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NATURE, LANDSCAPE AND PEOPLE SINCE THE SECOND WORLD WAR: A CELEBRATION OF THE 1949 ACT

DELIVERING BENEFITS GLOBALLY, NATIONALLY AND LOCALLY

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Introduction

In this paper I argue that, despite very significant advances in nature and landscape conservation over the past fifty years, environmental organisations must rise to the challenge of sustainable development by demonstrating the importance of the environment for human well-being in a more integrated manner and using more inclusive processes.

Integrated approaches to the environment are not new but they have tended to treat humans as secondary or as interferers in natural systems and processes. Over the last twenty years many initiatives have sought to broaden horizons. The World Conservation Strategy, the World Commission on Environment and Development, the Rio Accords on Sustainable Development, Climatic Change and the Convention on Biological Diversity all argue the need for more cohesive approaches: recognising sustainable development as the integration of the trilogy of increasing economic prosperity, achieving social well-being and equality, and improving environmental stewardship. In the paper I will identify some of the obstacles to meeting the challenges of sustainable development and draw lessons from the past, argue for new mechanisms and processes and seek to demonstrate through a few Scottish examples the progress which is being made.

Lessons from the past: the old reality

When one hears of nature conservation experts being burnt in effigy or reads headlines such as “Birds halt development”, “People should come first”, “Industry fears over nature reserve plan”, it is clear that nature and people are seen as

opposites. There are many and complex reasons for this stand-off. For the purpose of this paper I will summarise those which I regard as most pertinent to the achievement of a more integrated approach which the sustainable development agenda demands: policies and associated financial instruments, institutional structures and cultures, environmental evaluation methodologies, skills and expertise, communication, statutory conservation agencies and value systems.

Policies and the financial instruments which are attached to them have tended to have a functional focus. Whilst not criticising the legitimacy of public policy and financial instruments for housing, enterprise, energy, transport, agriculture, forestry, fisheries and, indeed, the environment, it has been clear for a long time that the link between them and their impacts on the natural environment have not been recognised sufficiently. The institutional structure which develops, approves and delivers these policies is frequently insular (what is now called the “silo mentality”) and each functional sector has developed its own institutional ethos and culture. Even when the environment is considered, it is often marginal. Alternatively, environmental policy and financial instruments are expected to mitigate the effects of what are seen as environmental problems, when they are regarded as conservation successes. An excellent example is the lack of integration of agricultural and environmental policy when applied to the management of wild geese on intensively farmed land.

Improvements are certainly noticeable, most notably in forestry and more recently in transport and agriculture. However, many areas of policy, and the financial resources used to deliver them, remain woefully short of a multi-objective approach which recognises environment as an intrinsic element of equal standing. Take for example where the CAP ensure economic and efficient production of food but fails to secure a high level of environmental stewardship and the provision of social and economic benefits to rural communities.

The first challenge of sustainable development is to ensure that policies and associated financial instruments, together with the institutions and their managers and staff, play their role in delivering all three of the elements of sustainable

development. More complex structures and working practices are an essential part of this process as are more multi-objective policies and instruments.

Many attempts to place environmental considerations at the heart of decision making have been made. Those who seek to measure everything in monetary terms do place environmental considerations at a disadvantage. The values which society might place on the functions and services which the environment provides for society are often not readily measurable and rarely compatible to the tried and tested economic measurement techniques. Much good work is now being undertaken by ecologists and economists in a very complex field **(reference....).** Appraisal and evaluation methodologies are being used to support decision making in Government and these, together with prompts from the UK Government's advisors on sustainable development, are helping Government to broaden its approach **(reference....).** Nevertheless, the backlash by hardened monetary economists and the apparently entrenched attitudes of decision takers and their key advisors, mean that progress remains slow **(reference Beckman)**.

The second challenge of sustainable development is to enhance the pace of investment in the development of new methodologies and techniques through multi-disciplinary collaboration and through multi-agency sponsorship so that the outcomes are accepted and used by decision makers, whatever their function.

Third, the communication between environmental experts and others has been a handicap. The media in its more normal conflict-seeking mode of operation has sought to exploit and, indeed, exaggerate, differences between the sides. The communication difficulties between the language of science and that of economists, for instance, have not helped. Neither has the ability of so-called technical experts to confuse their knowledge with their own value systems. Arguments concerning wild species population collapses often ignore the underpinning population viability analysis and arguments about job loss due to a wildlife site frequently ignore the economic benefits which the site can and does provide.

The third challenge of sustainable development is for more collaborative working, the use of everyday language and the recognition of shared values within the sustainable development ethic by the experts.

The skills required to deal with the complexities of the environment within the wider context of sustainable development are extraordinarily wide. Traditionally, environmental organisations have tended to employ experts on, for example, species populations, habitat monitoring and management, and landscape aesthetics. That must remain the case, but increasingly there is recognition of the need, additionally, to engage those with skills in community participation, project management, resource planning and economic evaluation.

The fourth challenge of sustainable development is for conservation organisations to ensure that they employ or have access to the requisite range of skills and that management ensures existing staff have the capabilities to do the job now required of them.

The pressures on the statutory conservation agencies since their establishment fifty years ago have changed. One of the most significant changes, in the context of sustainable development, is the balance of effort between protected or designated areas and sites and work in the wider countryside. The impact of post-war policies, fuelled particularly by the Common Agricultural Policy of the European Union, has meant very substantial losses in biodiversity compared with 1945 when Sir Arthur Tansley wrote his seminal book “Our Heritage of Wild Nature”. Protected areas have therefore become an even more important instrument of environmental policy **(reference .....)** and the legislation attached to them has increased accordingly, especially under the EU Species and Habitats Directive and the UK enabling Regulations. The ability to engage with key stakeholders has been hindered by imposed timescales and fuelled by conflicts, such that there are all too many examples of conflict between the local community and environmental organisations **(reference S.O. People and Nature)** when there should be shared recognition of the environmental asset and the benefits which it can bring to the local communities. Positive approaches to stimulate financially new forms of management are beneficial

but clash with the now out-moded compensatory regime borne of the voluntary principle. Pressures to maintain the current status of ecological health ignore natural, and often unpredictable, dynamics of natural systems and scientific analysis is not always in a position to provide guidance on management solutions. Much excellent policy advice on the wider countryside has been given over many years by the current bodies and their predecessors but resource restrictions have meant fire-fighting on designated sites has tended to be the order of the day. New approaches to help cope with this situation, embracing ecosystem management at different bioregional scales (see below), have been introduced by a number of agencies **(references....)**.

The fifth challenge of sustainable development is for statutory conservation agencies and has a number of elements: to argue successfully the case for sharing in the achievement of society's objectives for designated sites and areas using a variety of Government policies and instruments; the delivery of more people-friendly and inclusive approaches to conservation in statute and in practice and the associated application of the necessary people skills; the implementation of broader-based integrated planning approaches; and the development of more management orientated scientific endeavour on natural processes and functions.

Finally, in this brief survey, is the issue of how society, and communities and individuals within it, value the environment. Reference to any opinion polls **(reference...)** show consistently that health, education and employment are top of the poll and therefore highest on the political agenda. Environment has a lowly rating apart from the burst at the European elections in the late 1980s. Amongst environmental issues those relating to the work of the statutory conservation agencies tend to be lower than those of the statutory environmental protection agencies. A clear connection between environmental protection and human health and well-being is an important part of the explanation. And yet individual incidents concerning wildlife - a stranded sperm whale, persecution of hen harriers or peregrine falcons, or reappearance of otters in rivers or ospreys nesting in the Highlands - evoke a strong and positive public and media reaction. And at the same time we are still bedevilled by the uninformed views of those who wish to intervene to

“re-balance nature” or those who wish to preserve and protect the furry and the cuddly.

The sixth challenge of sustainable development is for the environmental movement to act in a more concerted way across the voluntary groups and within Government agencies and through integrating organisations such as IUCN. The action is to demonstrate good practice on the ground to increase understanding of the value and benefits to people of a good, well-stewarded environment.

Visions for the future: the ideal

The World Conservation Strategy, perhaps the seminal environmental document of the 20th century, argued for a new approach based on the key objectives of maintenance of essential ecological processes and life-support systems, preservation of genetic diversity, and ensuring the sustainable utilisation of species and ecosystems **(reference....)**. The institutional authorship was itself significant in a British context as the institutions were developed 50 years ago by the close collaborators of the progenitors of current statutory conservation agencies. Strategy by three international bodies, however influential, is only driven home in reality if it is translated into an international action accord. Fortunately this is the case, as with further evolution the World Conservation Strategy in effect became the Convention on Biological Diversity with its key objectives of the sonceration of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the use of genetic resources **(reference...)**.

In the meantime, the desire of some industrial nations to bridge the “North/South gap” and the recognition that western industrialised nations’ value were always being imposed on developing countries, a new approach to world order was required. The World Commission on Environment and Development (the Bruntland Report as called) placed people at the heart of the agenda and in the popular imagination

coined the term “sustainable development” - seeking to bring together the apparently inseparable environment and development aspects with the focus clearly on people “whose well-being is the ultimate goal of all environment and development policies”. (Bruntland, page XIV). This is epitomised in the sub-title of the Commission’s Report “From one earth to one world” signalling integration and cohesion in many dimensions to key issues affecting human survival on the planet and role which the richer nations had to help to poor achieve better lifestyles. This carefully analysed and argued vision, along with the further work by the environmental movement in the form of “Caring for the earth” (IUCN etc.) provided the basis for the Rio Declaration on Environment and Development which set out 27 principles.

So for the statutory conservation agencies the seminal date was 1992 and the signing of the Earth Summit agreements on Agenda 21, the Rio Declaration and the Conventions on climate and biological diversity and not, as some would argue in 1990 with the new statute marking the replacement of the NCC with country conservation agencies in England, Scotland and Wales. These agreements set a new baseline and a new challenge for everyone. SNH, for example was given a challenge in its founding legislation (Natural Heritage (Scotland) Act 1991) “SNH shall have regard to the desirability of securing that everything done, whether by SNH or any other person, in relation to the natural heritage of Scotland is undertaken in a manner which is sustainable”.

The “think global/act local” adage of the 1980s took on a new meaning. A clear connection had been established between population and development on the one hand and its environmental footprint on the other, and action was demanded globally, regionally, nationally and locally. In the UK the various action plans on sustainable development, biodiversity and climate change heralded the beginning of a new, more integrated approach to decision-making affecting people and the environment. Inevitably some elements are easier to change than others where values, approaches and institutions led the way in resistance for some time despite valiant attempts by environmental bodies to put their cards on the table and challenge themselves and others on the way forward **(reference SNH strategy)**. Panels, Round Tables and Advisory Groups were spawned to stimulate debate and

lead to action: the former easy, the latter at times intractable except where there was a political will. Arguments about the definition and meaning of sustainable development got in the way of progress - and can still do so. But the setting of timetables for the production of Local Agenda 21 plans has helped to break the deadlock. Nevertheless, there still seems, as the diagram attempts to illustrate, less than a meeting of minds by the hijacking of the word “sustainable” for economic, tourism and business interests, as opposed to the joined up totality.

It is not surprising therefore that the environment movement seized upon the biological diversity agenda to make progress. The 59-point ‘Biodiversity: the UK Action Plan’ touched all parts of Government which it needed to. In practice, however, progress was made by the environmental movement working largely on its own - government, statutory agencies and NGOs. That which could be delivered by this sector was the order of the day and countless Species Action Plans were at the forefront of endeavour. Only recently have Habitat Action plans begun to take a more prominent role. Even now the wider elements of the Convention on Biological Diversity, particularly in relation to genetic diversity (as opposed purely to species and habitat diversity defined on a largely non-genetic basis), sustainable use of key biological resources such as fish and wood, and the role of protected areas are relatively under recognised. **The seventh challenge of sustainable development** is to achieve a more balanced and broad ranging approach to the delivery of the Convention in the action planning system which has been established so effectively in the UK. The Local Biodiversity Action Plans being drawn up by local authorities have the potential to do this but only if they are seen as a component part of local Agenda 21 strategies and not a separate initiative dealing with species and habitats. The planning systems for sustainable development and biological diversity and the plans themselves need to be brought together in order to meet the challenges of Rio, hence a further, **eighth challenge of sustainable development.**

Shortages of food and water and use of natural resources in one country affecting its availability across the political boundary in the next have caused attention to be focused on the functions and services which the environment provides to society. The natural dynamics of ecosystems at different geographic scales are an important

element. To those leading this thinking, it seems to be an effective way of putting the environment into sustainable development and also arguing the importance of the environment for human well-being.

It appears a self evident truth that the soil, air and water provide a resource base for civil society but we can take a somewhat more sophisticated approach which recognises the specific services and functions and the social benefits which they can confer. Take for example wetlands (mires, fens, salt marshes and river floodplains) and their role in the UK. Far from being a hindrance to farming or house construction or other development, and therefore the need to have them controlled through drainage, they are part of the functioning natural system. Stopping flood plains flooding to protect arable farmland means that the channel run off will be faster and flood banks downstream likely to be overwhelmed causing substantial damage with a high cost of reinstatement. In addition to their role as water regulators, wetlands can be sinks for waste, and wildlife sanctuaries providing both spiritual refreshment and recreational enjoyment. The benefits to local communities, measured by adding values to these functions, are substantial. When set alongside the destruction of such natural resources, more balanced decisions can be taken. The same approach can be taken for many other services (diagram) such as erosion control, soil formation, genetic resources, food production and recreation. Defining functions and services and ascribing a value provides the basis for a new way of assessing the environment alongside those features which are more susceptible to measurement by normal economic indicators. **The ninth challenge of sustainable development** is the cogent input into the decisions-making process of the values and benefits to civil society of the functions and services provided by the environment.

Individual elements of the environment should be seen and considered as part of wider functioning systems. It is a welcome news that there is renewed interest in understanding ecosystems as an intrinsic element of planning and managing the natural dynamics of the environment. The ecosystem approach, as it is now labelled, is “a method for sustaining or restoring natural systems and their functions and values. It is goal driven, and is based on a collaboratively developed vision of

desired future conditions that integrates ecological, economical and social factors. It is applied within a geographic framework defined primarily by ecological boundaries". (Inter-agency Ecosystem Management Force 1995). **The tenth challenge of sustainable development** is to ensure that the dynamics of natural systems, including the fact that they are inherently unstable, is taken into account in decision making which seeks to intervene in the natural processes.

Addressing the functioning of the environment geographical scales is important - what has become known as the "bioregional approach" (Miller 1996). It is defined classically as dealing with the functioning of ecosystems, including people, at an appropriate geographical scale. As such it has been applied to the Central American Cordillera, the Serengeti and nearer home is being applied to the Tweed basin, the Loch Leven catchment in Fife, the whole of Scotland and in many European countries **(reference.....)**. The bioregional approach seeks to address the isolation of protected areas through recognition that each part of a region has a different role of one part to play should not result in untoward impact on other parts of the region, and that there are gradations in the protection for species, habitats and landscapes from core zones of high protection through buffers to corridors which connect them (diagram) all placed within a wider matrix. Human settlements and economic activity are embraced within the bioregion to ensure the connection between human needs and the functions and services provided by the environment within the region. **The eleventh challenge of sustainable development** is to make these bioregional approaches effective practical tools.

A critical element of the approach as now practised is that humans are integral components of ecosystems on the basis that they influence the system and are also affected by it. This has very substantial implications for the processes of deciding on objectives and outcomes, defining strategies and plans, and implementing agreed action. The setting aside of the role of stakeholders is no longer a realistic approach - and quite rightly so. Although engagement does prolong the decision-making process, it makes it much more likely to be durable in the longer term: a great benefit compared with short term imposed fixes. Defining the stakeholders is critical - local communities, those whose private interests are affected through ownership of

resources, organisations with statutory responsibilities, and democratically elected representatives of civil society. Local interests, whilst vitally important, are not the only ones which have a legitimacy as stakeholders. National government and its agencies, along with representative and membership organisations with specific interests and responsibilities are equally important. Processes for the full engagement of these stakeholders are essential, as is the clear acceptance that objectives and outcomes must be part of the deal of engagement. This is **the twelfth challenge of sustainable development** but fortunately there are many good, although some not so good, examples of practice.

Defining desired outcomes is a critical part of the sustainable development agenda. The broader the topic, the wider the stakeholder base, the larger the area then the more challenging it becomes. The essential issue is to identify the values which are shared and those which are not, and from the common values seek to define objectives and ascertain outcomes. Balancing the three elements of sustainable development is important in this context to ensure that one does not take over the others. Recognition that some values can be mutually supportive is also important: aesthetics with naturalness, enhancement and restoration with local economic worth.

A managed approach, either reactive to particular problems or adaptive to introduce change to reach desired end points is likely to be necessary. This cannot be undertaken without adequate scientific information and knowledge of the environment and informed interpretation of the status and trends opf the constituent parts. Monitoring and evaluation of, for instance, limits of acceptable change and carrying capacities is necessary. **The thirteenth challenge of sustainable development** is to ensure that the key gaps in scientific knowledge and in information are plugged as quickly as possible through co-operative effort.

Arriving at desired outcomes prompts then discussion and agreement on the action required and the means of taking it forward. The full engagement of those stakeholders with the ability to deliver new approaches and mechanisms and the political willingness to change are essential. Use of a variety of measures, with fiscal instruments arguably the most powerful and successful, alongside regulation,

statutory duties, statutory or voluntary codes of practice, must all be part of the toolkit. **The fourteenth challenge of sustainable development** is to ensure that there is flexibility in the approach by key decision-makers to the use of existing instruments in novel ways and the development of new instruments.

In the ideal world, therefore, the key lessons seem to be the following:

- to link environment into the sustainable development agenda through environmental functions and services
- engaging all stakeholders throughout in an inclusive process
- being clear about ends and the means of achieving them
- using best available knowledge and information
- obtaining necessary knowledge where there is a critical gap
- flexible use of different tools and mechanisms
- operating at the appropriate geographical scale
- operating in an integrated way within the geographic area.

Putting the ideal into practice: the new reality

Since the new statutory conservation agencies were established at a time of the development of the Rio Fourth Summit, then each has faced major challenges in seeking to address the new agenda. A number of examples are given from Scotland of work led, facilitated or involving Scottish Natural Heritage. In each case the desired outcomes, the process and mechanisms used, the outcomes to date and the pointers for sustainable development are set out.

(1) **Natural Heritage Zones**

A new framework for SNH's work is currently being developed - styled National Heritage Zones. These are areas which have a similar natural attributes and cultural landscapes within which SNH intends to develop an integrated approach to the delivery of its remit and to its engagement with key stakeholders. The desired outcomes are a more integrated approach to the delivery of its remit, more engagement in delivery of natural heritage benefits by other stakeholders, clearer articulation of visions and opportunities which will benefit each of the elements of sustainable development.

Twenty-one zones have been defined on the basis of a variety of factors, including species distribution, climate, soils, topography and landscape character **(reference....)**. For each zone all relevant data is gathered and analysed to help in the identification of opportunities and the development of . a vision for the next quarter of a century. From this material a prospectus for the zone drafted. Thereafter, engagement with key local stakeholders is undertaken and detailed information passed on. Simultaneously national assessments of key elements of the natural heritage are developed and, at a later date, national prospectuses setting out our policy and objectives for key attributes and key activities are developed.

It is too early to judge ultimate success. There have been a number of beneficial outcomes to date. First has been recognition of the interactions of the different elements in the natural heritage and hence the importance of a more integrated approach. Second, the bringing together of data and other information to inform thinking and action has been a major step forward. Third, there has been greater clarity of views on opportunities enabling the definition of a vision and associated objectives. Finally, it is clearer how, at the local level, the work can inform SNH's input into Local Agenda 21 plans and Local Biodiversity Action Plans.

The **pointers for sustainable development** from this programme will be to: clarify the environmental contribution to sustainable development locally through the local Agenda 21 process; identify environmental opportunities which will bring social and economic benefits locally; and engage stakeholders in vision and objective setting and in the ensuing action.

(2) **Loch Leven catchment**

The Loch Leven catchment in Fife is of both local value as a recreation, wildlife and economic resource and of international significant for its breeding, migratory and wintering wildlife, particularly wildfowl, and its brown trout fishery. Nutrient enrichment through phosphorous deposition in the loch itself demanded action within the catchment. Although some action had been underway for two decades, statutory agencies and local interests recognised that a more concerted effort was required. The objectives of the approach, therefore, were to achieve sustainable management within the catchment through the development of an integrated catchment management plan with the specific objective of reducing phosphorous input.

The process used was to establish a steering committee of key stakeholder interests and for the public agencies to join together and appoint a project officer. Four working groups, dealing with water quality, river management, planning and development, and agriculture and forestry, were established with representation of key stakeholder interests. Extensive consultations were carried out leading ultimately to the publishing of a catchment management plan **(reference...)**. The plan includes 62 recommendations with planned implementation directed at key statutory bodies. The clear outcome then is an agreed plan by the stakeholder interests as a framework for future action.

The **pointers for sustainable development** are: the quality of the local environment has been recognised as important in its own right; all stakeholders have recognised that they have a role to play in improving environmental quality; the integrated approach to dealing with the issues has been recognised and

acted upon; and there is a recognition that to deliver the ultimate outcomes requires effort by all stakeholders.

(3) **Cairngorms**

The need for an integrated approach to the management of the Cairngorms Mountains and their surrounding glens and straths has been recognised for a long period of time. A substantial degree of environmental, and specifically ecological, degradation is to be reversed with a programme of enhancement through positive management. Better protection is required for key environmental assets, especially in the montane and sub-montane zones and in the native woodland zones. Opportunities also need to be provided for economic development within the context of a high quality environment. All thinking and action had to engage the key constituencies of interest.

Government determined that action was required and established a Working Party comprising key stakeholder interests and supported by key technical experts. After an intensive period of activity, the outcome was a detailed analysis of the situation and a shared vision **(reference...)**. Following a hiatus in decision-making, the Government established a Cairngorms Partnership but took a rather more detached role in the identification of the key stakeholders. After an intensive period of data gathering, analysis **(reference...)** and consultation throughout the area and further afield, a Management Strategy was drawn up and agreed **(reference...)**. Following a further delay, a new Partnership was eventually established with the remit to deliver the Management strategy. It is too early to judge the outcome of this stage, suffice to note that there are many actions underway some of which stem from the Management Strategy.

Parallel with the second Partnership was work undertaken by SNH, at the request of Government, to draw up detailed proposals for the establishment of a National Park for the Cairngorms. In addition to gathering the best available experience from other developed countries **(reference..)**, extensive consultation exercises were held, consultation papers drawn up **(reference....)** and circulated widely and meetings and seminars undertaken. The outcome

was a clearly stated aim that the purposes of a Cairngorms National Park should be environmental, social and economic and that all of these could be developed in a coordinated and integrated manner, with the proviso that in case of dispute then maintenance of environmental assets had primacy **(reference....)**.

The **pointers for sustainable development** from these exercises are: the need to ensure a real balance of interests and not just provide something for each constituency; the need for a clear definition of the geographical area which is integral and through which coherent policies and actions are deliverable; the need for clear mandate to be given to the Partnership as a whole for delivery of the agreed strategy; and strategic actions rather than specific disconnected projects are also critical.

(4) **Focus on Firths**

In Scotland, as in other parts of the UK, the maritime environment was ignored as an asset and certainly ignored from an environmental management viewpoint. There was a need to find a basis for the delivery and implementation of marine protected areas under the EU Habitats and Species Directive and through that bring together the various constituencies of interest. The UK Biodiversity Action Plan identified a target for the drawing up of strategies for the key firths: Moray, Forth and Solway, by the end of 1998 **(reference...)**.

A series of fora were established for each of the three firths, together with subsidiary fora for the inner firths for the Moray Firth: Dornoch and Cromarty. The fora comprised initially of the core constituents but these were widened on a progressive basis as more stakeholders sought to opt in to the process. In each case a full time project officer was appointed, initially funded by key public sectors interests led by SNH. Newsletters to communicate progress, and topic papers to seek views on key activities, functions and other issues were produced. The outcome is that strategies have been achieved or are in an advanced state by the deadline. The pace of activity has been high but the ability to progress has varied due to local circumstances, including the

perceived degree of threat to specific interests of this more planned approach, the size and complexity of the stakeholder interests and the size of the area.

It is a little early to identify the key pointers for sustainable development. Suffice to say that it does need a good deal of time to address new areas and topics and bring together a range of stakeholders who would not normally work together.

Conclusion

International experience and recent experience in Scotland shows that there are a number of critical factors for success of initiatives which seek to place the environment, alongside social and economic aspects, to deliver sustainable development in practice. There needs to be flexibility of policies and associated instruments for delivering them and a need to modify institutional structures and to evolve the cultures of the organisations and the staff within them. The need to plan and manage at the appropriate geographic scale bearing in mind the environmental functions, services and dynamics. Engagement of stakeholders in determining outcomes and the means of achieving them is vital, with an inclusive process throughout. Best available knowledge and information should be used at all times. Focused and strategic effort on key knowledge gaps where these are impeding advancement is required. Adaptive management is usually the best approach, with a process of monitoring and scientific assessment of the outcomes against the values and objectives a critical part of the process.

Good progress has been made in a short time. There remains a need for greater effort to focus on environmental resources as a dynamic and essential asset in the sustainable development equation. The need for shared visions and outcomes for the use and management of that environment is critical. In addition to particular techniques we also need to apply structured and integrated approaches to ecosystem dynamics, functions and services at appropriate geographic scales. There are many challenges but it is clear that if we can move towards meeting these then the environment will become the essential practical element of sustainable development and thereby provide benefits locally, nationally and globally.