

The potential for Biosphere Reserves to achieve UK social, economic and environmental goals



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Preface

This research was undertaken in response to a call for research proposals issued by DEFRA on 5th November 2007 (Ref: CR 0393). The overall aim of the research was:

to generate recommendations for anticipating and maximising the social, economic and environmental benefits from UNESCO World Biosphere Reserves in the UK, in order that they may deliver real added value benefits to social, economic & environmental goals.

The study draws on an analysis of the “added value” of Biosphere Reserves in Europe and the developed world through literature review, discussions with key stakeholders, and 5 case studies. An assessment framework developed in previous work for SNH¹ was used to structure the work, and was further refined as part of the research. The study considers how lessons learned might be applied in order to maximise the benefits deriving from a fully functioning network of Biosphere Reserves in the UK.

¹ Hambrey Consulting 2007. Social, economic and environmental benefits of World Heritage Sites, Biosphere Reserves and Geoparks. SNH Research Contract 18998.

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APPENDIX 1: CASE STUDIES (SEPARATE VOLUME)

- 1. Kristianstads Vattenrike Biosphere Reserve, Sweden**
- 2. Braunton Burrows Biosphere Reserve, North Devon, UK**
- 3. Rhoen Biosphere Reserve, Germany**
- 4. Entlebuch Biosphere Reserve, Switzerland**

1 Executive Summary

1.1 The evolving meaning of Biosphere Reserve

The origin of Biosphere Reserves goes back to the "Biosphere Conference" organized by UNESCO in 1968, the first intergovernmental conference to seek to reconcile the conservation and use of natural resources, thereby foreshadowing the present-day notion of sustainable development². In 1973, the concept of Biosphere Reserves was formally established within UNESCO's Man and the Biosphere (MAB) programme. Their functions were to conserve biodiversity and provide facilities for research, education and training.

The MAB philosophy and programme was substantially revised at the 1995 Seville Conference which created a "*Statutory Framework of the World Network of Biosphere Reserves*" and associated criteria for designation. According to Article 3 of this framework, Biosphere Reserves (BRs) are expected to be "*sites of excellence to explore and demonstrate conservation and sustainable development on a regional scale*". BRs are expected to combine three functions: conservation; sustainable development; and logistic support (education, training, exchange etc)

Management of BRs is conceived within a threefold zonation – a core zone of high biodiversity value subject to some form of legal protection; a buffer zone managed in such a way as to secure the qualities of the core while at the same time encouraging sustainable use; and a transition zone, which may include urban areas, in which the ethos of sustainable development can be pursued more broadly, and where the links and inter-dependencies with the core and buffer zones can be explored and demonstrated.

The most recent interpretation of the nature and purpose of biosphere reserves is to be found in the Madrid Action Plan (MAP: UNESCO, 2008), which includes the following vision statement: "*The World Network of Biosphere Reserves of the Man and the Biosphere Programme consists of sites of excellence to foster harmonious integration of people and nature for sustainable development through participation, knowledge, well-being, cultural values and society's ability to cope with change, thus contributing to the [Millennium Development Goals]*".

The term Biosphere Reserve is therefore a misnomer: the designation is neither restrictive nor exclusive, except in so far as a legally designated core zone is required. Taken as a whole it is not a protected area as defined by IUCN. Rather it is the *only* global designation – or accreditation – for an area demonstrating excellence in sustainable development in practice.

Governance of Biosphere Reserves is highly variable, ranging from relatively autonomous facilitating teams, through a variety of representative and participatory structures, to relatively formal and powerful institutions – and there is no international consensus or indeed guidance on the best governance model. This diversity has been allowed, if not encouraged by UNESCO to maximise the opportunities for learning and demonstration. There is one key proviso however. The Statutory Framework specifies the need for participatory decision-making structures, involving a wide range of stakeholders, as well as provisions for a "management policy or plan for the area as a biosphere reserve".

² UNESCO MAB "Biosphere Reserves in a nutshell".

1.2 International review – benefits and conditions for success

Biosphere reserves vary greatly in terms of size, nature of the environment, economy, society and governance. They range from early BRs designated in the 1970's and early 1980's (including most of those in the UK) primarily for their ecological qualities, to more recently designated sites where the emphasis is more firmly placed on sustainable development and which may encompass large urban areas and degraded habitat.

Our analysis reveals that reported benefits are diverse, reflecting the scope of the BR objectives. However, most studies are based on qualitative assessments, often informed primarily by those actively engaged in the process. There are few objective studies based on stratified survey of local communities, and there is very little hard evidence of positive marginal (or added value) benefit.

There are several reasons for this. Firstly, it is costly and time consuming to undertake detailed social and economic survey. Secondly, the anticipated benefits from BRs are mainly about sustainability – in other words *long-term* benefits. In almost all cases we lack the social, economic and environmental time series data to establish any impact. Thirdly, where we do have such data, it is usually impossible to establish the “control” or baseline: what would the trend have been without the BR? Could these benefits have been realised through alternative processes?

The BR concept is all about ways of doing things, the future, quality of life – a philosophy rather than a development mechanism. Benefits are bound to be intangible or very difficult to measure.

This is why most of the benefits identified are “perceived process benefits” – such as awareness raising; conflict resolution, stakeholder forums, labelling schemes, monitoring programmes etc. The “outcomes” in terms of social, economic and environmental benefit have nowhere been systematically monitored or verified.

Notwithstanding these limitations the literature review and case studies suggest the following strategic benefits:

- The BR concept is an incentive/facilitating mechanism for the implementation of a broad development philosophy which is specifically conceived as likely to generate social, economic and environmental benefits in the long term.
- Although there are alternative delivery mechanisms (such as Agenda 21; planning and development vision for some local government; codes of practice for business etc) none of these offer the combination of:
 - a short term reward in terms of a globally respected designation/quality assurance;
 - associated marketing opportunities for sustainably produced products or sustainably managed environments;
 - a practical focus on an identified human-natural system, or a particular “place”, whose characteristics can be seen to improve through the BR implementation; and
 - international networks through which to share experience and develop partnerships.

- The BR label is the only existing global “standard” associated with area based sustainable development and associated products – something which, judging by most discussions of the nature of sustainability, is sorely needed.
- The designation has the potential to:
 - Attract those in search of a high quality sustainably managed environment and associated services (leisure, recreation, adventure, study, pleasant living environment);
 - Provide a practical and unifying focus for sustainable development initiatives;
 - Raise the levels of awareness, understanding and *pride* in the local environment and the way in which it is managed, which in turn can inject and attract dynamism into the local economy;
 - Leverage in additional support or project funds by both assuring the quality of the environment and the sustainability of the local economy.
- Dependent on circumstances the lack of regulatory powers associated with most BR designations can be either a strength or a weakness :
 - To those who dislike or despair of the highly regulatory approach to environmental protection, the BR offers a more constructive and conciliatory approach; an opportunity to prove that we can do better without regulation.
 - In situations where the capacity to organise is poor, where community coherence and identity is weak, and where existing governance structures are fragmented and/or duplicated, the lack of authority may be a weakness.

The actual benefits realised will depend upon the perceived need, the local capacity and opportunity to meet these through a BR type designation, and the political will.

1.3 Benefits in terms of meeting UK and devolved administration policy objectives

Given the scope of the biosphere reserve concept, it is perhaps not surprising that successful implementation would contribute to very large range of UK and devolved administration policies. In fact **it is hard to find a policy to which a successful BR would not contribute**. We have listed the main ones, including the priorities, aims and objectives associated with each, in a separate Appendix available on request.

The following phrases can be found again and again in policy statements, strategies and action plans: *sustainable development; sustainable communities; mainstreaming the ecosystem approach; taking decisions at the appropriate spatial scale; healthy functioning ecosystems; quality of life; access and outdoor recreation; participation in planning and management; consideration of biodiversity in all decision making; living within environmental limits; sustainable food production; quality management systems and quality labelling; engagement of local people in decision making; adaptive management; developing a robust evidence base; holistic approach.*

In practice these concepts are so broad, so often repeated, yet with so few tangible mechanisms for their implementation, that there is a danger of them becoming devalued.

The Biosphere Reserve concept roots these aspirations within a defined area whose structure to some degree reflects people's relationship with nature. It brings the ideas literally down to earth. It therefore has significant potential to contribute to many of these policy aspirations.

1.4 Evaluation of benefit

In making our assessment of the social, economic and environmental benefit in relation to the case studies we used a six stage process, and this methodology could be used for evaluations of both existing and potential BRs. The methodology is described in detail in section 6, and builds on an assessment framework developed in previous studies.

Given the lack of effective baselines, "controls" and comprehensive trend data in most circumstances, the analysis is bound to be largely qualitative and based on *perceived* benefits. The key to an informed and unbiased analysis is to ensure a fair representation of these perceptions across the local community, and to ask always the question *what would or could have happened/what is likely to happen without the BR?*. Wherever possible statistical evidence is then sought to support and strengthen the qualitative analysis.

If the study relates to *potential* benefit, it will be necessary to assess capacity to implement the BR concept and realise potential benefit by assessing the area against the conditions for success discussed below.

1.5 Conditions likely to favour the realisation of potential benefits

It is clear that the concept of a Biosphere Reserve has potential. It is one of the few tools we have to promote sustainable development in practice. However, its scope and complexity are such that it is unlikely to generate significant benefits unless certain key conditions are in place, relating to the place itself and its natural resources, the economic structure, attitudes and awareness of local people, and governance structures. These conditions are summarized below and discussed in more detail in the text. Not all are *required*, but the more that are met, the more likely is significant benefit.

Ecology and geography

- A high quality natural environment, *or* one with the potential to become high quality;
- Attractive and accessible to local people for recreation and education;
- Attractive and accessible to tourists, and with potential for exploration, interpretation and education;
- Clear functional links between the quality of the environment and the lives of local people;
- Large enough to support significant sustainable land use activity and levels of production or service provision which can usefully be marketed under a BR/sustainable development label.

Economy

- A perception of need for regeneration, new initiative, a new way of doing things amongst the local population and especially key players – and broadly based interest in sustainable development;
- Opportunity for improved livelihoods, income or new development related to the qualities of the natural environment (e.g. local food or wood products; outdoor recreation; tourism);
- The existence of local crafts or local processing of food and natural products.

Society and governance

- High levels of awareness of natural values;
- Local institutions or individuals keen to “champion” development and conservation;
- Strongly supportive local government – preferably with boundaries coincident with the BR;
- A coherent community – a common sense of identity and pride – preferably related in some way to the natural environment (e.g. fisheries, farming, shooting, education, recreation etc).

Many of these characteristics cannot be drawn on a map – they depend on the nature of society, local culture and governance. **By far the most important characteristic is the presence of a group of motivated and capable people, broadly representative of the interests of local society, who believe in the idea.** This may be an influential individual, the local council, or a strong and effective partnership of interests.

This suggests that Biosphere Reserves should not be selected and “designated” according to detailed criteria and a top down process. Rather the concept should be promoted in the manner of a quality management scheme: you need to fulfil some very basic criteria, and then demonstrate capacity and performance against the key functions of the biosphere reserve. **This is bottom-up self selection rather than top down designation, and has the capacity to positively influence a far greater range of people.**

1.6 The role of UK MAB and a “fully functioning network”

1.6.1 Re-launch

The idea of a Biosphere Reserve is old and confused. The changes in meaning and approach are not reflected in the name. Most of the existing BRs in the UK do not score well according to the new criteria, or in terms of the favourable conditions listed above – and in themselves send the wrong message about the meaning of Biosphere Reserve.

Yet the idea is a good one: it is a logical and common sense approach; it hits a wide range of policy “buttons” at UK and devolved administration levels; it chimes well with the stated vision of most local and national government – but offers an extra dimension in terms of international “quality assurance”.

There are two ways forward: either drop the idea as confusing and outdated and channel money into other sustainable development initiatives; or re-launch so that all of those with an interest in sustainable development, or communities with a “place” image which chimes with the BR concept, become aware of its potential. We believe that the idea is good enough to merit the latter – especially since so many people are struggling to articulate the practicalities of sustainable development and the

ecosystem approach, and there appear to be few codified alternatives - and none with global credibility.

Our case studies – and common sense – suggest that strong support from local government and local politicians, together with representatives of resource users and a cross-section of the local business and civic community, will be critical to the success of any BR. These, rather than the nature conservation agencies, should be the target for any publicity/re-launch. Such a re-launch might include:

- TV, radio or blog series on Biosphere Reserves worldwide ending up with a thoughtful programme in the UK;
- National re-launch conference, with new name³, to which key local government representatives, resource user representatives (farmers, forester, fishermen, tourism etc) are invited;
- Press awareness – press articles in national and local papers;
- Dynamic website with new articles, editorials etc

The hosting of UK MAB within the International Wildlife Division of DEFRA sends the wrong messages about the nature of biosphere reserves, and the possibility of bringing it under the Strategy and Sustainable Development Directorate of DEFRA, or more directly under the UK National Commission for UNESCO should be considered. Strengths and weaknesses of the various alternatives are discussed in the main report.

The **UKMAB Committee will also need to rebalance its membership** to demonstrate the focus on sustainable development rather than primarily nature conservation. In particular it should seek closer association with the Sustainable Development Commission, and effective representation of local government and resource user groups, either directly on the MAB Committee or on task orientated working groups.

The “lapsed” biosphere reserves should be downplayed in any publicity and, if there is no prospect that they can become “modern” BRs, should be withdrawn from the World Network of BRs by the UK government. As with the withdrawal of four UK sites in 2001, this would be seen as good practice by UNESCO and would show UK commitment to the effective implementation of the BR concept.

Significant one-off resources would be required for an effective re-launch, and in the medium term support for a programme officer to facilitate establishment of a network of UK biospheres would be desirable. The initial focus for this support work should be clearly on the biosphere reserves, rather than research and international development, although these areas of activity should continue to be pursued by the UKMAB committee and its members.

1.6.2 Costs and benefits of a “fully functioning” network

Once a significant network of BRs in the UK is established, there may be opportunities to benefit from some form of “network” organisation. Our review of experience, and understanding of broader economic literature suggests that such a network at national level may deliver the following benefits:

³ Biosphere Reserve must remain the technical international designation, but there is no reason why a UK “working” name should not be used, as is the case in several other countries.

- Economies of scale (e.g. in training programmes, promotion programmes, access to R&D funding; dissemination of best practice);
- Sharing of experience and learning;
- Representation of BR interests and experience at UK and international level.

If these economies of scale and associated benefits are genuine, then member BRs should benefit in terms of lower costs and/or higher returns, and should themselves be prepared to pay for costs associated with the network, in the same manner as producers fund producer organisations. This would then allow for sustained funding of a programme officer/secretariat, which in turn would enhance its capacity to lever in additional funding to create a more effective and higher profile MAB programme in the UK.

Our research on BR networks in other countries reveals a wide variety of mutually supportive activity, including joint research and learning; training and demonstration; capacity building; marketing; monitoring and information; fund raising; and awareness raising.

However, there should be no rush to designate “12” BRs in order to create a “fully functioning network” as suggested in the TOR. It takes much time and effort to raise support and awareness to a level likely to create demand for, and underpin a successful BR, as the Kristianstad case illustrates. In any case a smaller number of UK BRs can take advantage of the well established European and global networks. The emphasis should be on quality and success for individual BRs to prove the approach and enhance the quality status of the brand. Expansion of the network should be a response to demand rather than ambition.

2 Background and rationale

2.1 Biosphere Reserves

The origin of Biosphere Reserves goes back to the "Biosphere Conference" organized by UNESCO in 1968, the first intergovernmental conference to seek to reconcile the conservation and use of natural resources, thereby foreshadowing the present-day notion of sustainable development⁴. In 1973, the concept of Biosphere Reserves was formally established within UNESCO's Man and the Biosphere (MAB) programme. Their functions were to conserve biodiversity and provide facilities for research, education and training; to have a site of biogeographic regional importance was considered sufficient. In 1976, the UK Government put forward thirteen National Nature Reserves to be part of the global Biosphere Reserve network. All were designated by UNESCO.

In 1984, the MAB programme produced an action plan which expanded the Biosphere Reserve concept to define sites in terms of their sustainable development value. When the UK left UNESCO in 1985 the UK MAB programme went into abeyance and, as a consequence, there was no formal UK representation at the 1995 Seville Conference which substantially revised the MAB programme and created a "*Statutory Framework of the World Network of Biosphere Reserves*" and associated criteria for designation.

A UK review was carried out in 1998 and published in 1999, following which 4 reserves were de-listed because it appeared unlikely that they could meet the revised criteria in the Statutory Framework. The remaining Biosphere Reserves in the UK are:

- Taynish, Scotland
- Beinn Eighe, Scotland
- Silver Flowe/Merrick Kells and Cairnmore of Fleet in Galloway, Scotland
- Loch Druidibeg, Scotland
- Dyfi Valley Biosphere Reserve, Wales
- Moorhouse Biosphere Reserve, England
- North Norfolk Coast Biosphere Reserve, England
- Braunton Burrows-North Devon's Biosphere Reserve, England

According to Article 3 of the Statutory Framework, Biosphere Reserves (BRs) are expected to be "sites of excellence to explore and demonstrate conservation and sustainable development on a regional scale". They are selected according to their capacity to meet criteria relating to ecological character, significance for conserving biodiversity, and their potential to explore and demonstrate sustainable development at a regional scale. The last of these is of increasing importance to the MAB programme. BRs are expected to combine three functions:

1. "conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation";
2. "development - foster economic and human development which is socio-culturally and ecologically sustainable";
3. "logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development."

⁴ UNESCO MAB "Biosphere Reserves in a nutshell".

BRs are zoned into Core areas, Buffer zones, and Transition areas. The Core area must be an area of high environmental quality, where conservation, research and education are carried out. This is surrounded by a Buffer zone where land management and use is sympathetic to the objectives of the core area. The Buffer zone is then surrounded by a Transition area, the extent of which depends on the issue, but where communities are encouraged to carry out sustainable development in all aspects. Community participation is now seen as a key element and requirement in BR planning and management. The zoning approach, coupled with participatory management, represents a powerful tool for combining conservation and sustainable development objectives. The conclusions of the UNESCO Seville+5 conference in 2000 highlighted (*inter alia*) the need to improve the visibility of BRs, and to improve their evaluation.

2.2 Policy context

MAB policy and initiatives

While the MAB programme has always placed an important emphasis in environmental (and in particular biodiversity) goals, there has been an increasing emphasis on social and economic goals, particularly since the Seville Conference in 1995. Many of the recommendations of the conference focused on such goals, and a number of specific task forces have been set up and meetings held, at both regional and global levels, to address social and economic issues such as social monitoring, quality economies, and tourism in BRs. Such issues have been a strong focus of the EuroMAB network, the regional network for Europe and North America, which organises biennial meetings.

The 2005 meeting of EuroMAB Biosphere Reserve Co-ordinators and managers in Vienna⁵ involved 111 participants from 29 countries. Common denominators identified across the various workshops and relevant to this project were the need for:

- Good local leadership
- Moral and financial support from national authorities
- Good communications with stakeholders and decision makers

Major issues and action points included:

- The need for and difficulty of measuring the success of Biosphere Reserves
- The accommodation of multiple designations
- Participation and public relations

One of the workshop topics at the 2005 Vienna conference was “measuring success in implementing the Biosphere Reserve concept”. Case studies presented indicated the difficulty of this, and the varying levels of information available. They also pointed to the potential associated with Biosphere Reserve “labelling”.

The major focus of the 2007 EuroMAB conference in Turkey was how to enhance linkages between science and society, using the BR network as a ‘learning platform’ for sustainable development. The E-conference held in spring 2007 to prepare for the conference also addressed, among other themes, the question of measuring the

⁵ . Meeting of the EuroMAB Biosphere Reserve co-ordinators and managers. Proceedings. Austrian Commission for UNESCO, Vienna 2006. <http://www.unesco.at/user/news/euromab2005.pdf>

social and economic benefits of Biosphere Reserves⁶ under a thread led by Doris Pokorny (BR, Germany). Issues raised by Andy Bell, chair of UK MAB, included

- Skills and education to provide a good resident workforce and attract inward investment.
- Use of local government statistics to monitor area GDP, and its limitations in terms of measuring sustainability.
- The continuing lack of any form of payment for ecosystem services.
- Possible use of mathematical models to look at economic effect of sites.

North-South Cooperation

Opportunities for international development and North-South cooperation are raised in the project brief. Often located in isolated parts of the globe, BRs represent an opportunity for stimulating the sustainable development of rural communities in areas disadvantaged by distance from economic centres or lack of infrastructure.

UK conservation and development policy

We are now in a phase of increasing convergence of development and conservation policy in the UK and elsewhere. Sustainable development is now the objective both on and off many designated sites. There is increasing emphasis on a more holistic approach to biodiversity conservation, emphasising coordination and connection between different types of designated site, reinforcing connections and ensuring sustained delivery of ecosystem services through the creation of “*green infrastructure*”. The now widely promoted “ecosystem approach”, as developed under the Convention on Biological Diversity, emphasises precisely the principles of sustainable development and community participation espoused by MAB.

CAP reform

CAP reform raises particular opportunities for more creative sustainable development initiatives both on and off designated sites. Not only has production-based subsidy been largely removed from “Pillar 1” (market support measures), but “modulation” allows for the transfer of funds from Pillar 1 to Pillar 2 (rural development and agri-environment schemes) and match funding from the UK Government. This effectively increases the proportion of funds available for innovative rural development. Pillar 2 funding and programming is now administered through the European Agricultural Fund for Rural Development (EAFRD), and will be used to support three strategic priorities as follows:

- Improving the competitiveness of agriculture and forestry by supporting restructuring, development and innovation.
- Improving the environment and countryside by supporting land management.
- Improving the quality of life in rural areas and encouraging diversification of economic activity.

In the UK, these priorities are implemented through the Environmental Stewardship Scheme in England; Tir Cynnal, Tir Gofal, and Organic Farming Scheme in Wales; Environmentally Sensitive Areas Scheme, Countryside Management Scheme, and Organic Farming Scheme in N Ireland; and Rural Development Contracts and Scottish Rural Development Programme in Scotland.

⁶ Measuring the social and economic benefits of Biosphere Reserves. On-line discussion led by Doris Pokorny. EuroMAB E-Conference April – June 2007.
http://www.unesco.org/science/forum/gforum.cgi?post=14;sb=post_latest_reply;so=ASC.forum_view_forum_view_collapsed;quest=2203990

In addition, LEADER is a bottom-up, locally-driven approach which works across all the strategic priorities listed above. BR designation may provide the framework within which convincing proposals for innovative and sustainable enterprise may be made under these and related schemes.

2.3 Rationale for the study

Given the changing policy context and associated opportunities on the one hand, and the increasing calls in all areas of activity to demonstrate social, economic and environmental benefit, it is appropriate to undertake a thorough review of the potential added value of BRs in achieving UK social, economic and environmental goals.

The 1999 review⁷ indicated the conservation gains that would be delivered by a fully functioning BR; however other benefits of BR designation were not explored in detail. A study undertaken by Hambrey Consulting for Scottish Natural Heritage in early 2007 (Hambrey Consulting 2007) explored the social, economic and environmental impact of the three UNESCO designations (Biosphere Reserves, Geoparks and World Heritage Sites) based on case studies drawn from throughout the world. The conclusions were broadly positive, though high-quality supporting data was difficult to find. This study was limited in depth by its breadth of scope, and by the fact that it drew mainly on published materials, with limited contact with reserve managers or others with a practical insight into possible impacts. It does, however, offer a rigorous assessment framework which could be used, and refined, in future studies. Given the forthcoming review of performance of BRs in the UK, and the availability of this assessment framework, it is appropriate to take a closer look at the impact of BRs, with a particular focus on the UK.

2.4 Aims

The aim of this research is set out in the research specification and may be summarized as follows:

Drawing on an analysis of the “added value” of Biosphere Reserves in Europe and the developed world, generate recommendations for anticipating and maximising the social, economic and environmental benefits from UNESCO World Biosphere Reserves in the UK, in order that they may deliver real added value benefits to social, economic & environmental goals.

More specifically, the report should consider and give recommendations as to how the UK Biosphere Reserves:

- have, or can further add value to existing UK designation systems (national, European and global);
- deliver Government targets on sustainable development, supporting what are typically deprived rural areas.
- contribute to or benefit from changing support mechanisms for rural land management through European CAP reform and the decoupling of production and subsidy (taking account of all pillars of the CAP budget).

⁷ Price, M.F., MacDonald, F., & Nuttall, I., *Review of UK Biosphere Reserves*. Environmental Change Institute, University of Oxford, for DETR, 1999. <http://www.defra.gov.uk/wildlife-countryside/ukmab/BRReport/head.htm>

2.5 Key issues and challenges

In order to achieve these objectives, we believe a number of core issues must be addressed by the research:

1. The assessment of benefits must relate to the interests of UNESCO as the international accrediting body.
2. The work must also relate to the interests of public and private stakeholders in the UK. The devolved governments, development agencies, local authorities, and local communities are central to this, in addition to the nature conservation agencies. For these stakeholders, the benefits must be set in the context of UK and devolved policies and their outcome measures.
3. The work must address the added value provided by BR designations taking into account the range of other national, international, and local designated sites, as well as trends in the wider economy.
4. The benefits considered must be based on a sound conceptual framework, rooted in current practice but also taking account of new approaches to valuing assets and services.
5. The final recommendations must be practicable, and the findings of the work must be influential with the target audiences.

Assessing benefit

A range of existing methods and previous studies exist for the evaluation of social, economic, and environmental benefits arising from natural heritage-based designations. There are three basic approaches: the use of conventional quantitative indicators related to direct social and economic effects, such as employment and income; the use of environmental economic techniques, such as contingent valuation or choice experiments, which seek to place a quantitative or monetary value on less tangible social and environmental services and benefits; and the use of qualitative indicators of benefit. There is also growing awareness of the importance of public goods, including environmental services, and of the need to account for system resilience. Each of these approaches has strengths and weaknesses, and their use depends on resources, data availability, and stakeholder involvement/communication needs. Unfortunately, at the sub-regional level, there is usually a dearth of information, and the costs of collecting more relevant data are often prohibitive. This has led to proxy measures being used in many studies.

Several recent studies illustrate the challenges of benefit evaluation. For example, Hambrey Consulting carried out work on the social, environmental, and economic impacts of SNH activity and land designations (SNH 2004). This proposed a suite of criteria for assessment, identified associated indicators, and commented on their use in practice. Moxey (2006b) reviewed the public benefits purchased from, and provided by, a large highland estate within the Cairngorm National Park. As part of a EU-funded (6th Framework) project, Price et al. (2006) developed indicators for social monitoring in mountain BRs.

In our more recent work for SNH on the social, economic and environmental impact of UNESCO designations (Hambrey Consulting 2007), we reviewed the application of these various methodologies and generated a “tailor made” assessment framework which can be further tested and developed in this study.

3 Approach and methodology

The approach and methodology broadly followed that requested in the statement of requirements and in our proposal. The work was broken down into packages each associated with one of 5 project objectives

3.1 Objective 1: Review UK and international experience

“review the UK and international experience of identifying the social, economic and environmental impacts of Biosphere Reserves related to domestic UK and foreign policy. Due regard will need to be given to devolved administrations where the policy objectives may differ”.

We reviewed a wide range of published and unpublished literature relating to potential benefits - identified through web research, literature search, and through contacts working with biosphere reserves throughout Europe. We also reviewed the UK policies, and associated objectives and targets, to which a network of biospheres might contribute.

3.2 Objective 2: Social, economic and environmental gains from UK BR network

“Building on the research carried out for Scottish National Heritage (SNH) in 2007, identify the potential social, economic and environmental gains the Biosphere Reserve network can offer the UK if it were properly resourced and functioning”.

We approached this objective from several directions.

1. We summarized and classified the benefits identified in the initial review, supplemented by the findings of our previous work for SNH.
2. Through a modest survey we made an assessment of the nature of benefits arising from national and regional networks of biospheres.
3. We explored in more detail benefits arising in “case study” biosphere reserves. Benefits were identified in two ways:
 - those identified spontaneously by interviewees;
 - those related to particular categories of benefit listed in table 1 – i.e. we specifically sought out possible benefits in these categories through search of written materials, available statistics, and specific questions
4. We compared these benefits and potential benefits against UK and devolved administration policies.
5. We explored and discussed the extent to which these benefits might be realised in a fully functioning network of (12) biosphere reserves in the UK.

Case study selection was largely pragmatic. The key criteria were:

- available information
- ease of communication (English or French)
- known and helpful contacts
- at least 1 UK site

Ideally we also wished for a spread of social, economic and geographic contexts.

The final choice, was made in consultation with the steering committee.:

Two detailed case studies based on face to face interviews plus review of available material:

1. Branton Burrows Biosphere Reserve N. Devon
2. Kristianstads Vattenrike Biosphere Reserve, Skane, Sweden

Two detailed case studies based on emails, telephone discussions, plus review of readily available material:

3. Rhön Biosphere Reserve, Germany
4. Entlebuch, Switzerland

In addition we used readily available web based and published material relating to several other cases to inform our discussion.

3.3 Objective 3: recommend social, economic and environmental evaluation methodology for proposed areas

“Make recommendations for a methodology to evaluate the potential social, economic and environmental impacts that designation might bring to areas proposed for this designation”.

The review and case studies allowed us to test and refine the assessment framework, and develop specific methods for analysing each of the various categories of cost and benefit within the framework. It also allowed us to develop a check list of possible benefits, and the circumstances in which they might arise or be pursued.

3.4 Objective 4: selection criteria to maximise benefits and policy gain

“Identify criteria for selecting new Biosphere Reserves which will help to maximise the benefits of social, economic and environmental impacts and support UK domestic and foreign policy”.

Under objective 3 we listed the possible benefits, and the situation or conditions required to realise or maximise them. For objective 4 we turned this analysis on its head and identified the conditions likely to generate the maximum range and level of benefit. These conditions effectively serve as the criteria for site selection.

3.5 Objective 5: Improvements to UKMAB programme

“Identify improvements that might be made to support the UKMAB programme generally in the UK and its possible international activity.” (R John Hambrey; Sue Evans; Martin Price)

- i) Identify how the network and UKMAB might maximise its impact in terms of benefits to national social, economic and environmental goals.
- ii) Compare the terms of reference for the current UKMAB committee and other national MAB committees and make appropriate recommendations

Meeting this objective followed logically from the foregoing analysis. We reviewed our findings and their implications for UKMAB, held internal consultant team discussions, discussed evolving ideas with the Chair of UKMAB, Jane Robertson of UNESCO, and members of the UK UNESCO Commission, and reviewed appropriate documents.

4 Review of international experience

Objective 1 of the “statement of requirements” calls for a “*review the UK and international experience of identifying the social, economic and environmental impacts of Biosphere Reserves related to domestic UK and foreign policy. Due regard will need to be given to devolved administrations where the policy objectives may differ*”. The statement of requirements calls for two tasks associated with this objective:

- i) Review the purpose and structure of Biosphere Reserves world wide, and identify potential impacts, including those anticipated by the international managing authorities.
- ii) Carry out a literature search to identify relevant published reports from relevant countries in Western Europe, North America and elsewhere.

4.1 The purposes and structure of Biosphere Reserves world-wide

4.1.1 Biosphere reserves: an evolving concept

The World Network of Biosphere Reserves (WNBR) comprises 531 sites in 105 countries. They form a unique international network which is now the primary focus of UNESCO’s Man and the Biosphere (MAB) programme, which began in 1971; the first biosphere reserves (BRs) were designated in 1976. The existing BRs in the UK were designated in 1976 and 1977, all on National Nature Reserves (NNRs) (Price et al., 1999).

The BR concept has evolved considerably over time (Price, 1996). The initial emphasis, in the 1970s to early 1980s, was on (biodiversity) conservation, scientific research and monitoring, and education. A unique and continuing characteristic of the concept was a clear zonation, with one or more strictly protected ‘core zones’ surrounded by ‘buffer zones’: an inner one for research and education, with limited public access; and an outer one with a flexible outer boundary, to be used for various purposes (UNESCO, 1974).

As the concept evolved, during the 1980s, increased emphasis was placed on what would now be called sustainable development, though conservation was still identified as a primary objective. In 1986, a Scientific Advisory Panel on BRs relabelled the outer buffer zone as a ‘transition area’ or ‘zone of cooperation’ within which a wide range of cooperative activities should be developed between “researchers, managers, and the local population, with a view to ensuring appropriate planning and sustainable resource development in the region while maintaining the greatest possible harmony with the purposes of the biosphere reserve” (UNESCO, 1986). However, well into the early 1990s, most BRs – including those in the UK – consisted entirely or primarily of core zones and therefore did not, and appeared unlikely to be able to, fulfil the objectives stated by the Scientific Advisory Panel. In other words, a significant proportion of biosphere reserves were merely ‘protected areas’ with an extra label, with neither transition area (and, often, buffer zone[s]) nor involvement of local people. Thus, the strength of both the World Network and the concept on which it was based were severely weakened – as recognised in an evaluation undertaken by IUCN-The World Conservation Union (1995).

This evaluation provided the background to the International Conference on BRs in Seville, Spain, in March 1995. One product of the conference was an almost final

draft of a statutory framework. The final version of the “Statutory Framework of the World Network of Biosphere Reserves” (referred to below as ‘the Statutory Framework’) was adopted by the General Conference of UNESCO in November 1995, together with a longer document entitled “The Seville Strategy” (UNESCO, 1996). The initial version of this strategy was prepared before the Seville conference, to provide the framework for recommendations deriving from panels on the following themes: conservation, sustainable use, and management; research, monitoring, and networking; and implementation of the biosphere reserve concept. By the end of the conference, the ‘traditional’ roles of research and monitoring were mentioned in only one of the ten ‘key directions’ in the preamble to the final version of the Strategy, entitled ‘The Vision from Seville for the 21st Century’. In common with the reports of the panels, this places a strong emphasis on the importance of biosphere reserves for sustainable development, as well as conservation. It notes that “the global community needs working examples that encapsulate the ideas of UNCED for promoting both conservation and sustainable development ... express[ing] all the social, cultural, spiritual and economic needs of society and ... based on sound science”, and proposes that “Biosphere reserves offer such examples. Rather than forming islands in a world increasingly affected by severe human impacts, they can become theatres for reconciling people and nature, they can bring knowledge of the past to the needs of the future, they can demonstrate how to overcome the sectoral nature of our institutions”.

In February 2008, the 3rd World Congress on Biosphere Reserves took place in Madrid, Spain. The main outcome of this meeting was the Madrid Action Plan (MAP: UNESCO, 2008), which explicitly builds on the Seville Strategy and recognises that the Statutory Framework continues as the fundamental document for the WNBR. In its introductory sections, the MAP also stresses the need for biosphere reserves to play a role in responding to emerging global challenges such as accelerated climate change, accelerated loss of biological and cultural diversity, and rapid urbanization. In this context, the MAP includes the following vision statement: “The World Network of Biosphere Reserves of the Man and the Biosphere Programme consists of sites of excellence to foster harmonious integration of people and nature for sustainable development through participation, knowledge, well-being, cultural values and society’s ability to cope with change, thus contributing to the [Millennium Development Goals]”. In summary, over more than three decades, the concept of biosphere reserves has evolved in line with broader developments related to protected areas and conservation, with the current emphasis on sustainable development, particularly the need to support human societies.

4.1.2 The purposes and structure of biosphere reserves according to the Statutory Framework and Madrid Action Plan

Purpose

The purposes of BRs are stated in a number of ways in the Seville Strategy, the Statutory Framework, and other documents published by the MAB Secretariat and its staff. Since it is the Statutory Framework which provides the basis for the designation and periodic review of BRs (see below), the purposes stated in this document are cited below.

The introduction states: “biosphere reserves are established to promote and demonstrate a balanced relationship between human and the biosphere”.

Article 2 further notes that, together, BRs constitute the WNBR, which “constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments”.

Article 3 states:

“In combining the three functions below, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development at a regional scale:

- (i) conservation – contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- (ii) development – foster economic and human development which is socio-culturally and ecologically sustainable;
- (iii) logistic support – support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.”

Article 4 further states that a BR “should be of significance for biological diversity conservation” (criterion 2) and that it “should provide an opportunity to explore and demonstrate approaches to conservation and sustainable development at a regional scale” (criterion 3).

Taken together, these statements underscore that BRs have a range of complementary purposes relating to being ‘sites of excellence’ for biodiversity conservation; sustainable development (which is often taken to include biodiversity conservation as an element of the environmental ‘pillar’); positive interactions between these; and the underpinning activities listed under ‘logistic support’.

As noted above, the idea of ‘sites of excellence’ is also included in the vision statement of the Madrid Action Plan. The mission statement for this plan is:

“To ensure environmental, economic, social and cultural sustainability through:

- development and coordination of a world-wide network of places acting as demonstration areas and learning sites with the aim of maintaining and developing ecological and cultural diversity and securing ecosystem services for human well-being;
- development and integration of knowledge including science for advancing our understanding of interactions between people and the rest of nature;
- building global capacity for governance of complex socio-ecological systems particularly through encouraging greater dialogue at the science-policy interface, environmental education and multi-media outreach to the wider community.”

Structure

The geographical structure of a biosphere reserve is also outlined in Article 4 of the Statutory Framework, which gives “general criteria for an area to be qualified for designation as a biosphere reserve”.

The *first criterion* requires that “It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions”. The representativeness requirement was initially a key criterion for choosing BRs, but its importance has decreased over time. The requirement for a mosaic and a “gradation of human interventions” suggests that BRs need to be quite

large (though this again depends on regional characteristics) and to include not only ecosystems that are as near to natural as possible in the regional context but also cultural landscapes – which may include major settlements.

The *fourth criterion* is that: “It should have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3”.

The *fifth criterion* defines the characteristics of the three zones required to fulfil these functions:

- Core area(s):
 - legally-constituted;
 - devoted to long-term protection, according to conservation objectives;
 - of sufficient size to meet these objectives.
- Buffer zone:
 - clearly identified;
 - surrounding or contiguous to the core area or areas;
 - only activities compatible with the conservation objectives can take place.
- Transition area: sustainable resource management practices are promoted or developed.

In addition, *the sixth and seventh criteria* define the expected organisational structure of a BR: “Organizational arrangements should be provided for the involvement and participation of a suitable range of *inter alia* public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve. In addition, provisions should be made for:

- (a) mechanisms to manage human use and activities in the buffer zone or zones;
- (b) a management policy or plan for the area as a biosphere reserve;
- (c) a designated authority or mechanism to implement this policy or plan;
- (d) programmes for research, monitoring, education and training.”

The biosphere reserve concept: realities and implementation

The zonation pattern specified in the Statutory Framework means that biosphere reserves are not ‘protected areas’ which fit into the six-fold system of categories developed by IUCN-The World Conservation Union (1994). While the core zones and buffer area often fit within these categories, the reserve as a whole – and usually the outer transition area, if it exists – cannot be so neatly categorised (Phillips, 1998). Similarly, the Statutory Framework specifically avoids this terminology, recognising that the outer zone is not necessarily legally protected, and that the flexible outer boundary means (at least in theory) that a biosphere reserve’s specific geographic extent should not be precisely defined. In principle, the extent of the transition area (previously also, and more usefully, called the ‘zone of cooperation’) should vary depending on the issue(s) of concern “(e.g. management of an entire water catchment basin, efforts to stem out-migration to a neighbouring major city, reconciling conflicts between different natural resource user groups) and [on] the spatial distribution of the communities wishing to participate in the biosphere reserve and the economic infrastructures concerned” (Robertson Vernhes, 2007). However, this idea, included in the BR concept from the start, has always proved difficult to implement and, in reality, the outer boundary is usually defined on maps of BRs. Thus, the MAP notes that “the establishment of cooperation plans and concepts, implementation of co-operation projects and fostering of committed citizenship need clear boundaries which are easy to accept and to understand.... while acknowledging the arbitrary or fuzzy nature of transition area boundaries they nevertheless must be specified. Cooperation however, can extend beyond these boundaries, for sharing

best practices, solutions and approaches within the wider region, thus facilitating the BR's role as a learning site for regional sustainable development”.

To encourage the adherence of BRs to the criteria outlined in the Statutory Framework, its Article 9 defines a periodic review process that is unique with respect to international designations. Its ultimate aim should be to ensure, within a reasonable period, that each BR does fulfil the three complementary and mutually reinforcing functions, so that the reality comes to match the concept, and that the BR achieves recognition as a 'site of excellence'. The process consists of the following stages:

1. the MAB Secretariat sends out a form to the concerned authority requesting a report on the status of the biosphere reserve according to the criteria in Article 4 of the Statutory Framework (i.e., existence and functioning of the full suite of zones, management policy/plan and designated authority, public participation, and programmes for research, monitoring, education, and training);
2. the concerned authority submits a report to the MAB Secretariat;
3. the Advisory Committee on Biosphere Reserves considers the report and makes a recommendation to the International Co-ordinating Council (ICC);
4. the ICC either *a*) recognises the satisfactory status or management of the biosphere reserve or *b*) recommends measures to be taken to ensure conformity with the provisions of Article 4.

In practice, the recommendations of the Advisory Committee have been sent to concerned authorities by the MAB Secretariat for further action before consideration by the ICC.

As well as the end point of the process mentioned under 4 (a) above, two others are possible. First, if, after a “reasonable period”, the ICC finds that a biosphere reserve still does not satisfy the Article 4 criteria, it can notify the Director-General of UNESCO that this area will no longer be referred to as “ biosphere reserve which is part of the network” (WNBR). Second, if a state recognises that a biosphere reserve under its jurisdiction does not have the potential to satisfy these criteria, it can remove it from the WNBR, notifying the MAB Secretariat. This was done in 1998 by Norway with regard to the former Northeast Svalbard Biosphere Reserve; a site of great conservation importance, but with no resident human population and therefore inappropriate for fulfilling the development function. In 2001, following the review of UK biosphere reserves (Price et al., 1999) and a decision of the Board of Scottish Natural Heritage, the UK government requested the removal of four sites from the World Network of BR: Caerlaverock, Claish Moss, Rum, and St. Kilda. In 2007, the German government requested the removal of the Bayerischer Wald from the WNBR since it has not been possible to secure support from local authorities and populations to establish a transition area in order to meet the criteria.

One should not interpret this small number of 'delistings' as implying that all remaining BRs fulfil the criteria. Since the periodic review process began in 1997, a number of countries have never responded to requests from UNESCO (Price, 2002). Equally, many periodic reviews of BRs submitted by governments have shown that these sites do not fulfil the criteria – and, in many cases, that they have little if any potential to do so. However, the ICC has never proposed the delisting of such sites. At the same time, all BRs designated since 1997 do conform to the criteria; and a number of BRs have been redesigned or expanded, or have had their governance

structures improved, in order to conform to the criteria. In the UK, Branton Burrows BR is a good example of such a positive response to the periodic review process. Thus, it is possible to argue that realities are coming closer to the concept; and that the WNBR is therefore stronger as a result.

4.1.3 The purpose of biosphere reserves: regional and national examples

While UNESCO refers to all sites it designates within the WNBR as biosphere reserves, the term 'reserve' (and translations thereof) is not accepted as appropriate in all countries. Consequently, UNESCO accepts that, within individual countries, members of the WNBR may be identified using more culturally-appropriate terms, such as 'biosphere area' (e.g., in Sweden), 'biosphere region' (e.g., in Canada), or 'biosphere' (e.g., in Australia). Similarly, the purposes of BRs are interpreted in different ways both by national MAB committees and by those responsible for individual BRs. The examples cited below are taken principally from publications by those responsible for BRs in Europe, North America, and Australia, as their social, economic and political contexts are most relevant to the UK.

In Europe, BRs are not recognised in the national legislation of most countries. However, in Germany, "biosphere reserve" is a category in the federal law for nature conservation, and there are also guidelines for the protection, maintenance and development of BRs (German MAB National Committee, 2005). National legislation in Spain also recognises BRs. In Latvia, there is a specific law for the North Vidzeme BR, adopted in 1997. This states that its legal tasks (Urtans, 2005) are to:

- Ensure the preservation of the territory's landscapes, ecosystems, species and genetic diversity;
- Promote the territory's sustainable social and economical development;
- Ensure information exchange on environmental research, monitoring and education in relation to nature protection and regional development in the territory;
- Promote understanding in regard to environmental protection and sustainable development within the Reserve; and,
- Promote the restoration of degraded ecosystems in the Reserve.

This contrasts with the UK where there is no mention of BRs in either legislation or planning guidance.

At a regional level, the summary of a 2004 meeting of individuals concerned with BRs in Nordic and Baltic countries states: "The biosphere reserve concept serves as a uniting tool for professionals, politicians and volunteers to find solutions for local development in combination with preservation of cultural heritage, biodiversity and recreation possibilities" (Thorell et al., 2005). In Finland for example, "The emphasis in biosphere reserves has been on development projects with the aim to connect nature protection with local development" (Hokkanen et al., 2005).

In France, "the interest of the BR concept is that it permits the integration, at variable levels corresponding to the diversity of situations, of different approaches for the protection and management of biodiversity, and development tools" (Cibien, 2006, translated). A small book entitled 'Biosphere reserves: domains for people and nature' (MAB France, 2000) refers to BRs as "experimental sustainable development sites". It states that BRs "were created to help human beings confront one of the greatest challenges facing the world at the dawn of the new millennium: the reconciliation of the aspirations and development needs of a growing world with the

conservation of the diversity of plant and animal species, ecosystems and landscapes”, and answers the question ‘What are biosphere reserves for?’ as follows: “Biosphere reserves serve humankind by seeking development paths that guarantee the preservation of the world’s environment through long-term projects and investments in research and training. They also contribute to the conservation of the biodiversity required for our future because it supplies our food, medicine and raw materials. Biodiversity also provides us with a great deal of pleasure and inspiration.”

In both Germany and Austria, BRs are intended to be “model regions for sustainable development” (German MAB National Committee, 2005, Lange, 2005). Germany has also identified Biosphere Reserves as test areas for adapting and mitigating climate change, and will be funding activity therein. The chair of the Austrian MAB national Committee notes that they “are not a classic conservation concept. Their designation is mainly intended to trigger an ongoing process. It takes a strong and committed management and a matching infrastructure to control and co-ordinate this process, i.e., to secure conservation and at the same time to support economic stability in the region” (Grabherr, 2005). Comparably, in Spain, the country with the largest number of BRs in Europe, BRs “aspire to becoming a point of reference for integrated, participative and sustainable management of the natural and cultural heritage with the basic objective of combining the preservation of biological diversity with sustainable development, illuminated by the principles of public and social participation, and scientific research” (Narbona Ruiz, 2006).

When asked about the aims and requirements of MAB, the project manager of the Swiss Entlebuch BR stated *“UNESCO intends to establish a global network of model regions with representative natural and cultural landscapes. This is expected to maintain valuable ecosystems and traditional forms of livelihood, promote exemplary forms of economic, social and ecological development, and foster research and education”* (Wymann von Dach, 2001).

In Australia, the vision of the Mornington Peninsula and Western Port BR is “The biosphere will be a place where people attain an enduring relationship with the natural world and contribute to the needs of society as a whole by showing the way to a more socially, environmentally and economically sustainable future” (www.biosphere.org.au/aboutus.html#biospheres). Similarly, for Fundy BR, the newest BR in Canada, the vision is “To be a place where communities, policy makers, resource managers and scientists work cooperatively to achieve a greater degree of sustainability between human development and ecosystem integrity” and the goals are “To be a FBR regional network that provides initiative, leadership and logistical support that will enable its stakeholders to achieve their sustainability goals more effectively and efficiently” (www.fundy-biosphere.ca/docs/Vision_Goals_Objectives.pdf).

In a presentation on measuring success in implementing the biosphere reserve concept, the coordinator of the Rhön BR in Germany, then a member of the Advisory Committee on Biosphere Reserves, stated that BRs “are areas which “do make a difference”. They are areas which are full of challenges for the coordinators, the local people and all those who are involved, to leave the well-trodden paths and mind-sets and try out new ways in order to solve today’s problems and help reconcile “people and nature”. Isn’t the success of a biosphere reserve about enhancing and securing quality of life for all, and providing (future) opportunities and economic and social wellbeing in an ecologically sound environment?” (Pokorny, 2006).

All of these statements of purpose accord reasonably well with those stated in the Statutory Framework, with varying emphases deriving both from the specific regional

or national situation and from the interests of individual national MAB committees (and their most influential members).

4.1.4 The geographical structure of biosphere reserves: national examples

In principle, every BR should include the three zones specified in the Statutory Framework and the UNESCO documents which preceded it. Every BR designated since 1995 does include the three zones. In some countries, the preferred area and ratio of the zones is specified: for instance, the guidelines produced by the German national MAB Committee state that a BR should be between 30,000 and 150,000 ha in area, and that: the core zone must be at least 3% of the total area; the buffer zone(s) should be at least 10% of the total area; the core area and buffer zone(s) together should be at least 20% of the total area; the core area should be surrounded by the buffer zone; and the transition area (referred to as a 'development zone') should be at least 50% of the total area (http://www.bfn.de/fileadmin/MDB/documents/0506_kriterien.pdf). Clearly, with such guidelines, the transition area has to have a fixed boundary! Comparable guidelines have also been used in Austria (Lange, 2005).

Even though the periodic review process has been underway for a decade, many BRs designated before 1995 still do not have three zones. These include a number of UK BRs. Nevertheless, as noted above, the periodic review process has led to the redefinition of zones and the expansion of BRs to ensure that a sufficient diversity of land uses was included within a full suite of zones. Notable examples include Braunton Burrows BR in the UK, Mont Ventoux and Camargue BRs in France, and Menorca BR in Spain.

4.1.5 The organisational structure of biosphere reserves: national examples

The Statutory Framework specifies the need for participatory decision-making structures, involving a wide range of stakeholders, for BRs, and this is a key issue assessed by the Advisory Committee for Biosphere Reserves whenever a site is proposed for designation as a BR or a periodic review form for an existing BR is received. Nevertheless, as noted by the Secretary of the French national MAB Committee, "Complete freedom is given to each country to use national legal and institutional tools to put the concept into practice on its territory" (Cibien, 2006, translated).

In many countries, especially where BRs do not match the criteria in the Statutory Framework and are essentially protected areas with an additional 'label', they are managed by the agency responsible for the protected area, with little involvement of other stakeholders. For example, in Australia, Matysek et al. (2006) state that "a lack of capacity (or unwillingness) to keep pace with international refinements to the program [i.e., the Statutory Framework] has contributed to Australia's existing biosphere reserves becoming moribund". Nine of the 12 BRs are "almost entirely protected areas, managed by government conservation agencies.... The other three have a range of governance types and better represent the intended arrangement of biosphere reserve governance". Matysek et al. suggest that the best example is that of Mornington Peninsula and Western Port BR, designated in 2002, implemented by a Foundation with a board including directors nominated by community roundtables, the Victoria Minister for the Environment, and Parks Victoria; appointed by each of the five local government members; and representing industry or commerce conducted in the biosphere reserve, nominated by the board. In addition an independent director, nominated by the board following consultation with the Victoria Minister for the Environment, occupies the office of chairperson (<http://www.biosphere.org.au/board/index.html>).

Governance structures for BRs in Canada (Francis, 2004) include:

- a membership organisation with 2 representatives from municipalities, 1 from the provincial parks agency, and members elected both by agencies and organisations (5) and from local communities (5) (Charlevoix BR);
- a 'solidarity cooperative' with a Board drawn from local development councils (linked to municipalities), the private sector, and conservation organisations (Lac Saint-Pierre BR);
- a membership organisation with 15 elected directors (Long Point BR);
- a committee comprising the local member of the provincial parliament, elected municipal officials, the chair of the Park Board, and "interested delegates from other groups" (Redberry Lake BR).

There are also other Canadian models; those listed above appear most relevant to the UK context as they involve neither indigenous populations nor large parks managed by a single agency.

In the Nordic countries, other models exist. These include:

- a 'Biosphere Reserve Foundation' NGO created by NGOs from the counties with land inside the BR (Western Estonian Archipelago BR) (Kokovkin, 2005);
- a 'co-operation group' with representatives from the regional environment centre, the region, the local university, and the national park; supported by a wider 'reference group' with representatives of the involved municipalities, regional authorities, regional universities, and an NGO representing the villages in the BR (Archipelago Sea BR, Finland) (Hokkanen et al., 2005);
- a consultative group including representatives from central, regional and local authorities, organisations, local entrepreneurs, etc. (Kristianstads Vattenrike BR, Sweden; from BR nomination form available at <http://www.vattenriket.kristianstad.se/eng/biosphere/index.htm>).

Additional examples could be described from other countries. However, the reality, as described by the former chair of Canada's Working Group on BRs (Francis, 2004) is that "No two designated biosphere reserves are alike in the local organizational arrangements they have developed since each had to be designed for the particular circumstances. Flexibility to develop "placed-based" [sic] arrangements (rather than follow a prescribed format) has been viewed favourably at local levels since it allows for change and re-organization as local circumstances change". This approach would also appear to be appropriate in the UK.

4.2 A summary of possible and actual benefits identified in the literature

In tables 1-3 we present a summary of social, economic and environmental benefits benefits as identified in some of the literature. We have used our previous assessment framework (Hambrey Consulting 2004, 2007) simplified slightly as the basis for categorizing the various benefits.

There is in addition a substantial literature which offers discussion of the many *perceived* benefits of biosphere reserves (e.g. <http://www.clayoquotbiosphere.org/science/ClayoquotBibliography.pdf>), and

there is also much anecdotal evidence of benefit – for example education for women and training for suitable jobs for women in rural areas (Waterburg BR; Rhoen BR); empowerment of communities (Clayoquat Biosphere); reducing rural depopulation (Cevennes BR).

It is apparent that the perceived benefits are diverse, reflecting the many dimensions of sustainable development, and the ambitious scope of the BR objectives. It is also notable, when the individual studies are explored in more detail, that (with the exception of Wallner et al 2007) most studies are based on qualitative assessments, often informed primarily by those actively engaged in the process. There are few objective studies based on stratified survey of local communities, and there is virtually no hard evidence of positive marginal (or added value) benefit.

There are several reasons for this. Firstly, it is costly and time consuming to undertake detailed social survey. Secondly, the anticipated benefits from biosphere reserves are mainly about sustainability – in other words *long term* benefits. In most cases we lack the social, economic and environmental time series data to establish any impact. Thirdly, where we do have such data, it is usually impossible to establish the “control” or baseline: what would the trend have been without the BR. We would need to find a control area with very similar social, economic and environmental characteristics. Given the scale and complexity of most BRs, and the diversity of benefits being assessed, this is virtually impossible.

This is why most of the benefits identified are “perceived process benefits”. In other words researchers make the assumption that the following are either benefits in themselves, or will lead to benefit at some point in the future:

- Acceptance of the principles of sustainable development
- Specific nature conservation initiatives
- Knowledge of the natural environment and engagement with/exposure to the natural environment
- Management strategies and plans
- Stakeholder forums, committees, workshops, working groups, partnerships, networks, community social events
- Conflict resolution
- Ecotourism initiatives
- Codes of practice/organic farming/product quality labelling
- Enterprise mentoring and start-up support

These assumptions are instinctively attractive to the modern educated mind, but unfortunately we have very little evidence of significant positive impact. One of the few studies which engaged a diverse range of respondents (Wallner et al 2007) found both positive and negative perceived effects. Furthermore, even where there is some evidence of benefit, it is usually unclear that this could not have been achieved through other existing formal or informal institutions.

The BR concept is all about ways of doing things, the future, quality of life – a philosophy rather than a development mechanism. Benefits are bound to be intangible or very difficult to measure in the short term. The recent publication by Bouamrane (2006) illustrates this well. There are many ways in which we can

improve the way we balance or manage conservation and development through more effective use of science, user knowledge, and stakeholder participation in management. Biosphere Reserves can serve as a focus for efforts to demonstrate opportunities and best practice. But measuring success in social and economic terms would require substantial long term comparative research programmes.

Table 1: Analysis of reported benefits (environmental)

A healthy Environment			
Component	Criteria	Indicator/identified benefit	Source
Biodiversity	species diversity, range and abundance	increase in wild animals (Carpathians)	Wallner et al 2007. (perceived effects, qualitative interviews)
		community conservation plans for important bird areas	Matysek et al 2006
	habitat extent and condition	restoration of aquatic ecosystems; agriculture/habitat management; nature conservation	Francis 2004 (perceived effects); German MAB National Committee 2005
		protection; shoreline stewardship	Brent Parker 2006 (survey of National Park managers)
	structural diversity		
Landscape	character, condition and qualities	Codes of practice	Matysek et al 2006
		connecting landscape core areas	Brent Parker 2006 (survey of National Park managers)
		maintenance of open landscape by local breeds of cattle and horses;	Europarc Germany 2007
Ecosystem services	quality and productivity of soil, water, air	organic farming	Francis 2004 (perceived effects)
	efficient drainage; flood protection	flood protection from forest	
		water course and wetland/bog reclamation (Spreewald, Middle Elbe, Schaalsee; floodplain reclamation	Europarc Germany 2007
	erosion resistance		
	carbon sinks		
	other ecosystem services	increased ecological capital?	Mendis Millard & Reed 2007

Table 2: Analysis of reported benefits (social)

A healthy society			
Component	Criteria	Indicator/identified benefit	Source
Recreation and access	active recreation		
	access		
	passive recreation and inspiration		
Understanding and awareness		partnerships for research; enhanced communications networks	Matysek et al 2006
		awareness raising; source of accurate impartial information; forest inventory; regional monitoring; development of metadata; local education; review of official management plans	Brent Parker 2006 (survey of National Park managers)
		environmental education	Lange 2005; Europarc germany 2007; German MAB National Committee 2005
		regional environmental performance indicators; environmental monitoring	Matysek et al 2006; Lange 2005
		research	Lange 2005
Community	Community engagement	neutral forum; facilitator on issues of local importance; broadening the community of interest - creating a cooperative network	Brent Parker 2006
		sustainability framework (participatory development);	Matysek et al 2006
		community conservation plans for important bird areas	Francis 2004 (perceived effects)
	vitality and cohesion	community economic development	Francis 2004 (perceived effects)
		cooperation, networking; collaborative initiative; conflict resolution; <i>local</i> education; cultural festivals; partnering opportunities	Brent Parker 2006 (survey of National Park managers)
		local integrating mechanism for sustainable development	Ruttan 2004

		increased social capital	Mendis Millard & Reed 2007
		conflict resolution (eg skiing v conservation and science)	Lange 2005
		conflict resolution (tourism-conservation) in wassertal Thuringen	German MAB National Committee 2005
		buses for tourists;	
		renewal of traditional farms	German MAB National Committee 2005
The quality of places to live	near environment (greenspace)		
	houses and gardens		
Environmental justice	equitable access to, and utilisation of, environmental benefits	water quality and sanitation and a wide range of other social benefit <i>predicted</i> from Urban BRs in this study	Stanivliet et al 2004. http://www.clayoquotbiosphere.org/science/ClayoquotBibliography.pdf

Table 3: Analysis of reported benefits (economic)

A healthy economy			
Component	Criteria	Indicator/identified benefit	Source
Employment and income	direct employment and income	jobs in coastal protection and tourism (Waddensee)	German MAB National Committee 2005
	indirect employment and income	expectations of local communities <i>re</i> economic benefits linked to nature conservation/BR cannot always be met	Stanvliet et al 2004
	job quality		
	income and jobs foregone	more difficult access to wood; uncompensated loss of grazing in high valley pasture designated as core area (Carpathians)	Wallner et al 2007
Business	business opportunities and constraints	opportunities: tourism; local products	Wallner et al 2007. (perceived effects, qualitative interviews)
		Constraints: fear about new restrictions in land use (Entlebuch)	
		accreditation of sustainable land and water use products; cooperative agricultural programmes; strategies for ecotourism	Matysek et al 2006
		regional brand (Schorfheider Chorin)	German MAB National Committee 2005
		local labels - Shorheide Chorin (sheep; tourism; riding); (organic and conventional)	Europarc Germany 2007
		cooperation on certification with Forest Stewardship Council	
		product branding and marketing	Francis 2004 (perceived effects)
		feel good factor for tourism	Reinius and Fredman 2007
		tourism partnerships; high quality wines; organic farming; direct distribution	Lange 2005; Europarc germany 2007; German MAB National Committee 2005
		partnering, innovation facilitation/opportunities	Brent Parker 2006 (survey of National Park managers)

		sheep; organic wines; quality beef; mineral water; gherkins	Europarc germany 2007
	short term investment	start up funding	Francis 2004 (perceived effects)
	long term investment	socially responsible investment	Francis 2004 (perceived effects)
	human resources	biosphere job motor: mentoring sustainable enterprise	
Resource use	conservation of resources with an economic value	cooperation on certification with Forest Stewardship Council; sustainable forestry	Matysek et al 2006; Europarc Germany 2007
		old varieties of fruit trees	Europarc Germany 2007
		mountain woodlands; renewable energy	Lange 2005
		sustainable agriculture (Schleswig Holstein Waddensee)	German MAB National Committee 2005
	conservation of resources with <i>potential</i> economic value	ecological capital; built capital	Mendis Millard & Reed 2007

4.3 National networks of biosphere reserves

4.3.1 Introduction

Within the World Network of Biosphere Reserves are many other networks of biosphere reserves. The most important and active are those operating at regional scales, such as EuroMAB, established in 1987 and covering 42 countries in Europe (including Israel, Russia and Turkey) as well as those for Canada and the USA. At the 3rd World Congress on Biosphere Reserves, a background paper on 'How can the MAB and Biosphere Reserve Regional Networks be strengthened to become the main drivers of MAB and Biosphere Reserves agendas' (UNESCO, 2008) was tabled; this provides a good overview of the existing regional and thematic networks and led to a number of the targets and actions within the Madrid Action Plan. The paper also briefly mentions national networks, specifically mentioning Canada and China.

Given our brief to comment on the potential impact of a 'fully functioning network of 12 UK BRs', in order to complement this information, a brief survey was sent to MAB contact points in countries with large numbers of biosphere reserves and/or identified by MAB secretariat staff as having active national networks⁸. The information presented and discussed below derives from the responses to this survey from Australia (14 BRs), Austria (6), Canada (15), China (24), Czech Republic (6), France (10), Germany (12), Peru (3), Russia (37), South Africa (5), and Spain (37), supplemented by information available for the China Biosphere Reserve Network on its website.

4.3.2 Extent and nature of meetings

The initial set of questions in the survey explored whether a national BR network exists, and whether the managers/coordinators of BRs meet regularly. Positive answers to both questions were obtained from all of the responding countries except Austria – where the managers of the two most recently designated BRs cooperate in activities such as selling produce from the other BR – and Russia. In Russia, biosphere reserves function as part of the Russian national network of protected areas regulated by the Federal Nature Use Supervisory Service (Department of Protected Areas and Legal Support) and by the Ministry of Natural Resources (Department of National Environmental Policy). Biosphere reserves do not function as an integrated system. Directors of BRs participate in national and regional meetings (research and practice conferences) of directors of Russian PAs on an irregular basis. The most recent meeting took place in December 2007, and did not address biosphere reserves. However, a Research and Practice Conference to prepare for the Madrid Congress took place in October 2007, initiated by the Russian MAB Committee and supported by the Russian Ministry of Natural Resources and the Administration of Khanty-Mansi Autonomous Okrug. This was attended by 19 of the total of 37 directors of BRs and led to specific recommendations to the Madrid Congress, as well as amendments to the Federal Law on Protected Areas to highlight the importance of BRs (not yet endorsed by parliament). There are also irregular meetings of directors of biosphere reserves at a regional scale (e.g., Altai-Sayans ecoregion) and thematic meetings (e.g., 11 [of 15] directors of mountain BRs (of total 15) met in 2006 as part of a project on studies of global changes in these BRs, organized by the Russian Ministry of Natural Resources and the Russian Academy of Sciences).

⁸ Australia, Austria, Benin, Brazil, Canada, China, Czech Republic, France, Germany, Madagascar, Mexico, Peru, Poland, Russia, South Africa, Spain, and Vietnam

In most cases, meetings of national BR networks are annual, held each year in a different BR, and lasting from two to four days. There is usually a field trip, which often includes meetings with local stakeholders. In South Africa, there is an intention to meet every six months. In the Czech Republic, the concerned individuals meet more frequently because the BRs are also Protected Landscape Areas and/or National Parks. BR coordinators in the Czech Republic and Germany also meet more often through their membership in the EUROPARC Federation (www.europarc.org). In Canada, there are also more frequent meetings between managers/coordinators on a case-by-case basis, usually with BRs that are nearby or located in the same province. In general, the administrations of each BR pay travel costs; often, host BRs pay for local costs. In Spain, meetings are supported by the National Parks Autonomous Body, within the Ministry of Environment.

4.3.3 Participation and purpose

The participants in meetings of national BR networks are not necessarily restricted to BR managers/coordinators; they may also include scientists, university lecturers, members of national MAB Committees, and representatives of ministries, NGOs, and government administrations (local, regional, or national). The meetings are generally devoted to information exchange and capacity building on themes including organizational issues (network functioning etc.), and scientific and management issues concerning national BRs in general and the hosting BR in particular. In South Africa, particular attention is being given to developing shared opportunities for branding and benefits to local economic sectors in BRs, and joint training, education, marketing, awareness strategies and programmes to present to national departments (e.g., the Department of Transport to create road signage) – with the key aim to source funding for BRs jointly rather than individually.

4.3.4 Examples

From the information obtained, there are four countries where the levels of activity in national networks are particularly high: Canada, China, France, and Spain.

In Canada, the Canadian Biosphere Reserves Association (CBRA) is a non-profit association, incorporated in 1997 (<http://www.biosphere-canada.ca/about.htm>). Its vision is “to sustain our communities, our country and our planet through research, education, conservation and demonstration in the Canadian biosphere reserve network. The CBRA/ACRB will:

- Develop and implement projects for conservation, protection, and sustainable resource use suited to national and local needs;
- Train and involve local communities and volunteers in biosphere reserve activities;
- Promote Canadian biosphere reserves and the biosphere reserve concept as a model for responsible, community-based resource management and sustainable development;
- Build a national network of biosphere reserves by encouraging the formation of new UNESCO biosphere reserves within Canada; and
- Share information and services so that biosphere reserve activities can be used as models for national and international organizations.”

There is an annual general meeting comprising a business meeting, only open to BR managers/coordinators and CBRA honorary directors, and an open meeting which

addresses the types of issues mentioned above. Parks Canada pays the related costs. A number of joint projects and programmes have been undertaken through the CBRA (http://www.biosphere-canada.ca/projects_and_programs.htm):

- The Biosphere Reserve Information Database Project, supported by Environment Canada's coordinating office for the Ecological Monitoring and Assessment Network (EMAN);
- Effects of Climate Change on Biosphere Reserves in Canada, supported by EMAN and the Ontario Ministry of the Environment;
- The Biosphere Reserve Land Use Change Project, supported by EMAN and the Ontario Ministry of the Environment;
- Habitat Restoration Projects in Biosphere Reserves, supported by Canada Trust Friends of the Environment Foundation;
- World Biosphere Reserves Ecotourism Consortium, supported by the Canadian Tourism Commission;
- Biodiversity Monitoring Plots, supported by EMAN;
- Canadian Biosphere Reserves Association's Student Network: for researchers conducting research both on (e.g., what is the significance and what are the practical applications of the concept?) and in (research on a variety of topics that takes place in) biosphere reserves in Canada.

The February 2008 Canadian federal budget allocated \$2 million over two years to Environment Canada, to support the operations of the CBRA.

In China, the National MAB Committee established the China Biosphere Reserve Network (CBRN) in 1993 to implement the BR concept in the light of Chinese conditions. Its specific functions are:

- to serve as an international cooperation channel to promote exchanges between Chinese nature reserves and their foreign counterparts;
- to help to improve the management quality and level of nature reserves through exchanges of knowledge, concepts and experiences;
- to provide a platform for lateral exchanges between nature reserves under the jurisdiction of different departments.

Each annual meeting has a specific theme. The CBRN has concentrated its activities in the fields of GIS application, eco-tourism, management policy research and public education

(<http://www.unescobeijing.org/projects/view.do?channelId=004002001001003004>). Specific activities have included:

- a case study for the UN Decade of Education for Sustainable Development on 'Experiencing biosphere reserve and dialogue with metropolis';
- revision of Draft Protected Areas Law from the perspective of BR managers (at its 8th network conference);
- evaluations of specific BRs for the periodic review process, to identify "changes, problems and practical measures for management improvement, and means towards fostering dialogue and "concertation" among biodiversity stakeholders";

- a training workshop on the role of green and organic products to develop quality economies in BRs;
- field studies in a number of BRs and nature reserves.

Strengths of the CBRN include its role as a cross-sectoral tool for implementing the BR concept and for international cooperation. However, there are still challenges to transform the BR concept into practice; and identified weaknesses include the lack of financial and human resources, and the lack of legal status for the CBRN.

In France, the national BR network not only holds annual meetings of BR coordinators (2-3 days) which have taken place since 1991, but also includes five thematic working groups. These have been constituted at the request of the BR coordinators, who manage them with financial and logistic support from the national MAB Committee. The working groups are as follows:

- pedagogy: exchange of practice; development of joint actions; training of teachers; partnerships with stakeholders in the fields of education, environment, and sustainable development; development of public interest in science. The group meets once a year; joint actions have included twinning of classes from BRs and participatory research programmes (both linked to EuroMAB) and an internet site about biodiversity for teachers.
- forests: a platform for discussion aimed at sustainable forest management in BRs, involving public and private foresters, BR coordinators, scientists, members of the national MAB Committee. The group meets once a year and is supported by the National Office of Forests.
- BR charter: this is studying the possibility of involving 'socio-economic actors' in the BR in a jointly-produced charter. It includes BR coordinators, scientists, and members of the national MAB Committee, and has met once.
- communication: this aims to increase the visibility of BRs to different sectors of the public, and involves those responsible for communication in the different BRs. Activities include agreements on the use of the logo, an exhibition, and the www.mab-France.org website.
- university training linked to MAB: this aims to improve and structure relationships between the BRs and university training in sustainable development.

In Spain, the national BR network is supported by:

- the Managers Council, with a technical representative from each BR;
- the Scientists Council, an advisory body to the national MAB Committee, with 21 members appointed by either the autonomous governments with BRs on their territory, or the chairman of the national MAB Committee
- the national MAB Committee, which includes 4 representatives from each of the Councils, together with representatives of the autonomous governments with BRs on their territory, other public or private institutions responsible for BRs, and a broad scientific, institutional and social representation;
- the secretariat of the national MAB programme, funded by the National Parks Autonomous Body, within the Ministry of Environment. The ministry also has some lines of direct and indirect funding for BRs.

Meetings of the Managers Council are at least annual; they usually meet several times a year according to a work programme agreed by managers and reflected in a strategy and action plan for BRs, developed in 2006 for the period 2007-9. This includes collaborative projects between BRs, the development of support tools for the management of BRs, identification of funding sources, recommendations to the national MAB committee, and criteria for adjusting BRs to the Seville Strategy.

An additional country where the meetings of the national BR network have led to specific activities is the Czech Republic. These have included:

- a three-year project on 'evaluation and prognosis of ecosystem changes on the basis of long-term data series', funded by the Grant Agency of the Czech Republic;
- the Czech network of Long Term Ecological Research Sites (www.lter.cz);
- ecological projects funded by the Global Environment Facility;
- books on Czech BRs, written by BR coordinators and published in 1994 and 1996; one translated into English (Jeník and Price, 1994).

4.3.5 Summary of benefits of networking

This overview suggests that a national BR network can bring many positive impacts, and certainly offer a mechanism for members to benefit from economies of scale. The minimum level of impact would consist of the intangible benefits of networking, exchange of information and practice, and capacity-building – all leading to more effective implementation of the BR concept and related concepts such as sustainable forest management. Communication materials such as exhibitions, books, and websites may be developed both for greater public understanding and formal education and training. Beyond this, joint applications for funding may result in research projects, ecological restoration projects, ecotourism information packages complemented by accreditation and training to help promote biosphere reserves,. National BR networks can also contribute to periodic reviews, by bringing experts to a specific BR to evaluate performance in relation to the Statutory Framework. However, it is not easy to say what a 'properly resourced and functioning network' would comprise; the levels of resources vary greatly from country to country, and the functions vary considerably – depending very much on the types and levels of available resources, the institutional landscape, and the commitment and lobbying ability of key individuals, as shown most recently by the success of the CBRA in obtaining funding in the federal budget following years of lobbying.

5 Overview of the case studies

There are striking differences between the case studies, and any lessons learned must take account of these differences. Care must be taken in drawing conclusions however – the interviews in North Devon were broadly based, including ordinary people well outside the management structures; those in Kristianstad were organised by the BR team; while information for the other cases (Rhön and Entlebuch) was dependent on published material and phone contact with a local coordinator or manager.

5.1 Origins

As can be seen from table 4 the cases are very different in terms of history and economic geography. Kristianstads Vattenrike resulted primarily from the groundwork and enthusiasm of a small team, working closely with the Municipal Council, but also effectively networked with local resource users and regional, and national interests. North Devon was a re-designation of an old style biosphere reserve driven by two main factors: the opportunity to use the BR as a mechanism to implement ecosystem based management; and a desire on the part of English Nature (now Natural England) to maintain a designation in the face of loss of National Nature Reserve status. Rhön was a response to reunification and the need and opportunity to put in place a cross boundary initiative for sustainable development while conserving some of the unmanaged border “wilderness areas”, and also buffering the mountain pastures from the full force of agricultural structural change. Entlebuch was presented to the local population as an economic regeneration project, which also overcame the possible negative effects and central control associated with the 1996 law on protection of moors and marshes. Apart from Devon, all were at least partially driven by some clear local need and opportunity. The Biosphere Reserve, being a highly flexible development and conservation tool was able to meet these diverse needs.

5.2 Economic geography and development needs

Overlaid on these strikingly different origins, are significantly different societies and economic geography. Kristianstad was probably the most economically healthy at the time of designation, with modest population growth, a fairly diverse economy and increasing food product exports. In this context access, recreation and education were all in demand, and a relatively environmentally aware Municipality saw the advantages to the area of an image of high environmental quality and sustainable development – all reinforcing the quality and healthy image of food products. This has undoubtedly helped the Biosphere “Area” concept to become embedded in the economic development strategy of the Municipality. Opportunities to develop infrastructure on the back of the BR – a major visitor centre (*Naturum*) and associated attractions and facilities are planned – have further reinforced the status of the BR and its role at the heart of city planning and development.

Entlebuch is very different. The local economy was relatively stagnant, based on small scale farming, forestry and tourism. The need here was for a strengthening of the quality image of local food, and stronger link between local food products and tourism. Again, the BR concept was sufficiently flexible to allow for this particular focus. The extent to which this is linked with environmental quality is hard to say.

Rhön found itself in the post unification economic melting pot, and this was a tremendous opportunity to embrace a new social-environmental idealism and focus for cooperative economic development. And as for Entlebuch, the BR designation offers particular opportunities for small scale traditional agriculture and forestry systems.

The North Devon economy is rather mixed, with pockets of deprivation and decline interspersed with more affluent zones. Agriculture is also struggling, being neither large scale and cost effective, nor small scale feeding into niche or local markets. The lack of any significant local food processing also isolates them to some extent from other economic sectors. Tourism, especially associated with the beach area is crucial, but typically relatively low pay. The opportunities associated with BR designation are less clear here.

5.3 Governance

Again, the differences are striking. Kristianstad Vattenrike is within a single Municipality. A small, flexible, adaptable and enthusiastic BR team has significant autonomy, working directly to the Executive Committee of the Municipality and advised by a consultative group. In addition to its core funding it can draw on other services of the municipality (e.g. for walkway maintenance). It links in closely with trade and industry, and planning and development departments and has significant influence over the Municipality structure plan (comprehensive plan). The BR team have been highly effective at networking with resource users on the one hand, different departments within the Municipality, local politicians, and players at regional and national levels. They work primarily as “fixers” and facilitators but within the sustainable development philosophy of the BR. They have become effectively embedded into existing agricultural and Municipal governance structures, but have no regulatory powers themselves.

The Rhön case is again radically different. It has a Central coordinating office; three thematic working groups drawn from local councils and stakeholders; a BR department in each of the *lander*; a trilateral technical advisory committee; and a BR consultative association in each of the *lander*. Management is guided by a framework management plan (goals, zonation) drawn up by consultants, but based on substantial public consultation, in 1995. Unlike any of the other cases, a range of levels of protection and regulation have been established under this framework, as well as BR specific land management grants. This is a significant power structure with substantial influence over land use in the area.

Entlebuch is perhaps intermediate between Rhön and Kristianstad. The basic work of the BR is undertaken by a Regional Management Centre, in conjunction with Office of Forestry & Agricultural Education Centre. This group works to a Steering Group representing the eight communities and various interest groups, which is elected by an assembly of delegates. A coordination committee with eight sub-groups addresses sub sectors such as wood, energy, education etc. and advises and supports the centre as appropriate. In this case the issues addressed and management approaches are determined very much by the sub groups and the steering group.

In North Devon, the Biosphere Reserve Team has evolved from the North Devon Coast and Countryside Service. The service is responsible to a “Biosphere Reserve Partnership” – a group which guides the development of a strategy and detailed action plan. The service is jointly core funded by two District and one County Council, while the remaining 50% of funding is raised from projects and other organisations. Funding is therefore relatively insecure, and the BR team and associated structures lack authority, political legitimacy and influence. Their activities are embedded in local planning to some extent, through consultation on developments and inclusion in key strategy documents, but the low public profile of BRs and lack of national guidance on their treatment makes real integration difficult.

5.4 Strategy

In Kristianstad the strategy has been clear from the early days of the *Ecomuseum* established more than 15 years prior to the BR, and from which the BR evolved: build up awareness and understanding of natural values; engage with resource users to try to find solutions which benefit their enterprise as well as nature conservation; maximise access and exposure to natural values – directly, through outdoor education and recreation, and indirectly through stories in the press, films on national TV, and a range of awareness raising events; build alliances. If the profile is high enough, and the network strong, then opportunities for sustainable management and development will follow, as will pride in the natural environment and influence over Municipal planning and development.

In the case of Rhön the strategy was largely defined by history and context: secure the wilderness areas (core and significant parts of the buffer zone) while at the same time assisting farmers and foresters with management grants, and by developing and promoting “area based” high quality products. At the same time seek to link marketing initiatives with environmental education and tourism initiatives.

For Entlebuch the strategy was perhaps simpler: talk, concentrate on a few big ideas, and then encourage the community to take them on.

In the case of North Devon, despite the existence of “business plans”, the strategy is less immediately obvious because the BR, lacking independent funding and with a title perhaps less attractive to the British public, has worked in a low-key manner through other organisations. In any case, strategic opportunities are more difficult to identify here: grant aid to farmers for environment friendly farming is largely out of their hands and related to SSSI designation; there is little tradition of food processing and “local” quality products. However, a good deal of effort is being put into environmental education and economic projects, using the biosphere as a case study, and this should underpin the steady raising of awareness of natural values which has worked so well in Kristianstad.

5.5 Added value benefits – actual and potential

Although we have been able to list and describe the reported social, economic and environmental achievements for each of the cases (an evaluation table is presented in each case study; and a brief summary of key achievements is listed in table 4 below), we found it impossible to quantify the marginal benefit, or added value specifically associated with the Biosphere Reserve designation. There were several reasons for this:

1. In North Devon and Kristianstad the BR designation was not completely new, in so far as the governance institutions had evolved from previous institutions (the North Devon Coast and Countryside Service; and the *Ecomuseum*). Many of the direct and tangible benefits would have been realised irrespective of BR designation - assuming the pre-existing institutions had maintained momentum.
2. Even where related institutions did not exist previously – as in Rhön and Entlebuch – it is likely that at least some of the activities associated with the BR would have been developed under a range of other development and conservation initiatives – though perhaps not so well integrated.
3. Some of the key benefits – which may have the greatest overall long term social and economic value – are associated with understanding, pride, image, and “ways of doing things” – and are impossible to measure in the short term.

4. Achievement in terms of sustainable development can only be assessed – by definition – over the long term.

This means that although there appears to be an effect, there is neither a *baseline*, nor a *trend*, nor a *control* with which to compare it. We are left with perceptions and interpretations – not quantifiable social, economic and environmental impact.

Unfortunately, a thorough and unbiased survey of perceptions and interpretations – of a range of stakeholders and representative socio-economic groups – was beyond the scope of this research. We were heavily dependent on the relevant management teams for key contacts, and where we went outside of this, we were only able to talk to a few partially representative persons.

Nonetheless – and taking full account of the caveats above – our research and the case studies suggest the following:

- The BR concept is an incentive/facilitating mechanism for the implementation of a broad political philosophy which is specifically conceived as likely to generate social, economic and environmental benefits in the long term.
- Although there are alternative delivery mechanisms (such as Agenda 21; planning and development vision for some local government; codes of practice for business etc) none of these offer:
 - a short term reward in terms of an internationally respected designation/quality assurance;
 - associated marketing opportunities for sustainably produced products or sustainably managed environments.
 - a practical focus on an identified human-natural system, or a particular “place”, whose characteristics can be seen to improve through the BR implementation
 - an international network through which to share experience;
- The BR label is the only existing international “standard” associated with sustainable development and associated products – something which, judging by most discussions of the nature of sustainability, is sorely needed.
- The designation has the potential to:
 - Attract those in search of a high quality sustainably managed environment and associated services (leisure, recreation, adventure, study);
 - Provide a practical and unifying focus for sustainable development initiatives;
 - Raise the levels of awareness, understanding and *pride* in the local environment and the way in which it is managed, which in turn can inject and attract dynamism into the local economy;
 - Lever in additional support or project funds by both assuring the quality of the environment and the sustainability of the local economy.
- The lack of regulatory powers associated with most BR designations can be either a weakness or strength – dependent on circumstances.
 - To those who dislike or despair of the highly regulatory approach to environmental protection, the BR offers a more constructive and

conciliatory approach; an opportunity to prove that we can do better without regulation.

- In situations where the capacity to organise is poor, where community coherence and identity is weak, and where existing governance structures are fragmented and/or duplicated, the lack of authority is a weakness.

The actual benefits realised will depend upon the perceived need, and the capacity and opportunity to meet these through a BR type designation. This is the subject of the next section

Table 4. Summary of the case studies

Issue	Kristianstad	North Devon	Rhön	Entlebuch
History	“Ecomuseum” group within Municipality since 1989; requested by Municipality to develop proposal 2003/4. Designated 2005.	Old style biosphere reserve based on SAC/SSSI Re-designated 2002	Designated in 1991 immediately after re-unification - a symbol of cross-boundary cooperation and a stimulus to sustainable development	1996 law on protection of moors and marshes threatened local economic interests. Local Councils turned a threat into an opportunity – education campaign persuaded locals that BR would allow them a greater say. 94% approval in 2000. Approved and designated 2001.
Economy	Fairly robust and growing; major emphasis on quality food and food processing.	In decline (loss of shipbuilding). Low skill/low wage. Seasonal tourism. Limited local food processing. Ageing population. High house prices and low wages causing real difficulty. Popular area for second homes. Small livestock farms currently struggling.	Rural, agricultural, dispersed, poor. Agriculture, tourism (esp. hiking), mechanical engineering, forestry, quarries. Contrasting (E/W) land ownership and management systems. Relatively unfavourable natural conditions for agriculture, and number of farms in decline – i.e. rationalisation. A few young educated farmers are key BR partners. Many high quality breweries, distilleries, butcher.	Rural: agriculture and forestry; tourism; local food production. One of poorest regions of Switzerland. 2 mountain railways and 5 large businesses. Environment and local produce are key elements in tourism.
Society	Around 80,000 people (growing) mainly in regional centre of Kristianstad. Widespread interest in health, recreation, environment.	150,000 people. 3 distinct towns. 2 district councils. Fragmented and divided community: rich v. poor; local v. immigrant .	136,000 people. Significant cultural differences across 3 <i>Länder</i> . In need of new identity.	17,000 people (steady) in 8 settlements

Issue	Kristianstad	North Devon	Rhön	Entlebuch
		Environment is a luxury – for middle class incomers or wealthy business?		
Environment	104,375 ha Wetland, meadows, beach. Wetlands a significant local recreational and historic resource.	1,300 ha <i>core</i> dune and estuary 33,000 ha <i>buffer</i> estuary. Marsh and coastal downland 2,291 sq km <i>transition</i> on land: moorland, wetlands and river valleys. 1,476 sq km transition over sea.	185,000 ha: low hills, pasture, meadow, woodland. Some ex border areas very little managed. 29 core areas close to wilderness.	39,000 ha: mountain, moorland, peat bog and marshland, forest, alpine pasture . More than 50% of the area covered by protective designation.
BR Governance	Relatively independent and motivated team, employed directly by municipality and responsible directly to the executive board. Advised by a “consultative group”. Management plan very simple and focused: flexible response to emerging issues.	Biosphere Reserve Team jointly core funded by 2 District and one County Council + 50% funding from variety of sources. Responsible to a “biosphere reserve partnership”. Strategy and action plan with detailed activities and targets. Core dune/grassland system is privately owned/MoD owned and partially access controlled.	Central coordinating office. 3 thematic working groups drawn from local councils and stakeholders. BR department in each <i>Lander</i> . Trilateral technical advisory committee. BR consultative association in each <i>Lander</i> . Framework management plan (goals, zonation) drawn up by consultants in 1995 with public consultation.	Steering group representing 8 communities and various interest groups – elected by an assembly of delegates. A coordination committee with 8 sub-groups addresses sub sectors such as wood, energy, education etc. Regional management centre, in conjunction with Office of Forestry & Agricultural Education Centre, facilitates and implements.
Strategy	Build up awareness of natural values and pride through outdoor education and access. Sustainable use: build alliances with user groups by identifying attractive conservation and development opportunities in core, buffer and transition zones.	Activities largely driven by standing responsibilities (countryside path/trail maintenance) and need to generate project funding. Focus on education and volunteering.	Sustainable development based on regional products. Marketing linked to tourism initiatives and environmental education. Buffer zone not intended for settlement or commercial development.	Concentrate on a few big ideas and let the community take them on.

Issue	Kristianstad	North Devon	Rhön	Entlebuch
			Biosphere grants for conservation sensitive agriculture and forestry	
Main achievements	Positive engagement of farmers in managing for conservation. Recreation, access (7km wetlands trail), education. Enhanced development image for Kristianstad Municipality. Influence on Municipality structure (comprehensive) plan. Pride. Approval of a Euro7m <i>Naturum</i>	Education (major work with local schools and input into college course). Research support. Volunteering. Local events. Path maintenance. Orchards. Encouragement of local community nature reserves.	Catalyst for sustainable development. Regionally defined products (e.g. Rhön sheep and apples) BR product labelling scheme Training. Access. Regional pride. Designation of 3% of the BR as protected in 29 “core areas” + 8% of buffer zone “low disturbance habitat”	Sustainable forestry and forest products. <i>Echt (genuine) Entlebuch</i> brand. Coordinated marketing of wood and dairy products. Fourfold increase in visits since 2002

6 Social, economic and environmental evaluation

Objective 3 of the TOR require the following:

“Make recommendations for a methodology to evaluate the potential social, economic and environmental impacts that designation might bring to areas proposed for this designation”.

In making our assessment of the social, economic and environmental benefit in relation to the case studies we used a six stage process, and this methodology could be used for evaluations of both existing and potential BRs.

- **Stage 1:** Review existing material describing activities and achievements (or proposed activities, or potential activities) and allocate these to a “benefit category” or criterion in the sustainable development assessment framework (table 5).
- **Stage 2:** Interview key stakeholders and informants to ascertain what they regard as benefits and achievements. Ideally this would include interviews with key stakeholders as well as stratified survey of the general population, businesses and organisations. Supplement the stage 1 analysis accordingly.
- **Stage 3:** For each reported or perceived benefit, seek to establish some form of baseline – *i.e. what would have happened/what is likely to happen without the BR*. This may be qualitative, based on interviews (e.g. “nothing would have happened”), or more quantitative (e.g. has the area under designation bucked a wider trend such as tourist numbers?)
- **Stage 4:** Consider whether there are alternative structures, processes, designations, accreditation systems, funding arrangements etc which might deliver similar benefits. What are the strengths and weaknesses of the various alternatives from a local perspective?
- **Stage 5:** Draw conclusions about added value or marginal benefit.
- **Stage 6:** If the study relates to *potential* benefit, assess the capacity to implement the concept by assessing the area against the “favourable conditions” criteria listed below.

In stage 1, if a suitable category cannot be found in table 5 for a particular activity, a new category may be required, but we found it possible to allocate all benefits to these categories. Use of a standard format such as this would greatly facilitate comparisons between sites and approaches, and also allow for meaningful “meta-data” analysis at some point – something which UNESCO or regional networks might wish to pursue.

In this study we lacked the resources to undertake a detailed stage 2 analysis for the case studies, and were only able to undertake a rapid appraisal exercise. There is a real need for more detailed studies of this kind, to assess in particular public and business support for biospheres.

Stage 3 is the most difficult. The baseline, if any, is likely to be elusive. However, we found for example in the case of Entlebuch, that visitor numbers have increased in recent years, and after some digging, discovered that this bucked a wider trend in Switzerland of sluggish growth in tourism. Although of course there may be other reasons why Entlebuch is different, this at least begins to strengthen the argument for a relationship with the designation.

Stage 4 can also be difficult. Sustainable development is probably the most popular government policy objective in the world, and our analysis of UK policy reveals an extraordinary raft of higher level policies and strategies designed to promote it. These in turn are supported by a wide range of incentive schemes and regulatory frameworks. Many of the attributed benefits could be achieved through these alternatives. Again it is a matter of exploring in depth with those who identify or claim the benefits the extent to which the BR designation is better or more effective in some way than the alternatives.

Stage 5 follows logically from the previous stages. It is important here to look also at the bigger picture: whether the sum total of the combined benefits is greater than could have been achieved through other diverse mechanisms.

Stage 6 is the necessary “add on” if the evaluation relates to a potential site rather than an actual site. The evaluation will need to review the extent to which a particular area or proposal meets the conditions, or exhibits the characteristics, typically associated with success in achieving benefit. These conditions are discussed below.

Table 5: Analysis of reported benefits using a sustainability framework (from Hambrey Consulting 2004)

<i>Dimensions</i>	<i>Criteria/potential benefit</i>	<i>Identified benefit</i>
A healthy environment		
Biodiversity	species diversity, range and abundance	
	habitat extent and condition	
	structural diversity and connectivity	
Landscape	character, condition and qualities	
Ecosystem services	quality and productivity of soil, water, air	
	efficient drainage	
	erosion resistance	
	carbon sinks	
Other	<i>any other environmental impacts</i>	
A healthy society		
Recreation and access	active recreation	
	access	
	passive recreation and inspiration	
Understanding and awareness	understanding and awareness	
Community	engagement <i>with</i> community	
	involvement <i>of</i> community	
	vitality and cohesion	
The quality of places to live	near environment (greenspace)	
	houses and gardens	
Environmental justice	equitable access to, and utilisation of, environmental benefits	
Other	<i>any other social impacts</i>	
A healthy economy		
Employment and income	direct employment and income	
	indirect employment and income	
	job quality	
	income and jobs foregone	
Business	business opportunities and constraints	
	short term investment	
	long term investment	
	human resources	
Resource use	conservation of resources with an economic value	
	conservation of resources with <i>potential</i> economic value	
Other	<i>any other economic impacts</i>	

7 Site selection criteria

Objective 4 of the TOR require us to:

“Identify criteria for selecting new Biosphere Reserves which will help to maximise the benefits of social, economic and environmental impacts and support UK domestic and foreign policy”.

In our previous work for SNH (Hambrey Consulting 2007) we identified the following as being key factors affecting the realisation of benefit:

- The economic geography of the site
- The system of governance
- Local leadership

This study broadly confirms these findings, but also allows us to flesh out in more detail the relationships between sites and potential benefits. Both the literature review and cases studies suggest that any assessment of potential should address the following issues.

7.1 Quality of the natural environment

To some degree the quality of the natural environment is already a selection criterion in so far as a core area, legally protected, is required for any biosphere reserve.

However, given the negative attitudes to such designations in many European countries, the association between BR and protected areas is not necessarily positive in terms of gaining buy-in and public support. Furthermore most of the “sustainable development” opportunities cannot be realised in the core area. In this sense, a site with relatively small core area may offer greater potential. Biodiversity interests are already protected in legally protected areas; *the “added value” of a biosphere reserve is in the buffer and transition zones.*

The existing old style biosphere reserves in the UK were premised on the quality of the core area. The shift in emphasis to sustainable development suggests that we might also shift our attention from assessing core areas, to assessing the potential of the buffer and transition zones for sustainable use, sustainable development and enhanced environmental quality. In a sense we should be turning the concept on its head: we should not be looking to protect core areas (this is already catered for); we should be looking for opportunities to enhance the natural environment, especially around urban areas and existing land-use activities.

To maximise potential, the area as a whole should have some or all of the following characteristics:

- Attractive and accessible to local people for recreation and education;
- Attractive and accessible to tourists, and with potential for exploration, interpretation and education;
- Large enough to support significant sustainable land use activity and levels of production which can usefully be marketed under a BR/sustainable production label (for example there are roughly 2000 farmers in the case area – more than enough to generate a product with a label);

- Clear functional links between the quality of the environment and the lives of local people. Water (for example) can be a powerful focus, especially where drinking water is locally sourced. Agriculture is dependent on it. Water based recreation is a major growth area. Wetlands can be understood as having substantial value as carbon sinks and flood mitigation systems.

7.2 Nature of the local economy

In order for the BR concept to be attractive to local people, and in order to gain practical interest and buy-in, there should be both a *need* for economic initiative and *opportunity* related in some way to sustainable natural resource use. This is a rare combination (if the opportunity is strong but not yet realised, there may be significant constraints) yet well illustrated in the cases.

Examples include traditional small scale low intensity agriculture where returns are poor, but where local image can be combined with both quality and sustainability image within a BR marketing initiative. This is further enhanced if there is also a tradition of local processing (e.g. beer and sausage in Rhön case study). If this can be linked in with a growing local tourist market, or a growing local economy, then the potential of the BR is further strengthened. A tradition of forestry and forest products can serve as a similar focus for BR related added value initiatives.

7.3 Nature of Society

A BR will not succeed if people do not believe in it or see the potential, and there must be established or latent entrepreneurial initiative. Where there is not, any BR initiative will need to nurture it over many years if success is to be achieved.

High levels of awareness of natural *values* – and pride in them - are key pre-conditions. Kristianstads Vattenrike illustrates this beautifully – where more than 15 years of groundwork was undertaken to achieve the current strong levels of pride and confidence (sufficient to encourage substantial investment in the *Naturum*) embedded now within the local government and political hierarchy. Again, if this is not already in place it will have to be a key focus for activity in the early years of any new BR.

Community coherence and sense of belonging - and ownership of the natural values – are also key characteristics. A strong local newspaper or radio relating to the area may for example serve as an indicator. Where society is fragmented or divided the task will be all the harder. However, the Rhön case shows that fragmentation can be overcome – where there is a major drive or incentive – and indeed the BR can itself become the unifying force. But this is unlikely in anything other than exceptional cases.

As with any initiative leadership from *within* local society will be critical to success, and success will be all the greater if the leader(s) are well connected – with resource users, with local government, with local business, with regional and national agencies and so on. Such a person may or may not be, or become, an official part of any BR structures; the key is to be an effective champion for the BR approach, and a talented communicator and networker.

7.4 Overall: site selection or self selection?

The above considerations for the evaluation of benefit have significant implications for “site selection”. The BR concept is sufficiently flexible to have the potential to

deliver benefit in radically different situations, as our case studies well illustrate. The key is to be able to realise the benefit, and the key to realisation is belief in the approach and capacity to deliver – in other words *the right people in a broadly favourable context*. This suggests that rather than considering any formal, top down process of site selection, we should rather be seeking to encourage self selection.

In box 1 we summarize what we might term broadly favourable conditions for the realisation of benefit. But we should not consider even these few as required conditions or hard criteria. Overriding all of these in terms of benefit realisation will be the determination and enthusiasm of individuals or institutions to make this work. We should encourage “informed” self selection. And – judging by these criteria - the existing historic biosphere reserves in the UK are unlikely to be the best place to start.

Box 1: Conditions likely to favour the realisation of benefits from biosphere reserves

Ecology and geography

- A high quality natural environment, or one with the potential to become high quality
- Attractive and accessible to local people for recreation and education
- Attractive and accessible to tourists, and with potential for exploration, interpretation and education
- Large enough to support significant sustainable land use activity and levels of production which can usefully be marketed under a BR/sustainable production label
- Clear functional links between the quality of the environment and the lives of local people.

Economy

- A perception of need for regeneration, new initiative, a new way of doing things amongst the local population and especially key players – and broadly based interest in sustainable development
- Opportunity for improved livelihoods, income or new development related to the qualities of the natural environment (e.g. local food or wood products; outdoor recreation; tourism)
- Local crafts or local processing of food and natural products

Society and governance

- High levels of awareness of natural values
- Local institutions or individuals keen to “champion” development and conservation
- Strongly supportive local government – preferably with coincident boundaries
- A coherent community – a common sense of identity and pride – preferably related in some way to the natural environment (e.g. fisheries, farming, shooting etc)

7.5 Organisational structures

Much has been written about governance and organisational structures appropriate for any form of resource management, and there are many possible models, including in the UK those associated with Coastal and Firths partnerships, River Basin Planning, AONBs etc. However, as our case studies and literature review

reveal, there are no magic bullets or necessary prescriptions. Decision making traditions, level of involvement, public interest and so on vary greatly, even within the UK. But it is evident nonetheless that whatever formal or informal institution drives the BR forward, it must have respect, legitimacy, dynamism, and leadership - and be broadly representative of stakeholders and key members of society. The UNESCO requirement for participation is necessary, but not sufficient to guarantee success.

7.6 Financial resources

The costs associated with the “administration” of a biosphere reserve again vary greatly, dependent on the ambition and the efficiency of those involved, and the needs to be addressed. But any form of integrated planning and management is associated with significant transaction costs, and research, education and awareness raising can all be expensive. We have already noted the leverage that a BR can bring to bear on a wide range of funding applications (and the policy review demonstrates clearly that BR’s should be attractive to central and local government keen to promote their policy objectives), but heavy dependence on outside funding is far from desirable. In any case to demonstrate genuine sustainability, a BR should show itself to be financially sustainable. There must be local “buy-in” ideally from both local government and local business. It is notable in this regard that the Kristianstad case shows a strong belief on the part of local government in the long term economic benefits of the biosphere reserve - a belief reflected in substantial BR linked investment by both local and regional government.

There are however some very specific funding packages which are particularly well suited to the new Biosphere Reserve approach. LEADER funding represents a particular opportunity in this regard. Its aim is “to increase the capacity of local rural community and business networks to build knowledge and skills, innovate and co-operate in order to tackle local development objectives”, and it supports in particular projects which are community driven and have a wide community benefit. The EU has defined four broad themes to guide funding:

- the use of 'know how' and new technologies to make rural products and services more competitive;
- improving the quality of life in rural areas;
- adding value to local products;
- making the best use of natural and cultural resources.

These themes once again chime well with the biosphere reserve approach. LEADER funding therefore represents an opportunity to implement Biosphere Reserve initiatives on the one hand, and the establishment of a biosphere reserve is likely to further enhance the capacity of communities to access LEADER funding for a range of projects. Funding is significant. Thus £30m has recently been awarded to Local Action Groups for distribution in Scotland, with the more disadvantaged areas, such as Highland, receiving a relatively high proportion.

Sustainable development is a key cross cutting theme within the European 7th Framework for Research, which offers a wide range of opportunities to develop research programmes of relevance to the establishment and management of Biosphere Reserves. Of particular relevance are the Socio-economic Sciences and Humanities and Science in Society theme, and the Environment theme.

Taken together these European funding sources offer a potent package to access resources in support of practical community and governance initiatives on the one hand, and longer term research on the other. The European Network of Biosphere

Reserves also offers a ready made structure through which Europe wide research can be conducted, and should greatly enhance the chances of successful funding bids.

8 The potential contribution of biosphere reserves to UK and devolved administration policies

Given the scope of the biosphere reserve concept, it is perhaps not surprising that successful implementation would contribute to very large range of UK and devolved administration policies. In fact it is hard to find a policy to which a successful BR would not contribute. We have listed the main ones, including the priorities, aims and objectives associated with each, in a separate Appendix available on request. A list of just some of the policies to which biosphere reserves might contribute on a practical level are listed in boxes 2-6.

The following phrases can be found again and again in policy statements, strategies and action plans at UK and devolved administration levels: *sustainable development; sustainable communities; mainstreaming the ecosystem approach; taking decisions at the appropriate spatial scale; healthy functioning ecosystems; quality of life; access and outdoor recreation; participation in planning and management; consideration of biodiversity in all decision making; living within environmental limits; sustainable food production; quality management systems and quality labelling; engagement of local people in decision making; adaptive management; developing a robust evidence base; holistic approach.*

It is impossible to summarize all these policies here, but below we extract a few highly relevant aims and objectives of UK and English policies to which the biosphere concept should contribute strongly. Similar phrases and sentiments can be found in devolved administration policies.

Securing the Future - UK Government Sustainable Development Strategy

- piloting open and innovative ways to allow stakeholders to influence decisions about the kind of projects which would deliver the goals of this strategy
- Building a strong, stable and sustainable economy which provides prosperity and opportunities for all, and in which environmental and social costs fall on those who impose them (polluter pays), and efficient resource use is incentivised.

Rural Development Programme for England

- To build profitable, innovative and competitive farming, food and forestry sectors, that meet the needs of consumers and make a net positive contribution to the environment
- To improve the environment and countryside
- To enhance opportunity in rural areas, in a way that harnesses and builds upon environmental quality

The Strategy for Sustainable Farming and Food: Facing the Future

- Enable viable livelihoods to be made from sustainable land management, both through the market and through payments for public benefits.
- Respect and operate within the biological limits of natural resources (especially soil, water and biodiversity).

A Sea Change: A Marine Bill White Paper 2007

The Vision: Clean, healthy, safe, productive and biologically diverse oceans and seas.

A Strategy for England's Trees, Woods and Forests

- provide, in England, a resource of trees, woods and forests in places where they can contribute most in terms of environmental, economic and social benefits now and for future generations

Natural Environment PSA 'Secure a Healthy Environment for today':

- "to secure a diverse, healthy and resilient natural environment, which provides the basis for everyone's well-being, health and prosperity now and in the future; and where the value of the services provided by the natural environment are reflected in decision-making.

Working with the Grain of Nature. A biodiversity strategy for England.

- A halting, and if possible a reversal, of declines in priority habitats and species, with wild species and habitats as part of healthy, functioning ecosystems
- The general acceptance of biodiversity's essential role in enhancing the quality of life, with its conservation becoming a natural consideration in all relevant public, private and non-governmental decisions and policies

Conserving Biodiversity: the UK approach:

- Embedding proper consideration of biodiversity and ecosystem services in all relevant sectors of policy and decision-making;

Ecosystems Approach Action Plan

- taking a more holistic approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services

Eliminating world poverty: making governance work for the poor' 2006 White Paper on International development,

- Put support for good governance at the centre of what we do, focusing on state capability, responsiveness and accountability, working in particular with citizens, civil society groups, parliamentarians and the media.

The word sustainable lies at the heart of these policies and statements. Indeed, the word is used 105 times in the associated vision, objectives and priority statements for the listed policies, and the word ecosystem is used 19 times in the UK and English policies.

In practice these concepts are so broad, so often repeated, yet with so few tangible mechanisms for their implementation, that there is a danger of them becoming devalued. The Biosphere Reserve concept roots these aspirations within a defined area whose structure to some degree reflects people's relationship with nature. It brings the ideas literally down to earth. It therefore has significant potential to contribute to many of these policy aspirations.

The global network of biosphere reserves, encompassing both developed and developing countries, also serves as a testing ground for new approaches to sustainable development, and an opportunity to share experience in a range of approaches to conservation and development – but all rooted in more effective stakeholder participation.

Box 2: Policies to which Biosphere Reserves are well placed to contribute: UK

Conserving Biodiversity The UK Approach October 2007

UK Government Sustainable Development Strategy *Securing the Future*

The UK's shared framework for sustainable development: *One future, different paths*

Ecosystems Approach Action Plan

The Strategy for Sustainable Farming and Food: *Facing the Future*

2006 White Paper on International Development: [Eliminating world poverty: making governance work for the poor](#)

The joint UK response to the Review of Marine Nature Conservation: *Safeguarding Sea Life*

A Marine Bill White Paper March '07: *A Sea Change*

Marine & Fisheries Business Plan 2007-2008

Tomorrow's Tourism: *A growth industry for the New Millennium* (DCMS)

Green Paper: *Youth Matters*, and follow up '*Youth Matters – Next Steps*'

White Paper for England and Wales: *Heritage Protection for the 21st century*

Climate Change: The UK Programme 2006. *Tomorrow's Climate, Today's Challenge*

The Energy White Paper *Our Energy Future – Creating a Low Carbon Economy*, DTI/Defra 2003

Box 3: Policies to which Biosphere Reserves are well placed to contribute: England

Working with the Grain of Nature: *A biodiversity strategy for England*

Natural Environment PSA '*Secure a Healthy Environment for today*'

Sustainable Communities

Rural Development Programme for England 2007 - 2013

Rural Strategy 2004

Our Countryside: *A Fair Deal for Rural England*

Sustainable Farming & Food Strategy *A Forward Look* (Defra)

A Strategy for England's Trees, Woods and Forests

A Government Strategy for the development of tourism in England (DCMS) *Tomorrow's Tourism Today*

National Skills Strategy for the Hospitality, Leisure, Travel and Tourism sector in England (People 1st/DCMS)

Green Paper and SDC report: '*Every Child Matters (ECM)*' and '*Every Child's Future Matters (EFCM)*'

Green Paper: *Youth Matters*, and follow up '*Youth Matters – Next Steps*'

Learning Outside: *the Classroom Manifesto*

2003 Sustainable Development Action Plan for Education & Skills

The DfES Sustainable Development Action Plan 2005/06: *Learning for the Future*

Five Year Strategy for Children & Learners

English Heritage's Strategy for 2005 to 2010: *Making the Past Part of Our Future*

English Heritage: Conservation Principles, Policies and Guidance

The Historic Environment: *a Force for our Future*

Box 4: Policies to which Biosphere Reserves are well placed to contribute: Wales

Welsh Biodiversity Strategy

Environment Strategy for Wales

Sustainable Development Action Plan

Sustainable Development Scheme: *Starting to Live Differently* March 2004.

Wales: *A Better Country*

Rural Development Plan 2007 - 2013: Wales Strategic Approach

Creating a Better Wales 2006-2011

Corporate Strategy from the Environment Agency Wales

Farming for the Future: *a new direction for Farming in Wales*

Strategy for Trees and Woodlands: *Woodlands for Wales*

Tourism Strategy for Wales 2006 2013 : *Achieving Our Potential*

Visit Wales – Delivery Plan 2006/07

Sustainable Tourism A Framework for Wales 2007

Cultural Tourism Strategy

A Science Policy for Wales 2006

The National Economic Development Strategy of the Welsh Assembly Government 2002 and refresh 2004: *A Winning Wales*

The Welsh Assembly Government's Strategic Framework for Economic Development. *Wales: A Vibrant Economy*

The Wales Spatial Plan 2008 update: *People, Places, Futures*

A Culture Strategy for Wales: *Creative Futures*

Strategy for sport & physical activity: *Climbing Higher*

Energy and Climate Change

Making the Connections

Box 5: Policies to which Biosphere Reserves are well placed to contribute: Northern Ireland

Northern Ireland Biodiversity Strategy 2002 and Recommendations for Biodiversity Conservation Action
Nature Conservation, Waste Management and Minerals and the Coast

Recommendations for Biodiversity Conservation Action

Sustainability Strategy for Northern Ireland: *First Steps Towards Sustainability*

DARD Rural Strategy 2007-2013

Northern Ireland Rural Development Plan 2007 - 2013

DARD Strategic Plan 2006-2011

A Regional Innovation Strategy: *Think, create, innovate*

Environmental Legislation relevant to farmers and landowners

Forest Service Business Plan 2007-2008

Fisheries & Rural Policy Business Plan 2007-2008

Tourism: Strategic Framework for Action 2004-2007

Natural Heritage Research and Development Strategy 2004-2009

Preparing for a changing climate in Northern Ireland

The Northern Ireland Strategy for Sport & Physical Recreation 2007- 2017

Regional Development Strategy

Shaping Our Future 2025

Economic Vision for Northern Ireland

Planning Strategy for Rural Northern Ireland

Box 6: Policies to which Biosphere Reserves are well placed to contribute: Scotland

Scotland's sustainable development strategy: *Choosing our future*

Scotland's climate change programme: *Changing our ways*

Scotland's biodiversity – *Its in your hands* (Scottish Biodiversity Strategy)

Scottish Forestry Strategy 2006

A Forward Strategy for Scottish Agriculture: *Custodians of change*

Scotland Rural Development Programme 2007-13

Strategic Framework for Scottish Aquaculture.

National Planning Framework

Tourism Framework for change

Smart Successful Scotland: strategic direction to the Enterprise Networks and an enterprise strategy for Scotland

Scottish Executive Guidance for Community Learning and Development : *working and learning together to build stronger communities*:

Scottish Planning Policy 1

SPP2 Planning for fish farming

SPP11 Open space and physical activity

SPP15 Planning for Rural Development

SPP21 Green belts

PAN 81 – Community engagement – planning with people

NPPG14 Natural Heritage

9 The role of UK MAB and a “fully functioning network”

The TOR (objective 5) required us to:

“Identify improvements that might be made to support the UKMAB programme generally in the UK and its possible international activity.”

More specifically we were asked to:

- iii) Identify how the network and UKMAB might maximise its impact in terms of benefits to national social, economic and environmental goals.
- iv) Compare the terms of reference for the current UKMAB committee and other national MA committees and make appropriate recommendations

9.1 The historic role of UNESCO MAB

UNESCO launched the MAB inter-governmental program in 1970, and proposed a number of broad themes to orient collaborative endeavours which different countries might find relevant to their own situations. Early examples included human uses and adaptations to different major biomes in the world, approaches for conducting environmental assessments, or developing effective measures to remediate polluted ecosystems. As countries joined in these endeavours, they were also able to benefit from an exchange of information and experience which MAB would help to organize.

MAB developed a number of major projects at the outset including the major ecosystem or biotopes such as:

- Tropical and Sub-tropical systems,
- Temperate forests,
- Savannah grasslands,
- Arid Zones
- Mountain and tundra regions,
- Coastal zones, rivers and lakes
- Island systems

There were also thematic areas such as:

- Conservation of Natural areas and systems (Biosphere Reserves)
- Ecological impacts of pest management and fertiliser application on terrestrial and aquatic systems.
- Impact of major engineering works
- Urban systems (specifically urban ecological aspects of energy utilization in urban and industrial systems),
- Interactions between environmental transformations and genetic and demographic changes
- Perception of environmental quality
- Environmental pollution and its impact on the Biosphere

In 1971 the International Coordinating Council of MAB defined a project to deal with the establishment of reserves, protected and managed in various ways, to help meet the scientific, economic, educational, cultural and recreational needs of mankind. Such areas were regarded as essential for research in ecosystems of various kinds and of fundamental importance as baselines or standards against which change could be measured and the performance of other ecosystems judged, and for

conservation of gene pools of plants, animals and micro-organisms. The Council recommended development of a coordinated, worldwide network of protected areas, and suggested that they might be designated 'biosphere reserves.'

Since that time the focus on Biosphere Reserves and education has increased, and the profile of the international research has declined somewhat, with particular themes taken over by other dedicated international programmes or organisations.

9.2 The Current UNESCO MAB Programme

The ultimate aim of UNESCO, and the UK UNESCO Commission, is to promote "the inseparable goals of peace, mutual understanding and equitable and sustainable human development". It does this through a network of 195 UNESCO Commissions in Countries throughout the World and through the various international programmes.

The UNESCO Man and Biosphere Programme is one of four intergovernmental scientific programmes, along with the Intergovernmental Oceanographic Commission (IOC); the International Hydrological programme (IHP) and the International Geo-science Programme.

The MAB programme works on a number of the themes and often in conjunction with other International Science Programmes, and in partnership with NGO and other intergovernmental bodies. The Madrid Action Plan sets out the MAB programme which will be delivered over the next 6 years - mainly, though not exclusively through the network of Biosphere Reserves. It will concentrate on the challenges of:

- Accelerated climate change with consequences for societies and ecosystems;
- Accelerated loss of biological and cultural diversity with unexpected consequences that impact the ability of ecosystems to provide services critical for human well-being;
- Rapid urbanization as a driver of environmental change.

These will be delivered through the following action areas

- Cooperation, management and communication
- Zonation – linking functions to space
- Science and capacity enhancement
- Partnerships

The programme is not costed and will rely on extra-ordinary budget as well as other donor partnerships.

The promotion of Biosphere Reserves within UNESCO is as "learning laboratories" for sustainable development. Connections should be made with the Education sector to realise this potential. There is a proposal to produce a TV programme about the Biosphere Reserves featuring North Devon and its Malindi Twin in Kenya. Some funding has already been found (about 30% of the anticipated cost) to commission the filming for BBC World as part of the Decade of Education for Sustainable Development.

9.3 MAB in the UK

The UK government sees UNESCO role is primarily in education. "It is able to provide a forum for international debate, the establishment of global standards and indicators, sharing of ideas, analysis of experience and sharing of results. In terms of

science it should in particular take forward comprehensive policies and strategies for integrated water resources management". (DFID 2001)

The MAB programme in the UK is implemented primarily through the UK MAB committee, which sits under DEFRA International Wildlife Division in Bristol, and which provides the secretariat. No finances come directly from DEFRA (other than for reports such as this) or any other government body, other than time in kind provided by staff. The committee includes national (and devolved administrations) conservation agencies, biosphere reserve managers, research organisations, environmental NGOs, and the Urban MAB forum (box 4). Other countries have widely different arrangements as can be seen in Box 3.

The TOR for the UK MAB Committee are presented in Box 4, and these are broadly speaking consistent with the UNESCO guidance (Annex 1). Main tasks include: liaison between the UKMAB, UNESCO MAB (Paris) and MAB in other countries, as well as liaison with other relevant bodies and initiatives in the UK; increase awareness internationally of UK approaches to biodiversity conservation and sustainable development; promote UNESCO MAB concerns and philosophy; oversee, review, guide and support UK Biosphere Reserves.

Despite the ambition of the TOR, MAB in the UK has a low profile, and appears to lack policy recognition and support from the government and its various departments. The programme and the Biosphere Reserve concept are so broad that any department has an interest – but non sufficient to influence policy and action at the highest level. Very few local governments are aware of its philosophy, and the potential of Biosphere Reserves to meet local government commitments to sustainable development. A biosphere reserve is something in the Indian Ocean or the Amazon forest – irrelevant to most of those concerned with planning and development in the UK.

The committee is encouraging the current suite of 8 Biosphere Reserve to be fully functioning as defined in the Seville criteria. One is already functioning (North Devon), Dyfi in Wales and Dumfries and Galloway are producing their applications, the remaining 5 are in various stages of dormancy. A decision whether these should be continued will be made on the basis of the 10 Year Periodic review.

North Devon Biosphere Reserve has just launched its Strategy and will be seeking funding to deliver the programme. It will also be developing a European Programme

Box 3: MAB in other Countries

Germany

The German MAB Committee sits under the aegis of the Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, closely allied with the German Commission for UNESCO. Its main roles are to interpret UNESCO BRs in the German context, to oversee research projects on biospheres and to assess/review new and existing biosphere reserves

France

The Chair of the France national MAB committee is appointed by the Ministry of Foreign Affairs, and the committee has representation from the various relevant Ministries and from research organisations. MAB France co-ordinates the activities of a network of 10 biosphere reserves and encourages exchange of information, experience and personnel. The reserve co-ordinators meet regularly and share ideas in a newsletter published every two months. Two working groups are active – a forest group and schools group.

Canada

The Canada national committee for MAB is appointed directly by the Canadian Commission for UNESCO, with voluntary membership from government, research, first nations and business. It works mainly through voluntary working groups. Major activities include environmental education, traditional ecological knowledge, and circumpolar international scientific cooperation.

bid on Climate Change Adaptation and Mitigation strategies at a Biosphere Reserve Level with other partners in France, Wales, Germany and Spain.

Box 4: UK MAB committee Terms of Reference (2003) and membership

Chaired by the Department for Environment, Food and Rural Affairs on behalf of the UK Government¹, the UK MAB National Committee will:-

- Provide a UK focal point for the UNESCO MAB programme, maintaining liaison with the UK National Commission for UNESCO, the MAB secretariat in Paris, EuroMAB and, as appropriate, MAB national committees in other countries.
- Through the MAB secretariat in Paris and in consultation with the UK UNESCO national commission to ensure wider awareness of and interest in current UK approaches to enhancing biodiversity and sustainable development
- Establish and maintain links with other relevant UK structures such as the UK Biodiversity Partnership, the UK National Ramsar Committee the UK IUCN Committee, and the UK MAB Urban Forum.
- Promote in the UK and more widely the UNESCO MAB concerns for
 - the conservation of biological diversity
 - the promotion of sustainable development
 - the development of human and institutional capacity to cope with environment/development issues,identifying where UK MAB can undertake its own programmes and can influence and add value to other relevant UK initiatives and programmes.
- Maintain oversight of UK Biosphere Reserves and the Biosphere Reserve periodic review process, providing a high-level stakeholder forum for considering BR nominations and adaptations to inform ministerial decisions.
- Guide and support the work of the UK Biosphere Reserves and facilitate links between them and with Biosphere Reserves in other countries.

Organisations represented on the committee

DEFRA (chair)
Countryside Agency
Countryside Council for Wales
English Nature
Forestry Commission
Centre for Mountain Studies (UHI)
Northern Devon Coast and Countryside Service
Royal geographic Society
Scottish Government
Scottish Natural Heritage
UK MAB Urban Forum
Wildlife and Countryside Link
World Conservation Monitoring Centre

1. Note

In July 2005, at Defra's request, North Devon Coast and Countryside Service took over chairmanship and secretariat of the UK MAB committee. This was due to capacity issues within the department, who at that time, held the EU Presidency. To date, NDCCS has continued to hold chairmanship of the UK MAB committee with support and thanks from DEFRA.

Other MAB activities:

- Andy Bell has been developing projects in Africa related to ICZM and climate change, including how to draw in the funds from partnerships with the Carbon Credit trading companies on the "statutory market" as well as the voluntary market.

- Martin Price has been co-ordinating the GLOCHAMORE initiative (Global Change in Mountain Regions).
- Pete Frost and Gerald Dawe have been furthering work on Urban systems.

UKMAB has recently proposed a development programme for the MAB Programme in the UK including the invigoration of UK committee (Box 5)

9.3.1 Relationship with the UNESCO National Commission

“The UK UNESCO Commission is not an internal part of UNESCO. Rather, it is an essential partner to UNESCO and acts as a catalyst to involve key national players in the organization’s five programme sectors – education, natural sciences, social & human sciences, culture and communication & information. As an independent body, the Commission is the principle adviser to and works closely in partnership with UK government, enabling it to engage UK organisations in education, science, culture and communication & information. The Commission works within the context of the Government's main objectives in its relationship with UNESCO: to develop UK input to UNESCO policy-making and debate, to build a more effective UNESCO and to encourage support in the UK for UNESCO's ideals and work”.

There is a loose and ill defined relationship between UKMAB and the Commission - indeed the latter is not explicitly represented on the MAB committee. This seems surprising, and a strengthening of this relationship is probably desirable.

9.4 The potential role and activities of UK MAB

UK MAB, as represented by its committee, is the focal point for the interpretation and implementation of UNESCO MAB in the UK. This is achieved through three main areas of activity:

1. **Liaison and coordination** (between UK, EuroMAB and UNESCO MAB secretariat; between the international MAB and other relevant UK structures).
2. **Promotion and education** (of UNESCO MAB ideas, philosophy and experience into the UK; of UK experience in sustainable development and biodiversity conservation through the international MAB network).
3. **UK Biosphere Reserves**: coordinate, review, guide and support the UK BRs.

Reflecting changes in the international programme, there has been a shift over the years from significant involvement in international research programmes to a greater emphasis on the promotion of sustainable development through biosphere reserves, and research in support of this through the biosphere network. This shift makes good sense given the existence of other major international research programmes and organisations, and the more pressing need to demonstrate sustainable development in practice, and share experience globally.

The Committee has recently generated a set of proposed activities (Box 5)

Box 5: Proposed activities for UKMAB (pending this report)

A development programme for the MAB Programme in the UK including the invigoration of UK committee

- Redefine ToR for the Committee
- Produce a development plan, full work programme and recruitment drive for the committee.
- Activities to raise the profile of UKMAB in various departments

Increase the number of functioning Biosphere Reserves in the UK

- Support the Dyfi application
- Support the South West Scotland application development
- Carry out 10 year periodic review (2008-9)

Support Biosphere Reserve development and MAB activities in Southern Hemisphere Countries (these include capacity building for climate change adaptation and mitigation)

- Develop Specific projects on ICZM Malindi- Watamu Biosphere Reserve
- Amboseli Kilimanjaro Corridor Project on Climate change adaptation and maintain elephant migration.
- Bale Mountains National Park and Arabica Coffee Forest Ethiopia designation development and programme for Carbon Financing
- Support partnership development for the Ulu-Sagama Re-forestation project in Malaysia
- Support the development and work of the MAB committee in Sri Lanka.

Lead on the Urban Project

- Develop policy examples for linking Urban systems with their wider rural ecosystem service providers.
- Inclusion of Urban systems in the Biosphere Reserve concept.

Planning and development

- Develop a new planning approach aligned to safeguarding ecosystem services.

Source: *Bell pers. com.*

This implies a somewhat broader role than that defined in the current TOR, and in particular a more active role in international development. While this is laudable in the longer term, and fits well with the UNESCO vision of global exchange of knowledge and experience, we feel that the priority at this time should be to strengthen the “home base” – ie the BR network and activities in the UK – which is currently weak. Many other organisations are involved in promoting/advising on ICZM, carbon trading/climate adaptation and large scale wildlife management. As we have noted elsewhere, the unique strength of MAB programme lies in its network of BRs and the accumulating practical experience associated with them.

The current TOR are broadly in tune with the UNESCO guidance and consistent with a plan to reinvigorate the BR network in the UK, and we see no pressing need for change. There is however a need for more radical action.

9.5 Re-launch and restructure

The term “Biosphere Reserve” is a poor reflection of the idea and ambition as set down in section 4. To most people in the UK it sends completely the wrong message – separation; exclusivity; protection; top down regulation. The changes in meaning and approach to Biosphere Reserves which have evolved under UNESCO MAB in recent years are not reflected in the name of the designation. Most of the existing BRs in the UK do not score well according to the new criteria, or in terms of the favourable conditions listed in Box 1 (section 7) – and their very existence, dormant or otherwise - sends the wrong message about the meaning of biosphere reserve.

Yet the idea is a good one: it is a logical and common sense approach; it hits a wide range of policy “buttons” at UK and devolved administration levels; it chimes well with

the stated vision of most local and national government – but offers an extra dimension in terms of international “quality assurance”.

There are two ways forward: either drop the idea as confusing and outdated and channel money into other sustainable development initiatives; or re-launch so that all of those with an interest in sustainable development, or communities with a “place” image which chimes with the BR concept, become aware of its potential. We believe that the idea is good enough to merit the latter – especially since so many people are struggling to articulate the practicalities of sustainable development and the ecosystem approach, and there appear to be few codified alternatives - and none with global credibility. The timing is auspicious. This is the decade of education for sustainable development 2005-2014.

Our case studies – and common sense – suggest that strong support from local government and local politicians, together with representatives of resource users and a cross-section of the local business and civic community, will be critical to the success of any BR. These, rather than the nature conservation agencies, should be the target for any publicity/re-launch.

Such a re-launch might include:

- TV, radio or blog series on Biosphere Reserves worldwide ending up with a thoughtful programme in the UK;
- National re-launch conference, with new name, to which key local government representatives, resource user representatives (farmers, forester, fishermen, tourism etc) are invited;
- Press awareness – press articles in national and local papers.
- Dynamic website with new articles, editorials etc

We are convinced that in the UK context (and certainly in Scotland) the existing name would be a serious impediment to gaining support from key stakeholders, and is in any case a misnomer. This is therefore a key issue for any re-launch. Apparently, renaming was rejected in North Devon in discussions prior to Madrid, and at Madrid the renaming was also rejected by the Congress. However, the word Biosphere Reserve is not used for example in normal national or local usage in Sweden and several other countries. It is clear that with respect to individual BRs this is not a problem (e.g. Kristianstads Vattenrike (Water Kingdom) in Sweden). But an expression for national usage is also required for the re-launch, such as “Biosphere Area” or “Biosphere Management Initiative”. This would not preclude the use of the term Biosphere Reserve in the associated technical reports and agreements, which may be required to ensure international consistency.

The “lapsed” biosphere reserves should be downplayed in any publicity and, if there is no prospect that they can become “modern” BRs, should be withdrawn from the World Network on BRs by the UK government – preferably prior to any relaunch. As with the withdrawal of four UK sites in 2001, this would be seen as good practice by UNESCO and would show UK commitment to the effective implementation of the BR concept.

9.5.1 Committee structure

The UKMAB Committee will need to rebalance its membership to demonstrate the focus on sustainable development rather than simply nature conservation, and on places as well as agencies.

Several key departments and organisations need to be **represented**, including:

- The Sustainable Development Commission
- Local Government Associations
- The Department for International Development
- UNESCO UK Commission

It is also arguable that we need stronger representation of resource use interests, such as farmers, foresters, fishermen, tourism and sustainable food sourcing. Care would be required however to ensure that the committee does not become too large and unworkable. A way round this is to keep the core committee relatively small, but to promote active working groups which are more inclusive.

Although the current **committee chair** appears to be highly regarded, it is arguable – especially in view of the proposed re-launch – that the Chair should be a high profile political or celebrity figure. There are many such figures with a strong commitment to sustainable development who might relish the challenge – if the opportunities are effectively communicated. A professional process should be undertaken to identify such a person.

9.5.2 A positive enabling environment

The MAB programme is currently anchored within DEFRA International Wildlife Division in Bristol. We have discussed the strengths and weaknesses of this arrangement at some length with representatives of UNESCO in Paris, the UK UNESCO Commission, and members of the MAB committee.

An alternative to the current system has been suggested – i.e. to have the committee relatively independent of government and working more directly to the UNESCO National Commission, as is the case in France for example. This has the advantage of enhancing its international status, and distancing from what is seen by many as a top down government department. This is an important consideration for any re-launch, given the antipathy to nature conservation designations in many parts of the UK. If appropriately constituted, it might also allow for a rebalancing of emphasis on sustainable development rather than biodiversity conservation. The weakness of this approach would be a separation from national government, and all its resources, influence and responsibility. However – it is notable in France that this problem is overcome to some degree by having a chair appointed by the most relevant ministry, and representation of other key ministries on the committee. Although we recognise some weaknesses in this approach we believe it should be given careful consideration by DEFRA and the MAB Committee.

In any case, it is arguable that the current home in the International Wildlife Division of DEFRA is inappropriate, and again sends the wrong messages. DEFRA has a strong sustainable development programme, and, if the committee is to remain within DEFRA, it would probably be more appropriate to ally it more closely with this area of DEFRA's work, probably within the Strategy and Sustainable Development Directorate.

Some of the strengths and weaknesses associated with these options are presented in table 6.

Table 6: An effective home for the UK MAB Committee

Option	Strengths	Weaknesses
<i>UK MAB Committee remains under International Wildlife Division in DEFRA</i>	Minimal disruption. Strong links with international wildlife conservation interests	Association with wildlife – and in particular wildlife protection - rather than the broader concerns of sustainable development. Lack of influence on mainstream U.K. sustainable development policy and implementation.
<i>UK MAB Committee convened under Strategy and Sustainable Development Directorate in DEFRA</i>	Strong links with mainstream sustainable development initiatives in the UK	Association with U.K. Government - regulation, designation etc
<i>UK MAB Committee convened under UNESCO UK Commission with support from and representation of key Government Departments (DEFRA, DFID, Devolved Governments)</i>	Strong international and independent image. “Buy-in” from a range of relevant government departments. Shift away from “environmental protection” image.	No single focused ownership and responsibility. Unclear channels of influence. Risk of everyone involved; no-one responsible.
<i>UK MAB Committee set up as independent trust, but supported in the first instance by DEFRA</i>	Independence from Government and bureaucratic inertia. Streamlined policy development and decision making. Flexibility in terms of fund raising.	Lack of financial security, and professional time compromised by fundraising activities. Reduced influence over mainstream government policy. Yet another environmental NGO?

9.5.3 Resources

If the UK government accepts the arguments presented here – that Biosphere Reserves represent a uniquely practical and “grounded” approach to the promotion of sustainable development and the implementation of the “ecosystem approach” - then it should assist, at least initially, in the proposed re-launch. It is also arguable that in the longer term it should support a secretary/programme officer (minimum, say 1/2 time), either within DEFRA or the UK UNESCO Commission. This is rather little to ask of a major national programme as part of an international programme.

If on the other hand DEFRA does not accept these arguments, it may wish to follow the “trust” approach outlined above, and set UKMAB free to establish itself, and draw in funding in any way it can to support itself. This would not preclude funding from DEFRA and/or other government departments and agencies – but this would depend entirely on the case made by the trust.

The TOR for a programme officer would be primarily to promote and support the establishment of a network of Biosphere Reserves in the UK; to facilitate exchange of knowledge and experience between BRs within the UK and more widely; and to promote, facilitate and coordinate research across and between BRs. The officer would be accountable to the UKMAB committee and responsible for the delivery/facilitation of its programme (see below).

9.6 Costs and benefits of a “fully functioning” network

Once a significant number of BRs in the UK is established, there may be opportunities to benefit from some form of “network” organisation. Our review and survey (section 4.3) identified the following as some of the activities and benefits associated with networks in other parts of the world:

- Exchange of information and practice;
- Capacity-building for more effective implementation of the BR concept;
- Joint development of communication materials such as exhibitions, books, and websites for greater public understanding and formal education and training;
- Joint applications for funding. (e.g. research projects, ecological restoration projects, ecotourism information packages);
- Accreditation and training initiatives;
- Periodic reviews, by bringing experts to a specific BR to evaluate performance in relation to the Statutory Framework;
- Representation of BR interests and experience at national and international level.

While some of these activities and associated benefits may be achieved by individual BRs, a network allows for substantial economies of scale and greater sharing of experience.

If these economies of scale and associated benefits are genuine, then member BRs should benefit in terms of lower costs and/or higher returns, and should themselves be prepared to pay for some or all of the costs associated with the network, in the same manner as producers fund producer organisations. This would supplement, or ultimately replace (if a sufficient number of active BRs became established), any on-going funding by DEFRA or other government departments.

However, it should be remembered that EuroMAB and other regional groupings already exist, and it may be that - given this is a global designation specifically designed to encourage international exchange and learning - resources might be better directed to this level through some form of membership fee. In other words, the emphasis should be on strengthening the regional and global networks, rather than the UK network at least in the first instance. This would allow a few UK BRs to benefit from a larger European network in terms of both experience and resources.

This is important because we do not believe that UKMAB should rush to seek updated designation of “12” BRs. This should not be a numbers game. As we have argued elsewhere, a re-launch should encourage self selection, and it will take time for the idea to take hold, and for existing BRs to demonstrate success. One of the key lessons from the Kristianstad case study was the time it takes to establish an effective and widely supported BR.

9.7 On going functions

If an on-going secretariat/programme officer were to be supported at national level, its functions and activities could include the following:

- Assistance in the implementation of UKMAB functions as set down in the existing TOR and UNESCO guidance.

- Organisation and coordination of the “re-launch” as described above.
- Assistance and facilitation for those interested in establishing BRs (conditional on basic “favourable conditions”).
- On-going promotion, policy development, learning pieces, website maintenance etc.
- Organisation of annual networking/experience exchange meetings of UK BR managers and/or other key players in BR implementation.
- Periodic hosting of EuroMAB events.
- Leading and participating in MAB key themes such as Urbanisation, Climate Change, GLOCHAMORE etc and assistance with joint research initiatives and associated funding proposals.
- Once UK BRs and associated network better developed, facilitation of international exchange, mutual learning, and where appropriate development support for BRs in developing countries.

10 Summary of conclusions and recommendations

10.1 Conclusions

1. *The term biosphere reserve is a misnomer:* the designation is neither restrictive nor exclusive, except in so far as a legally designated core zone is required. Taken as a whole it is not a protected area as defined by IUCN. Rather it is the *only global designation – or accreditation – for an area demonstrating excellence in sustainable development in practice.*
2. Although there are alternative approaches to the promotion of sustainable development (such as Agenda 21; planning and development vision for some local government; codes of practice for business etc) none of these offer the combination of:
 - a short-term reward in terms of a globally respected designation/quality assurance;
 - associated marketing and labelling opportunities for sustainably produced products or sustainably managed environments;
 - a practical focus on an identified human-natural system, or a particular “place”, whose characteristics can be seen to improve through the BR implementation; and
 - international networks through which to share experience and develop partnerships.
3. *Reported benefits* associated with BRs are diverse, reflecting the scope of the BR objectives. Unfortunately there are few objective studies based on stratified survey of local communities, and there is very little hard evidence of positive marginal (or added value) benefit. Additional short term research will not remedy this. The BR concept is all about ways of doing things, the future, quality of life – a philosophy rather than a development mechanism. Benefits are bound to be intangible or very difficult to measure.
4. The *actual benefits* realised will depend upon the perceived need, the local capacity and opportunity to meet these through a BR type designation, and the political will.
5. *Governance* of Biosphere Reserves is highly variable and there is no international consensus or indeed UNESCO guidance on the best governance model. The Statutory Framework does however specify the need for participatory decision-making structures, involving a wide range of stakeholders, as well as provisions for a “management policy or plan for the area as a biosphere reserve”.
6. Given the scope of the biosphere reserve concept and its emphasis on sustainable development, it is not surprising that successful implementation would *contribute to very large range of UK and devolved administration policies.* In fact it is hard to find a policy to which a successful BR would not contribute. The Biosphere Reserve concept roots many of these policy aspirations within a defined area whose structure to some degree reflects people’s relationship with nature.

7. In making our *assessment* of the social, economic and environmental benefit as exemplified in the case studies we used a six-stage process, and this methodology could be used for evaluations of both existing and potential BRs. It is described in detail in Section 6.
8. The scope and complexity of the BR concept is such that it is unlikely to generate significant benefits unless certain *key conditions* are in place, relating to the place itself and its natural resources, the economic structure, attitudes and awareness of local people, and governance structures. These conditions are summarized in section 7. By far the most important characteristic is the presence of a group of motivated and capable people, broadly representative of the interests of local society, who believe in the idea.

10.2 Recommendations

9. This (8) suggests that Biosphere Reserves should not be selected and “designated” according to detailed criteria and a top down process; rather they should be “*self-selected*”, accepted by UKMAB and designated by UNESCO so long as they can effectively demonstrate in their proposal their determination and capacity to meet BR objectives.
10. We believe that the idea of Biosphere Reserve is good, but it is poorly understood, and its potential unrecognised in the UK. The name itself contributes to these problems. An effective future for the idea will therefore depend on a “*re-launch*” and communications initiative which would seek to seed interest with local authorities, land/water use interests and civil society more generally across the UK.
11. The “*lapsed*” biosphere reserves should be downplayed in any publicity and, if there is no prospect that they can become “modern” BRs, should be withdrawn from the World Network of BRs by the UK government as soon as possible. As with the withdrawal of four UK sites in 2001, this would be seen as good practice by UNESCO and would show UK commitment to the effective implementation of the BR concept.
12. The UKMAB committee will also need to *change the balance of its membership* to encompass greater representation of sustainable development interests, including the Sustainable Development Commission; Local Government Associations; the Department for International Development and the UNESCO UK Commission. Stronger representation of resource use interests would also be desirable, such as representatives of farmers, foresters, fishermen, tourism and sustainable food sourcing.
13. In the report we explore the desirability of finding a more suitable “home” for the UK MAB committee which currently sits under the auspices of the International Wildlife Division of DEFRA. The options include a move to the Strategy and Sustainable Development Directorate of DEFRA, a move to closer association with the UNESCO UK Commission, or the establishment of some form of independent trust-based organisation. *These alternatives have differing strengths and weaknesses and should be explored further by DEFRA/UKMAB/UNESCO Commission.*

14. *There is an argument for short-term funding for a re-launch and medium term funding for a programme officer, preferably at least ½ time. Without this the opportunities for taking forward sustainable development in a practical way may not be realised. In the longer term it is arguable that the benefits associated with BRs should be sufficient to allow for self funding of UKMAB and any associated secretariat and network organisation.*
15. *However, there should be no rush to designate “12” BRs in order to create a “fully functioning network” as suggested in the TOR. It takes much time and effort to raise support and awareness to a level likely to underpin a successful BR, as the Kristianstad case illustrates. In any case a few UK BRs can take advantage of the well-established European and global networks.*
16. *It is important that the focus for this work remains on the establishment of Biosphere Reserves. While opportunities for linking with international development exist and fit well with the UNESCO emphasis on cultural, scientific and educational exchange, the priority should be to get the groundwork done in the UK.*

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Annex 1: UNESCO GUIDELINES FOR ESTABLISHING MAB NATIONAL COMMITTEES

Establishment of MAB National Committees

The decision to create a MAB National Committee and the means for its establishment depend on the internal organization of each State. Hence the designation, composition and functioning of MAB National Committees vary from one country to another. The MAB International Co-ordinating Council nevertheless has drawn up some general guidelines as to their role, their composition and their functioning. In the absence of a MAB National Committee, a MAB Focal Point can be designated to carry out some of the functions that are described below.

Role of MAB National Committees

- A MAB National Committee is responsible for the activities making up the national contribution of a country to the international Programme on Man and the Biosphere (MAB) in the field of biodiversity conservation, sustainable development, capacity building and information sharing, and in particular in promoting the biosphere reserve concept, the World Network of Biosphere Reserves and its constituent regional networks.
- In co-operation with the UNESCO National Commissions, it serves as a liaison between the different institutions and ministries concerned by the MAB Programme and UNESCO (MAB Secretariat, Division of Ecological Sciences and field offices). It also serves to liaise with the national structures responsible for the other UNESCO programmes in environment and development, i.e. the IGCP, IHP, IOC and MOST, with a view to develop joint activities, as appropriate.
- It ensures the national participation, as a member or as an observer, whenever appropriate, in the sessions of the MAB International Co-ordinating Council.

The MAB National Committee should also:

- be associated with research on and conservation of natural resources and land use planning at the national level;
- be consulted on the participation of the State as appropriate in other international programmes in the field of ecology (in particular the programmes carried out in collaboration with MAB) and in the implementation at the national level of the main Conventions (Ramsar Wetlands Convention, World Heritage Convention and Conventions on Biological Diversity and Convention to combat Desertification) and Agenda 21, and related regional initiatives.

Composition of MAB National Committees

In order to take account of the interests of the scientific community and the administrative authorities, the MAB National Committee should:

- be composed of representatives of the main scientific research centres, and of the universities, institutions and ministries concerned, in particular the ministries in charge of protected areas and land use planning;
- be interdisciplinary (including natural and social scientists);
- include appropriate representation of biosphere reserve management/co-ordination agencies;
- encourage appropriate participation of women and young scientists.

Functioning

The MAB National Committee should be in a position to:

- whenever possible, have a budget to provide seed money to national MAB activities and funds for its functioning (meetings of its members, co-ordination at the national level of its biosphere reserves; participation in regional and international meetings, publication of research results and diffusion of information);
- organise periodic meetings and prepare a report on national activities to be addressed to the MAB Secretariat at least every two years;
- ensure exchanges of information and expertise and the development of communication systems and data bases, including updating of the MABnet and if possible the creation and maintenance of a national MAB web site;
- ensure, whenever possible, participation in regional networks and in the World Network of Biosphere Reserves.