

Policy Statement

Applying the Precautionary Principle to decisions on the natural heritage

Policy Statement no 96-01

1. Introduction

Scottish Natural Heritage (SNH) is a government agency established in 1992 with responsibilities for securing the conservation and enhancement of the natural heritage, facilitating its enjoyment and fostering its understanding. For these purposes the natural heritage is defined as ‘the flora and fauna of Scotland, its geological and physio-graphical features, its natural beauty and amenity’. In carrying out these duties we are required to have regard to the desirability of securing that anything done in relation to the natural heritage of Scotland is undertaken in a manner which is sustainable. SNH was the first public body in the UK to be given a statutory remit which mentioned sustainability. This perhaps reflected a perception at the time that the pursuit of sustainability was an issue on which environmental bodies should lead. Subsequently it has come to be viewed that it is an aim to be shared across a much wider range of interests and, indeed, the whole of society.

SNH has endeavoured to translate broad sustainability principles into guidance for those whose activities have the power to alter the natural heritage - for good or ill. In 1993 we published ‘Sustainable Development and the Natural Heritage’¹ which set out five principles which may be taken as guiding sustainable use of the natural heritage: Wise Use, Carrying Capacity, Environmental Quality, the Precautionary Principle, and Shared Benefits. This statement on the application of the Precautionary Principle is an extension of this work, amplifying the fourth of these five principles.

Uncertainty is common in environmental decision making because:

- Ecosystems are complex and dynamic, and do not have clear boundaries. Long-term changes (let alone chaotic and chance events) are difficult to predict, and tend to invalidate models of cause and effect. Although it is possible to develop a reasonable scientific understanding of simple ecosystems (eg. certain agricultural systems), this is far harder for the majority of natural ecosystems. In natural systems, we often simply cannot predict with any confidence what the effects of our actions might be.

¹ Sustainable Development and the Natural Heritage, SNH 1993, revised 2002, Policy Statement No. 02-01

- Ecology is a developing science, still with limited predictive capacity. Experimentation and data-gathering may be too expensive and time consuming to fit within decision making timescales. Data collection can be very difficult, especially in remote or marine environments.

Existing environmental assessment procedures tend to assume that impacts can be quantified and hence outcomes evaluated. Uncertainty tends to be downplayed, with the onus on a developer to state likely impacts with a degree of definiteness. The precautionary principle, on the other hand, acknowledges the need to make decisions in situations of uncertainty, rather than pretend it is not there.

The 'precautionary principle' is endorsed at a variety of levels of official policy and strategy. At an international level, the Earth Summit meeting at Rio in 1992 resulted in Agenda 21 which advocated the widespread application of the precautionary principle in these terms: 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'. At an EU level, the principle appears in the Treaty of Maastricht (1992), and also the Amsterdam Treaty (1999), which stated that 'Community policy on the environment shall aim at a high level of protection .. it shall be based on the precautionary principle ..'. A more recent EC Communication (2000) has outlined the Commission's approach to the precautionary principle, and established guidelines for applying it. The UK Government adopted the precautionary principle within the UK Strategy for Sustainable Development (1994): '.. the principle can be applicable to all forms of environmental damage that might arise; nor should it apply only to the actions of government'. It has confirmed that principle in its updated sustainable development strategy 'A Better Quality of Life' (1999), pointing to the unacceptability of saying 'we can't be sure that serious damage will happen, so we'll do nothing to prevent it'.

There is no general expression of the precautionary principle in UK law. However legislation translates the principle into specific requirements such as for integrated pollution control and for the regulation of genetically modified organisms in the Environmental Protection Act 1990, and for consideration of potential development impacts upon Natura 2000 sites in the Conservation (Natural Habitats, &c) Regulations 1994.

The principle is incorporated within national planning guidance. In particular The Scottish Office NPPG 14 on the Natural Heritage states 'the Government is committed to the application of the precautionary principle where there are good scientific grounds for judging that a development could cause significant irreversible damage to our natural heritage.' It recommends that the precautionary principle should be reflected in development plan policies relating to the protection of natural heritage and biodiversity, and should be applied in development control decisions, using an adaptive approach where possible.

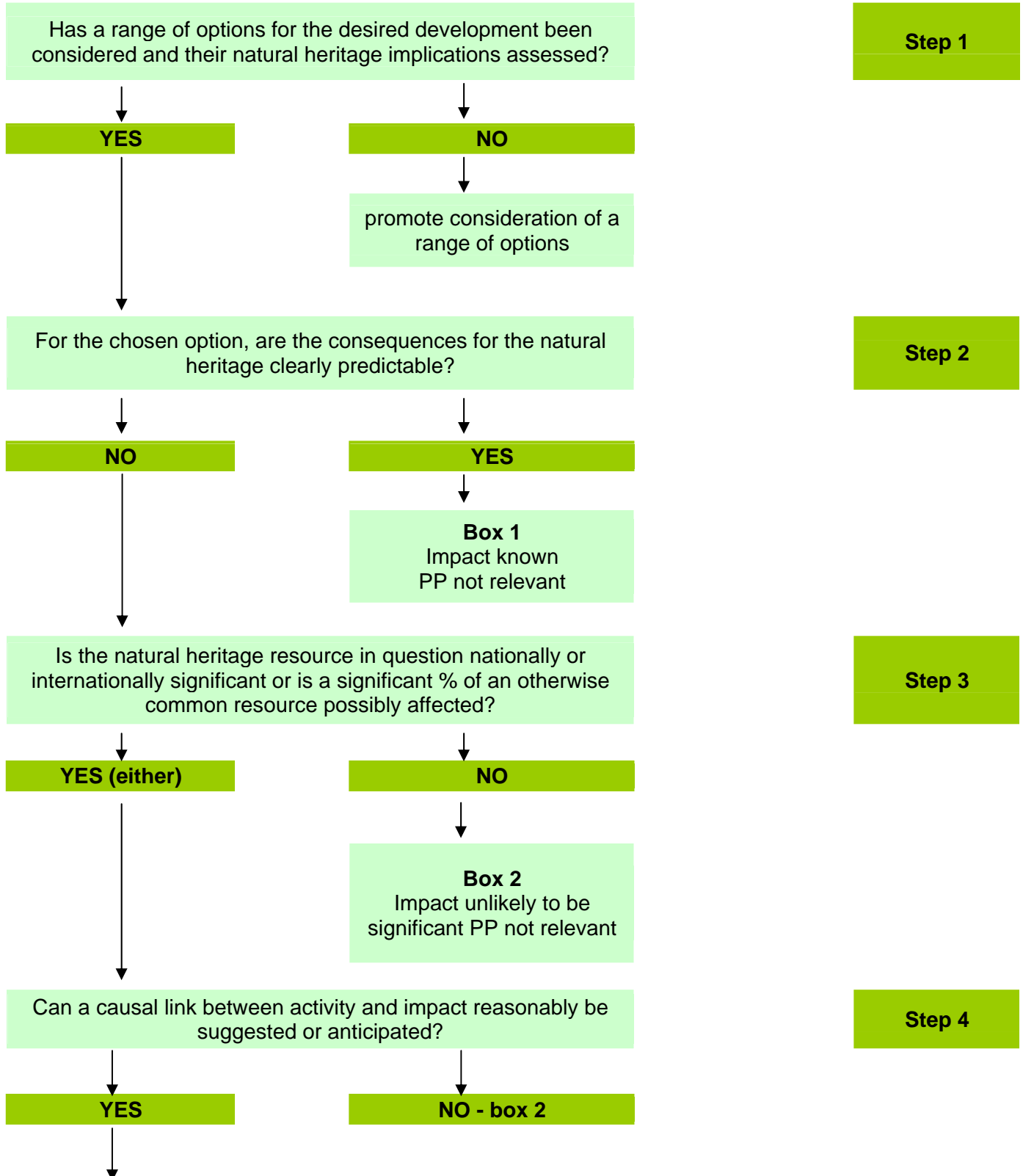
While the term itself has wide currency, in most cases the nature of the precautionary approach which should be followed in given circumstances is not spelled out. SNH interprets the precautionary principle to mean that 'full scientific proof of a possible adverse environmental impact is not required before action is taken to prevent that impact'. This paper considers general concepts of uncertainty and significance in terms of impacts upon the natural heritage, and creates a framework for deciding (i) whether the precautionary principle should apply, and (ii) what to do if it does. The guidance begins with a step by step procedure, which can be followed when the principle might be relevant.

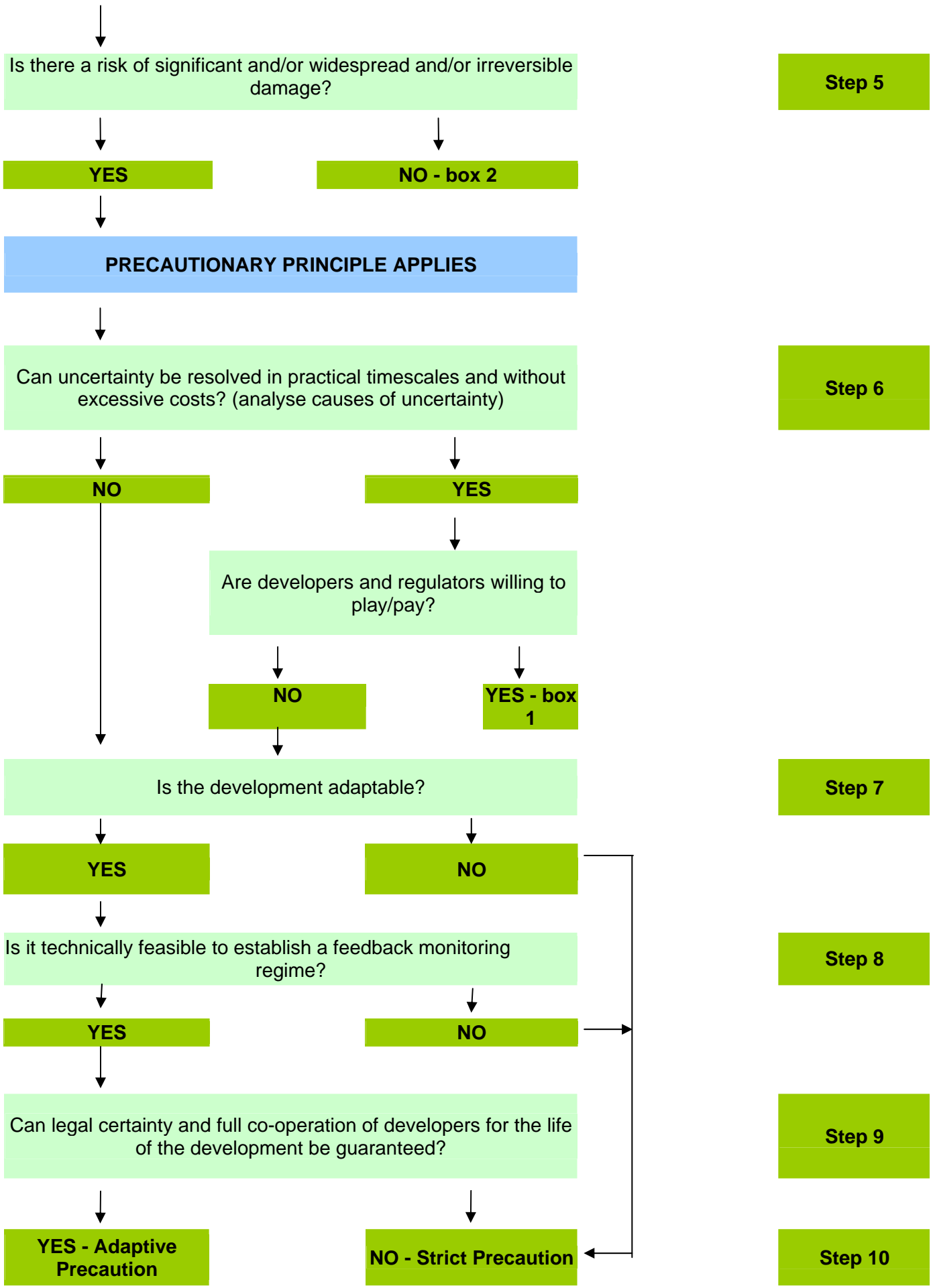
The approach focuses attention on the nature of the development, and the institutional framework for its planning and regulation, rather than just the environmental uncertainty.

The procedure described here could benefit from being more widely tested. It draws attention to the importance of reversibility/adaptability in development, which may have more general applicability than the relatively limited circumstances under which SNH has tried to apply it. SNH would be interested to receive any feedback, or simply to hear the experiences of those who try to use it.

2. A Procedure for Applying the Precautionary Principle

This gives a schematic overview of the procedure proposed in applying the Precautionary Principle to decisions which might adversely affect the natural heritage. This decision-tree is described in detail in section III.





3. Explanatory notes on Applying the Precautionary Principle

Applying this step-by-step approach requires some exploration and interpretation. In this section the rationale for the procedure outlined above is described.

STEP 1: Has a range of development options been considered?

This question is designed to draw attention to how the precautionary principle should ideally be applied at the strategic level of decision-making. Policies (eg in structure plans, local plans, corporate plans, etc) and programme proposals should promote consideration of a range of possible development, locational and design options to identify those presenting the least environmental uncertainty and risk. If at all possible, these should be favoured. The policies should also encourage *adaptability* in programme and development design where these may put the natural heritage at risk. This precautionary forward-look may be part of a process of 'strategic environmental assessment'.

In practice it may be necessary to move straight to Step 2 as such environmental assessment of policies or programmes is not yet widely applied. Regulatory systems (such as the Town and Country Planning system) only have a certain leverage in ensuring option appraisal. Nevertheless, there is still scope to encourage policies promoting the consideration of development options and adaptability. Applying the precautionary principle in the absence of such policies (ie 'late' in the development process and where developers and regulators are unfamiliar with the ideas) may result in reluctance to implement the principle and incur the additional development costs arising.

STEP 2: Are the consequences for the natural heritage clearly predictable?

Many activities have a combination of both certain and uncertain (but possible) impacts. The aim here is to list the areas of certainty and uncertainty. The wider the range of perspectives applied to this process the better, to facilitate the exchange of information and opinions. If there are no uncertainties (i.e. either there is certain to be an impact, or there is certain to be no impact) the procedure ends here as the precautionary principle is not relevant. A preventive approach, however, might be appropriate. If there are *any* uncertainties move onto the next step, where their significance will be assessed.

STEP 3: Is the natural heritage resource of significant importance?

It is unrealistic to expect to apply the precautionary principle in all cases where there is a risk of environmental damage. Indeed, to do so would discredit the principle. It should only be applied if the balance of likely costs and benefits justifies it: the so called "proportionality" principle. This balance cannot be precisely quantified, but is rather a matter of judgement. In SNH's view, an important aspect of this cost-benefit

assessment is judging whether the natural heritage resource in question falls within any of the following special protection categories:

- **the international / national designation system** eg Natura 2000 sites, Ramsar Sites, National Scenic Areas, National Nature Reserves, Sites of Special Scientific Interest, and National Parks;
- **international / national conservation status** eg Berne/Bonn Convention species, specially protected species on schedules or annexes to the Wildlife and Countryside Act & the Habitats and Species and Birds Directives;
- **significant proportion of an otherwise common resource** eg of a common species' population.

If an activity does fall within one of these categories, then an initial cost/benefit test is made, in that there may well be a significant cost of not taking precautionary action.

STEP 4: Can a causal link reasonably be suggested?

The general presumption in favour of development means that in most cases, one needs to be able to justify a linkage between cause and effect in order to warrant precautionary action. Government has indicated that the precautionary principle "is not a licence to invent hypothetical consequences". Environmental assessments should be helpful here provided they give due attention to uncertainties.

The definition of 'reasonableness' (can a causal link reasonably be suggested?) is a key point: there is no easy answer to this other than it is what a reasonable person might think. The principal way of assessing whether there is a causal link or not between activity and impact is to consider the proposed mechanism through which the causality could act. This may require review and evaluation of information from similar situations elsewhere, and relating that to the case in question. If a causal mechanism can reasonably be justified, move on to step 5.

The general presumption in favour of development does not apply to developments likely to have a significant effect on Special Areas of Conservation and Special Protection Areas. Article 6(3) of the European Union (EU) Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna states that in the case of a project likely to have a significant effect on such a site 'competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned....'. Thus in these circumstances, the onus lies on the developer to demonstrate that the development will not have a significant impact, if it is to be granted approval.

STEP 5: Is there a risk of significant and / or widespread and / or irreversible damage?

Assessment of the 'significance' of the impact of a development on the natural heritage is a judgement SNH has always had to make. It is assessed for a site in relation to the implications of a development on the objectives of the designation, and for a species in relation to impacts on its conservation status.

The risk of 'widespread damage' applies in the case of natural heritage resources which may not be rare or nationally significant but which may be subject to an adverse impact across the whole of their range or distribution, rather than in relation to a specific site.

The risk of 'irreversible damage', including damage which is reversible but only at high cost and over a long time period, is an additional consideration in either situation which reinforces the need for precaution.

If any of these considerations apply and especially if there is a risk of irreversible damage, the precautionary principle applies. Move on to Step 6. SNH interprets the principle as '**full scientific proof of a possible environmental impact is not required before action is taken to prevent that impact**'.

The emphasis of the procedure now is to see whether uncertainties can be resolved beforehand and whether sufficient safeguards can be applied to a development to allow it to proceed in a precautionary manner.

STEP 6: Can uncertainty be resolved in practical timescales without excessive cost?

Here it is firstly necessary to pin down the causes of environmental uncertainty. There are three main causes: complexity, lack of data and lack of understanding.

Complexity

Natural systems can be highly complex owing to their inter-connected and dynamic nature. This natural complexity is often increased by the existing effects of human activities and where the system in question is extensive. As a general guide, the sea, the atmosphere and many freshwater environments are likely to rank as highly complex due to their high connectivity, extent and the complicating effects of existing management activities. The need here is to itemise the main reasons for complexity and decide whether they are a cause of the relevant uncertainty. If so, research is likely to be needed to try and identify the links between cause and effect.

Data

Lack of survey data is a common reason for uncertainty. This simply may be due to the cost of obtaining data, or due to technical and geographical problems with collection. In practice, the two have the same effect.

Understanding

Research information or survey data may be available but may be difficult to interpret or there may be different interpretations of what they mean - both leading to uncertainty. In this situation it is important to ensure that all interested parties have access to and can come to a common understanding of available information and remaining uncertainties.

Classifying the causes of uncertainty in this way will help in the assessment of whether they can be resolved through, for example, further research, experimentation or survey, or through further debate on the interpretation of existing information. If so, can it be done in practical timescales and without excessive cost? If there is agreement that uncertainties can be resolved and they are, the procedure returns to and ends at Box 1.

STEP 7: Is the development adaptable?

If uncertainty cannot be resolved practically before a development proceeds, ie there remains a risk of adverse impact but we cannot accurately assess that impact, the question of whether the development can proceed but in a modified or strictly regulated way inevitably will arise.

The key question here is:

If the development goes ahead, can it physically be adapted, in the light of monitoring of its actual impacts, to remove any significant harmful effect?

For a development to go ahead in circumstances that would by now apply at this stage in the procedure, the initial focus should be on the development itself, i.e. the underlying cause of the risk, rather than any 'secondary' risks arising from use or operation of the development.

Given the importance of the resource in question, it is necessary to be sure that the risk, if it translates into a real impact, can be removed, and that it is not going to recur at some future date. This requires careful consideration of whether flexibility can be designed into the development itself. This is a central message of the precautionary approach and reinforces the requirement in step 1 for policies which promote both the consideration of a range of development options *per se* and a range of design options for particular developments which have associated risks of natural heritage impact. If the risk of impact arises not from the development itself but from its operation or use, the viability of mitigating measures should be considered in relation to steps 8 and 9.

STEP 8: Is it technically feasible to establish a 'feedback' monitoring regime ?

By now the possibility of an adaptable development has been established. In practice the adaptive approach will only work if it is technically possible to monitor the impacts of the development in both its establishment and operating phases. There may be problems with establishing a monitoring regime due to remoteness, durability of

equipment and / or the nature of the environment (eg underwater). Standards of proof to trigger action will need to be agreed by all parties. These will need to be high if they are to result in changes in the development.

STEP 9: Can full co-operation and legal certainty for the life of the development be guaranteed ?

By this stage it will have been established that, in theory, the development is both adaptable and its impacts can accurately be monitored. The key remaining questions are:

Are those responsible for development willing to co-operate fully in redesigning it, monitoring for potential impacts and linking monitoring results with action?

The absence of anything other than full co-operation would prejudice this course of action. For it to work, it would be necessary for those planning development to consider adaptations in the first place, to build-in flexibility, to co-operate fully in the monitoring regime and be prepared to implement required action. A key requirement is the need to demonstrate that resources are available to carry out such action and will continue to be available.

Can an effective legal framework be established ?

It is insufficient solely to rely on goodwill. Agreements need to be legally enforceable and underpinned by planning conditions and agreements or other appropriate regulations. Conversely, goodwill is essential for such agreements to work in practice - the parties must enter an agreement willingly.

STEP 10: Adaptive or Strict Precaution?

If the answer in step 6 is 'no' and in steps 7, 8 and 9 are 'yes', the precautionary principle can be applied in an adaptive way. Each of these steps the becomes a focus for attention. For example in Step 7 SNH would engage in discussion on alternative 'fall-back' development designs which would be taken forward if monitoring information reveals adverse impacts. In Step 9, the attention would be on the detailed terms of agreements and controls.

If the answers to any of the questions in steps 7, 8 and 9 are 'no', a strict application of the precautionary principle is likely to be appropriate – ie the development should not proceed on the grounds of unacceptable risk to an important natural heritage resource.

4. Conclusion

Scottish Natural Heritage's step by step guidance seeks to codify the precautionary principle and define what this principle means in practice. It recognises the need for good science in decision-making, but also that environmental complexity and consequent uncertainty limit the scope for obtaining scientific proof of impact within decision-making timescales.

The above guidance reflects several important aspects of the precautionary principle:

- A precautionary approach can be applied through a step-by-step procedure, with decisions at each step being adequately justified;
- A key feature of this approach is analysis of alternative development options, as well as of the causes of uncertainty and potential impacts; and
- Post-construction adaptability is at the core of adaptive precaution. Decision-making need not be once-and-for-all, but can accommodate a flexible, learning process, where assessment is ongoing, provided that ways of adapting the development have been identified if adverse impacts begin to occur.

It may be necessary to treat developments which proceed in circumstances of sufficient uncertainty as “real-life experiments”, and develop a database so that information can be used subsequently to better understand actual and potential impacts.

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