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**Development, Developers and the
Water Environment**

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Good evening everybody, and thank you for joining me for my final talk in the 2015-16 series on ‘Britain’s Troubled Waters’. Again, I want to thank the Frank Jackson Foundation for sponsoring the series, and for continuing their support next year when I will be looking at some global scale questions in a series entitled ‘The Bigger Picture’. I hope you will join me for some of those too.

Today, my talk is entitled ‘Development, Developers and the Water Environment’. I want to consider some of the controversies surrounding the influence of new development on the water environment today, particularly some of the disagreements that are most immediate to people in the UK, and indeed in many areas of the rest of the world. I will be looking at new developments such as housing, industrial premises or waste disposal sites, and why these are so controversial - after all, new housing is needed, we all throw away rubbish, and we all use the goods and the buildings and infrastructure that are created from the mined materials. In addition, the designs for these sites today can be beautiful and ecologically advantageous, so that they may improve the quality of human life and biodiversity. But quite often in practice they do not. So, what exactly is the problem with development and how do we reconcile our different views? I also want to look at the changes that have taken place in our system of planning over the last few years. I will not be focusing on the detail of the legislation, but on the general trends that have taken place, and where we might expect these to lead us in future. It is, however, a future that is in part in our own hands, because in theory if not in practice, we individuals have a voice in saying what should happen to our local and national environment.

The framework for consideration of issues of planning in the UK, and elsewhere in Europe is set by the European Union. When I drafted the abstract for this talk, many months ago, the subject of Europe and the advantages and disadvantages of the UK’s membership of the European Union, was not in the public eye whereas today it is on the front pages of most of our newspapers. We will shortly vote on whether or not to withdraw from the Union, BREXIT, possibly the most significant political decision taken by our generation – and one that will certainly affect our children’s lives.

A little aside on Europe on account of the Eurovision Song Contest apparently taking place this week. In 1974, Italy refused to broadcast their own entry because there was a referendum about divorce going on, and the title ‘Si” (Yes) might have influenced the outcome. Clearly some subliminal ‘BREXIT vote influencing’ is being brought to bear by persons unknown today, though. Italy’s entry this year is entitled ‘No Degree of Separation’, whereas Britain’s entry is ‘You’re Not Alone’. More of that, the influences on people’s thinking, later; I will spare you the delights of Joe and Jake’s song.

When I was a child in the 1950s I lived on the edge of a large city, Leicester, in an area where a lot of houses were being built. With other young children, I walked through nearby fields uninterrupted except by hedges, climbed trees, collected berries, threw stones into small streams, and paddled. That latter, and the sodden shoes, did get us into some trouble, actually. But we did not hesitate to step into the water, and did not need to think much about whether it was safe to do so. In messing about with nature, my own scientific curiosity was kindled. I wondered why there were small pieces of chalk in stream beds, amongst all sorts of other stones. Later on, I was to discover that these were the legacy of the Quaternary ice that had creaked and groaned across Leicestershire from the chalk areas to the east, the pieces having been eroded and transported by the moving glaciers. Access to nature has some well-recognised benefits to education.

Post-War UK house building was almost universally regarded as a good thing, bringing better living conditions to people who were being moved out of city slums. But there were downsides. By the time I was a teenager, houses and schools had covered most of the fields around about, and you could not easily find streams or berries, or many suitable trees to climb. You would also have needed to think more about any water you saw – it tended to be full of rubbish, the debris of development, and some contamination too. But in the 1960s most people did not mind too much; houses and schools, factories and roads were generally seen as a benefit and to be welcomed. That is not to say that there was no environmental protection for rural areas – Green Belts had been established some years beforehand to constrain city growth, and to prevent the car-induced urban sprawl that was becoming apparent in the USA. And there was legislation to control pollution too, but not generally the sort of legislation that could deal with contamination emanating from widespread construction activity. It was more geared up to stopping toxic point-source industrial discharges.

Today, many people appear to think differently. Even when development will, as a side effect, clean up sites that have been historically damaged, such as the largest development site in Europe at Old Oak Common in West London, things can become controversial. Old Oak Common, for those of you who are not familiar with the site, is an extensive area where essentially a New Town is to be built on the site of former railway sidings and semi-derelict industrial premises. The site is contaminated, and ugly. It is scheduled to have some 25,000 houses and flats, extensive open space and new shops, and an enormous transport hub.

For some people, this redevelopment is seen as an unrepeatable opportunity to produce an amazing new landscape, and to make some inroads into London’s undoubted housing shortage. The illustrations here show some views of the landscapes that might be achieved. However, development is often bitterly fought by local residents, who see it as an assault on their personal space, their community, or who assert that it is an attack on the common inheritance of everyone. No-one seems to want new housing, industrial sites, sand and gravel pits, or roads. Or at least they want them, but not close to their own homes. There are claims that places will be too crowded, that new land uses will conflict with quiet enjoyment. There will be dust, more traffic, pollution, flooding, loss of biodiversity and habitat. The developers - industrialists, builders, and sometimes Councils, are commonly viewed as villains, attempting to maximize their income or profit at the expense of others. The allegations are legion and some of them are probably true.

Is this position warranted, specifically in relation to the impact of developments on the water environment? Developments have many effects on the water environment, which I have spoken about previously. If we look firstly at housing developments, the principal direct effect of building new homes is to increase the demand for water locally. It may not increase the demand for water much overall, nationally or regionally, because the people who move there were presumably living somewhere else beforehand and using water, but it can provide an immediately obvious and broadly quantifiable demand locally. In reality, the demand per head may be slightly greater than before too, because individuals use more water when they live in houses than flats, and when they live in smaller family groups or as individuals, compared to those in larger groups such as extended families. This new localized demand has to be met from somewhere and today, when we build houses, the assumption is normally that the demand can and will be met somehow. In the case of industry, factories also can consume a lot of water, although they have become much more water efficient in the last few years. The figures for Old Oak Common ca be seen here, and there is indeed a likely increase in the demand for water and the runoff, reductions in infiltration,

Water shortage is rarely seen as a reason to refuse permission for development. In one sense that is an adequate position, since at the moment we lose a lot of water from our supply network, especially in areas that are being redeveloped from Victorian industrial premises; the pipes are frequently leaky. So redevelopment offers the possibility of sorting that out and putting in new non-leaky pipes, and water efficient apparatus. However, the general growth in water use cannot continue indefinitely. We each use about 150 litres of water every day in our houses, although we drink less than four or five litres. The rest is for flushing the lavatory, brushing teeth, washing up, washing clothes, showering and so forth. If we add up the total, it is about one cubic metre for drinking, in a year, but 50 to 100 cubic metres for the rest of the household chores. On top of that, in practice each of us ‘consumes’ a further 2000 cubic metres to grow the food and textiles that we use in a year. Some of that will effectively come embedded in the food imported into the area (the economist Tony Allen calls that ‘virtual water’) but some is used by industry and farming in the UK. In the case of Old Oak Common, that water will have to come from outside the area, so some of the hydrological problem will be externalized.

You might say, with some justification, what about the increased possibility of flooding created from impermeable areas around our houses, and from the roads and other roofs? The hydrological cycle is being altered in more subtle ways as well, by housing development, and with large areas of paving, this adds up. Again, it is possible to design for this, to build sustainable drainage systems that accommodate the sudden local runoff by trapping it in urban ponds and grassy or reed-lined depressions, allowing it to infiltrate back into the ground over a longer period rather than running straight through a surface water sewer into the nearest river. It needs the appropriate encouragement though example, or policy and legislation, or incentive, for designs to be done appropriately; at the moment we do not have this, and in fact a UK Parliamentary Bill about sustainable drainage was only partly successful this week – agreed by the Lords, and turned back for the most part in the Commons. The balance of water before and after development is shown in the histogram, and the map indicates how the surface and dirty water could be managed, to minimize the effect. But there will nevertheless be an effect.

On a broader scale, the Thames already shows the effects of increasing abstraction for London’s water supply. Even bearing in mind the monitoring difficulties, actual low flows (averaged over a period of a month) dropped significantly over the course of the last 150 years as the city grew. Further away, many of the smaller rivers in the south of England are also, as Fred Pearce points out very persuasively in his book entitled ‘When the Rivers Run Dry’, over-abstracted. Small chalk streams have in the past had boreholes put into the underlying aquifers nearby to take water to rapidly growing towns such as Swindon, as well as London. These streams, if not the Thames itself, can be left dry in summer, with their fish (trout, for instance) dead or dying, and the other wildlife that they harbor, the mayflies, otters and lapwings, under pressure.

It is possible to prevent this situation arising, and in order to protect some streams, water can potentially be pumped from further afield into the headwaters of the streams in South East England– from the Avon, for example. Or flows may be maintained by building reservoirs that can hold winter rains until the summer, when the water is needed to top up rivers and bathtubs. Or a complex pumping pattern can be managed to pump water into aquifers when there is plenty in streams, and pump it back out again and into the river when water levels in the channel are low. This can provide some immediate environmental protection, and maintain the riverine ecology, even if quite a bit is almost immediately lost into the riverbed. So, even with the likelihood of serious climate change, and more prolonged summer drought periods, perhaps there is not a problem? (We should note that there remain in place plans to evacuate some city areas in the event of serious droughts – Yorkshire Water, for instance, came close to evacuating Bradford and Halifax in the mid 1990s and according to Fred Pearce, the plans remain in place. But they have not been used). In order to decide what to do, and perhaps what to sacrifice to meet the water needs of growing cities, we need to have a means of agreeing what we want to do, and whether proposals are acceptable - some sort of policy. When I was teaching undergraduates about development and water policy some years ago, my students gave me a little present that suggested a few ideas on how to manage water shortages…!

Whereas the challenges at Old Oak Common are hypothetical since there will need to be a thirty year development plan, there are splendid examples of developments from former industrial sites that demonstrate what can be achieved using what is becoming known as a ‘Blue Green’ approach to development. The centre of Deanshanger village, to the west of Milton Keynes had the old Britannia iron works with ground and groundwater contamination, an unsightly culverted stream (King’s Brook) subject to flooding, and derelict buildings. It was agreed to allow housing, and using innovative design techniques, a very attractive, watery and biodiverse environment is now emerging, which also allows access for walking in formerly inaccessible areas. I am indebted to Landscape Architecture practice Ilman Young for the 2007 and 2014 photographs showing the implementation of their ‘blue-green’ designs when housing was being constructed, and now. But this site too was controversial at the time.

Quarrying, another common type of development, can similarly have direct and indirect hydrological impacts, and is again usually unpopular with local residents. The GoogleEarth image here shows a typical sand and gravel site, this one not far from my own house. During the operation of a site, drawdown of the groundwater, needed to keep the base of the holes from which water is extracted, dry, sucks water out from the adjacent land too. Water is often used to wash the minerals too, so the total use can be quite high. Research on the potential impact of such development is quite challenging. Although we know that pumping water from sand and gravel aquifers creates a cone of depression around the borehole, it is difficult actually to establish from pumping tests how widespread the effect will be. The high levels of uncertainty about the exact size of the ‘cone’, lead to concern about the effect on mature trees, on foundations and so forth. The scientifically-identified effect of one development site on hydrology is usually small overall, and the water levels often recover relatively quickly when the pumping stops, maybe in a year or two. But it is significant when it lies next to people.

Again, restorations of quarries can create some amazing landscapes, if sometimes more controversial. The direct impact of a hole in the ground and the cessation of pumping is clearly a potential lake or pond, which can be a benefit to biodiversity if what it replaced, mono-cultural agricultural land for example. If the quarry site is itself developed, again new habitats and opportunities can emerge, either naturalistic or more engineered in their appearance. The illustrations here show some proposed quarry restoration sites in China, for example. Not yet, built I should add, and to my eyes at least rather incredible.

Summarising, on the direct and indirect impacts of development on landscape we need to consider both the hydrological and other broadly scientific effects that can be established through measurement, but also those impacts that are more subjective, or even those alleged to be priceless – the aesthetics of a landscape, for instance, or the values of biodiversity.

So why are there problems, when such amazing beautiful landscapes, with great water environments, and public benefit, can be created? Why is there conflict between ‘developers’ and others? Part of this conflict is arising because, as economists describe things, elements of the environment are being turned from being a public to a common to a private ‘good’. We can conceive of many types of ‘thing’, let us say goods and services, on two axes. The first, the vertical axis here, relates to the accessibility of the good or service. Economists describe this as ‘excludability’ – how easy is it to exclude people from getting at or using the service? There is clearly a spectrum, but things such as air, or fish in the sea, are relatively accessible, as are the BBC broadcasts, and the national defence services provided by Government in the UK.

The other axis relates to how ‘subtractable’ the thing is. The other term for this is ‘rival’. If something is subtractable, then an individual person’s use of it does not in itself deprive another person from using it. Public transport is a good example of a relatively non-subtractable good, because when I have finished my journey, the seat is still there for someone else to use. Satellite TV is another – we can all use it (assuming that we can pay for it). The Internet is an interesting one because actually we use up bandwidth. Attractive rural scenery is another relatively non-subtractable good; my enjoyment does not preclude yours (so long as I behave reasonably and don’t bombard you with drones, for instance).

For water, when the number of people were relatively small, water was non excludable, and of low subtractability. It would be difficult to stop people getting access to it, by fencing for instance. Rainfall replenished the water sources, and the impact of people on quality was slight and could be accommodated by normal ecosystem processes; we call such a classification, in the lower left of the diagram, a ‘public good’. However, as time has gone on, and our demands on the natural water system have increased, it is increasingly looking like a ‘common pool’ resource, where the use I make of the resource, the water, might deprive you of it for a long time. You may be familiar with the phrase ‘Tragedy of the Commons’, which refers to goods effectively owned by all of us, but where there is potentially some incentive for individuals to overuse the resource, to get in first, at the expense of others who also have a theoretical right of access. If development of Old Oak Common draws in water from elsewhere which is effectively consumed, then that water cannot reasonably be used for topping up chalk streams in Berkshire and maintaining their aquatic habitats. So water is often a ‘common good’ and common goods require some level of group agreement on the rules.

Today, it may be that water is now moving towards the upper right quadrant of the diagram. In some parts of the world this is already the case; freshwater is a private resource, sold, and access to those who cannot pay is almost entirely restricted. In the UK, we have a privatized water system where private companies ‘own’ water that falls as rain, but our arrangements are such that we do not let people die of thirst or make them collect water from public ponds. However, innately, when the stakes are high because water is such a fundamental resource, private goods will create conflict both from a philosophical perspective, and in reality. How did we get to this position and how can we deal with it?

To address the problems of common goods, we have gradually implemented a planning system, which attempts to accommodate the various complex and potentially conflicting uses that are proposed for water and the land uses that influence it, to achieve the optimum outcome for all of us. We do not want conflict over common resources in the way that existed in the early nineteenth century, for instance, at least not explicitly. The policies are supposed to be informed by evidence – scientific and technical evidence about the characteristics of different land uses, too. But water management does represent, as I have said many times previously, a genuinely ‘wicked’ problem, with so many complexities that the challenge is huge. Not only do we not understand everything that is happening hydrologically, we certainly do not agree (as my examples about Old Oak Common and other developments demonstrate) what is important, and we may not share a common language in which to discuss the issues. Groups have completely different world views (‘amazing opportunities’ versus ‘community wrecking schemes’ for instance). More recent research also suggests that the problem may be ‘super wicked’ with time running out, authorities that are partial, or governance arrangements that are weak.

In the early 1970s, such land use and water planning as there was emanated from the UK; the oversight of the EU was absent. The first thing to note is that in the 1970s, the multiple aspects of water management were primarily in the public domain; the privatization of water and sewerage companies took place only in 1989. Secondly, there was a widespread view that water resources were very limited and that there was insufficient capacity to provide for the developments of housing and industry that were scheduled, especially in south east England; our current concerns there are not new. Thirdly, regulations and guidance for water and land use were generally developed at national level and enforced locally in a rather piecemeal fashion. Fourthly, the links between land use and water parameters – amount, quality, acidification, eutrophication, flooding, drought and so on - were only just being explored by researchers. The detailed hydrological impacts of UK urban development, and afforestation were still unclear although the general trends were obvious and it was known that water quality, for instance, was poor in many rivers. Nor was climate change a significant concern. And finally, in this very brief summary, a number of large nationally-focused schemes for reservoirs and other storages were being planned, despite (and again we note similarities to today) public objections, and in the knowledge that investment in pipes and other infrastructure was challenging for the public sector. By and large, public opinion was not sought.

How is it done now, with Britain currently part of the European Union? By contrast, in 2016, the EU has one of the most comprehensive sets of environmental policies and regulations in the world, about 400 pieces of legislation, addressing environmental challenges in water, air, chemical regulation and climate change. The overarching strategic intent of politics generates policies that are implemented and enforced at national level. Research on the outcomes should, in theory, feedback to influence the policies themselves, and the ways of dealing with them nationally.

Over the years these policies have evolved from narrow environmental and human protection concerns such as regulating the use of dangerous chemicals, and avoiding water pollution, towards more ambitious and complex targets such as sustainability, and global environmental governance. Environmental concerns have increasingly affected other sectors to greater or lesser degrees – energy, transport and manufacturing industry for example. The EU does help to shape international policy too, on such things as bird habitats, but in turn is itself shaped by international commitments – a two-way interaction. The EU is generally wealthy, so at face value we might assume that these 400 regulations have not hampered economic growth unduly. It is nevertheless sometimes alleged that the binding measures, shaped by complex governance arrangements (and perhaps by ‘behind the scenes’ actors too) based in Brussels, and implementation measures locally in the UK or in other member states, hold us back in developing our water resource management, and our economy. It is certainly true that the ‘wriggle room’ of EU Member States is limited, and for some people this is an unacceptable intrusion into the way we do things.

There are nevertheless five reasons why European environmental policy has been important. Firstly, environmental issues are not constrained by national boundaries. Air and marine pollution crosses the North Sea, and fresh water flows from one area to the next –from Wales to England in the UK for example, so artificial national boundaries are unhelpful for management.

Secondly, different national policies on some areas of environmental protection would undermine the principle of free trade within the Union, on which the EU is founded. Harmonisation makes sense, in that one area cannot develop or use (say) its water resources in a cheap but very damaging way, lowering environmental standards to gain benefit to pricing its industrial products, at the expense of other states.

Thirdly, the economic ‘race to the bottom’ has been avoided and environmental quality and human health have been improved across the EU – more in some places than others, and still with some areas needing to catch up, but overall it has worked. Britain, for example, when it joined the EU was frequently referred to as the ‘Dirty Man of Europe’ largely because of the poor state of its rivers. One might quibble about exactly what has underpinned the general improvement in water quality in Britain’s rivers since the 1970s, but EU policy and legislation, particularly the legislation falling within the Water Framework Directive, has certainly driven change.

Fourthly, the development of supranational EU environmental policies has stimulated other forms of collaboration, including on the development of things other than environmental quality. Involvement of different levels of government from national to local, has been stimulated, and this is generally, I think, a good thing. The theme to which I would make specific reference to is cross-national collaboration for scientific research, including environmental science, at EU level, but we can gain other useful insights about policy development by studying what has happened, and the roles of specific actors such as elected representatives, officials, national governments, regional and local organisations, lobby groups, multinational corporations and individuals, in relation to the negotiations required to secure environmental legislation. Analysing these interest groups, and how they have played out successfully, does give insights into mechanisms for other negotiations.

Finally, citizen opinion or local community input has been flagged up by Europe as being a crucial component of environmental policymaking in relation specifically to development, for reasons that will be mentioned later on, and this has been incorporated into UK practice in many realms, not just environmental arenas.

Across Europe generally, in both the established states and the recent joined, people are overwhelmingly of the view that the environment is important to them, and that action to preserve and enhance it is required at European level. The Eurobarometer survey done in 2014 illustrates some of this. 95% of the large number of EU citizens who were interviewed for this survey reported that environmental protection was important or very important to them personally, a figure that has changed very little over the years. The UK figure is very similar to the EU average. The commonest worries in 2014 were associated with air pollution and various aspects of water management; half of the interviewees reported fears about water pollution, for instance, with more than a quarter also worrying about future water shortages. As we have already seen, this appears to be an entirely legitimate fear. Interestingly, EU citizens appear to be rather sceptical about the environmental information they acquire, with only 50% believing scientists (who were held in greatest regard), and a mere 6% trusting national governments. To be fair, the EU itself did little better on that, testifying to a wide suspicion about politicians generally.

One of the interesting contrasts between the UK and the rest of Europe, however, relates to the impact of environmental legislation on the economy. One possible economic narrative would say that we have to sacrifice environment for economic growth, or, for example, the health of the water environment for development. In fact, 74% of EU citizens agree slightly or completely that environmental protection can boost, rather than constrain economic growth, the UK figure being only a little lower. In the case of those expressing total agreement, the figure is 29% for the EU generally but only 21% for the UK. Only 18% of British people would totally disagree, having a countervailing position that environmental legislation is limiting to economic growth, and agreeing with Gorge Osborne, for instance that the Habitats Directive is getting in the way of industry. UK residents are not necessarily less wholehearted in their support for Europe, but their enthusiasm is nevertheless tempered by views that economic growth would need to be constrained a little, but that this is a price they would pay.

Again, when asked about views on the appropriate location for decision making, British respondees were much more likely than the average EU citizen to think that decisions and legislation should rest at national level, rather than be shared with the Commission: 50% as opposed to 64% across Europe. These figures are not without their own methodological criticisms, naturally.

There are also people who hold that the views of the public, even if it can be established what they are, are not as valuable in sorting out planning and land use or water developments, as those of professional people. The recent naming of the Natural Environment Research Council’s new research vessel provides a great example of this. ‘Boaty McBoatface’ was overwhelmingly chosen as the name in a public poll last week, but the authorities decided otherwise, perhaps not unexpectedly. RSS Sir David Attenborough it is to be.

If we also consider environmental professionals’ views, they are overwhelmingly positive about Europe, as the most recent survey undertaken by ENDS in conjunction with Society for the Environment has demonstrated in April this year. 77% were in favour of the Remain’ campaign, with only 14% saying they would prefer to leave. Support was particularly strong with younger professionals, and for the efficacy of the Union’s policies. Rather than just summarise the position in relation to that, I want to analyse the feedback a little. There are some key criteria that should underpin policy making in any domain, and these have been used as the basis for some sort of analysis shown in my tabulation. Whilst the EU is generally felt t be efficacious, inclusive and able to learn from itself, it was overwhelmingly thought to be wasteful. Moreover, there remain problems with European environmental policy, perhaps picked up in some cases more strongly in British opinion than elsewhere. Professional respondents do think that the EU Agricultural Policy, and the Common Fisheries policies produce net harm to the environment. A surprisingly large number also felt that there were instances of it holding back the development of standards, but they rejected (albeit by a narrow margin) the notion that overall the EU resulted in a loss of flexibility over the environment. If Britain left the EU, professionals thought that water and habitat policy would come under particular threat.

Let me conclude by returning from what may be a dangerous European digression, back to the UK. We have environmental conflicts with new housing, mineral exploitation industry and the like, and we try to manage them through development planning policy and water-related legislation. We also recognize that water scarcity will become increasingly important over the next few years if demand grows unchecked; industrialists are particularly concerned, and water is now seen as a limiting factor in some areas. Most people appear to think that the current policy and implementation situation with the UK within the European Union is broadly appropriate and has served us well over recent years, although the EU is thought to be inefficient. In their views the EU is broadly effective, accountable, and able to learn from evaluating its own practices. We know that it is easier, if not easy, to deal with measurable impacts of development such as water use (in cubic metres), or the extent of increases in flood levels (in metres) and areas, or carbon emission reductions (in tonnes) even if there are scientific uncertainties, for example in how far the cone of depression of a quarry will spread. But we still have huge debates at local level with development and are going to need some innovation to secure further progress.

The main challenges relate to how we represent different people’s perspectives on intangible aspects such as the scenic value of landscapes, or the issues around biodiversity: the values they hold (pro or against development on the Green Belt, for instance) and how we reconcile different world views. At the moment most natural capital is valued at nothing, or said to be priceless and hence not able to be valued, so it gets damaged by developers. If things had a researched monetary value, they would at least be considered. This is the approach being pursued by the UK Natural Capital Committee. The Natural Capital approach adopts a view that says that although we cannot value a precious asset such as a rare butterfly, or a unique water habitat, and hence cannot compensate if it is lost or damaged or reduced, we may be able to work out the cost of the quantifiable services to humans that an environmental asset provides, which would be lost if it were removed by development. We can put a monetary value on those. For example, a river basin with a healthy set of soils and trees provides services such as maintaining water supplies by promoting infiltration, and flood mitigation by holding back rapid runoff. It may allow water-based transport in its rivers, and even maintain the mental health of those who live within its watershed. Values can be put on these ‘ecosystem services’, which will allow them to be evaluated when any proposed development is being contemplated. This approach might also allow compensation to those affected by developments, for the loss of the ecosystem services they currently enjoy, or to allow reinstatement at a later point. It would, in part, allow us to evaluate that negative impact of the EU common agricultural policy, perceived by so many people whether professionals or others, which (as Tony Juniper maintains) is iniquitous and economically wrong in valuing cheap food over skylarks. Why do farmers not have to bid for subsidies or grants, for instance? Everyone else does. They could factor in the environmental benefits, the additions to natural capital of their farming proposals. We could also evaluate the impact of certain types of food on the costs to human health, if we wished. In this way, agriculture would be seen not as a separate entity, but as part of an overall plan.

For housing and quarries, reinstatement to beautiful and environmentally valuable habitats with advantages to the water environment, ecology and public access could also be evaluated in the same way, by considering the value that these services provide, and what would be lost or gained at different points and by different people, if development went ahead. Again, compensation could be paid if the assets were valued properly, but there would be a basis for planning proper reinstatement too.

The counter argument says that an approach through ‘Natural Capital’ represents a privatization or commodification of the environment, cannot represent the spiritual value or intrinsic value of that rare butterfly, and must be avoided. Water and forests, for instance, would be valued above the environment of butterflies, or rare butterflies themselves. This world view would suggest that there is a predisposition to placing elements of the environment into the top right box of my diagram concerning common goods and private goods.

The UK is the first nation in the world to have a Governmental Natural Capital Committee with cross party consensus, that has developed a 25 year plan for valuing nature and guiding subsequent action. More data is required to know how to do these valuations more precisely, but this should not, in my view, prevent us from starting now. Professor Dieter Helm is working on this, and has an interesting website with methodologies and discussion about trial sites for investigation. We need to understand what the right questions are that we need to answer about developments of different types, and what the quantifiable assets are that we need to maintain. This will guide our research.

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