groups. [94] It should also be set within a framework of multi-level governance facilitating linkage to national level enablers and delivery tools.

85. The Scottish Universities Insight Institute has undertaken research[95] that highlights the increasing role of Participatory Catchment Organisations, such as the Westcountry Rivers Trust (see Box 6), in the delivery of water legislation. The Institute pointed out that such organisations are in a good position to engage with stakeholders as they are seen to be "trusted intermediaries". This was a perspective shared by the WRT, which described itself as "an ethical broker" between the market force and the provider of the service, the farmer. [96]

BOX 6

Westcountry Rivers Trust[97]

The Westcountry Rivers Trust (WRT) is one of a number of rivers trusts which have been set up across the country as independent organisations. It is an environmental charity established in 1995 to secure the preservation, protection, development and improvement of the rivers, streams, watercourses and water impoundments in the West Country and to advance the education of the public in the management of water.

The WRT works in partnership with external individuals and organisations to share expertise and facilitate better information transfer. By collaborating with a whole range of stakeholders—ranging from individual businesses through to academic institutions, NGOs and government departments—the Trust aims to circumvent sectoral interests and encourages joint solutions to the complex environmental problems our society currently faces.

The WRT operates the ecosystem services approach, which allows environmental change to be implemented at the appropriate level and empowers individuals and communities to take ownership, and thus responsibility, for the work, creating sustainable change. For example, a farmer could be paid to undertake a soil test, which might establish that the soil had sufficient, or excessive, levels of phosphate. In that instance, the farmer might be advised to shift to using fertiliser without phosphate, thus reducing the farmer's costs and those to the river.

86. As highlighted in their Water White Paper, the Government have embraced a Catchment Based Approach (CaBA), for the second round of RBMPs, along the lines of participatory and community-led schemes in countries such as Australia, New Zealand, South Africa and the United States. In England and Wales, one hundred catchments have been identified by the EA[98] for the purpose of the catchment based approach.[99]

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94 Such as Healthy Waterway Partnership, Queensland, Australia (Q 21)

95 http://www.scottishinsight.ac.uk/Portals/50/Water%20Management%20-%20Policy%20Brief%20(2012).pdf

96 WRT Q 188; EA Q 251

97 http://www.wrt.org.uk/mission.html

98 http://www.environment-agency.gov.uk/research/planning/131506.aspx

99 Technically, a catchment can be any size but the Environment Agency has described 100 of roughly similar size as a category below that of river basin districts. The catchment based approach being trialled in 2012

87. Most of our witnesses accepted the advantages of a water management model that includes local level participation.[100] For example, Wessex Water has been working with farmers in their catchments where nitrates have been a particular issue.[101] One witness, though, cautioned against blanket support for catchment management: "for some companies, a catchment management solution is obviously the best way forward ... Other companies would not want to go down that path, because it would not make sense. For others, a treatment works is the best solution in terms of value for money."[102]

88. Elsewhere in the EU, processes akin to catchment management have emerged, but this may be more related to existing governance structures than to a decision to apply a new type of management.[103] By way of example, we heard from the French government that, when there is a drought or threat of water scarcity, the local authorities can make their own provisions to tackle the problem, acting within the river basin management plans (of which there are eight on the French mainland).

89. Sub-river basin management will differ according to the scale of the river basin. The Commission cited the example of the Danube, which is a basin covering 800,000km². An overall plan is set out under the Danube Convention and then each of the States (EU and non-EU) has its own plan, and there are local plans beneath that level.[104] The German government confirmed this in principle, although noted that some municipalities are more engaged than others.[105]

90. **The development of catchment management reflects our evolving understanding of the interactions between land and water. In many instances, the appropriate scale at which to tackle issues will be specific to a field or a farm but will also require broader local co-ordination and participation.**

91. **It offers a particular opportunity to engage with local communities. This, we emphasise, is key. Behaviour will only change by linking communities back into their rivers, the surrounding catchments and the ecosystem services that the catchment supplies, such as water. This will help to address issues such as water consumption and the impact of food production on water.**

92. **We consider that a smaller scale than river basins is necessary for effective governance. With few cross-boundary issues to address and no corresponding political administrative level, the river basin scale in the UK is essentially a reporting device. In order to engage local stakeholders in water and land management, the scale has to reflect their sense of place. We therefore welcome the evolution of local level management solutions. Such novel governance approaches are despite, rather than because of, EU policy and we are interested to**

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will consider some of these 100 catchments, but is also evaluating the community-led approach and the development of catchment plans at lower (sub-catchment) levels of varying sizes.

[100] FDF para 3; NFU paras 16 & 32; WICS, para 7; Severn Trent Water, para 18

[101] NFU, Q 100

[102] Water UK Q 28

[103] Q 13

[104] Q 264

[105] Q 124

observe that a more local approach happens to a degree elsewhere in Europe, but mostly because environmental policy is devolved to lower levels of governance.

93. As we noted in Chapter 3, Defra told us that the Government are developing a strategy to tackle urban diffuse pollution, and that local authorities have a particular role to play. They referred us to the National Planning Policy Framework (NPPF) which was subsequently published on 27 March, and requires local plans to take account of water management issues, including when considering new housing and commercial development. In so doing, local planning authorities should work with water providers.

94. According to the EA, there is some engagement with local authorities, although this varies dramatically between authorities.[106] The WWF agreed and noted that a fundamental flaw with river basin management is that there can be "hundreds of local authorities, potentially, in one river basin area" and management, therefore, needs to be done on a scale where a local authority can engage meaningfully in the process. A specific example offered by the EA of working with local authorities to make sustainable improvements to urban water quality through urban regeneration projects was that of the River Lee and its close association with the London Olympics. **We welcome the requirement in the National Policy Planning Framework for local plans to take account of water management issues, but we call on the Government to keep under review whether it goes far enough to engage local authorities adequately in implementation of the Water Framework Directive and whether a duty to co-operate with local authorities needs to be placed on water companies to this end.**

The role of the EU in promoting a new form of governance

95. The Commission acknowledged that "dialogue at local and regional level between stakeholders about the benefits and disadvantages of different measures" was important. It argued that the Common Implementation Strategy (see paragraph 13) was a useful method through which to share best practice.[107] Others, though, thought that the Commission itself could "do much more to promote innovative catchment management at the sub-River Basin District scale in support of the regional scale approach adopted under the WFD."[108]

96. Mr Benyon considered catchment management to be a form of governance with a great deal of merit and he was keen that the Commission took note of its success in the UK.[109] However, he did not want the Commission to take any further involvement.

97. The NFU cautioned against legislative action to promote catchment management: "There is a role for legislation as a fall-back, but experience in other countries such as Australia illustrates that voluntary approaches which achieve stakeholder buy-in endure and succeed."[110]

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[106] Q 251

[107] Q 260

[108] Benson et al para 10

[109] Q 290

[110] NFU para 16

98. **The EU should recognise that different activities to deliver ecosystem services need to be carried out at different geographical scales. It should work to develop an understanding around the EU of the emerging concept of integrated catchment management, which brings into play a much wider set of issues, leads to integration and encourages the development of win-wins and (acceptable) trade-offs.**

99. **The EU is in a good position to assist communication between those involved in catchment management, identifying and aiding the sharing of best practice. While work through the Common Implementation Strategy is welcome, facilitation of links between practitioners could be much improved. We recommend that the Commission examines this issue and gives consideration to support for remote networking.**

100. **In its Blueprint, the Commission should promote the catchment level, already included in the Water Framework Directive in the form of the sub-river basin district, as an important level of governance.**

Governance requirements

101. We heard that a catchment management model will not, in itself, deliver benefits. David Benson and his colleagues pointed to supporting requirements such as accountability, technical capacity and financial resources.[111] Their vision for a catchment management model is set out in an attachment to their evidence, which we have annexed to this report.

102. The Westcountry Rivers Trust (see Box 6) is an example of a successful, well-resourced voluntary organisation in this sector. However, there are many other organisations attempting similar work but struggling for funding. Throughout England and Wales, 75 full-time and 28 part-time staff are supported by 1500 volunteers.[112]. The WRT urged the Government to put in place "the economics that cause this local flow of money into the approved and adopted catchment plan"[113]. Various sources of funding were suggested: the water companies themselves; regional carbon offsetting; and visitor payback schemes. Regional carbon offsetting would allow organisations or companies that are unable to reduce their carbon emissions to pay a contribution towards carbon reduction projects elsewhere. These might include, for example, the planting of trees along a riverbank or the restoration of peatbogs.

103. Laurence Smith described catchment management projects as "a spontaneous community response to the problems", and concluded that government needed to build on that early work.[114] As an example of good practice, he cited the Healthy Waterways Partnership in south-east Queensland, which covers 17 catchments. It has taken 20 years to evolve their catchment management approach. The Partnership has a secretariat which provides the "glue", the horizontal co-ordination and the communication, while most of the implementation is done by industry working groups, community-based working groups and local government. A

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[111] Benson et al, para 5

[112] Q 18

[113] Q 191

[114] Laurence Smith Q18

regional spatial and strategic plan is drawn up, followed by annual management plans with actions.[115]

104. Water UK expressed concern that catchment management might be a cheap management solution in challenging economic times, which will leave water companies, and ultimately consumers, to pick up the costs.[116]

105. **Local catchment management schemes have evolved organically as a response to a local need. Their success cannot be taken for granted. For them to work properly, not only does there need to be a change of philosophy in central and local government but, in particular, their leadership, technical capacity and sustainable financing must also be considered. We are concerned that, where even one of these is insufficient, success will be impossible. We therefore urge the Government to focus on these areas and we look to see progress on them in the forthcoming Water Bill. We agree that Government should not see catchment management as a cheap solution but, equally, we consider that consumers may need to pick up some of the costs.**

106. **Innovative financing mechanisms, such as regional carbon offsetting, might be explored. At the EU level, financing from the European Investment Bank should be explored in addition to rural and regional development funding.**

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[115] Q 22

[116] Q 42

CHAPTER 5: POLICY INTEGRATION

107. The European Commission has indicated that better integration of water policy with other policies will be a priority for the Blueprint.[117] This aim was supported by many of our witnesses, pointing to EU policies on: agriculture; regional development; transport; energy; and other environmental areas.[118]

108. In this Chapter, we look at some of the options presented to us for better integration of policies and we seek to do so by building on our recommendations as regards governance set out in the previous Chapter.

Integration and governance

109. There is a widely accepted view that EU policies that relate to water need to be integrated more effectively. A compelling case for doing so is the danger that policies conflict with each other. The Association of Electricity Producers (AEP) warned that further development of carbon capture and storage will increase the cooling demand of power plant to which it is fitted and hence may result in additional water requirements. They insisted that "a holistic view of the various policies is required".[119] We heard similarly that the various policies "end up being integrated in a field on a farm. If they are all asking different things, there is absolute chaos in terms of policy ask, and it is not a clever way of working."[120] Mr Benyon confirmed the need "to integrate what we are asking of farmers to help them to deliver multiple environmental benefits".[121] In terms of the Common Agricultural Policy (CAP) specifically, we heard that the scale at which it works does not correlate to local water governance.[122]

110. **In recognising the benefits of catchment management as a model of governance, the Commission should also appreciate its potential for more effective integration of EU policies at the local level. Such integration is essential and requires consistency at EU level.**

111. There was some criticism that there may be institutional obstacles to policy integration. The AEP observed that "policy integration across EU Directorates and government departments in Member States [...] needs to be a key theme in any further policy development."[123]

112. A further issue which may both cause problems for integration but, equally, highlight the need for it, is that of competing policy philosophies.[124] Mr de Hemptinne explained that the CAP has tended to be more focused on the market and competitiveness while water policy concerns are less about the market and more about environmental quality and long-term investment in infrastructure.[125]

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[117] Q 257

[118] Benson et al para 13; SLE para 5.1.1; AEP para 6; CIWEM para 24.

[119] AEP, para 20

[120] NFU Q 103; Scottish Land and Estates, para 5.1.1

[121] Q 302

[122] Professor Jenkins Q 59

[123] AEP para 6

[124] CIWEM para 24

[125] Q 213

113. **Close co-operation between administrative units at EU, national and regional levels is necessary, and is the only way to overcome competing policy objectives which will prevent effective policy integration at a local level. As a prerequisite, the Common Agricultural Policy must be more responsive to local needs.**

BOX 7

Reform of the Common Agricultural Policy

The Common Agricultural Policy (CAP) has a two-pillar structure:

- Pillar 1 provides direct income support to farmers and applies the same rules across the EU. Payments are subject to compliance with certain rules, a system known as cross-compliance (see Box 8). It is 100% funded from the EU budget;
- Pillar 2 (the Rural Development Fund) provides additional payments for farmers to undertake specific additional forms of management, make certain investments and pursue other action (including for environmental protection). It is part-financed by the EU budget and part by Member States and works on a multi-annual planning cycle.

In October 2011, the Commission proposed a reform of the CAP, which maintained the current structure but sought to improve the environmental credentials of Pillar 1 and re-distribute payments more equitably amongst farmers and amongst Member States. Key proposals included:

- a compulsory basic payment, making up 70% of a farmer's payment;
- a compulsory "greening" payment, making up the remaining 30% of a farmer's payment, requiring farmers to maintain existing permanent grassland, to have 7% "ecological focus area" (fallow land, terraces, landscape features, buffer strips and afforested areas) and to cultivate three different arable crops (under certain conditions); and
- simplification of the cross-compliance system.

Pillar 1 of the CAP

114. In our earlier report on innovation in EU agriculture, we were clear that direct payments under the CAP should be made in return for the delivery of public goods, responding to climate change, protecting biodiversity and encouraging environmental innovation.[126] Witnesses agreed on the importance of incorporating environmental considerations, including water policy, into the CAP.[127] One specific recommendation made by the NFU was to require farmers to have soil conservation plans, nutrient management plans and water management plans, and, better still, an integrated resource protection plan for the farm.[128]

115. The Commission has sought to integrate environmental protection considerations into Pillar 1 in two ways under its proposals for reform: first, through continued (but simplified) application of the principle of cross-compliance; and, second, through so-called "greening" measures (see Box

[126] 19th Report of Session (2010–12), HL Paper 171.

[127] SEPA, IEEP

[128] Q 118

7). In response to the proposals, we expressed concern that the Commission's proposals for greening the CAP were too rigid and argued for greater flexibility. The WWF acknowledged that it was difficult to see how a centrally established greening scheme could fit the diversity of water and geography across the EU. If necessary, though, the proposed ecological focus areas could be amended to deliver greater benefit for water protection, a view also held by the Minister.[129] The need for better local targeting of CAP payments was emphasised by David Benson and his colleagues.[130]

116. **We re-iterate our view that payments should be made to farmers and landowners in support of environmental goods, including new forestry where appropriate. While we acknowledge that the Commission has sought to adopt this approach in its proposals on greening the CAP, we consider the proposals to be too rigid. Greater flexibility for the establishment of greening rules at the national or regional level would give administrations the ability to place a greater emphasis on water management in the context of agricultural payments and their own water management needs.**

117. **Should such a de-centralised approach to the greening of the CAP not be possible, we recommend that, in negotiations on the future of the CAP, water management considerations be further integrated into the greening provisions, such as the ecological focus areas. We see value in a requirement that farmers adopt an integrated resource management plan.**

BOX 8

Cross-compliance

Under the principle of cross-compliance, direct payments made to farmers under Pillar I are conditional on meeting specified requirements of two varieties:

- Statutory Management Requirements (SMR)—these are embedded in EU Directives.[131] It is proposed under the CAP reform that these be reduced from 18 to 13, increasing eventually to include the Water Framework Directive and Pesticides Directive[132] once these have been implemented in all Member States.
- Good Agricultural and Environmental Condition (GAEC)—to be reduced from 15 to 8 under the CAP reform, these include measures in relation to water protection, soil management and landscape, with precise standards set by Member States.

118. As the Institute for European Environmental Policy (IEEP) reminded us, cross-compliance is an opportunity to make more explicit the links between farmers' obligations under EU law and the support they receive from the EU budget (see Box 8). No witnesses disputed the proposal that the WFD

129 QQ 225, 302

130 Benson et al para 13

131 Such as Directives and Regulations on nitrates (91/676/EEC), wild birds (2009/147/EC), habitats (92/43/EEC), traceability of beef, pigs, sheep and goats (1760/2000, 2008/71/EC, 21/2004) and animal welfare legislation

132 Directive 2009/128/EC

should be included in the cross-compliance requirements, but many noted that the policy could only move at the pace of the slowest Member State as it will apply only once all Member States have implemented the Directive.[133]

119. It was suggested that some key aspects of the WFD could become part of cross-compliance immediately, such as no unauthorised abstraction of water for irrigation.[134] Other possible WFD obligations which may be applicable as SMRs were: unauthorised discharge of waste water into water courses and illegal application of pesticides. The Commission reminded us that much of the detail will be set out in implementing regulations once the key Regulations have been agreed.[135]

120. We heard suggestions that the contribution of Pillar 1 to the provision of public goods could also be improved through the strengthening of Good Agricultural and Environmental Condition (GAEC) requirements.[136] We note, though, that the GAEC requirements already include measures in relation to water protection.

121. **We welcome the inclusion of the Water Framework Directive within the cross-compliance requirements but, as the policy can only move at the pace of the slowest Member State, we consider it unlikely that this will have a significant impact in the short to medium term. We recommend that the Commission, Council and European Parliament consider whether there are aspects of the Water Framework Directive that could be brought within cross-compliance already, such as no unauthorised abstraction or discharge. Such changes are of sufficient importance to be included in the basic Regulations for CAP reform, and not left to be resolved in implementing legislation.**

Risk management

122. The French government highlighted how difficult it is for farmers faced with water scarcity.[137] This uncertainty faced by the agricultural industry was reflected in the CAP reform proposals, including their risk management toolkit (support for insurance premia for example). The Committee has supported this in correspondence with the UK Government and Commission but has suggested that any public support for risk management measures should be time limited, ending once greater take-up by farmers has occurred. **Water scarcity and droughts are a cause of considerable uncertainty for farmers. One way in which that uncertainty can be addressed is through risk management measures. We support the proposed risk management toolkit under reform of the CAP, but note that more action needs to be taken, through farm advice, to encourage take-up of risk management within the agricultural industry.**

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133 Q 266

134 WWF; IEEP

135 Q 266

136 SEPA; IEEP

137 Q 319

Farm advice and knowledge exchange

123. We concluded last year in our report on innovation in EU agriculture that advice to farmers was crucial, and that real improvements were required to knowledge transfer systems. In its proposals for a reformed rural development policy, the Commission has substantially strengthened this element of the CAP: the Farm Advisory System should be extended beyond cross-compliance measures; and support for farm advice under Pillar II is eligible for higher EU financing than other measures.

124. In Germany, for example, advisory services (at the more local level) are being used to make the link between farming and water management and the NFU similarly emphasised the importance of advice. The Scottish Environment Protection Agency (SEPA) added that CAP payments should include support for knowledge exchange[138] to help deliver the WFD environmental targets. In our innovation report, we also considered knowledge exchange as crucial, and we explore this further in Chapter 6.

125. **If farmers are to be asked to take a greater role in managing water resources, we consider it essential to strengthen the advice available to farmers. We welcome the suggestions made to this effect by the Commission in its proposal for the new Rural Development Fund and urge Member States, including the UK, to ensure that appropriate funding is targeted at this area of Pillar 2. Agricultural advice is welcomed by farmers from advisers who are trusted, and are often local and familiar.**

Rural and regional development

126. The proposed new Pillar 2 allows for funding to compensate beneficiaries for costs incurred and income foregone resulting from implementation of the WFD. It can also support water management infrastructure and agri-environment-climate payments.

127. We heard general support for the role of Pillar 2 in supporting water management activities.[139] The Government, for example, pointed to options under agri-environment schemes that protect natural resources and "competitiveness" measures that promote better resource efficiency.[140]

128. Others thought that there was room for improvement. Mr de Hemptinne suggested that Pillar 2 measures for water management could be strengthened.[141] WWF and the NFU emphasised the need for better targeting of agri-environment measures at water and were critical of the failure of current rural development plans to do so.[142]

129. **Pillar 2 (the rural development Regulation) provides scope to support water management and water efficiency in agriculture, including making funds available specifically to compensate for costs incurred and income foregone as a result of implementation of the Water Framework Directive. We urge Member States to support these**

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138 Two-way interaction between researchers and users

139 QQ 19, 189, 225, 255, IEEP, NFUS, para 11, CCW para 2.21

140 Defra para 22

141 Q213

142 QQ 111, 224

strands of work as appropriate according to regional need, using them ambitiously.

130. The Commission has proposed that structural funds, the rural development fund and the fisheries fund be strategically linked through a Common Strategic Framework (CSF), which would aim to ensure that the Funds are deployed in a complementary fashion at the local level. The precise details of this methodology will take some time to be worked out, but further information emerged from the Commission in March 2012. In terms of water management, it explained that the European Regional Development Fund might support investment in water supply, treatment and re-use, including leakage reduction, while the rural development fund could support agriculture-specific water efficiency measures and advice.[143]

131. Witnesses recognised that regional funding is already available to support water-related projects. Defra observed, for example, that the current (2007–13) Structural Funds priority theme list includes management and distribution of water (drinking water), water treatment (waste water), integrated prevention and pollution control, and mitigation and adaptation to climate change, under all of which freshwater management projects could be undertaken.[144]

132. We also heard, however, that regional policy could be "better integrated with water policies".[145] The IEEP criticised the EU's regional policy for its continued focus on economic growth and social development and argued that it does little to account for important inter-linkages between project-related impacts, such as increased water and air pollution and their link to protected and natural areas. The mainstreaming of environmental considerations throughout regional policy had yet to be realised.[146]

133. The importance of local, regional and national flexibility in programming of funds was emphasised by others. David Benson and his colleagues suggested that it "presents a significant opportunity to support regional or local scale initiatives, thereby enhancing subsidiarity in water management."[147] Similarly, Defra emphasised the importance of flexibility, allowing Member States to determine how to spend regional funding most effectively.[148]

134. In the previous Chapter, we highlighted a failure to consider urban policy in the context of water management. We were interested to hear from the Commission that the urban environment is a specific priority in the new proposals for regional policy.[149]

135. **In the next programming period (2014–20), a new opportunity for integrated use of EU funds will be introduced through the Common Strategic Framework (CSF). We urge the Government to engage pro-actively with the Commission, and to work across relevant Departments and the UK Administrations to identify how the CSF could be designed most effectively. This must include consideration of**

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143 SWD(2012)61

144 Defra, para 23

145 Benson et al, para 13

146 IEEP

147 Benson et al para 13

148 Defra

149 Q 268

how it can assist effective delivery at the local level of water management solutions.

136. **We believe that deployment of the funds strategically, as intended by the CSF, could be of particular benefit in supporting the catchment-based approach to water management, both in rural and urban areas.**

Other policy areas

137. Various witnesses drew our attention to the need to ensure synergies between water policy and energy policy. The International Commission on Irrigation and Drainage observed that policy on renewable energy sources and targets for biofuels production have implications for water use and water quality, an observation shared by the Chartered Institution of Water and Environmental Management (CIWEM) and the Centre for Ecology and Hydrology (CEH).[150] We are aware that successful local collaborative work in Lower Saxony to reduce nitrate leaching to groundwater was undermined by German federal subsidies and priorities to grow more biofuels.[151] According to the Commission, work is being undertaken on the sustainability of biofuels. We also heard from the Commission that guidance had been issued on how to deal with hydropower installations.[152]

138. Various other pieces of environmental legislation are relevant to work on the WFD, particularly when considering the tackling of pollution at source. These include chemical regulation, pesticides legislation, medicines legislation, biotechnology, biodiversity policy and, importantly, floods policy. The NFU supports "holistic policies to water resource management, rather than having policies in boxes marked 'flood', 'drought' and 'pollution'".[153]

139. It may be, as suggested by the WRT, that a radical simplification of approach to land management could replace complex rules that are not currently delivering and would assist compliance with a number of older Directives in addition to the WFD.[154]

140. As regards links between water policy and transport policy, the Commission explained how its Environment Directorate General was working, for example, to develop guidelines for the Danube and inland navigation.[155]

141. Urban policy falls largely to Member States to define, but various aspects of EU policy, including water policy, are pertinent to urban areas. The Common Implementation Strategy includes an agricultural working group, but no such group exists for urban matters. **We therefore recommend an urban dimension working group as part of the Common Implementation Strategy.**

142. **It is clear that water policy needs to be integrated across a range of policy areas. We note in particular the links between energy policy and water policy, particularly in the context of the increased demand for energy by 2050. There are clearly broader links to food policy and**

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150 ICID, CIWEM, CEH

151 Professor Robert Harris, SOAS conference, 11 January 2012

152 Q 263

153 NFU para 32

154 WRT supplementary written evidence

155 Q 263

land use policy and we consider that this web of policy points to the need for a reflection on how the European Union directs, manages and coordinates these policies. In the interim, we see room to ensure greater coordination between the Water Framework Directive and flooding policy.

143. **We were pleased to learn of some of the work being done across the Commission on integration of policy but consider that a systematic approach is required. As a first step, we recommend that, when undertaking impact assessments on new legislation, the Commission consider the implications for water management.**

Ecosystem services

144. One way in which policies can be coordinated at the local scale is, as we described in the previous Chapter, through catchment-based water management. The concept of the ecosystem services approach is already being developed at that level, although not as a direct result of the Water Framework Directive. **Although the WFD is "ecosystem centred", it was developed before the concept received the exposure it has gained today and hence does not especially promote the ecosystem services concept. This is a gap that should be addressed.**

145. The approach of "payment for ecosystem services" (PES: see Appendix 7) is relevant here. In the UK, Defra has classified a number of projects to improve water quality as PES. These include the United Utilities Sustainable Catchment Management Plan (SCaMP) in the catchment of the River Hodder in the Forest of Bowland and the South West Water "Upstream Thinking" programme in all their key river catchments, in conjunction with the Westcountry Rivers Trust, Devon Wildlife Trust and Dartmoor National Park Authority.

146. Mr Benyon confirmed that "payment for ecosystem services is a direction of travel that we are very keen on", and that the Government are keen to promote it with water companies, who can pay land managers for ecosystem services delivered, and through agricultural policies and agri-environment programmes.[156] The National Farmers Union of Scotland was favourable towards such an approach.[157] As the IEEP explained, certain actions by farmers, such as active management or river margins, can have beneficial effects, but may not be adequately rewarded.[158]

147. One example of this approach was offered by the German government: in Germany, farmers are paid not to use manure or fertilisers in water-protection zones, so they get paid as compensation for not using the soil in these zones as they would like.[159]

148. In the UK, there was a Nitrate Sensitive Area scheme in the 1990s, which made a basic payment to farmers in certain areas for reducing fertiliser inputs and a further payment for reverting arable land to grass or trees. The areas identified were those close to drinking water sources and where nitrate levels were high and rising. This scheme was replaced by Nitrate Vulnerable Zones,

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156 Q 302

157 NFUS, para 12

158 IEEP

159 Q 132

involving no compensatory payment and little subsequent impact on nitrate levels in water.

149. The Scottish Agricultural College noted that building the ecosystem approach into the policy framework from the start should allow the policy sufficient flexibility to adapt to any new challenges and the scale at which they need to be addressed.[160] Mr de Hemptinne argued that it could be the answer to the competing objectives of the CAP and water policy.[161] More specifically, Water UK suggested that a revised CAP could link sustainable food production to water resources and water quality as well as land environments and habitats.[162]

150. Analysis[163] suggests that PES is not a panacea and that a number of challenges remain to enhancing the effectiveness of PES in relation to water management. These include: packaging multiple ecosystem services, such as water quality, carbon storage and biodiversity into PES schemes; and trading off the risk that paying farmers to provide certain ecosystem services could lead to higher market prices for other services such as food.

151. The complexity of a PES approach was also illustrated by Laurence Smith, who emphasised the need to develop a rural spatial planning process for each catchment. Such a process should aim to identify "which are the most vulnerable areas that will need protection measures and mitigation measures, that will need farmers to adopt less intensive farming methods, and identify those areas that are less at risk, where we can concentrate intensive production and so have the food production that we need". Some such assessments are already being carried out, as we explain in the next Chapter, but on a limited scale. Mr Smith argued that EU policy could support this process through flexible and local funding arrangements that can assist with those sorts of assessments.[164]

152. The PES approach of paying subsidies not to undertake polluting activities could be construed as rewarding land managers for adopting management practices they should undertake as part of good practice or stewardship, conflicting with the "polluter pays" principle. However, if the provision of ecosystem service benefits cannot be assured through regulation, then it is in society's interest for landowners to be paid to provide these by governments or other brokers, such as River Trusts. **We consider that the "polluter pays" principle is not always reflected in the modern practice of local water management. While it may have merit in some instances, such as avoidance of illegal abstraction for the purposes of irrigation, there are times when there is a need to give greater consideration to the principle of the "provider is paid".**

153. **Adoption of that principle could lead to further development of payment for delivery of ecosystem services. This concept should, we argue, assist as a tool to helping communication with the wider public and understand the priorities in any given catchment or river basin.**

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160 SAC

161 Q 213

162 Water UK, para 2.3

163 Parliamentary Office of Science and Technology, *Living with Environmental Limits*, POST Report 370, January 2011, pp 83–84

164 Q 21

154. **The EU is in a position to provide a framework for promoting the concept of payments for ecosystem services: at one level by strongly linking the CAP to the environment and on a higher plane by adopting, developing and promoting the ecosystem services concept within a strategic framework. This may ultimately require a re-orientation of the CAP towards a land use policy, which incorporates a food production strategy and recognises the suite of ecosystem services provided by the land.**

CHAPTER 6: INNOVATION AND RESEARCH

155. In this Chapter, we examine ideas for boosting innovation, disseminating knowledge and promoting existing innovations, before exploring some of the gaps in knowledge that have been identified in the course of the inquiry.

Innovation

156. The European Commission took the view that innovation is about not just technology but also management, public involvement and providing information to the public.[165] We agree. When considering innovation, innovation in process is as important as innovation in engineering. Innovation can of course arise through science and technology. However, in looking at how people interact with their environment, innovation can also be promoted through understanding the socio-economic context of, and engagement between, communities which have most influence over a particular catchment.

European Innovation Partnership

157. Our inquiry showed that activity to implement the WFD is in reality a large number of experiments being carried out across Europe, particularly at the grass-roots level. This is understandable given the novel approach of the Directive and our lack of understanding of how ecosystems work in relation to the water and the land. Management solutions therefore need largely to be adaptive—learning by doing.[166] The extent to which the learning gained is being co-ordinated or collated effectively was far from clear to us. The German government summarised the dilemma: "we must not be lonely warriors not talking to each other". **We see ample opportunity for the EU to assist with knowledge exchange in relation to water management**.

158. The Commission is alive to this need. As part of its Europe 2020 Strategy on growth, it proposed an Innovation Union,[167] with several relevant initiatives. First, the new European Institute of Innovation and Technology (EIT) has set up several Knowledge and Innovation Communities (KICs), including a KIC focused on climate change. This "Climate-KIC" will work on four themes, one of which is water management and adaptation. Second, European Innovation Partnerships (EIPs) are being established, one of which will address Agricultural Productivity and Sustainability and another of which will address Water. According to the Commission, the agricultural EIP will address water management and pollution reduction at farm level and the water EIP will cover water infrastructure and water allocation in rural areas.

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[165] Q 277

[166] This adaptive management approach assumes that abnormal events are inevitable, knowledge of systems and their interactions will always be incomplete and that human interactions with ecosystems will always be evolving. It requires uncertainties to be identified and then to 'test' possible management measures to see if they help to achieve desired levels of ecosystem service benefits.

[167] COM(2010)546

BOX 9

European Innovation Partnership on Water

The Commission has said that the strategic objective of the EIP on Water is to position Europe as a world leader in water technology and services by boosting innovation, based on three aims: through innovation, to develop solutions for the many water quality and quantity challenges Europe (and the world) is facing; through boosting innovation, to create a global leadership position for European water technology and services; and through mobilisation of all relevant actors at EU, national and regional levels, to remove any regulatory and market barriers, promote the integration of various policy and finance instruments and increase the demand for innovation, across all sectors and users of water.

The Commission says that at the operational heart of the EIP will be the "Innovation Activities," organized in three work packages: urban water management; rural water management; and industrial water management. The Innovation Activities will be large-scale projects, focussed on finding solutions for identified challenges by putting into practice the multi-disciplinary approach of bringing together actors from technological, financial, organizational and management perspectives, and testing the solutions.[168]

159. The Commission told us that stakeholders have expressed "a very positive view" about the idea of a water EIP and of the contribution that an EIP could bring both to the implementation of water policy and to the development of commercialised solutions and European business and jobs in the area of water solutions.[169]

160. We also heard support for the idea from others. Mr de Hemptinne considered that the EIP could help in keeping the momentum going after 2012: "today we are giving a lot of attention to the past and to the present, but the future is also knocking at the door because the first step of the second planning cycle is approaching".[170] Professor Jenkins welcomed the idea of an innovation partnership, noting that what was needed in the EU was "a more efficient partnership on water innovation". He observed that the privatised model of water management in the UK acted as an obstacle to innovation.[171] On the other hand, we are aware that, in the UK, the Technology Strategy Board, Defra and Research Councils have invested up to £4m in feasibility studies and collaborative research and development projects to stimulate innovation in the UK water industry. It is important that these are linked into the EIP.

161. Last year, we gave qualified support to an EIP on Agricultural Productivity and Sustainability on the understanding that it would be founded on effective, action-based co-operation.[172] **Similarly, we support the**

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168 See: http://ec.europa.eu/environment/water/innovationpartnership/

169 Q 257

170 Q 206

171 Q 86

172 19th Report (2010–12), HL Paper 171

principle of the European Innovation Partnership on Water. We consider that clarity is required as to how the various initiatives in this area—Agricultural and Water European Innovation Partnerships and the Climate Change Knowledge and Innovation Community—will work together, drawing on relevant funding sources. How this work then feeds in to the Common Implementation Strategy on the Water Framework Directive, and on down to practitioners, as well as into rural development plans also needs clarification. It is vital that best practice developed through these initiatives is not only shared amongst but put into practice by Member States.

162. The Commission told us that it has three priorities in the innovation partnership: rural issues, industrial issues and urban issues. As regards the latter, particular focus would be applied to sewage systems.[173] Similarly, Laurence Smith considered that sustainable urban drainage systems would be a useful subject for the work of the EIP.[174] **We agree that the Water EIP should place strong emphasis on urban issues.**

163. In supporting the agricultural EIP, we emphasised that a twin-track approach must be followed—involving networking across borders and local delivery. Local engagement as regards innovation was also emphasised to us by David Benson and his colleagues: "local engagement of stakeholders and improved planning and decision making requires the 'twin-track' of deliberation supported by analysis and credible 'first class' science."[175]

164. **Emphasis must be placed on effective engagement of stakeholders, including those working at catchment management levels. We re-iterate our view that local delivery of innovations is as important as networking at the EU level. As with all innovation, the challenge is in the integration and appliance of scientific knowledge in close partnership with practitioners in the field.**

Innovation in Public Engagement

165. Mr de Hemptinne expressed his view that the public will be more involved in water "the day that they are given a way to act and when they are really able to do something for water."[176] The Commission agreed that public information is a key element of water policy. It cited the example of Spain, where campaigns have been run that have managed to bring down household water consumption from the order of 150 litres per person per day to 100 litres per person per day.[177]

166. A particularly innovative public engagement tool about which we were told was a system of report cards developed by the Healthy Waterways Partnership in Queensland, Australia.[178] Catchments are graded according

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[173] Q 268

[174] Q 23

[175] Benson et al para 12

[176] Q 215

[177] Q 269

[178] www.healthywaterways.org

to the health of their ecosystems,[179] and "report cards" are generated electronically. Laurence Smith told us that these are much more understandable by a wider range of people than more traditional ways of reporting. In the Australian example, one result of this easier comprehension has been that local politicians are held to account for the results. The report card is now also available as an electronic application for mobile phones (iphone app).[180] On a more conventional level, we were also told that, in Baden-Württemberg in Germany, there was public participation over a series of evenings with external facilitation in getting the local community together, trying to work out appropriate measures to take and using local knowledge of where those measures would be most applicable.[181]

167. **Connecting people back into their environment and their place in the landscape will be important if we are to reduce water consumption. Innovative methods, such as a report card or iphone app, can be used to engage the public in their environment. Public information campaigns have been shown to be successful and we therefore consider that national administrations, including the UK Government, have a responsibility to boost public engagement.**

168. **We see the proposed European Innovation Partnership as potentially a very useful forum for sharing ideas on public engagement. We note too that sharing of experience and ideas beyond the European Union is of great value.**

Innovation in water efficiency

169. We heard various examples of how innovative ideas are already being used to boost water efficiency, one of which as regards efforts made in Copenhagen we set out in Box 4 in Chapter 3. As we were told by SEPA, the use of such cost-effective and water efficient practices and technologies is likely to become more important as water users face greater difficulties in securing water, particularly as other resource costs are likely to increase.[182]

170. In the UK, one widely discussed innovation in relation to water efficiency is water metering. As we discuss in Chapter 3, most of our witnesses supported the metering of domestic water supplies, which is not compulsory in most of the UK[183] but is widely used throughout the EU. It has been compulsory in France since the 1930s. More recently, it has been credited with helping to drive down water consumption in both Romania and Copenhagen, as prices have risen accordingly.[184]

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[179] Indices used are: physical/chemical, nutrient cycling, ecosystem processes, invertebrates and fish

[180] Q 23

[181] Q 231

[182] SEPA

[183] Southern Water, Folkestone Water and South East Water have introduced compulsory metering, and all serve water-stressed areas.

[184] Pinsent Masons Water Yearbook 2011–12

BOX 10

Water embodied in Products[185]

The water associated with production, known as "virtual" water, constitutes 95% of human water use: 9% is associated with industrial production and 86% is used in food production. It has been calculated, for example, that, as a global average, 70 litres of water are used in the production of one apple and 15,500 litres for one kilogram of beef.

As pressure on water supplies rises, recognition of the amount of water used within each step of production could be important to managing water use. With projected increases in global population size, meat consumption and economic growth, demand for water is forecast to outstrip supply by 40% over the next 20 years. This situation may worsen due to changes in hydrological cycles and precipitation patterns due to climate change.

Individuals, businesses and governments can improve their awareness of virtual water use by calculating the amount of water they consume and determining the location of their water sources. However, this is complicated, as water consumption may vary in time and space depending on a range of variables, such as climatic conditions and the techniques used for withdrawal and irrigation.

Water use can be assessed at two levels: at the inventory level, through "water footprinting" methodologies which assesses the volume of both direct and indirect water use; or at the impact level, through Life-Cycle Impact Assessment approaches which attribute environmental impacts to the water consumed over a product's lifecycle.

Both approaches can be limited by the accuracy of spatial and temporal data. A primary concern is the need to standardise methodologies required to attribute the environmental impact of water use. Potential solutions for managing virtual water include a range of options, such as better measurement and accounting, increased supply chain cooperation and implementing water pricing for agriculture.

171. A great deal of water is used in the production of goods (see Box 11) but assessment of it is far from simple. There is general support for the principle of water footprinting, but concern about the practicality of developing a scheme that recognises the increased value of water taken from a water-stressed region compared to others.[186] One of those that indicated support, the Food and Drink Federation, told us that it is contributing to the work currently being undertaken by the International Standards Organisation[187] on requirements for water accounting and impact assessment.[188] Scottish Land and Estates cautioned against adding more labelling to products "as it would be at great expense and it would be unlikely to have a significant impact on

[185] Parliamentary Office of Science and Technology, *Water in Production and Products* (PostNote 385, Aug 2011)

[186] Defra written evidence; IEEP; Commission Q 277

[187] http://www.iso.org/iso/iso-focus-plus_index/iso-focusplus_online-bonus-articles/isofocusplus_bonus_water-footprint.htm

[188] FDF, para 12

the choice of consumers".[189] Defra suggested that this was an area for further research.[190]

172. **We agree that greater recognition of the amount of water used in the products that we consume will be increasingly necessary and urge the Commission to consider the role of "virtual" water in EU policy, particularly in terms of achieving the objectives of the EU Resource Efficiency Roadmap. We acknowledge the difficulties in establishing a methodology and agree that further research is required, research which clearly needs to be cross-disciplinary, but also recommend that Defra consider policy options for ensuring businesses measure their water impact and develop specific water strategies to ensure security of their supply chains. Work by the Commission and Government must also be linked in to the work of the International Standards Organisation to avoid duplication.**

173. Another issue that we examined in relation to water efficiency was that of rain water harvesting. In the UK, the Code for Sustainable Homes encourages the installation of rainwater harvesting in new-build homes and there is an emerging regulatory approach in support of enhanced rainwater harvesting. Thus far, no incentives through the taxation system have been introduced. In France, by contrast, consumers can claim tax credits on 25% of rainwater equipment costs (extended until 31 December 2012).[191] The Commission confirmed that it is considering the issues of rain water harvesting and of the reuse of wastewater, particularly in the context of building design.

174. **In order to boost the use of rainwater harvesting, we urge the UK Government to consider tax incentives in addition to regulatory and voluntary approaches. The Commission could assist by sharing best practice on this issue, possibly through the Common Implementation Strategy or as a strand of work of the water EIP. Water-efficient building design should certainly feature in the Blueprint, although we would not favour a legislative approach to this issue by the Commission.**

Research

175. The Commission has proposed a new research funding instrument over the period 2014–20 (Horizon 2020) with a total budget of €80bn. It recognises the importance of water-related research throughout various research strands, but there is a specific area of activity focused on the management of natural resources, including water. This should include: furthering our understanding of the functioning of ecosystems, their interactions with social systems and their role in sustaining the economy and human wellbeing, and providing knowledge and tools for effective decision making and public engagement. In addition, the EU has a budget for demonstration projects in the area of Environment and Climate Change, which it is proposed should receive funding of €3.6bn over the period 2014–20.[192]

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189 Scottish Land and Estates, para 3.2.1

190 Defra, para 18

191 http://www.ifep.info/syndicat/credit-impot.php#a1

192 COM(2011)874

176. **We support the increased budgetary provision on innovation and research as a larger proportion of a smaller overall EU budget; we consider there to be a strong case for the proposed Environment and Climate Change budget. We welcome the recognition in the proposed Horizon 2020 Programme of water-related research. Deployment of this funding must be dovetailed with spending under the Environment and Climate Change Programme.**

177. SEPA emphasised that greater knowledge and understanding of our environment will lead to better informed decision making by Member States at all levels of decision making. Consequently, research into cost effective monitoring techniques would be extremely useful.[193] Defra called for further work into: climate change impacts on the water environment; better integration of water resource assessments; and development of a common integrated land use and hydrological modelling platform.[194]

178. **Our knowledge of water-related ecosystems remains inadequate and we agree that emphasis must be placed on boosting this knowledge. Collecting the right data, from the right places, using the right techniques, is essential. Effective monitoring programmes and techniques are clearly pivotal to that. Given the pressures of climate change, and the important local impacts that climate change can have, we see it as crucial to build climate change impact into our work on developing a better understanding of local ecosystems. This must include the impact of societal response to climate change, such as alternative crop development, water demand and population change.**

179. In Chapter 4, we outlined an emerging catchment level of water management. We were keen to understand how research could assist at this level. One innovative activity that the WRT has undertaken is to map where ecosystem services can be delivered. Within the catchments that they have studied, it demonstrates that the area of land where other ecosystem services conflict with intensive agriculture unduly (and therefore where farmers would need to be compensated for reducing food production) is limited—in their case, less than 10%.[195] Linked to this, Defra called for further research into practical methods for ecosystem service assessments.[196]

180. **We consider that development of methods for ecosystem service assessments at a local scale, tied into an emerging methodology for mapping of ecosystem services, would be useful areas for future research. Such mapping should inform the choices of technological solutions to be applied, avoiding a "one size fits all" approach to adoption of particular innovations.**

181. David Benson and his colleagues suggested that the EU's research programmes could do more to support investigations into how new forms of local level collaboration and institutional arrangements might help address the twin challenges of climate change and non-point source pollution. [197] **We agree that further research into how new forms of local level**

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[193] SEPA

[194] Defra, para 18

[195] Q 189

[196] Defra

[197] Benson et al para 11

collaboration can most effectively support water management throughout the European Union would be helpful in moving towards an institutionalisation of the emerging catchment management model.

182. Many witnesses were clear that there is insufficient understanding about the impact of urban diffuse pollution on watercourses. The EA has identified that the largest impacts on quality of waters in urban environments are from: run-off from roads, other hard surfaces and industrial estates; misconnected drainage; and contaminated sediments that continue to release pollutants.[198]

183. Professor Jenkins told us that innovation in wastewater treatment technology was required, but he also assured us that major breakthroughs are close: "A lot of new techniques are being tested that should enable us to make more use of wastewater through better treatment, and with no excessive carbon emission or power usage cost."[199] The Commission confirmed that the management of urban water was a priority.[200]

184. **It is evident that further research is required into the management of urban diffuse pollution. We note in particular that further work is required on run-off, sediment and wastewater treatment. The pressure on urban systems would be reduced if the discharge or discard of chemicals into the sewerage system in the first place were to be reduced, and thus greater work on this is required. The use of sewers as treatment systems rather than just for conveyance might also be explored.**

185. Various other suggestions were made to us by witnesses. The English Golf Union would support research to assist the undertaking of tailored research programmes to deal with future irrigation product development/design techniques in the leisure and sports turf sectors.[201] Thames Water favoured more research to improve understanding of the true value of water in the environment.[202]

186. **We accept that leisure industries, such as golf, must not be ignored in the push for greater understanding of new technologies that could reduce their water footprint. The Commission should consider such industries in the context of its Blueprint. Ultimately, a greater understanding of the true value of water could take us a long way in establishing a long term sustainable water resource and related knowledge base.**

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198 EA supplementary written evidence

199 Q 86

200 Q 268

201 English Golf Union

202 Thames Water, para 5.1

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

Chapter 2: Implementation of EU water legislation

187. In our view, any expectations that changes should be made in the short term to the core elements of the Water Framework Directive, such as the objectives and timescales, are unrealistic, and unjustified. It is too soon to assess overall implementation of the Directive with any degree of certainty, though it is clear that Member States are finding it challenging to implement. While there seems to be no realistic prospect that Member States will secure the Directive's ambition that all rivers and water bodies should have good or high status by 2027, we agree with several witnesses that the aspiration to meet the demands of the Directive has already delivered substantial improvement in the management of water resources. (paragraph 44)

188. We view the "one out all out" basis for assessing status categories as a blunt and rigid method which fails to capture effectively the ecological as well as the chemical quality of water. While we do not call for regulatory change at this time, we urge the Commission to consider the "one out all out" rule specifically in its work on the Blueprint. In the short term, we see an urgent need for reporting on progress under the Directive to go beyond the "headline measure" of these categories and to show the progress made in the individual quality criteria. We call on the Commission to develop guidance, through the Common Implementation Strategy, to help in the communication of the wider extent of improvements being promoted under the WFD that may not be fully reflected in the assigned status of water bodies. (paragraph 45)

189. We recommend that the Commission examine the issue of sampling methods in some detail with a view to ensuring comparability of monitoring regimes across the EU. (paragraph 47)

190. As regards the February 2012 proposal on priority substances, we see a need for the UK Government and the Commission to acquire more knowledge of the risk posed, principally by the pharmaceutical substances being added to the list, and of cost-effective methods of reducing this risk before effluent containing the substances requires wastewater treatment. These considerations must include the pharmaceutical manufacturers, not least because the "polluter pays principle" means that they may be called on to contribute to mitigating the risk. (paragraph 48)

191. We expect the Government, the Environment Agency, Ofwat and local government to act quickly on lessons learnt from the catchment management trials, but we see it as incumbent upon the Government quickly to develop a more strategic approach to water resource management, with a particular view to overcoming reluctance by water companies to make capital investment. We note the EA's new additional role in this as the Government's body in England for advice on climate adaptation to organisations in key sectors on the actions needed to build resilience to the changes and impacts projected. (paragraph 51)

192. We look to the UK Government, and to the Commission, to ensure that Member States take as much away from Common Implementation Strategy (CIS) discussions as they bring to them. We urge the Commission to do more to assist with implementation and enforcement, including the sharing

of best practice at all levels of governance and implementation, and to enhance the CIS discussions with non-Governmental input. (paragraph 52)

193. We received no conclusive evidence to support the early withdrawal of other elements of existing EU water legislation, but expect the Commission to pay particular attention to consideration of whether these pieces of legislation are still fit for purpose. We see the case in the longer term for the integrated approach of the Water Framework Directive increasingly to supplant more narrowly focussed legislation. (paragraph 53)

Chapter 3: Challenges to be met by EU water policy towards 2050

194. We consider that the "good status" objective of the Directive cannot meaningfully be pursued without effective action on water resource availability. We look to the Commission to demonstrate in the Blueprint the critical dependencies between the two policy areas. The EU should encourage the development of national water scarcity and drought management plans (both short- and long-term) to ensure more effective use of the EU's plentiful water supplies. (paragraph 68)

195. We call on the UK Government to accelerate their efforts to deal with the problems of water scarcity. Consumption of water, whether by industrial or domestic users, must be better adjusted to respect constraints of water availability, through abstraction controls and through economic instruments. (paragraph 69)

196. We believe that the cost of water will have to rise in areas where other measures are not enough to meet the challenges of water scarcity. We do not think that fear of higher consumer bills should in itself be a reason to avoid metering, but safeguards are required to ensure that those unable to pay higher bills are protected. (paragraph 70)

197. We consider that a focus on diffuse pollution from agriculture, though important in its own right, has distracted water policy from understanding and remedying urban diffuse pollution. We welcome the Government's commitment to develop a strategy for this problem; we call on them to work urgently with the Environment Agency and local authorities to deliver the strategy once adopted. We urge the Commission to contribute to a better understanding of the issue in the Blueprint as well as through its other activities. (paragraph 72)

198. We consider that the Commission's current review needs to look at whether the WFD's overarching strategic objectives have evolved, and whether this evolution needs to be recognised as it is implemented in future years. In particular, there is a question as to whether the current mix of chemical (water quality) and ecological monitoring targets is appropriate. The Commission should highlight this in the Blueprint as an urgent issue for discussion. (paragraph 76)

199. Future EU policy will need to be flexible and dynamic in order to respond to changing environmental pressures. As we move forward, there will be a broader need to consider, at all levels of governance, how a more integrated and inclusive land-use planning system could be developed, linking closely into water management and reflecting the needs and demands of both rural and urban areas.(paragraph 77)

Chapter 4: Governance

200. Catchment management offers a particular opportunity to engage with local communities. This, we emphasise, is key. Behaviour will only change by linking communities back into their rivers, the surrounding catchments and the ecosystem services that the catchment supplies, such as water. This will help to address issues such as water consumption and the impact of food production on water. We consider that a smaller scale than river basins is necessary for effective governance. With few cross-boundary issues to address and no corresponding political administrative level, the river basin scale in the UK is essentially a reporting device. In order to engage local stakeholders in water and land management, the scale has to reflect their sense of place. We therefore welcome the evolution of local level management solutions. Such novel governance approaches are despite, rather than because of, EU policy and we are interested to observe that a more local approach happens to a degree elsewhere in Europe, but mostly because environmental policy is devolved to lower levels of governance. (paragraphs 91 and 92)

201. We welcome the requirement in the National Policy Planning Framework for local plans to take account of water management issues, but we call on the UK Government to keep under review whether it goes far enough to engage local authorities adequately in implementation of the Water Framework Directive and whether a duty to co-operate with local authorities needs to be placed on water companies to this end. (paragraph 94)

202. The EU should recognise that different activities to deliver ecosystem services need to be carried out at different geographical scales. It should work to develop an understanding around the EU of the emerging concept of integrated catchment management, which brings into play a much wider set of issues, leads to integration and encourages the development of win-wins and (acceptable) trade-offs. The EU is in a good position to assist communication between those involved in catchment management, identifying and aiding the sharing of best practice. While work through the Common Implementation Strategy is welcome, facilitation of links between practitioners could be much improved. We recommend that the Commission examines this issue and gives consideration to support for remote networking. In its Blueprint, the Commission should promote the catchment level, already included in the Water Framework Directive in the form of the sub-river basin district, as an important level of governance. (paragraphs 98 to 100)

203. Local catchment management schemes have evolved organically as a response to a local need. Their success cannot be taken for granted. In particular, their leadership, technical capacity and sustainable financing must be considered. We are concerned that, where even one of these is insufficient, success will be impossible. We therefore urge the Government to focus on these areas and we look to see progress on them in the forthcoming Water Bill. We agree that Government should not see catchment management as a cheap solution but, equally, we consider that consumers may need to pick up some of the costs. Innovative financing mechanisms, such as regional carbon offsetting, might be explored. At the EU level, financing from the European Investment Bank should be explored in addition to rural and regional development funding. (paragraphs 105 and 106)

Chapter 5: Policy integration

204. Close co-operation between administrative units at EU, national and regional levels is necessary, and is the only way to overcome competing policy objectives which will prevent effective policy integration at a local level. As a prerequisite, the Common Agricultural Policy must be more responsive to local needs. (paragraph 113)

205. We re-iterate our view that payments should be made to farmers in support of environmental goods including new forestry where appropriate. While we acknowledge that the Commission has sought to adopt this approach in its proposals on greening the CAP, we consider the proposals to be too rigid. Greater flexibility for the establishment of greening rules at the national or regional level would give administrations the ability to place a greater emphasis on water management in the context of agricultural payments and their own water management needs. Should such a de-centralised approach to the greening of the CAP not be possible, we recommend that, in negotiations on the future of the CAP, water management considerations be further integrated into the greening provisions, such as the ecological focus areas. We see value in a requirement that farmers adopt an integrated resource management plan. (paragraphs 116 and 117)

206. We welcome the inclusion of the Water Framework Directive within the cross-compliance requirements but, as the policy can only move at the pace of the slowest Member State, we consider it unlikely that this will have a significant impact in the short to medium term. We recommend that the Commission, Council and European Parliament consider whether there are aspects of the Water Framework Directive that could be brought within cross-compliance already, such as no unauthorised water abstraction or discharge. Such changes are of sufficient importance to be included in the basic Regulations for CAP reform, and not left to be resolved in implementing legislation. (paragraph 121)

207. We support the proposed risk management toolkit under reform of the CAP, but note that more action needs to be taken, through farm advice, to encourage take-up of risk management within the agricultural industry. (paragraph 122)

208. If farmers are to be asked to take a greater role in managing water resources, we consider it essential to strengthen the advice available to farmers. We welcome the suggestions made to this effect by the Commission in its proposal for the new Rural Development Fund and urge Member States, including the UK, to ensure that appropriate funding is targeted at this area of Pillar 2. Agricultural advice is welcomed by farmers from advisers who are trusted, and are often local and familiar. (paragraph 125)

209. Pillar 2 (the rural development Regulation) provides scope to support water management and water efficiency in agriculture, including making funds available specifically to compensate for costs incurred and income foregone as a result of implementation of the Water Framework Directive. We urge Member States to support these strands of work as appropriate according to regional need, using them ambitiously. (paragraph 129)

210. In the next programming period (2014–20), a new opportunity for integrated use of EU funds will be introduced through the Common Strategic Framework (CSF). We urge the Government to engage pro-actively with the Commission, and to work across relevant Departments and the UK

Administrations to identify how the CSF could be designed most effectively. This must include consideration of how it can assist effective delivery at the local level of water management solutions. We believe that deployment of the funds strategically, as intended by the CSF, could be of particular benefit in supporting the catchment-based approach to water management, both in rural and urban areas. (paragraphs 135 and 136)

211. We recommend an urban dimension working group as part of the Common Implementation Strategy. (paragraph 141)

212. We were pleased to learn of some of the work being done across the Commission on integration of policy but consider that a systematic approach is required. As a first step, we recommend that, when undertaking impact assessments on new legislation, the Commission consider the implications for water management (paragraph 143)

213. We consider that the "polluter pays" principle is not always reflected in the modern practice of local water management. While it may have merit in some instances, such as avoidance of illegal abstraction for the purposes of irrigation, there are times when there is a need to give greater consideration to the principle of the "provider is paid". Adoption of that principle could lead to further development of payment for delivery of ecosystem services. This concept should, we argue, assist as a tool to helping communication with the wider public and understand the priorities in any given catchment or river basin. The EU is in a position to provide a framework for promoting the concept of payments for ecosystem services: at one level by strongly linking the CAP to the environment and on a higher plane by adopting, developing and promoting the ecosystem services concept within a strategic framework. This may ultimately require a re-orientation of the CAP towards a land use policy, which incorporates a food production strategy and recognises the suite of ecosystem services provided by the land. (paragraphs 152 to 154)

Chapter 6: Innovation and Research

214. We support the principle of the European Innovation Partnership on Water. We consider that clarity is required as to how the various initiatives in this area—Agricultural and Water European Innovation Partnerships and the Climate Change Knowledge and Innovation Community—will work together, drawing on relevant funding sources. How this work then feeds in to the Common Implementation Strategy on the Water Framework Directive, and on down to practitioners, as well as into rural development plans also needs clarification. It is vital that best practice developed through these initiatives is not only shared amongst but put into practice by Member States. We agree that the Water EIP should place strong emphasis on urban issues. (paragraphs 161 and 162)

215. Emphasis must be placed on effective engagement of stakeholders, including those working at catchment management levels. We re-iterate our view that local delivery of innovations is as important as networking at the EU level. As with all innovation, the challenge is in the integration and appliance of scientific knowledge in close partnership with practitioners in the field. (paragraph 164)

216. Connecting people back into their environment and their place in the landscape will be important if we are to reduce water consumption. Innovative methods, such as a report card or iphone app, can be used to

engage the public in their environment. Public information campaigns have been shown to be successful and we therefore consider that national administrations, including the UK Government, have a responsibility to boost public engagement. We see the proposed European Innovation Partnership as potentially a very useful forum for sharing such ideas on public engagement. (paragraphs 167 and 168)

217. We agree that greater recognition of the amount of water used in the products that we consume will be increasingly necessary and urge the Commission to consider the role of "virtual" water in EU policy, particularly in terms of achieving the objectives of the EU Resource Efficiency Roadmap. We acknowledge the difficulties in establishing a methodology and agree that further research is required, research which clearly needs to be cross-disciplinary, but also recommend that Defra consider policy options for ensuring businesses measure their water impact and develop specific water strategies to ensure security of their supply chains. Work by the Commission and Government must also be linked in to the work of the International Standards Organisation to avoid duplication. (paragraph 172)

218. In order to boost the use of rainwater harvesting, we urge the UK Government to consider tax incentives in addition to regulatory and voluntary approaches. The Commission could assist by sharing best practice on this issue, possibly through the Common Implementation Strategy or as a strand of work of the water EIP. (paragraph 174)

219. We support the increased budgetary provision on innovation and research as a larger proportion of a smaller overall EU budget; we consider there to be a strong case for the proposed Environment and Climate Change budget. We welcome the recognition in the proposed Horizon 2020 Programme of water-related research. Deployment of this funding must be dovetailed with spending under the Environment and Climate Change Programme. (paragraph 176)

220. Our knowledge of water-related ecosystems remains inadequate and we agree that emphasis must be placed on boosting this knowledge. Collecting the right data, from the right places, using the right techniques, is essential. This must include the impact of societal response to climate change, such as alternative crop development, water demand and population change. (paragraph 178)

221. We consider that development of methods for ecosystem service assessments at a local scale, tied into an emerging methodology for mapping of ecosystem services, would be useful areas for future research. Such mapping should inform the choices of technological solutions to be applied, avoiding a "one size fits all" approach to adoption of particular innovations. (paragraph 180)

222. We agree that further research into how new forms of local level collaboration can most effectively support water management throughout the European Union would be helpful in moving towards an institutionalisation of the emerging catchment management model. (paragraph 181)

223. It is evident that further research is required into the management of urban diffuse pollution. We note in particular that further work is required on run-off, sediment and wastewater treatment. The pressure on urban systems would be reduced if the discharge or discard of chemicals into the sewerage system in the first place were to be reduced, and thus greater work on this is required. (paragraph 184)

224. We accept that leisure industries, such as golf, must not be ignored in the push for greater understanding of new technologies that could reduce their water footprint. The Commission should consider such industries in the context of its Blueprint. (paragraph 186)

APPENDIX 1: SUB-COMMITTEE ON AGRICULTURE, FISHERIES AND ENVIRONMENT

The Members of the Sub-Committee which conducted this inquiry were:

The Earl of Arran
Baroness Byford
The Earl of Caithness
Lord Cameron of Dillington
Lord Carter of Coles (Chairman)
The Earl of Dundee
Lord Giddens
Baroness Howarth of Breckland
Lord Lewis of Newnham
Baroness Parminter
Baroness Sharp of Guildford

Declarations of Interests

The Earl of Arran
Married to farmer and landowner in Devon

Baroness Byford
Family farming interests in Suffolk
Member, NFU, CLA, National Trust
Member, Royal Agricultural Society of England
Patron/President of several rural charities
President 2010 The Royal Smithfield Club
Hon Ass. Member RCVS and BVA
President, Leaf
Patron, Womens Farming Union

The Earl of Caithness
Trustee of Queen Elizabeth Castle of Mey Trust which owns agricultural land
Chairman of a salmon fishing time-share and on the Caithness District Salmon Fishery Board

Lord Cameron of Dillington
Farmer and landowner in Somerset
Trustee of Lawes Agricultural Trust at Rothamsted
Director of Royal Bath and West Agricultural Society
President of the Guild of Agricultural Journalists
Chairman of the Strategic Advisory Board of the Government's Global Food Security Programme
A Member of: CLA, NFU, RSPB, CPRE and National Trust

Lord Carter of Coles
Farms and farmland in Hertfordshire

The Earl of Dundee
Farmer, landowner and forester in Scotland
Director of farming company in Scotland
In receipt of Single Farm Payments

Lord Giddens
No relevant interests

Baroness Howarth of Breckland
A Member of: RSPB, National Trust, WWT AND WWF

Lord Lewis of Newnham
Chair of Advisory Board, Veolia Environmental Services

Baroness Parminter
Charity Consultant (non-practising)
Trustee, Institute for Public Policy Research

Baroness Sharp of Guildford
Visiting Fellow to Science Policy Research Unit, University of Sussex

The following Members of the European Union Committee attended the meeting at which the report was approved:

Lord Bowness
Lord Carter of Coles
Lord Dykes
Lord Foulkes of Cumnock
Lord Hannay of Chiswick
Lord Harrison
Baroness Howarth of Breckland
Baroness O'Cathain
Lord Plumb
Lord Roper
The Earl of Sandwich
Baroness Young of Hornsey

During consideration of the report, no relevant interests were declared.

A full list of registered interests of Members of the House of Lords can be found at http://www.parliament.uk/mps-lords-and-offices/standards-and-interests/register-of-lords-interests/

Professor Robert Harris and Dr Jonny Wentworth acted as Specialist Advisers for this Inquiry and declared the following relevant interests:

Professor Robert Harris
Visiting Professor, Catchment Science, University of Sheffield
Contracted to Defra as Secretariat of their Demonstration Test Catchments Programme

Dr Jonny Wentworth
Environmental Partner, Chartered Institute of Water and Environmental Management
Member of the Institute of Ecology and Environmental Management

APPENDIX 2: LIST OF WITNESSES

Evidence is published online at www.parliament.uk/hleud and available for inspection at the Parliamentary Archives (020 7219 5314)

Evidence received by the Committee is listed below in chronological order of oral evidence session and in alphabetical order. Those witnesses with ⋆ gave both oral evidence and written evidence. All other witnesses submitted written evidence only.

Oral evidence in chronological order

⋆	(QQ 1–23)	Laurence Smith, Head of the Centre for Development, Environment and Policy, School of Oriental and African Studies, University of London (SOAS)
⋆	(QQ 24–51)	Severn Trent Water
		Thames Water
		Water UK
⋆	(QQ 52–97)	Natural Environment Research Council (NERC) Centre for Ecology and Hydrology
⋆	(QQ 98–118)	National Farmers' Union (NFU)
⋆	(QQ 119–142)	German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
⋆	(QQ 143–166)	Consumer Council for Water
⋆	(QQ 167–182)	Ofwat
⋆	(QQ 183–203)	Westcountry Rivers Trust (WRT)
⋆	(QQ 204–215)	Frédéric de Hemptinne, The Sustainable Synergies Group
⋆	(QQ 216–232)	World Wildlife Fund (WWF)
⋆	(QQ 233–256)	Environment Agency (EA)
⋆	(QQ 257–278)	European Commission
⋆	(QQ 279–307)	Department for Environment, Food and Rural Affairs (Defra)
⋆	(QQ 308–323)	French Ministry of Ecology and Sustainable Development

Alphabetical list of all witnesses

Association of Electricity Producers (AEP)

Dr David Benson

Dr Dylan Bright

The Chartered Institution of Water and Environmental Management (CIWEM)

⋆ Consumer Council for Water

Dr Hadrian Cook

* Department for Environment, Food and Rural Affairs (Defra)

  English Golf Union (EGU)

* Environment Agency (EA)

* European Commission

  European Golf Association Golf Course Committee

  Food and Drink Federation

* French Ministry of Ecology and Sustainable Development

* German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

* Frédéric de Hemptinne, The Sustainable Synergies Group

  Alex Inman

  Institute for European Environmental Policy (IEEP)

  International Commission on Irrigation and Drainage (ICID)

  Professor Andrew Jordan

* National Farmers' Union (NFU)

  National Farmers' Union Scotland (NFU Scotland)

* Natural Environment Research Council (NERC) Centre for Ecology and Hydrology

* Ofwat

  Scottish Agricultural College (SAC)

  Scottish Environment Protection Agency (SEPA)

  Scottish Land and Estates

* Severn Trent Water

* Laurence Smith, Head of the Centre for Development, Environment and Policy, School of Oriental and African Studies, University of London (SOAS)

* Thames Water

  Water Industry Commission for Scotland

* Water UK

* Westcountry Rivers Trust (WRT)

* World Wildlife Fund (WWF)

APPENDIX 3: CALL FOR EVIDENCE

Introduction

The House of Lords European Union Committee will conduct an inquiry, through its Agriculture, Fisheries and Environment Sub-Committee (Sub-Committee D), into the future direction of EU freshwater policy. The European Commission plans a "Blueprint to Safeguard Europe's Water" for publication towards the end of 2012. This has a twofold purpose: to assess the implementation and achievements of the current policy[203] while identifying gaps and shortcomings; and to look forward at the evolving vulnerability of the freshwater environment to identify measures and tools that may be needed in several EU policy areas in order to ensure a sustainable use of good quality water in the long term.

Water is a finite resource. Recent reports by the Committee have highlighted the importance of water sustainability to meeting new challenges, not least climate change and boosting agricultural productivity in order to respond to a growing global population ("*Adapting to Climate Change: EU agriculture and forestry*", March 2010, and *"Innovation in EU Agriculture"*, July 2011).

Our recent work and the Commission's current review of the policy, alongside current discussions on the future of the Common Agricultural Policy and cohesion policy make this a critical time to examine what is wanted from future EU freshwater policy.

The issues

The Committee is seeking evidence from interested parties on the issues outlined below. On the basis of that evidence, the Committee will formulate conclusions and recommendations to inform the House of Lords, and to contribute to the development of EU policy on freshwater by the UK Government and the EU institutions over the next few years.

The Committee invites you to submit written evidence, by **5 September 2011**. The Committee would find it helpful if you would focus on a number of specific issues, listed below. You may also wish to draw our attention to additional issues not addressed by the questions below. It is recognised that those submitting evidence will not necessarily have an interest in all the questions and may therefore wish to be selective.

Views are sought on the following:

Strategic objectives of EU freshwater policy

(1) The Commission states that the aim of future policy should be to ensure a "sustainable use of good quality water in the long term". Would you agree that this should be the overarching goal of EU freshwater policy? What particular challenges should seek to be addressed by the policy? In the light of existing information on population and climate change trends, how long should the Commission's "long term" be?

[203] Water Framework Directive (2000/60/EC), Groundwater Directive (2006/118/EC), Environmental Quality Standards Directive (2008/105/EC), Urban Waste Water Directive (91/271/EEC as amended by 98/15/EEC), Nitrates Directive (91/676/EEC) and the Floods Directive (2007/60/EC)

(2) How adaptable to emerging new challenges is the current policy framework likely to be?

Adding value

(3) How, and where, can the EU add value to the efforts of Member States in freshwater policy, including issues relating to financing? What aspects of the policy are best dealt with at Member State, or regional, level?

Future policy

(4) In the light of the challenges that need to be addressed, the importance of flexibility and the possibilities offered by the EU to add value, how do you think EU freshwater policy should change?

(5) What particular EU initiatives would be helpful in tackling water scarcity and droughts? Should the EU promote awareness, assessment, and labelling of the water footprint of products?

Research and innovation

(6) How can the EU's future research programme support freshwater policy and innovation in sustainable freshwater management most effectively?

Other policy areas: agriculture and cohesion

(7) How should other EU policy areas, notably the Common Agricultural Policy and cohesion policy, be used and adapted to the needs of sustainable freshwater management?

APPENDIX 4: LIST OF ACRONYMS AND ABBREVIATIONS

AEP	Association of Electricity Producers
CAP	Common Agricultural Policy
CIS	Common Implementation Strategy (for the WFD)
CSF	Common Strategic Framework for EU funds
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EIP	European Innovation Partnership
EQSD	Environmental Quality Standards Directive (2008/105/EC)
KICs	Knowledge and Innovation Communities
NFU	National Farmers' Union
Ofwat	The Water Services Regulation Authority (in England and Wales)
PES	Payment for ecosystem services
RBD	River Basin District
RBMP	River Basin Management Plan
SEPA	Scottish Environmental Protection Agency
SOAS	School of Oriental and African Studies
UWWTD	Urban Waste Water Treatment Directive (91/271/EEC)
WFD	Water Framework Directive (2000/60/EC)
WRT	Westcountry Rivers Trust

APPENDIX 5: RIVER BASIN DISTRICTS IN THE UK AND IRELAND

[Map here]

Source: Sniffer

APPENDIX 6: WATER STRESS ACROSS THE EU

[Map here]

Source: European Environment Agency (EEA)

APPENDIX 7: PAYMENT FOR ECOSYSTEM SERVICES (PES)

Ecosystems are composed of physical, biological and chemical components such as soils, water, organisms and nutrients. Interactions among and within these living and non-living elements, which may be physical (such as infiltration of water), chemical (such as oxidation) or biological (such as photosynthesis) give rise to ecosystem functions, intrinsic characteristics of the ecosystem, such as nutrient cycling, which are fundamental to maintaining its integrity. These functions determine the capacity of ecosystems to sustain ecosystem services, those aspects of ecosystems used (actively or passively) to maintain human wellbeing. The UN Millennium Ecosystem Assessment separated ecosystem services into four categories:

- cultural services (such as recreation, walking and fishing);
- provisioning services (drinking water and food);
- regulating services (flood and drought attenuation,); and,
- supporting services (soil formation and photosynthesis).

At present, the provisioning services are paid for by the markets, but most other ecosystem services are public benefits for which land managers (farmer) are not paid for providing. The 2011 UK National Ecosystem Assessment found that for freshwater habitats (openwaters, wetlands and floodplains) although the chemical quality of rivers and lakes has been steadily improving, many of the services from freshwater habitats have been poorly valued or completely overlooked. Consequently many have been degraded or lost through wetland drainage, flow modification for flood defences, toxic pollution and acidification, habitat degradation and loss, exploitation and introduction of invasive alien species.[204]

The aim of PES is to protect ecosystem services by providing an incentive to land managers to adopt land use or management practices favourable to the protection or enhancement of desired ecosystem service benefits.[205] The UK government committed to encouraging and facilitating greater use of PES in the future in the 2011 Natural Environment White Paper, and will to publish an action plan in 2012 to expand PES schemes. However, this approach of paying subsidies not to undertake polluting activities could be construed as conflicting with the "polluter pays" principle, which is enshrined in the WFD.

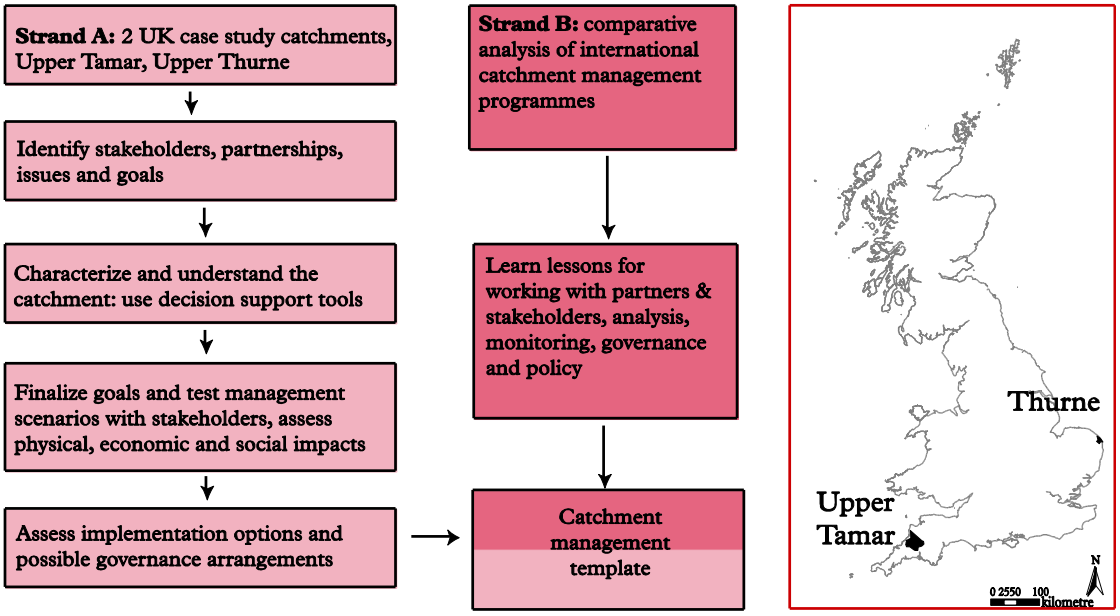
[204] UK National Ecosystem Assessment (2011), The UK National Ecosystem Assessment: Synthesis of the Key Findings. UNEP-WCMC, Cambridge.

[205] Defra Evidence and Analysis Series (2011), Paper 4, Payments for Ecosystem Services

APPENDIX 8: A 'TEMPLATE' FOR CATCHMENT MANAGEMENT[206]

The term 'catchment' refers to the sub-basins of tributaries or the whole river basin itself, as defined by the watersheds that divide drainage areas. In some countries 'watershed' also refers to this basin or catchment land area. The need to manage water from its source to its sink, and the inter-dependence of our water uses with each other and natural processes, require holistic and catchment-based management. Technical capability, leadership and coordination of actions are required for catchments that rarely correspond to administrative boundaries.

Our Project Structure and Activities



Source: Dr Dylan Bright, Dr Hadrian Cook, Alex Inman, Laurence Smith, Dr David Benson and Professor Andrew Jordan

Over abstraction, flood risk and water quality are common concerns. Water pollution comprises point and non point source contamination including discharges from water treatment and industry, surface run off from fields, seepage of nutrients from soil into ground water, stream bank erosion and discharges from dispersed and numerous minor point sources such as field, farmyard and urban drains.

Based on the achievements of innovative catchment management programmes in the USA, Australia and north west Europe, and on piloting of approaches in England, this project has derived a 'template' to guide integrated catchment governance through:

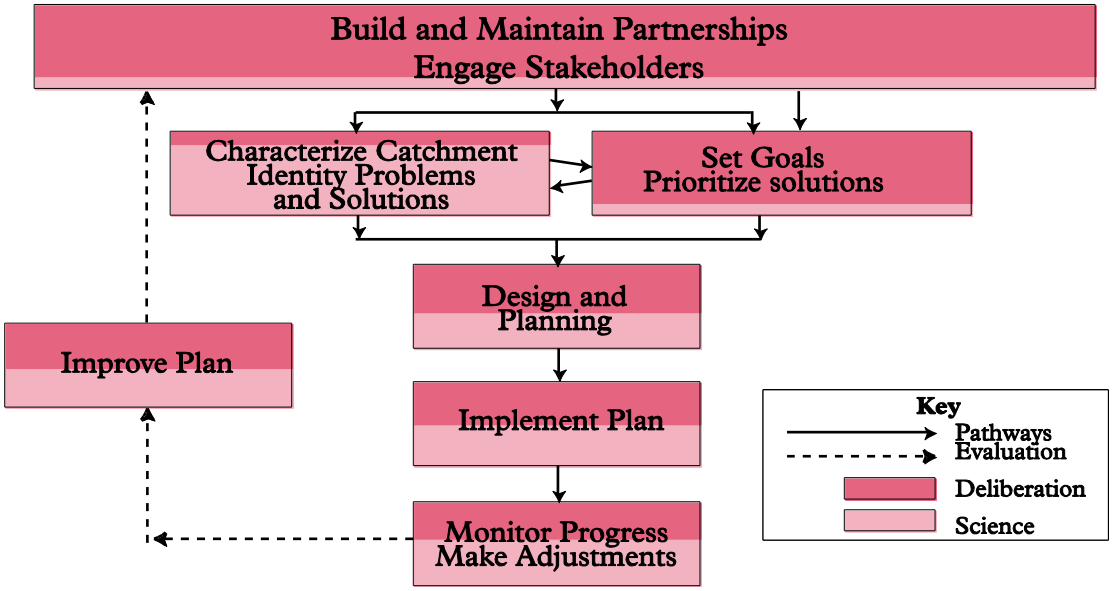
- the use of science and communication tools to guide policy, decision making, and management measures;
- collaborative partnerships and stakeholder participation that direct and enhance decision making;
- and decision making and implementation at the level which is most effective and accepted within catchments.

[206] Benson et al written evidence

Key Components of the Template

An Adaptive Management Cycle

The complexity, temporal and spatial scales, dynamics and inevitable trade-offs of catchment management necessitate an adaptive management cycle, collaboration between agencies and levels of government and a 'twin-track' of deliberative partner and stakeholder engagement supported by targeted scientific research.



Source: Adapted by Dr Dylan Bright, Dr Hadrian Cook, Alex Inman, Laurence Smith, Dr David Benson and Professor Andrew Jordan from Environment Protection Agency (EPA)

Aims and Outcome Criteria

Delivery of Long Term Water Quality Improvements and Sustainable Management of Water Resources

Ultimate goals are to sustain designated uses of land and water in a catchment with a functioning ecology, accounting for inter-generational needs and guarding the future against present uses.

Cost Effectiveness and Efficiency in the Delivery of Outcomes

Achieved through the prioritization of needs and targeting of resources based on catchment assessments, with flexibility in policy and delivery for well adapted local solutions. Monitoring and reporting should also demonstrate cost effective delivery compared to alternative approaches.

Assurance and Acceptance of the Burden of Costs and Distribution of Benefits

Allocation of catchment resources based on all legitimate interests and values that is accepted as fair and equitable, and an equitable allocation of financial and other costs to sustain catchment management.

Governance Components

Meaningful and Sustained Opportunities for Public Participation

Deliberation with partner organizations and other stakeholders can integrate environmental and public health criteria with economic and social goals. Stakeholders can contribute to catchment assessments and programme design, and implementation will be enhanced by local knowledge, acceptance and ownership.

Cooperative Partnerships Within and Between Levels of Government, Sectoral and Area Responsibilities, the Private Sector and Non-Governmental Organizations

Catchment programmes should be built from existing organisations and partnerships, centred on those with current management responsibilities, and working within the framework of prevailing law. The building of partnerships must establish shared goals and recognize differentiated interests and responsibilities. Catchment management requires technical capability, leadership and capacity for coordination covering at least agriculture, water supply, wastewater and waste management, highway and other storm runoff, stream corridor restoration, and development and spatial planning. Laws are needed that facilitate rather than prohibit partnership arrangements and appropriate delegation.

Legitimacy and Institutionalization of Programme Status

Integrated land and water management involves local responsibilities and requires inclusive deliberation at the local level under the framework of existing multi-level government. Thus locally acceptable responsibilities and rights must be translated from higher level regulation, with provision for inter-locality cooperation and coordination. Informal partnerships with effective leadership are often a starting point but growth in funds, capacity and authority usually necessitate standing, legitimacy and a formalised legal status.

Transparency and Accountability

All data, synthesized information and decision making should be available to the public and open to scrutiny. Key actors must assume and be accountable for their delegated responsibilities and outcomes. Accountability through elected officials is preferred, implying that at least an oversight role for local government is important.

Funding

Successful catchment management programmes access diverse funding sources including the private sector. However, continuity in institutional development and capacity building can be expected to require core public funding, and thus appropriate mechanisms for funding from higher levels of government.

Capacity Components

Mobilization of Locally Accepted Technical Providers

Trusted individuals, agencies or groups are needed for capacity building and advisory work, not least with farming communities. Their essential functions include convening and mediating to foster trust, participation, collaboration and co-production of knowledge.

Capacity to Conduct Comprehensive Condition and Threat Assessments, and Strategic and Action Planning, Based on Sound Science and Best Available Knowledge

Programmes must be able to make assessments of the condition of and all threats to water resources and prepare comprehensive and integrated plans. Ideally all partners will agree and refer to one integrated plan for the catchment. Planning and implementation must be based on credible science, and there must also be the capacity to commission external expertise and scientific peer review.

Capacity for Monitoring of Performance and Outcomes

Monitoring and evaluation of the processes and outcomes of catchment management is essential to the learning and responsiveness inherent in an adaptive management cycle, and for determination of the effectiveness and efficiency of outcomes. Reporting on governance, achievements and outcomes is also inherent to sustaining stakeholder and partner engagement, and to demonstrating the benefits of collaborative and integrated catchment management.

Capacity for Knowledge Exchange

Programme technical providers need to act as brokers to compile, synthesize and communicate information, enabling decision makers to consider and use diverse data sources. Education about water resources for children, parents and communities can be a facilitator for commitment and action and a two-way process. Gaining the benefits of partner and stakeholder participation in terms of enhanced diagnosis, planning and implementation requires an accessible knowledge base, skilled intermediaries, and high quality communication and decision-support tools.