Consultation Process for the Biodiversity Climate Change Sectoral Adaptation Plan

September 2019

Overview

Section 1.2 of the Biodiversity Climate Change Sectoral Adaptation Plan describes the development of the Plan up to the point of public consultation. This document presents the responses to the 14 submissions received via public consultation.

The Biodiversity Climate Change Sectoral Adaptation Plan that was submitted for public consultation was also presented at the National Biodiversity Conference 2019 by Tara Shine and chaired by Margaret Desmond (EPA). Approximately 180 delegates attended this session. The session collated feedback from the audience and through the use of Slido, an audience interaction tool that allows people to submit their comments online during the event. The areas highlighted by the delegates included, inter alia, habitat restoration; addressing data gaps, particularly relating to a national habitat map; the important role of the National Biodiversity Data Centre in the collection of biodiversity data; the promotion of incentives for farmers to conserve biodiversity; the significance of riparian corridors for connectivity in the wider countryside; the need for education across sectors; suggestions for the investment of National Lottery funding, crowdfunding, Leader funding and funding arising from "polluter pays principle" into conservation/restoration. The debate was lively and many points have been taken up within the Climate Adaptation Plan or are already covered under the National Biodiversity Action Plan 2017-2021.

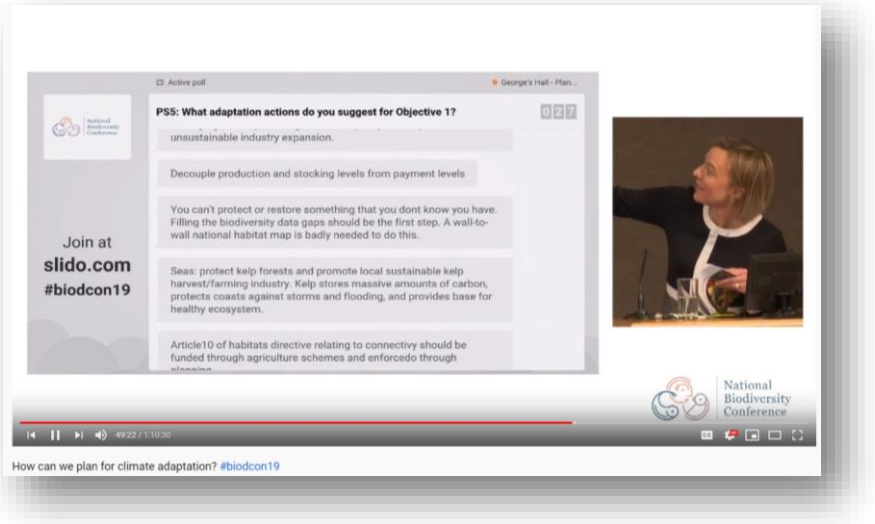

Figure 1 – Tara Shine discussing Sli.do comments on elements of the draft Biodiversity Climate Change Sectoral Adaptation Plan at the National Biodiversity Conference 2019

An Roinn Cultúir, Oidhreachta agus Gaeltachta
Department of Culture, Heritage and the Gaeltacht

Organisation	Submitted Comments	Response Notes
1. Clare county council	1. Reflect the importance of how the final plan might generate change the thinking or perception (particularly in relation to developers) that biodiversity is a hindrance or barrier to economic development.	Addressed in Executive Summary
	2. Clare Council welcomes the announcement of Biodiversity funding for Local Authorities in support of the National Biodiversity Action Plan implementation. It recommends that a commitment would be made to continue and expand this funding allocation in the coming years.	DCHG funding for local biodiversity action to double by 2021. See "Seeds for Nature" National Biodiversity Conference charter.
	3. Many of the actions such as 1.3 and 2.6 relate to the collection of data relating biodiversity which was previously not undertaken by a local authority. The need to monitor and collate baseline information is of paramount importance as we cannot predict the impact without first understanding the baseline. It is difficult to ascertain how Local Authorities will undertake such monitoring based on the actions outlined. It is recommended that a commitment be made to adequately resource local authorities with qualified and experienced staff to facilitate this information gathering	LAs have collected considerable biodiversity data over recent years e.g. county wetland surveys. There will also be data arising from the Local adaptation plan.
	4. How these methodologies will be implemented across the various authorities and on a transboundary across local authority boundaries would need to be carefully planned.	We assume that the CAROs would have a role in this.
	5. It is recommended that consideration be given to the creation of a shared platform that might be hosted at a national level but where Local Authorities would be in a position to upload and access collated information	All government funded environmental data should be made publicly accessible. Action 6.4 looks to Climate Ireland, funded by DCCAE, to point to relevant datasets

Organisation	Submitted Comments	Response Notes
	6. Action 1.9 states "Develop an integrated coastal management strategy which includes ecosystem-based adaptation actions to manage climate risk and build resilience to climate change". Clare County Council as lead authority was one of the key drivers behind the development of the Strategic Integrated Framework Plan for the Shannon Estuary. The Strategic Environmental Assessment which supports this plan is currently in the implementation and monitoring phase. Significant commitments were made in the plan in relation to the collation of baseline information in order to inform future development in the knowledge that climate change could alter not only the physical footprint of the estuary but also the way in which the estuary is used by a variety of species. This has required significant resource to monitor and collate information and to make sure the levels of collaboration needed are achieved. There is a query as to where the resources will come from to undertake an integrated coastal management strategy and on what level this will be undertaken (Local, Regional, National). 7. There is a significant challenge in aligning the objectives and actions between Local Authority adaptation strategies and sectoral adaptation plans and it would be useful to provide and synopsis of how this will be achieved.	This action is embedded in the National Marine Planning Framework The ongoing work of the interdepartmental adaptation steering committee will address this
2. Birdwatch Ireland	1. Worth reiterating the recent study by BirdWatch Ireland and funded by the Department of Culture, Heritage and the Gaeltacht (DCHG) detailing the 40% decline in waterbird species in less than 40 years with a 15% decline in 5 years1. Climate change has been identified as a significant factor in these shocking declines. The impacts of extreme weather events are very well highlighted in the draft Plan and we would hope that NPWS staff would continue their important work in noting these on-the-ground impacts of these events on their own work and on habitats and species. 2. Recently four climate change adaptation plans were subject to public consultation for the greater Dublin area. These plans include sections on biodiversity. Other plans will be published in 2019 for other climate change adaptation offices. It is critical that these plans are reviewed for coherence to ensure the best outcomes for biodiversity.	Additional information relating to recent publications on the impact of climate change on Birds had been added throughout section 3.3 All available plans were reviewed and relevant information summarized in Table 3

Organisation	Submitted Comments	Response Notes
	3. In addition, Regional Economic and Spatial Strategies are being produced which will impact on the potential for saving spaces and making space for biodiversity under a climate change scenarios.	Noted
	4. Some immediate actions could be taken now in response to government policies and should be taken. a. Extreme weather events are affecting biodiversity now. Planning to address these events for birds and other animals especially during the breeding period need to be considered now. For example, flood events and measures to address flooding must be examined for impacts to breeding river birds such as Kingfisher, Dipper, Grey Wagtail.	Elements addressed in Action 1.7
	5. Climate change **mitigation** measures are being implemented by government (but not fast enough). These include proposals for deep retrofitting of buildings which may remove nest sites for birds (and roost site for bats) in particular Swifts, but also House Martins and Swallows. Measures to ensure that Swift nest sites are not destroyed and indeed that Swift bricks are included in any retrofitting works must be developed and included in County Development Plans. Additional Survey work is needed to ensure nest sites are known for this species in decline.	Maladaptation screening covered in Actions 2.5 and 4.1
	6. The Plan rightly outlines that biodiversity is crosscutting across sectors and the DCHG doesn't own biodiversity. However, it is not clear how agriculture/forestry/fisheries etc. will provide for climate change adaptation planning for biodiversity. This needs to be fleshed out.	Addressed in Section 4.1 – Cross-sectoral considerations. Also considered as part of relevant sectoral plans. See also Action 3.5
	7. The Climate change adaptation action plan should have regard to the report of the Joint Oireachtas Committee on Climate Action which outlines specific measures which have climate change mitigation and adaptation planning with biodiversity co-benefits.	Addressed in Executive Summary, and section 2.2 Biodiversity policy in context of climate change
	8. A financial plan is needed and should be presented with the final plan to demonstrate the scale of the resources need and how this will be sourced. It is noted that some	Addressed under Objective 5 – Multiple actions 5.1-5.5. A Financial Needs Assessment is

Organisation	Submitted Comments	Response Notes
	actions outlined have High Resource needs.	underway Noted in Section 4.1 – Cross-sectoral considerations
	9. Coherence of policies (agriculture/forestry/fisheries and biodiversity) deserves greater attention in the report and greater action from government departments.	
	10. Strict adherence to the Birds and Habitats Directives is required and the precautionary principle applied to planning applications that threaten important sites for birds and other wildlife. We need to protect what we have. Greenways are a significant focus of local authorities at the moment but mostly the urge is to site them close to important and sensitive coastal sites for birds. A stronger response is needed from NPWS to ensure that the most important sites for birds that exist currently are not further impacted by disturbance in particular. Cumulative impacts of activities in particular needs greater consideration.	Covered under existing Appropriate Assessment
	11. The DCHG should consider the development of a Climate Change Adaptation Impact Assessment tool which can be used to address potential impacts form proposed developments or policies on the climate change adaptation potential of species.	Addressed Objective 2, action 2.5
	12. Better implementation of the laws protecting birds, other biodiversity and their habitats is urgently required. This includes the EIA regulations especially as they relate to agriculture.	It is not the role of this plan to determine the effectiveness of the implementation of existing laws
	13. The conservation status of the conservation interests of specific Natura sites needs to be published so that and greater protection afforded to Natural Heritage Areas. Proposed Natural Heritage Areas also need to be fully designated. These are important stepping stones in the landscape which will help improve landscape permeability but many are degraded.	Any locally derived assessments by NPWS are published on the NPWS website
	14. The following actions are suggested in relation to birds: a. Set out to quantify the	Captured under Actions 1.8 and 2.1

Organisation	Submitted Comments	Response Notes
	impact of sea-level rise on coastal birds and their habitats. b. Identify sections of the (national) coastline that are used by significant numbers of coastal waterbirds (high and medium-risk especially) and explore/promote managed realignment to minimise impacts of sea-level rise over time.	
3. UCC / BEES	1. Greater focus needed on interactions of agriculture/forestry with climate and potential impacts on biodiversity. Most of the Irish land cover is directly shaped by humans (e.g. pastureland, cropland, forestry) with substantial implications for carbon budgets, climate resilience and biodiversity. While trophic interactions and the threat of phenological mismatch are covered in the Plan, the importance of plant biodiversity as a buffer for phenological mismatch is not addressed. Overall, there could therefore be more focus on vulnerability resulting from monocultures and the potential to improve ecosystem stability through increased cultivated plant biodiversity and selection of the most suitable species, varieties or provenances. There could also be recognition that biodiversity at a regional scale (i.e. landscape homogeneity) has effects on ecosystem functioning and stability (Mori *et al.*, 2018; Oehri *et al.*, 2017)	Added under Section 3.3, Increased degradation of habitats and changes in ecosystems processes
	2. The impact of monocultures (such as grasslands dominated by perennial ryegrass or tree monocultures in forestry) on biodiversity should be included. This is of importance since more diverse plant communities support higher animal biodiversity in general and provide a more continuous source of food, thus avoiding vulnerabilities arising from phenological mismatch in response to climate change. In addition, grasslands *et al.*, 2015) and forests (Liang *et al.*, 2016; Jactel *et al.*, 2018) with a larger number of plant species are more productive, capture more carbon and therefore have a higher potential to mitigate against climate change. For example, species-rich grasslands were shown to increase soil microbial activity and soil carbon storage (Lange *et al.*, 2015). Furthermore, plant species richness increases climate resilience and supports high grassland productivity during climate-related stress (Isbell *et al.*, 2015).	Added under Section 3.3, Increased degradation of habitats and changes in ecosystem processes
	3. Given that two thirds of Ireland are covered by grassland, there is an enormous potential to improve carbon storage in the soils (Royal Irish Academy, 2016). This requires selection of grassland species and ryegrass varieties that are adapted to a future Irish	Added under Section 3.3, Increased degradation of habitats and chances in ecosystem processes

Organisation	Submitted Comments	Response Notes
	climate, and optimise species mixtures that sequester more carbon in the soil, are more climate resilient and support higher biodiversity.	
	4. This potential of grasslands to capture carbon would be maximised if the agricultural policy that impacts upon grassland greenhouse gas emissions (primarily dairy and beef sectors) were aligned with the objectives of a Biodiversity Climate Change Adaption Plan. Strategies should be advocating in concert for sustainable, carbon-neutral land-use that promotes the livelihoods of farming communities.	Acknowledged in Section 3.1 and 4.1 – Cross-sectoral considerations and under Objective 1 under Objective narrative
	5. Through afforestation, the area of Ireland covered by forests Ireland has increased to 11% (DAFM, 2018), and it is important that the climate resilience of these forests as well as their potential to support biodiversity in a changing climate are investigated, with the aim of choosing the best species/provenances and tree species mixtures that support biodiversity and other ecosystem services such as carbon sequestration.	Noted in Section 4.1 – Cross-sectoral considerations
	6. Since climate has a direct impact on the timing of phenological events of plants and thus on their ability to sequester carbon and provide food and habitat to animals (as explained in the Adaptation Plan*),* an action should be included to coordinate sustained phenological research at national level. The EPA has recently re-established funding for phenology research in Ireland, with the following departments and organisations involved on the steering committee: DAFM, DCCAE, National Biodiversity Data Centre, Central Statistics Office, OPW and Met Éireann. OPW and Met Éireann also contribute data to the International Phenological Gardens of Europe (IPG), but coordination at the national level between the phenological gardens in Ireland and better access to the data for Irish researchers is required. Improved access to phenological data will be helped by a long-term commitment to a National Phenological Network and central coordination of all phenological data by an established organisation.	Objective 2 – New Action Added, 2.4

<table>
<tr><th>Organisation</th><th>Submitted Comments</th><th>Response Notes</th></tr>
<tr><td>5. Hedge Laying Association of Ireland (HLAI)</td><td>Mark McDowell, Secretary of the Hedge Laying Association of Ireland (HLAI) here.
I notice in the table on page 33, Protect and restore biodiversity etc, 1.6 Actors should include the Forestry NGOs and our own HLAI. NGOs are included as Actors elsewhere on the table and it would be logical to include them here also.</td><td>ENGOs added where appropriate</td></tr>
<tr><td>6.Chartered Institute of Ecology and Environmental Management's (CIEEM)</td><td>A General Comments
1. language may not be fully accessible to everyone, thereby potentially limiting reaction and response from the general public
2. Noted that certain semi-state bodies such as Coillte Teo and Bord na Mona are not represented on the working groups though their inclusion and engagement would seem to be critical and they are an actor in Objective 1.2

B Specific Comments/Observations on the Consultation Document

Page | Heading / Section / Paragraph / Bullet No. | Comment /observation

10 | Background/1.1 | Biodiversity is described in the context of EU habitats and species and does not include all of Irelands Biodiversity, or indeed much of the biodiversity that people are familiar with. Information on Ireland's biodiversity is available from the National Biodiversity Data Centre. It would be useful to describe biodiversity in terms of locally and nationally important habitats and species, as well as European, so that the wider community are more likely to connect with biodiversity and the Plan itself.

14 | Section 2.1 | In addition to the Core Team, it is suggested that a full-time project manager and/or administrative officer should be engaged to oversee the implementation of the Plan, or perhaps this is already</td><td>Added to Objective 1.2 Actors

The section refers to DCHG (2014) which gives a more comprehensive overview of Irish Biodiversity. Insect numbers are given. The most comprehensive and recent assessments have been under the Directives.

Resources have not been allocated at this stage</td></tr>
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Organisation	Submitted Comments	Response Notes
	planned?	
		Amendment made
		Too specific. Numerous other examples could be included on this basis
		The LA fund from DCHG has increased.
		Addressed
		Addressed

Organisation	Submitted Comments			Response Notes
	22	Category 'Degradation of habitats'	It is suggested that this might be changed to 'Loss and/or Degradation of habitats.'	Addressed
	22	Category 'Degradation of habitats'	Perhaps another bullet point could be added to address the increasing loss of trees owing to: storms; removal of trees because of H & S concerns from public; losses as a result of to flood protection schemes. This tree loss is compounding the loss of Carbon Sequestration services, thus in turn compounding climate change and impacts on biodiversity.	Acknowledged
	31	6.1 Goals and Objectives. Objective 5	It is very important that sufficient funding is provided. It is noted, however, that funding provided by the government to Local Authorities to tackle invasive species last year was under €5k which does not suggest that the matter is being taken seriously – even though invasive species is one of the priority impacts of climate change.	All Biodiversity Updated to Academia throughout to cover Uni & Schools and not just restricted to research but led by academics (Actions 2.9 & 2.10)
	33	Table 2 Overall comment regarding Objectives	Table 2 provides timeframes of Short term, Medium term and Long term. It is not clear what is meant by these terms. It is suggested that and explanation be provided as to what constitutes Short Term etc in terms of years.	
	33	Table 2 Overall comment regarding Objectives	Similarly, it is unclear what the relative values attributed to 'Resources' means. Does it mean labour, funding? What do High, Medium and Low refer to? It is suggested that some explanation / clarification is provided in this regard.	Should be captured under DAFM plan & through maladaptation actions
	33	Table 2 Overall comment regarding Objectives	Following on from the above two comments regarding the lack of clarity around Timeframe and Resources: It is considered that this lack of clarity does not help in trying to understand how realistic it is to achieve the objectives. More precise, confirmed timeframes and resources would be	Ecological consultants can be considered as a Business actor

Organisation			Submitted Comments	Response Notes
			welcomed.	
	v33	Table 2 Overall comment regarding Objectives	It is vital that these objectives and actions are implemented.	Addressed Objective 1, action 1.4
	33	Table 2 Objective 1.1	Does this include all biodiversity or just EU protected habitats and species? Actors: to include the NBDC. Objective 1.1 lists schools as an actor in delivery of the NBAP. This should also include 3rd level institutions. There are many relevant initiatives underway at 3rd level which are relevant to the NBAP and would not be covered under academic research (green colleges, outdoor play workshops, invasive species monitoring by students) "Establish an all-island invasive species programme to monitor the spread of terrestrial, aquatic and marine invasive species in a changing climate and control invasive species where their spread is considered problematic." Also include species used in agricultural diversification, such as non-native species grown for biofuel where the potential impact of rising temperatures on them is unknown, and any naturalisation / spread would be of concern. Perhaps CIEEM is a relevant Actor in the implementation of the Plan? Given the extent of survey work undertaken by ecologists country-wide and the assessment of potential impacts of proposals (taking account of climate change, where appropriate), there would seem to be a role for ecological consultants here. The restoration of degraded peatlands is a key priority to reduce	Covered in Actions 1.4 & 1.5 Addressed under current actions Addressed Objective 3 – under actions 3.1-3.4 Covered in Action 2.3 Addressed, resources increased to medium

Organisation	Submitted Comments	Response Notes
	degradation of carbon stores, and to increase the carbon sequestration capacity of these habitats.	Addressed Objective 5, action 5.3
	As a method to increase the scale of restoration works, could the restoration of blanket bog be included in agri-environment schemes for farmers in western or upland areas, e.g. as a component of GLAS, the NPWS Farm Plan Scheme, or via different scheme? Landowners could receive grants to cease peat extraction, to block drainage channels, to exclude livestock from areas subject to excessive poaching, or to re-profile heavily eroded areas.	
	Suggested that this would this be added as a separate action of the Plan?	Addressed in Action 4.1 and in info box 10
	A suggested additional action: Improve understanding of the impacts of climate change on biodiversity, could be that we decide to record climate change impacts, note species activities which are unusual, early arrival of migrants etc., invasive species, effects of extreme weather events.	
	This could be done through the NBDC, but agree to/acknowledge this objective as ecological consultants/CIEEM? (Acknowledging data ownership issues). Also improve local connectivity between local habitats and designated areas.	Addressed Objective 5, actions 5.1-5.3
	Suggested additional objective: Examine the impacts of flood alleviation activities, such as dredging activities, removal of riparian trees considered as flow obstructions etc; and the negative impacts of these channel maintenance and flood management activities on biodiversity.	
	This is a very important objective and yet 'Resources' are placed as Low.	Addressed in Action 5.2
	This appears to be a misunderstanding of the implications of using such measures in an urban environment where lands may not be available for natural attenuation features and land availability and	

Organisation	Submitted Comments	Response Notes
	therefore cost is very high. The feasibility of nature-based solutions in urban environments is not as great as in the rural context. Peatlands should form a key component of natural capital accounting, because these areas are very important in Ireland's carbon budget. As an action of the Climate Change Adaptation Plan, it is suggested that an attempt should be made to assign an economic value to Ireland's peatlands, including their capacity to reduce Ireland's GHG emissions (through sequestration), and their capacity to reduce Ireland's GHG emissions (through degradation). As an action of the Climate Change Adaptation Plan, the potential role of carbon-sequestering habitats (notably peatlands/wetlands and native woodlands) should be highlighted as an option to reduce Ireland's GHG emissions. This may help to attract funding for large-scale peatland-restoration and/or woodland-planting projects. The Oireachtas is currently debating proposals for carbon taxes in Ireland. The use of carbon tax revenue is currently under debate, with some TDs recommending its use for home-insulation schemes, others for infrastructural projects (e.g. flood-prevention measures) or for other non-specified "climate actions". It is suggested that the Core Team should lobby for carbon-tax revenues to be used for beneficial habitat measures, notably the restoration of degraded peatlands, and the planting of native woodlands. It is suggested, therefore, that this should this be added as a separate action of the Climate Change Adaptation Plan. It is considered that the Core Team should monitor the international policy regarding emissions offsetting and trading, in order to identify opportunities to attract international financing for beneficial habitat measures (e.g. peatland restoration, planting of native woodlands) from others nations that are signatories of the Paris Agreement.	Addressed in Action 5.2 Citizens Assembly for Biodiversity is scheduled to take place

Organisation	Submitted Comments	Response Notes
	The Core Team could investigate the opportunities for a flagship carbon-offsetting project designed to attract direct investment from international corporations that are seeking to offset their emissions. For example, the Katingan-Mentaya project (http://katinganproject.com/impacts/1/climate) is a private enterprise that attracts donations from international corporations, and uses the funds to restore degraded peatland forests in Indonesia. The project complies with Verified Carbon Standard (VCS), and Climate Community and Biodiversity (CCB) standards. A similar flagship project could be developed in Ireland - e.g. to restore Ireland's degraded raised bogs - and could be marketed towards international corporations with large carbon footprints. Perhaps this could be added as a separate action of the Climate Change Adaptation Plan? The cross-Government Department representation on the working group as shown in the Appendix is essential. Is it possible that something similar to the citizens assembly may be used to gain citizen representation on this group? The citizen assembly process allowed citizens to engage and become informed on issues of national importance, there was good media coverage and the chair delivered the views of the citizens. A similar model might be used as one way to engage citizens in this critical issue of climate change.	
3. OPW	Outlined below are observations from the relevant sections within the OPW, namely Flood Risk Management and National Historic Properties, on the actions setout in the draft plan which are applicable to OPW. Action No. OPW Observation **1.1** OPW actively participate on the High Level Biodiversity Group and the Inter-departmental	Acknowledged

Organisation	Submitted Comments	Response Notes
	Biodiversity Working Group to assist implementation of the national plan.	
	1.2 For the provision of flood maps covering the current condition as well as future scenarios (medium and high-end) please refer to www.floodinfo.ie. In the Flood Risk Management Plans (FRMPs), published in May 2018, the OPW committed to examine measures that will have benefits for both WFD and flood risk management objectives. The OPW is involved in a number of initiatives involving Natural Water Retention Measures (NWRMs) which can potentially generate multiple benefits including biodiversity gains and improvement in flood resilience.	Noted
	2.1 The National Botanic Gardens (NBG) are responsible for coordinating an international response to the Convention on Biological Diversity in terms of a National Strategy for Plant Conservation (NSPC). NBG will continue research in the assessment of plant species vulnerability to climate change (following from Wyse Jackson 2007).	Noted
	2.2 The National Herbarium in Glasnevin holds current and historical plant specimens and records from across the country. These records are an important source of data to inform actions on biodiversity adaptation to climate change.	Noted
	2.3 There are no action currently being progressed by OPW which would comply with this action and we propose OPW be removed as an 'actor'.	Follow on from Action 1.7. Also a role for the Botanic Gardens
	2.5 There are no action currently being progressed by OPW which would comply with this action and we propose OPW be removed as an 'actor'.	The OPW should consider ecosystem based adaptation as part of flood relief
	3.1 OPW complete some work in respect of invasive species management as part of flood risk management operations but there is no action currently being progressed by OPW which would comply with this overall action and we propose OPW be removed as an 'actor'.	Role for Botanic Gardens
	3.4 OPW collaborate with Inland Fisheries Ireland in a national barrier assessment project.	Noted

Organisation	Submitted Comments	Response Notes
	4.1 Natural Water Retention Measures (NWRMs) initiatives carried out by OPW as noted in Action 1.2 above, are also partly applicable to this action.	Noted
	4.2 National Historic Property sites have implemented a number of educational and awareness programmes on climate change, including phenology walks and the all-Ireland pollinator plan. The National Botanic Gardens have put in place a "Be Plant Wise" programme as part of an Invasive Species Ireland initiative.	Noted
	4.5 Similar to as noted in Action 1.1, OPW are actively participate with multiple biodiversity forums which assists cross-sectoral communication.	Noted
	4.6 The National Strategy for Plant Conservation progress report was launched at the National Biodiversity Conference.	Noted
	5.2 There are no action currently being progressed by OPW which would comply with this action and we propose OPW be removed as an 'actor'.	OPW removed although there may be a role for the Botanic Gardens
	5.3 There are no action currently being progressed by OPW which would comply with this action and we propose OPW be removed as an 'actor'.	Action updated to include cost benefit analysis undertaken to promote Ecosystem Based Adaptation options; this should be undertake as part of flood relief proposals to ensure effective spending of exchequer funding
4. SWC Promotions	1. Can contribute a case study regarding the three barrier-lagoon systems on the South Wexford Coast	Noted
	2. How would you prioritise the climate impacts identified in the Plan? (1) Coastal erosion and coastal flooding, (2) Summer droughts, (3) Wet winters, (4) Snow and low temperatures, (5) High winds.	Information used to inform final document

Organisation	Submitted Comments	Response Notes
	3. See that adequate human and financial resources are provided to make it happen.	Addressed Objective
5. Climate Change Advisory Council	**General Comments** 1. The document summarises well the current status of biodiversity in Ireland, however the final plan would benefit from additional case studies and particularly from examples of green infrastructure. The draft also contains limited assessment of the risk and adaptation requirements for biodiversity in the urban environment. 2. Very useful detail is given on the adaptation planning process of establishing a core team, its responsibilities and the services derived from academic and other sources however the final plan should reflect how the key skills required were decided upon and deployed. 3. A clear vision/goal for adaptation for the sector should be identified at the outset. This is important to enable appropriate assessment of the subsequent plan for its suitability. This should align with the definitions of resilience, mitigation and adaptation provided in the Climate Act and national policy.	Additional case studies added as suggested including urban focused. Acknowledgement of risk and adaptation requirements for biodiversity in urban environments captured in the final objectives and accompanying narratives The key skills required are captured in several of the Plan's objectives and actions. Pressing research gaps in biodiversity are highlighted and suggested additional research and programmes (including phenology, invasive species monitoring and vulnerability assessments are) are highlighted. This has been addressed in the new plan with the goal and associated objectives captured clearly at the outset and explicitly aligned with the Climate Act and relevant national policy.

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	4. Much of the text in the draft is taken from both the sectoral and local authority guidelines which may lead to inconsistency in tone and style. A statement at the beginning of the final plan demonstrating how the Climate Act, National Adaptation Framework and the relevant adaptation guidelines have been considered would be useful. It may be useful for the reader if text from the guidelines is not restated unnecessarily and more appropriate chapter titles are used in the final plan.	Significant revisions have been carried out in the final document to address the points made here including significant editing of text, revisions of chapter titles and a streamlining of tone and style.
	5. The final plan should further address the risk to biodiversity of potential mitigation actions. Information on the costs and benefits of adaptation within the sector is limited and there is limited reference to co-benefits.	This point has been addressed in the framing (introduction) of the final plan and captured in the plan objectives, particularly Objectives 5 and 6.
	Projections and Risk 6. The period identified for climate impact screening is narrow and the assessment of impacts of climate events is not systematic.	Due to data and resource limitations the climate impact screening was carried out best fit the constraints presented. Data limitations and research gaps in relation to biodiversity in Ireland is well documented in the National Biodiversity Plan and elsewhere.
	7. The draft plan provides limited information on the range of climate scenarios/uncertainty that have been considered. The Council consider that a wide range of plausible climate change outcomes should be considered. It is not clear	See response above. There are significant limitations of data available and the Plan was carried

Organisation	Submitted Comments	Response Notes
	whether future climate impact is being assessed for any future time period or scenarios in particular.	out using current state of the art science available
	8. 'Priority Impact Assessment' is one of the steps contained in the sectoral adaptation planning guidelines. The Council note that no priority impact assessment has been conducted as part of the draft due to data constraints, the absence of vulnerability assessment for ecosystems and biodiversity and the cross cutting nature of biodiversity. The sectoral adaptation guidelines note that 'where quantitative data is lacking or deficient' previous experience of climate and weather-related impacts and expert understanding of how biophysical impacts are manifest can be employed. The absence of a priority impact assessment means the draft plan does not address urgent and future climate risks in depth. This is very important for such a potentially vulnerable sector and should be addressed in the final plan.	The issue of Priority Impact Assessment is captured in the new Section 4 Prioritisation and Planning and cross-cutting issues are captured in the Cross-sectoral considerations section 4.1. Clear links and interdependencies between sectors are articulated and captured here.
	9. The 2013 research which suggested upland habitats, peatlands and coastal habitats may be most vulnerable to climate change impacts is cited but the draft plan does not discuss these further in any depth.	This has been addressed in the final plan with additional detail and case study material added.
	10. The final plan should also consider the implications of societal developments such as changes in population and urbanisation patterns etc. further.	This has been addressed in the final plan with additional material added.
	Ownership and Implementation	
	11. Much of the text on monitoring and evaluation in the draft is drawn from the guidelines, with little detail on how it will be applied in the context of the sector.	The monitoring, evaluation and review section has been expanded

Organisation	Submitted Comments	Response Notes
		and revised significantly to address this comment.
	12. The draft plan presents adaptation actions that at times could be more focused and many of the adaptation actions identified are for others to implement and cost. There is limited information on how these bodies were engaged in devising the actions or how implementation will be overseen. This approach risks a low level of commitment to implementation from responsible bodies.	This comment has been acknowledged and addressed in a revised section on Governance and by identifying lead actors in for specific actions where possible. The section on cross-sectoral considerations 4.1 also captures these concerns.
	13. In future, to progress integration in the implementation process, more of the key decision makers, from central and local Government and at senior levels, should be involved. The role of the Department of Agriculture, Food and the Marine as a key stakeholder in particular should be considered further.	Acknowledged and captured in Governance Section and section on cross sectoral considerations 4.1
	14. The draft plan states that 'Due to the cross-cutting nature of biodiversity it is vital that ALL sectoral and local adaptation plans: 1) Emphasise the importance of natural capital, including biodiversity, to resilience building in all sectors; 2) Systematically evaluate and implement (where viable) nature-based adaptation actions', however it is weak on how this is to be achieved. Further detail should be given on the proposed structures to be used to integrate biodiversity considerations into other sectoral plans and local strategies (e.g. via the National Adaptation Steering Committee, or new structures?)	This comment has been acknowledged and addressed in a revised section on Governance and by identifying lead actors in for specific actions where possible. The section on cross-sectoral considerations 4.1 also captures these concerns.
	15. The final plan should focus more the means of developing interactions and communication between the key stakeholder groups and of finding ways for the practicable integration of the work to be undertaken by these groups.	Captured under Governance, Cross-sectoral considerations

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		and Monitoring, evaluation and review sections.
	16. To ensure implementation and change can be monitored, it is essential that appropriate indicators are identified, and systems put in place to enable these to be updated and tracked. In addition, monitoring is critical to ongoing improved understanding of future impacts and the sensitivity of key ecosystems and species to climate change, both in terms of slow onset changes and extreme events. The draft plan does not propose appropriate actions to address the need for these indicators. There are useful international examples to inform this issue. For example, the recent evaluation of the EU adaptation strategy discusses transferable lessons learned that may improve climate change adaptation evaluation practices in areas including biodiversity	Now addressed in updated Plan under Monitoring, evaluation and review and captured under Objective 6, Putting adequate monitoring and evaluation measures in place to implement the Biodiversity Climate Change Adaptation Plan
	17. The role of the Department of Culture, Heritage and the Gaeltacht and of the National Parks and Wildlife Service in biodiversity and adaptation could be explained in more detail to deepen the understanding of responsibilities in the sector.	DCHG have oversight of the Plan but need commitment and collaboration with other relevant sectors
	18. The draft plan does not identify the range of potential resources available to enable adaptation actions. For example, LIFE funding is discussed but the draft is limited on how the sector could integrate/benefit from the other research funding processes. Also, the Climate Action Fund is not noted.	DCHG collaboration with EPA regarding research funding detailed. Additional research streams highlighted in the National Biodiversity Action Plan.
	Mainstreaming and Cross Sectoral Issues 19. Mainstreaming is a key aspect of building resilience and while the draft plan discusses cross sectoral adaptation planning in the context of the adaptation plans of other sectors, it is not shown how it will be reflected in other Department of Culture,	The Adaptation Plan is an action within the current National

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	Heritage and the Gaeltacht documents, plans and policies and how they intend to promote it in wider Government policy.	Biodiversity Action Plan. The next iteration will expand on climate change requirements. Heritage 2030 will have considerable focus on climate change as it was an important component of public consultation
	20. How climate change adaptation will be considered by the National Parks and Wildlife Service in its role in development consultations and if this has been considered as a way of mainstreaming is not clear. Any particular implications of climate change for Natura 2000 sites should also be addressed in the final plan.	Action 2.5 will address the need for climate specific screening as part of development consultations. The vulnerability assessment Actions 2.1 and 3.2 will highlight any implications for Natura 2000.
	21. Links with other plans, particularly those in the same theme of the National Adaptation Framework (i.e. seafood, forestry, agriculture) remain underexplored, as do linkages with the flood risk management and water quality sectors. Issues with seascapes and coastal habitats are raised but linkages with the ongoing Marine Spatial Planning process are not considered.	Links are captured under the revised Cross-sectoral Considerations Section and the Action on Coastal Zone Management links with the Marine Spatial Planning process
	22. Further information should be provided on what citizens and the private sector can do to contribute to the resilience of biodiversity.	Captured in revised plan under Implementation Section and under Objective 2 (Improving

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	23. Further information should be provided on potential linkages with the Sustainable Development Goals.	understanding of the impacts of climate change on biodiversity) and Objective 4 (Engaging society to protect biodiversity and enhance resilience) Revisions made to the final text to capture this point.
6. Department of Agriculture, Food and the Marine (DAFM)	1. There are a number of actions with a range of stakeholders where it is unclear who is being proposed as the lead/responsible for delivering the action – clarity around actions were DAFM is seen as a stakeholder and where, if any it is proposed as the lead would be useful. 2. Action 1.4 – national soils strategy - a small typographical error, point 1.4 on table 'co-benefits.' 3. Action 1.5 is erroneously identifying DAFM & the Marine Institute with roles in developing an integrated coastal zone management. In fact, DHPLG is responsible for wider terrestrial and marine spatial planning and has such processes underway – the EU introduced a maritime spatial planning directive (which integrates land/sea interactions and has replaced ICZM as a stand-alone concept) to address these issues and DCHG participates in the Interdepartmental Group which DHPLG convenes. The action therefore would need to be substantially revised. 4. Actions 3.5 and 4.4 refer to agri-environment schemes - a rewording around DCHG liaising with DAFM to ensure that the next set of agri-environment schemes continue to include biodiversity, landscape measures, could be considered. 5. 5.4 – monitoring and evaluation is part of the CAP process so a rewording here around DCHG inputting to CAP reform or CAP Strategic Plan development could be considered. The action itself might be better worded as an action for DCHG itself to work closely with DAFM to maximise the CAP greening rules and measures under the EMFF on	Acknowledged, lead or potential actor now indicated across all actions Error addressed Noted and addressed Noted and addressed Noted and addressed

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	climate change and biodiversity. DCHG is on the Operational Programme Monitoring Committee for the EMFF and has the opportunity there to influence the scope of measures being approved. There is already a Marine Biodiversity Scheme but our understanding is that to date DCHG itself has not sought opportunity to use the fund though it could do so if it wished.	
	6. In the body of the document it states that 'Agriculture, forestry and fisheries *should evaluate* measures undertaken in government programmes to ensure no further degradation of biodiversity occurs'. DAFM suggests that this should be "continue to evaluate".	Noted and Addressed
	7. On page 22, an additional comment for consideration; all plant and animal systems may be stressed by heatwaves. This may lead to lower crop yields (including grass growth), lower animal growth and milk production. The drought in the summer of 2018 resulted in a national shortfall of fodder for winter months of c. 28%. Also, altered disease and pest pressure. Water resources may be limited and irrigation may be required on crops, particularly high-value crops.	Noted but deemed to be more relevant to Agricultural Sectoral Plan
	8. DAFM recognises the interactions between biodiversity and land use and the need for agri-food production to be compatible with biodiversity goals.	Noted as reflected in Objectives where appropriate
11.UCC, School of Biological Earth and Environmental Science	1. One of my concerns was that the focus on climate change might inadvertently obscure the major challenge faced by biodiversity: habitat degradation caused by ongoing human activities, especially farming practices. The report largely avoids this, especially in the objectives that are detailed in the Executive Summary and again late in the report.	This is why we included the implementation of the National Biodiversity Action Plan
	2. One concern perhaps remains, however, which is that too much focus on trying to understand potential impacts of climate change might serve to delay the basic actions needed to ensure resilience in order to protect areas of importance and biodiversity	Acknowledged and concern now addressed in Executive Summary

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	now, independently of any climate change impacts. It would be good to see this spelled out in the Executive Summary. It is too easy for society to get distracted worrying about impacts which are hard to predict when the major concern we have is more fundamental. 3. Implementing and monitoring the effectiveness of this climate change adaptation plan, not to mention the National Biodiversity Conservation Action Plan, will be expensive not to mention politically challenging, and I remain unconvinced that any government will invest the resources needed to make change. Although we should strive to ensure that this status quo changes, nevertheless it may be prudent and pragmatic to focus on promoting the protection of species and their habitats that are reliable indicators of ecosystem health, especially: i) in those ecosystems that are most difficult to monitor, either because they are inaccessible (e.g. offshore marine areas) or because they are dominant (farmland). ii) for species that Ireland has an especially strong legal obligation to protect and that provide especially important or tangible ecosystem services. For example, birds are especially important because they are protected under the EU Birds Directive - especially seabirds and shorebirds, which a) provide particularly important and measurable ecosystems services, especially tourism, and b) which we know are declining considerably.	Covered under the National Biodiversity Action Plan.
	4. To summarise why birds deserve special focus, I quote from the EU: "Today, thanks to the Birds Directive there are over 5 650 protected sites for birds (Special Protection Areas), covering more than 843 000km2 of the EU's land and seas. They form an integral part of the EU Natura 2000 ecological network, the biggest coordinated network of protected areas in the world…. The Birds Directive also helps deliver international EU commitments to protect migratory birds. Since many bird species spend part of their lives outside Europe, it is essential to work with other countries along their flyways to ensure healthy bird populations."	We have avoided focus on specific species groups

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	https://ec.europa.eu/info/news/environment-eu-celebrates-40-years-birds-directive-2019-apr-02_en 5. I note that the report by EPA on hedgerows and carbon sequestration is not cited https://www.epa.ie/pubs/reports/research/climate/ccrp-32-for-webFINAL.pdf In general little mention is made of the contribution that hedgerows can make to i) carbon budgets and ii) protecting biodiversity generally, especially bird and invertebrate populations, alongside the promotion of field margin management. Hedgerows support an enormous proportion of the countries biodiversity and wildlife populations. 6. At the recent National Biodiversity Conference in Dublin Castle, an audience vote overwhelmingly recognized that "integrated farmland management" was the most important objective of conservation in Ireland, and as such this could be emphasised in the report. Case Study Example provided the impacts of climate change on biodiversity The timing of breeding In the riparian bird, the Dipper, only advanced by 3 days from 1983 to 2016 in North Cork, and there was little evidence of any change in breeding success. Increased rainfall, river flow and frequency of floods during the study period may have selected for shortening of wings relative to body size, which are advantageous for underwater foraging in deeper and faster flowing water. These trends may provide evidence of climate-change induced phenotypic variation mediated by direct changes to the physical environment of the species. Darío Fernández-Bellon, 2018. Responses to global change in a river passerine. PhD Thesis, University College Cork. measures to build the resilience of species and habitats	Now included under Biodiversity policy in the context of climate change and captured under Objective 1, action 1.4 and under Cross-sectoral considerations The vote was for an "integrated land use policy. We have tried to emphasise the importance of cross sectoral issues in section 4. Case studies added to the final Plan reflect the issues covered here

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	Seabirds are amongst the most threatened birds worldwide. Recent evidence collected by students at UCC suggests that the population of Atlantic puffins on Great Saltee Island has fallen from 1400 birds to 200 birds over the last 10 years. Historical estimates for the Manx shearwater population are unavailable but the population, now <1000 pairs, is likely to be a fraction of what it has been in the past, given that the rat-free but very similar Skomer Island in South West Wales holds >200,000 pairs. The invasive brown rat is almost certainly the main reason for the low populations of both species on Great Saltee but the Atlantic puffin in particular is thought to be also influenced by the effects of climate change on food sources. Rats worldwide are the number one threat faced by seabirds but their status on the many Irish islands that support seabirds, especially off the west coast of Ireland is unknown. There is an urgent need to remove rats from all islands occupied by burrow nesting seabirds in order to provide some of our most spectacular and important wildlife populations with resilience towards predicted effects of climate change. In addition to this, disturbance from tourism causes the desertion of many gannet nests. This damages Ireland's international reputation and image as a green tourist destination. Ongoing efforts by UCC and NPWS in combination with the owners of the island will be essential to give some resilience towards future climate change. Allbrook, D. 2017. Quantifying the effects of human disturbance on northern gannets (Morus bassanus) in the presence and absence of regulatory signs. MSc thesis, University College Cork. Arneill, G. E. 2018. Developing and assessing methods to census and monitor burrow-nesting seabirds in Ireland. PhD Thesis, University College Cork. Kelly, P.E. 2018 The effects of invasive species on seabirds in the Saltees. MSc thesis, University College Cork. 7. I would suggest that by far the most important of the 4 objectives has to be c) increased degradation of habitats and changes in ecosystem processes, and b) changes in the geographical range of species. They are also the most challenging to implement. 8. As for the occurrence of invasive species, this has the potential to be extremely important but the ability to tackle it is very much taxon specific. Many plants, for	Case studies added to the final Plan reflect the issues covered here

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	example, are beyond tackling but some invasive mammals, and especially rats, can be controlled with relative ease and tackling this factor alone can have a huge impact on Ireland's bird biodiversity. We also need to educate the public about the enormous impact of cats on wildlife and push for PIT tagging/licensing of all cats. 9. Changes in phenology have the potential to be damaging when they do not occur uniformly in communities. Phenology is academically interesting, yes, but the potential for intervention must be limited to very specific cases, and in most cases should be unnecessary when communities change through phenotypic plasticity or natural selection. For this reason, changes in phenology is the least important impact, though I acknowledge they are not necessarily distinct from c) and b). 10. I think more effort needs to made to influence policy at the National and EU level, which many believe pays only lip service to biodiversity. Ireland has a great opportunity to become a leader in biodiversity conservation within the EU, and this could be a good point to start this. All it takes is to get politicians to understand that farming and wildlife do not have to be conflict. See more under Objective 5 below. a. Objective 1 i. Academics and students could be listed as actors under 1.2 ii. Under 1.5, another important Actor is the SFI Research Centre MaREI, https://www.marei.ie iii. Under 1.6, there is the b. Objective 2 i. academics and students could be listed as actors in 2.4, 2.5, 2.6, 5.4 c. Objective 3 – none Objective 4 i. Tidy Towns could be brought into this. They do a lot on a local level but I suspect need more guidance. e. Objective 5 i. Part of this needs to be about lobbying the EU to change the subsidies system in favour of the small farmer and always with conditions linked to biodiversity and the environment. It is well	Rolled into Academia Avoiding highlighting specific research centers Addressed Addressed Noted

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	recognised that current schemes to promote biodiversity amount to little more than "fake environmental spending" and have little impact. Furthermore farmers are penalised for not using their land productively. Instead they should be given subsidies of any kind only if they optimise the trade-off between productivity and biodiversity. Specifically as I understand it there is lots of evidence that the trade-off does not need to be pronounced. ii. Academics and students could be listed as actors in 5.4 In general academics and students could be listed as actors in many of the objectives, especially 1.2, 2.4, 2.5, 2.6, 5.4 11. Do you have any other suggestions on how to address the cross cutting nature of this adaptation plan? a. The task at hand is monumental and the main actors are too few and too underfunded to have a major impact on these objectives. In particular the National Parks and Wildlife Service is vastly underfunded by several orders of magnitude. As an ornithologist, I am staggered to see how few staff within the NPWS are dedicated to bird conservation. I do not think I am biased because birds are key ecological indicators, are easy to monitor, and have high value to society and tourism in particular. b. Education is not part of the plan but to bring about long term lasting change, more effort should be put into changing attitudes throughout society. In the short term focus could be put on students at third level, especially those directly involved with land management and industry. For example ecosystem services and biodiversity should be taught more to agricultural students.	Addressed Addressed Addressed Addressed under Objective 4, action 4.2 and Objective 2, action 2.9-2.10
12. Member of the Climate Change Advisory	1. Do you have feedback on the Plan overall? From a public health viewpoint biodiversity is very important in maintaining a safer healthier environment for us all. Therefore, biodiversity resilience to climate change is very important for public health too.	Acknowledged and reflected in the document, reflected in discussion

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Council Adaptation Committee, NAF Steering Committee, and work with DoH on health sectoral planning for climate change adaptation		on SDGs and where relevant in the document
	2. Is there information missing that you would like to see included? Identification of allied policies such as Healthy Ireland – while we are in the early stages of identifying interdependencies, it might be worth including the need for a comprehensive public health risk assessment on the risk of biodiversity loss and highlighting the public health benefits of a flourishing biodiversity.	Addressed in Executive Summary, in the introduction under Ireland's climate policy and reflected in Objective narratives
	3. Are there case studies or examples you would like to contribute relating to: · the impacts of climate change on biodiversity · measures to build the resilience of species and habitats · the impact of adaptation actions (in any sector) on biodiversity I think the last point may need to be considered in other sectoral plans. It might be worth considering how this might be achieved in a timely manner.	Addressed under cross-sectoral considerations
	4. How would you prioritise the climate impacts identified in the Plan? Without a public health risk assessment of biodiversity loss, I wouldn't be able to provide evidence based advice on this.	Noted
	5. Do you agree with the objectives proposed? They all appear to be very reasonable.	
	6. Please provide your feedback on the adaptation actions proposed for each of the objectives, including on who you feel the actors should be. a. Objective 1 b. Objective 2 c. Objective 3 d. Objective 4 – it might be worth looking for formal inclusion of biodiversity protection consideration in all national, regional and local plans – mainstreaming. A Public Health aim is for "Health in all Policies", perhaps there needs to be "Biodiversity in all Policies" too. e. Objective 5	Acknowledged is cross sectoral considerations and in narrative for Objective 4
	7. Do you have any other suggestions on how to address the cross cutting nature of this adaptation plan?	

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	I think this will only happen effectively if there is formal comprehensive analysis of the nature of cross-cutting issues, and use of suitable tools (e.g. checklists) to ensure consideration of all the identified issues in this and all the other sectoral plans – might have to be in next round of planning.	Acknowledged and addressed in Objective 6, and Section 6 Implementation, evaluation and review
13.Climate Action Regional Offices (CAROs)	**With Reference to Adaptation Objectives and Actions** Local Authorities are listed as actors in 14 of the Adaptation Objectives and Actions of the Plan. 1. *Resource and implement the National Biodiversity Action Plan 2017-2021 in full.* CARO Response to Action: The expected deliverables under the National Biodiversity Action Plan have not been adequately resourced within each Local Authority. This is evident from the fact that some Local Authorities are without full time biodiversity officers and budget to implement the NBAP at a local level and. In some cases, Heritage officers are also acting as Biodiversity officers which is not sustainable if the actions required under the NBAP are to be fully implemented. 2. *Enhance and restore natural systems through management to increase resilience - starting with hydrological processes (freshwater and marine), carbon processes and pollination (e.g. use OPW flood maps (see floodinfo.ie) to assess the exposure of known habitats/Natura sites to current and future flood risk and update of the site management plans to ensure steps are taken to adapt/restore bog lands to increase their role in carbon sequestration and to increase their resilience to drying associated with temperature rising).* CARO Response to Action: Local Authorities can act as stakeholders on this action however it is suggested that there is further research and support required in some areas to ensure this action is achieved. It is noted that Fingal County Council have submitted a draft research project proposal "Developing an Irish Coastal Erosion Risk Assessment Methodology and	DCHG has provided additional funding to Heritage Officers to implement actions at a local level Biodiversity research strategy and other research actions under the National Biodiversity Plan; also see action 2.7

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	Monitoring Programme for inclusion" in the 2019 Environmental Protection Agency research call. 3. *Establish an all island invasive species programme to monitor the spread of terrestrial, aquatic and marine invasive species in a changing climate and control invasive species where their spread is considered problematic.* CARO Response to Action: Local Authorities can act as stakeholders on this action. However, it is noted that not all Local Authorities currently have a fulltime biodiversity officer. In some cases, Heritage officers are also acting as Biodiversity officers which is not sustainable if this monitoring programme is to be fully implemented. Sufficient budget must be made available for implementation of monitoring. 4. *Develop an integrated coastal management strategy which includes ecosystem-based adaptation actions to manage climate risk and build resilience to climate change.* CARO Response to Action: The Office of Public Works (OPW) has undertaken a national assessment of coastal flooding and erosion under the Irish Coastal Protection Strategy Study (2013)1. The Study provides strategic current scenario and future scenario (up to 2100) coastal flood hazard maps and coastal erosion maps for the national coastline. The Local Government Management Authority (LGMA) and County and City Management Association (CCMA) Climate Change subcommittee carried out two national audits among Irish coastal Local Authorities to establish the extent of the coastal erosion at a national scale and investigate practices and policies in place to deal with the issue in Ireland at the LA level. (Local Authority Coastal Erosion Policy and Practice Audit, MAREI 2017). The report showed that there is large variability across Local Authorities in how coastal erosion is monitored and how risk of coastal erosion is calculated. The report also recommended the development of a National Coastal Strategy and National Policy on Erosion Management. Local Authorities can act as stakeholders in this action. It is noted that there are other key stakeholders who have ongoing work programmes and projects in this area. These include the Geological Survey of Ireland (GSI) who have prepared a	Additional funding to Heritage Officers for IAS control has been provided by DCHG OPW & GSI included

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	National Coastal Vulnerability Index (CVI) and the Office of Public Works (OPW) who have undertaken flood risk assessment of coastal areas. 5. *Monitor on an on-going basis the current impacts of climate change on biodiversity and hold all data in a central clearing house to inform adaptation and biodiversity activities*. CARO Response to Action: Monitoring and research can assist in the management of climate change impacts at site level. However, a lack of data and research on the impacts of climate change on protected sites have been highlighted in the National Biodiversity Action Plan 2017-2021 when it states that 'more information is required on the impacts of climate change to ecosystem services and on the role of biodiversity and habitats played in both mitigation and adapting to climate change'. Local Authorities can act as stakeholders in achieving this action however additional resources would be needed in some areas where no biodiversity officer is in place. Additionally, wider partnerships and cost sharing would be required with state bodies such as National Parks and Wildlife Services, National Biodiversity Data Centre, Climate Ireland and Climate Action Regional Offices and educational research institutions etc. to formulate projects to gather biodiversity information and to monitor climatic impacts. It is noted that Fingal County Council have submitted a project proposal to the 2019 EPA research call to develop a standardised methodology to assess the risk of coastal erosion to property and infrastructure at a national level and to develop a coastal erosion monitoring methodology for a range of coastal habitats. The CAROs have also submitted a research proposal to the EPA on the need for additional GIS analysis of climate risks at a Sectoral and Local Authority level. 6. *Collect information on biodiversity and ecosystem-based adaptation actions being implemented in Ireland and store this information centrally to facilitate lesson learning and experience sharing.* CARO Response to Action: Biodiversity and ecosystem based adaptation actions implemented by Local Authorities as part of Climate Adaptation Plans will be stored by Local Authorities and	LAs would feed in data arising from the implementation of the LA sectoral plans Noted

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	will be made available to any national project to facilitate lesson learning and experience sharing. Liaison with bodies such as the National Biodiversity Data Centre and Climate Ireland is also important in terms of achieving this proposed action. 7. *Identify vulnerable ecosystems and species that through enhanced landscape connectivity would be less impacted by climate change.* CARO Response to Action: Local Authorities can act as stakeholders in achieving this action. Developments in the area of 'Green Infrastructure' and 'Nature Based Solutions' that are being initiated at the local and regional level will assist in this. 8. *Design corridors and buffer zones to enhance the resilience of protected areas and designated sites by increasing opportunities for dispersal across the landscape.* CARO Response to Action: In partnership with the National Parks and Wildlife Service, Local Authorities incorporate best practice for set-back distances to protected sites to increase opportunities for dispersal across the landscape. 9. *Implement measures to reduce the barrier effects of roads, railways and technical objects in rivers and streams to facilitate species spatial responses to climate change* Developments in the area of 'Green Infrastructure', 'Nature Based Solutions' and public realm strategies that are being initiated at the local and regional level will contribute to this objective. 10. *All sectors systematically consider nature-based solutions as potential low cost win win climate change adaptation and mitigation solutions and report on relevant action as part of the review of this and other sectoral adaptation strategies.* CARO Response to Action: Local Authorities do consider all potential solutions for climate adaptation and mitigation planning including green walls, green roofs, urban tree planting and	Noted Noted Noted Noted

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	Sustainable Urban Drainage Systems. Examples of these actions are included in the Draft Dublin Climate Change Action Plans at www.dublinclimatechange.ie	
	11. *Design and implement a citizen engagement and awareness campaign on climate change and biodiversity conservation to capture case studies, tell stories and engage citizens in data collection and monitoring.*	Noted
	CARO Response to Action: Citizen engagement and awareness are already key functions of Local Authorities. Local Authorities are involved in programmes such as Tidy Towns and with education programmes and community groups to promote engagement and awareness around biodiversity. Additionally, CAROs are engaged with the EPA and the DCCAE on the roll out of the National Dialogue on Climate Action and biodiversity issues shall be incorporated into the process.	
	12. *Co-design green spaces and wildlife refuges in cities and peri-urban areas with local communities to provide habitats for species under threat from climate change and to connect people to biodiversity.*	Noted
	CARO Response to Action: This work is being undertaken by Parks Departments across Local Authorities.	
	13. *Use the National Biodiversity Conference and other fora to engage stakeholders in all sectors to protect biodiversity in order to increase resilience to climate change.*	Noted
	CARO Response to Action: Stakeholder engagement is already a key function of local authorities and they support and have participated in recent and very successful biodiversity conferences including the aforementioned National Biodiversity Conference (February 2019) and All Ireland Pollinator Pan Conference (April 2019). Local Authorities recently presented at the All Ireland Pollinator Plan Conference highlighting how landscapes can be managed to promote natural areas for wildlife and pollinators and outlined challenges with public perceptions of 'wild' areas.	

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	14. *Undertake natural capital accounting in all sectors to ensure natural capital is being valued and Ecosystem Based Adaptation and green infrastructure options are being employed.* CARO Response to Action: Whilst local authorities recognise the worth of this emerging concept and have a role in contributing to it; there is a requirement for guidance, leadership and relevant case studies in the area of natural capital accounting. In the meantime, local authorities are advancing such measures as ecosystem services scoring and communicating the benefits of biodiversity to citizens.	Acknowledged and reflected in preamble to Objective 5
RECEIVED LATE **14.National Federation of Group Water Schemes,**	Overall, we feel that the plan is an appropriate response to the biodiversity emergency, but only if it has a dedicated agency/entity to drive it and if it makes specific, measurable demands on all sectors that have an environmental/biodiversity remit, including State, semi-State and publicly owned organisations. We suggest as follows: _ While implementation of the plan's objectives will be cross sectoral, it is our belief that a strong and properly resourced organisation/entity must take the lead on this, as otherwise there will be a lack of coherent collaboration and progress. _ Each organisation should be asked two questions. i. What can you deliver? ii. When can you deliver it? [e.g. in the case of Coillte, the focus might be on significantly increasing the percentage of deciduous planting (but with more openings in the canopy), increasing the setback distance of conifer planting near water bodies and wider biodiversity planning on all of its land assets. _ The plan suggests that a bottom-up approach is required. We feel that this already exists through the efforts of environmental organisations, community groups, tidy towns, green schools, etc. and that the wealth of experience and goodwill within these sectors provides a ready-made platform upon which further citizen engagement might be encouraged. _ A greater emphasis needs to be put on the promotion of biodiversity for 2 additional key reasons; to protect our tourism industry and to promote the 'green' image of the country in relation to food production.	See new governance section in Plan See added text on NGOs and citizens Not addressed / too detailed

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	_ The need for collaboration with organisations that can effect change over a wide area is also extremely important. To this end, the NFGWS would suggest that we be included (amongst others) as part of the steering committee to monitor progress.	
	_ As part of their approach to Climate Change, local authorities [and all State and semi- State agencies] must be required to biodiversity-proof their policies and work practices and be able to demonstrate that works being completed by their staff are carried out appropriately.	See material on LAs in final Plan
	_ Incorporation of green spaces must be included in the planning of public spaces & buildings, while all new builds – whether housing, commercial, industrial or community – should include features that will tend to support biodiversity resilience (e.g. rainwater harvesting systems that will reduce abstraction pressures in raw water sources and pressure on carbon/chemical hungry treatment processes).	Covered under LA Plans
	_ For existing buildings, there should be active encouragement to reduce or remove hard surfacing (e.g. tarmac or concrete paving). Besides the 'wilding' of such spaces, this will benefit the aquatic environment in slowing or capturing the flow of contaminants during severe weather events.	Implicit under Action 1.2
	_ Diverting road drainage systems from direct entry to water courses should also be an objective.	
	_ The infill of lakes and wetlands should be prohibited and the policy should be to encourage the blocking of man-made drainage systems so that wetlands are restored or are newly created. On a related topic, there should be an immediate phasing out of machine harvesting of peat.	
	_ The view of biodiversity/environmental issues as an impediment to urban/rural development must also be dispelled. Group water schemes, with the support of the NFGWS, are already demonstrating that biodiversity-friendly measures, in addition to enhancing the protection of drinking water sources from contamination, also reduce energy demand and use of chemicals in treatment processes. Initiatives within the sector include the exclusion of farm animals from direct access to water bodies, slowing down and trapping overland flow of contaminants through the implementation of lowtech, biodiversity-friendly buffers/traps, discouraging pesticide use around drinking water sources and instigating community-led sludging of septic tanks. Please find the link to our practical guide here.	

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	2) Is there information missing that you would like to see included? Community-led initiatives should be included in this plan. In addition, the plan should include as a short-term objective the compilation of a working document that specifies the funding avenues available towards biodiversity initiatives as part of climate action, whether by voluntary community groups, individual farmers, statutory agencies and industries, etc. **3) Are there case studies or examples you would like to contribute relation to;** - The impacts of climate change on biodiversity - Last year's drought conditions appear to have resulted in a rise in nitrate contamination of groundwater supplies as there was insufficient dilution of nitrates seeping into the aquifer. - The unprecedented rise in drinking water demand put additional pressure on water bodies and on the aquatic life they support. - The extreme temperatures, combined with drought, also exacerbated the problem of algal blooms on lake sources, with resulting oxygen depletion, increased chemical use in treatment plants (as more coagulant had to be dosed) and more backwashing and sludge disposal, all of which impact on wider biodiversity. - Measures to build the resilience of species and habitats - While we are not qualified to suggest measures in relation to species or habitats, we have signed up as an organisation to the All-Ireland Pollinator Plan and are actively raising the consciousness of our members in relation to these issues and encouraging them to make their sites pollinator-friendly and to end the practice of herbicide spraying around valves and fittings. We are grateful to the National Biodiversity Data Centre whose enthusiasm and practical assistance has made us more aware of measures that can be taken to provide habitat and food for pollinators. Similarly, we have benefited from advice provided to us by the forestry section of the DAFM as well as by the EPA and the GSI (on better understanding pollution pathways in groundwater systems). We would welcome similar advice and support from other organisations with a knowledge of biodiversity and/or on the vulnerability of aquatic ecosystems where we can make a real difference. - The impact of adaptation actions (in any sector) on biodiversity Drinking water source protection measures are already having a positive impact on building biodiversity-awareness in the GWS sector, as is the NFGWS 'Educating Communities Through Schools' programme, as part of which schoolchildren are taken on a tour of source catchments,	Covered under Action 5.1

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	treatment plants etc. and are encouraged to take key environmental messages home with them. Community groups are an integral part of the battle to control invasive species (Suir River Trust for instance). Many surface water GWS sources have issues with invasive fauna and we would suggest that there be a collaborative approach between the GWS, NPWS, Inland Fisheries and Local Authorities to consider ways in which (a) problem areas are identified and solutions implemented and (b) waterbodies unaffected remain so through the collaborative implementation of biosecurity measures. **4) How would you prioritise the climate impacts identified in the plan?** The plan correctly identifies the primary need for an audit/screening process to ascertain resilience to climate change. This should be the number one priority for every sector and organisation. Such a screening process will assist in targeting resources towards the areas of greatest and most urgent need (e.g. where the extinction of an endangered species may be preventable through the adoption of remediation measures). In the case of the drinking water and wastewater services sectors, the present overreliance on carbon-based energy systems should be addressed as a priority, as should water loss and water wastage, while every supply should be evaluated in relation to its vulnerability to extreme weather events, including droughts, floods, high temperatures and high winds. For a copy of the NFGWS submission on the Adaptation Plan for Climate Change (Water & Wastewater), click here. **5) Do you agree with the objectives proposed?** Yes, the objectives proposed encompass the wide-ranging and cross-sectoral nature of what is required. However, we would suggest that Objective 1 might include provision for research to be carried out in relation to how the enhancement of biodiversity can assist vital services for humans in the context of climate change, such as contributing towards drinking water source protection. **6) Feedback:** - Objective 1 In addition to point 1.5, we would suggest that a plan be completed for integrated freshwater management systems (including surface & groundwater). While this does not need to be done	The actors listed in 1.6 would involve all relevant stakeholders Should be covered by the Water Sectoral Adaptation Plan

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	on a specific catchment-by-catchment basis, it should provide a framework, with general guidance in relation to strategies and measures that will tend to protect and improve aquatic systems. The NFGWS could assist in relation to drinking water sources, as we have recently completed a similar framework document in relation source protection. (copy available) **7) Do you have any other suggestions on how to address the cross-cutting nature of this adaptation plan?** As suggested above and in the consultation document, a steering committee should be formed that meets regularly to monitor the progress of individual organisations, both statutory and non-statutory, in addressing the biodiversity crisis as part of wider climate actions. In turn, this steering committee could provide data to a centralised hub (the 'driver') through which practical advice and support might be provided. As part of its work, such a 'driver' could compile and maintain a database of completed projects (their successes and failures), current initiatives and planned initiatives, as well as tracking emerging funding opportunities.	See governance section where this is addressed