I welcome the opportunity to comment on the draft NAF, and ask you to consider the following points:

**Summary of submission**

1. Governance needs to be more clearly described in one concise section
2. No need for new bodies or agencies – optimise existing system
3. Disproportionate burden placed on Local Authorities to devise responses
4. Climate adaptation information web platform should be under state control
5. Need to address greatest risk which is from indirect effects, climate refugees
6. More focus on known significant direct vulnerabilities, flooding, storms
7. State should not pursue active strategy of exploiting “opportunities”
8. Other comments

**1. Governance**

The national adaptation framework should give a clear description of the governance. The various elements are spread out in the narrative with the result that it is not entirely clear at a single reading who is in charge of what. Governance is the key to the NAF, and should be described at the beginning of the document. I have attempted to extract from the draft document the main features of the governance structure as described, to put together an overview, which is presented in the chart attached. While government is ultimately in charge, the planning and direction of national adaptation falls within the remit of three identified climate change steering committees, which in some cases include input from CCAC, EPA, CCMA and Regional Authorities. The government department with primary responsibility is DCCAE. Other government departments have responsibility for sectoral plans as listed in the draft NAF. It is noted that Transport Infrastructure Ireland and Irish Water have been omitted from the draft NAF. It would be expected that these bodies would have key roles in adaptation planning for national road/rail infrastructure and water infrastructure respectively.

Implementation of important aspects of the sectoral plans will be at local level by Local Authorities. There are already mechanisms for linkage between local authorities via the DHPLG, and through participation of CCMA and Regional Authorities in one of the climate adaptation steering committees. There is an established flow of guidance relating to flood matters from OPW, and coordination via the Interdepartmental Flood Policy Coordination Group. Local
authorities also seek advice from the Climate Ireland platform, which is currently an independent entity.

Overall, existing governance of climate change adaptation is largely top-down, which is logical given that the projected impacts will affect the whole country. The climate change adaptation aspects of immediate concern can be addressed within the existing governance framework. Flood issues can be addressed through the existing OPW mechanism, and national adaptation guidelines produced in terms of spatial planning and flood zoning. Extreme weather aspects can be addressed through revision of building standards, sustainable drainage guidelines, and emergency planning systems. Consideration of indirect impacts from abroad fall within the remit of government.

There is ambiguity in the present draft NAF on the role of Local Authorities. In places it is implied that they will have a large degree of independence in devising responses, and that regional approaches would be adopted. Elsewhere, governance is described in terms of the existing largely top-down approach from the key government departments and agencies. In the draft NAF it is implied that there are management deficits which are barriers to adaptation planning at Local Authority level. It is unlikely that Local Authorities are any worse in this respect than other public bodies. They already have adequate governance structures, project management experience, and existing regional cooperation systems to address adaptation. This is in fact explicitly acknowledged on page 23 of the draft NAF. What they need is not a new layer of management complexity, or new regional bodies, but guidance on the priority vulnerabilities and adaptation responses. These should be clearly set out in the NAF.

In short, we should aim for simplicity and retain the existing top-down model of national governance and ensure that all elements work efficiently. The practical implementation of measures can subsequently be done at local level based on local priorities and resources subject to national guidance and national regulations.

2. Proposal for Regional Climate Offices

Creation of new bodies should be avoided. Establishing Regional Climate offices, as mentioned on page 77 would not be an efficient approach. Adaptation plans are likely to be updated at most every five years, and personnel in any such office would have little to do most of the time, and would potentially cut across the existing vertical governance systems. It would be much more effective to integrate climate aspects into the ongoing work of local authorities through appropriate national guidelines, standards and regulations. The focus should be on getting the existing national bodies, especially the high-level steering committees, functioning effectively. If there are capacity restraints in the key department of DCCAE these should be rectified.
3. Burden on Local Authorities

It would be pre-mature at this stage for local authorities to expend significant resources on adaptation planning. The published EPA guidelines for adaptation planning by local authorities (Gray, 2016) are based on generic project planning and management principles, and contain little useful factual information on climate risks or adaptation. According to these guidelines the “non-exhaustive list” of specialities involved in the adaptation team would be at least 15 people. Across all county and city authorities this could amount to 450 people attempting to analyse future scenarios and responses without the benefit of the most basic input information, and in the absence of appropriate national technical guidance.

4. Climate Ireland Web Platform

The proposal to establish on a permanent basis the Climate Ireland web platform as an information source for actors and stakeholders is welcomed. A single source of validated information on climate impacts and adaptation strategies would be very helpful. This resource should however be hosted by an existing state body rather than being an inter-university collaboration with unknown governance or accountability as is currently the case. Government must ensure that information and methodologies emanating from this platform are aligned with government policy and reflect the priorities in national adaptation strategy. Such a web-based adaptation portal could be operated by the EPA for example in collaboration with Met Eireann and OPW, and any necessary external expertise could be sourced as required.

5. Indirect Effects

The greatest threat to Ireland will come from indirect effects. There is just one passing reference to indirect effects in the draft NAF.

The ongoing rapid climate change may lead to breakdown of agricultural systems, collapse of fragile states in the developing world, water disputes, and even some arid regions becoming uninhabitable this century. Our agricultural system must be prepared to address food security risks in Ireland and to increase output to help offset expected shortfalls in food production in affected countries. In this context, a national land-use policy needs to be developed, and the national afforestation policy needs to be reviewed to ensure that productive agricultural land is not lost to forestry or urbanisation. An increasing flow of refugees can also be expected into the EU as conditions in Africa, the Middle East, and Asia deteriorate. If conditions in southern Europe become increasingly arid we may also see high rates of internal migration northwards within the EU. Ireland with its temperate climate and open economy will prove an attractive location, especially after the UK leaves the EU. Under current EU laws Ireland would not be able to place a limit on such migration, nor on the purchase of land by citizens and corporations from other EU states. There is no residency registration requirement for EU citizens in Ireland, which makes implementation of any immigration control impossible at present. A policy response needs to be adopted at national level as to how many climate refugees we can sustain. Would it
be 200,000, or 5 million? We know that historically Ireland has been just able to support about 8 million people on a largely vegetarian diet. Ireland will also be an attractive location for purchase of agricultural land by foreign corporations and governments. China, which appreciates the risks of climate change for food security, has for many years engaged in a strategy of purchasing or leasing large tracts of agricultural land in Australia, Africa, France, USA and Ukraine. There is nothing to control or stop such foreign control of Irish agricultural land. I note that food security has not been addressed in the current sectoral plan for agriculture, but will be addressed in future iterations. Land ownership risks should also be included. Consideration at government level needs to be directed to these potentially serious indirect climate change impacts, and appropriate adaptation responses devised within the framework of Irish and EU laws. Consideration will also have to be given to a significant increase in national security capacity to enforce whatever national controls are identified.

6. Significant Direct Effects

6.1 NAF Should Set Out Future Scenarios

The NAF should clearly indicate based on current evidence what impacts or future scenarios need to be taken into account in adaptation planning. The draft NAF discusses a range of potential impacts in terms of temperature rises and possible sea level rises this century. The reader is left wondering, can temperature be held to 1.5 °C, or could it be a catastrophic 4 °C? There is an understandable reluctance to come down in terms of a definitive temperature rise or sea level rise. A judgement call is required taking account of the range of projections of the impacts and the degree to which the precautionary principle is applied. This is not an easy call, and whatever is decided may well need to be revised in subsequent iterations of the NAF.

However, based on a moderately precautionary approach, I would suggest that there is sufficient evidence to indicate that future scenarios leading to a 2 °C temperature rise and a 1m sea-level rise this century should be used as the basis for adaptation planning at this stage. Many of the adaptation responses which can be immediately implemented will be in terms of low-cost and low-regret options such as national guidelines and regulations, national spatial planning, and local flood zoning. Consequently, the risk of mal-adaptation involving excessive expenditure is low in adopting such a moderately precautionary approach.

A rise in global mean temperature of 2 °C this century seems quite credible given that we are already half-way there. The temperature anomaly of +1 °C in 2016 was above the upper envelope of projections in the IPCC fifth report for RCP 4.5 scenario. As acknowledged in the draft NAF, the cumulative Paris commitments if realised would result in a temperature increase of 2.7 °C this century. At current emission rates the carbon budget for a 2 °C rise will have been reached in three decades, and this temperature rise will be locked in.

Even if through superhuman worldwide effort emissions are slashed to near zero this century, and the currently unproven carbon capture technologies succeed, and we achieve the future
scenario denoted RCP2.6, there is still a 33% chance of exceeding 2 °C. Adaptation planning based on anything less than 2 °C would be irresponsible.

Adaptation measures designed around a 2 °C value would also be of some benefit if temperatures marginally exceed 2 °C. Significantly higher increases of 3, 4 or 5 °C would constitute a very high risk of severe, widespread, and irreversible impacts globally. It would not be a perturbation of the climate and earth system, which might be gradually adjusted to, but a complete disruption. While it is impossible to predict the characteristics of such a scenario, it is enough to say that it would be catastrophic for humanity. It would take us into the realm of breakdown in ecosystems, agriculture, society and nation states, and it is unlikely that anything we might do in terms of adaptation over the coming decades would be fit for the scale of such challenges. Consideration of the possibility of such large increases in temperature should however be used as a motivation for greatly accelerated reductions in GHG emissions globally. This catastrophic high-end scenario could be used to demonstrate the imperative for greatly increased mitigation on page 16 of the draft (rather than the 1.5 °C example given).

Regarding sea-level, the measured rise over the past decades is consistently at the upper range of the modelled predictions, which indicates we should be looking at the upper range of predictions for 2100. Based on current projections and adopting a moderately precautionary approach, a sea level rise of 1m would need to be factored into revised flood risk maps which might be valid for this century.

6.2 Adapting to Sea Level Rise and Flooding

The main direct impacts in Ireland will be increased frequency of coastal flooding, brought about by sea level rise, increased intensity of rainfall events, and more intense storms. The adaptation responses can include national spatial planning, and revision of flood maps for incorporation into county and local area development plans. The existing flood zonings in areas subject to coastal flooding do not currently incorporate sea level rise. Mid-range and high-end scenarios analysed by OPW (Climate Change Sectoral Adaptation Plan, 2015) indicate a probable order of magnitude increase in flood risk due to sea level rise. This would result in existing areas categorised as flood zone B moving into the high-risk flood zone A. In turn, areas currently categorised as flood zone A would be subject to frequent flood events. When the revised flood maps incorporating climate change are available in 2018, detailed analysis will be required at national and local authority level to determine whether the risk can be best addressed by enhanced defences, or whether planned retreat is advisable.

For very long-term planning, such as location of large new urban centres or costly permanent infrastructure, the time horizon for adaptation planning can be extended to several hundred years, allowing for even greater sea-level rise. In this context a sea level rise of at least 2m may be appropriate, as such a possibility by 2100 is mentioned as being plausible in the OPW report.
Eventually, on the scale of hundreds to thousands of years a 7m rise in sea level may occur (IPCC WGI, p1140) for sustained warming above 2°C.

6.3 Adapting to Storms and Rainfall Extremes

Increased intensity of storms and rainfall events in recent years are consistent with global warming predictions made since the 1990s. While the existing building stock has withstood recent events it may prove vulnerable to more frequent and more intense storm and rainfall events. Revision of building standards and regulations with respect to wind loading, rain proofing and drainage are urgently required. Guidelines on flood risk management published in 2009 identified sustainable drainage as an important element in mitigating pluvial flooding (The Planning System and Flood Risk Management, DEHLG/OPW 2009). Yet, there is still no national technical guidance on sustainable drainage for new developments. Increasingly such low-cost green solutions will be important for protection against flooding, and overloading of combined urban wastewater systems. This is a practical example of where top-down governance is required.

6.4 Adapting to Temperature Rise

As the earth heats up the increases in surface temperature will not be the same everywhere, and in large parts of the world will significantly exceed the global average with severe consequences. Fortunately for a temperate climate region such as Ireland the projected increase in temperature is close to the global average. The direct effects of an increase in average temperature this century therefore do not give rise to significant concern in terms of adverse impacts on the human population in Ireland. There are however impacts in terms of agriculture and forestry, which have been identified in the draft sectoral plan (DAFM, 2017). Ecosystems and biodiversity will naturally endeavour to adapt to the changing climate, but the mode of adaptation would be difficult if not impossible to predict. Our adaptation planning in this respect should focus on what we don’t do, rather than attempting active interventions which would be expensive and futile. Existing natural areas, wetlands, woodlands, hedgerows, marginal lands, and water bodies and other natural habitats should not be interfered with or encroached upon by development. Spreading of chemical environmental stressors such as artificial fertilizers, herbicides and pesticides should be greatly reduced.
7. Opportunities

There are numerous references in the draft NAF to exploiting opportunities presented by climate change. Without any government intervention we could reasonably expect that climate change considerations will become fully integrated into the economy and business. We could also expect that any commercial opportunities which present themselves will be recognised and acted upon by businesses without any coaching from government. However, I strongly believe from an ethical perspective that opportunities presented by climate change should not be pursued as a national strategy. Firstly, given the grave threat posed to the world by climate change it would be unseemly for the state to set out to capitalize on other peoples’ misery. We may recall from our own history that fortunes were made by many businesses such as grain merchants during the great famine. The de-population of the land also presented the opportunity to consolidate farms and to improve profitability for the remaining landholders and farmers. It even gave rise to our current system of cattle and dairy farming. Yet who would wish to recall the horrible events of the mid-nineteenth century, and say that there were many positive outcomes? We should also bear in mind how other more affected nations may react when reading the Irish NAF. Moreover, any talk of opportunities serves to downplay the seriousness of the situation.

8. Other Comments

Document Size

The draft document is quite discursive and repetitive. The final version would benefit from a reduction in size, to maybe 10 to 20 pages.

Sectors and Themes

The definition and number of sectors needs to be clarified. In Chapter 1, eight sectors are mentioned: Agriculture, Forestry, Biodiversity, Coastal Areas, Critical Infrastructure, Marine & Fisheries, Water Management, Human Health and well-being. As the definition of Critical Infrastructure in the document includes Water, it reduces to a total of seven broad sectors.

Chapter 3 introduces two additional sectors: Industry/Finance and Tourism

The concept of “themes” is introduced in chapter 4. I do not see how this thematic grouping aids the clarity of the presentation. The Thematic groupings include a new sector: Cultural Heritage. River flooding is added to the Coastal flooding. Industry/Finance and Tourism sectors disappear.
Built Environment is a vulnerable sector (storms, rain, temperature, pluvial flooding), but is not mentioned anywhere. It could be added as a sector Built Environment/Spatial Planning.

**Other Suggested Edits**

Introduction, page 12, first paragraph: I don’t know where the 30% figure comes from. If we are talking about carbon dioxide it is true to say that it has increased by 40% compared to pre-industrial levels (IPCC Synthesis Report page 44). As to the increase relative to the preceding 800,000 years, this would be a bit tricky to phrase, as the concentration was oscillating over the 800,000 year period. It would be best to use something along the lines of the IPCC wording (IPCC Synthesis Report page 4), such as: “As a result, greenhouse gas (GHG) concentrations in the atmosphere are unprecedented in at least the last 800,000 years.”

I suggest that references to 1.5 °C on page 16 be deleted. Achieving 1.5 °C is wishful thinking and misleading. The first review of the Paris agreement is due in 6 years in 2023, by which stage the carbon budget for a 1.5 °C increase will have been emitted, and this temperature rise will have been locked in.

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Chart showing NAF governance structure

Government

High Level Climate Action Steering Group

National Adaptation Steering Committee + EPA CCAC CCMA

Sectoral Adaptation Steering Committee

Interdepartmental Flood Policy Coordination Group (OPW)

DCCAE DHPLG DAFM DTTAS Finance/DPER Dept. Health

EPA Met Eireann Teagasc TII ?? OPW

SEAI Irish Water ??

Regional Adaptation Bodies (proposed)

CCMA Regional Assemblies Local Authorities

Local Adaptation Strategies (proposed)

External Expertise and Advice

Climate Ireland MaREI

CCAC Reports advice

Colin Doyle