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31st March 2017 Our Ref: SCP170201.1

Re: National Planning Framework (NPF) Our Plan – Issues and Choices and SEA Scoping of Ireland 2040

Dear Mr. Hogan

We acknowledge your correspondence, dated 2nd February, in relation to Ireland 2040 Our Plan – National Planning Framework (the NPF) Issues and Choices and the associated Strategic Environmental Assessment (SEA) Scoping Report.

The EPA welcomes the opportunity to provide input at this stage of the Plan and SEA process. This submission includes both general and specific issues to be considered in the NPF and SEA processes.

Our submission below sets out key overarching considerations. In addition specific comments on the Issues and Choices document (including the associated questions) are provided in Appendix I. Observations on the SEA Scoping Report are included Appendix II. The relevant aspects of these submissions should be taken into account in the NPF and the SEA processes.

Ireland's Environment and the NPF
We acknowledge and welcome the inclusion of Ireland's environment as a key consideration in the *Issues and Choices* document. This is clearly evident in the chapters and sections related to *People's Health and Well-Being, Integrated Land and Marine Development, Ireland's Unique Environment - Sustainability* and under *Equipping Ireland for Future Development Infrastructure.* This recognises the importance of a good quality environment in contributing to our health and well-being and in underpinning our economy. It also supports the EPA's vision for "*A clean, healthy and well protected environment supporting a sustainable society and economy"* as outlined in our Strategic Plan 2016-2020 *'Our Environment, Our Wellbeing'*.

These aspects should continue to be reflected throughout the NPF process with the inclusion of specific objectives/commitments in the Draft NPF to influence and promote an integrated cross government approach to the protection of Ireland's environment and the promotion .of sustainable development. Given their importance and inter-relationships with other environmental criteria, additional sub-sections on '*Water Quality*' and '*Air Quality*' should also be included in the chapter on *Ireland's Unique Environment- Sustainability.* The inclusion of a separate sub section on '*Biodiversity*' should also be considered.

The recent EPA publication "*Ireland's Environment - An Assessment 2016"*[1] provides a timely opportunity to inform preparation of the NPF and the SEA. The description of the current state of Ireland's environment in this report will be a useful source of information for the development of the NPF and the parallel SEA process in the context of key environmental policies and considerations. A copy of *Chapter 13* - "*Environmental Challenges and Emerging Issues for Ireland*" from "*Ireland's Environment"* is provided separately in Attachment 1. In this Chapter, the 7 Key Environmental Actions for Ireland include:

1. *Environment and Health and Wellbeing* - Recognition of the benefits of a good quality environment to health and wellbeing.
2. *Climate Change* - Accelerate mitigation actions to reduce greenhouse gas emissions and implement adaptation measures to increase our resilience in dealing with adverse climate impacts.
3. *Implementation of Legislation* – Improve the tracking of plans and policy and the implementation and enforcement of environmental legislation to protect the environment.
4. *Restore and Protect Water Quality* – Implement measures that achieve ongoing improvement in the environmental status of water bodies from source to the sea.
5. *Sustainable Economic Activities* – Integrating resource efficiency and sustainability ideas and performance accounting across all economic sectors.
6. *Nature and Wild Places* – Protect pristine and wild places that act as biodiversity hubs, contribute to health and wellbeing and provide sustainable tourism opportunities.
7. *Community Engagement* – Inform, engage and support communities in the protection and improvement of the environment.

These actions are also linked to a number of the UN's Sustainable Development Goals. Addressing and implementing these key actions will be important in delivering environmental protection and promoting sustainable development in Ireland. The NPF and SEA should take into account the relevant aspects of these Actions and the related sub actions. To reflect this, a commitment to contributing to the 7 Key Actions could be included in the NPF. This will emphasise the fundamental benefits of maintaining a good quality environment to our health and well-being and economy as well as the attractiveness of Ireland as a place to live, work and visit.

Relationship with other Plans and Programmes

The inclusion in the NPF of a schematic showing the links with other relevant national, regional and local level plans would provide a useful overview of the key inter relationships between the NPF and other sector and environmental plans. In the context of land use planning, the proposed Regional Spatial and Economic Strategies will be particularly relevant along with local authority development plans in implementing a consistent approach in line with the NPF. They will also provide the basis for a tailored and spatial approach to regional and local development.

The NPF process coincides with consultation on a number of key Draft consultation documents including the *Draft River Basin Management Plan, Draft National (Climate) Mitigation Plan* and also '*Cleaning Our Air - A National Clean Air Strategy for Ireland*'. While currently at consultation stage provisions should be included for the relevant aspects of these environmental plans /strategies to be reflected in the environmental commitments in the NPF, in order to ensure that future development strategies are fully aligned with national environmental policy. The series of *Flood Risk Management Plans* currently being finalised are also of relevance. Other key Plans/ Programmes are also included in Appendix II. The relevant aspects of these should be taken into consideration in the overall NPF and SEA processes.

[1] http://www.epa.ie/irelandsenvironment/stateoftheenvironmentreport/

Consideration of Alternatives

The inclusion of environmental objectives in the consideration of alternative strategies to the '*Business As Usual*' scenario is welcome and reflects a number of the Key Actions for Ireland. In particular, we welcome the requirement to consider objectives related to:

- good environmental stewardship;
- reduction of carbon emissions;
- prioritisation of infrastructure that can deliver national benefit including renewable energies; and,
- harnessing the planning system to maximise the role it can play in relation to climate change and renewable energies.

In addition, the inclusion of an objective to "*manage the planning and development process so that the right development occurs in the most suitable places and at the right time, ensuring sustainability and the best use of scarce resources"* will be informed by the SEA and AA processes. This will also be delivered by parallel and lower level plans and associated assessments. The development of "*a tool kit of options to ensure greater environmental coherence when planning for future growth"* to inform the consideration of alternatives has the potential to contribute to delivering on this overarching objective.

Consideration should also be given to additional objectives that address:

- the loss of important/strategic carbon sinks through poor land use decisions; and,
- the challenge of coastal zone management in future planning (taking into consideration resilience to climate change impacts).
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We recommend that objectives should also be included in the Draft NPF to address these aspects.

Geographical Information Systems and related applications have the potential to provide the spatial environmental sensitivity analysis necessary to guide environmentally sustainable development.

Implementation and Governance

The implementation phase of the NPF will present significant challenges. Implementation will, however, benefit significantly from the statutory basis afforded to the NPF through Planning and Development Bill 2016. The adoption of a proactive approach to governance and implementation, as outlined in *Section 7- Enabling the Vision –Implementing the National Planning Framework*, will provide for robust and transparent mechanisms to ensure delivery of the NPF objectives and commitments. The inclusion of provisions for the development of integrated and robust planning enforcement and cooperation mechanisms to be developed in association with the DHPCLG, relevant Government Departments, and the proposed Office of the Planning Regulator, Regional Assemblies and local authorities should also be considered.

The EPA recognises in *Ireland's Environment* that Government departments have significant responsibility to plan for, design and integrate social, educational and infrastructural systems that support our ambition to become a carbon-neutral, climate-resilient and sustainably competitive society. The NPF has significant potential to provide this integrated long-term bigger picture planning needed to drive the scale and nature of the transformational change required to achieve these overall objectives.

A commitment to preparing an NPF Implementation Programme alongside the NPF should be considered for inclusion in the proposed *Governance and Implementation* chapter. This could

potentially set out key responsibilities (including lead /partner Departments/Authorities etc.), priorities and where appropriate, timescales, alongside each of the objectives/ commitments in the NPF. The alignment of the NPF with future Capital Investment Plans has a potential to play a significant role in informing key decisions on investment and prioritisation of infrastructure at a national level and where appropriate regional level. This will ensure that priority is given to investing in infrastructure that can deliver overall national benefit.

DHPCLG could potentially have a key role in coordinating the overall implementation with support from representatives of key Government Departments, relevant sectors and stakeholders.

Monitoring, Reporting and Review

The inclusion of a specific commitment to establishing independent monitoring of the NPF is welcome. The inclusion of relevant sub groups as appropriate to oversee and review specific aspects of the implementation phase should be considered. The potential role of the proposed Office of the Planning Regulator once established, in monitoring, should also be considered.

The establishment of an *Environmental Working Sub Group* should also be considered. This would provide for oversight of monitoring of the environmental performance of the NPF and a commitment to associated reporting. The arrangements in place for the implementation stages of the Offshore Renewable Energy Development Plan (OREDP) and Food Wise 2025 may be relevant in this regard and relevant aspects could be adopted for the NPF implementation.

A separate section on '*Monitoring, Review and Reporting*' should be considered for inclusion in the NPF. This should also reflect the proposed environmental related monitoring commitments required to be included in the SEA Environmental Report. This will provide a formal mechanism for feedback and review progress on implementation of specific aspects of the NPF. It will also make the Strategy more robust and provide for increased accountability and transparency during implementation.

Due to the cyclical nature of the NPF with formal provisions for review, the ongoing link with *Ireland's Environment* reporting and related established periodic environmental topic reporting has the potential to contribute significantly to reporting on progress on the NPF's environmental related objectives The commitment to review the NPF every 6 years could also be supplemented with a mid-term interim high level review during year 3 of implementation as appropriate. This would facilitate alignment with the four yearly cycle for EPA's reporting on *Ireland's Environment*, with the next report due in 2020.

Relevant existing national environmental monitoring programmes including Water Framework Directive, Bathing Water Directive, Habitats Directive, biodiversity, air quality and greenhouse gas emissions related monitoring and predictions should be taken into account. These should be aligned with relevant international, EU and national environmental obligations, commitments and targets. Relevant Appropriate Assessment related monitoring should also be included.

Provisions for environmental monitoring reporting should also be set out in the NPF. Where relevant, this could be aligned with possible provisions for annual (or other suitable frequencies), reporting on independent monitoring of the NPF implementation to Government and the Oireachtas.

Integration of SEA and AA in the NPF

A section should be included in the NPF indicating how the SEA and AA processes have influenced and informed its preparation. A description and schematic should be included in the NPF describing and showing the link between the SEA and AA processes and the NPF preparation. This should indicate how and where the SEA and AA have informed the NPF. A summary of alternative scenarios considered and the justification for selection of the preferred scenario/ combination of scenarios should also be provided.

The integration of the SEA processes should reflect the overall objective of the SEA Directive "*to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes*". This is in keeping with the inclusion of objectives in the NPF to "*ensure good environmental stewardship by avoiding any further deterioration and addressing existing deficiencies*". In particular, the link between the relevant Mitigation Measures and Recommendations in the SEA and, where relevant, commitments/ objectives in the NPF should be highlighted.

Scoping Process Guidance
Guidance on the SEA Scoping Process, including an SEA Pack, Integration Guidance, SEA Checklist, SEA Spatial Information Sources and guidance on Integrating Climate Change into SEA, is available on the EPA website and should be considered in the preparation of the SEA. See: http://www.epa.ie/pubs/advice/ea/

The EPA's GIS based SEA Search and Reporting Tool application can be accessed via www.edenireland.ie

Consultation
We acknowledge the proactive approach to consultation adopted by the DHPCLG NPF Team at this stage of the process. The continuation of this approach during the ongoing development of the NPF and the SEA process will provide significant opportunities for key stakeholders, sectors and the wider public to further engage and inform the overall process.

Under the SEA Regulations notice should also be given to the relevant statutory environmental authorities. In addition, consultation on SEA can also extend to other relevant Government Departments and key stakeholders where they have a role in environmental protection and sustainability. This consultation should also include consultation with relevant transboundary authorities.

The EPA welcomes the opportunity to comment at this stage of the process. We look forward to working with the NPF Team in the ongoing development of the NPF and the SEA process through the NPF Advisory Board and the NPF Environment Steering Group. The EPA is also committed to providing relevant information, data and input at the implementation phase. Further comment will be provided on receipt of the Draft NPF and SEA Environmental Report and associated documents during the next statutory consultation phase of the Plan and SEA Process.

Should you have any queries or require further information in relation to the above please contact the undersigned. We would be grateful if an acknowledgement of receipt of this submission could be sent to: sea@epa.ie.

Yours Sincerely,

Tadhg O'Mahony
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SEA Section
Office of Evidence and Assessment
Environmental Protection Agency
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Appendix I – Comments on the NPF Issues & Choices Paper

Governance, Implementation and Review

Greater detail should be provided on how the NPF will be implemented, including the role of other government departments, public bodies, local authorities and other relevant bodies. Consideration should also be given to including provisions in the NPF for integrated and robust planning enforcement and cooperation mechanisms, in association with the DHPCLG, other relevant government departments, the proposed Office of the Planning Regulator, the Regional Assemblies and local authorities. The NPF (and SEA) should also highlight the links to other key plans, strategies and frameworks covering the environmental area that will be responsible for achieving the various actions and commitments contained in the NPF.

It would be worth considering including a commitment to preparing an NPF Implementation Programme, setting out key responsibilities (including lead /partner Departments/Authorities etc.), priorities and where appropriate, timescales, alongside each of the objectives/ commitments in the NPF. DHPCLG could potentially have a key role in coordinating the overall implementation with support from representatives from key Government Departments, relevant sectors and stakeholders. Alignment of the NPF with future Capital Investment Plans will be important in informing key decisions on investment and prioritisation of infrastructure at a national level and, where appropriate, regional level and ensuring that priority is given to investing in infrastructure that can deliver overall national benefit.

.*European and International Context*

A table that sets out the 2040 plan for Ireland against other European and international long term plans such as the UN's Sustainable Development Goals, Climate Targets and the EU 7th Environment Action Programme target of "*Living well, within the limits of our planet*" would be helpful. This would put Ireland's plan into context with European and international targets and polices.

Integrated Land and Marine Development

Planning has an important role to play in maintaining the quality of our marine environment. Future development and population growth should not undermine or reduce the potential benefits of a high quality marine environment. The *Ireland's Environment - An Assessment 2016* (*Ireland's Environment*) recognises the need to protect coastal, estuarine and marine areas through better integration of actions under different water, marine and nature directives. It is vital that there are clear and definite linkages between the proposed Maritime Spatial Plan (MSP) and the NPF. The appropriate hierarchy and interactions between the two plans should be clearly defined to avoid potential future planning conflicts at inshore and coastal locations. In some cases it needs to be acknowledged that multiple uses of the marine environment may not always be compatible.

Forward Strategic Planning

Ireland's Environment recognises that soils, land cover and landscapes are resources that need to be protected, monitored and managed. Establishing and implementing an integrated national land cover, land use and habitat mapping programme is essential to assist in the reporting and assessment of the impact of different land cover and land use types on the environment. The European Environment Agency (EEA) recognises that "*compact urban development and resource efficient approaches to the built-environment can provide opportunities to alleviate environmental pressures and enhance human wellbeing and also protect from the impacts of climate change*" (EEA, 2015).

Forward strategic planning is vital for land use and new infrastructure to ensure that growth is sustainable and does not add to environmental pressures that are already evident, such as the gradual loss of wetlands or capacity issues in delivering drinking water and treating urban wastewater. The national CFRAM programme and associated series of Flood Risk Management Plans and related maps should assist in identifying those lands at risk of flooding and provide for appropriate land uses based on the level of flood risk identified.

Land is subject to many, often competing sectoral demands. The challenge for the NPF will be to ensure that national level sectoral plans and policies are carefully coordinated and monitored, to ensure a sustainable approach to land use planning is carried out in a way that does not negatively affect the environment, the wider economy and communities.

Climate Change & Transition to a Low Carbon Economy

Addressing Climate Change is a 'Key Action' in *Ireland's Environment* and one which the NPF should seek to progress as a matter of national priority. Ireland needs to accelerate mitigation actions to reduce GHG and implement adaptation measures to increase our resilience to the adverse impacts of climate change. The Climate Action and Low Carbon Development Act 2015 sets out the legislative basis and timelines for making of national and sectoral climate mitigation and adaptation plans. The NPF should promote the integration of these climate mitigation and adaptation plans into all levels of land use and non-land use planning.

Guidelines published by the EPA in 2016 make it easier for local authorities (and others) to plan for the inevitable consequences of climate change. Major transitions are needed in the energy and transport sectors within the lifetime of the NPF. The NPF should promote the implementation of the Government White Paper *Ireland's Transition to a Low Carbon Energy Future 2015-2030* and the recent National Policy Framework for Alternative Fuels Infrastructure for Transport. In addition, further policies, regulations and incentives are urgently needed if Ireland is to meet existing EU targets and to move onto a pathway to decarbonising energy, transport and heating and to achieve effective GHG emission neutrality in the agriculture and land use sectors by 2050. This challenge should be acknowledged and addressed in the NPF. Finally, it will be important that robust and transparent monitoring systems are in place to track progress towards targets across different sectors and the NPF should seek to promote this.

Agriculture

Ireland's Environment highlights the need for polices that promote '*the right farming in the right place'*. This has a clear spatial dimension as it recognises that planned agricultural growth cannot be uniform across the country, and regional and local factors need to be accounted for to determine where intensification will (or should) take place. Agricultural intensification should be closely monitored to ensure significant adverse environmental effects are avoided. The NPF should also seek to promote the protection of (high-nature value farming) and areas of high soil quality/fertility areas from adverse development.

Biodiversity

A separate section on '*Biodiversity*' should be included in *Section 5 – Ireland's Unique Environment – Sustainability*. This would serve to recognise the importance of protecting nature and wild places in an ever increasing urban environment across Europe. As outlined in *Ireland's Environment*, this includes green and blue space for health and wellbeing, quiet areas and local environments that add to Ireland's biodiversity, heritage and culture such as bogs, beaches, hedgerows etc. These areas could be 'banked for safekeeping' as in 2040 it is likely that these areas will provide significant value for tourism and recreation, in addition to their biodiversity value.

The NPF should include strong commitments to protecting designated national and European sites (NHAs, SACs, SPAs). The European Commission's recent Environmental Implementation Review report for Ireland raises issues related to the completion of the European sites designation process in Ireland and an investigation is ongoing into the completeness of the Natura 2000 network for the marine environment. The NPF (and SEA ER) should include relevant maps and figures to show the location of designated areas, candidate sites etc.

Air Quality

A separate section on 'Air Quality' should be included in *Section 5 – Ireland's Unique Environment – Sustainability*. The NPF should recognise the importance of buffer areas between

industrial/commercial areas and residential areas and promote the need for adequate separation between sensitive receptors and industrial activities. This is a particular issue in relation to activities which can potentially generate odorous emissions and cause nuisance in adjacent areas, such as waste management activities (waste transfer stations, waste processing activities, composting) and food and drink production related activities (cooking, food processing, rendering activities).

Water Quality

A separate section on 'Water Quality' should be included in *Section 5 – Ireland's Unique Environment – Sustainability*. This would provide an opportunity to include a summary of the key information available through the Water Framework Directive (WFD) characterisation process and to look at the various significant pressures on water quality and how these may be addressed through planning. Consideration of how the NPF will comply with the objectives of the WFD should be included in this section. The NPF should describe the vision that the Ireland of 2040 will be comfortably achieving its WFD Objectives, thereby ensuring a sustainable and high quality water supply to support the future development of both urban areas and the regions. It is essential that the NPF supports and promotes the means to achieve the objectives set down in the WFD. To this end, the NPF should be informed by the resources available within the River Basin Management Plan and supporting WFD Application (available via EDEN). Additional useful information on the WFD and RBMP process, including information on key pressures, is provided in Attachment 2.

The population growth projections to 2040, as described, confirm the need to carefully plan for the provision of infrastructure, including water infrastructure, to service this growing population. Accommodating this increasing population will prove a further challenge for the achievement of the objectives of the WFD which is already facing significant challenges. The NPF must inform future decisions on the provision of infrastructure in Ireland, in particular water infrastructure. Urban Waste Water Treatment has been identified as a significant pressure on water quality within a considerable number of *At Risk* [1] water bodies. The population growth projections will place further pressure on these *At Risk* water bodies and must be carefully managed so that growth occurs where there is sufficient infrastructure available to support it.

Recognising the difficulties in providing water infrastructure for one-off rural housing and the significant pressure Domestic Waste Water Treatment Systems place on water quality should also be acknowledged. The NPF should set the appropriate framework which highlights the unsustainable nature of urban-generated rural housing and provide a basis for a controlled approach to policy in this area. Particular care must be given to development within catchments of high status water bodies as these are particularly sensitive to changes causing reduced water quality. These high status water bodies could be identified within the NPF as areas where development likely to negatively impact on water quality should be avoided. Implementation of the NPF should occur in tandem with the implementation of the 2nd Cycle River Basin Management Plan and appropriate linkages for the monitoring of both plans may be applied.

Noise

Noise is now recognised as a serious environmental and health issues in the EU, responsible for at least 10,000 premature deaths each year and causing annoyance to some 20 million adults and sleep disturbance to a further 8 million. The WHO identifies noise as the second most significant environmental cause of ill health (after air pollution). The Environmental Noise Directive (END) requires the preparation of '*strategic noise maps*' for major roads, railways, airports and agglomerations, as well as the development of action plans to reduce noise exposure. It also discusses the protection of '*Quiet areas*' where people can find some respite from noise pollution, particularly in built up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, and near schools, hospitals and other noise-sensitive buildings and areas.

[1] Water bodies identified as at risk of not achieving WFD objectives.

In Ireland, local authorities are required to develop noise action plans for transport related noise sources (major, road, rail and airports) and the two city agglomerations of Dublin and Cork. The NPF should include a recommendation to make these noise action plans more widely available to policy makers, planners and local authorities. The status of these noise action plans and noise mapping could be described in the SEA.

The protection and further development of designated quiet areas should also be considered in the NPF, with special consideration given to NHAs, SPAs, SACs, RAMSAR sites and places of high amenity value with regard to their natural soundscape. There are no quiet areas currently designated in open country in Ireland and this should be an area for consideration under the NPF. The NPF should also consider future trends in transport and mobility systems and predict the implications for the population's exposure to environmental noise.

The NPF should set out a vision for how our cities and urban areas could look (and sound like) in the future if best practice, imaginative and new actions were implemented to avoid, prevent or reduce on a prioritised basis the harmful effects (including annoyance) of noise exposure. Finally, the NPF should provide strategic recommendations for noise planning guidelines. There is a need for further guidance for planning authorities with regards noise considerations in land use plans. In this context, the UK Guidance *"Draft ProPG guidance: Planning & Noise, Professional Practice Guidance on Planning & Noise New Residential Development Consultation Draft"* (www.cieh.org/WorkArea/DownloadAsset.aspx?id=58591) is currently available and could provide a basis for similar Irish guidance, as relevant and appropriate.

Responses to Questions in NPF 'Issues and Choices' Paper

Section 4 – A Place-Making Strategy

In thinking about what Ireland might look like in twenty years' time, what is the future for Ireland's coastline, islands and offshore?

Ireland's coastline islands and offshore should provide a greater proportion of our energy needs through renewable energy technologies. Sustainable tourism (eco-tourism, activity-based, cultural tourism) could be further developed. The 'Blue Economy' should be supported and promoted in line with policies such as *Harnessing Our Ocean Wealth*.

How can coastal and island communities contribute to a national vision for Ireland, as part of the NPF?

Become role models for sustainable development, the circular economy, renewable energy and low carbon society (transport, heating etc.). There are a number of examples of community based projects promoting environmentally sustainable approaches to living, working and farming in coastal and island communities. Examples include Burren Life and Aran Life. Learning from these projects and follow on projects has the potential to change behaviours and promote buy in to the adoption of sustainable practices.

How can the goals of the integrated Marine Plan be spatially represented in a National Planning Framework?

Possibly by looking at the existing linkages between spatial land use and marine-related sectoral plans (offshore renewable energy plans, seafood development plans etc.) and how the NPF is placed to support these aspects. Areas of concern due to infrastructure deficiencies/capacity issues, environmental sensitivities, economic restrictions etc. could be reviewed.
Aspects for consideration could include:

- Transportation links from ports, harbours and marinas (commercial fishing, transport, freight, tourism)
- Industry (offshore renewable energy, offshore fisheries, offshore hydrocarbon exploration, telecommunications, electricity)
- Key foreshore interconnectivity and grid infrastructure (existing / proposed)
- Key marine tourism related ports, harbours and marinas
- Key offshore dumping at sea sites
- Protection of key offshore/onshore environmental sensitivities

For each of the above, consider examining what is currently in place, in the context of how predicted changes / requirements associated with Ireland's growth in terms of economy and population will impact or affect achieving these aims. They should also take into account the ability to adapt to climate change, protect designated sites, support sustainable development and protect human health.

What, policies, measures or actions need to be advanced to enable Ireland's marine resource to adapt to the effects of climate change (e.g. coastal erosion, flooding, sea level rise etc.)?

The NPF could recommend that a review of existing sectoral marine-related plans is carried out in the context of ensuring that the predicted effects associated with climate change are considered, including the susceptibility of offshore/foreshore infrastructure to increased storminess, sea level rise etc. Where particular aspects are not adequately considered, these plans should be reviewed and amended, as appropriate and relevant. The NPF also has a clear role to play in terms of promoting the integration of sectoral climate mitigation and adaptation plans into all levels of land use and non-land use planning.

What infrastructure investments need to be made in order to maximise the sustainable potential of our ocean resource?

The scale of offshore infrastructure (energy, food, telecommunications, and commercial transportation) should be assessed in terms of ability to expand to meet the demands of a growing economy / population. Options for retrofitting existing infrastructure to adapt to supporting a low carbon society should be considered, as well as considering new infrastructural development. Consideration of impacts on environmental receptors should be integrated in the decision making process. Certain aspects may need to be reviewed in the context of climate change. Susceptibility to storm damage and sea level rise, changes in ocean chemistry for example may potentially impact on existing commercial fish stocks , both farmed and un-farmed or provide options for new species migration (and subsequent possibilities for invasive species spread and waterborne diseases). Assessment of options to adapt existing, replace obsolete and develop new infrastructure options should be recommended.

There is a significant shortfall in the provision of adequate waste water treatment infrastructure for many medium to large coastal urban settlements and possibly also in the case of future expanding island communities where tourism in particular may significantly increase pressures. The NPF should reflect the importance of all development being facilitated / restricted by the provision of critical service infrastructure and the need for Irish Water being adequately resourced in the context of delivering the various timed phases of its Water Services Strategic Plan to help ensure the sustainability of Ireland's marine environment.

The potential impacts of marine related plans/activities such as dredging, fisheries and offshore energy exploration and operation activities, on grid infrastructure (and related offshore infrastructure) should also be considered where relevant.

In addition, the NPF should ensure that the full range of potential likely significant effects, including in particular cumulative effects, are taken into account and assessed within the SEA.

Section 5 – Ireland's Unique Environment - Sustainability

As previously outlined, this Section would benefit from the inclusion of additional sub-sections on '*Water Quality', 'Air Quality'* and *'Biodiversity*.

How can the NPF help to ensure we get a sustainable balance between catering for a growing population and avoiding or addressing environmental pressures?

The NPF should acknowledge Ireland's legal obligations to protect habitats and species under threat across Europe. The continuing deterioration of high status water bodies, land use changes and the planned intensification of agriculture may lead to further losses. The implementation of initiatives such as Food Harvest 2020 and Food Wise 2025 should be scrutinised to ensure they are implemented in a sustainable way and that the environmental commitment contained therein are adhered to.

The NPF should include commitments to recognise and protect our valuable environmental resources from adverse development / encroachment and integrate the *National Biodiversity Plan – Actions for Biodiversity 2011-2016* (and any subsequent reviews thereof). Schemes such as GLAS, GLAS Plus and LIFE programme initiatives should continue to be supported. The NPF should recognise the importance of green and blue infrastructure and consider providing for regular reviews of local authority habitat mapping in land use planning. Recognition of the valuable research and awareness activities of organisations such as the National Biodiversity Data Centre and continued support for environmental research would also be welcome.

The NPF can also contribute to ensure a sustainable balance between catering for a growing population and avoiding or addressing environmental pressures by:

- ensuring that during the SEA/EIA/AA processes for any plans with the potential for significant environmental effects, only realistic alternatives are put forward and fully assessed;

- promoting the concept of Plan and SEA Monitoring being closely linked in all plans and programmes with the potential for environmental effects and that responsibilities/timelines for monitoring are clearly defined;
- ensuring a commitment to on-going review of new and updated national plans and reports such as *Ireland's Environment*, Urban Waste Water Treatment Report, Drinking Water Report etc.

How do we plan for growth in such a way that supports a transition to a low carbon and climate resilient economy and what planning policy measures are needed to achieve this?

The NPF should commit to requiring that the Government's White Paper on Energy – *Ireland's Transition to a Low Carbon Energy Future* (DCCAE) which sets out a framework to guide policy up to 2030, is implemented at national, regional and local level as appropriate. Strong policy support for and investment in renewable energy infrastructure is needed. Funding research into sustainable alternative energy technologies is also needed. In relation to transport, integrating transport planning and urban land use planning is required. Supporting sustainable energy community initiatives would be welcomed and would help to make communities more involved in the need to become more energy efficient. An assessment of the existing energy-related infrastructure should be carried out to determine the suitability and adaptability to support a low carbon-energy future. This should be supported by recognising that new infrastructure may be required, and that the locations of such developments will need to be carefully considered. Additionally, clear indicators and monitoring will also be needed to identify and monitor and review energy efficiency / resource use over the lifetime of the NPF to ensure that infrastructure remains fit for purpose to achieve these low-carbon energy efficient aims.

What strategic energy infrastructure is needed to support the economy and society and realise the transformation of Ireland's energy system to meet climate change and energy obligations and in what areas should it be located?

A number of key national energy related plans have been prepared over the last few years. These include:

- Alternative Fuels Infrastructure for the Transport Sector (DTTAS)
- Offshore Renewable Energy Development Plan (DCCAE)
- National Bioenergy Plan (DCCAE)
- Grid 25 Implementation Plan (Eirgrid)
- Ireland's Offshore Strategic Environmental Assessment IOSEA5 (petroleum exploration and production) (DCCAE)
- Renewable Electricity Policy (DCCAE)
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Where necessary, there is merit in seeking a review of these plans (as appropriate) to consider whether any additional modifications/amendments are required to promote the transformation to a low carbon society / economy in any related infrastructural development proposals or commitments described.

Are there any other national environmental issues that you think should be included within the NPF and that are within the remit of planning policy?

The key national environmental issues and challenges for Ireland, as described within the EPA State of the Environment Report (SOER) '*Ireland's Environment – An Assessment 2016*' (EPA, 2016). These are included in Attachment 1to this submission.

An SEA scoping document has been developed in tandem with this paper. What are the relevant significant issues to be addressed by the SEA, AA and SFRA and what environmental objectives should be used?

We refer you the Appendix II of this submission for specific comments on the SEA.

What measures should be implemented in order to safeguard our landscapes, seascapes and heritage and ensure that Ireland continues to be an attractive place to live, visit and work?

The NPF should provide for integration of the National Landscape Strategy (NLS) (DAHG, 2014) at a national, regional, sectoral and local level. The NPF should, in particular support the NLS Actions to prepare a National Landscape Character Map and Landscape Character Assessment Guidelines.

The NLS seeks to ensure that Ireland complies with the European Landscape Convention by establishing the principles for protecting and enhancing the landscape while positively managing changes. There is also a need to support the development and integration of detailed land cover maps that will be essential to assess the potential impacts on our landscape resource of land use planning, in a consistent and coherent manner.

The NLS includes an objective to prepare 'State of the Landscape Reports', as well as providing a national and sectoral-level landscape policy framework to protect, manage and plan for the sustainable stewardship of our landscape. 'State of the Landscape' reports could be relevant for land use plans, and associated SEAs, with potential to impact on landscape character. This potential requirement should be reflected in the NPF.

Section 6 – Equipping Ireland for Future Development Infrastructure

What are the nationally important infrastructure projects for Ireland that require delivery over the next twenty years?

Nationally important infrastructure projects include:-

- Renewable Energy Infrastructure (onshore and offshore)
- Grid Infrastructure
- Sustainable Transport Infrastructure (public transport (rail, bus), alternative fuel infrastructure, cycle/pedestrian networks)
- Critical Service Infrastructure (Wastewater, Water, Waste)
- Communications – National Broadband Plan
- Flood Defence / Coastal Defence

In addition, we acknowledge the need for continued investment in national/regional road, rail, and port and airport infrastructure to support continued economic growth over the lifetime of the NPF. This infrastructure development will need to be realised in a sustainable manner that supports the achievement of a low carbon society and complies with relevant environmental legislation.

What do we need to do to make best use of existing infrastructure?

Determine how adaptable it is to cater for upgrade/redesign/replacement of existing infrastructure

- Predicted population increase and costs to upgrade / replace
- Supporting transition to low carbon society / economy
- Climate Change Effects

How can we ensure that the provision of infrastructure can be planned to match future demand and how can the NPF reflect this?

Closely coordinate spatial planning and infrastructure planning and population growth – provide a clear link to the need for services/society/economic activity to be serviceable by appropriate infrastructure in an environmentally sustainable way. Measures at all levels in the planning hierarchy to ensure key commitments are reflected in spatial planning decisions associated with lower level plans. Seek to coordinate preparation of key national level plans to reflect 'census' completion periods to assist in providing the most upto date evidence and information to support these decisions. There is a clear need for up to date census information to inform key plans and programmes and monitor implementation-related effects, such as population growth, commuting habits, agricultural output etc. Additionally, coordinating subsequent reviews of the NPF to take account of subsequent updates to Ireland's Environment reporting would also be welcomed. (*Ireland's Environment* is published every four years, with the next report due in 2020).

How can capital spending on new infrastructure be sequenced in a way that is affordable and equitable, while taking account of Ireland's Climate Change obligations?

Areas where the biggest improvements can be made to achieve the benefits of a low carbon society should be prioritised where possible. This may include aspects such as:

- Improvements in public transport (frequency. coverage etc.)
- district heating
- further encouraging non-fossil fuel private vehicle transport,
- communications infrastructure,
- measures to minimise agricultural emissions
- energy efficient building design

Reference should also be made with the Draft National Mitigation Plan, sector Adaptation plans and key relevant sector Plans (erg Food Wise 2025).

How do we ensure that existing and new development can be supported by the timely provision of social infrastructure?

Consider making the requirement is reflected in relevant statutory Guidelines. Approval for development should be carefully controlled, authorised, monitored and reviewed to ensure that it meets the relevant criteria (including provision of critical service infrastructure and social infrastructure etc.). It may be necessary to prepare "Social infrastructure Development Guidelines" to ensure a consistent /coordinated approach to providing the necessary infrastructure at the appropriate scale and in the appropriate place, is taken by local authorities. The NPF could possibly promote best practice in respect of social infrastructure provision in the context of evaluating how 'good examples' already applied in some of our large urban areas could be adapted to be more widely applicable.

Section 7 – Enabling the Vision – Implementing the National Planning Framework

What Barriers exist to implementation?

Potential barriers to effective implementation of the NPF include:

- the need for robust NPF Implementation Programme and governance arrangements setting out key responsibilities (including lead /partner Departments/Authorities etc.) and reporting obligations,
- prioritisation of actions and assigning realistic achievable timescales,
- relevant resources (staffing),
- non alignment of lower level plans with the NPF and SEA mitigation/monitoring/reporting,
- not linking the NPF to relevant financial plans/budgets,
- a lack of robust planning enforcement mechanisms,
- insufficient political backing or cross-party support,
- and a lack of cross-departmental buy in.

Appendix II - Comments on NPF SEA Scoping Report

Environmental Baseline

Climate Change
The SEA (and NPF) should use the most recent greenhouse gas (GHG) emissions and projections data available. The EPA is responsible for compiling Ireland's annual GHG emission inventories and projections and the most recent data are available on the EPA website at: www.epa.ie/climate/emissionsinventoriesandprojections. The environmental baseline could include a summary of the vulnerability to climate change of major infrastructure supporting Ireland's continued economic development (including major coastal/marine and terrestrial infrastructure), with a view to informing future upgrade/replacement needs.

Environmental Emissions in Dublin Area
Given the continued role of the Dublin area in driving economic growth and contributing to population increase, the SEA could consider describing the proportion of environmental emissions (e.g. waste, air, waste water etc.) and resource use requirements arising in the Dublin area, to show its influence on Ireland's totals and the associated potential environmental implications.

Air Quality
The potential data sources on air quality (Table 6.1- *Baseline Data Sources*) to be reviewed should also include the various emission inventory reports for Ireland, which highlight the main contributors to different pollutants. This will help to inform how the NPF may be able to assist in improving air quality across relevant sectors. The scoping report recognises the role of the transport sector in relation to air quality issues (Section 5.3.5) and in particular refers to PM10 and PM2.5 from road transport. Given that more than 50% of national emissions of PM2.5 relate to residential solid fuel burning (coal, peat and wood). This should also be recognised as a challenge to achieving good air quality. Section 5.19 of the *Issues and Choices* document mentions 1,200 premature deaths linked to air pollution; it should be noted that this estimate has since increased (EEA's '*Air Quality in Europe – 2016 report*').

Biodiversity
In addition to the National Peatlands Strategy (and associated Raised Bog SAC Conservation Management Plan and Raised Bog NHA Review), the SEA should note that the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs will be preparing SAC Management Plans for Blanket Bogs.

Water Quality
The EPA's new WFD Catchments website (www.catchments.ie) provides a useful source of data and associated maps relating to water quality, pressures and WFD related aspects. Integrating the WFD 'catchment boundary' within the NPF provides a valuable opportunity to familiarise and educate the public on the 'catchment' concept and embed the Integrated Catchment Management approach into planning activity. Additional useful information on the WFD and RBMP process, including information on key pressures, is provided in Attachment 2.

Data Gaps

Lack of a National Landcover, landuse and habitats dataset
The proposed use of GIS (where relevant spatial datasets exist) is welcome and should assist in determining areas of overlapping environmental sensitivity requiring protection. There is however an urgent need for a more detailed national landcover, landuse and habitats dataset to assist in

preparation, assessment, monitoring and review of land use plans. A good understanding of local and national scale land use and land- use change is critical to effective spatial planning and associated environmental assessments. Many of the topics covered in Section 5 of the *Issues and Choices* document (e.g. unsustainable land use change, protection and management of the landscape and the implementation of green infrastructure) have a direct link to land use and land cover and require high quality data to address these issues. A national high resolution land use dataset would provide more detailed analysis of housing density, transport links, locations of services, important biodiversity, green/blue infrastructure and cultural heritage considerations, thereby enabling planners to make better evidence-based assessments resulting in more targeted and resource efficient development plans and helping to limit urban sprawl and aid the 'City Centre Outwards'. Such a dataset would also assist in the monitoring of achievement of the proposed SEA Objectives and Targets.

Since 2010, the EPA has collaborated with other public bodies and government departments to develop a proposal for a high resolution national land cover, land use and habitats dataset that would provide detailed information on every individual field parcel, building, landscape feature, infrastructure network, water body and semi-natural habitat in the country. A memo was submitted to the Minister of Arts, Heritage and the Gaeltacht on this matter in 2015. The EPA would welcome the inclusion of a commitment in the NPF to supporting the establishment of this significant dataset.

Relationship with other plans / programmes

The SEA Scoping Report recognises the key significant national and regional key influential plans/programmes/strategies currently underway and the role of the other Government Departments (DAFM, DCCAE, DHPCLG, DTTAS etc.) and we welcome the recommendation for a coordinated approach to addressing the challenges facing our environment, economy and society. It may be useful to include a reference to a number of additional plans/programmes/strategies described below:

- Finalised National Peatlands Strategy
- Draft Forestry and Freshwater Pearl Mussel Plan
- Draft Freshwater Pearl Mussel sub-basin catchment management plans (2010)
- LIFE Programmes
- Irish Offshore Strategic Environmental Assessment 5

There is also merit in considering including a diagram showing the relationship between the various key national plans (land use and non-land use) associated with addressing the issues and challenges of the NPF. This will assist in coordinating, implementing, monitoring and reviewing these plans/programmes/strategies.

Strategic Environmental Objectives

In considering the Draft Objectives and associated Targets described in *Section 5.3 Scoping of Strategic Environmental Assessment Topics*, the SEA could consider indicating the lead authorities responsible for achieving/progressing these objectives. In *Table 7.1 - Draft SEA Environmental Objectives*, there is merit in including additional objectives on the following:

- *"To promote reduced energy consumption and support the uptake of renewable options and a move away from solid fuels for residential heating"*, and
- in relation to Soil / Geology: *"To avoid or minimise adverse effects on mineral resources, important geological and geomorphological sites and soils"*.

Additional suggested amendments to consider re the Draft SEA Objectives in Table 7.1 include:

- *Objective 2 on Biodiversity, Flora and Fauna* - Draft SEA Target: Require all regional, county and local level land use plans to include ecosystem services and green**/blue** infrastructure provisions in their land use plans.
- *Objective 5(i) and 5(ii) on Air Quality* - Draft SEA Target: Decrease in proportion of journeys made by private **fossil fuel-based** car compared to 2014 National travel Survey levels.
- *Objective 9 on Landscape* - Draft SEA Objective: To provide a **consistent** framework for identification, assessment, protection, management and planning of landscapes having regard to the European Landscape Convention.

Alternatives

We welcome that the EPA guidance on '*Developing and Assessing Alternatives in Strategic Environmental Assessment – Good Practice Guidance'* (EPA, 2015) will be considered in the preparation of the SEA and the consideration of alternatives. The various options available should be described and incorporated into the scope of the associated environmental assessments (SEA and AA). Any assumptions, selection and assessment criteria should be clearly set out.

Monitoring

The SEA (and NPF) should consider setting out the key environmental targets that Ireland will achieve by 2040 (e.g. GHG emissions, low carbon, water quality, habitat protection etc.) and develop indicators as part of the plan to track progress with these national targets. The NPF and SEA should consider the use of independent national monitoring indicators where available. The environmental indicators associated with the EPA's *Ireland's Environment* report should also be incorporated in the monitoring and review of the SEA (and the NPF). Other public sources of relevant indicator data may include the CSO and the NBDC. The EEA is developing new indicators to help track achievement of the actions of the 7th EAP. For information, Norway has environmental targets on its SOE page that might be useful to explore as a means of setting targets to monitor progress with environmental aspects of the NPF (see http://www.environment.no/goals/).

Transboundary Considerations

We acknowledge the intention to engage with the Northern Ireland competent authorities (Department of Agriculture, Environment and Rural Affairs) in the development of the SEA. A shared and coordinated approach to developing and monitoring the border regions, in a way which will promotes economic growth, sustainable development and environmental protection in both jurisdictions, is welcome. This approach is already reflected in the approaches adopted for both Flood Risk and River Basin Management Planning.

Integration of SEA into the NPF

We acknowledge that the NPF represents a long-term (20+ year) development framework that sets out the vision for Ireland in terms of economic activity, social progress and environmental quality, through co-ordinated policy, investment and action at national, regional and local levels. The EPA recommends that environmental protection is placed at the heart of policy-making in the Plan, as it supports the economy, society, quality of life, human health as well as supporting biodiversity and protected species and habitats.

We also welcome that that the SEA Scoping report recognises the key significant issues / challenges identified in the EPA's *Ireland's Environment* report (EPA, 2016). Recognising and providing the appropriate commitments to addressing these challenges should also be reflected in the Draft Plan.

Suggested Environmental Resources

Environmental Criteria	Selected Resources
EPA State of Environment	http://www.epa.ie/irelandsenvironment/stateoftheenvironmentreport/
Surface Water	http://www.wfdireland.ie/index.html http://www.epa.ie/pubs/reports/water/waterqua/ http://www.catchments.ie
Ground Water	http://j.mp/gsigroundwater http://www.epa.ie/downloads/pubs/water/ground/ http://www.epa.ie/hydronet/#Water%20Levels
Bathing Water	http://www.epa.ie/pubs/reports/water/bathing http://splash.epa.ie/#
Marine	http://www.marine.ie/Home/site-area/home/home
Biodiversity	http://www.npws.ie/guidance-appropriate-assessment-planning-authorities http://www.npws.ie/publications http://maps.biodiversityireland.ie/#/Home EcoPLan Project (Green-Infrastructure/Ecosystems Approaches) Guide and Report
Flood Prevention and Management	www.floodmaps.ie www.cfram.ie
Air	http://www.epa.ie/pubs/reports/air/quality/
Climate	http://www.environ.ie/en/Environment/Atmosphere/ClimateChange/ http://www.epa.ie/pubs/reports/research/climate/
Waste Management	http://www.epa.ie/pubs/reports/waste/
Energy Conservation	www.sei.ie
Landscape Character Assessment	http://www.heritagecouncil.ie/
Geology / Geomorphology	http://www.gsi.ie/Mapping.htm
Transportation	https://www.nationaltransport.ie/planning-policy/ http://www.nra.ie/environment/
SEA	www.edenireland.ie (SEAGIS Reporting Tool) http://www.epa.ie/pubs/advice/ea/ http://www.epa.ie/pubs/consultation/manual/
EIA	http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/EnvironmentalAssessment/EIASEAGuidance

Some Useful Planning Related Resources

Environmental Criteria	Selected Resources
Spatial Planning GIS	www.myplan.ie http://www.epa.ie/soilandbiodiversity/soils/land/corine/
DECLG Guidelines / Legislation	http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/Planning/
Flood Risk	www.cfram.ie www.floodmaps.ie

Some High Level Plans/Programmes/Strategies (PPS) to Consider*

Environmental Criteria	High Level Plans/Programmes/Strategies (PPS)
National	- Rural Development Programme (DAFM) - Draft River Basin Management Plan (DHPCLG) - National Clean Air Strategy (in preparation) - National Renewable Electricity Policy and Development Framework (in preparation DCCAE) - Grid 25 Implementation Programme - BioEnergy Plan (In preparation) - National Hazardous Waste Management Plan (EPA) - Food Harvest 2020 / FoodWise 2025 (DAFM) - National Forestry Programme / Forestry Policy Review (DAFM) - Seafood Operation Programme / Strategic Aquaculture Programme (DAFM) - Harnessing Our Ocean Wealth (DAFM) - National Broadband Plan (DCCAE) - National Landscape Strategy (DAHG) - National Peatland Strategy, SAC Raised Bog Management Plan (DAHG) - National Biodiversity Plan (DAHG) - Water Services Strategic Plan (Irish Water) - Capital Investment Programme (Irish Water) - National Mitigation Plan (DHPCLG) - Sectoral Climate Change Adaptation Plans/Strategies - Smarter Transport / Strategic Framework for Integrated Land Transport (DTTAS) - Offshore Renewable Energy Development Plan (DCENR) - Offshore Oil and Gas Exploration (DCENR) - Ireland's Environment – An Assessment (EPA, 2016)
Regional/County	- Regional Spatial and Economic Strategies (in preparation) - Regional Planning Guidelines - Local Authority Development Plans - National CFRAMS Programme/ Draft Flood Risk Management Plans (OPW) - Wild Atlantic Way Operational Programme (Failte Ireland) - Pollution Reduction Programmes for Shellfish Waters - Freshwater Pearl Mussel Sub-basin Management Plans - Forestry and Freshwater Pearl Mussel Plan (DAFM, in preparation) - Regional Waste Management Plans - National Transport Strategy for Greater Dublin Area - Shannon Integrated Framework Plan (SIFP)

Note: *Plan-makers should consider and identify key relevant PPS in the SEA. List of Plans is indicative only and some may not always be relevant to a particular plan.

A number of the Government Departments have changed, the list above refers to the Department in place at the time of the PPS preparation.

Chapter 13

Environmental Challenges and Emerging Issues for Ireland

Environmental Challenges for Ireland

Introduction

There are many positive aspects associated with Ireland's environment. Air quality is generally classified as good (EPA, 2015a). We still have good-quality water in many rivers, lakes, estuaries and coastal waters, which support important habitats and species (EPA, 2015b). Excellent progress has been made in meeting EU waste recycling, recovery and diversion targets (EPA, 2016a).

The critical role that our environment plays in delivering health benefits and significant economic advantages for our society is now beginning to be appreciated. This appreciation must be further realised through coherent and integrated national social and economic policies.

Ireland is at a crossroads as to how it addresses the global environmental challenge of climate change. In the longer term national greenhouse gas (GHG) emissions have increased when measured against 1990 levels; this is at odds with the overall achievements of the EU, where GHG emissions have decreased (EEA, 2016). In recent years national GHG emissions have decreased. However, projections of future emissions suggest that this trend will be reversed in the near future and Ireland may fail to meet the 2020 emissions targets and not be on track for necessary decarbonisation (EPA, 2016b).

Our national values system has evolved to a stage that sees conspicuous consumption as socially desirable. Moreover, the rise of individualism is dictating behaviours that are not always in the best interests of society or the environment. This is not a sustainable pathway for any nation. Recent national actions to engage communities in environmental protection and sustainable development are seen as central to delivering the future we need. This strengthening is also being led by some of our more enlightened businesses through corporate social engagement.

There are also significant water pollution risks specific to Ireland that will remain a challenge unless underinvestment in water services is reversed and measures are implemented to ensure that the intensification of the agriculture, fisheries and food sectors under Food Wise 2025 does not have a negative effect on the environment and biodiversity (EPA, 2015a,b,c).

European Perspective

European State of the Environment Report 2015

The European Environment Agency (EEA) report indicates a mixed picture in relation to achieving the EU's 2050 vision of "living well within the limits of the planet".

The EEA released its latest State of the Environment report for Europe in 2015 (EEA, 2015a). The EEA paints a varied picture in relation to achieving the EU's 2050 vision of "living well within the limits of the planet". Some areas, notably resource efficiency and the low-carbon economy, have progressed or have a mixed picture in the medium term. However, the picture for protecting, conserving and enhancing natural capital in many areas is deteriorating. A similar outlook is given for safeguarding Europe from environmental risks to health. Deteriorating trends in relation to biodiversity and climate impacts can be singled out as special causes for concern. These are global issues and not just confined to Europe. A summary of the trends identified by the EEA are presented in Table 13.1.

Table 13.1 An Indicative Summary of Environmental Trends (Source: EEA, 2015a)

	5–10 year trends	20+ years outlook	Progress to policy targets
Protecting, conserving and enhancing natural capital			
Terrestrial and freshwater biodiversity			☐
Land use and soil functions			No target
Ecological status of freshwater bodies			☒
Water quality and nutrient loading			☐
Air pollution and its ecosystem impacts			☐
Marine and coastal biodiversity			☒
Climate change impacts on ecosystems			No target
Resource efficiency and the low-carbon economy			
Material resource efficiency and material use			No target
Waste management			☐
Greenhouse gas emissions and climate change mitigation			☑/☒
Energy consumption and fossil fuel use			☑
Transport demand and related environmental impacts			☐
Industrial pollution to air, soil and water			☐
Water use and water quantity stress			☒
Safeguarding from environmental risks to health			
Water pollution and related environmental health risks			☑/☐
Air pollution and related environmental health risks			☐
Noise pollution (especially in urban areas)		N.A.	☐
Urban systems and grey infrastructure			No target
Climate change and related environmental health risks			No target
Chemicals and related environmental health risks			☐/☒

Indicative assessment of trends and outlook

- Deteriorating trends dominate
- Trends show mixed picture
- Improving trends dominate

Indicative assessment of progress to policy targets

- ☒ Largely not on track to achieving key policy targets
- ☐ Partially on track to achieving key policy targets
- ☑ Largely on track to achieving key policy targets

Note: The indicative assessments presented here are based on key indicators (as available and used in SOER thematic briefings), as well as expert judgement. The corresponding 'Trends and outlook' boxes in the respective sections provide additional explanations.

More recently, the EEA reported that EU GHG emissions continued to decrease in 2014, with a 4.1% reduction in emissions to 24.4% below 1990 levels (EEA, 2016). However, the situation in Ireland is somewhat different: the figures released point towards increasing emissions since 1990. This may indicate that Ireland is not yet meeting the challenge to build a resource-efficient, low-carbon economy.

The EEA is advocating for a shift in the way we value and protect our shared environment. Various policies and initiatives have been created to steer Europe towards a green economy. However, the assessment from the EEA shows that these policies to date have not made sufficient progress to reverse the trends predicted. The environment is not yet placed at the heart of everyday decisions and actions. This provides a challenge for all European and national institutions to work more closely together to help deliver common outcomes for a healthy environment.

Overall, the high-level challenges highlighted by the EPA throughout these chapters reflect the challenges set out by the EEA in its State of the Environment report for Europe 2015 and also in the EU 7th Environmental Action Programme (EAP). This attests to the fact that across Europe there are similar challenges in addressing identified environmental issues and ensuring a good-quality environment.

The 7th Environmental Action Programme

The 7th Environmental Action Programme provides the basis for EU wide action to enhance environmental protection in the period 2014 to 2020 and outlines a longer vision for Europe in 2050 (EU, 2013):

"In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society."

The three key objectives of the EAP are:

- to protect, conserve and enhance the EU's natural capital
- to turn the EU into a resource-efficient, green and competitive low-carbon economy
- to safeguard the EU's citizens from environmental-related pressures and risks to health and wellbeing.

It also establishes two horizontal priority objectives:

- to make EU cities more sustainable
- to help the EU address international environmental challenges more effectively.

To deliver on these goals the EU has set a focus on four key actions:

- better implementation of legislation
- better information by improving the knowledge base
- more and wiser investment for environment and climate policy
- full integration of environmental requirements and considerations into other policies.

Challenges Outlined in the State of the Environment Report 2012

In Ireland the picture is mixed when considering progress in addressing the four main challenges outlined in the State of the Environment report 2012.

The four key challenges from the EPA's State of the Environment report 2012 are listed in Table 13.2 (EPA, 2012a). The table also provides an indicative high-level summary on progress with these challenges.

Table 13.2 Summary Report on Progress with the Four Key Challenges Listed in the State of the Environment Report 2012 (Source: EPA)

Four key challenges listed in Ireland's Environment: An Assessment 2012	Indicative summary on progress against these challenges based on information in this report (further details are included in the key messages section)
1. Valuing and protecting our natural environment	Economic value of eco-system services is a concept that has a higher profile but it is not on a routine basis integrated into business decisions and policy making. The habitats of most pressing concern are those that have reduced range and/or area, notably raised bogs and species-rich grasslands. Species most under threat include those linked to wetlands or uplands or sensitive to water pollution. Ireland has a similar challenge to Europe in halting biodiversity loss. There are also important air quality challenges to be addressed in the forthcoming air quality strategy and significant water pollution risks from urban waste water and agriculture that remain a challenge to resolve in order to meet the public and environmental health requirements for good water quality.
2. Building a resource-efficient, low-carbon economy	Ireland has significant work to do to transition to a low-carbon economy. Fossil fuels dominate our energy system and need to be phased out over the coming decades and our national GHG emissions are projected to increase. There has been a substantial increase in awareness of the value of resource efficiency and green growth to economic performance, reputation, and image, at business and national levels: nevertheless there remains an appreciable gap between awareness and implementation. Energy efficiency is more advanced than water, waste or raw materials efficiency measures. In relation to displayed behaviours, Ireland still has a long way to go to close the gap on sustainable consumption. An integrated national resource efficiency strategy is not in place. Green Public Procurement can assist addressing this challenge but remains a largely unimplemented policy device.
3. Implementing environmental legislation	Despite progress in several areas, including waste recycling and emissions from industrial facilities, Ireland still faces challenges in implementing a number of regulations and directives that are designed to protect our environment and, by extension, our health. There is poor adherence, at individual and household levels, to regulations dealing with matters such as litter, waste prevention, water use, smoky coal use, and septic tank management, that impact on our health and environmental quality.
4. Putting the environment at the centre of decision making	Information sources, such as websites with information for the public, data and map layers, have improved but it is more difficult to translate information into action on the ground that results in changes in behaviour. Good progress on Strategic Environmental Assessment of national plans and programmes. Growing awareness of sustainable behaviours through programmes such as Stop Food Waste.

Key Actions for Ireland in 2016

Following on from the information and evidence presented in earlier chapters, this section of the report highlights seven key environmental actions for Ireland. While the actions are listed as individual items, many are linked and the integration of actions across these areas will be important for the delivery of environmental protection and sustainable development. Many of these actions can also be linked to the Sustainable Development Goals from the UN.

Figure 13.1 Seven Key Environmental Actions for Ireland on the State of the Environment in 2016

SYSTEMIC MESSAGES

Environment and Health & Wellbeing

Recognition of the benefits of a good quality environment to health and wellbeing.

Climate Change

Accelerate mitigation actions to reduce greenhouse gas emissions and implement adaptation measures to increase our resilience in dealing with adverse climate impacts.

Implementation of Legislation

Improve the tracking of plans and policies and the implementation and enforcement of environmental legislation to protect the environment.

TOPIC MESSAGES

Restore & Protect Water Quality

Implement measures that achieve ongoing improvements in the environmental status of water bodies from source to the sea.

Sustainable Economic Activities

Integrate resource efficiency and environmental sustainability ideas and performance accounting across all economic sectors.

Nature & Wild Places

Protect pristine and wild places that act as biodiversity hubs, contribute to health and wellbeing and provide sustainable tourism opportunities.

Community Engagement

Inform, engage and support communities in the protection and improvement of the environment.

Key Action 1: Environment and Health and Wellbeing

Recognition of the Benefits of a Good Quality Environment to Health and Wellbeing

Environment and Health – Inextricably Linked

We need to remind ourselves that our health and wellbeing are supported by a clean and well-protected environment.

A clean and well-protected environment is a key building block to a healthy Ireland. Clean air and water are not luxury items but basic needs, and should be treated as valuable assets that need to be protected to benefit our health and also the wider economy. The state of the environment can influence our health in positive terms (e.g. amenity) but also in negative terms, because of the risks to health posed by pollution. As evidenced in this report, Ireland's environment is generally good, and it can be concluded that on the whole Ireland does present a clean, safe environment to live in. The availability of green spaces (parks, woods, countryside) and blue spaces (ponds, river banks, lakeshores and seashores), along with clean, fresh air and breathtaking landscapes, provides an enviable resource which should be valued and enjoyed. In addition to the beneficial effects of being active in these spaces, scientists have also linked exposure to nature to benefits in coping with mental stress and fatigue.

From an environmental perspective, definitions of pollution include the terms "harmful to human health"

or "endanger human health", emphasising how closely health and environmental protection are linked. One of the goals of the EPA's new corporate strategy is to promote a greater awareness of the impact of environmental quality on human health and amenity. Actions covering this area will be developed in co-operation with the National Healthy Ireland Strategy, the Health Service Executive and other stakeholders.

As explored in the Environment, Health and Wellbeing section in Chapter 3, there is a need to understand the dynamic interaction between the various dimensions of our environment that can, through different modes of exposure or experience, impact on health and wellbeing. The three key dimensions are natural environment, built environment and lifestyle–consumption. Policy solutions are at the same time simple and complex, but must be integrated completely through well thought out and cross-departmental interventions.

There are a number of issues that require action including air pollution, radon, drinking water contamination and environmental nuisances caused by odour, noise or litter. In addition, from an emerging risks perspective, we need to be vigilant in relation to climate change-induced health risks, antimicrobial resistance and new chemicals and substances.

Protecting Air Quality

We should not be complacent about our air quality in Ireland.

Reports from the World Health Organization (WHO) have shown the impact that vehicle exhaust emissions and other air pollutants are having on quality of life in many world cities (WHO, 2015). Ireland remains relatively fortunate to have better air quality than most countries in Europe, but some key challenges remain. Air pollution is estimated to have contributed to annual mortality rates which need to be addressed.[1,2] Traffic is a key pressure on air quality and is the main cause of air quality problems in our larger towns and cities. Local air quality, particularly in small Irish towns with a high dependence on coal, turf and wood for home heating, can be poor at times, and communities need much better local-level air quality information. It is now accepted that even low levels of air pollution, notably from particulates (dust), can have negative health impacts, and plans are needed across Ireland to protect and improve air quality by dealing with specific local pressures.

The move to a low-carbon and resource-efficient economy should also lead to better air quality, provided that there is strong regulation and control of the burning of renewable fuels, such as wood and biomass, which in themselves can give rise to air pollution problems. We also need to develop a better understanding of linkages between climate and air quality policies and be careful that there are not unintended consequences for the environment (i.e. not creating an environmental harm through solving a different environmental harm). The Clean Air Strategy for Ireland produced by the Department of Communications, Climate Action and Environment should be an opportunity to highlight these issues and put forward policy solutions. The adoption of WHO guideline values for air quality into Irish legislation as part of this process would provide an impetus for action to protect air quality.

Radon – a naturally occurring radioactive gas – is a risk to human health which also needs to be highlighted and brought more to people's attention. Some of our citizens are living in houses that may be making them sick, although they are not aware of it. Householders, institutions and businesses need to investigate and remediate building stock where a radon risk is determined.

Drinking Water

We need to have safe and secure supplies of drinking water. This will require significant investment.

There has been improvement in recent years in the quality of drinking water supplied by both public and group schemes, but many problems remain to be tackled to guarantee a safe and secure supply of drinking water (EPA, 2015d). There are still an unacceptable number of supplies on long-term Boil Water Notices and on the EPA's Remedial Action List. Comprehensive national strategies will be necessary to address key priorities such as disinfection, disinfection by-products, lead, pesticides and water safety planning.

Major investments are still needed in the public water sector and in the group water sector to make sure consumers are protected from risks such as cryptosporidiosis, verotoxigenic *E. coli* (VTEC), lead and trihalomethanes. More also needs to be done to highlight the risks faced by over 180,000 households which have their own private well. A multi-barrier approach that protects the source waters, including rivers, lakes and groundwater, from pollution – linked with effective treatment and operation designed to match the quality and variability of the source water – is recommended to ensure safe and secure drinking water.

Environmental Nuisance

Local action plans are needed to deal with specific problems relating to odour, noise and litter.

Nuisance, whether this is noise, odour or litter/fly-tipping of waste, is a threat to human health and wellbeing, as well as to the wider environment. These three dimensions

1 *www.euro.who.int/en/health-topics/environment-and-health/air-quality/news/news/2014/03/almost-600-000-deaths-due-to-air-pollution-in-europe-new-who-global-report*

2 *www.eea.europa.eu/media/newsreleases/many-europeans-still-exposed-to-air-pollution-2015/premature-deaths-attributable-to-air-pollution*

of nuisance are the environmental issues that generate the most complaints to the EPA and local authorities and can have negative impacts not only on health, but also on enjoyment of amenities, as well as on environmental quality.

After poor air quality, noise nuisance is the second largest environmental source of human health morbidity and mortality in the EU (EU, 2014). National planning for infrastructure (such as transport) and urban spaces must factor in appropriate protections for the population against noise impacts. Building design should likewise ensure appropriate acoustic shielding for occupants.

Local authorities receive over 60,000 environmental complaints each year from the public. The majority of these relate to litter and waste-related issues. The EPA also receives a significant number of complaints about odours emanating from industrial activities, in particular waste management, food and drink facilities. The primary responsibility rests with industrial operators to effectively control their activities. The EPA and the Local Authorities have a range of effective enforcement tools to call upon in the event of a failure by an operator to properly manage an activity.

The extent of the annoyance and amenity impairment caused by litter is clearly demonstrated by the number of complaints made to local authorities, around 40,000 a year between 2012 and 2014. While local communities and local authorities are actively involved in clean-up projects across the country, it is clear that enforcement and resources are still required to tackle ongoing litter and fly-tipping problems. This resourcing should also incorporate educational and behavioural change interventions so as to assist in normalising sustainable attitudes and practices.

Key Action 2: Climate Change

Accelerate Mitigation Actions to Reduce Greenhouse Gas Emissions and Implement Adaptation Measures to Increase Our Resilience in Dealing with Adverse Climate Impacts

Climate Change Action

Urgent action is needed around climate change, including the mitigation and adaptation work necessary to protect ourselves from its inevitable consequences.

As an island country, we need to adopt a much greater sense of urgency about:

- reducing our dependence on fossil fuels for energy, heating, and transport
- radically improving energy efficiency and
- preparing for the inevitable consequences of climate change such as flooding.

Climate change is now with us, and the sooner we act, the less damage will be done to our society, economy and environment. Planning for climate change adaptation actions is now also essential for Ireland's social and economic resilience.

Local Authority Adaptation Strategy Development Guidelines

Climate change mitigation (i.e. efforts to prevent the concentration of GHGs in the atmosphere from reaching a dangerous tipping point) is a priority. Urgent action is required to enact the UN Paris 2015 Agreement in order to reduce the risk of climate-driven changes overwhelming the capacity of most societies and ecosystems to adapt to its impacts. However, when it comes to climate change adaptation, the urgency to respond is somewhat different. While mitigation demands immediate action, adaptation requires immediate planning.

Guidelines published by the EPA during 2016 make it easier for local authorities and others to plan for the inevitable consequences of climate change (EPA, 2016c).

Actions to address climate change, through mitigation and adaptation measures can also provide economic and social opportunity through, for instance, green jobs, habitat and wetlands preservation (ecosystem services), promoting resilient communities, and sustainable competitiveness.

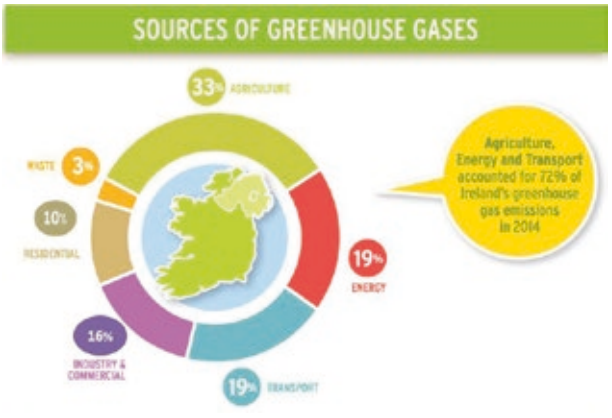
Transition to a Low-Carbon Future

There is a pressing need to develop, implement and monitor progress on measures to reduce GHG emissions and deliver resource efficiency.

The national policy position for Climate Change establishes a vision for Ireland of low-carbon transition based on an aggregate reduction in carbon dioxide (CO_2) emissions of at least 80% (compared with 1990 levels) by 2050 across the electricity generation, built environment and transport sectors; and, in parallel, an approach to carbon neutrality in the agriculture and land use sectors, including forestry, that does not compromise capacity for sustainable food production (Irl Gov, 2014).

Ambitious GHG mitigation plans with clear short-term and longer-term targets are needed in the key socio-economic areas of energy, transport, buildings, manufacturing, services and agriculture to get Ireland on a clearly defined road to a low-carbon and resource-efficient future (Figure 13.2). The Climate Action and Low Carbon Development Act 2015 sets out the legislative basis and timelines for the making of national and sectoral mitigation plans as well as a National Adaptation Framework plan, with the overall aim of reducing our GHG emissions and moving towards a low-carbon and climate-resilient future (Irl Gov, 2015). A key task will be to ensure that robust and transparent monitoring systems are in place to provide the evidence to track progress to targets that have been set across different sectors.

Figure 13.2 Ireland's Sources of Greenhouse Gas Emissions in 2014[3] (Source: EPA)



However, a paradigm shift across society and the economy is needed if Ireland is to successfully transition to a carbon-neutral future in line with the policy ambition. The emission reductions have to come from a broad base that includes all sectors.

The most recent GHG emissions data for the Emissions Trading Sector were released in early 2016 (EPA, 2016d). The figures show that the Emissions Trading sector increased its emissions. This increasing trend does not look encouraging for meeting our national goal to transition to a carbon neutral society and economy. There is a need for stronger incentives to move away from burning fossil fuels and in particular our ongoing use of coal and peat to generate electricity. For wider sectors of the economy and society not covered by the ETS, which includes transport, agriculture, waste and residential sectors, for the period 2014-2020 GHG emissions are projected to increase (EPA, 2016b). Agriculture emissions are projected to increase by 6-7% and transport is projected to increase by 10-16% on 2014 levels. Overall, total emissions are projected to be between 6-11% below 2005 levels in 2020. The target is a 20% reduction.

If Ireland takes a business as usual approach and does not introduce new policy measures to speed up progress to move away from fossil fuel we will end up having to concentrate effort over a short timeframe to meet targets which will be inefficient and high risk. In effect, Ireland will need to reduce its GHG emissions to near zero before the end of this century.

There is embodied carbon in all our production and consumption cycles, specifically in relation to raw material use. The significant levels of disposal income as well as the construction boom up to 2007 put Ireland in the bracket of being amongst the most resource inefficient people in Europe (GDP per tonne of Domestic Material Consumption). The last 5 years has seen a significant improvement in resource productivity, the challenge is to ensure that the current economic recovery does not put us back to that period of unsustainable and carbon intensive consumption. Businesses have been awakened to the economic and competitive value of resource

3 Based on National Sectoral Analysis

and sustainable business practices, however some businesses, in particular SME's, find it difficult to resource engagement with the national support services. The EPA's resource efficiency activities (*www.begreen.ie* and *www.greenbusiness.ie*) have demonstrated the economic advantage of business participation. This has also been determined through EPA funded research activities where a 2% efficiency in material consumption would yield nearly a billion euro saving for the national economy (EPA, 2013). In respect of the five main elements of resource efficiency (energy efficiency, water efficiency, raw material efficiency, waste prevention and clean technology) it is the energy area that has been most successful, principally driven by high energy costs, as well as access to finance and technical support (e.g. SEAI and others).

Energy and Transport Sectors

Major transitions in the energy and transport sectors are needed in the coming decades.

Ireland's energy systems will need to undergo a major transformation in the coming decades as part of actions to improve air quality and address and limit climate change. Fossil fuels, which make up about 90% of Ireland's current energy profile, need to be phased out and replaced by renewable energy resources such as wind, solar and tidal. Large-scale public and private investment in energy infrastructures, including energy-efficient and innovative energy management systems, energy distribution and smart grid systems, is needed to enable this transition. Progressive engagement with stakeholders and the public including information provision will be required as part of this transition. The government White Paper on *Ireland's Transition to a Low Carbon Energy Future 2015 – 2030* sets out a blueprint for the energy sector that sets about addressing these challenges.

There are very clear wins for the public in energy savings by retrofitting older and less energy-efficient housing stock to reach higher energy ratings (SEAI, 2016). Retrofits of the housing stock, especially older houses, as well as commercial and public buildings to reach a Building Energy Rating (BER) grade A is a national climate change-related project that could be prioritised through more targeted action programmes. This project would also benefit householders in terms of comfort and savings on heating bills.

In relation to transport, there needs to be support for a modal shift from the private car to an efficient sustainable transport system through a more proactive and systematic approach to land use and transport planning. Wider policy measures are needed to promote significant increases in alternative fuels and electric vehicle usage. Ireland needs to develop a mix of planning, infrastructural investment and fiscal measures to bring about a reduction in transport demand. Over the next 30 years Ireland will need to incrementally electrify its national urban public transport system. For larger urban areas, we need to work on many different levels to have a much more integrated network, with right of way given to transport modes that reduce air pollution and GHG emissions.

Key Action 3: Implementation of Legislation

Improve the Tracking of Plans and Policy and the Implementation and Enforcement of Environmental Legislation

Implementing Environmental Legislation

Progress in closing out compliance with some key directives is slow.

The implementation of environmental legislation was one of the four key challenges highlighted in the State of the Environment report 2012. It is a key driver to meeting our national and international commitments and to ensuring a thriving, clean environment. Legal responsibility rests with industry, economic sectors and all of society to meet environmental obligations and not cause pollution.

The EPA and the local authorities are the main bodies responsible for implementing environmental legislation. Other Government departments and authorities have implementation roles in relation to legislation covering specific environmental areas, such as biodiversity and wildlife legislation (National Parks and Wildlife Service), fisheries protection (Inland Fisheries Ireland, Marine Institute, Sea Fisheries Protection Authority) and environmental health (Health Service Executive).

Despite progress in several areas, including waste recycling and emissions from industrial facilities, Ireland still faces challenges in implementing a number of regulations and directives. Ireland faces open EU complaints or infringement proceedings in relation to the Drinking Water Directive and the Urban Waste Water Treatment Directive. This is an area where significant investment is needed to upgrade treatment facilities and networks. The second cycle of the River Basin District Plans are delayed and sustained progress is needed to restore water bodies not meeting "good" status. And as outlined in the chapter on climate urgent work is needed to reduce GHG emissions. The European Commission has also begun infringement proceedings against Ireland for failing to complete the designation requirements for its Special Areas of Conservation.

Enforcement of Environmental Legislation

Continued enforcement and engagement to change attitudes and behaviours is required.

Environmental enforcement bodies should continue to target key environmental risks and non-compliance with permits and licences in order to drive environmental improvements. Appropriate odour control and the requirement to have robust and secure financial provisions in place to manage environmental liabilities are two key issues for waste and industrial sites.

Odour control in parts of the waste management and food and drinks sectors needs to improve. These sectors accounted for approximately 98% of all odour complaints made to the EPA during 2015, with 10 sites accounting for 75% of all complaints. Inspections conducted by the EPA have found poor management and storage of waste at some waste facilities, which is leading to unacceptable odour nuisance and an increased risk of fires. The EPA has committed to use enforcement powers to bring the operators of these facilities into line and ensure that they improve their environmental performance.

Litter and fly-tipping also account for the majority of environmental complaints made to local authorities. These figures illustrate that litter and fly-tipping are issues that still need attention. Continued enforcement, as well as initiatives to promote positive attitudes and behaviours, is required. Citizen involvement in reporting environmental pollution or related environmental issues provides on-the-ground information for public bodies to act on. Various phone lines, apps or web-based systems are now operated by public bodies to make reporting easier and instant (Figure 13.3).

The prevention and remediation of environmental damage at contaminated sites, and from the closure of authorised activities, is a strategic priority for the EPA. To this end, operators under various authorisation regimes (waste, industrial emissions directive and integrated pollution control licensing, and dumping at sea permitting) are required to make adequate financial provision for the potential environmental liabilities associated with:

- closure and restoration/aftercare and
- response to, and completion of remedial measures in the event of an incident.

The State has stepped in to manage remediation at major waste infrastructural sites where companies ceased to trade resulting in significant cost to the public purse. The EPA has published two recent sets of guidance on measuring and providing for environmental liabilities, with the general aim that financial provisions must be *Secure, Sufficient and Available.*

Figure 13.3. The EPA has developed a phone app, called *See it? Say It!*[4] to help people to report environmental pollution (Source: EPA).

Emissions from Industrial Facilities

Emissions of pollutants from large industrial activities are not all reducing.

The regulation of emissions from large industrial facilities of pollutants to air and water is showing a mixed trend of both increases and decreases for various parameters, with large urban waste water treatment plants the major industrial source of releases of the nutrients nitrogen and phosphorous to waters.[5] The mineral and waste water management sectors reported the largest quantity of pollutant releases in 2014. For air we are seeing the positive impact of higher penetration of renewables in power generation in addition to the improvements in abatement measures over the last number of years.

Monitoring National Plans and Programmes

Strategies and sector plans should be written with a commitment to report publically and regularly on environmental performance against relevant environmental indicators.

Many economic sectors have strategies in place for growth or change. Implementation of these strategies can come with potential environmental risks and challenges. It is now recognised that monitoring the environmental performance of sector strategies is necessary to ensure that growth strategies are sustainable in the long term.

Strategies should be written with a commitment to report publicly and regularly on their environmental performance against relevant environmental indicators. This will make the strategies more robust and provide for increased environmental accountability and transparency during implementation. A strategy review mechanism should kick in if the performance monitoring demonstrates an unfavourable situation for Ireland's sustainability.

4 See It Say It: Environmental Protection Agency, Ireland

5 PRTR Registers – National: *www.epa.ie/enforcement/prtr/map/* European: *http://prtr.ec.europa.eu/#/home*

Understanding and Dealing with Wider Environmental Risks

We need to develop new ways of understanding and dealing with emerging and systemic risks that take the precautionary principle into account.

Many specific environmental issues are regulated on a site by site basis, for example the licensing of an industrial facility or the management of a protected area. However, across the wider environment there are also systemic risks, such as diffuse water pollution or decline in species populations. We need to develop new approaches to be able to tackle these risks effectively. The EEA and recent EU research point towards the need to learn new ways to identify emerging risks (EEA, 2013; EU, 2016). The provision of timely environmental data is crucial to the early identification of these wider risks.

Mapping and Understanding our Land Use Patterns

Good planning decisions are those that are integrated and also provide for a better environment.

The challenge is to design a future urban environment with public appeal that incorporates climate-proofing aspects, along with green areas and wild spaces for wildlife and people, while also meeting the needs of the population. Forward strategic planning for land use and new infrastructure is needed to ensure that growth is sustainable and does not add to the environmental pressures that are already evident, such as the gradual loss of wetlands over the past two decades or capacity issues in delivering drinking water and treating urban waste water.

Land is subject to many often competing sectoral demands. National policies, such as in forestry, agriculture, peatlands and the built environment, influence land use change and resource management. Establishing and implementing an integrated national land cover, land use and habitat mapping programme is essential to assist in reporting and assessing the impact of different land cover and land use types on the environment. By integrating the National Landscape Strategy into land use planning, sustainable landscape management practices can also be progressed.

A National Catchment-Based Flood Risk Assessment and Management (CFRAM) Programme is under way to assess the existing flood risk of inland watercourses and coastlines in Ireland. The CFRAM Programme co-ordinated by the Office of Public Works is a programme where active participation and consultation with local communities should lead to better outcomes to tackle flooding while minimising impacts on the wider environment. The programme should link work between directives, for example between the Water Framework Directive and the Floods Directive, in order to achieve the co-ordinated protection of water resources.

Key Action 4: Restore and Protect Water Quality

Implement Measures that Achieve Ongoing Improvement in the Environmental Status of Water Bodies from Source to the Sea

New Approaches Needed to Protect Water Quality

Protecting and improving our waters will present significant challenges in the future.

Water protection measures are needed to ensure that we continue to have healthy rivers, lakes and estuaries and clean beaches in order to protect human health, to preserve fish and biodiversity and to allow our important water resources to be a driver for sustainable jobs and tourism. While Ireland's waters might be among the best in Europe, we are still a long way from meeting the full legal requirements of the Water Framework Directive, against which water quality is measured. Preliminary results indicate that there has been no overall improvement in water quality over the first river basin cycle (2009–2015). The target of a 13.6% improvement in the ecological status of surface waters (from the 2009 baseline) by 2015 was not achieved. Water quality improvements are required at approximately 50% of rivers, lakes and estuaries that are impacted by pollution or other pressures (EPA, 2015b). The two main suspected causes of pollution in rivers are agriculture and municipal sources, accounting for 53% and 34% of cases, respectively (EPA, 2015b). Physical modifications, such as barriers to fish migration, are also a key pressure that needs to be tackled.

While overall the length of unpolluted river channel has remained relatively constant there has been a substantial loss in the highest quality river sites (i.e. Q value of 5). In the most recent monitoring period (2013-2015) only 21 sites were classified as the highest quality river sites (0.7%

of sites) compared with 584 between 1987 and 1990 and 82 between 2001 and 2003. This is an area where substantial effort is required to protect the few remaining highest quality river sites and return impacted ones back to their earlier extremely high quality.

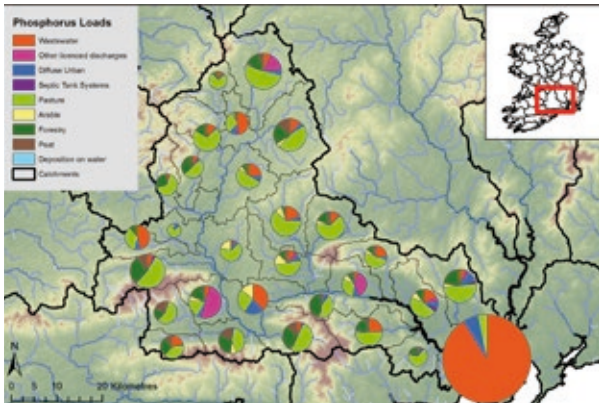
The findings from farm inspections carried out to implement the Good Agricultural Practices Regulations indicate that improvements are needed in the management of manures and organic fertilisers on farms. The new catchment risk-based approach being promoted by the EPA to identify potential Critical Source Areas (CSAs) of pollution is designed to focus water management measures where they will be most effective. This will be particularly important in ensuring that agricultural expansion plans under Food Wise 2025 are achieved in an environmentally sustainable manner.

Urban waste water is still one of the principal pressures on water quality in Ireland. There is a need for continued investment in water services in urban areas, where many waste water treatment facilities are listed on EPA priority lists for improvements. This investment is needed to provide, upgrade and manage the sewer networks and treatment facilities necessary to treat sewage and industrial water to the standard needed to protect human health, and water quality in our rivers, lakes and coastal areas. This investment is also needed to reverse the recent decline in capital expenditure and address the fact that, in many urban areas, waste water treatment does not meet the requirements of the Urban Waste Water Treatment Directive or the standards set in EPA authorisations (EPA, 2015c). The four priority issues that must be addressed are (1) to provide the necessary infrastructure and optimise the operation and maintenance of all plant and equipment, (2) to eliminate the discharge of raw sewage, (3) to implement plans to prevent pollution by waste water discharges and restore affected waters to good quality and (4) to carry out improvements identified in risk assessments to protect freshwater pearl mussels and shellfish waters.

The recent regulation of septic tanks is an example of how local action can make a difference to the protection of human health and the environment. The inspections of septic tanks by local authority staff, as part of the National Inspection Plan, have for the first time provided data on the performance of individual septic tanks (EPA, 2015f). The results show that many of these systems are not properly maintained, yet there are simple steps that homeowners can take to keep their systems operating properly.

Recent research as part of the Towards Integrated Water Management (TIMe) project indicates that water bodies are an important part of people's lives, with 71% of people surveyed visiting a water body at least once a month (EPA, 2015g). The overwhelming majority of the respondents in the survey felt that local communities should have a say in how the water environment is managed. One of the main measures now being implemented to improve and protect water quality is the use of an integrated and evidence-based approach to managing water catchments. This new approach will require much better targeting of interventions such as the identification of the sources of nutrient loadings to catchments (see Figure 13.4 as an example), to restore and protect water quality as well as a greater community involvement in protecting and managing our water resources.

Figure 13.4 Sources of phosphorus in the Suir sub-catchments



The Marine Environment and Seas Around Ireland

Integrating coastal and estuarine policies with nature and water protection would bring benefits for environmental protection.

Ireland's marine territory is one of the largest in the European Union being nearly 10 times its land area. It is highly productive and provides a sustaining foundation for a rich mosaic of marine life. Ireland's marine environment has remained relatively unpolluted; however, the level of environmental stress both from internal and external sources has increased.

Untreated sewage is discharged at 36 estuarine or coastal locations. The "treated" effluent discharged from 10 of the country's large waste water treatment plants to estuarine or coastal water failed to meet effluent quality standards. Overall, 71% (46 out of 65) of the urban areas that have inadequate treatment or do not meet mandatory EU standards discharged to estuarine or coastal locations in 2015 (D. Shannon, EPA, August 2016, personal communication).

Marine litter is now a global issue and the impacts can be seen on even the remotest of our beaches. While litter is a key marine environment and biodiversity challenge,

its generation and prevention are linked to a variety of human activities and policy areas, such as waste and waste water management, product design, shipping, fisheries policies, consumption and behavioural patterns. Successful implementation of a comprehensive targeted waste policy is a prerequisite to avoid plastic litter entering the marine environment. We place a high value on our beaches in Ireland and it is unacceptable that some of our beaches and coastlines are still being polluted by sewage and other sources of material discarded by people.

The sustainability of fish catches continues to be an issue with 26% of commercial fish stocks overfished (Marine Institute, 2015). Out of 72 commercial stocks, 36% are considered to be sustainably fished. Overfished stocks have declined to 26%, and 38% remain at an unknown status. Nineteen per cent of commercial species are considered to have been depleted.

Other stresses on our coastal environment are wider and link to the impacts of climate change. From a climate perspective, rising sea temperature, ocean deoxygenation, rising sea levels and ocean acidification (the effects of which are being seen in Irish waters) are major causes of concern worldwide. The rich coastal marine grasses (i.e. *Zostera* spp.) and kelp forests are significant carbon sinks (as well as important biodiversity reservoirs) that need protection and enhancement.

One of the key aspects of many of the environmental challenges facing our estuaries and coasts is that they cut across many sectors, environmental themes and organisations. Issues covered in this report on the marine area point towards the need to protect coastal, estuarine and marine areas through better integration of the actions required under the Water Framework Directive, Bathing Water Directive (2006/7/EC), Urban Waste Water Directive, Marine Strategy Framework Directive (2008/56/EC), Maritime Spatial Planning Directive (2014/89/EU) and Nature Directives (2009/147/EC and 92/43/EEC).

Key Action 5: Sustainable Economic Activities

Integrating Resource Efficiency, Sustainability Ideas and Performance Accounting across Economic Sectors

Resource Management and the Circular Economy

We must move our material flow economy from a linear to a circular one in which materials are captured for reuse at the end of a product's productive life.

In a world of finite resources and a growing population it has never been more important to evolve our national economy and society to become sustainably competitive. This requires us to become resource efficient and sustainable in how we produce and consume. Ireland has in recent years dramatically reduced the waste consigned to landfill (1 Mt less municipal waste to landfill in the last 5 years) and produced less household waste per capita than the European average.

We could and need to be doing better. CSO data published in 2016 would suggest that 500,000 national households do not implement waste prevention in the operation of their homes, and 51,000 households do not participate in legal waste management practices.

The use of Green Public Procurement to drive a market response to resource efficiency and the green economy, as articulated in national policy, has been largely unsuccessful to date, principally due to implementation weaknesses across all government and public body procurement units (Irl Gov, 2013).

A positive national response to the EU Circular Economy package would be to articulate a national resource efficiency plan that draws together the different stakeholders, integrates the elements currently ongoing, identifies investment needs, and sets policy objectives.

As economic prosperity returns we must work harder to ensure our unsustainable consumption patterns of the past do not return. We must move our material flow economy from a linear to a circular one in which materials are captured for reuse at the end of a product's productive life. This evolution will create opportunity in the green economy and ensure that Ireland can move towards sustainable and competitive prosperity. Many good things happen at local level and these need to be normalised across society.

Waste Management Capacity

If Ireland is largely dependent on an export market for treatment of our recyclable waste, and has no developed national capacity, we are vulnerable to external forces.

Ireland has pioneered economic initiatives which have changed consumer behaviour and prevented waste (e.g. the plastic bag levy). Our National Waste Prevention Programme is well established and an example of best practice (EEA 2014, 2015b). Ireland should seek to be innovative in embracing the concept of the circular economy to drive sustainable competitiveness and maximise green growth opportunities.

Ireland is largely dependent on export market for treatment of our recyclable waste, and has limited developed national capacity. Consequently we are vulnerable to external forces such as competition, capacity, currency fluctuations and any changes to policy in the EU. The DECLG discussion paper titled *Exporting a Resource Opportunity? Measures to Maximize Resource Efficiency and Jobs in Ireland* contributes to putting forward solutions to resolving this self-sufficiency gap in dealing with the waste generated in our homes and businesses.

Ireland has some notable waste infrastructure deficits, such as the lack of a hazardous waste landfill, and has limited current available capacity in other infrastructure. Built landfill capacity is at a critical state with potentially less than 1 year's capacity, based on the 2015 fill rate. There was a 10-fold increase in residual waste exported for use as a fuel in the period between 2010 and 2014.

Another challenge will be adequately addressing how we safely manage and recover End-of-Life Vehicles and Batteries and Accumulators. Coordinated and concerted effort by producers, compliance schemes, regulators and the waste industry will be necessary to address this risk. In addition, Local and Regional Authorities will need to achieve the targets set out in their 2015-2021 Regional Waste Management Plans.

Corporate Social Responsibility

Business and institutional leaders have a social responsibility to become thought and action leaders in delivering the low-carbon sustainable society and economy we need.

The economy is dependent on a healthy and well-protected environment to be competitive and to grow. Clean water, effective waste water and waste management and clear rules on environmental performance all support the economy. Systemic change is needed to realise a transition to a low-carbon, resource-efficient economy and society. There is growing evidence of decarbonisation, resource efficiency and green growth in the national economic performance. This type of change needs, however, to happen at a much faster and more sustained pace. Business and institutional leaders need to measure and report on their environmental footprint alongside their economic performance and have a social responsibility to become leaders in delivering the low-carbon sustainable society and economy we need.

Environmentally Harmful Subsidies

The EU roadmap includes a milestone that "by 2020 environmentally harmful subsidies will be phased out, with due regard to the impact on people in need".

Environmentally harmful subsidies (via taxation, transfers, or other market interventions) are causing environmental harm. This is not sustainable. A recent International Monetary Fund (IMF) report states that environmentally harmful subsidies aggravate climate change and worsen local pollution and congestion; for example, in Ireland, we spend $1.2 billion on fossil fuel subsidies, or $261 per head (IMF, 2015). This is just one example of subsidies that distort the market and stifle innovation.

The EU Resource Efficiency Roadmap (2011) requests that urgent attention be applied to the phasing out, by 2020, of environmentally harmful subsidies at a national level. Environmentally harmful subsidies lead to higher levels of waste and, polluting emissions (including climate change gases), inefficient resource extraction and negative impacts on biodiversity.

In Ireland, this requires the identification, and phasing-out (or reformulating), of existing subsidies, transfers, state aids and tax exemptions which offer support for emissions that contribute to harming the environment (i.e. negative environmental externalities).

Agriculture

We need policies to promote the right farming in the right place.

One of the key challenges for the agriculture sector is to foster the vision of the right farming in the right place. With the plans for expansion of agricultural output under Food Wise 2025, there is a need to ensure sustainability of the sector for both economic growth and environmental protection. This planned growth cannot be uniform across the country, and regional and local factors need to determine where intensification will take place. This will require a more location-specific and prioritised actions to address the pressure agriculture places on the environment.

The environmental credentials of agriculture, along with aquaculture, need to be measurable and benchmarked to demonstrate our commitments to expanding in a manner that would not result in long-term degradation of our natural environment (EPA, 2015h). This would be bad for both the agri-sector and Ireland as a whole. Projects implementing this benchmarking process, such as the Bord Bia Origin Green programme (Bord Bia, 2015), are under way.

Mitigating GHG emissions and adaption to climate change will be key considerations for Irish agriculture in the coming years. It is clear that climate change will require adaption to a new reality and this will impact on farmers, as on all sectors of society.

We must also support continued collaborative research to inform decision making that may affect soils, land use and landscapes. Ireland has a rich and productive soil resource that supports significant food production and other social, economic and environmental uses, and it is important that we protect this precious resource for future generations.

Putting the Environment at the Centre of Decision Making

Information sources, such as websites with guidance, data and map layers, have increased but it is more difficult to translate information into action on the ground that results in changes in behaviour.

Putting the environment at the centre of decision making is a key challenge, given the competing demands placed on our environment by today's society. Ensuring that the environment is at the centre of decision making is not just a task for business and policymakers, it is also a choice for all consumers. The 2012 State of the Environment report outlined some of the challenges this poses and how even we, as individuals, can make changes that will have a collective impact, and thus position the environment at the centre of decision making.

The Strategic Environmental Assessment (SEA) process is a key tool for putting the environment at the heart of decision making by providing for protection of the environment and contributing to the integration of key environmental considerations in plan and programme making. Over the past 4 years, engagement by key sectors in the SEA process has increased significantly. The SEA process has developed further and is now an integral part of the decision-making process in relation to key national plans across a range of economic sectors (EPA, 2012b).

Four years on, there is still a need to increase efforts at all levels in environmental decision making and the need for a more integrated approach to environmental monitoring and protection. In the area of biodiversity, for example, we should develop better clarity in the roles and responsibilities of our government agencies with respect to biodiversity protection. A step towards this would be better co-ordination and integration of the relevant EU directives that protect biodiversity, water and the marine environments.

Key Action 6: Nature and Wild Places

Protect Pristine and Wild Places that Act as Biodiversity Hubs, Contribute to Health and Wellbeing, and Provide Tourism Opportunities

Valuing and Protecting our Natural Environment

We need to protect our remaining wild places and high-status water bodies as a safe place for wildlife and people.

There are very few places in Ireland that have not been impacted by human activity and our landscape reflects the shifting patterns of human activity over many centuries and millennia. We need to protect our remaining wild places and high-status water bodies from further deterioration so that they remain a safe place for wildlife and people, and as a legacy for future generations. Through ecological restoration and other conservation strategies, we can also restore damaged habitats to near-pristine condition. Conserving what we already have, and restoring habitats such as our damaged boglands, will help provide wild areas that protect biodiversity, contribute to the health and wellbeing and provide significant tourism opportunities. There are risks

to species and habitats from climate change but the need to develop climate adaption strategies, for example in dealing with flood risk, may also bring opportunities to develop amenities and wetlands and not just hard engineering solutions.

Valuing and protecting our natural environment was one of the four key challenges highlighted in the 2012 State of the Environment report. The current assessment is that habitat and biodiversity loss remain a risk and there is a need to develop initiatives to engage society and incorporate nature protection in decision making.

In relation to species and habitats in Ireland that are considered threatened across Europe and protected under the Habitats Directive, 52% of species are in favourable status but only 9% of habitats are in favourable status. One of the species of greatest concern is the pollution-sensitive freshwater pearl mussel. Red List species are those identified in most need of conservation interventions. Of 185 birds that breed and/or winter in Ireland, 37 were placed on the Red List and 90 on the Amber List, based on conservation status. The iconic Curlew is now one of these threatened breeding birds.

Ireland has lost most of its highest quality river sites in the last three decades, with only 21 sites now remaining. The loss of these sites (i.e. highest biological quality site) is not a legacy that we should be leaving for future generations. Lakes and estuaries are also still under threat from pollution with the latest preliminary water quality results showing a reduction in lake quality and no improvement overall in estuaries. Ireland is now at a stage where urgent and effective measures to control pressures on water quality from agricultural and waste water is needed if we are to protect and improve water quality. In the absence of such measures the remaining highest quality river sites could become extinct from the Irish landscape.

There is a need to bring biodiversity into the mainstream through Biodiversity Action Plans, robust biodiversity monitoring systems/mapping and new approaches such as the ecosystem approach/natural capital accounting, where appropriate, in the development of policies, plans and strategies. Efforts to increase public awareness of biodiversity could be strengthened as the appreciation of biodiversity and its link to everyday life is necessary if efforts to protect nature are to be successful. There are also wider biodiversity issues that need consideration, such as the need to protect bee populations, as reported on over the past few years in a number of strategies and plans (NBDC, 2015).

In Ireland some future challenges are emerging in relation to climate change, to add to the key pressures on species and habitats as outlined in Chapter 4. Increased land use change as the economy recovers may lead to further habitat loss and/or fragmentation through, for example, risks to wetlands. Initiatives such as Food Harvest 2020 and Food Wise 2025 will have to be monitored and analysed to a high level to ensure that these plans are implemented in an environmentally sustainable way. The impacts of climate change and the continuing threat of invasive species are areas that also need to be monitored and guarded against.

Key Action 7: Community Engagement

Inform, Engage and Support Communities in the Protection and Improvement of the Environment

Environmental Information – Evidence and Knowledge

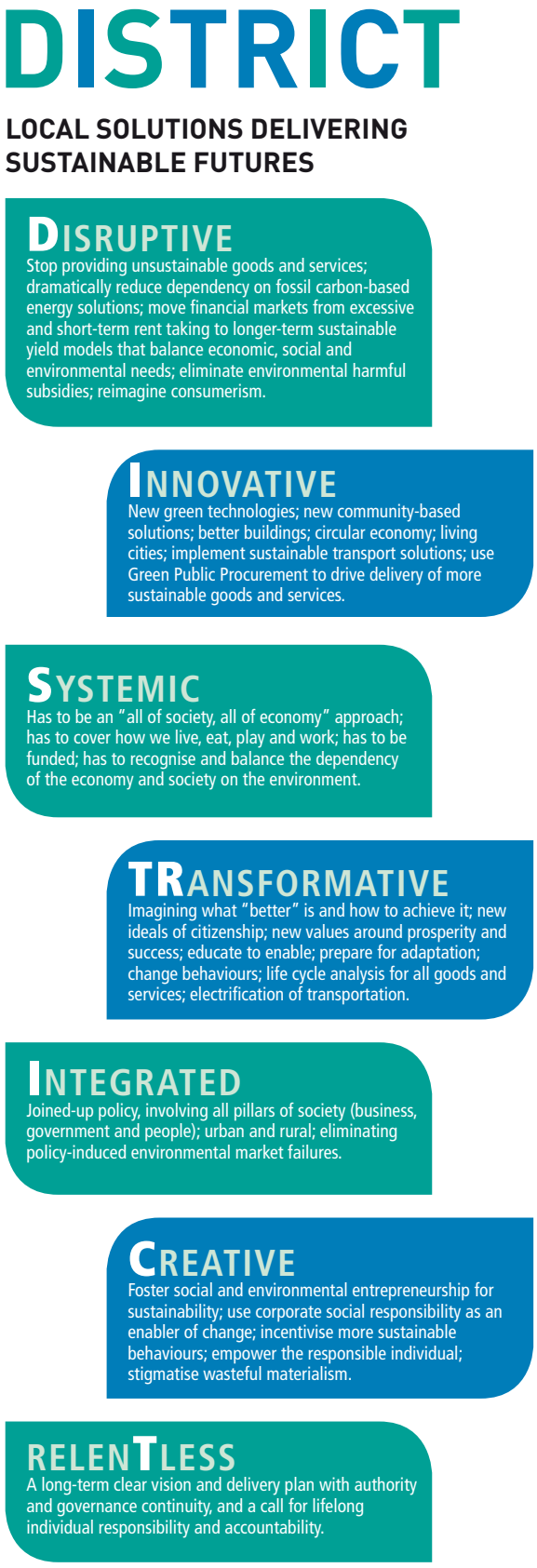
We need to continue to develop better provision of online, up-to-date and accessible information on the environment.

Information and evidence are key to making effective decisions that place the environment at the core of the decision-making process. A positive development in recent years has been the increase in the provision of information sources. Government, the EPA and the Central Statistics Office websites now provide user-friendly information for business and/or consumers. Examples include the EPA's Ireland Environment, Splash and BeGreen web resources, as well as co-delivered web resources (the EPA with local authorities, HSE, IFA) such as Live Green, Catchments.ie, Green Healthcare, Local Prevention and Smart Farming. There are also numerous NGO-delivered resources (many of which are supported by the EPA) including the Community Reuse Network (CRNI),[6] ECO-UNESCO[7] and An Taisce[8]. Operating in parallel with these information sources are EPA-funded public awareness activities such as Stop Food Waste and EcoEye.

In developing information sources, we should also be reminded of the recommendation from the EEA that "that public communication alone cannot bring about a society-wide transition as outlined in the EU's policy objectives of 'living well within the limits of our planet.' But by embracing recent innovations in communication technologies and insights from behaviour science, communications can complement other policy tools and rally support for environmental measures" (EEA, 2015a).

6 *www.crni.ie*
7 *www.ecounesco.ie*
8 *www.antaisce.ie*

Figure 13.5 DISTRICT - Local Solutions Delivering Sustainable Futures (Source: EPA)



Engaging Communities

Work and protection at a local level will contribute to the overall state of the environment in Ireland.

We need to get more involved locally and be informed about environmental issues. It is the work and protection at a local level that contributes significantly to the overall state of the environment in Ireland. To make progress on many of the environmental challenges we will need widespread public engagement and participation. We have many good examples to build on in Ireland, such as Tidy Towns, Pride of Place and Green Schools. We all own the environment and have a responsibility for its care and protection: after all, our health and wellbeing depend on it. At the core of this ambition is the need to engage the public in debating and defining behaviours and citizenship for a sustainable future. While our current model of citizenship is strongly rooted in our citizens and related to culture, there is room to expand our thinking into a more proactive approach to caring for our local environment, the preservation and quality of places we live in, and more joined up social responsibility.

There are encouraging signs that more local and community-based projects such as the Burren Life[9] and the Dunhallow Life Programmes[10] can act as template projects to maintain and improve biodiversity and river habitats water in sensitive farming areas. Similar programmes run by Eco-Unesco and An Taisce's Green Schools are successfully engaging our young people. The challenge here is to replicate these types of projects through policy support and incentives elsewhere across the country in order to multiply the benefits for the environment.

Final Remarks

Ireland's economy and economic policy are clearly making positive moves in relation to planning and have achieved some limited success in decarbonisation and resource efficiency; however, there is still considerable scope for improvement. The economic downturn evidently forced us to become more efficient as a nation: the challenge now is whether we can maintain that competitive advantage into the future. What is clear is that our economic prosperity is intimately dependent on the quality of, and services provided by, our environment. The 2014 EU Eurobarometer survey on environmental attitudes in the EU noted that 83% of Irish people surveyed believed that protection of the environment can boost economic growth.[11]

A future sustainable business model is not just one that merely stops providing unsustainable goods or services,

9 *www.burrenlife.com*

10 *www.duhallowlife.com*

11 *www.ec.europa.eu/public_opinion/archives/ebs/ebs_416_fact_ie_en.pdf*

but also one that requires economic entities to engage – for example through corporate social responsibility practices (including sustainability reporting) or similar business-led codes of conduct – with their environment and their communities in order to protect and nurture the interdependencies and in so doing will ensure enduring competitiveness and growth. Government departments have significant responsibility too: to plan for, design and integrate social, educational and infrastructural systems that support our ambition to become a carbon-neutral, climate-resilient and sustainably competitive society. Our economic and social development principles and practice must move to an operational norm of "beyond compliance" involving systemic eco-innovation.

We are now at a stage that requires governance, corporate and citizenry solutions and interventions that are:

Disruptive, **I**nnovative, **S**ystemic, **Tr**ansformative, **I**ntegrated, **C**reative and Relen**t**less

So, what is stopping us in adopting DISTRICT solutions? A mixture of risk aversion, economic lock-in, individualisation, short-term planning, fear of change, policy conflict, etc., but most of all perhaps an absence of the necessary commitment and integrated long-term bigger picture planning needed to drive the scale and nature of the transformational change required. We need brave, well informed, determined, committed and enduring leadership within our homes, our businesses, our communities, and most especially in our governance structures. After all, our future is everyone's responsibility.

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Attachment 2 - Background to Water Framework Directive, River Basin Management Plan and Characterisation

1.0 Integrating water management & planning

Improving the integration of the Water Framework Directive into the planning system and water management across various spatial scales (i.e. local, regional and national, refer to figure 1, Planning Policy Hierarchy 2016+) enables multiple benefits. Our economic growth requires a sustainable water supply which is reliable and safe. Improvements to our water environment will therefore serve to protect our economic sustainability. Development plans and Local Economic and Community Plans, for example, can transcend and merge improvements in our water environment which can contribute to our well-being. Enhanced biodiversity is an obvious benefit as water resources support ecosystems with knock-on socio-economic benefits. Green and Blue Infrastructure[1] Plans, an emerging planning practice for sustainable environmental management, will help protect our water environments from encroaching development, while also protecting our landscapes.

Figure 1: *Planning Policy Hierarchy in Ireland, 2016+ (Source: Department of Housing, Planning, Community and Local Government, Towards a National Planning Framework, December 2015).*

To achieve multiple benefits in a coordinated and sustainable way, integrated water management and planning policy needs to be developed. Activities and development proposals need to be considered at a suitable scale that links and integrates the water

[1] Green Infrastructure is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are considered) and other physical features in terrestrial (including coastal) and marine areas. GI is present in rural and urban settings. European Commission (2013a) Building a Green Infrastructure for Europe. – Luxembourg: Publications Office of the European Union.

environment, biodiversity, and climate change along with sustainable socio-economic development.

The relationship between environmental issues and societal pressures is complex. A water management issue can be linked to a number of environmental pressures and the response needed to address a problem can involve a wide variety of stakeholders. There are many linkages between sectors of society and identified water- related environmental issues.

2.0 The Water Framework Directive

In response to an increasing threat of pollution and the increasing demand for cleaner rivers, lakes and beaches across Europe, the EU developed the Water Framework Directive. The Directive came into effect in 2000 and was transposed into Irish Law in 2003. The Directive is designed to protect, preserve and improve the environment of water bodies across member states whilst encouraging the sustainable use of water. It applies to rivers, lakes, groundwater, estuaries and coastal waters and requires an integrated approach to managing our water resources on a river basin scale.

The ultimate objective of the Directive is to achieve, by coordinated action at least 'good status' of all EU surface water and groundwater. Member States are required to achieve two obligations, namely to prevent deterioration of the status of water bodies and to protect, enhance and restore (where applicable) surface water bodies and groundwater bodies.

Table XX: Water Framework Directive Environmental Objectives for Surface Water, Groundwater and Protected Areas

ENVIRONMENTAL OBJECTIVES		
Surface Waters	**Groundwater**	**Protected Areas**
Prevent deterioration of the status of all bodies of surface water*	Prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater*	To achieve compliance with any standards and objectives under which individual protected areas have been established i.e. - Areas designated for abstraction for drinking water; - Areas designated for economically significant aquatic species; - Recreational waters, including bathing areas; - Nutrient sensitive areas; - Areas designated for the protection of habitats and species where maintenance or improvements of the status of water is an important factor in their protection. (All the Natura 2000 sites with water dependent habitats and species have been included in the Water Framework Directive Register of Protected Areas).[2]
Protect, enhance and restore all bodies of surface water with aim of achieving at least good status*	Protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction and recharge, with the aim of achieving good status*	
Protect and enhance all artificial and heavily modified bodies of water with aim of achieving good ecological potential and good surface water chemical status*	Reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity	
Progressively reduce pollution from priority substances and cease or phase out emission, discharges and losses of priority hazardous substances		

[2] There are 44 water dependent habitats, 5 of which are at favourable conservation status i.e. 11%. There are 22 water dependent species, 11 of which are at favourable conservation status i.e. 50%.

*subject (but not limited to): failure to prevent deterioration where proposals satisfy criteria of *Article 4(7)* and derogation is secured, or Temporary Deterioration satisfying criteria set out in *Article 4(8)* and described in Section 6.

The Water Framework Directive is intrinsically linked to a number of other EU directives in several ways, refer to Figure 2. These include directives relating to the protection of biodiversity (Birds and Habitats Directives), directives related to specific uses of waters (drinking water, bathing waters and urban waste water directives) and to directives concerned with the regulation of activities undertaken in the environment (Industrial Emissions and Environmental Impact Assessment and Strategic Environmental Assessment directives). More recent directives in areas such as Floods and the Marine Strategy Framework have significant linkages with the Water Framework Directive. The Water Framework Directive is also interlinked with the Priority Substances Directive and the Groundwater Directive. The Nitrates Directive is intrinsically linked with the Water Framework Directive and is one of the key instruments in the protection of waters against agricultural pressures. The Sustainable Use of Pesticides and the Sewage Sludge Directives also provide for the control of materials applied to land.

Figure 3 Water Framework Directive Interaction with other EU Legislation (Source: Significant Water Management Issues, 2015)

3.0 Implementing the WFD

The Water Framework Directive requires that River Basin Management Plans set out the means to achieve objectives of this directive in a 'programme of measures' across three cycles (2009-2015, 2016-2021 and 2022-2027). The 2nd cycle of the RBMP in Ireland will be published at the end of 2017.

The following sections outline the steps taken under the Water Framework Directive in developing the evidence base that will inform the development of the Programme of Measures in the River Basin Management Plan.

Essentially there are two distinct scientific steps:

- Step 1: Classification
- Step 2: Characterisation

3.1 Classification

The Water Framework Directive requires that all water bodies are at least at 'good status' and there should be no deterioration in status. The output of the classification process provides a status for each water body such that they can be measured against the 'good status' rating. This assessment provides an overview of our water environment nationally at a water body scale at the time the classification is undertaken.

The Water Framework Directive defines a water body as a 'discrete and significant element' of surface water such as a lake or reservoir or entire (or part) stream, river or canal, estuary or stretch of coastal water; or a distinct volume of groundwater within an aquifer.

Water bodies are used for reporting and assessing compliance with the environmental objectives of the Water Framework Directive. The overall status of a surface water body is assessed as a combination of ecological status and chemical status

3.2 Characterisation

Characterisation of water bodies assesses the risk of not meeting their assigned environmental objective i.e. "high status" or "good status", and the risk of deterioration in status.

To assess this risk, the following three factors must be considered:

- The current water body status;
- If there is an increasing or decreasing trend in water quality; and
- If these trends will cross an environmental quality standard threshold before the start of the next cycle.

For example, a water body may currently be at 'good status' but there may be an increasing trend in phosphate concentrations where it is estimated that this trend will cross from the 'good status' band into the 'moderate status' band before the next cycle. This water body is therefore considered 'at risk' of not meeting Water Framework Directive environmental objectives by the end of this cycle. Once a water body is considered to be 'at risk', further assessment is undertaken to determine what is causing the problem i.e. to identify the pressure or source of the problem, and also to identify how the pressure is linked to the water body if it is not a direct discharge i.e. identify the flow pathways. This means that the Source-Pathway-Receptor linkage (refer to Section 6) must be assessed and understood.

A thorough assessment of the Source-Pathway-Receptor linkage means that targeted management strategies and/or mitigation measures can be identified that break the pathway linkage. These may be aimed at reducing or removing the source or pressures or alternatively, putting in measures along the surface or subsurface pathways, that prevent

the source impacting the water body. The effectiveness of the measures is checked by monitoring and inspections, and this information is fed back into the next characterisation cycle. Figure 4 provides a summary of the process.

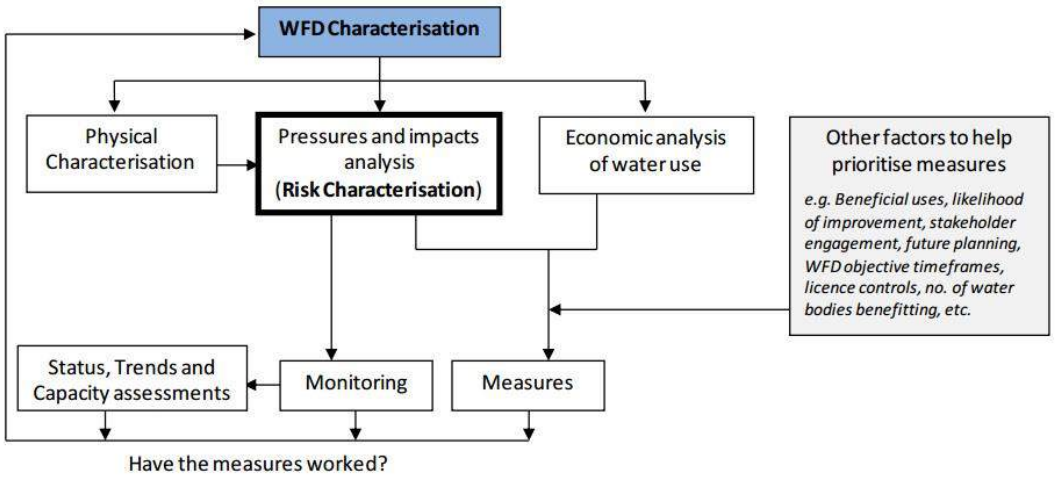


Figure 4: *Characterisation in the Water Framework Directive Framework*

The Programme of Measures can be implemented through legislative, financial or voluntary strategies. They might include, for example, the use of discharge consents to address point sources of pollution (e.g. from urban waste water treatment works), education programmes (e.g. on diffuse pollution from agriculture) or strategies for river restoration. Crucially they can include planning measures e.g. improvement to the condition of riparian zone and /or wetland habitats. They aim to achieve the environmental objective for the water body ie "high status" or "good status" and prevent deterioration in water bodies and achieve other priorities under the Water Framework Directive.

The involvement and cooperation of local communities, local authorities, and government/public bodies will be essential to ensure that the measures implemented are successful in improving our water resources.

4.0 River Basin Management Plans in Ireland

In terms of the implementation of the Water Framework Directive within EU Member states the River Basin Management Plan is the overarching tool and policy document developed at a River Basin District level.

4.1 1st Cycle RBMP

In the 1st cycle of river basin management plans, published in 2010, there were eight river basin districts on the island of Ireland. Four of these lie solely within Ireland: the Eastern, South Eastern, Western and South Western river basin districts. Three are international river basin districts, the Shannon, North Western and Neagh Bann, while the North Eastern river basin districts lies solely within Northern Ireland.

Important lessons have been learned from the 1st cycle of River Basin Management Plans. Significant resources were put into delivering the 1st cycle, however, both scientists and

planners believe that more can be achieved if water management and the planning system are better integrated in subsequent cycles. The following points highlight the issues that limited integration of the 1st cycle and it is important to ensure these issues are avoided in the 2nd cycle.

- With respect to implementation, the River Basin Management Plans focused on integration with land-use plans through strategic environmental assessment. While the National Spatial Strategy was not subject to strategic environmental assessment the National Planning Framework, which will replace the National Spatial Strategy, will be subject to strategic environmental assessment and will therefore take consideration of Water Framework Directive objectives and river basin management plans;
- The 1st cycle River Basin Management Plans and associated measures were generic in most instances, and therefore lacked applicability in spatial planning and development control;
- The scale of our river basins are vast and public engagement during the 1st cycle of Plans tended to occur at a regional scale, removed from local communities, and land use planning;
- Water management and planning policy operate in a top-down system. However, effective catchment management requires a bottom-up approach, mobilised by communities;
- There was some disparity between investment in water services and River Basin Management Plan objectives;
- Unlike the Environmental Impact Assessment, Strategic Environmental Assessment and Floods Directives which were supported by Planning Guidance documents in Ireland, no direction or training was provided in respect of integrating Water Framework Directive and the planning system.

Risk characterisation of our surface and subsurface environment assists in prioritising measures and also provides an evidence base for each of our water bodies that were previously unavailable. This evidence base can be considered in the planning process and appropriate spatial plans.

In addition, legislative provision now requires that development plans include mandatory objectives for the promotion of compliance with established environmental standards and objectives included in River Basin Management Plans. This is explored in greater detail in Section 5.

There is also a requirement under the Water Services Act 2007 for water services planning and investment to be consistent with, as far as practicable, national and regional spatial planning policy and to have regard to local spatial planning policy. This is explored in greater detail in Section 3.

4.2 2nd Cycle River Basin Management Plan

The 2nd Cycle draft River Basin Management Plan sets out a number of priorities in order to achieve the environmental objectives outlined in Section 2.3 are summarised as follows:

- Ensure full compliance with relevant EU legislation;
- Prevent deterioration;
- Meet the objectives for designated protected areas ;

- Protect High Status waters; and
- Implement targeted actions and pilot schemes to focus sub-catchments aimed at (i) targeting water bodies close to meeting their objective and (ii) addressing more complex issues which will build knowledge for the third cycle.

For the 2nd cycle there is a single national approach (in the Republic of Ireland) for the development of river basin management plans (Figure 5). The four national river basin districts and the Shannon International river basin district from the 1st cycle are merged into one national river basin district for administrative and reporting reasons. The North Western and Neagh Bann International river basin districts remain. The 2nd cycle of plans will be made by the Minister (Department of Housing, Planning, Community and Local Government), where previously they were made by local authorities as a reserved function.

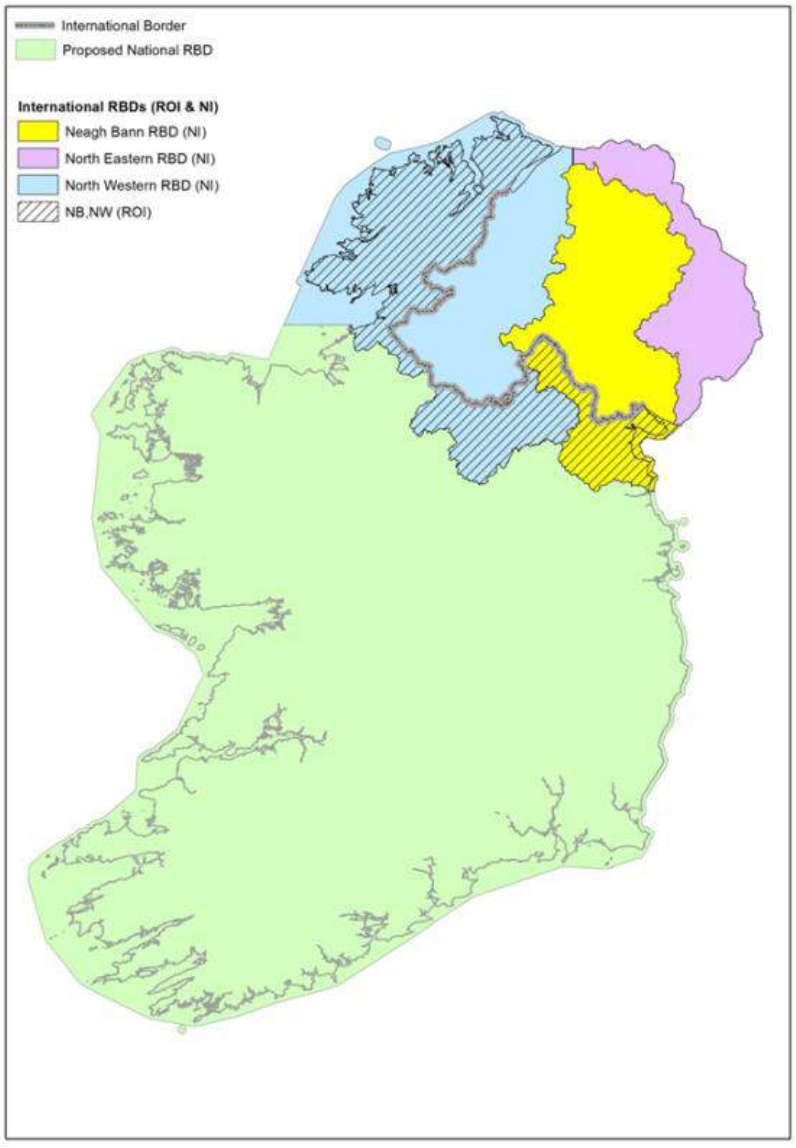


Figure 5 2nd Cycle River Basin District Areas

The *Public Consultation on the Draft River Basin Management Plan for Ireland 2018-2021* was published by the Department Housing, Planning, Community and Local Government in February 2017 with a period of public consultation currently on-going.

The second cycle River Basin Management Plan aims to build on the progress made during the first cycle. It is recognized that improvements are required on the way things have been done to date. To improve the effectiveness of this new plan the evidence base on which we will make management decisions has been substantially strengthened; improved governance and planning structures have been implemented to ensure better delivery together with great efforts to facilitate effective and meaningful public engagement and participation at local, regional and national level.

5.0 Overview of Key Findings of Characterisation

In general terms Ireland is considered to have a high standard of water quality although this continues to be under threat from a number of pressures. Analysis of the 2013-15 water status results shows 55% of river water bodies, 46% of lakes, 32% of transitional waters and 76% of coastal waters are achieving good or high status. For groundwater, 91% of water bodies are at good status. Nationally the number of monitored river water bodies and lakes at good or high status appears to have remained static. However this masks an underlying trend of improvement and dis-improvement across monitored river water bodies and lakes since 2009[3].

There have been significant gains made in recent years with a reduction in serious water pollution events, with serious pollution of rivers reduced to just over 6 km in 2013-2015 compared to 53 km 2007-2009. Reported fish kills have declined to an all-time low of 70 between 2010 and 2012 and water quality in canals remains very high, with over 90% of canals rated satisfactory in 2012.

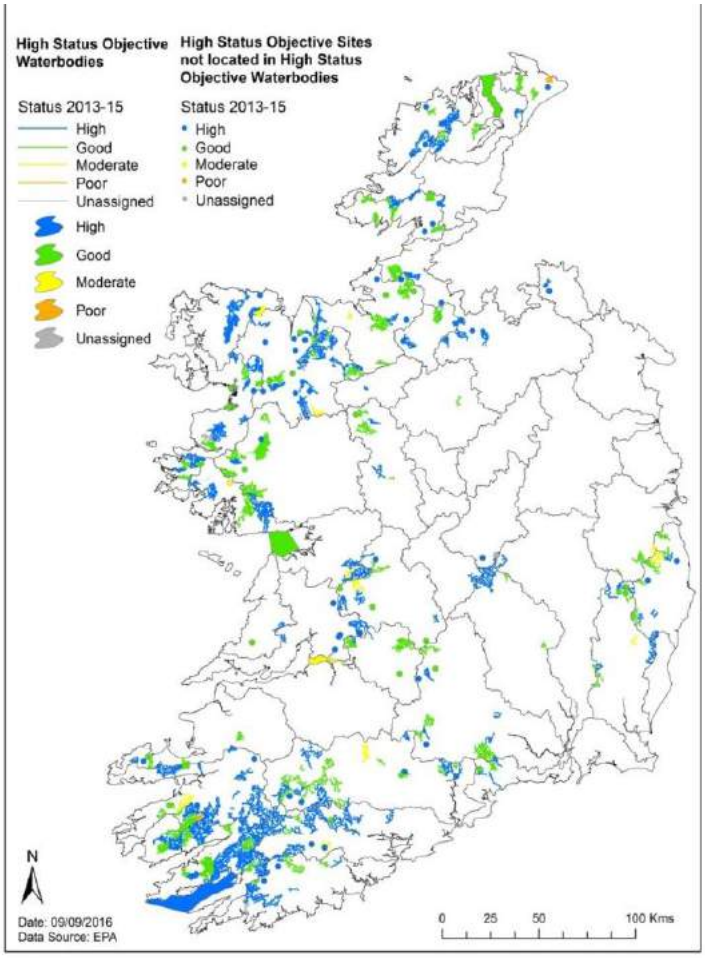
5.1 High Status water objective sites and the Blue Dot Programme

The EPA in combination with the DHPCLG have identified a network of High Status Objective sites and water bodies. These are monitoring locations which are currently at high or close to high status and which have been identified as high status objective sites under the Water Framework Directive.

Nationally, there are 381 river, lake, transitional and coastal water bodies for which the objective is High Status[1] as detailed in the Draft River Basin Management Plan. The deterioration of high status water bodies has emerged as an important issue, with 130 river water bodies or lakes assessed as being *'at risk'* of not meeting their high status objective.

[3] EPA (Environmental Protection Agency), 2016, *Irelands Environment: An Assessment*, EPA, Wexford, Ireland.

Figure 6 Location and Condition of High Status Objective Waterbodies and Sites.



There has been a gradual but steady decline in high-status river sites across Ireland with numbers halving in the 22 year period from 1987 to 2015. This decline emphasises the importance of maintaining additional water quality standards in these areas. These areas are often located within or are connected to protected sites (SAC's and SPA's) and the application of water quality measures is likely to have simultaneous benefits for both water quality and biological objectives.

The programme of measures included in the 2nd cycle of the River Basin Management Plan includes the establishment of a "Blue Dot Catchments Programme" establishing a network of river and lake catchments where the objective is to protect and restore high ecological status[4]. This will ensure that high status waters are prioritised for the implementation of supporting measures and for available funding.

5.2 Water dependent protected areas

Protected Areas are geographical areas within Ireland that have been designated as needing special protection because of their particular importance for use as either;

- bathing waters;
- drinking water supply;

[4] EPA Strive Report Series No. 99 *Management Strategies for the Protection of High Status Water Bodies*

- growing and harvesting of shellfish;
- conserving sensitive habitats and species; or
- areas that are particularly affected by eutrophication due to excessive inputs of phosphorus and/or nitrogen.

With regard to protected areas there are 134 designated bathing waters, 64 shellfish waters, 42 nutrient sensitive areas and 358 special areas of conservation (SAC's) with water dependency. These SAC's are geographically concentrated along the western seaboard - with a significant overlap between high status waters and protected areas.

The current status of our protected areas is outlined in the River Basin Management Plan which details that 93% of bathing waters met the required standards in 2015. For shellfish waters the most recent information, for 2015, shows 75% of sites meeting the microbiological guide value. For SACs with water dependency, around 60% of river water bodies and almost 70% of lakes achieved their required status. However, the situation for SACs in transitional waters was less positive – with 37% of such areas meeting their required standards of good status.

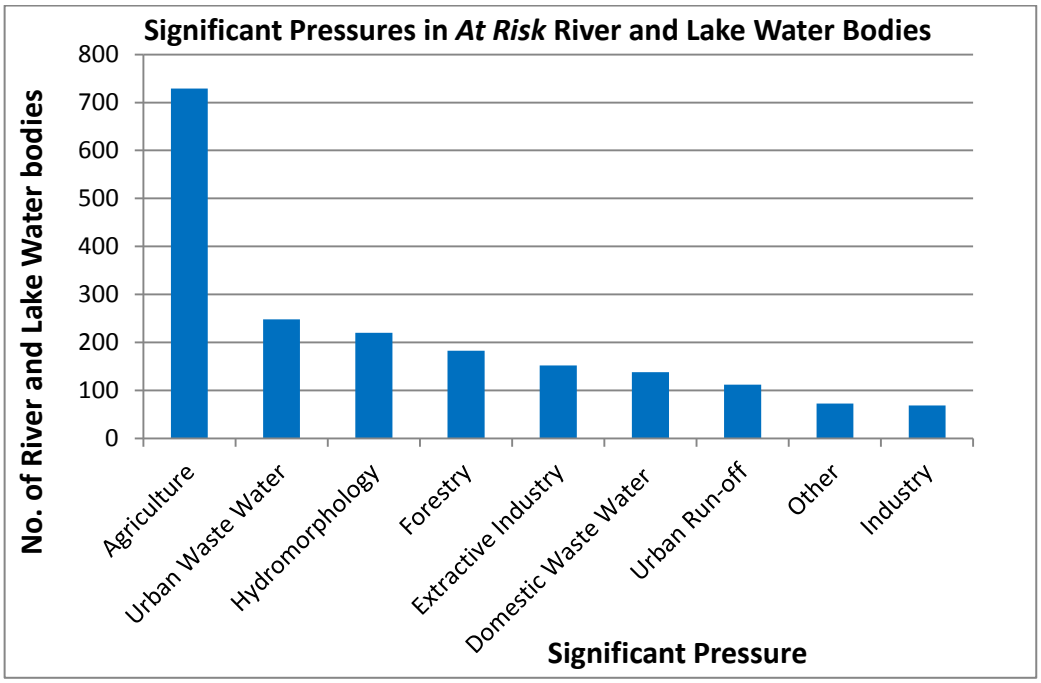
As part of the Programme of Measures the Draft RBMP proposes a number of measures with respect to protected areas including the production of around 350 public drinking water source protection plans to be completed by 2021, with the remaining plans completed by 2027. It also includes a proposal to identify SACs with a high status water dependency and these will be targeted through the "blue dot" programme together with measures aimed at Fresh Water Pearl Mussel habitats such as locally-led agri-environmental schemes and Irish Water investments which will see significant investment in water treatment.

While overall water quality results are generally positive with a reduction in extreme water pollution events the reducing high status water bodies and the absence of overall improvement in river and lake water bodies in the 1st River Basin Management Cycle is concerning. Decision makers need to mindful that any impact on water quality which would result in further deterioration represents a significant threat to Ireland achieving its objectives under the Water Framework Directive.

5.3 The Significant Pressures Identified on Water Quality

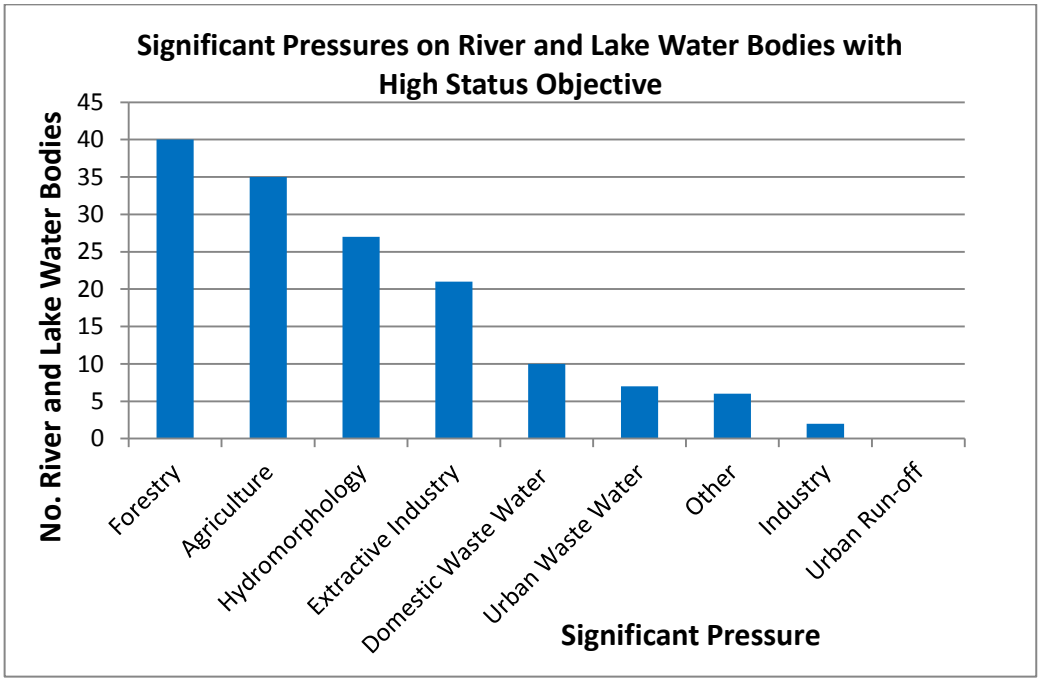
The Draft River Basin Management Plan includes information on the significant pressures on water bodies which are at risk of not achieving the WFD objectives. It provides a breakdown of significant pressures on 'at risk' lakes and waterbodies, 'at risk' high status objective water bodies and 'at risk' water bodies in water dependent Special Areas of Conservation, SAC's. For the 1,360 river and lake water bodies 'at risk' of not meeting their objectives the significant pressures impacting on them include agriculture (64%), urban waste water (22%), hydromorphology (19%), forestry (16%), domestic waste water (12%), peat extractive industry (10%) and urban run-off (10%). For these 'at risk' river and lake water bodies, 47% of them are subject to a single significant pressure, with the remaining 53% subject to more than one significant pressure.

Figure 7: *Significant pressures identified in 'at risk' River and Lake Water Bodies and on River and Lake Water Bodies in High Status Objective Areas*



In the case of High Status Objective areas 130 river and lake water bodies are *'at risk'* of not meeting their high ecological status objective. The profile of significant pressures is different to the general risk profile across water bodies nationally. Forestry is identified as the most significant pressure, followed by agriculture, hydromorphology and the extractive industry (mainly peat) followed by domestic waste water.

Figure 7 *Significant pressures identified in River and Lake Water Bodies in High Status Objective Areas*



Within Water Dependent SAC's 217 river and lake water bodies were identified 'a*t risk'* of not meeting their good ecological status objective within water dependent SAC's. The risk profile is similar to the general risk profile across water bodies nationally. Agriculture is a significant pressure in 49% of water bodies, followed by Urban Waste Water, hydromorphology, domestic waste water, forestry, urban run-off followed by the extractive industry.