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26th April 2017 Our Ref: SCP150902.2

Re. Draft National Mitigation Plan (NMP) and associated SEA Environmental Report

Dear Ms Lyons,

We acknowledge your correspondence, dated 15th March 2017, in relation to the Draft National Mitigation Plan (the NMP) and the associated Strategic Environmental Assessment (SEA) Environmental Report (ER) currently being prepared by the Department of Communications, Climate Action and Environment (DCCAE).

We welcome the preparation of Ireland's first NMP, covering the four key sectors of Energy, Transport, Built Environment and 'Agriculture, Forest and Land Use', as a key element of the effort to progress the national low carbon transition agenda. The statutory basis afforded to the NMP through the Climate Action and Low Carbon Development Act 2015 and the associated policy statement is particularly welcome.

The scale of the challenge facing Ireland to address climate change and reduce GHG emissions to meet our international and EU obligations cannot be underestimated. Our most recent State of Environment Report '*Ireland's Environment - An Assessment 2016*'[1] (EPA, 2016) identifies Climate Change as one of the three key systemic issues that need to be tackled in Ireland. The report highlights the need for us to accelerate mitigation actions to reduce our greenhouse gas (GHG) emissions, as well as implement adaptation measures to increase our resilience in dealing with adverse climate impacts. In the foreword to the report, the Director General of the EPA states that:

> '*Ireland and the world are at a crossroads and the choices we make over the coming decade will have implications for the future of humanity for centuries to come. We are fast approaching the end of the fossil age and we now fully understand the consequences*

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

of the large-scale consumption of fossil fuels over the past two centuries for the future health and wellbeing of our planet.

We must now, with a far greater sense of urgency, make the transition from a society and economy dependent on fossil fuels and the wasteful consumption of natural resources to one that uses renewable and clean energy and one that takes much greater care of our precious and non-renewable natural resources. Transformational change is urgently needed across our entire economy and society, change that will affect how we work, how we live, travel, heat our homes, produce our food and use our purchasing power as consumers and citizens.

We have nothing to fear though from these changes. Ireland, in fact, has much to gain by becoming a leader in this transition to a low carbon and resource efficient economy and by making sure that this transition is underpinned by a clean, healthy and well-protected environment.'

The prediction that Ireland is unlikely to meet its 2020 GHG emission reduction targets by domestic actions highlights the need for urgent and enduring action on climate change. To achieve this, the NMP should have a stronger focus on the shorter term actions and measures that can help Ireland reverse the current upward trend in emissions, to drive progress towards 2020 commitments, and in particular to put us in a position to achieve the 2030 commitments, which will be an even greater challenge. This should be in line with the overall objective of putting Ireland on a pathway that achieves our national 2050 decarbonisation objective as soon as possible. This is necessary both in terms of complying with future targets and minimising overall costs associated with achieving the national objective. It will also help position Ireland as a leader in the transition to a low carbon and resource efficient economy and society and to exploit the many economic, social and environmental opportunities that come with a successful and well planned transition. Delaying the implementation of the required actions and measures is likely to result in increased costs and reduced options and opportunities for a sustainable and cost effective transition and future economic prosperity.

Robust and clear cross-government departmental commitments to implementation of the necessary measures with the appropriate governance structures will be essential to ensure delivery of the NMP targets and measures. Given that many of the NMP sectoral measures relating to the Energy, Transport, Built Environment and Agriculture, Forest and Land Use sectors are already being implemented in existing national level plans (including Food Wise 2025, Forestry Programme, Offshore Renewable Energy Development Plan (OREDP), National Policy Framework on Alternative Fuel Infrastructure for Transport), the NMP provides an opportunity for a more coordinated approach to implementation of actions across the four sectors. It also provides the basis for an overall more determined and ambitious national approach to implementation of actions and measures to reduce GHG emissions across the various sectors.

The EPA welcomes the opportunity to make a submission at this stage of the NMP and SEA process. Our submission below sets out key considerations in the NMP and SEA processes. In addition, specific NMP-related comments are provided in Appendix I and SEA-specific comments are provided in Appendix II.

Key Challenges and Issues

1. *Protecting Ireland's Environment in the Transition to a Low Carbon Economy*

Our recent '*Ireland's Environment'* report recognises that moving to a low carbon and resource efficient Ireland will require urgent (and continued) transformational change across our entire economy and society, affecting how we work, how we live, travel, heat our homes, produce our

food and use our purchasing power as consumers and citizens. While undoubtedly challenging, the EPA believes that if we capitalise on our natural advantages, Ireland has the potential to become a leader in the transition to a low-carbon and resource-efficient economy, enabling us to promote rapid decarbonisation by other countries.

We equally recognise the fundamental importance of ensuring that the national transition is underpinned by a clean, healthy and well-protected environment. It will therefore be important that the NMP is developed and implemented in the context of a wider and more integrated approach to environmental protection. The GHG mitigation ambition envisaged in the NMP should be achieved in a manner that does not impact negatively on the wider environment and instead maximises the potential co-benefits for air quality, human health, biodiversity, water quality and other interrelated areas

Fully integrating the findings and recommendations of the environmental assessments (SEA and Appropriate Assessment) into the NMP will be key in strengthening its overall positive commitments while also ensuring that any significant adverse effects on the environment of implementing the NMP are mitigated (discussed further under point 6 below).

The recent publication of '*Ireland's Environment'* provides a timely opportunity to inform preparation of the NMP and the SEA. In particular, Chapter 13 identifies seven Key Environmental Actions for Ireland:

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 in the years ahead. A copy of *Chapter 13 - Environmental Challenges and Emerging Issues for Ireland* from '*Ireland's Environment'* is provided separately in Attachment 1.

While recognising that the NMP is primarily concerned with addressing Key Action 2, the Plan should also take into account the relevant aspects of the other key actions and the related sub actions outlined in Chapter 13. For example, Key Action 5 relating to 'Sustainable Economic Activity' incorporates integrating resource efficiency, sustainability ideas and performance accounting across economic sectors. In preparing the NMP, these aspects should be considered as appropriate and relevant to the four sectors. Including a commitment in the NMP to progressing the seven Key Environmental Actions for Ireland identified in *'Ireland's Environment'* would emphasise a commitment to ensuring that, in achieving the national transition objective, the fundamental benefits of sustainable development, resource efficiency

and maintaining a good quality environment are recognised. This approach has recently been adopted as part of the draft National Planning Framework.

2. *Relationship with other Plans and Programmes*

A schematic should be included in the NMP showing the links between the NMP and other key relevant national, regional and local level plans for the Energy, Transport, and Built Environment and Agriculture, Forest and Land Use sectors. This will assist in clarifying where the NMP fits in the hierarchy of national and sectoral plans for climate mitigation. In the context of land use planning, for example, the links with the draft National Planning Framework (NPF) and proposed Regional Spatial and Economic Strategies are relevant. These Strategies will provide the frameworks for implementing a consistent approach to mitigating climate change in land-use planning, including for example addressing unsustainable settlement patterns and managing economic and population growth. The recognition in the NMP of the importance of adopting a coordinated and coherent approach to integrating the commitment to the establishment of the National Dialogue on Climate Action and the development of the National Planning Framework is welcome.

The NMP process coincides with consultation on a number of key significant Draft Plans/Programmes/Strategies including the *Draft River Basin Management Plan* and '*Cleaning Our Air - A National Clean Air Strategy for Ireland*'. It is important that the NMP is fully aligned with the relevant aspects of wider national environmental policy.

3. *Implementation and Governance*

The EPA believes that there are currently significant gaps and challenges in governance structures in the climate area and that the implementation phase of the NMP will present significant additional challenges. Implementation will, however, benefit significantly from the statutory basis afforded to the NMP through the Climate Action and Low Carbon Development Act 2015, the national progress review activities of the Climate Change Advisory Council and the clear targets for decarbonisation set out in the associated policy statement.

A commitment to preparing an Implementation Programme for the various measures already in place and those proposed for consideration should be included in the NMP. 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 NMP. This Implementation Programme could be for a five-year period, with associated reporting, and it could form part of the final NMP or be an additional volume to it.

Where other plans/programmes/strategies are responsible for implementing the measures described, this should be clarified in the NMP and also reflected in the recommended Implementation Programme. It would be useful to include a table or schematic detailing which plans/programmes/strategies are (or will be) responsible for progressing particular climate mitigation measures, such as Food Wise 2025, the National Forestry Programme, Rural Development Programme, National Bioenergy Plan, National Peatlands Strategy etc. Where any new or modifications to existing plans/programmes/strategies are required in order to implement the measures identified in the NMP, these should also highlighted. Additionally, the requirements of the SEA and Habitats directives should be taken into account.

The SEA ER includes a recommendation that an "*interdepartmental planning and monitoring group (IPMG) be established and tasked with the long term planning and phasing of the measures from the NMP to the target date of 2050"*. This would maximise the potential synergies between the sectors and ensure the prioritised, phased and coordinated implementation of the measures. The suggested Implementation Programme could form the basis for reporting by the recommended Interdepartmental Planning and Monitoring Group.

The arrangements put in place for the implementation of Food Wise 2025 (FW2025) and the Offshore Renewable Energy Development Plan (OREDP), for example, provide existing approaches, the relevant aspects of which could be adopted for individual sectors and overall NMP implementation. For FW2025, a High Level Implementation Committee overseeing the implementation of the actions is chaired at ministerial level. An Environmental Sustainability Committee addresses the actions dealing specifically with sustainability reporting to the High Level Implementation Committee. A similar model could also be applied for implementation of the NMP. Individual focussed sector specific sub-groups could be established to oversee and review progress on implementation of relevant sector measures.

In addition to specifying the measures required to be implemented by each sector, the NMP should also set out the actions/commitments required by each of the sectors (and associated relevant Government Departments) and associated timelines and targets. Reporting on achievement of these actions could be incorporated into the work of the recommended Interdepartmental Planning and Monitoring Group and reflected in the Implementation Programme.

4. *Monitoring, Reporting and Review*

We welcome that the NMP will be subject to statutory review and progress reporting in accordance with the provisions of the Climate Action and Low Carbon Development Act 2015. The obligations for annual and periodic review reporting by the Climate Change Advisory Council and for annual transition statements by the Minister to the Oireachtas will provide valuable updates on progress in reducing GHG emissions and in furthering the transition to a low carbon economy.

We acknowledge that it is proposed to treat the NMP as a 'living document' which is continually updated as on-going analysis, dialogue and technological innovation generate more cost-effective sectoral mitigation options.

We recommend that consideration be given to including provision for fixed-term plan review periods over the lifetime of the NMP. This would facilitate a formal review of progress on implementation of the sector measures and highlight any necessary modifications to the NMP. Provisions should also be included for consultation with the relevant sectors, key stakeholders and the wider public.

Where reviews of the NMP identify that additional sectoral measures/actions are required or amendments to existing Plans/Programmes/Strategies are needed to advance achieving the aims of the NMP, the wider environmental implications of implementing these actions/measures must be assessed. The requirements of the SEA and Habitats Directive will also need to be taken into account. Establishing a close link between the monitoring /review of the NMP and the SEA-related monitoring is therefore needed.

In this context, there is merit in establishing the recommended Interdepartmental Planning and Monitoring Group. Environmental Steering / Working Groups similar to those established for Food Wise 2025 and the OREDP, would provide the relevant oversight of monitoring of the wider environmental performance of the NMP. It would also assist in linking the NMP-related monitoring requirements under the Climate Action and Low Carbon Development Act and the SEA-related monitoring obligations required under the SEA legislation.

A separate section on '*Monitoring, Review and Reporting*' should be considered for inclusion in the NMP. This should reflect the environmental related monitoring commitments recommended in the SEA ER. This will provide a formal mechanism for feedback and reviewing progress on implementation of specific aspects of the NMP. It will also make the NMP more robust and provide for increased accountability and transparency during implementation.

Separate to the Climate Change Advisory Council's statutory review and reporting obligations, consideration should be given to including a commitment to the publication of an annual progress report on meeting the targets outlined in Chapter 1 of the NMP. This should also incorporate sector reports on progress against each of the specified mitigating measures. It would be useful to include in the annual report details on the latest GHG inventory data and projections, along with any implications for meeting the targets and measures covered by the plan. A short user friendly non technical version of the progress report would contribute to progressing the community engagement measures outlined in NMP.

There is potential to link reporting on progress on the NMP's environmental related objectives with the cyclical *Ireland's Environment* reporting and related periodic environmental topic reporting.

5. *Role of Research*

There is significant opportunity to align national and international research programmes with the NMP so that these programmes can help support the implementation of the plan and its overall ambition to decarbonise the economy. It is likely that a considerable body of research will be needed to assist with working out how we transition away from fossil fuel dependency to a low carbon and resource efficient economy and society. This research can also help with the identification of economic, social and environmental opportunities associated with the transition. The recognition of the role of research under the key cross-cutting actions and for the energy and transport sectors is welcome. Similar commitments could also be included under Built Environment and Agriculture, Forest and Land Use sectors. The NMP should also include a brief section setting out how collaboration between national, EU and international research programmes can assist with and support the implementation of the NMP actions and measures

6. *Integration of SEA and Appropriate Assessment (AA) in the NMP*

A section should be included in the NMP indicating how the SEA and AA processes have influenced and informed the preparation of the NMP. A description and schematic should be included describing and showing the link between the SEA and AA processes and the NMP preparation. These should indicate how and where the environmental assessments have informed the NMP. A summary of alternative scenarios considered and the justification for selection of the preferred scenario/combination of scenarios should also be provided. A description should also be included of existing environmental problems relevant to the NMP.

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*". In particular, the link between the relevant Mitigation Measures and Recommendations in the SEA ER and, where relevant, commitments/objectives in the NMP should be highlighted.

Future Modifications to the Draft NMP

Where modifications to the NMP are proposed, these should be screened for potential for likely significant effects in accordance with the criteria as set out in Schedule 1 of the SEA Regulations (S.I. No. 435 of 2004) and should be subject to the same method of assessment applied in the "environmental assessment" of the Draft NMP.

SEA Statement

Following adoption of the NMP, an SEA Statement, should be prepared which summarises the following:

- How environmental considerations have been integrated into the NMP;

- How the Environmental Report, submissions, observations and consultations have been taken into account during the preparation of the NMP;
- The reasons for choosing the NMP adopted in the light of other reasonable alternatives dealt with; and,
- The measures decided upon to monitor the significant environmental effects of implementation of the NMP.

A copy of the SEA Statement with the above information should be sent to any environmental authority consulted during the SEA process.

We will continue to support DCCAE by providing the technical information on Ireland's annual GHG emission inventories and projections to inform the preparation of the NMP and, in time, its implementation, monitoring and review.

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

Yours sincerely

Tadhg O'Mahony

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Appendix I - NMP Comments

NMP Title

Consideration should be given to including more explanatory information in the title of the Plan. A possible option might include for example, "National Mitigation Plan for Greenhouse Gases", with a subtitle "Ireland's plan to meet greenhouse gas commitments and transition effectively to a low carbon and climate resilient future". The title should also capture the period for which the NMP will be operational.

Consideration of Alternative Policy Options

We note that Annex 1 to the NMP sets out key questions and policy options for each sector. Where any new or alternative options/measures/actions are proposed to be included in the final NMP, following this phase of consultation, these should be assessed under the SEA and AA processes to ensure that the potential for significant environmental effects are accounted for.

Chapter 1 –Climate Action and the Climate Challenges

Enabling the National Transition

More specific details on the specific outputs and roles/ responsibilities could be added to the cross cutting actions outlined in *Chapter 1 – Enabling the National Transition*. The delivery of the action titled "*Identify initial possible transition pathways to 2050 to inform sectoral strategic choices*" will be key to achieving the 2020 and 2030 targets agreed at EU level. Clarification is needed on how will this differ to the NMP. Subject to the nature and scope of the road map to achieve 2050 mitigation objectives, the requirements for SEA should be considered.

Challenge to 2020

The non-ETS emissions budget for the period 2013-2020 will need to be updated to reflect changes arising from the review currently underway.

Baseline data

The data, figures and commentary in Chapter 1 are based on 2015 data. This should be updated to reflect the latest 2016 greenhouse gas inventory and projections that are now available. Also in footnote 4 and table 1.2 reference is made to the EPA's "Business as Usual" scenario. It would be preferable to use the EPA projections terminology, "*With Existing Measures scenario*" to avoid any potential confusion.

Chapter 2 -Decarbonising Electricity Generation

Some of the specific items listed under the *Opportunities and Challenges* section in *Chapter 2 - Decarbonising Electricity Generation* could be considered for inclusion in the *Mitigating Measures.* For example the commitments to decarbonisation detailed for Coal and Peat section.

Tables in Chapter 2, 3, 4 and 5

There appears to be further and /or ongoing inputs required to the tables in Chapter 2, 3, 4 and 5 that provide an *Overview of Costs and Emissions Reduction Potential for the Existing Mitigation Measures in Place* and *Mitigation Measures under Consideration.* These include for example:

- Table 2.2 (there are a number of unknowns listed for the measures).
- Table 2.3 (there are unknowns listed for the measures under consideration).
- Table 3.2 (there are a number of items to be determined).
- Table 3.3 (there are a number of items to be determined).

- Table 4.1 (there are a number of mitigating measures in place that are not listed on the table and also some items not available).
- Table 4.2 (there are a number of mitigating measures under consideration that are not listed in the table).
- Table 5.1 (this is not as detailed as the tables covering the other sectors, only one table provided whereas earlier chapters have two tables - one for "in place" and the other for "under consideration measures". Clarification should be provided on whether new measures are under consideration, for example Section 5.5 mentions a switch in fertilizer type but there isn't a specific code given to this measure. Only two headline measures are covered where as other chapters evaluate the sub measures in most cases).

Where "unknowns" are listed and information is not currently available or may become available in the future, this could be highlighted as a note in the relevant Table(s). Future reviews of the NMP should capture any relevant updates to these Tables.

The NMP notes that the tables providing an *Overview of Costs and Emissions Reduction Potential* will require further analysis in some cases. Robust and detailed evaluation of the contribution and impact that each of the specific measures has or will have on meetings Ireland's GHG targets is needed. A number of the chapters (sections 2.6, 3.6 and 4.6) refer to further research on the details provided in the tables and this is an area that merits further consideration. Section 5.6 is less detailed and could be expanded.

For each of the mitigating measures outlined in the *Overview of Costs an Emissions Reduction Potential* tables it would be useful to provide details and explanatory text on the contribution each measure will make to meet the targets outlined in Chapter 1. The specific measures needed to meet the 2020 targets could be highlighted and explained separately in one combined table.

Share of emissions in Chapters 4 and 5

For context the share of non-ETS emissions in addition to the overall share represented by the Transport and Agriculture sectors should be specified in sections 4.2 and 5.2. The EPA can provide the relevant percentages from the latest Inventory data.

Wetlands in Chapter 5

Although there are known issues currently around data availability, in the context of a plan considering measures out to 2050, some mention of the research into the mitigation potential of wetlands management would be appropriate.

Ireland's Environment

Ireland's Environment – An Assessment 2016 provides information on climate issues that are relevant to the NMP. It should be noted that newer GHG emissions data for 2016 has now also been published by the EPA[2] [3]. Chapter 13 (provided as a separate attachment to this submission) provides a summary overview in relation to the 7 Key Actions for Ireland. "Key Action 2: Climate Change" provides a summary overview of the challenges and actions required to tackle climate change.

Also of relevance are the following chapters from SOER 2016:

[2] Date released: Apr 07 2017. http://www.epa.ie/newsandevents/news/name,61975,en.html

[3] Date released: Apr 13 2017. http://www.epa.ie/newsandevents/news/name,62088,en.html

- Chapter 3 Climate provides an overview of the science and the need for mitigation and adaptation, as well as details on emissions and projections. The responses to Climate Change Outlook and Conclusions and Key Messages are clearly set out in this Chapter.

- Chapter 9 Environment and the Economy describes the link between Ireland's economic resilience and environmental quality. It sets out the international and national policy context including the 7th Environment Action Programme, the UN Sustainable Development Goals a number of which are linked to climate with a specific Goal related to Climate Action. It also describes strategies for a resource-efficient and low- carbon Europe.

- Chapter 10 Environment and Transport contains relevant information ranging from the need for more energy efficient transport, better up take of electricity vehicles, alternative fuels, integrated public transport and cities that are designed for pedestrians and cyclists. It mentions that measures need to be driven as part of the NMP.

- Chapter 11 Environment and Energy contains relevant information ranging from increased investment in renewables, avoiding carbon lock-ins, smart meters/grids and schemes to retrofit older and less energy efficient housing stock to reach higher energy ratings.

- Chapter 12 Environment and Agriculture covers greenhouse gases and agriculture and notes that the challenges for the sector should not be underestimated and will need a combination of education, incentives, resources and substantial commitment by all stakeholders to enable implementation.

The Outlook and Conclusions and Future Challenges sections are of particular relevance and should be captured in the commitments and measures in the Plan. In addition, for the sector chapters on Energy, Transport and Agriculture, the relevant current Trends, What is Being Done/Outlook and Key High Level Messages should also be reflected in the NMP and the SEA.

Actions to tackle air pollution and greenhouse gas emissions are linked in many ways. This could be highlighted further in the NMP along with the related health issues. *Ireland's Environment* (p. 171) mentions that "*An integrated strategy, tackling GHG and air pollutant emissions together, needs to be pursued to ensure that the public health co-benefits are realised*".

Appendix II - SEA Comments

Baseline data

The data, figures and commentary in the SEA ER should be updated to reflect the latest 2016 greenhouse gas inventory and projections that are now available.

Consideration of Alternatives (Chapter 8)

We note that the preferred approach for the NMP and associated SEA alternative(s) reflects the National Policy Position, which consists of a long term vision of low carbon transition based on an aggregate reduction in CO_2 emissions of at least 80% by 2050 (compared to 1990 levels) across the electricity generation, built environment and transport sectors, and, in parallel, an approach to carbon neutrality in the agriculture and land-use sector, including forestry, which does not compromise capacity for sustainable food production.

We welcome the approach adopted in the SEA to the consideration of alternatives, incorporating strategic and sectoral level alternatives, which provides a clear and consistent assessment methodology for evaluating the various options available. Where more ambitious alternative recommendations are discussed in the SEA ER, these should be considered over the lifetime of the NMP and in future iterations of the NMP (and associated SEA).

A summary of the alternatives considered should be included in the NMP.

Assessment of Measures (Chapter 9)

We note the assessment of the environmental effects of the proposed measures contained in the NMP outlined in *Chapter 9 Assessment* of the SEA ER, including the summary tables highlighting the main potential positive and negative environmental effects. The NMP should provide a commitment to addressing the potential negative environmental effects identified in this chapter, in collaboration with the relevant stakeholders.

SEA Mitigation Measures

We note the various recommendations and proposed mitigation provided for each subsection in *Chapter 8 Alternatives* and *Chapter 9 Assessment.* With a view to promoting the full integration of the SEA into the Plan, the NMP should acknowledge and address each of the recommendations/proposed mitigation measures outlined in the SEA ER. It is important to distinguish between SEA mitigation measures (referring to measures needed to address potential for likely significant environmental effects of implementing the NMP), and mitigation measures to address climate change which is the overall objective of the NMP.

Chapter 10 Mitigation and Monitoring highlights the key mitigation measures arising from the assessment of alternatives (Table 10.1), the assessment of measures (Table 10.2) and those proposed in the Natura Impact Statement (Table10.3). There would be merit in incorporating these summary tables into the NMP.

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.

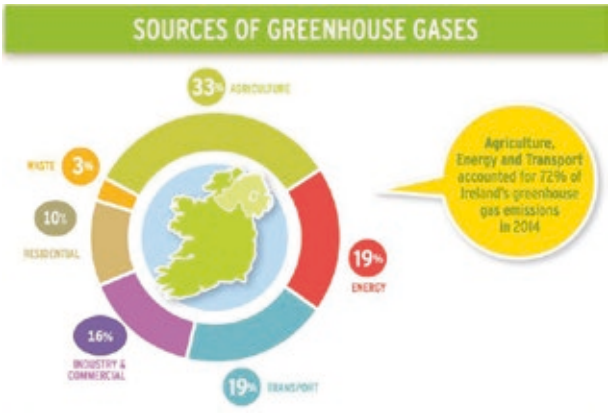
Transition to a Low-Carbon Future

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.

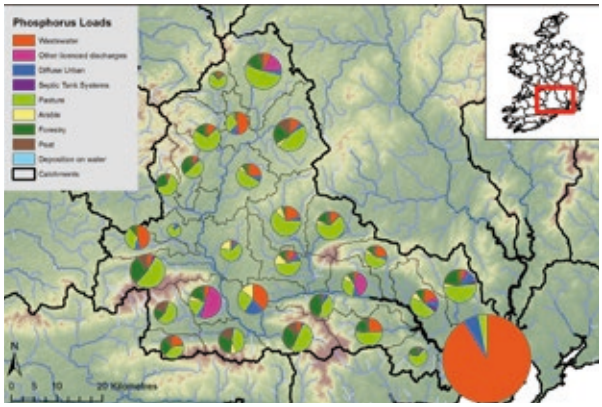
The findings from farm inspections carried out to implement the Good Agricultural Practices Regulations indicate that improvements are needed in the management of manures and organic fertilisers on farms. The new catchment risk-based approach being promoted by the EPA to identify potential Critical Source 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.

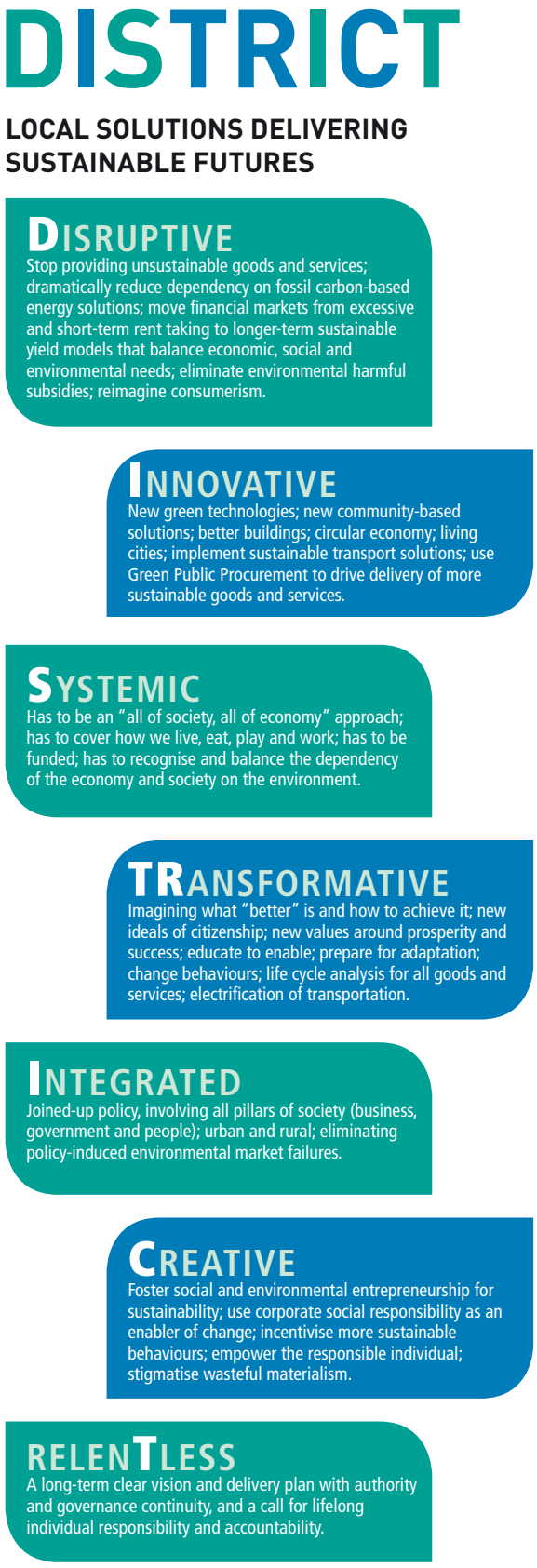
In developing information sources, we should also be reminded of the recommendation from the EEA that "that public communication alone cannot bring about a society-wide transition as outlined in the EU's policy objectives of 'living well within the limits of our planet.' But by embracing recent innovations 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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