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Integrating Climate Change into Policymaking using SEA: A Scottish Perspective

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This paper builds upon a paper first presented as a video at the IAIA Climate and Impact Assessment Conference in Aalborg 2010 [www.iaia.org/iaia-climate-symposium-denmark/proceedings.aspx]. It examines Scottish experiences in using SEA to help deliver world leading climate change targets and legislation. It explains the challenging targets set by the Climate Change (Scotland) Act 2009 and explores how the extended application of SEA in Scotland has an important role in helping their delivery. It outlines some findings from early practice and goes on to summarise the relevant findings of the 2011 Scottish SEA Review, which brought forward specific recommendations for improving the consideration of climatic factors within SEA practice.

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1. Introduction

In June 2009, the Scottish Parliament unanimously passed the Climate Change (Scotland) Act (the 2009 Act). The 2009 Act provides Scotland with a framework for implementing challenging reductions in greenhouse gas emissions and preparing the country for a changing climate.

Scotland also has far reaching Strategic Environmental Assessment (SEA) legislation[2] which requires assessment of the potential environmental effects of implementing a very wide range of public sector plans, programmes and strategies (PPSs), well beyond those falling under European Directive 2001/42/EC.

To achieve the ambitious targets set in the 2009 Act, Scotland's future public sector policies and strategies need to fully consider their contribution to climate change mitigation and adaptation. This is to ensure that policy decisions taken now do not lock Scotland into a high carbon future and also to help build a more resilient society and economy that are able to adapt effectively to a new and potentially uncertain climate.

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[2] *The Environmental Assessment (Scotland) Act 2005 (The SEA Act) expanded the scope of SEA in Scotland to include a much wider range of PPSs beyond that required by Directive 2001/42/EC. This is described in more detail in section 2.*

Accordingly, there needs to be a shift in the nature of policymaking so that climate change is fully integrated. SEA in Scotland is particularly well positioned to be able to do this: it provides a statutory platform for systematically and robustly identifying, evaluating and, where appropriate, addressing climate change issues arising from the policies contained in a very wide range of public sector PPSs.

2. Climate change legislation and policy in Scotland

The 2009 Act creates the statutory framework for greenhouse gas emissions reductions in Scotland by setting an interim 42% reduction target for 2020 and an 80% reduction target for 2050[3]. To help ensure the delivery of these targets, year on year reductions of at least 3% are required between 2020 and 2050 and specific annual targets have been set for 2010 – 2022[4].

The 2009 Act also requires preparation of a programme for adaptation setting out Scottish Ministers' objectives, proposals and policies to adapt to projected climate change. Scotland's statutory adaptation programme will also be informed by the UK Climate Change Risk assessment required under the UK Climate Change Act 2008. In advance of this statutory adaptation programme, Scotland's first Climate Change Adaptation Framework[5] was published in December 2009, the core aim of which is to make Scotland more resilient to climate change. The Framework established 3 main areas and 12 key sectors where adaptation action will be focused (figure 1):

Figure 1 – Climate Change Adaptation Framework

3 Areas of Focus	12 Sectors	
Exposure: understanding the degree to which Scotland is exposed to change and both the challenges and opportunities this presents.	Agriculture	Forestry
	Biodiversity	Health
Adaptive capacity: equipping organisations and stakeholders with the skills and tools needed to adapt to a changing climate.	Built Environment	Marine
	Business	Spatial Planning and Land Use
Competing pressures: realigning competing pressures and assisting the integration of adaptation into wider public policy and regulation	Emergency and Rescue Services	Transport
	Energy	Water

[3] *Compared to 1990 levels for carbon dioxide, methane and nitrous oxide and to 1995 levels for sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons*

[4] *The Climate Change (Annual Targets) (Scotland) Order 2010 sets out the annual targets for 2011- 2022: 2011 -0.5 per cent; 2012 -0.3 per cent; 2013 -9.9 per cent; 2014 -2.1 per cent; 2015 -2.2 per cent; 2016 -2.2 per cent; 2017 -2.2 per cent; 2018 -2.2 per cent; 2019 -2.3 per cent; 2020 -3.0 per cent; 2021 -3.0 per cent; and 2022 -3.0 per cent.*

[5] *The Climate Change Adaptation Framework sets the strategic direction for Scottish Government actions but, because many adaptation decisions are taken at a local level by individual organisations, action from across all sectors is needed. The Framework has been developed with a series of 12 accompanying Sector Action Plans, which outline the key issues and planned activity for adapting.i www.scotland.gov.uk/Publications/2009/12/08130513/0*

The 2009 Act also places duties on all of Scotland's public sector bodies to act, when exercising their functions:

a. in the way best calculated to contribute to delivery of the greenhouse gas reduction targets;

b. in the way best calculated to deliver the statutory adaptation programme;

c. in a way that it considers most sustainable.

In 2011, the Scottish Government published guidance[6] on how to put the duties into practice and public bodies must have regard to this. It is the responsibility of the public body to implement the climate change duties and the guidance suggests that public bodies should report on the duties in order to be able to demonstrate compliance. The 2009 Act also gives Scottish Ministers the power, by Order, to require reports on compliance with the climate change duties should they wish to make reporting mandatory.

3. Strategic Environmental Assessment in Scotland

The Environmental Assessment (Scotland) Act 2005 transposes Directive 2001/42/EC and also considerably extends its scope to apply SEA to a much wider range of PPSs. The result is an SEA regime in Scotland that covers most significant policymaking activities undertaken by the Scottish Government, Local Authorities and other public sector agencies[7]. In practical terms, this means that SEA in Scotland catches a wide diversity of PPSs, ranging from very high level plans such as the Scottish Government National Planning Framework[8] and even Bills of Parliament through to very detailed PPSs prepared by local authorities, such as master-plans for housing or business development.

Like the directive, the 2005 Act requires that public bodies analyse the effects of any qualifying PPS on climatic factors. The wider application of SEA in Scotland therefore provides a legal framework for systematically considering climate change across all major public sector decision-making. This represents a significant opportunity to use SEA to routinely ask "*the climate question*" (Scottish Government, 2011a) when making decisions about the PPSs that will shape Scotland for a generation.

Experience in Scotland has shown that there are very many opportunities that SEA offers to systematically and effectively integrate climate change into PPS preparation, including:

⇒ *Reducing greenhouse gas emissions and supporting transition to a low carbon economy* – SEA allows policymakers to systematically explore the potential contribution a PPS makes to reducing greenhouse gas emissions and supporting the decarbonisation of the Scottish economy. In doing so, it also can provide a structured approach to testing the comparative emissions associated with development alternatives or scenarios;

⇒ *Aligning policy* – SEA can help ensure that government policies are aligned and working in synergy to address the challenges of a changing climate and not competing against each other;

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[6] *Guidance to support public bodies in exercising their duties under the Climate Change (Scotland) Act 2009 can be found at: http://www.scotland.gov.uk/Publications/2011/02/04093254/0*

[7] *A more detailed summary of the Scottish SEA regime is provided in the Scottish Government's Basic Introduction to SEA - www.scotland.gov.uk/Topics/Environment/SustainableDevelopment/14587/basicguidance/O/EditMode/on/ForceUpdate/on*

[8] *National Planning Framework 2 (NPF2) was published on June 25 2009. It sets the spatial strategy for Scotland's development to 2030, and designates 14 national developments of strategic importance to Scotland. www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/npf*

⇒ *Building resilience* – SEA allows for systematic evaluation of the resilience of Scottish PPSs to the anticipated effects of a changing climate with the aim of ensuring that Scotland's economy and environment are well prepared;

⇒ *Early identification of remediation measures* – SEA can enable the early identification of measures to address any adverse effects a PPS may have on the ability to mitigate or adapt to climate change;

⇒ *Engagement* – The requirement for early and effective engagement affords opportunities for sharing information and provides a platform for policymakers to discuss with stakeholders and the public how climate change policy can be effectively integrated into local decision making;

⇒ *Preventing foreclosure of future adaptation options* – SEA can inform decision making so that future adaptation options are left open and not prejudiced by development that may make them unfeasible or too expensive;

⇒ *Meeting policy commitments* – SEA can help the Scottish public sector fulfil its duties under the 2009 Act and the objectives agreed in the Scottish Climate Change Declaration[9].

These represent very significant and potential powerful ways in which SEA can enable integration. The challenge for Scottish SEA practitioners and policymakers is to take full advantage of these opportunities. Recent research (SEPA, 2011) suggests, however that there remain many issues and barriers which need to be overcome for these opportunities to be fully realised. Many of these are not unique to the integration of climate change, but are ones that are felt across SEA practice as a whole.

4. Using SEA to implement Scottish climate change policy – Early experience

The 2006 "SEA Toolkit"[10] provided some basic coverage of key climate issues, but it was considered that more was likely to be required if SEA practice in Scotland was to effectively play its part in delivering the requirements of the 2009 Act. This led SEPA, on behalf of the Scottish Government, to develop specific guidance about SEA as a tool for considering the impacts of public sector PPSs on the delivery of its climate change mitigation and adaptation policies.

Prior to commencing preparation of this advice in 2009, a short, simple review of how climatic factors had been considered in some relatively early SEAs was undertaken. This provided a guide about those areas of greatest need where guidance should focus.

A sample of twenty Environmental Reports (ERs) from 2006-2008 were analysed to understand if, how, and to what level of detail climatic factors had been considered during the SEA.

The results showed that while general climate change issues were being considered within SEAs, there was inconsistency in the level of detail, the coverage of issues and in the use of assessment

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[9] *Scotland's Climate Change Declaration has been signed by all Scotland's Local Authorities and many other public bodies. When signatories agree to make a commitment to action, they pledge both to mitigate their impact on climate change and to adapt to predicted climate change impacts. Signatories also agree to issue an annual statement, detailing the progress of their climate change response. http://climatechange.sustainable-scotland.net/*

[10] *The SEA toolkit is the main source of Scottish guidance on SEA. Published in 2006, it provides practical advice to those undertaking SEA of the legal and procedural requirements, as well as providing advice on specific SEA topics. The toolkit is currently being reviewed in light of the Scottish SEA Review.www.scotland.gov.uk/Publications/2006/09/13104943/0*

methods. In particular, there were some aspects of climate change that were consistently being omitted from assessments and which could therefore reduce the effectiveness of SEA as a tool to integrate climate change in public policymaking. Specific issues found were:

⇒ Some assessments only considered climate change mitigation and omitted any reference to or analysis of what impacts the PPS may have on adaptation. In particular, few assessments considered the resilience of the PPS to a changing climate. This may be ascribed in part to the fact that the Scottish Government's own adaptation policy was still under development at this time and this made it more difficult for SEA practitioners and policymakers to identify how their PPS

⇒ Linked to this, there was almost no use of the UK Climate Change Projections[11] (at that time UKCIP02, but since revised and updated in 2009). The projections provide scenario based analysis of potential future climate across the UK and can therefore provide valuable insight into future adaptation requirements;

⇒ There was some use of carbon assessment tools, with some assessments using commercial tools and providing considerable detail, while others making very broad brush and sometimes unsubstantiated statements about likely increases or reductions in greenhouse gas emissions. The result was an inconsistent approach;

⇒ Few assessments provided any analysis of the potential impact of PPSs upon carbon soil stores. This is a particular issue for Scotland which has soils – predominantly deep peatlands - estimated to contain over 3200 million tonnes of carbon[12]. If just 1% of the carbon contained in soil was lost in a year it would be enough to triple Scotland's annual greenhouse gas emissions (Dobbie et al 2011);

⇒ Few assessments specifically considered the resilience of key infrastructure such as emergency and health services to climate change. This was particularly concerning where land use plans being subjected to SEA included policies and land zoning which would directly influence the location and accessibility of such services; and

⇒ Coastal erosion and the impact of rising sea levels were not being considered routinely, despite coastal flooding being a key issue for many Scottish authorities.

Even from this most rudimentary analysis, it was clear that there were considerable variations in how 'climatic factors' were being identified and considered in early Scottish SEAs. This pointed to a need for additional guidance to help Scottish practitioners fulfil the potential of SEA in helping to deliver the ambitious targets and measures set in the 2009 Act. In 2010 the Scottish Government

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[11] *The UK Climate Projections (currently UKCP09) provide climate information designed to help those needing to plan how they will adapt to a changing climate. The types of climate information provided are:*

- *Observed climate data (20th and 21st century historical information about temperature, precipitation, storminess, sea surface temperatures and sea level)*
- *Climate change projections (for temperature, precipitation, air pressure, cloud and humidity)*
- *Marine & coastal projections (for sea level rise, storm surge, sea surface and sub-surface temperature, salinity, currents, and waves).*

The Projections are presented for three different future scenarios representing High, Medium and Low greenhouse gas emissions. Available at: http://ukclimateprojections.defra.gov.uk/content/view/12/689/

[12] *Scotland has extensive peatlands estimated to contain around 2700 million tonnes (Mt) of carbon to a depth of 1m and an additional 516 Mt carbon below 1m in organic soils (Dobbie et al, 2011). By comparison, Scotland's greenhouse gas emissions in 2007 were 14.9Mt carbon (in a total of 56.9Mt CO_2e)..*

published the guidance[13] aimed at addressing these issues and providing clear direction to practitioners. The guidance includes:

⇒ Information about climate change science to help practitioners understand how impacts may manifest themselves with respect to a particular PPS or geographic area;

⇒ Baseline information and data sources about Scotland's greenhouse gas emissions and their trends;

⇒ Baseline information about observed and projected future climate change and current/planned adaptive capacity;

⇒ Advice on how to identify and analyse significant environmental effects associated with climatic factors, including a summary of potential types of effects in relation to certain types of plans such as transport, energy and town and country planning;

⇒ Examples of how to assess PPSs for effects on 'climate factors';

⇒ Advice on how to consider the reliance of PPSs to projected future climate change;

⇒ Examples of monitoring indicators.

5 Climate Change in the 2011 Scottish SEA Review

In 2011 SEPA, on behalf of the three Scottish statutory Consultation Authorities in SEA, undertook a formal review of the efficiency and effectiveness of SEA[14]. This review offered a further opportunity to evaluate how climatic factors were being considered in SEA practice and to come forward with specific recommendations that could be taken forward as part of a wider package of measures aimed at improving the way SEA operates in Scotland. Some of the relevant findings of the review were:

⇒ 'Climatic factors' was considered by SEA practitioners to be one of the most difficult of all SEA topics to identify significant environmental effects for. Numerous reasons were given for this and include:

- the complexity of climate change science and data made it difficult for some practitioners to identify or recognise the potential for effects, particularly in relation to adaptation;
- the cross cutting nature of the issues, which practitioners say make it very difficult to understand what effects a single PPS might have or how it, when acting with other PPSs, might lead to cumulative effects;
- the long term nature of impacts, which practitioners said they found difficult to measure and difficult to reconcile with the relatively short timescales of the PPS;

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[13] *Guidance on the consideration of climatic factors within strategic environmental assessment* http://www.scotland.gov.uk/Publications/2010/03/18102927/0

[14] *The Scottish SEA Review was the first formal evaluation of how SEA is performing in Scotland. It was undertaken by the Scottish Environment Protection Agency on behalf of the three statutory Consultation Authorities in Scottish SEA (SEPA, Scottish Natural Heritage and Historic Scotland). It had two main aims: (a) to identify whether SEA achieves effective environmental protection and improvement by influencing the preparation of PPSs; and (b) to identify opportunities to make SEA more efficient.*
The review took evidence from practitioners, plan-makers and stakeholders through workshops, questionnaires and through a comprehensive analysis of 32 cases. The review can be downloaded from:
www.sepa.org.uk/planning/sea/scottish_sea_review.aspx

- the very small scale of emissions increase or reduction likely to result from a specific PPS in the context of Scottish or UK emissions was considered by some practitioners to make consideration of climatic factors an insignificant part of the SEA;
- a lack of skills, capacity and simple tools or good practice advice were seen by practitioners as major barriers to effective consideration of climatic factors.

⇒ Climatic factors was the second most common SEA topic to be scoped out of an assessment (19% of all cases[15]). Given the high profile and policy priority of climate change, it was surprising to find that one in five of all assessments scoped it out, however, this perhaps reflects the view of some that the impacts of a specific PPS on climate were so minor as to be insignificant.

⇒ There appears to still be a much greater focus of effort on mitigation rather than adaptation. Testing the resilience of the policies contained within PPSs also appears, from evidence supplied by practitioners, to be inconsistently practiced and approached.

⇒ Practitioners noted a great deal of uncertainty when trying to identify effects on climate, borne in part from the lack of skills or tools and in part from the difficulties in identifying specific effects that may result from a single PPS or when acting in combination with others.

⇒ SEA practitioners complained that information about climate change to inform preparation of the environmental baseline could be difficult to obtain. Even where information was available, they found it difficult to interpret in a meaningful way in the context of an individual assessment.

⇒ Practitioners noted that information about flood risk was readily available and considered easy to use. However almost all other aspects of climate change adaptation were less well understood and considered much more difficult to find baseline information for.

⇒ The UK climate projections (UKCP09) are still not well used in assessments despite the 2009 projections offering the most comprehensive and up to date scenarios of projected changes in climate at a quite detailed geographic level (25km^2 grid squares). While some training in using UKCP09 in a spatial planning and SEA context was offered in 2009 and 2010[16], take up among practitioners was reasonably low and many appear to find the projections difficult to apply in assessments.

⇒ There was more evidence of greenhouse gas emission modelling being used in SEAs compared to early practice, but this was still constrained by the perceived complexity, time requirements and cost of some of the models. Some practitioners noted that they actively avoided using such models in order not to unbalance the focus of the assessment onto one specific issue.

⇒ There was little evidence that Scottish public bodies are actively using SEA to demonstrate how their PPSs are contributing to the public bodies' duty required by the 2009 Act despite it offering a practical, systematic and efficient means of doing so.

⇒ Impacts on climatic factors accounted for just 7%[17] of all significant adverse effects identified in the case sample.

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[15] *based on a 86 case sample derived from both the 32 cases assessed in the casework analysis and from evidence provided by 54 practitioner via the on-line survey.*

[16] *www.sccip.org.uk/7/47/165/Scotland--Projections-in-Practice-Week-November-2009.aspx*

[17] *Based on analysis of 32 cases*

⇒ Significant adverse effects on climatic factors were less likely to be taken fully into account compared to all other SEA topics. Only 36%[18] of significant adverse environmental effects on climatic factors were considered to have been taken fully into account in the case sample.

⇒ Objectives and indicators used to assess climate impacts and to monitor them are shown to vary considerably, with little correlation of these to nationally established indicator sets.

⇒ It was interesting to note that while climatic factors were given quite a low priority in some of the assessments, climate change was the second most common issue raised by stakeholders engaging in SEAs.

From these findings, it becomes clear that there remain distinct challenges for effective integration of climate change into SEA processes and practice. In particular, there is a need to improve understanding and awareness of the main issues to provide practitioners with both the knowledge and the tools to be able to consider climate more effectively. A number of specific recommendations aimed at improving the consideration of climatic factors in Scottish SEA were made in the review. These (set out in figure 2 below) work in association with wider recommendations aimed at enhancing the scoping process, improving clarity and developing stakeholder engagement.

Figure 2 – Summary of SEA Review Recommendations on Climate Change

Recommendation	Objective
There should be greater use of SEA by Scotland's public bodies to show how their PPSs contribute to the public bodies' duties.	This recommendation is designed to encourage authorities to use SEA proactively to demonstrate how a PPS contributes to the mitigation, adaptation and sustainability objectives of the 2009 Act. In doing so, it promotes consistent consideration of both mitigation and adaptation.
Climatic factors should be scoped into all assessments even where the impact or contribution of a plan or programme may be small.	This recommendation is aimed at ensuring climate change is seen as an integral part of *all* policymaking, even where the effects may be minor. A key element of delivering the aspirations of the 2009 Act will rely upon all PPSs working together.
Indicators used in assessments and in monitoring should, where possible, be aligned to establish national climate change indicators.	This recommendation is aimed at securing greater consistency in approach to assessing climate impacts and monitoring them.
There should be greater use of simple carbon quantification tools in SEAs to provide more detailed information about the greenhouse gas emissions.	This recommendation is aimed at promoting more robust consideration of potential greenhouse gas emission from individual PPSs. To assist this, the Scottish Government and SEPA are jointly developing a simple carbon assessment tool aimed specifically for use in SEA and spatial planning.
Providing specialist training /	This recommendation is specifically aimed to address

[18] *Based on analysis of 32 cases*

experience sharing sessions to help practitioners to consider climatic factors in SEA, including potential sessions on using the UKCP09 projections.	the skills and capacity issues expressed by practitioners. It also aims to integrate the UKCP projections much more into SEA processes, where it is feasible and appropriate to do so.

6. Conclusions

This brief summary of Scottish experience has shown that while SEA is very well positioned to integrate climate change into a wide range of public sector PPSs, considerable challenges remain in being able to do this effectively in practice. Scotland has the building blocks – ambitious climate change targets, wide ranging SEA legislation, the public bodies' duty – upon which to effectively integrate climate change through SEA. There is a need to grasp these considerable opportunities to ensure that the plans and programmes that will shape Scotland for a generation do so in a way that reduces greenhouse gas emissions and prepares the country for a changed climate.

Appendix - References and Further Information

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Further Information

Climate Change in Scotland

Scottish Government Climate Change website
www.scotland.gov.uk/Topics/Environment/climatechange

Scottish Environment Protection Agency (SEPA) Climate Change website
www.sepa.org.uk/climate_change.aspx

Scottish Climate Change Impacts Partnership
www.sccip.org.uk

Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) Climate Change Trends Handbook
http://climatetrendshandbook.sccip.org.uk/

Strategic Environmental Assessment in Scotland

Scottish Government SEA website
www.scotland.gov.uk/Topics/Environment/SustainableDevelopment/14587

Basic Introduction to SEA in Scotland
www.scotland.gov.uk/Resource/Doc/921/0096200.pdf

Scotland and Solway Tweed River Basin Plans and accompanying SEAs/climate change resilience check
www.sepa.org.uk/water/river_basin_planning.aspx

Scottish SEA Review – Executive Summary
www.sepa.org.uk/planning/sea/scottish_sea_review.aspx