EPA RESEARCH PROGRAMME 2021-2030

Good Practice Case Studies of Health in SEA

– A Dossier –

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by
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Table of Contents

List of Tables

1. Introduction

1.1. Aim of the report

This report investigates how human health is considered in Strategic Environmental Assessment (SEA) Environmental Reports (ERs). To do this, we conducted a review of 20 representative case studies; these included 10 recent SEA ERs from Ireland and 10 good practice SEA ER examples from other European nations. Data were extracted and analysed using an analytical framework informed by concepts and indicators identified in a literature review previously conducted around health in SEA (Deliverable 2 – Chapter 6). Key findings from the review of SEA case studies were then used to formulate recommendations around international good practice for fostering the effective and proportionate consideration of health in SEA.

2. Methodology

2.1. Case Studies

For this research task, 20 case studies were selected for review (Table 1). These included 10 recent SEA ERs from Ireland, identified in consultation with the project Steering Committee, to examine and establish current practice, and 10 good practice examples from other European nations selected from a larger review of approximately 200 international SEA ERs (Deliverable 3). The case studies were selected to cover a range of national, regional and local planning tiers and to represent a range of different planning and policy areas/sectors.

Table 1 Selected SEAs Included in Analysis.

Case	Origin	Level	Title	Year of SEA
1	Ireland	National	Common Agricultural Policy Strategic Plan 2023-2027	2023
2	Ireland	National	National Hazardous Waste Management Plan 2021-2027	2021
3	Ireland	National	National Climate Action Plan 2040	2024
4	Ireland	National	National Roads Strategy 2040	2022
5	Ireland	Regional	Eastern and Midland Regional Spatial and Economic Strategy 2021-2027	2019
6	Ireland	Regional	Fingal County Development Plan 2023-2029	2022
7	Ireland	Regional	Regional Water Resources Plan - Eastern and Midlands 2022	2022
8	Ireland	Local	Dublin City Local Authority Climate Action Plan 2024-2029	2023
9	Ireland	Local	Dundrum Local Area Plan 2023	2023
10	Ireland	Local	Limerick Shannon Metropolitan Area Transport Strategy 2022	2022
11	Netherlands	National	Dutch Built and Biophysical Environment Vision 2018	2019
12	Sweden	National	National Plan for the Transport System 2018–2029	2017
13	France	National	Report of the Strategic Environmental Assessment of the National Low-Carbon Strategy 2019	2019
14	Portugal	Regional	Innovation and Digital Transition Program 2030	2022
15	Czech Republic	Regional	Plan for the Development of Water Pipes and Sewers in the Ústí Region – Update 2020	2021
16	France	Regional	Occitanie Regional Biomass Plan 2020-2030-2050	2019

Case	Origin	Level	Title	Year of SEA
17	Sweden	Regional	Waste Plan for Eslöv, Höör and Hörby Municipalities - Action Plan for Resource Management and Circular Material Flows 2023-2026	2023
18	UK	Local	Glasgow City Region's Adaptation Strategy and Action Plan 2021	2021
19	UK	Local	Leeds Local Plan (Local Plan Update)	2023
20	Belgium	Local	Improving the Quality of Life for the Residents - Residential Area Klein-Rusland (Zelzate) 2017	2017

2.2. Search Strategy and Data Extraction

The analytical framework for assessing the consideration of health in SEA ERs (Table 2) was based on assessment criteria identified in the literature review previously conducted around health in SEA (Deliverable 2 – Chapter 6). They are summarised in Table 2 below. Primary searches were conducted using the assessment criteria or keyword for concept 1 – "health". This identified general locations within the SEA ERs from where relevant content and data were extracted. The keywords for concept 2 – health "impact", "outcome", "determinant", and "(in)equality" – were used as a reference guide for identifying written content/data specific to each assessment indicator within larger blocks of text. Health outcomes included a wide range of physical, mental, social, acute, and chronic effects (Department of Health, 2019; European Commission, 2024). Determinants of health include the physical environment, economic security and equality, social and community context, individual characteristics and behaviours, health system, education system, as well as markets, trade, and commerce (WHO, 2024). Health (in)equity / (in)equality refers to the distribution of outcomes, exposures, vulnerabilities, interventions, within and between populations (ibid).

For data extraction/gathering purposes, there always had to be an explicit reference to health (concept 1). For example, there are many references to determinants of health throughout SEA ERs (e.g. air quality, water quality). However, not all will acknowledge an explicit link to health or that they determine health outcomes. Therefore, these examples were not included in the data extraction. Data concerning potential negative as well as positive health effects (i.e. (co)benefits) of a plan, programme, or policy, or the lack thereof, were also included.

SEA ERs for eight international SEAs were translated from their original language into English using DeepL© – a translation software. All the SEA ER documents were then uploaded to an online data extraction and mining platform – Sysrev (https://www.sysrev.com/). One project team member coded and extracted data for all 20 case studies. To reduce the risk of bias, 15% of case studies (n=3) were coded and extracted by a second project team member.

Table 2 Concepts, Assessment Criteria, and Corresponding Search Terms.

Concept	Assessment Criteria	Proposed Search Terms	Explicit / Implicit
1	**Health**	"*health*" OR "well*being" OR "welfare"	Explicit in term; Likely to vary depending on original language.
AND			
2	**Health Outcome**	"death*" OR "mortalit*" OR "morbidit*" OR "disease*" OR "illness*" OR "injur*" OR "disab*" OR "mental" OR "physical" OR "well*being" OR "medic*" OR "psycho*" OR "soci*" OR "life*" OR "safe*" OR "case*" OR "incidence*" OR "prevalence*" OR "condition*"	Explicit in term
	Health Determinant	"soci*" OR "environment*" OR "economic*" OR "*financ*" OR "*employ*" OR "occupation*" OR "educat*" OR "*care" OR "capital" OR "secur*" OR "poverty" OR "climat*" OR "air*" OR "water*" OR "material" OR "soil*" OR "noise" OR "hous*" OR "land" "biodivers*" OR "inclus*" OR "exclus*"	Explicit in term and/or implicit in text
	Health (In)Equality/(In)Equity (within/between)	"*equalit*" OR "*equit*" OR "differen*" OR "vulnerabl*" OR "exposur*" OR "sensitivity*" OR "access*" OR "accept*" OR "avail*" OR "quality" OR "depriv*" OR "*advantage*" OR "marginal*" OR "exclu*" OR "*privilege*" OR "vari*" OR "gradient" OR "disparit*"	Explicit in term and/or implicit in text

Concept	Assessment Criteria	Proposed Search Terms	Explicit / Implicit
	Health Impact	"impact*" OR "effect*" OR "positive" OR "negative" OR "major" OR "minor" OR "significan*"	Explicit in term
	Health Expertise	"engag*" OR "inclu*" OR "involv*" OR "lead*" OR "collaborat*" OR "stakeholder*" OR "authorit*" OR "expert" OR "department" OR "minist*" OR "council*" OR "team*" OR "*care" OR "service*" OR "unit*"	Explicit in term

2.3. Data Analysis

The analysis of health considerations in the selected SEA ERs is intended to account for both, the quantitative coverage as well as the qualitative consideration of health in SEAs. Data analysis focused on the presence of health considerations as well as their absence. This meant that each assessment criterion for health consideration (Table 2) was evaluated in three ways: firstly – whether it was present/absent in the reviewed ERs; secondly – in what phase of the SEA process the criteria was referenced; and thirdly – the content or quality of the data extracted/gathered for each criterion.

Using the Sysrev platform, data were extracted directly from SEA ERs for each assessment criterion and analysed according to a set of guiding questions (Table 3 – column 2). Extracted data were then exported into Microsoft Excel. The contents of the categorical and binary responses were analysed descriptively as well as using the quantitative evaluation method outlined in Table 3 below. While the content and quality of the free text responses were analysed according to the keywords and definitions applied to concepts 1 "health" (including evidence of an explicit definition of human and public health) and 2 – health "impact" (including evidence of the significance of potential positive and/or negative impact), "outcome" (including evidence of the assessment of health outcomes), "determinant", and "(in)equality" (including how the policy or plan being assessed might introduce health inequalities within and between groups of the population) (Section 2.2).

A simple composite scoring method was used to evaluate the quantitative coverage of health in SEA ERs whereby a score of 1 was counted to every assessment criterion that was included in the

ER (Table 3 – Column 3), another score of 1 was counted when that assessment criterion was covered in the SEA baseline (Table 3 – Column 4), an additional score of 1 was counted when the assessment criterion was covered in any of the other SEA phases – assessment, alternatives, mitigation, and monitoring (Table 3 – Column 5). The criteria for health definition, health impact significance, and health outcome assessment were scored in terms of whether they were present in the SEA ER and not what phase of the SEA process. Table 3 summarises the composite scoring method used for the assessment criteria.

Table 3. Quantitative Evaluation Method of Assessment Criteria.

Criteria	Question	Considered	SEA Process	
Health Definition	Is there an explicit definition of human and public health?	Yes = 1	--	--
Health Impact	Are there explicit references to the effects of the programme/policy on health?	Yes = 1	Baseline = 1	Assessment, Alternatives, Mitigation, Monitoring = 1
Health Impact Significance	Is there reference to the significance of potential health effects (+ive or -ive)? (i.e. scale, acceptability, etc.)	Yes = 1	--	--
Health Outcome	Are there explicit references to specific health outcomes?	Yes = 1	Baseline = 1	Assessment, Alternatives, Mitigation, Monitoring = 1
Health Outcome Assessment	Is there evidence of quantitative and/or qualitative assessment of health outcomes?	Yes = 1	--	--
Health Determinants	Are there explicit references to the wider determinants of health?	Yes = 1	Baseline = 1	Assessment, Alternatives, Mitigation, Monitoring = 1
Health Equity	Are there explicit references to health (in)equity or (in)equality?	Yes = 1	Baseline = 1	Assessment, Alternatives, Mitigation, Monitoring = 1
Health Expertise	Are there explicit references to the engagement of health expertise?	Yes = 1	--	--

Criteria	Question	Considered	SEA Process	
Totals (maximum scores)		8	4	4
Composite Score (maximum)		**8+4+4 = 16**		

3. Findings

3.1. Scoring

Table 4 presents scored results for the consideration of health in each of the 20 SEAs. Scores reflect whether assessment criteria were present/absent; in what phase of the SEA process a criterion was referenced; as well as the content or quality of the data extracted for each criterion (i.e. the significance of potential health impact, or the assessment of health outcomes). Percentages are given for the score out of a total of 16 (as shown in Table 3). Appendix A provides the complete details of the quantitative evaluation of assessment criteria for each SEA. Of note, the original SEA ER for Case Study 17 that was accessed via an official government website and translated from Swedish did not include sections for specific SEA phases (e.g. baseline, assessment, alternatives, mitigation, monitoring). As a result, a complete quantitative evaluation and composite score were not undertaken for this specific case study.

Table 4. Coverage of the Consideration of Health in SEA Case Studies

Case	Title	Score	%
18	Glasgow City Region's Adaptation Strategy and Action Plan 2021	**15**	93.8%
15	Plan for the Development of Water Pipes and Sewers in the Ústí Region 2020	**14**	87.5%
20	Improving the Quality of Life for the Residents - Residential Area Klein-Rusland (Zelzate) 2017	**14**	87.5%
11	Dutch Built and Biophysical Environment Vision 2018	**13**	81.3%
12	National Plan for the Transport System 2018–2029	**13**	81.3%
19	Leeds Local Plan (Update)	**13**	81.3%
5	Eastern and Midland Regional Spatial and Economic Strategy 2021-2027	**12**	75.0%
10	Limerick Shannon Metropolitan Area Transport Strategy 2022	**12**	75.0%
13	Report of the Strategic Environmental Assessment of the National Low-Carbon Strategy 2019	**12**	75.0%
14	Innovation and Digital Transition Program	**12**	75.0%
1	Common Agricultural Policy Strategic Plan 2023-2027	**11**	68.8%
4	National Roads Strategy 2040	**11**	68.8%
7	Regional Water Resources Plan - Eastern and Midlands 2022	**11**	68.8%
16	Occitanie Regional Biomass Plan 2020-2030-2050	**11**	68.8%

Case	Title	Score	%
3	National Climate Action Plan 2040	**10**	62.5%
6	Fingal County Development Plan 2023-2029	**10**	62.5%
9	Dundrum Local Area Plan 2023	**10**	62.5%
2	National Hazardous Waste Management Plan 2021-2027	**9**	56.3%
8	Dublin City Local Authority Climate Action Plan 2024-2029	**9**	56.3%
17	Waste Plan for Eslöv, Höör and Hörby Municipalities - Action Plan for Resource Management and Circular Material Flows 2023-2026	--	--

Scores for the quantitative evaluation of the coverage of health in SEA ERs ranged between 56.3% (9/16) to 93.8% (15/16). The average composite score was 72% (11.25/16) and the most commonly occurring scores were 11 (n=4) and 12 (n=4) out of 16. Overall, international European case studies scored higher in terms of their coverage and consideration of health (i.e. average composite score of 13) than SEAs from Ireland (i.e. average composite score of 10.5).

4. Discussion

4.1. Definition of Health

One fifth (n=4) of the SEA ERs analysed contained an explicit definition of human health. All four of those ERs were international European case studies with composite scores above 75%, which is above the average. Two reports reference the World Health Organization's definition of health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity", linking physical, mental and social aspects of health "to the biological and genetic factors of each individual, as well as to environmental and socio-economic factors" (i.e. Case 13 (I Care & Consult et al., 2019, p. 90)). Another ER defines health both, in terms of physical and mental health as well as community wellbeing and reduced inequality (Case 18 (Williams Sale Partnership, 2021)). Even without an explicit definition, many SEA ERs still recognise the links between human health and the physical and social environmental quality (e.g. water, housing) as well as standards that are important for public health – ranging from the quality of immediate shared and lived environments in terms of housing and neighbourhoods, urban and rural communities, to the status and quality of air as well as surface and groundwater. In numerous SEA ERs, there is an attempt to define health in more than just individual and physical terms. For example, Case 20 (Sweco Belgium, 2017) prioritises the collective wellbeing of neighbourhood residents in terms of their shared and lived environments. All the 20 ERs considered physical forms of health, while 18 out of 20 cases considered mental forms of health, and 17 out of 20 cases considered social forms of health.

4.2. Impacts on Health and Determinants of Health

All SEAs ERs included references to health impact and the wider determinants of health. Although references were not always explicit (i.e. "determinants of health"), there was recognition of the wider underlying components and context that influenced health and wellbeing, both negatively as well as positively. For example, the quality and liveability of an environment (i.e. Case 19 (Leeds City Council, 2023)), the social and physical connectivity of a community (i.e. Case 19 (Leeds City Council, 2023)), or access to adequate health services, employment, education, and other amenities (i.e. Case 4 (Roughan & O'Donovan, 2022); Case 15 (Sweco Hydroprojekt Assoc., 2021)). Apart from health, SEA topics frequently considering health determinants and impact pathways were air (and noise), water, and climate. While biodiversity, cultural heritage, and landscape rarely or never considered the impact on health or determinants of health.

There was a prioritisation of the health effects of more direct exposure pathways. For example, SEA ERs of transportation system plans and road strategies explored the direct health effects of exposure to air and noise pollution from increasing road and rail traffic (i.e. Case 12 (Trafikverket., 2017); Case 4 (Roughan & O'Donovan, 2022)). Another example was how, in the absence of appropriate mitigation, the construction of alternatives may lead to negative health impacts via the generation of noise, dust, and congestion (i.e. Case 8 – (Fehily Timoney, 2023)). SEA ERs of waste management and wastewater system plans explored the direct health effects of exposure to chemical contamination of water and soils from fertilizers, pesticides, herbicides, heavy metals, and pharmaceuticals or the biological contamination of water and soils from *verotoxigenic E. coli* or *Cryptosporidium* (i.e. Case 2 (RPS Group, 2021); Case 15 (Sweco Hydroprojekt Assoc., 2021)). SEA ERs would assess these health impact pathways through infrastructural and environmental determinants such as the number of new connections to the water supply system, the total population connected to water supply networks, as well as the number of situations where droughts had affected drinking water supply in terms of quality or quantity of water. In terms of these impact pathways, many SEAs ERs also acknowledged the national, European, and international environmental directives and standards, such as air quality limits of nitrogen dioxide (NO_2) and fine particles ($PM_{2.5}$), are important for protecting and determining public health.

Just over half (n=11; 7 – International, 4 – Irish) of the case studies contained references to the significance of potential health effects – be they positive or negative. For example, improving access to quality green and blue spaces resulted in significant positive effects for wellbeing and inequalities (Case 18 (Williams Sale Partnership, 2021)). Other ERs assessed details of the scale, directness, duration, and combination of a health effect associated with a proposed programme or policy. For example, an assessment of the likely significant effect of ammonia atmospheric emissions on health determined the impact to be low/negative, indirect, temporary, and short-term, with no cumulative effect with other plans, schemes, or programmes (Case 16 (L'Artifex, 2019) – Section 1.7, Table 1). Therefore, the SEA finds the residual impact acceptable. Another case detailed the difficulty of quantifying the extent of increased adverse health impacts and outlined, more crudely, where attempts have been made to reduce health risks to an "acceptable level" (Case 12 (Trafikverket., 2017, p. 136)).

4.3. Health Outcomes

All SEA ERs included explicit references to specific health outcomes. These ranged from physical health outcomes (such as all-cause mortality, high blood pressure, cardiovascular disease,

respiratory disease, waterborne diseases, vector-borne diseases, and road traffic-related injury) to mental health outcomes (such as stress, anxiety, and depression) and to social aspects that are acknowledged to have an explicit link to health (such as social inclusion, community cohesion, and the social value of residential areas). Occasionally, specific health outcomes were accompanied by means of measurement, such as disability life adjusted years due to heart attacks, strokes, hypertension, sleep disturbances, and general disturbance (Case 12 (Trafikverket., 2017)). However, less than a third (n=6) of the SEA ERs included any indication of a quantitative and/or qualitative assessment of health outcomes. All of these ERs were International.

4.4. Health Equity

70% (n=14; 7 – International, 7 – Irish) of the SEA ERs made explicit reference to health equity. Most references to health equity were found in the baseline with very few arising elsewhere. In 42% (n=6; 1 – International, 5 – Irish) of the SEAs, equity was generalised in terms of "vulnerable populations" or "disadvantaged people". While 47% (n=8; 6 – International; 2 – Irish) of the SEA ERs drew specific attention to existing vulnerable groups; such as persons living with disability or elderly people. Examples included how transport related strategies might create health inequalities by making certain road users more vulnerable to injury or death (Case 4 (Roughan & O'Donovan, 2022)). Other examples included reference to elderly farmers being at higher risk of accidents (Case 1 (RSM Ireland, 2022)), or gender equality and the health disparities between men and women (Case 14 (IDAD, 2022)).

4.5. Health Expertise

A quarter (n=5; 3 – International, 2 – Irish) of the reviewed SEA ERs referred to the engagement of health expertise during the SEA process. Examples included reference to an online scoping workshop that included consultees from national institutes for public health (Case 2 (RPS Group, 2021)), or consultation with national health services on the potential health effects as a result of implementation (Case 9 (Conservation and Amenity Advisory Services, 2023)). While other SEAs included acknowledgements of the contributions of health experts and institutions, including individuals from the ministry of health (Case 11 (Maronier et al., 2019)), regional health administrations (Case 14 (Universidade de Aveiro, 2022)), as well as those undertaking public health impact assessments (Case 15 (Sweco Hydroprojekt Assoc., 2021)).

4.6. SEA Phases and Context

Both the quantity and quality of the consideration of health was the greatest in the baseline phase. Whereby the baselines of all 20 SEA ERs reviewed contained references to health impacts, outcomes, and determinants. While references to health equity were found in the baselines of 15 case studies. However, fewer SEAs maintained that consideration for health throughout the alternative (n=13), mitigation (n=10), and monitoring (n=13) phases. The majority of SEAs with an overall high composite score (>80%) for the coverage and consideration of health tended to be plans or policies pertaining to the local or sub-national level, such as local authority plans (Case 19 (Leeds City Council, 2023)), municipal climate action strategies (Case 18 (Williams Sale Partnership, 2021)), or complex local development projects (Case 20 (Sweco Belgium, 2017)). Overall, SEAs from other European nations scored higher in terms of their coverage and consideration of health than those case studies from Ireland. This is consistent with the international European case studies representing good practice examples.

4.7. Limitations

As indicated in our methodology, 8 SEA ERs were translated into English from their original language. Despite the efficiency of doing so and the performance of the software used, we acknowledge that some of the quality of how health was considered in the ER text might have been lost in this translation process. Furthermore, we only analysed final SEA ERs and, as such, elements of the consideration of health throughout the entire SEA process might have been missed. For example, the inclusion of health expertise in the early scoping stages may not always be mentioned in the final SEA ERs but may be noted in the SEA Scoping Report. It might also be beneficial to conduct a targeted review of the plans and programmes themselves to determine whether any health-related SEA recommendations were translated into the final plan/programme. However, this would be considered an indicator of SEA effectiveness and denote a measured change in plan or programme rather a change in health outcomes or the consideration of health. Some of these limitations are addressed in Deliverable 5 where the findings of a series of interviews with the practitioners involved in the selected case studies are presented.

5. Recommendations

5.1. Health in All SEA Phases

The review of the selected 20 international and national SEAs found that the consideration of health was greatest in both quantity and quality for the baseline phase. Fewer SEAs maintained such consideration into the alternative (n=13), mitigation (n=10), and monitoring (n=13) phases. While baseline health data are an important starting point for the effective and proportionate consideration of health in SEA, measures for mitigating potential health impacts and inequities and methods for monitoring health data are crucial during the implementation of plans and programmes (Fischer et al., 2010). This seems to coincide with the lack of quantitative/qualitative assessment of health outcomes, whereby less than a third (n=6) of the SEAs analysed included any indication of a quantitative and/or qualitative assessment of health outcomes. Largely, what we found was that health considerations raised in the baseline appeared as stand-alone items, such as figures referencing self-reported health and changing population demographics, that were rarely revisited again in other SEA stages. These findings are consistent with previous evaluations of health in European-based SEAs (Fischer et al., 2010; Pyper et al., 2022).

Based on the findings, it is recommended that the effective and proportionate consideration of health in SEA include health impacts, determinants, outcomes, equity, and experts in the baseline phase all the way through to the mitigation and monitoring phases.

5.2. What We Define, We Measure

The assessment of 20 SEA ERs shows that only four included an explicit definition of health – all of which were International cases. These same SEAs also tended to score high in other assessment criteria of health considerations measured. In particular, three out of the four were of the few reports (n=6; 6 – International, 0 – Irish) that also included methods for the assessment of health outcomes. In addition, it was found the context of the SEAs influenced how health was defined and scoped in or out. For example, SEAs that were based on local or sub-national level plans, as well as those based on sector specific plans were able to apply more focused boundaries for how health was considered – resulting in overall higher composite scores (>80%). While, often, the consideration for health in national level cross-sectoral strategies and plans was vast, vague, and uncertain. In this context, defining health in terms that are meaningful and manageable for SEA purposes may require more expertise, time, and resources. Even when health is defined in broad and aspirational terms, according the WHO framing, setting out a clear vision and initial scope of

what is being considered in the SEA process is necessary for consistent measurement, as well as both meaningful and practical assessment.

Based on the findings, it is recommended that the effective and proportionate consideration of health in SEA is predicated on being able to define conceptual, methodological, and policy boundaries.

5.3. Deliberate Engagement of Health Expertise

Out of the 20 SEAs, a quarter (n=5; 3 – International, 2 – Irish) referred to the engagement of health expertise during the SEA process in their final ERs. The inclusion of health expertise in the early scoping stages may not always be mentioned in the ER. In any case, there was little to no indication of engaging health expertise at later stages in the process, such as mitigation or monitoring. The deliberate and early engagement of health expertise would be an effective use of time and resources towards improving the consideration of health in SEA, including the definition of meaningful assessment boundaries and methodological approaches.

Based on the findings, it is recommended that the effective and proportionate consideration of health in SEA requires the deliberate engagement of focused health expertise throughout different stages of the SEA process.

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Acronyms and Abbreviations

ER	Environmental Report
NO_2	Nitrogen Dioxide
$PM_{2.5}$	Particulate Matter - Fine Particles
SEA	Strategic Environmental Assessment
WHO	World Health Organization

Appendix A: Detailed Composite Scoring of 20 SEA Case Studies

ProHealth SEA Case Study Dataset and Composite Scoring.xlsx