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**Promoting ratification and application of the Convention and the Protocol:
draft guidance on assessing health impacts in strategic environmental assessment****Draft guidance on assessing health impacts in strategic
environmental assessment****Note by the Bureau***Summary*

The present note contains draft guidance on assessing health impacts in strategic environmental assessment, as foreseen in the workplan for the implementation of the Convention on Environmental Impact Assessment in a Transboundary Context and its Protocol on Strategic Environmental Assessment for the period 2017–2020 (ECE/MP.EIA/23/Add.1–ECE/MP.EIA/SEA/7/Add.1, decision VII/3–III/3, annex II, item IV.1) and as agreed by the Working Group on Environmental Impact Assessment and Strategic Environmental Assessment at its seventh meeting (Geneva, 28–30 May 2018).

The draft guidance has been prepared by consultants funded by the European Investment Bank and reviewed and agreed by the Bureau at its meeting in Geneva, on 25 and 26 February 2020. The present draft document is the result of the substantial revision of an earlier draft (ECE/MP.EIA/WG.2/2019/5) submitted to the eighth meeting of the Working Group (Geneva, 26–28 November 2019), taking into account the comments made during and after that meeting by the delegation of the European Union, and the inputs from a task force composed of representatives of Austria, Finland, Ireland and Slovenia. In addition, the present draft has been supplemented with selected case studies from Czechia, Estonia and



the Netherlands to illustrate practical considerations for the assessment of health and the involvement of health authorities in specific strategic environmental assessments.

The Working Group is invited to review and comment on the draft prior to its submission to the Meeting of the Parties to the Protocol for adoption at its next session (Vilnius, 8–11 December 2020), through decision IV/5 (available for the Working Group in document ECE/MP.EIA/WG.2/2020/5).

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I. Introduction

1. The present guidance was commissioned by the Parties to the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) under the auspices of the United Nations Economic Commission for Europe (ECE). It was developed by consultants in collaboration with ECE, the World Health Organization (WHO) and the European Investment Bank, with funding from the European Investment Bank. It is being released as practical guidance on the application of the Protocol. The mandate for the guidance is derived from the workplan for the implementation of the Convention and its Protocol for the period 2017–2020 (ECE/MP.EIA/23/Add.1–ECE/MP.EIA/SEA/7/Add.1, decision VII/3–III/3, annex II, item IV.1) adopted by the Parties to the Protocol at their third session (Minsk, 13–16 June 2017).
2. The present guidance aims to assist Parties and future Parties to the Protocol in efficiently and consistently addressing relevant health impacts in the practical application of strategic environmental assessment. It builds on the recommendations provided in the *Resource Manual to Support Application of the UNECE Protocol on Strategic Environmental Assessment* (Resource Manual),¹ particularly in its annexes A1.1 and A5.1, prepared in collaboration with WHO.²
3. According to its article 1, the objective of the Protocol is to provide for a high level of protection of the environment, including health, by:
 - (a) Ensuring that environmental, including health, considerations are thoroughly taken into account in the development of plans and programmes;
 - (b) Contributing to the consideration of environmental, including health, concerns in the preparation of policies and legislation;
 - (c) Establishing clear, transparent and effective procedures for strategic environmental assessment;
 - (d) Providing for public participation in strategic environmental assessment;
 - (e) Integrating by these means environmental, including health, concerns into measures and instruments designed to further sustainable development.
4. Article 5 of the Protocol states that each Party shall establish whether particular plans or programmes are likely to have significant environmental, including health, effects. Stages and tasks of an ensuing strategic environmental assessment procedure consist of scoping, preparation of an environmental report, public participation, consultation with environmental and health authorities, transboundary consultations and decision-making. Significant environmental, including health, effects of the implementation of the plans and programmes, adopted under article 11 of the Protocol shall be monitored by each Party.
5. The Protocol, and therefore the present guidance, is not limited to transboundary effects. It is important that, in all cases of application, the level of health coverage within strategic environmental assessment should be proportionate. The present guidance therefore acknowledges that strategic environmental assessment is applied in different ways and contexts.
6. The present guidance focuses on the context within which strategic environmental assessment is applied and through which key environmental, including health, issues and reasonable alternatives are determined. Furthermore, the strategic environmental assessment

¹ United Nations publication, ECE/MP.EIA/17, available at www.unece.org/fileadmin/DAM/env/documents/2011/eia/ece.mp.eia.17.e.pdf.

² The *Resource Manual to Support Application of the UNECE Protocol on Strategic Environmental Assessment* (Resource Manual) was initially prepared as decided by the first meeting of the Signatories to the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (Cavtat, Croatia, 1–4 June 2004). At its first session (Geneva, 20–23 June 2011), the Meeting of the Parties to the Protocol welcomed the Resource Manual, supplemented with a health annex (ECE/MP.EIA/SEA/2, decision I/3).

procedure and suitable methods and tools are introduced and details of specific health issues and approaches for considering them are established. The guidance consists of the following four main parts:

- (a) The present introduction, which explains the approach taken in accordance with the Protocol;
- (b) Principles for the integration of health into strategic environmental assessment (following on from those introduced in the Resource Manual);³
- (c) The integration of health into strategic environmental assessment in practice;
- (d) Three case studies on integrating health into strategic environmental assessment.

7. The guidance contains recommendations for good practice but does not create new obligations in relation to the Protocol.

8. The Protocol is aligned with, but also differs slightly from, the European Union Strategic Environmental Assessment Directive,⁴ which is adopted as part of the European Union *acquis communautaire*, applicable to the European Union member States. The Protocol is accessible to all States Members of the United Nations.

9. As of February 2020, the Protocol had 33 Parties, including the European Union.⁵ Strategic environmental assessment is currently a formal requirement in over 50 countries (Parties as well as non-Parties to the Protocol) and is used by development banks and other organizations.

II. Principles for considering health in strategic environmental assessment

A. Defining health

10. When considering health in strategic environmental assessment, it is important to note that a relatively small group of health conditions is responsible for a large part of the disease burden in Europe.⁶ Non-communicable diseases – including diabetes, cardiovascular diseases, cancer, chronic respiratory diseases and mental disorders – are particularly relevant. Many of the driving forces affecting such non-communicable diseases come from outside the health sector and are associated with plans and programmes prepared in other sectors that fall under the remit of the Protocol. This situation highlights the importance of intersectoral cooperation when undertaking environmental health burden reduction activities.⁷

11. While non-communicable diseases dominate the disease burden in high-income countries, communicable diseases, particularly for young children, are responsible for much of the disease burden in low- and middle-income countries. This factor will need to be considered when applying health-inclusive strategic environmental assessment in low- and middle-income countries.

³ United Nations publication, ECE/MP.EIA/17.

⁴ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, Official Journal of the European Communities, L 197 (2001), pp. 30–37.

⁵ Up-to-date status of ratifications is available at https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-4-b&chapter=27&clang=_en.

⁶ World Health Organization (WHO) Regional Office for Europe, “Non-communicable diseases”, available at www.euro.who.int/en/health-topics/noncommunicable-diseases.

⁷ A. Prüss-Ustün and others, Preventing disease through healthy environments: A global assessment of the burden of disease from environmental risks (Geneva, WHO, 2016).

12. The Protocol explicitly refers to health wherever the term “environmental effects” is mentioned. The importance of fully covering health in strategic environmental assessment has also been set out by WHO and by the third Ministerial Conference on Environment and Health (London, 16–18 June 1999),⁸ which is cited in the Protocol’s preamble.

13. A comprehensive approach to health, underpinned by the WHO definition of health, is recommended in strategic environmental assessment. The WHO Constitution⁹ states that: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”

14. This WHO definition has two parts:

(a) The first part emphasizes how human health encompasses mental and physical health and social well-being. Health affects, and is affected by, environmental, social and economic factors. These factors are heavily influenced by actions in non-health sectors;

(b) The second part emphasizes the importance of addressing and treating disease and infirmity. This is the role of the health sector.

15. The WHO definition emphasizes positive aspects of health, indicating that strategic environmental assessment should not focus solely on the adverse aspects of ill health, as is often the case.

16. The focus of health in strategic environmental assessment will usually be on population health. Populations can be defined geographically or by shared characteristics, for example, gender, ethnicity, age and sexuality. Types of population vulnerability relevant to health that a strategic environmental assessment may wish to consider include: age (young and old); income (job insecurity or low income); health status (existing poor health and carers); social disadvantage (social isolation or discrimination); and access and geographic (areas of deprivation or barriers to services).

B. Framing health in different strategic environmental assessment applications

17. The context of each strategic environmental assessment needs to be understood in order to devise its appropriate format and decide on how health should be considered. The figure below introduces typical aspects to consider. Contextual aspects are subsequently described in further detail. The format of strategic environmental assessment is then elaborated on in section III below.

18. The level of detail for assessment is determined by the nature and content of the underlying plan or programme. For example, in tiered systems (ideally organized from policies and legislation through plans and programmes to projects), more geographical, technological and population details tend to be provided at lower levels.¹⁰ This is crucial when deciding on reasonable alternatives and issues to be considered and, ultimately, on how to integrate health into strategic environmental assessment.

⁸ Declaration of the Third Ministerial Conference on Environment and Health, London, 16–18 June 1999 (Commission of the European Communities/WHO Regional Office for Europe). Available at www.euro.who.int/en/publications/policy-documents/declaration-of-the-third-ministerial-conference-on-environment-and-health.

⁹ WHO, Constitution of the World Health Organization.

¹⁰ Terminology is not used consistently, varying from country to country, and (considering the issues covered) what may be called a programme in one country may be referred to as a plan in another and vice versa. In the present document, the terminology used is the same as that routinely employed in the relevant international literature.

Strategic environmental assessment: context and format – aspects to consider



Abbreviations: SEA, strategic environmental assessment.

Source: adapted from T.B. Fischer, “Health in SEA”, in *Health in Impact Assessments: Opportunities not to be missed*, R. Fehr and others, eds. (Copenhagen, WHO Regional Office for Europe, 2014).

19. An important consideration is how specific the assessment should be about the likely health impacts. For example, in a national plan, the focus may be on national population health, with some scope for differentiation between populations in different geographical areas. Furthermore, the possibility for transboundary effects will frequently have to be considered. In a local plan, the focus is likely to be on the local population and different groups therein. The possibility for transboundary effects will depend on the location with regard to other countries and the type of developments considered.

20. In all cases, the level of detail of the likely significant effects on health needs to be proportionate to the plan or programme (as well as, in accordance with art. 13, to the extent appropriate, policy or legislation) and its reasonable alternatives (art. 7 (2)). Strategic environmental assessment usually relies on the use of existing data and the quality of available data needs to be established.

21. Given the strategic (which typically means long-term and, therefore, more uncertain) nature of plans and programmes when compared with projects, details on emerging health issues and health priorities can be difficult to confirm and uncertain, but still need to be captured and assessed.

22. The Resource Manual states that developing appropriate institutional capacity is key to the effective implementation of the Protocol.¹¹ This includes the expertise of those conducting and managing the assessment (skilled and competent experts), as well as the resources available to adequately deal with the issues covered in strategic environmental assessment. Institutional capacity to conduct strategic environmental assessment effectively depends on various aspects, such as political, social and cultural aspects, as well as the state and nature of economic development, processes and decision-making traditions.

23. The implementation reports of the Protocol¹² are important tools for understanding specific capacity needs and should be made available to those conducting strategic environmental assessment in practice. In the context of developing appropriate strategic environmental assessment institutional capacity, article 3 (3) of the Protocol requires that “Each Party shall provide for appropriate recognition of and support to associations, organizations or groups promoting environmental, including health, protection in the context of this Protocol.”

¹¹ United Nations publication, ECE/MP.EIA/17, chap. B1.2.

¹² United Nations Economic Commission for Europe (ECE), “Review of implementation (national reporting)”. Available at www.uncece.org/env/eia/implementation/review_implementation.html.

24. Strategic environmental assessment is only likely to be systematically applied in the presence of formal (for example, legal) requirements. Assessment of impacts requires environmental, including health, objectives and criteria. Frequently, sector or administration specific objectives are provided and defined in legislation and by supporting guidance. While often relevant, such objectives may only reflect narrow health responsibilities. A review in the light of the requirements set out by the Protocol is therefore necessary.

25. The way strategic environmental assessment is applied may also be associated with country- or region-specific and sectoral requirements and traditions. For example, the way spatial plans are approached usually differs from transport programmes and these differences are the starting point for designing situation-specific strategic environmental assessments. Health will need to adapt to the different sectoral practices. For example, transport affects health through emissions to air. Relevant key health issues for transport programmes are therefore likely to be respiratory and cardiovascular health from emissions. Furthermore, locational choices in regional (spatial/land use) plans can influence distances travelled and the choice of transport mode. Relevant key health issues in spatial plans are therefore likely to be associated with physical activity and, for example, obesity from modal choice.

26. According to the Resource Manual, good practice strategic environmental assessment is carried out with “fairness, impartiality and balance”.¹³ However, fairness, impartiality and balance are unlikely to be achieved in situations where one or several stakeholders dominate the development of a plan or programme and the associated strategic environmental assessment. This means approaching the integration of substantive issues with caution. Powerful interests may override environmental, including health, issues that strategic environmental assessment aims to protect.

27. In many countries, different administrative levels (national, regional and local) are allocated specific decision-making tasks. This may mean that specific alternatives are assessed at a specific administrative level. For example, comprehensive network level plans and their strategic environmental assessments might only be conducted by national administrations, with regional and local administrations focusing on, for example, transport corridors.

III. Strategic environmental assessment and health in practice

28. Plans and programmes that are subject to strategic environmental assessment are key documents for framing the environment for years to come. In this context, strategic environmental assessment can be the key tool for achieving an improvement of health. This includes strategic environmental assessment supporting the setting of the direction of a plan or programme in a way that promotes (positive) health opportunities, as well as avoiding (negative) health challenges.

29. Articles 6 to 11 of the Protocol set out the strategic environmental assessment procedure. Procedural stages and tasks are further explored in subsection “B. Step 2” below.

30. According to article 2 of the Protocol, substantive determinants of health for consideration in strategic environmental assessment include biophysical (flora, fauna, biodiversity, soil, climate, air, water), as well as landscape aspects and natural sites. Material assets and cultural heritage also need to be considered. Interaction among these different determinants of health needs to be assessed.

31. Furthermore, and in line with the Resource Manual,¹⁴ it is good practice to consider social and economic determinants of health, as well as behavioural aspects with a connection to health and social well-being. This is underpinned by the WHO definition of health as set out in paragraph 13 above.

32. Health in strategic environmental assessment raises interpretation and implementation challenges. These can include the relative power of health-related institutions/teams and the

¹³ United Nations publication, ECE/MP.EIA/17, p. 164.

¹⁴ Ibid., annex A.1.1.

level of understanding of health of those involved in strategic environmental assessment, where there can be knowledge gaps, for example, with regard to non-biophysical determinants of health.¹⁵ Furthermore, the identification and subsequent integration of a wide range of health determinants can be conceptually and practically challenging. Articles 5 (2), 6 (2) and 9 (3) of the Protocol require that environmental and health authorities be consulted. Wider capacity-building initiatives may be particularly useful.

A Step 1 - Understanding the purpose of a plan or programme

33. To integrate health into strategic environmental assessment effectively, a clear understanding of a given plan or programme's purpose is essential, as this determines what issues, including health and alternatives, should be covered. This follows on from what is explained in section II B above.

34. Table 1 below provides an example of what issues may be addressed at different systematic decision tiers, taking the transport and energy sectors as examples. Issues may be addressed through questions asked in associated strategic environmental assessments. All questions shown here are important in a tiered decision-making system.

Table 1

Issues to be addressed in strategic environmental assessments at different tiers¹⁶

<i>Tier</i>	<i>Issues addressed in strategic environmental assessments</i>
Energy/Transport policies or legislation, (to be assessed to the extent appropriate, in accordance with art. 13)	<p>How does existing energy/transport infrastructure/use support health?</p> <p>What conflicts with maintaining/improving health arise from the current approach?</p> <p>What health and benefits would accrue (or risks arise) from modifying energy/transport infrastructure or use?</p> <p>Which options are better for health and what would be a realistic mix/transition?</p>
Energy/Transport plans	<p>What energy/transport infrastructure/use maximizes positive health effects and minimizes negative health effects?</p> <p>What health trade-offs are involved, (for example, land-take)?</p>
Energy/Transport programmes	<p>What infrastructure developments should be given priority, considering costs and benefits (for example, alternative ways to spend money to improve health) and health outcomes, positive and negative?</p>
Projects (subject to environmental impact assessment)¹⁷	<p>What are the environmental, social and economic health effects of specific projects and how can they be avoided, mitigated or enhanced?</p>

Source: adapted from T.B. Fischer, *The Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach* (London, Earthscan, 2007).

¹⁵ According to WHO: "Many factors combine together to affect the health of individuals and communities. Whether people are healthy or not is determined by their circumstances and environment". See WHO, "Health Impact Assessment", available at www.who.int/hia/evidence/doh/en/.

¹⁶ Arrangements will differ in different countries and systems.

¹⁷ A key ingredient for effective strategic environmental assessment is an awareness of what issues should be assessed and what issues are addressed elsewhere. This is why the project level is included here.

B. Step 2: Conducting health-inclusive strategic environmental assessment

1. Linking assessment with the plan and programme procedure

35. The strategic environmental assessment procedure should be linked with the process of preparing the plan or programme. Full integration of both processes may be possible, depending on the specific requirements and context. Strategic environmental assessments are generally led by a public authority,¹⁸ which may use external experts to prepare associated reports. The role of the health authorities in strategic environmental assessment is likely to be focused on review and evaluation of the assessment of health impacts.

36. Although promoting a holistic coverage of health is important, the intention is not to detract from the other effects covered in strategic environmental assessment. It is good practice, however, to make links to health across other relevant effects. The aim is to support an approach to assessment under which the impacts considered are not reduced to various sentinel health issues but are rather considered broadly through the determinants of health and their distribution among the populations affected.¹⁹

37. Pursuant to article 7 (2) of the Protocol, paragraph 1 of annex IV to the Protocol requires the environmental report to (as may reasonably be required) identify the main objectives of the plan or programme. This is distinct from the annex IV, paragraph 5, requirement to identify the relevant objectives established at the international, national and other levels. For health, good practice in meeting the annex IV, paragraph 1, requirement is to recognize the plan or programme's objective to improve physical, mental and social well-being across current and future populations (including vulnerable groups and those who would be most affected by the implementation of the plan or programme), with particular regard to some or all of the categories of determinants of health set out in table 2 below (i.e. health inequalities, healthy lifestyles, safe and cohesive communities, socioeconomic conditions, environmental conditions and health- and social-care services). Without a suitably broad health objective (and noting that objectives inform assessment in many methodologies), considerations that could undermine population health may be overlooked, or opportunities to improve population health may be missed. A proportionate strategic environmental assessment (with its many other considerations) would necessitate a succinct approach, possibly with one annex IV, paragraph 1, health objective (encompassing a broad view of health).

38. The Resource Manual introduces some analytical and participatory tools and methods.²⁰ The most commonly used methods and tools in strategic environmental assessment include:

(a) For plans and programmes that initiate specific land uses or projects where cause-effect chains can be readily identified:

(i) General applicability: checklists, impact matrices, impact networks, predictive modelling, case comparisons and collective expert judgements;

(ii) Site specific spatial/land use, transport and energy plans: overlay mapping and Geographic Information Systems;

(iii) Transport and energy programmes: life-cycle assessment and multicriteria analysis.

(b) For plans and programmes where effects are more indirect and generalized, including, for example, policy or future vision-oriented parts of spatial/land use, transport and energy plans: Strengths, Weaknesses, Opportunities, Threats analysis, scenario

¹⁸ United Nations publication, ECE/MP.EIA/17, chap. A1.4.

¹⁹ P. Harris and F. Viliani, "Strategic health assessment for large-scale industry development activities: An introduction", *Environmental Impact Assessment Review*, vol. 68 (January 2018), pp. 59–65.

²⁰ United Nations publication, ECE/MP.EIA/17, chap. A.5.

building,²¹ matrices of conflicts and synergies, decision trees, trend analysis and extrapolation, simulation modelling and comparative risk assessment.

39. There are other tools that are specifically and routinely used for the assessment of health impacts. These have general applicability and include, for example, health hazard checklists, qualitative and quantitative risk assessment, surveys of health risk perception and methodologies for rapid assessment of health risk and impacts.²²

40. Under the heading “screening”, article 5 (1) of the Protocol establishes that each Party shall determine whether particular plans and programmes are likely to have significant environmental, including health, effects. This can be achieved “either through a case-by-case examination or by specifying types of plans and programmes or by combining both approaches”. The outcome would be a decision on whether, subsequently, a further strategic environmental assessment procedure will be conducted. In this context, article 5 (2) requires that environment and health authorities (see art. 9 (1) of the Protocol) be consulted. Annex III provides criteria to support determining likely significance. These include the identification of: health considerations that promote sustainable development; health problems; risks to health; and the probability, duration, frequency, reversibility, magnitude and extent of health effects. The cross-cutting nature of health means that, as a topic, it has links with many of the other topics considered in strategic environmental assessment. However, in practical terms, it would be rare for health to be the sole reason for determining whether a plan or programme should be subject to strategic environmental assessment.

41. Screening for strategic environmental assessment is meant to support developing a proportionate understanding of the relationship between a plan or programme and relevant determinants of health (environmental, social). It is good practice for a decision on whether or not to subsequently conduct a further strategic environmental assessment procedure to be explicit about the role health considerations have played and to explain the health criteria used.

42. Article 12 (1) states that significant environmental, including health, effects of the implementation of a plan or programme should be monitored. Article 12 (2) requires that monitoring results be made available to health authorities, in accordance with national legislation. Good practice monitoring may include the following components:

- (a) Ensuring compliance with the points specified in the strategic environmental assessment and the associated plan or programme;
- (b) Evaluating whether actual impacts are in line with what was envisaged;
- (c) Remedial action in case of unforeseen adverse effects;
- (d) Dissemination of monitoring documentation.

43. Where appropriate, it is good practice to lay down certain monitoring arrangements, in which actions, responsibilities, timelines and reporting requirements are clearly defined. There are technical and institutional aspects to monitoring.

44. The technical aspects to designing monitoring arrangements are related to ways in which health change can be tracked. Steps may include defining the population(s) to be monitored and specifying the aims of the monitoring.²³ Routine public health indicators can

²¹ See, for example, WHO Regional Office for Europe, Health economic assessment tool (HEAT) for walking and for cycling: Methods and user guide on physical activity, air pollution, injuries and carbon impact assessments (Copenhagen, 2017). Available at www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/publications/2017/health-economic-assessment-tool-heat-for-walking-and-for-cycling.-methods-and-user-guide-on-physical-activity,-air-pollution,-injuries-and-carbon-impact-assessments-2017.

²² See, for example, United Kingdom of Great Britain and Northern Ireland, Wales Health Impact Assessment Support Unit, “Health Impact Assessment: A practical guide”. Available at https://whiasu.publichealthnetwork.cymru/files/1415/0710/5107/HIA_Tool_Kit_V2_WEB.pdf.

²³ M. Douglas and others, eds., Health Impact Assessment of Transport Initiatives: A Guide (Edinburgh, National Health Scotland/Medical Research Council Social and Public Health Sciences Unit/Institute of Occupational Medicine, 2007). Available at www.healthscotland.com/documents/2124.aspx.

be used where available and suitable. Developing bespoke health-monitoring arrangements is not recommended, unless there are specific and significant environmental, including health, effects arising from the plan or programme itself that are not considered elsewhere. Generally speaking, integration with other existing or planned monitoring (and auditing) initiatives is important. Consistent with article 12 (1), it is recommended that adaptive management measures, for example, governance arrangements to review the plan or programme, be defined for situations where monitoring identifies consistent unforeseen significant health effects, for example, across several projects brought forward under the plan or programme.

45. The institutional aspects of designing monitoring arrangements may include specifying who will be responsible for associated activities, including intersectoral work within government and links outside government.²⁴ Subsequently, the further strategic environmental assessment procedure is introduced and explained.

2. Scoping

46. Article 6 (1) of the Protocol describes the scoping stage, whereby the relevant information to be included in the environmental report is determined (in accordance with art. 7 (2)). This stage aims at determining the relevant likely significant environmental, including health, effects to be assessed, and an outline of the plan or programme's possible reasonable alternatives. In this context, article 6 (2) requires that health authorities (see article 9 (1)) be consulted. In practice, scoping decisions are frequently subsequently reviewed, for example, in the light of new evidence that has emerged. This stage, therefore, has an iterative character.

47. It is recommended that a methodology for establishing potential impact significance be defined in scoping and then consistently used throughout the environmental report in order to make results transparent, reproducible and comparable. A typical and simple method that can be used is an impact sensitivity matrix where sensitivity of the environment is compared with expected impact magnitude. Professional judgment on the likely significance of health effects is usually key to determining impact significance.

48. Public health authorities can support the identification of key health effects. In this context, recommendations regarding the level of detail and advice on procedures for engagement of health stakeholders can be provided.

49. An important initial task in strategic environmental assessment is to conduct a simple expert opinion-based compatibility test of objectives and criteria used for assessing impact significance. If there is inconsistency, integration of issues representing different health dimensions (for example, biophysical, social and behavioural) in assessment can be problematic. A compatibility test may find that:

(a) Integration can reinforce beneficial health outcomes. For example, there are recognized co-benefits to public health from policy actions that reduce greenhouse gas emissions: reducing fossil fuel combustion and improving air quality leads to a reduction in chronic diseases and in associated health-care costs, which in turn brings economic advantages;²⁵

(b) Integration will be difficult to achieve because there is conflict between objectives. For example, an objective to protect biodiversity or cultural heritage may aim to restrict use of green or blue space for physical activity and access to nature, both of which are beneficial for physical and mental health;

(c) Conflicts may exist across a population. For example, an economic objective may aim at reducing health risks for working age people through better employment, but this may lead to increased emissions, in turn increasing health risks for the young and the frail and elderly.

²⁴ WHO, "Health in all policies (HiAP) framework for country action", Health Promotion International, vol. 29, No. S1 (June 2014), pp. i19–i28. Available at <https://doi.org/10.1093/heapro/dau035>.

²⁵ A. Haines and others, "Public health benefits of strategies to reduce greenhouse-gas emissions: Overview and implications for policymakers", *The Lancet*, vol. 347, No. 9707 (19 December 2009–1 January 2010), pp. 2104–2114. Available at [https://doi.org/10.1016/S0140-6736\(09\)61759-1](https://doi.org/10.1016/S0140-6736(09)61759-1).

50. In relation to mandatory consultation of health authorities, the national/regional/local public administration or organization responsible for public health can advise the strategic environmental assessment team or experts and the plan or programme promoter of the potential intended or unintended consequences for health.

51. Generally speaking, it is good practice to establish, as early as possible, the roles and responsibilities of those who should be approached across sectors and administrations, for example, in health, transport, energy and spatial/land use planning.

52. Table 2 below provides an indicative checklist of determinants of health that is recommended for consideration at the scoping stage.

Table 2

Illustrative determinants of health to consider in scoping

<i>Will the plan/programme/project lead to changes in:</i>	<i>Y/N</i>	<i>Links/Action</i>
Health inequalities		
Health inequalities between population groups		
Health inequalities between geographical areas		
Healthy lifestyles		
Healthy lifestyles and leisure activity opportunities		
Nutrition		
Safe and cohesive communities		
Housing, buildings and connecting routes		
Poverty, social exclusion and crime		
Socioeconomic conditions		
Education		
Employment (including quality)		
Environmental conditions		
Air quality		
Water		
Soil		
Noise and vibration		
Health- and social-care services		
Access to health- and social-care activities/services		
Occupational safety and health		

Source: Adapted from J. Nowacki, “The Integration of health into environmental assessment – with a special focus on strategic environmental assessment”, PhD dissertation, Bielefeld University, 2018. Available at www.euro.who.int/en/health-topics/environment-and-health/health-impact-assessment/publications/2018/the-integration-of-health-into-environmental-assessments-with-a-special-focus-on-strategic-environmental-assessment-2018.

53. The process and rationale for identifying the key determinants of health relevant to a plan or programme’s intended (and potential unintended) consequences can be informed by

considering a simple source-pathway-receptor linkage model.²⁶ Such an approach is appropriate in situations where the anticipated change (source), impact pathways and receiving population (receptor) are clear.

54. However, there may be situations where a simple source-pathway-receptor approach may not be possible, particularly in the presence of higher levels of complexity and uncertainty. In those situations, a Driving Force, Pressure, State, Exposure, Effect, Action framework approach – as introduced below – may be more appropriate.

Driving Force, Pressure, State, Exposure, Effect, Action framework

55. The Driving Force, Pressure, State, Exposure, Effect, Action framework approach²⁷ traces the relationship between health effects and other factors in society. The framework approach can: show how plans and programmes (and, if appropriate, policies and legislation, according to art. 13 of the Protocol) translate into health effects at the community and population levels; serve as a simple tool for use by an assessor or in a workshop situation to develop a pathway, or conceptual map, by which changes in determinants of health lead to changes in health effects; and be used to map out potential health changes and to identify actions for mitigation.

56. Driving forces for plans and programmes can include, for example, population growth, economic development and technological advances in a country, region or locality. Pressure (the main cause of impacts) may then be exerted by production and consumption patterns and associated waste releases and emissions. In order to develop an understanding of effects, it is important to know about the state of, for example, population health and existing natural resources and hazards, as well as existing pollution levels. Exposure to health risks then needs to be considered (for example, absorption capacity and acceptable doses/stresses). These can be translated into health effects (with regard to well-being, morbidity and mortality).

57. Table 3 below sets out ways in which the framework can be used. By describing the content relevant for the plan or programme for each stage of the framework, a useful representation of the possible impacts and opportunities can be generated, as well as ways to mitigate the adverse effects.

²⁶ The source-pathway-receptor linkage model allows for an evaluation of environmental (and other) consequences on human populations. The model was first described in M.W. Holdgate, *A Perspective of Environmental Pollution* (Cambridge, Cambridge University Press, 1979).

²⁷ Y. von Schirnding, *Health in Sustainable Development Planning: The Role of Indicators* (Geneva, WHO, 2002); and D. Briggs, C. Corvalán and M. Nurminen, eds., “Linkage methods for environment and health analysis: General guidelines” Report of the Health and Environment Analysis for Decision-making (HEADLAMP) project, No. WHO/EHG/95.26 (Geneva, United Nations Environment Programme/United States Environmental Protection Agency/WHO, 1996).

Table 3
Using the Driving Force, Pressure, State, Exposure, Effect, Action framework

<i>Stage</i>	<i>Description</i>
Driving force	<p>A number of macro scale factors ultimately affect human health. For example:</p> <ul style="list-style-type: none"> • The global, national, regional and local economy will have an indirect impact on human health by affecting income levels and the distribution of income. • A changing climate will mean increased risk of severe weather events with short-, medium- and long-term effects on physical and mental health. • Demographic change will directly and indirectly affect health and well-being through changes to the age and the employment structure of the workforce, meaning that people will have to work until they are older and a smaller workforce will have to support a larger non-working population.
Pressure	<p>The above-mentioned driving forces result in pressures on the social, economic and physical environment. Pressures are generated on all sectors of economic activity, such as transport, energy, housing, agriculture, industry and tourism. The pressures are manifest in changes to, for example, living conditions, quality of infrastructure and income poverty.</p>
State	<p>The state (quality) of the social, economic and physical environment is affected by the various pressures. These can be adverse or beneficial. Some changes may be complex and widespread – for example, pollution of a whole marine environment or strengthening of a regional economy – while others may be more localized, for example, contamination of a local water supply or effects restricted to a local economy.</p>
Exposure	<p>Even where there are major effects on the state of the environment, people’s health and well-being will be affected only when they are actually exposed to a particular state, whether for good or for ill. Many factors determine whether an individual will be exposed, for example, to pollution in the environment. Pollution levels vary from place to place and over time, and people’s activities and behavioural patterns may influence the extent to which they come into contact with the environment. Likewise, in the case of economic downturn, not all sections of society are affected.</p>
Effect	<p>Once a person has been exposed to a hazard, health effects can vary in type, intensity and magnitude, depending on the type of hazard, the level of exposure and other factors. The ill-health effects of environmental exposures may be acute, occurring relatively soon after exposure (from a single large dose due to an accident or spill, for example), or they may be chronic, occurring as a result of cumulative exposures over time. A long period of time may elapse between initial exposure and the appearance of the adverse health effect, for example, exposure to asbestos and mesothelioma, or exposure to radiation and leukaemia. Dispersal of the population at risk over time and the long incubation period make reconstruction of exposures problematic, so that acute health effects are often easier to detect than chronic ones, which may be difficult to relate to specific hazards or sources.</p>
Action	<p>An approach to health hazard control and prevention that focuses on hazards of human origin is useful in that it addresses potentially remediable problems (giving due regard to uncertainty that exists about the extent of risks to human health associated with specific agents in the environment, or with the broader development process). Various actions can thus be taken, based on consideration of the nature of the risks, their amenability to control and the public’s understanding of and attitude towards the risks.</p>

Source: Adapted from Y. von Schirnding, *Health in Sustainable Development Planning: The Role of Indicators* (Geneva, WHO, 2002), chap. 7.

58. The Driving Force, Pressure, State, Exposure, Effect, Action framework supports an approach to assessment that considers health broadly through the determinants of health and their distribution among the populations affected.

59. The preparation of plans and programmes, and this includes the consideration of alternatives, requires different types of information. This can range from an analysis of the opinions of wider society based on stakeholder and community responses to estimates of costs and benefits and/or quantifiable evidence of impacts, should they exist (for example, from the scientific literature or existing population health studies for an area).

60. Plan and programme decisions are often concerned with potential health impacts of multiple similar developments; for example, developments of multiple offshore platforms feeding different and geographically dispersed onshore facilities (with, for example, implications for port health). The associated analysis would also need to include other non-project, but related, development activities in the region – for example, transport infrastructure, schools, markets and others – as these would also be important and can affect health determinants (possibly indirectly).²⁸

61. The Protocol does not specifically provide for a scoping report but, in practice, preparation of such a report is useful.

62. Where a linkage is either implausible or improbable and therefore is not capable of being a likely significant effect, it should be scoped out. Where there is uncertainty (and this should be clearly stated), the issue may be informed by the scientific literature or public health stakeholders.

63. It is important to find a balance. Scoping many issues in makes assessment of health complex; a tight scope, focusing on a limited number of issues, can fail to adequately address significant impacts. Thus, the determination of what is likely to be “significant” is of central importance for scoping.

64. Evaluation of significance will be made during the further assessment of the impacts and their reporting. General criteria and how they are used when evaluating significance should be common to all impacts assessed in strategic environmental assessment. Different types of impacts considered in strategic environmental assessment include direct and indirect, secondary, cumulative, synergistic, short-, medium- and long-term, permanent and temporary, positive and negative effects (see annex IV, para. 6, of the Protocol).

65. The evaluation of impact significance would be based on health objectives and associated standards. However, compliance with a threshold does not necessarily equate to there being no health effects.

3. Preparation of an environmental report

66. Article 7 (1) of the Protocol requires that an “environmental report” be prepared for plans and programmes subject to strategic environmental assessment. Article 7 (2) states that this report, in accordance with the determination under article 6, shall identify, describe and evaluate the likely significant environmental, including health, effects of implementing the plan or programme and its reasonable alternatives. The report shall contain such information specified in annex IV as may reasonably be required, taking into account:

- (a) Current knowledge and methods of assessment;
- (b) The contents and the level of detail of the plan or programme and its stage in the decision-making process;
- (c) The interests of the public;
- (d) The information needs of the decision-making body.

67. With regard to health, annex IV requires the specific inclusion of the relevant: health baseline and its likely evolution; health characteristics, problems and objectives; measures to

²⁸ International Petroleum Industry Environmental Conservation Association/International Association of Oil and Gas Producers, “Health Impact Assessment. A Guide for the Oil and Gas Industry”, Report No. 548 (London, 2016). Available at www.ipieca.org/resources/good-practice/health-impact-assessment-a-guide-for-the-oil-and-gas-industry/.

prevent, reduce or mitigate any significant adverse health effect; health monitoring measures; and likely significant transboundary health effects. For health significance, good practice is a context-specific professional judgment about what is important, desirable or acceptable with regard to those population health changes that are likely to be triggered by the plan or programme. Importance may be informed by the scientific literature and national health priorities. Acceptability (or desirability) may be informed by regulatory thresholds or national policy for the setting. Health significance may also be articulated in terms of sensitivity and magnitude.

68. The environmental report is also a means to explain how environmental and health objectives, the baseline environment and alternatives and other issues were identified and taken into account. Article 7 (3) requires Parties to ensure that environmental reports are of sufficient quality (with regard to the Protocol's requirements). Aspects of quality review may also include the adequacy of alternatives and of consultation with health authorities.

69. The Resource Manual²⁹ suggests that the best practicable environmental option may be considered wherever possible and appropriate in strategic environmental assessment. Furthermore, the evolution of the environment without a plan or programme is to be assessed. Importantly, alternatives should not be made up just to support the development and selection of a preconceived preferred alternative. In this context, public participation and consultation of health authorities can support the decision on what constitutes reasonable alternatives.

70. As part of the assessment of alternatives, mitigation measures need to be considered. From a health point of view, rather than just addressing negative impacts, it is recommended that health enhancement measures also need to be foreseen. With reference to the source-pathway-receptor linkages considered during scoping (see paras. 53 and 54 above), it is good practice to identify key opportunities to intervene where a pathway leads to adverse effects and to support pathways that lead to beneficial effects.

71. While the criteria (or guide questions) for assessing alternatives may be varied and are not, therefore, prescriptively stated here, it is recommended that they include an appropriate range of key health concepts and, as appropriate, span the wider determinants of health categories listed in table 2 above. For example, good practice may consider which alternative best: narrows health inequalities; promotes healthy lifestyles; enhances socioeconomic conditions to enable people to thrive; or improves access to good quality health and social care.

4. Public participation

72. Article 8 (1) explains what public participation should comprise. Importantly, it should be "early, timely and effective" when all plan and programme alternatives to be considered in strategic environmental assessment are still open.

73. Open and fair public participation may help to resolve possible conflicts of interest, particularly by establishing public values and by taking them into account when considering alternatives. Public support for plan and programme decisions can increase, based on decisions reflecting expectations and preferences. Publicly acceptable solutions can both reduce costs for plans and programmes by helping to avoid delays and promote better mental and social well-being.

74. Effective public participation is based on good governance principles. In addition to an overall right to participate, transparency (art. 3 (1)) and accountability in the plan- or programme-making process are of key importance.

5. Consultation with environmental and health authorities

75. Article 9 (1) of the Protocol requires Parties to designate environmental and health authorities to be consulted on draft plans or programmes and environmental reports. Article 9 (3) requires that health authorities be given: "in an early, timely and effective manner, the

²⁹ United Nations publication, ECE/MP.EIA/17, chap. A.1.4.

opportunity to express their opinion”. Article 10 describes transboundary consultations where a plan or programme is likely to have significant transboundary health effects.

76. Strategic environmental assessment is unlikely to improve consideration of health in planning while there continues to be a separation of functions between professions and a lack of understanding between professions.³⁰ Cross-sectoral work is therefore important. However, this can be challenging.

77. Environmental authorities have data on the environment. Public health authorities have data on the population in their areas. Knowledge of the area and of the environmental and health priorities that have been set are of crucial importance. Access to stakeholders will be key to the consultative aspect of the assessment, as well as wider dissemination of information and knowledge about the plan or programme.

78. One challenge to overcome is that public health authorities may not have strategic environmental assessment expertise or be aware of the procedure.

79. A central tenet of the present guidance is that authorities conducting strategic environmental assessment should seek advice from health authorities (owing to specific requirements to consult health authorities contained in articles 5 (screening), 6 (scoping), 9 (consultation) and 10 (transboundary matters)). Establishing joint working arrangements between health administrations and other key sector administrations (for example, regional development and spatial/land use planning) is good practice with regard to ensuring a shared understanding of the strategic environmental assessments coming forward and the coordination of inputs, including on health, into those assessments.

6. Decision-making

80. Article 11 (2) requires that, when reaching a decision on a plan or programme, a statement be provided, summarizing how environmental, including health, considerations have been taken into account, including the consultation responses from environmental and health authorities and the public. Effectively influencing decision-making is, therefore, an important consideration for health in any strategic environmental assessment.

81. The inclusion of health in the environmental report can allow the decision maker to be clear about any likely significant health effects in relation to the plan or programme and its alternatives. It is recommended that any potential health effects be set out clearly and explicitly and that, whenever possible, a win-win approach be pursued. This may include geographic inequalities and inequalities between the general population and more vulnerable population groups (for example, due to age, gender, poor health or socioeconomic status).

³⁰ A. Bond, B. Cave and R. Ballantyne, “Who plans for health improvement? SEA, HIA and the separation of spatial planning and health planning”, *Environmental Impact Assessment Review*, vol. 42 (September 2013), pp. 67–73. Available at <https://doi.org/10.1016/j.eiar.2012.10.002>.

Annex

Case studies¹

A. Draft national strategy on spatial planning and the environment, the Netherlands

Case study based on presentation by Ms. Brigit Staatsen, National Institute for Public Health and the Environment, Netherlands.

1. Draft national strategy on spatial planning and the environment

1. The draft national strategy on spatial planning and the environment² provides a sustainable perspective for the living (built and natural) environment. This will enable the Government of the Netherlands to respond to major challenges, as well as bringing added value through a national-regional approach. The draft national strategy was drawn up in consultation with responsible ministries, municipalities, provinces and water authorities, with further input from advisory boards, centres of knowledge, the private sector, civil society organizations and individual citizens.

2. The draft national strategy presents a long-term vision up to 2050. Interests set by national Government are organized into four priority clusters: (1) space for climate change and energy transition; (2) sustainable economic growth potential; (3) strong and healthy cities and regions; and (4) future-proof development of rural areas. The draft national strategy is working towards a living environment that protects and promotes health. This integrated vision is a result of the active role played by various parties, including the Ministry of Health.

2. Strategic environmental assessment of the draft national strategy

3. The draft national strategy was subjected to a strategic environmental assessment, assessing opportunities and risks for the physical living environment and environmental impacts for the policy choices made in the strategy. The assessment covered how different tasks come together and have an impact on and compete with one another for (environmental) space in the physical living environment. A call for a cohesive, integrated (national scale) approach is made that goes beyond the limits of the individual sectors. In addition to the draft national strategy, for certain more specific interests, choices have been made and laid down in a variety of structural strategy documents, memorandums, other policy documents and administrative agreements. This reality is considered in the strategic environmental assessment, which has mapped out opportunities and risks of policy choices. In a number of cases, it has been concluded that risks call for additional measures, potentially including national policy choices, strategies and implementation measures for specific policy fields (environment, mobility, air transport, nature, health) and other (field-specific or sectoral) areas.

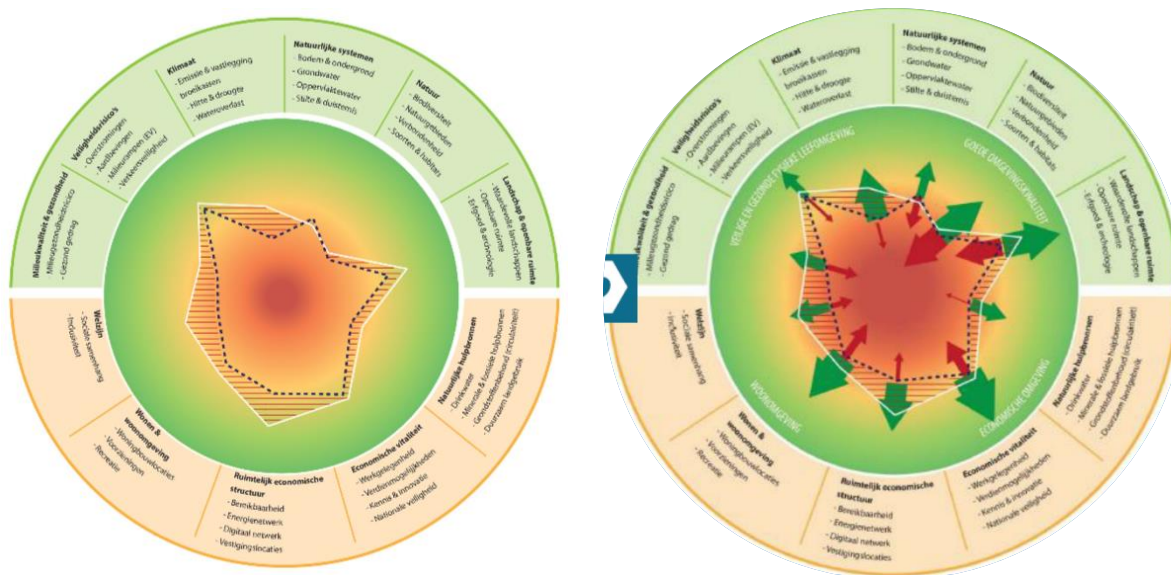
¹ The case studies are based on presentations made at the eighth meeting of the Working Group on Environmental Impact Assessment and Strategic Environmental Assessment (Geneva, 26–28 November 2019). The presentations are available at www.unece.org/index.php?id=50466.

² Netherlands, Ministry of the Interior and Kingdom Relations, *Draft national strategy on spatial planning and the environment: A sustainable perspective for our living environment* (The Hague, 2019). Available at www.ontwerpnovi.nl/translations+draft+novi+and+sea/handlerdownloadfiles.ashx?idnv=1419958.

3. How was health included?

4. An evaluation of health indicators (from the present day until 2030) was conducted, which concluded that health risks such as noise and air pollution will increase. In some cases, healthy behaviour may increase, in others not. There will be an increase in health risks due to higher temperatures (associated with a changing climate). There will be a weakening of social cohesion and a decrease in inclusion/participation in wider society. An “evaluation wheel” (see figure below) was developed to show, in a single diagram, how all the risks and opportunities combine. It was concluded that the health opportunities outweigh the health risks.

Evaluation wheel showing how health risks and health opportunities combine



Source: V. Maronier and others, *Milieueffectrapport Nationale Omgevingsvisie* (Royal Haskoning DHV, 2019), pp. 11 and 15. Available at www.denationaleomgevingsvisie.nl/publicaties/novistukken+publicaties/default.aspx#folder=1451327 (in Dutch only).

Note: Green arrows indicate a potential positive direction of development; red arrows indicate a potential negative direction of development with regard to a range of sustainability aspects.

4. Conclusion

5. Environmental quality is under pressure. The risks for health in relation to climate change will be great if no extra mitigation and adaptation measures are adopted. While an integrated strategy brings both opportunities and risks, it is also necessary to develop additional measures/decisions for “vulnerable” themes: health-welfare-nature and some region-specific policies.

6. Affected ministers share joint responsibility for programmes emerging from the national strategy. The ministry with initial responsibility drives the process. The national strategy does not change the tasks and responsibilities of the various ministers and government members. The programmatic approach and practical implementation will be based on the opportunities and risks identified in the strategic environment assessment. The dialogue with and between stakeholders will not stop when the national strategy is published but will remain an open process of which public consultation represents an intrinsic part.

5. Health in strategic environmental assessment and next steps

7. What helped:

- Presence of an “Ambassador” at the ministries to draw attention to health.
- Health objectives in environmental legislation.
- Health and well-being as part of evaluation wheel.
- Interest of the Ministry of Health in prevention.
- Collaboration – network of health and planning experts and network of environmental health professionals who provided input.

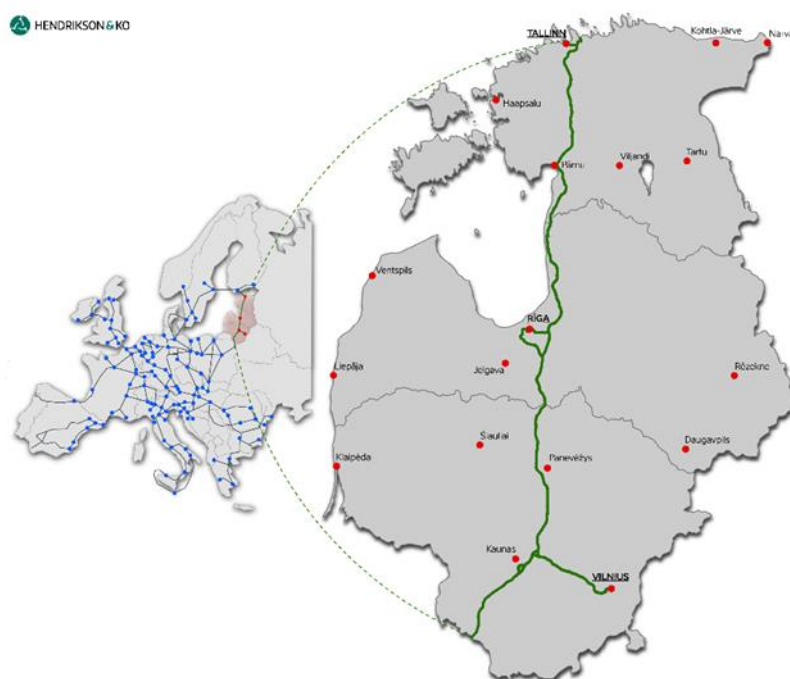
8. Next steps: An interministerial working group has been established to safeguard the attention drawn to vulnerable themes in the final national strategy and regional plans.

B. Rail Baltica, Estonia

Case study based on presentation by Mr. Heikki Kalle, Estonian Environment Institute.

9. Rail Baltica is a 700 km-long high-speed and electrification rail transport infrastructure project aiming to integrate the Baltic States into the European rail network. The project includes five European Union countries: Estonia, Finland (indirectly), Latvia, Lithuania and Poland. It will connect Helsinki, Tallinn, Pärnu (Estonia), Riga, Panevežys (Lithuania), Kaunas (Lithuania), Vilnius and Warsaw. The Baltic part of the Rail Baltica project is referred to as the Rail Baltica Global Project.

Map showing route of Rail Baltica Global Project



Source: Hendrikson and Ko, 2020

10. Environmental impact assessments were conducted in Latvia and Lithuania. In Estonia, a strategic environmental assessment for about 200 km of the rail route was carried out between 2012 and 2018 and a feasibility study was conducted in 2010. Human health was considered as part of the strategic environmental assessment due to Estonian environmental impact assessment and spatial planning legislation.

11. The strategic environmental assessment had three tiers, from state to regional and local levels. The table below shows how the assessment at the global/state tier was an objectives-led approach, while at the regional and local level, it was baseline-led.

12. A range of determinants of health were considered, including: climate (greenhouse gas emissions); groundwater and surface water quality; noise; vibration; air quality; electromagnetic radiation; accidents; identity and development of local communities; accessibility; and visual impact.

Health in different tiers of strategic environmental assessment

<i>Tier</i>	<i>Dominant approach</i>	<i>Main determinants of health</i>	<i>Health outcome</i>
Global/ state level	Objectives-led	Air quality, greenhouse gas emissions, flooding	Mainly positive changes due to shift to more sustainable form of mobility
Regional level	Baseline-led	Accessibility	Positive if properly supported by planning
Local level	Baseline-led	Noise, vibration, electromagnetic radiation (operational phase), air quality (dust in the building phase)	Negative if not properly mitigated

13. The Estonian Health Board and the Estonian Rescue Board provided official opinions on the environmental report. At first, it was a challenge to find common ground between regional authorities and public health authorities: the public health specialists were not familiar with strategic environmental assessment and were more focused on a local scale. However, regional health considerations of accessibility were brought into the discussion. For instance, accessibility of communities' recreational areas and of health-related services was discussed.

14. Health-related topics were also discussed with the Estonian Environmental Board, especially regarding the impact on the surface water of Lake Ülemiste – Tallinn's main water source. In this context, the Ministry of Defence expressed concern about the safety of train traffic near a military training area.

15. The objectives-led approach was not used in full. The assessment was able to identify spatial data on risk factors, such as determinants of health described in the table above, but it had difficulty in identifying spatial data on health indicators.

16. The assessment team reflected on the strategic environmental assessment and concluded that:

- Strategic environmental assessment can and should communicate positive effects.
- State and regional scale health objectives would enable health authorities to be involved in state and regional level strategic environmental assessment and planning.
- It is important to organize the assessment according to spatial and temporal scales.
- There is a need for spatial data linking determinants of health, health indicators, risk factors and health outcomes.
- There is a need for cross-training of strategic environmental assessment experts and public health experts.
- Good guidance is needed on health in strategic environmental assessment and on health in environmental impact assessment.

C. Regional Energy Concept of Vysočina Region update 2017–2042, Czechia

Case study based on presentation by Mr. Jaroslav Volf, University Hospital Ostrava, Czechia, and Ms. Helena Kazmarová, National Institute of Public Health, Czechia

17. A health impact assessment was carried out alongside the strategic environmental assessment of the Regional Energy Concept of Vysočina Region update 2017–2042. The objectives of the Regional Concept are to:

- Increase security and reliability of energy supply.
- Improve the efficiency of energy use.
- Promote sustainable development.

18. The two assessment processes were initiated simultaneously. The evidence that informed the Regional Concept and the assessment included: data on all sources of electric energy and heat, including location, capacity, fuel type and utilization of reserves; detailed information on current electricity and heat consumption; information on prospective energy consumption and the possibilities of renewable energy production. Ways to improve the use of waste heat from the Dukovany nuclear power plant were also considered.

19. The Regional Concept was evaluated against the territorial development principles of the Vysočina region and a range of regional strategic documents and thematic studies, including documents on environmental education, education and awareness and the environmental protection strategy of the Vysočina region. Some of the plans/programmes taken into account focused on specific subregions regarding issues such as water basin planning and air quality improvement. Strategic documents used included regional, national and international publications.

20. The impacts on public health of the Regional Concept were evaluated with reference to annex 9 to the Act on Environmental Impact Assessment, focusing particularly on noise and air issues. The issues covered in the assessment were partly determined by this legal framework and included:

- Identifying what was proposed.
- The level of detail of the information.
- The scope of the regional concept.
- The definition of the affected population.
- The timing for the assessment.
- The number and types of meetings that would be held.

21. The health impact assessment was oriented towards environmental health (physical, chemical, air, water, noise), but also considered social and economic determinants of health (employment, education and salary).

22. The assessment found positive effects for social and economic determinants, for example, higher education, higher incomes for workers and increased opportunities to benefit from compensatory measures, especially in the emergency planning zone. The following adverse effects were noted: fear of a nuclear accident; concerns about long-term exposure to radiation from the nuclear power plant; and occupational exposure to radiation and the perception of potential risks related to family planning. The sensitive placement of other sources of electrical energy and heat and the utilization of nuclear power plant potential were found to be important for environmental protection.

23. The Regional Concept health impact assessment concluded that:
- A reliable supply of energy for the population is important in ensuring that the basic needs for maintaining good health (heat, light, microclimate, cooling mode, scope of health services, security of communication connection) are met.
 - The objectives of the Regional Concept – to increase the security and reliability of the energy supply, improve efficiency of energy use and ensure sustainable development – are beneficial to human health.
-