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Meeting of the Parties to the Convention
on Environmental Impact Assessment
in a Transboundary Context

Meeting of the Parties to the Convention
on Environmental Impact Assessment in
a Transboundary Context serving as the
Meeting of the Parties to the Protocol on
Strategic Environmental Assessment

Working Group on Environmental Impact Assessment and Strategic Environmental Assessment

Twelfth meeting

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Item 6 (a) of the provisional agenda

**Promoting practical 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draft guidance on assessing health impacts in strategic environmental assessment**

Draft guidance on assessing health impacts in strategic environmental assessment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The present note contains draft guidance on assessing health impacts in strategic environmental assessment, as initially foreseen in the workplan for the implementation of the Convention on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, and which, in 2020, the Meetings of the Parties committed to finalizing for adoption at the next session of the Meeting of the Parties to the Protocol (Geneva, 12–15 December 2023), subject to the availability of resources.

The present draft was last extensively revised by the European Union and its member States further to the request of the Working Group at its eleventh meeting (Geneva, 19–21 December 2022) for delegations to provide comments to the draft guidance for consideration by the Bureau at its last meeting (Geneva, 22–23 February 2023).^a At that meeting, the Bureau reviewed and agreed on all the revision proposals of the European Union and its member States. It also considered comments from the World Health Organization, adding a reference to additional source material from the World Health Organization (see para. 11 of draft guidance below).



The Working Group is expected to agree on the text of the draft guidance to be submitted to the Meeting of the Parties to the Protocol at its next session.

Draft decision V/6 of the Meeting of the Parties to the Protocol on assessing health impacts in strategic environmental assessment is available to the Working Group in document ECE/MP.EIA/WG.2/2023/6.

^a ECE/MP.EIA/WG.2/2022/2, paras. 74–75.

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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 initially developed by consultants in collaboration with ECE, the World Health Organization (WHO) and the European Investment Bank, with funding from the latter, and subsequently revised by Parties to the Protocol. 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 2017–2020¹ 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),² particularly in its annexes A1.1 and A5.1, prepared in collaboration with WHO.³

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, among other things:

(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. According to article 4 of the Protocol, strategic environmental assessment is to be carried out for certain plans and programmes that are likely to have significant environmental, including health, effects. For some plans and programmes, strategic environmental assessment will be required only if so determined by screening pursuant to article 5 of the Protocol. In article 2 (6) of the Protocol, “strategic environmental assessment” is defined as “the evaluation of the likely environmental, including health, effects, which comprises the determination of the scope of an environmental report and its preparation, the carrying out of public participation and consultations, and the taking into account of the environmental report and the results of the public participation and consultations in a plan or programme”. Significant environmental, including health, effects of the implementation of the plans and programmes, adopted under article 11 of the Protocol, shall be monitored according to article 12 thereof by each Party.

5. The present guidance acknowledges that strategic environmental assessment is applied in different ways and contexts, taking into consideration the specificities of each plan

¹ ECE/MP.EIA/23/Add.1–ECE/MP.EIA/SEA/7/Add.1, decision VII/3–III/3, annex II, item IV.1.

² United Nations publication, ECE/MP.EIA/17.

³ 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).

and the context within which it is developed, and in a manner that is reasonable and proportionate with regard to the level of health coverage.

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 procedure and suitable methods and tools are introduced and details of specific health issues and approaches for considering them are developed. 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);
- (c) The integration of health into strategic environmental assessment in practice;
- (d) Case studies to consider health in strategic environmental assessment.

7. The guidance contains non-binding recommendations for good practice and does not create new obligations in relation to the Protocol. Consequently, the strategic environmental assessment, with health included as one of several protected goods, remains an environmental assessment that is not to be extended to a broader sustainability assessment.

8. The Protocol is accessible to all States Members of the United Nations.

9. As of March 2023, the Protocol had 33 Parties, including the European Union.⁴ Strategic environmental assessment is currently a formal requirement in over 50 countries (Parties and non-Parties to the Protocol) and is used by development banks and other organizations in their due diligence procedures.

II. Principles for considering health in strategic environmental assessment

A. Defining health in strategic environmental assessment

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.⁵ The state of environment, including health, relates to different environmental effects due to (or generated by) traffic, industry, energy, agriculture, waste and other sectors. The consequences of said effects could be communicable or non-communicable diseases.

11. Non-communicable diseases include diabetes, cardiovascular diseases, cancer, chronic respiratory diseases and mental disorders. Many of the driving forces affecting such non-communicable diseases may be associated with plans and programmes that fall under the remit of the Protocol. This situation highlights the importance of intersectoral cooperation when undertaking environmental health burden reduction activities.⁶

12. The burden of disease from environmental risk is connected to the environment and usually relates to air quality, noise, status of water bodies, drinking water quantity and

⁴ 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.

⁵ World Health Organization (WHO) Regional Office for Europe, “Health topics”, available at <https://www.who.int/europe/health-topics/>.

⁶ A. Prüss-Ustün and others, *Preventing Disease through Healthy Environments: A Global Assessment of the Burden of Disease from Environmental Risks* (Geneva, WHO, 2016); and WHO, *Healthy Environments for Healthier Populations: Why Do They Matter, and What Can We Do?* (Geneva, 2019).

quality, solid and liquid waste, climate change and biodiversity. There should be consultations on those issues with health authorities in relation to health on a “case-by-case” basis and included in the environmental report according to the specific requirements of the Protocol (arts. 7 and 9). Furthermore, measures to prevent, reduce or mitigate any significant adverse effects of the planned activities on health should be identified and described in the environmental report (annex IV, para. 7). The relevant authorities (art. 9), organizations and public (art. 8) need to be consulted regarding the environmental report. The results of the strategic environmental assessment should be taken into account (arts. 1 and 11). The summarizing statement should describe how the environmental, including health, considerations have been integrated into the plan and programme (art. 11). In the case of transboundary consultations according to article 10, any environment-related health issues should be discussed, if relevant, with neighbouring countries, and the received comments must be taken into account by the Party of origin.

13. The Protocol explicitly refers to health wherever the term “environmental effects” is employed. In article 2 (7), the Protocol determines that: “‘Environmental, including health, effect’ means any effect on the environment including human health, flora, fauna, biodiversity, soil, climate, air, water, landscape, natural sites, material assets, cultural heritage and the interaction among these factors.” According to the Protocol, human health is linked to environmental factors.

14. WHO has a wider approach to health. The preamble of the Constitution of WHO states that: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”⁷ Parties may decide on a voluntary basis to go beyond the requirements of the Protocol and to use a broader approach to health, to the extent appropriate and as long as the link to the environmental factors is not lost or weakened.

15. The WHO definition of “health” has two parts:

(a) The first part emphasizes how human health encompasses mental and physical health and social well-being. Health can be affected by environmental, social and economic factors, therefore possible impacts on health should be assessed in advance when preparing plans and programmes;

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

16. In strategic environmental assessment, environmental, including health, effects are assessed taking into account both negative and positive environmental impacts on health.

17. When considering health, the focus in strategic environmental assessment may, depending on the type of plan or programme, be on population health. The aim and scope of the plan or programme determine the types of population vulnerability related to health that a strategic environmental assessment may wish to consider, including age, health status, access to clean drinking water and sanitation, and exposure to air pollution.

B. Framing health in different strategic environmental assessment applications

18. The context of each strategic environmental assessment needs to be understood in order to set the scope of assessment in consultation with health authorities and define how health should be considered. The figure below introduces typical aspects to be considered. Contextual aspects are subsequently described in further detail. The format of strategic environmental assessment is then elaborated on in section III below.

19. The level of detail for assessment is determined by the nature and content of the underlying plan or programme. In multilevel programming and planning systems, from policies and legislation to programmes and plans, more geographical, technological and

⁷ WHO, *Basic Documents: Forty-ninth Edition 2020 – Including Amendments Adopted up to 31 May 2019* (Geneva, 2020), p. 1.

population details tend to be provided later on, for example, at local land use plan level.⁸ This is crucial when deciding on reasonable alternatives and issues to be considered and, ultimately, on the possible ways to integrate health into strategic environmental assessment.

Strategic environmental assessment: context and format – aspects to be considered⁹



Abbreviations: SEA, strategic environmental assessment.

Source: adapted from Thomas B. Fischer, “Health in SEA”, in *Health in Impact Assessments: Opportunities Not to be Missed*, Rainer Fehr and others, eds. (Copenhagen, WHO Regional Office for Europe, 2014), pp. 23–46.

20. An important consideration is the scale of the plan being assessed and 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 in relation to other countries and the type of developments considered.

21. In all cases, the level of detail of the likely significant effects on health needs to be reasonable and 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.

22. Given the strategic long-term nature of plans and programmes as opposed to projects, details on emerging health issues and health priorities are often uncertain, but still need to be captured and assessed, if relevant.

23. The Resource Manual states that developing appropriate institutional capacity is key to the effective implementation of the Protocol.¹⁰ 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 political, social and cultural and other aspects, as well as the state and nature of economic development, processes and decision-making traditions.

⁸ Use of terminology varies 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.

⁹ Legislation and policy, to the extent appropriate.

¹⁰ United Nations publication, ECE/MP.EIA/17, chap. B1.2.

24. The implementation reports of the Protocol¹¹ 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 institutional capacity for strategic environmental assessment, 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.”

25. Strategic environmental assessment is only likely to be systematically applied in the presence of formal (e.g., legal) requirements. Assessment of impacts requires environmental, including health, objectives and criteria. Frequently, specific objectives are provided and defined in national legislation and by supporting guidance. While often relevant, such objectives and criteria may only reflect health to a limited extent.

26. The strategic environmental assessment process is applied and adapted with reference to geographical (country, region) 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 strategic environmental assessments tailored to specific situations. Similarly, assessment of impacts on health will need to respond to different sectoral practices and key health issues arising from them. For example, transport affects health through emissions to air. Relevant key health issues for transport programmes are therefore likely to be respiratory and cardiovascular in nature and arising 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 should be considered while designating and assessing alternatives.

27. According to the Resource Manual, a good strategic environmental assessment is carried out with “fairness, impartiality and balance”.¹² However, this is 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.

28. In many countries, authorities at different administrative levels (national, regional and local) are responsible for performing specific decision-making tasks¹³ and this may result in the assessment of alternatives for specific plans and programmes at different administrative levels, depending on the scale and sector of the plans and programmes. Usually, planning/strategic environmental assessment responsibilities are prescribed through legislation, most often at the national, federal or regional levels.

III. Strategic environmental assessment and health in practice

29. Strategic environmental assessment can be a tool for achieving the improvement of health outcomes in practice.

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

31. 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

¹¹ United Nations Economic Commission for Europe (ECE), “Review of implementation (national reporting)”, available at www.unece.org/env/eia/implementation/review_implementation.html.

¹² United Nations publication, ECE/MP.EIA/17, p. 164.

¹³ Reviews of implementation of the Protocol on SEA. Available at <https://unece.org/environment-policy/environmental-assessment/review-implementation-national-reporting>.

assets and cultural heritage also need to be considered. Interaction among these different determinants of health needs to be assessed.

32. Furthermore, and in line with the Resource Manual,¹⁴ it may be helpful to consider social and economic determinants of health, if possible, as well as behavioural aspects with a connection to health and social well-being.

33. Health in strategic environmental assessment raises interpretation and implementation challenges. These can include the relative power of health-related institutions/teams and the level of understanding of health in strategic environmental assessment of those involved in the process, where there can be knowledge gaps, for example, with regard to non-biophysical determinants of health.¹⁵ Furthermore, the identification and subsequent integration of the relevant 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. However, due to different levels of understanding and experience of the strategic environmental assessment by health authorities, as well as of health within strategic environmental assessment by environmental and planning authorities, wider capacity-building initiatives may be particularly useful.

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

34. To integrate health into strategic environmental assessment effectively, a clear understanding of a given plan's or programme's purpose is essential, as this determines what issues, including health, should be assessed.¹⁶

35. 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 tiers¹⁷

<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>What are the impacts of a transport/energy plan on human health in terms of air pollution and noise? To what extent have circular/smart city considerations been introduced into a plan to green it? Have electromobility, car-free areas, bicycle areas and traffic restrictions in certain areas depending on their inhabitants been foreseen? Has the state of the environment been assessed and are data available before developing a new plan? For energy plans in particular, have the impacts been thoroughly studied in terms of emissions and solid and liquid waste?</p> <p>[How does existing energy/transport infrastructure/use support health?</p> <p>What are the main challenges the current approach suffers from when trying to maintain/improve health levels?</p>

¹⁴ United Nations publication, ECE/MP.EIA/17, annex A1.1.

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, "Determinants of health", 3 February 2017, Questions and Answers, available at www.who.int/news-room/questions-and-answers/item/determinants-of-health.

¹⁶ Usually during the scoping phase.

¹⁷ Arrangements will differ in different countries and systems.

Tier	Issues addressed in strategic environmental assessments
	<p>What health benefits (or risks) would accrue/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, and minimizes negative, health effects?</p> <p>What health trade-offs are involved (e.g., land take)?</p>
Energy/transport programmes	<p>What infrastructure developments should be prioritized, considering not only costs and benefits (e.g., alternative ways to spend money to improve health) but also both positive and negative health outcomes?</p>
Projects (subject to environmental impact assessment)¹⁸	<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 Thomas B. Fischer, *The Theory and Practice of Strategic Environmental Assessment: Towards a More Systematic Approach* (London, Routledge, 2007).*

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

1. Linking assessment with the plan and programme procedure

36. The strategic environmental assessment procedure should inform the preparation of 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,¹⁹ which may use external experts to prepare associated reports. The role of health authorities in strategic environmental assessments would most likely focus on reviewing and evaluating the possible health impacts identified during the assessment itself and, to the extent possible, mitigating and monitoring them.

37. Pursuant to article 7 (2) of the Protocol, paragraph 1 of annex IV to the Protocol requires the environmental report to identify the main objectives of the plan or programme (as may reasonably be required). This is distinct from paragraph 5 of annex IV, which requires that the relevant objectives established at the international, national and other levels be identified.

38. The Resource Manual introduces some analytical and participatory tools and methods²⁰ commonly used for strategic environmental assessment, including:

- (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;

¹⁸ A key ingredient for effective strategic environmental assessment is an awareness of which issues should be assessed and which are addressed elsewhere. This is why the project level is included here.

¹⁹ United Nations publication, ECE/MP.EIA/17, chap. A1.4.

²⁰ Ibid., chap. A.5.

(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:

- (i) Strengths-Weaknesses-Opportunities-Threats analysis;
- (ii) Scenario building;²¹
- (iii) Matrices of conflicts and synergies;
- (iv) Decision tree;
- (v) Trend analysis and extrapolation;
- (vi) Simulation modelling;
- (vii) 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 The design of an assessment of human health and other aspects within a strategic environmental assessment depends on: the type of plan or programme; its level of detail; the stage of decision-making; and the availability of data.

40. According to article 4 of the Protocol, a strategic environmental assessment will be required for specific plans and programmes that are likely to have significant environmental, including health, effects. For certain plans and programmes (as defined in art. 4 (3)–(4)) a strategic environmental assessment is to be carried out only if it is so determined by screening (see also para. 4 above). Under the heading “screening” (art. 5 (1)), each Party shall determine whether particular plans and programmes pursuant to article 4 (3)–(4) 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 determination of whether, subsequently, a further strategic environmental assessment procedure will be conducted. In this context, article 5 (2) requires that environmental and health authorities (see art. 9 (1)) be consulted. Annex III to the Protocol provides guidance on the criteria to be used to assess the significance of the possible effects. These include the identification, for example, 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 effects alone to be the sole reason for determining whether a plan or programme should be subject to a strategic environmental assessment.

41. Screening for strategic environmental assessment (see para. 40 above) may be used to provide support in developing a proportionate understanding of the relationship between a plan or programme and the relevant environmental determinants of health. The criteria taken into account when deciding whether to subsequently conduct a strategic environmental assessment should include the relevant health considerations, as well as the environmental criteria used (including health-related criteria) as determined in annex III to the Protocol.

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

²¹ See, for example, Sonja Kahlmeier and others, *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, WHO Regional Office for Europe, 2017).

²² See, for example, Wales Health Impact Assessment Support Unit, “Health Impact Assessment: A Practical Guide” (n.p., n.d.). Available at <https://phwwhocc.co.uk/wp-content/uploads/2020/07/Health-Impact-Assessment-A-Practical-guide.pdf>.

monitoring results also be made available to health authorities, in accordance with national legislation. Good practice in 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 useful 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 relating to institutional arrangements for strategic environmental assessment generally (see para. 28 above).

44. The technical aspects of designing monitoring arrangements are related to ways in which health changes 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 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. In line with article 12 (1), it is recommended that management measures, such as 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 Certain steps relevant within the context of a strategic environmental assessment are discussed below.

2. Scoping

46. Article 6 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 phase aims at identifying the possible relevant significant environmental, including health, effects to be assessed, and an outline of the plan or programme's possible reasonable alternatives, to the extent appropriate. In this context, article 6 (2) requires that health authorities (see art. 9 (1)) be consulted. In practice, the scoping information may be subsequently reviewed in the light of new evidence that has emerged. This stage, therefore, may have an iterative character.

47. A methodology for establishing potential impact significance could be defined already in scoping, if possible, 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 one of the options for determining impact significance.

48. Public health authorities can support the identification of key health effects. In this context, recommendations regarding the level of detail on information to be included in the environmental report can be provided. For this purpose, the environmental and health authorities are to be consulted according to article 6.

²³ M. Douglas and others, eds., *Health Impact Assessment of Transport Initiatives: A Guide* (Edinburgh, National Health Service Health Scotland/Medical Research Council Social and Public Health Sciences Unit/Institute of Occupational Medicine, 2007).

²⁴ WHO, "Health in all policies (HiAP) framework for country action", *Health Promotion International*, vol. 29, No. S1 (June 2014), pp. i19–i28.

49. In strategic environmental assessments, it may be useful to conduct a simple expert opinion-based compatibility test between objectives and criteria used for assessing impact significance. If there is inconsistency, integration of issues representing different health dimensions (e.g., biophysical, social and behavioural ones) in assessment can be problematic. A compatibility test may find that:

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

(b) Nonetheless, integration of issues representing different health dimensions seems difficult to achieve because of the conflicting policy objectives. For example, an objective to protect biodiversity or cultural heritage may aim to restrict the use of green or blue space for physical activity and access to nature, both of which are beneficial for physical and mental health;

(c) Trade-offs may exist also across a population. In fact, an economic objective may aim at reducing health risks for working age people through better employment, but this may lead to increased emissions, thus increasing health risks for the young and the frail and elderly instead.

50. With respect to the obligation to consult 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 on 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 or spatial/land use planning.

52. Table 2 below provides an indicative checklist of determinants of health related to environmental impacts that can be taken into consideration at the scoping stage, if applicable.

Table 2

Illustrative determinants of health

<i>Please indicate whether plan/programme's environmental impacts will lead to changes in:</i>		
	<i>Yes/No</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

²⁵ Andy 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), pp. 2104–2114.

Please indicate whether plan/programme's environmental impacts will lead to changes in:

Yes/No Links/action

Education

Employment (including quality)]

Environmental conditions

Air quality

Water

Solid and liquid waste

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, Germany, (Copenhagen, WHO Regional Office for Europe, 2018).

53. The process and rationale for identifying the key determinants of health relevant to a plan's 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 (see table 2 above) may 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 might, depending on the plan or programme, include population growth, economic development and technological advances in a country, region or smaller area. Pressure (the main cause of impacts) may then be exerted by production and consumption patterns and associated with waste releases and emissions. In

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 Yasmin 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).

order to develop an understanding of its effects, it is important to get to know, among other things, the state of population health and existing natural resources and hazards, as well as existing pollution levels. Exposure to health risks then needs to be considered (e.g., 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.

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, e.g.:</p> <p>[The global, national, regional and local economy will have an indirect impact on human health by affecting income levels and the distribution of income.]</p> <p>A changing climate will mean increased risk of severe weather events with short-, medium- and long-term effects on physical and mental health.</p> <p>[Demographic changes will directly and indirectly affect health and well-being through changes to the age and 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.]</p>
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, e.g., transport, energy, housing, agriculture, industry and tourism. The pressures are manifest in changes to living conditions, quality of infrastructure and income poverty, among other things.</p>
State	<p>The state (quality) of the social, economic and physical environment is affected by these various pressures, which can be adverse or beneficial. Some changes may be complex and widespread – such as pollution of a whole marine environment or strengthening of a regional economy – while others may be more localized, e.g., 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, e.g., 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 (e.g., from a single large dose due to an accident or spill), 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, like 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 as it addresses potentially remediable problems, giving due regard to</p>

Stage	Description
	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 understanding of, and attitude towards, the risks.

Source: Adapted from Schirnding, *Health in Sustainable Development Planning*, 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. Potential health impacts of similar developments can influence plan and programme decisions; for instance, developments of multiple offshore platforms feeding different – and geographically dispersed – onshore facilities (with 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 and markets – as these would also be important and can affect health determinants (possibly indirectly).²⁸

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

61. Where there is uncertainty (and this should be clearly stated), the issue may be informed by the scientific literature or public health stakeholders.

62. It is important to find a balanced approach and to ensure a reasonable assessment. The scoping should focus on the relevant issues, in order not to make the assessment of health overly complex. On the other hand, it is important to adequately address significant impacts. Thus, the determination of what is likely to be “significant” is of central importance for scoping.

63. 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 Protocol, annex IV, para. 6).

64. The evaluation of impact significance related to health aspects would be based on health objectives and associated standards. However, compliance with a threshold does not necessarily equate to the absence of health effects.

3. Environmental report

65. 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 to the Protocol 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;

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 (n.p., n.d.).

(d) The information needs of the decision-making body.

66. Annex IV describes the information to be given in the environmental report. The information is linked to environmental, including health, issues. Depending on the scoping, health aspects may be relevant according to the specific information requirements, for example in describing the current state or existing problems. For evaluating health aspects, including their significance, a context-specific professional judgment of what is important, desirable or acceptable with regard to those population health changes that are likely to be triggered by the plan or programme is a useful tool. 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.

67. In the environmental report, it may be useful to explain why certain issues have been identified or are described more fully than others, for example, with regard to the (international, national or subnational) environmental, including health, objectives that are relevant to the plan or programme, the baseline environment or the reasons for the described alternatives. Article 7 (3) requires Parties to ensure that environmental reports are of sufficient quality to meet the Protocol's requirements. In this respect, one aspect may include the adequacy of alternatives and their assessment. Generally, the detail of the assessment should follow the level of detail of the plan or programme.

68. 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, including health, without a plan or programme is to be presented (option 0). Importantly, alternatives should not be made up just to support the development and selection of a preconceived preferred alternative. In this context, consultation with health and environmental authorities, as well as public participation, can also support a reasonable assessment of alternatives.

69. In the environmental report, measures to prevent, reduce and mitigate any significant adverse effects must be described. From a health point of view, it is recommended that mitigation of health effects and possible compensation measures be adequately foreseen. With reference to the source-pathway-receptor linkages considered during scoping (see paras. 53–54 above), it may be helpful to identify key opportunities to intervene where a pathway leads to adverse effects and to support pathways that lead to beneficial effects.

70. Criteria (or guiding questions) for assessing alternatives may be varied and are not, therefore, prescriptively stated here. Depending on the outcome of the scoping, the determinants set out in table 2 above may be further considered in the assessment. Provided that there are no strong trade-offs between environment and health, it may be useful to consider the positive impacts on health of the alternatives to be assessed [, for example: 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

71. 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 for consideration. Early public participation can avoid proponents of a plan from becoming overly invested in a single solution and minimize the need for modifications of the plan.

72. Open and fair public participation may help to resolve possible conflicts of interest, particularly by establishing common 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.

²⁹ United Nations publication, ECE/MP.EIA/17, p. 102.

73. 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

74. 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. Health responsibilities in relation to human health, according to the Protocol, may rest with different authorities. Authorities that have health responsibilities and are concerned by the implementation of the plan or programme need to be consulted. Article 9 (3) requires that environmental and health authorities be given “in an early, timely and effective manner, the opportunity to express their opinion”. Article 10 describes transboundary consultations where a plan or programme is likely to have significant transboundary health effects.

75. 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.

76. Organizations that hold relevant data in relation to environmental and health aspects need to be considered. 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.

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

78. A central tenet of the present guidance is that authorities conducting strategic environmental assessment should seek comments from health authorities, owing to specific requirements to consult health authorities contained, for example, in articles 5 (screening), 6 (scoping), 9 (consultation) and 10 (transboundary consultations). Establishing joint working arrangements between health administrations and other relevant key sector administrations (e.g., regional development and spatial/land use planning) may ensure a shared understanding of the strategic environmental assessments and the coordination of inputs, including on health, into those assessments.

6. Decision-making

79. 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. This must include 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.

80. 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 (e.g., due to age, gender, poor health or socioeconomic status).

³⁰ Alan Bond, Ben Cave and Rob 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.

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.

3. How was health included?

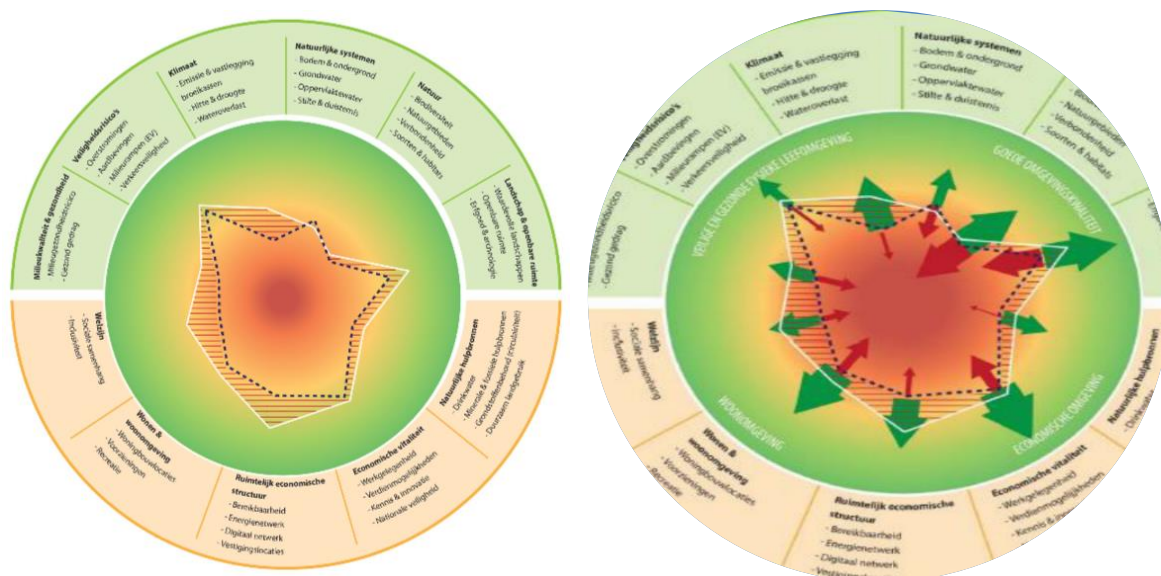
4. An evaluation of health indicators (from the present day until 2030) was conducted, which concluded that health risks such as noise and air pollution will increase. In some cases, healthy behaviour may increase, in others not. There will be an increase in health risks due

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

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/novi-stukken+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 increase 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. Ministries involved 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.

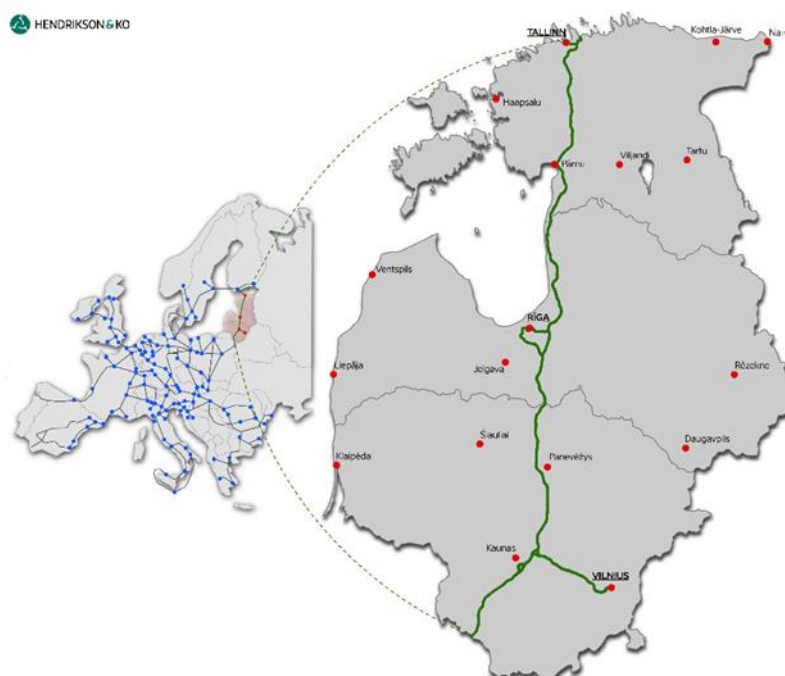
8. Next steps: An inter-ministerial working group has been established to safeguard the attention drawn to vulnerable themes in the final national strategy and regional plans.

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, Panevėžys (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.

D. Learning from practice: Case studies of health in strategic environmental assessment and environmental impact assessment across the World Health Organization European region

24. More case studies relating to the consideration of health in strategic environmental assessment (and in environmental impact assessment) have been reviewed and made available by the WHO Regional Office for Europe.³

³ World Health Organization (WHO) Regional Office for Europe/University of Liverpool, *Learning from Practice: Case Studies of Health in Strategic Environmental Assessment and Environmental Impact Assessment across the WHO European Region* (Copenhagen, WHO Regional Office for Europe, 2022).