

Environmental Impact Assessment & Strategic Sustainability Assessment

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Professor of Sustainability Assessment and Planning at NOVA University Lisbon and senior researcher at CENSE, Center for Environmental and Sustainability Research. He has been Visiting Professor/Researcher at Nanjing University (China), Fudan University (China), São Carlos School of Engineering (EESC) and School of Arts, Sciences and Humanities (EACH), University of São Paulo (Brazil), University of Salford (United Kingdom), University of Sussex (United Kingdom), International University of Andaluzia (Spain), University of La Laguna (Spain), Birla Institute of Management Technology (BIMTECH) (India), State University Peninsula Santa Elena (Ecuador), Escuela Politécnica del Litoral (Ecuador), Florida State University (USA), University Agostinho Neto (Angola).

He is listed in the World's Top 2% Scientists, a ranking developed at the University of Stanford*. His research activity is centred on sustainability assessment and management, including indicators and reporting, circular economy, impact assessment, public sector organisations, stakeholder engagement and transdisciplinary collaborative approaches. He has published several scientific articles, being one of the authors with the highest scientific production in the areas of 'sustainability indicators' and 'sustainability management and public sector' (Elsevier | Scopus, 2023).

He is *Executive Editor* of the Journal of Cleaner Production (Elsevier, IF: 9.7) and *Editor-in-Chief* of the journal Cleaner Production Letters (Elsevier), and member of the Editorial Board of several leading scientific journals, e.g., Sustainable Development (Wiley), Business Strategy and Development (Wiley). He was also *Guest Editor* of several journal special issues: Business Strategy and the Environment (Wiley); Sustainable Development, (Wiley); Journal of Cleaner Production (Elsevier); Journal of Environmental Assessment Policy and Management (World Scientific).

Coordinator and team member of several R&D Projects, funded by e.g.: Marie-Sklodowska-Curie Actions, ETN-ITN, European Commission (EC); Directorate General for Employment Social Affairs and Inclusion, EC; INTERREG Program, European Regional Development Fund; Organization for Economic Co-operation and Development (OECD); São Paulo State Research Support Foundation (FAPESP); Directorate-General for Science, Research, and Development (DGXII JOULE) EC; Foundation for Science and Technology, Calouste Gulbenkian Foundation, Portuguese Environment Agency. He has been grant reviewer for several national and international agencies (European Union, Japan, Belgium, Canada, Brazil, United Kingdom, Netherlands, Portugal) and reviewer for more than 35 scientific journals.

Invited speaker at several international reference institutions, e.g.: United Nations (UN), Department of Economic and Social Affairs Division for Inclusive Social Development; UN - WHO, World Health Organization; New York University, STERN School of Business; KU Leuven. Chair of the world conference '22nd Annual International Sustainable Development Research Society Conference ISDRS 2016', Organised by FCT NOVA, CENSE. 13-15 July 2016, Lisbon, Portugal. He was member of the Board of Directors the International Sustainable Development Research Society (ISDRS) (2013-2019), member of the Accreditation Council of the Order of Engineers of Portugal (2004-2010) and President of the Portuguese Environmental Engineering Association (1997-1999).

*Authors' Career List and Authors' Single Year List: 2019, 2020, 2021, 2022 and 2023 — A standardized citation metrics author database annotated for scientific field.

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I. Introduction and background

What is Environmental/ Sustainability Assessment?

Let's do a little icebreaking activity...

- What does sustainability assessment mean to you?
- When sustainability assessment should be conducted?

🛃 Mentimeter



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Go to **www.menti.com** and use the code **3700 4182**

Sustainability assessment:

concept and aim

Despite the existence of several non-consensual definitions, interpretations, and methods, the term 'sustainability assessment' (SA) is often used to refer to a systematic and comprehensive approach:



to characterize the sustainability "state" covering the environmental, social, economic, and institutional/governance dimensions



Sustainability assessment: approaches

 (i) ex ante (before the event) – forward-looking predict the potential effects of an activity prior to its implementation and
 (ii) ex post (after the event) current implemented situation

(Pope et al., 2004; 2017)



Sustainability assessment: scope

Can support different levels of decision-making and policy processes, playing a role in the strategic and operational levels of planning and project processes, including:

- Policies, Plans, Programs (PPPs) e.g. Strategic Environmental Assessment (SEA), Sustainability Appraisal
- **Projects** e.g. Environmental Impact Assessment (EIA)
- Organizations, services, products, activities/operations... *e.g.* EMS,...



Formal Environmental Assessments instruments

Scope

- Environmental impact assessment (EIA):
 - individual projects / specific activities
- Strategic environmental assessment (SEA):
 - plans and programs
 - Policies and legislation
- Habitat/biodiversity assessment
 - EIA and SEA limited to impact on habitat
- Health assessment
 - Limited to impact on health
- Social assessment
 - Limited to impact on society





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Environmental Impact Assessment (EIA):

Source: https://depositphotos.com/illustrations/puzzle.html



Strategic environmental assessment (SEA):



Source: https://depositphotos.com/illustrations/puzzle.html



Key dimensions of the assessment context

- **Political**: stability, priorities, decision-making processes, and level of democratic engagement.
- Institutional: governance and regulatory frameworks and stakeholder dynamics
- **Geographic:** spatial characteristics and constraints.
- Socio-cultural: norms, values, and community characteristics.
- *Economic*: resource availability and economic conditions.
- *Environmental*: ecosystems, biodiversity, natural resources, and environmental pressures





Group Exercise: EIA or SEA?

Main aim: identify whether a project or plan needs an Environmental Impact Assessment (EIA) or a Strategic Environmental Assessment (SEA).

Scenarios:

- A new road between two towns
- A national waste management strategy
- A proposed industrial area with a railway and harbour near a coastal zone

Instructions:

Work in small groups.

For each scenario presented, decide:

(i) EIA or SEA?

- (ii) Give a very short justification.
- Share and discuss answers with the class.

Think about scale, decision level, and potential impacts.

II. Environmental Impact Assessment

EIA Environmental impact assessment

EIA has spread throughout the world and has become an important tool in ensuring that environmental values are considered within planning

Preventive tool related to proposed activities(projects) which may have significant impact on the environment



EIA Legal/Institutional Context



Environmental Impact Assessment (EIA) was introduced in the United States of America in 1969 with the US National Environmental Policy Act (NEPA).

- NEPA states that federal agencies are required to make analyses of environmental effects of implementing their programs or actions
- EIA in the US legislation was imposed upon the federal government for its projects and not for those of the private sector.



The EIA European Directive was first issued in 1985

recently updated in 2014 — Directive 85/337/EEC recently updated by the Directive 2014/52/EU

- applies to public and private projects which are expected to have significant impacts on the environment.
- applies to projects that are identified into two main list types of projects for which EIAs are required.



EIA Phases

Screening:

- This initial stage determines whether a project is likely to have significant environmental effects and, therefore, requires an Environmental Impact Assessment (EIA).

Scoping:

 This stage defines the scope and key focus areas of the EIA. It involves identifying the potential environmental impacts, relevant issues, and the level of detail needed in the assessment.

Assessment – EIA Report Preparation:

 At this stage, all collected data and analyses are compiled into a comprehensive EIA report. The report outlines potential impacts, proposed mitigation measures, and alternatives.

Other Key Stages:

 The EIA process also includes public consultation, informed decisionmaking by the competent authority, and post-decision monitoring to ensure compliance and assess unforeseen effects.









Actors' engagement / public participation

Environmental assessment Procedural and decision-making tool

- Characterization of the project consideration of alternatives
- Baseline characterization and integration of environmental, social, cultural, economic, governance (justice, ethics, transparency) key factors and concerns

Evaluation of impacts/effects (ex ante): identification, prediction, assessment)

- Mitigation of the most significant and negative, enhancing the positive impacts
- Follow-up: monitoring and management (*ex post*)

What assessment?

EIA must identify, describe, assess likely, direct and indirect environmental impacts/effects of activities on

- human beings / human heath
- fauna, flora / biodiversity
- soil
- water
- air
- climate / climate change
- landscape
- land use management
- material assets
- cultural heritage
- Socio-economic systems

and the interaction between those factors

Some features of the EIA system

- Legal responsibility rests with the project proponent;
- •EIS teams/authors will have legal status (e.g. certification system);

•"New" thematic areas: climate change; land use management, risks,...health issues

- •Particular emphasis in (i) Project Alternatives and (ii) assessment of cumulative impacts
- Monitoring is mandatory;
- •Ministry of the Environmental has the final decision on project's approval;
- •Portuguese law follows closely the European Directive;

•Recent national EIA Legislation— All the time periods were shortened, including for public participation, and no clarification for the roles of EIA vs SEA was provided.































III. Strategic Environmental Assessment

National policy and planning system

 National Framework Laws on Land Use Management sets the overall policy basis for spatial and sectorial planning, including it goals and principles



• The Territorial Management System through which planning policy is organized in three distinct levels, national, regional and local, and through different types of plans.





Examples of Types of Plans and Programs

Scale	Type of Plans	Responsibility
National	 National Plans and Programs Sustainable development Spatial Policy Environmental Policy Sectoral Plans: energy agriculture 	Central government
	fisheries, defence,	
	 "Special" Plans: Environmental/natural resources protection and management: Plans for Coastal Areas Plans for Protected Natural Areas Plans for Water Reservoirs Plans for Estuaries Plans for Archeological Parks 	
Regional	Regional spatial Plans: articulate the national and regional level policies, and defining guidelines for spatial planning at local level	Regional authorities/governments
Local	 Municipal Spatial Plans: Master Plans (whole municipality) Urban Development Plans Detailed Plans (for smaller areas within the municipality) 	Local governments

SEA Phases

Screening:

 This initial step determines whether a policy, plan, or programme (PPP) requires a Strategic Environmental Assessment, based on its potential to cause significant environmental effects.

Scoping:

 At this stage, the scope and key environmental issues to be addressed are defined. It includes identifying significant environmental factors, setting objectives, and determining the assessment's depth and methodologies.

Assessment – SEA Report Preparation:

 Systematic assessment of environmental effects and the development of alternatives. Findings are compiled into an Environmental Report, which outlines predicted impacts, mitigation strategies, and monitoring measures.

Other Key Stages:

 The SEA process also incorporates public and stakeholder consultation, integration of environmental considerations into decision-making, and monitoring of plan or policy implementation to track actual effects and support adaptive management.





In contrast with EIA, Strategic Environmental Assessment (SEA) is a relatively novel, less consolidated and implanted tool, but of growing importance as a decision

support tool in planning and policy.



SEA context and concepts



SEA is a formal and systematic policy tool which aims to integrate and promote sustainability through the evaluation of the effects of strategic decision-making processes (e.g. policies and plans):

ex ante assessment



SEA context and concepts



Envisaging the participation of different stakeholders and enabling institutional change and learning

Legal frameworks and training needs in this domain have grown accordingly, demanding new answers from the different actors.



V. Final Remarks

Context, language and links

✓ Explore tailor-made EIA/SEA approaches/models, regulations and procedures to deal with specific territorial contexts – specific natural and human features.

✓ Establish common EIA/SEA language: concepts and definitions, avoiding the blurred use of new or reinvented terms.

✓ Clarify the links, differences and similarities between EIA and SEA, without



Training and sustainability focused

✓One of the main goals of EIA/<u>SEA education</u> should be training students to have a holistic and strong systemic perspective on sustainability issues:



to produce ex ante evaluations of the foreseen risks and benefits of a given policy, plan and projects, as well as the follow-up and ex-post evaluation of those instruments.

EIA/SEA is often grounded on the technical aspects, showing the need to include intangible, social and cultural aspects, to improve and promote the interdisci

plinary and systemic learning and practice.

EIA/SEA training should reflect new sustainability assessment challenges, and be able to respond to societal demands for robust assessment results.



In-Class Exercise

Identify two major significant environmental or socio-economic impacts of a highway to be implemented near a natural protected area:

a) Negative Impact:

b) Positive Impact: