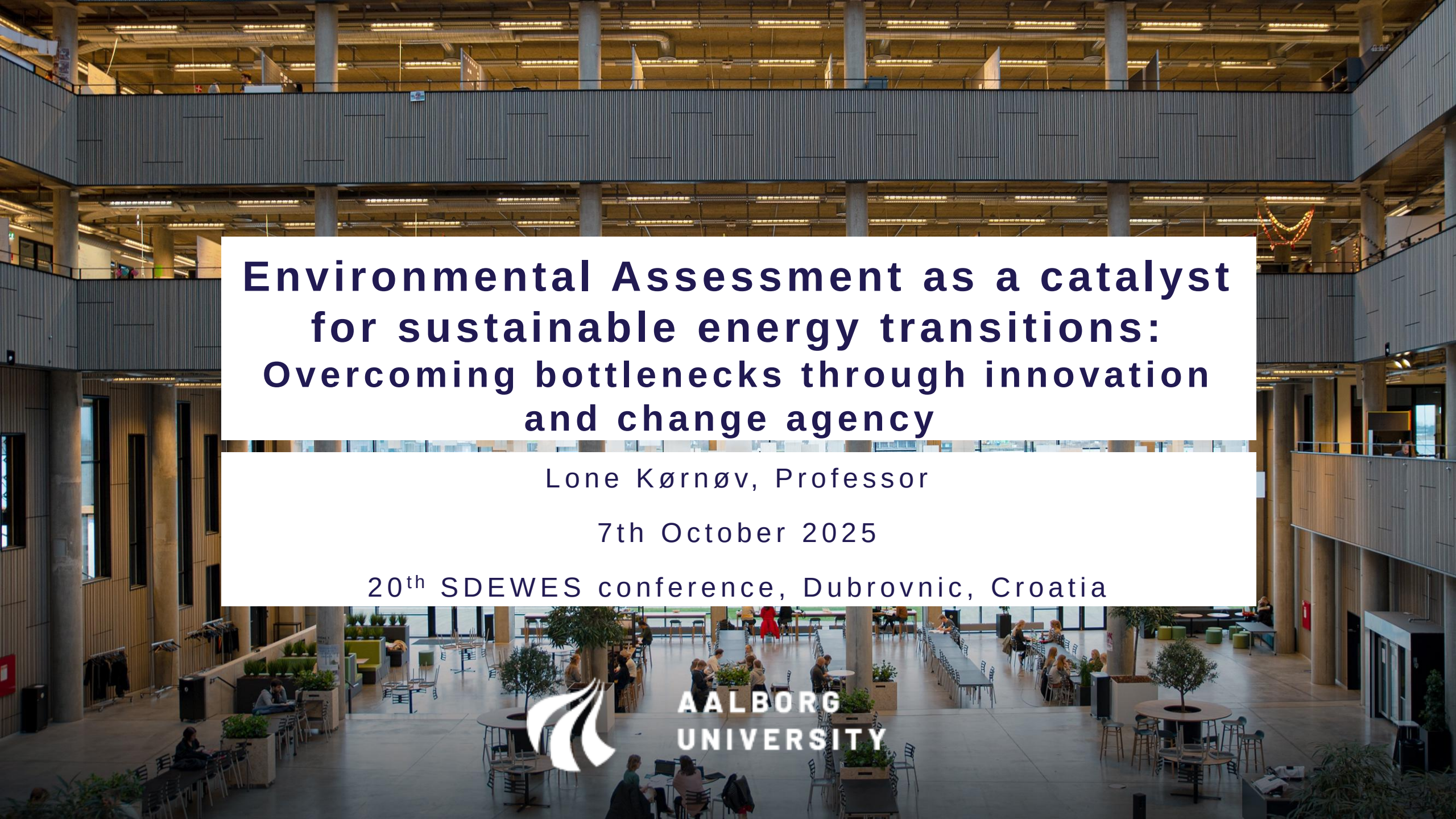


Environmental Assessment as a catalyst for sustainable energy transitions: Overcoming bottlenecks through innovation and change agency

Lone Kørnøv, Professor

7th October 2025

20th SDEWES conference, Dubrovnic, Croatia

AALBORG UNIVERSITY

Short introduction

- Professor in Environmental Assessment and decision-making
- Head of the Danish Center for Environmental Assessment (DCEA) at Aalborg University, Denmark
- President of the International Association for Impact Assessment, 2024-2027
- Supported: Danish and EU evaluation, DK guidance , DK legal ‘simplification’, a range of infrastructure developers
- Leading national continuing educations plus local capacity building
- Experience through own consultancy

DEPARTMENT OF SUSTAINABILITY AND PLANNING
AALBORG UNIVERSITY

IAIA International Association for Impact Assessment

DCEA
THE DANISH CENTRE FOR ENVIRONMENTAL ASSESSMENT

01

What is Environmental Assessment?

02

The sustainable green transition

03

Is Environmental Assessment fit for the transition?

04

Agency and change

05

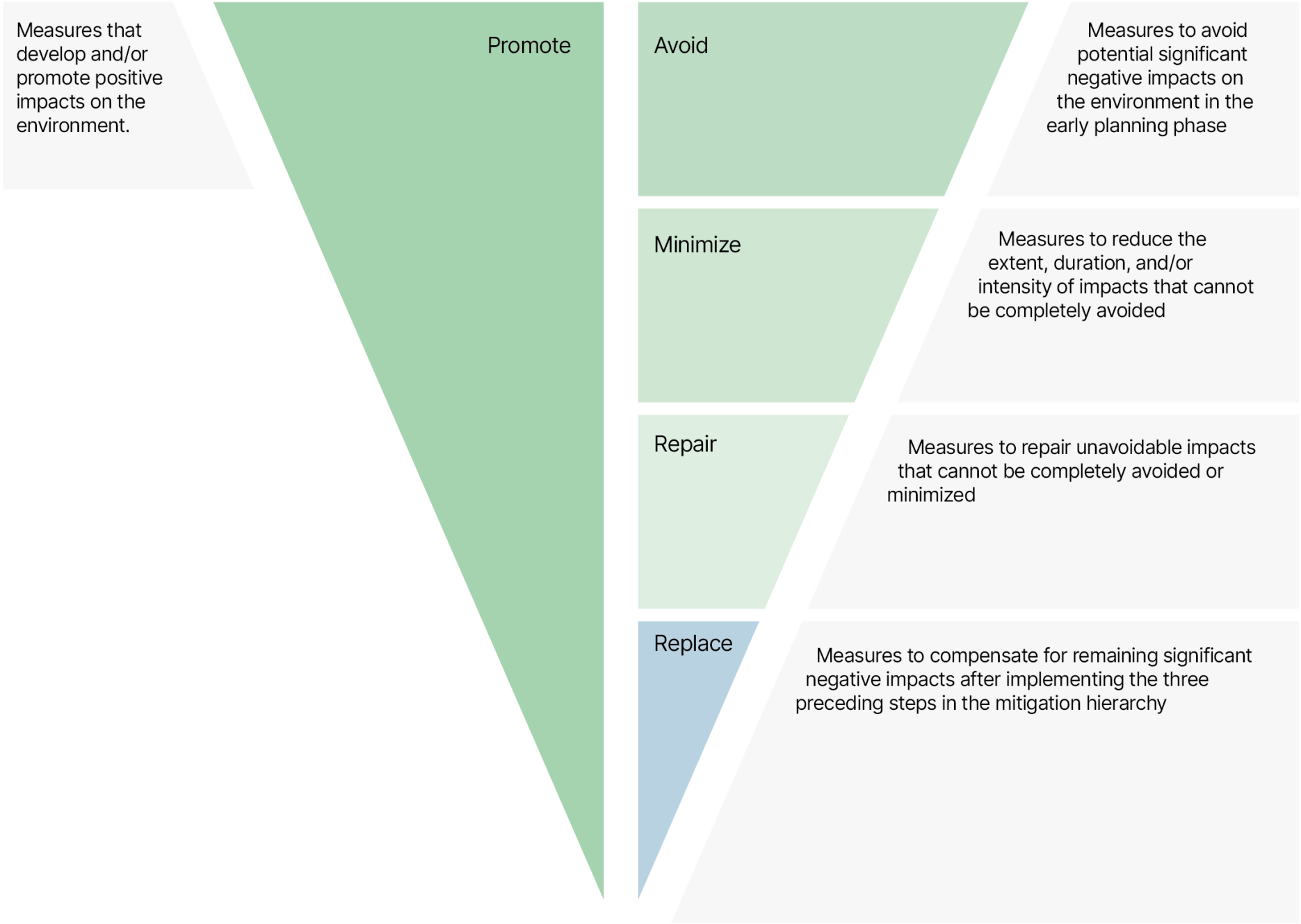
Illustrative cases

06

Closing reflections

01

Introduction: What is Environmental Assessment?


Measures that develop and/or promote positive impacts on the environment.
Promote
Avoid
Measures to avoid potential significant negative impacts on the environment in the early planning phase
Minimize
Measures to reduce the extent, duration, and/or intensity of impacts that cannot be completely avoided
Repair
Measures to repair unavoidable impacts that cannot be completely avoided or minimized
Replace
Measures to compensate for remaining significant negative impacts after implementing the three preceding steps in the mitigation hierarchy

Impact Assessment

"Impact assessment (IA) is a transformative process designed to inform and guide decisions and actions by government, businesses, or individuals. It aims to maximize positive outcomes while minimizing negative effects, ultimately fostering sustainable development."

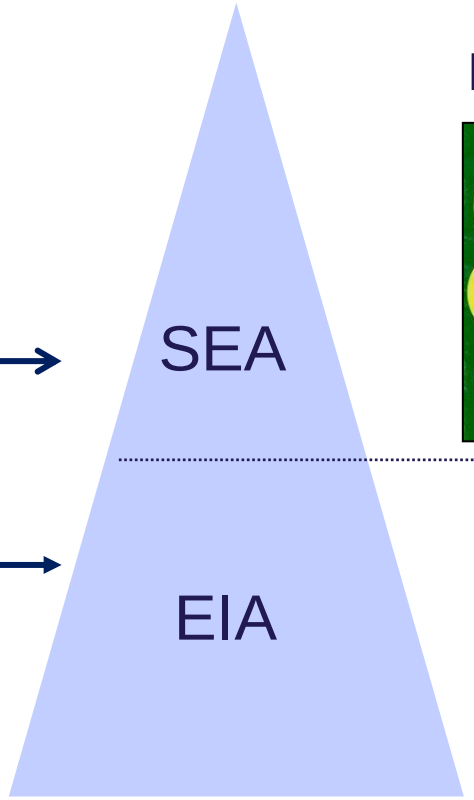
(IAIA)

Impact Assessment

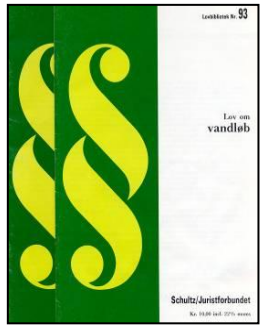
"Impact assessment (IA) is a transformative process designed to inform and guide decisions and actions by government, businesses, or individuals. It aims to maximize positive outcomes while minimizing negative effects, ultimately fostering sustainable development."

(IAIA)

Target different levels of decision-making

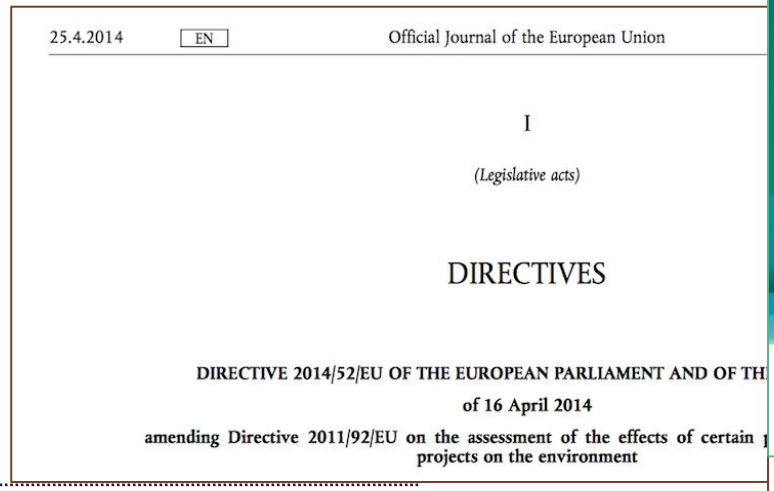


Legislation Plans/programmes



Projects

LCA, Habitat Assessment, SIA etc.


25.4.2014 EN Official Journal of the European Union

I

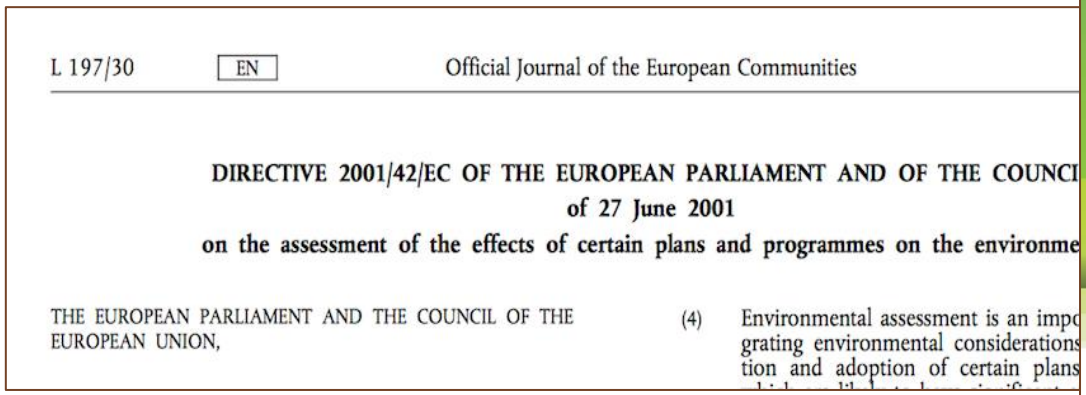
(Legislative acts)

DIRECTIVES

DIRECTIVE 2014/52/EU OF THE EUROPEAN PARLIAMENT AND OF TH

of 16 April 2014

amending Directive 2011/92/EU on the assessment of the effects of certain
projects on the environment


L 197/30 EN Official Journal of the European Communities

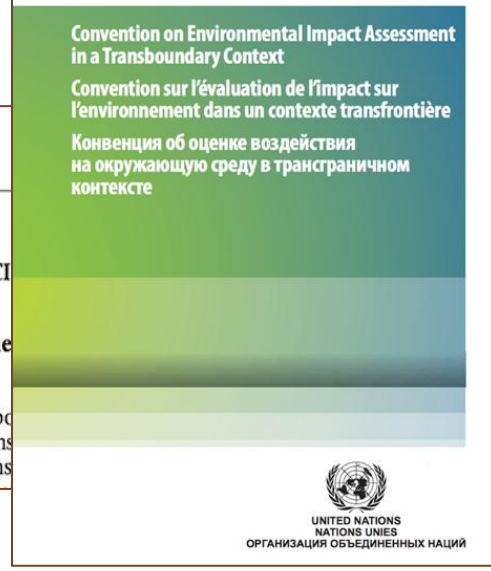
DIRECTIVE 2001/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCI

of 27 June 2001

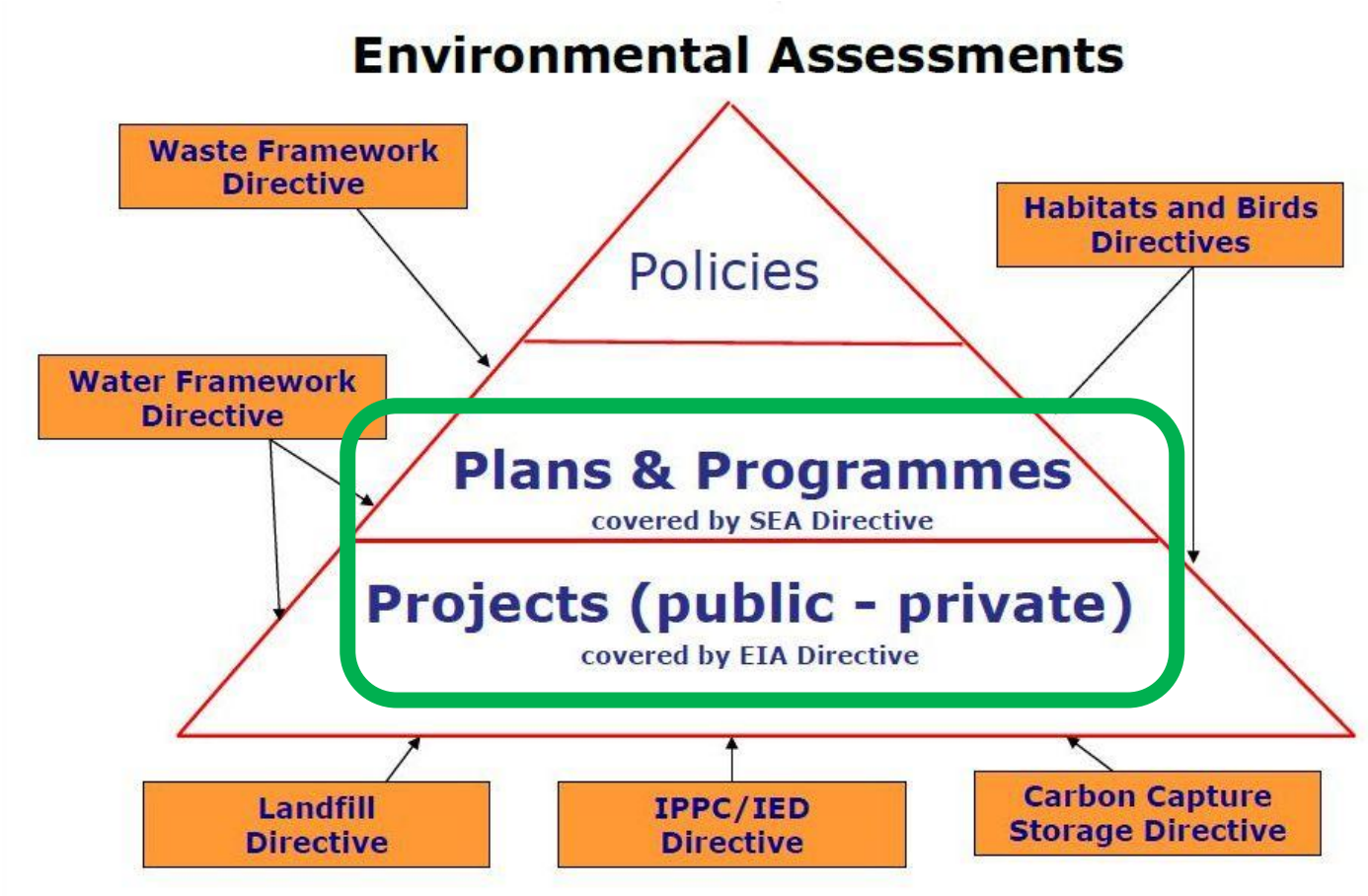
on the assessment of the effects of certain plans and programmes on the environme

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

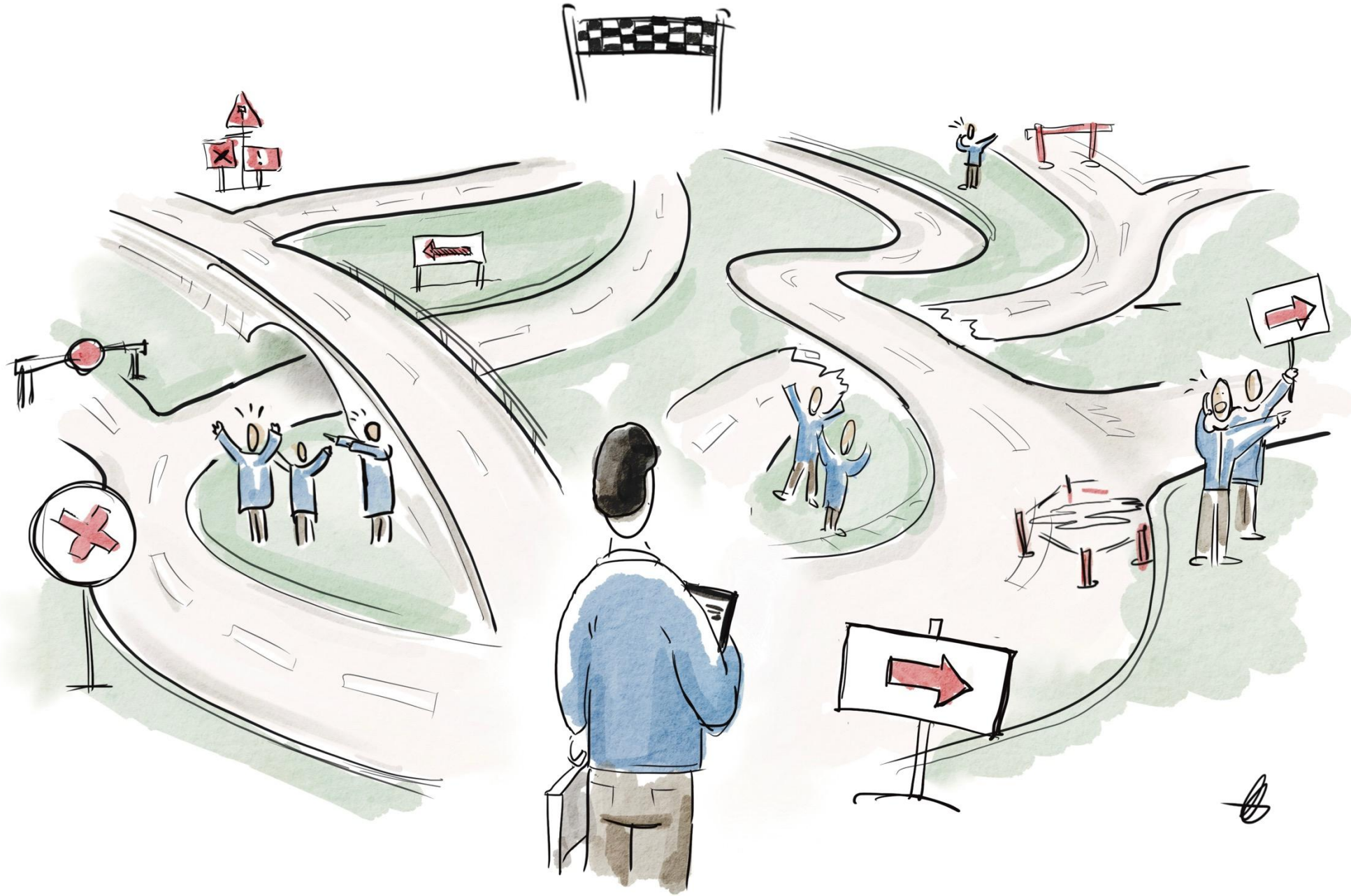
(4) Environmental assessment is an impo
grating environmental considerations
tion and adoption of certain plans



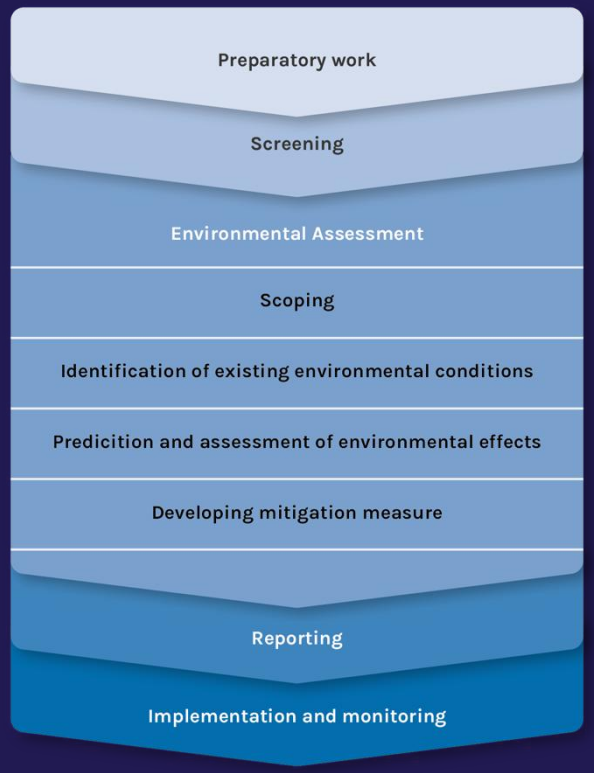
Related to other environmental assessment regimes in the EU

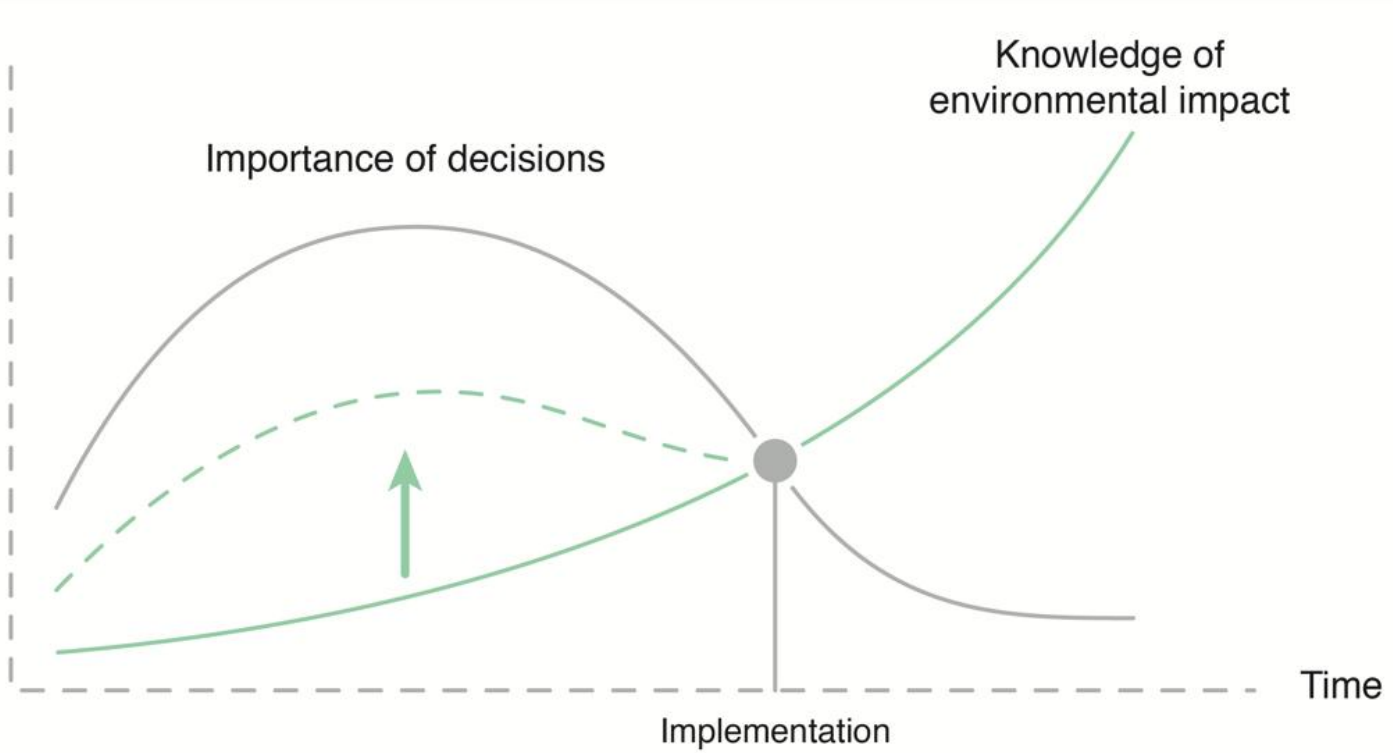


Source: Presentation of the European Commission at the 11th meeting of the Energy Community Environmental Task Force, June 2016



Environmental Assessment as a catalyst in decision-making





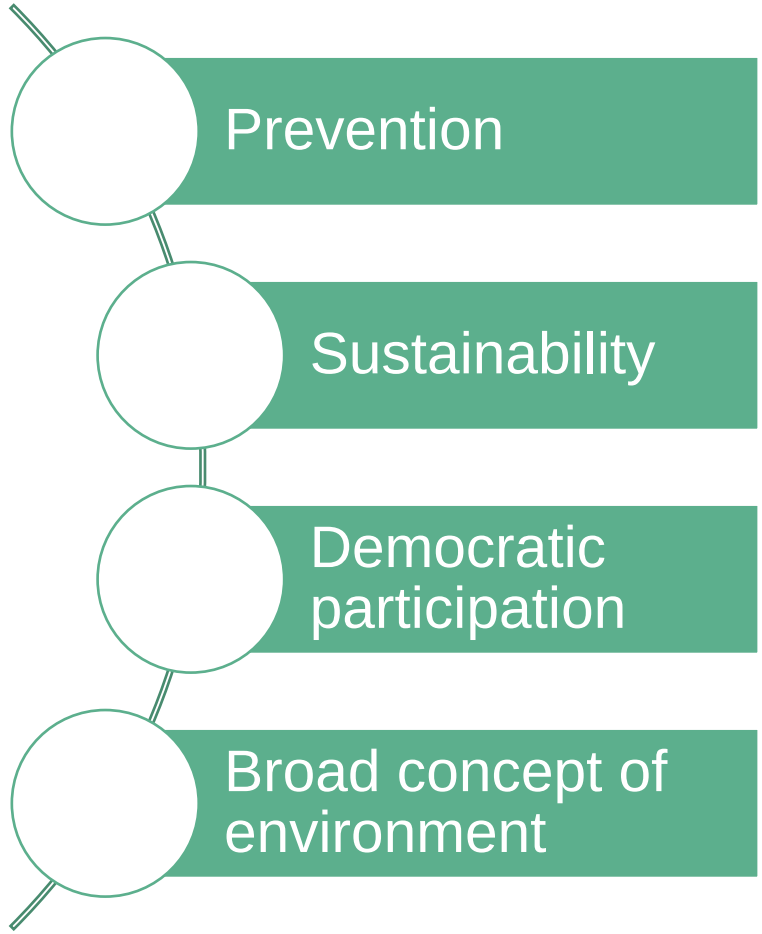
(Kørnøv et al., 2021)

The objective

*"The objective of this law is to provide for a **high level of protection of the environment** and to contribute to the integration of environmental considerations into the preparation of plans and programmes and permission to projects with a view to **promoting sustainable development**, by ensuring that an environmental assessment is carried out of plans, programmes and projects, which are likely to have significant effect on the environment.*

*The objective of an environmental assessment is that, with the **involvement of the public as early as possible** and before the authority makes a decision on the plan, programme or project, account is taken of the likely significant impacts of plans, programmes, and projects on the environment, including **biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationships between the above factors**."*

(EU Directives implemented in Danish EA Law, own translation)



The environmental concept

Flora, fauna, and biodiversity

Population

Human health

Soil

Land

Water

Air

Climatic factors

Material assets

Landscape

Cultural heritage

Major accidents and/or disasters

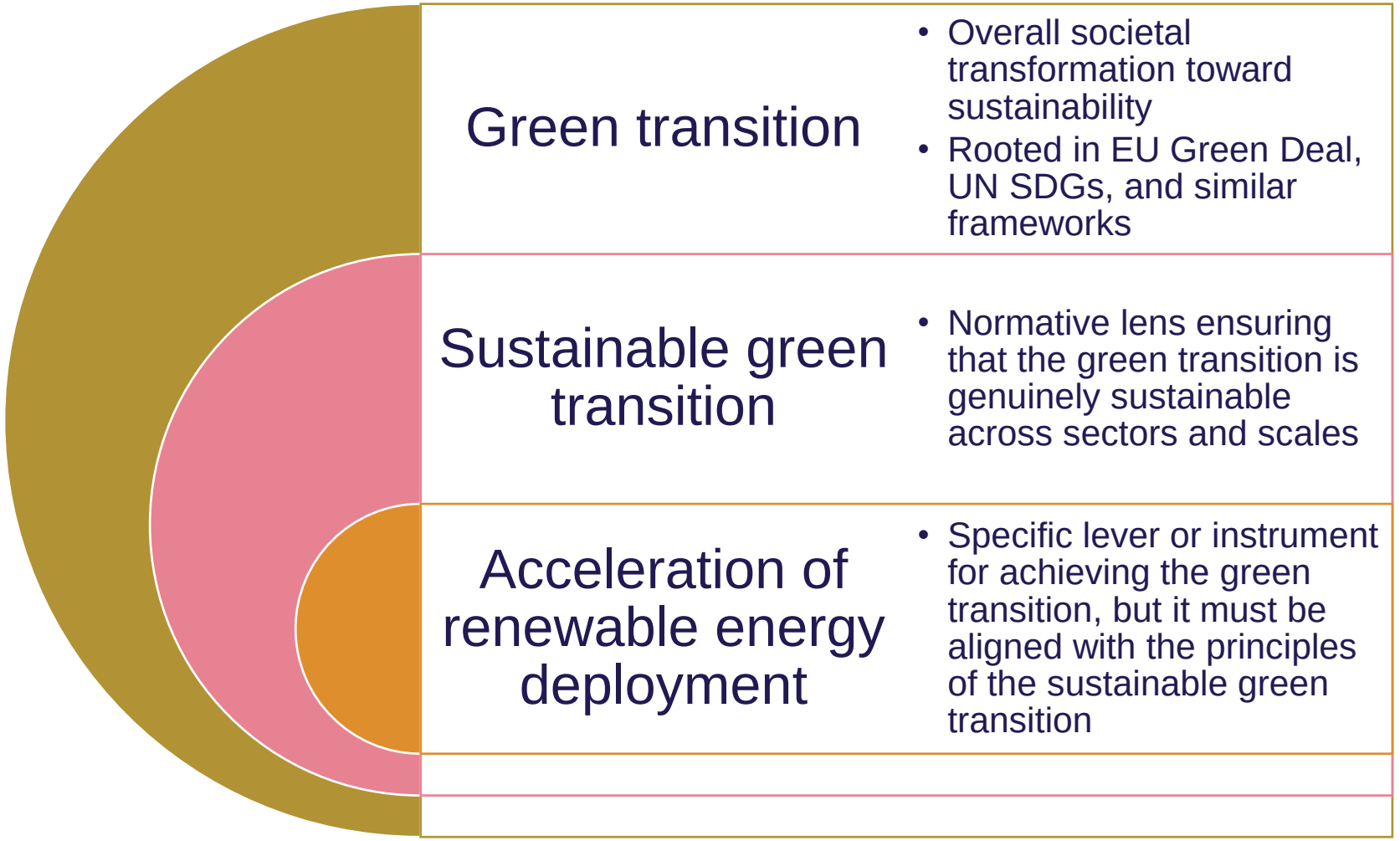
Resource efficiency

O2

Setting the stage: Sustainable green transition

Framing the transition

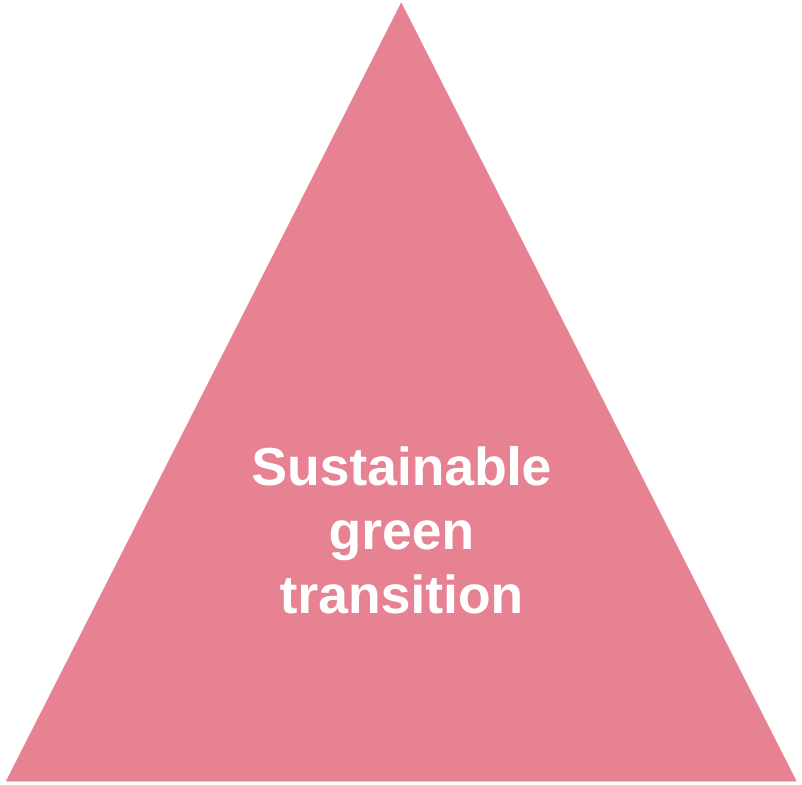
Green, sustainable, and accelerated



Sustainable transition: Between push, pull, and protection

Rapid renewable deployment
Emerging technologies (AI)
Regulatory reforms
Shifting societal dynamics (e.g. energy security)

Drivers



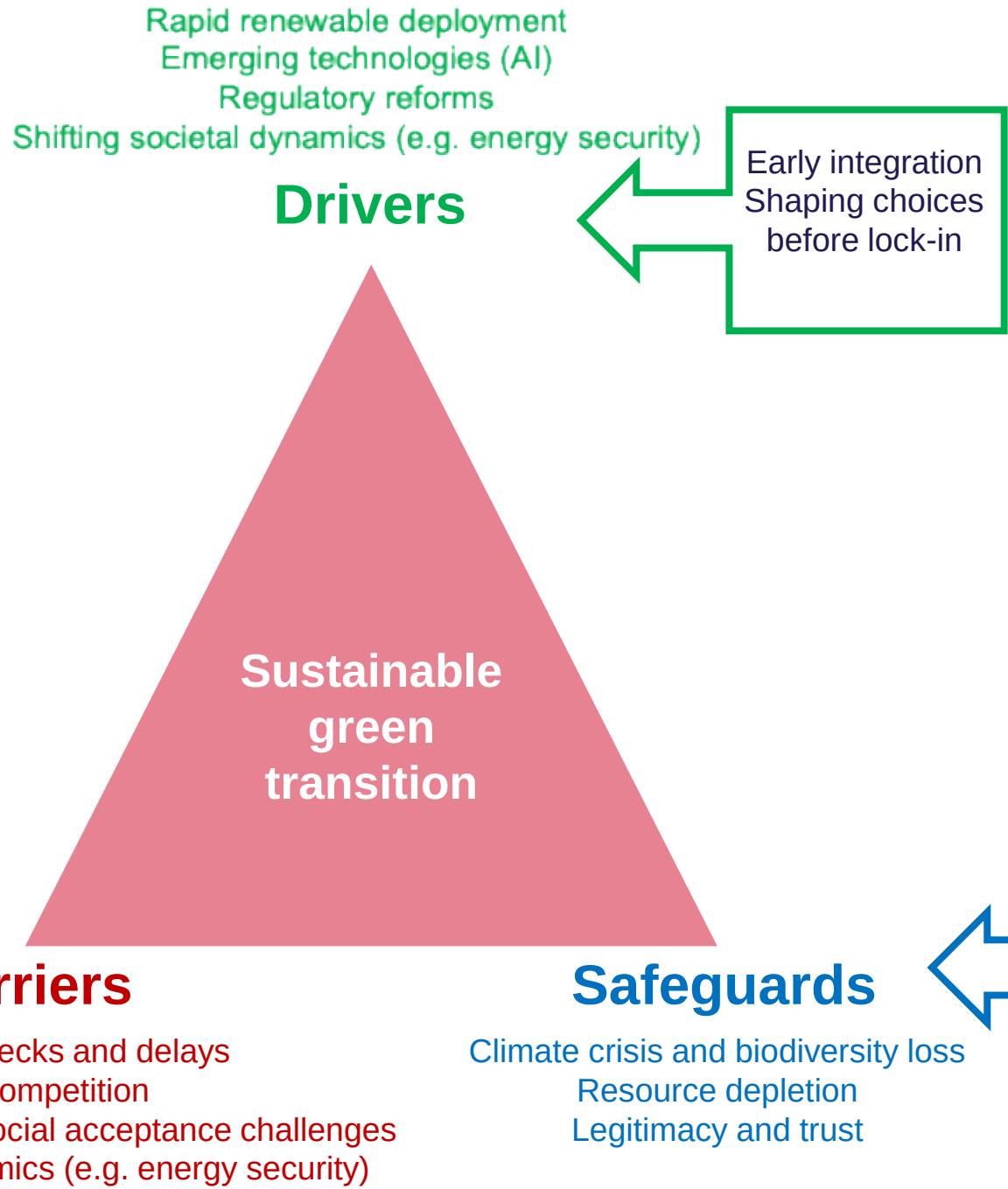
Barriers

Grid bottle necks and permitting delays
Land competition
Public opposition and social acceptance challenges

Safeguards

Climate crisis and biodiversity loss
Resource depletion
Legitimacy and trust

A bridge between speed and sustainbility?



O3

Is Environmental Assessment fit for the transition?

Main challenges slowing down the transition identified across MS

Process and governance

- Slow fragmented permitting
- Weak coordination across authorities
- Lack of digitalisation and transparency

People and participation

- Limited citizens engagement
- Public acceptance challenges
- Insufficient staff and expertise

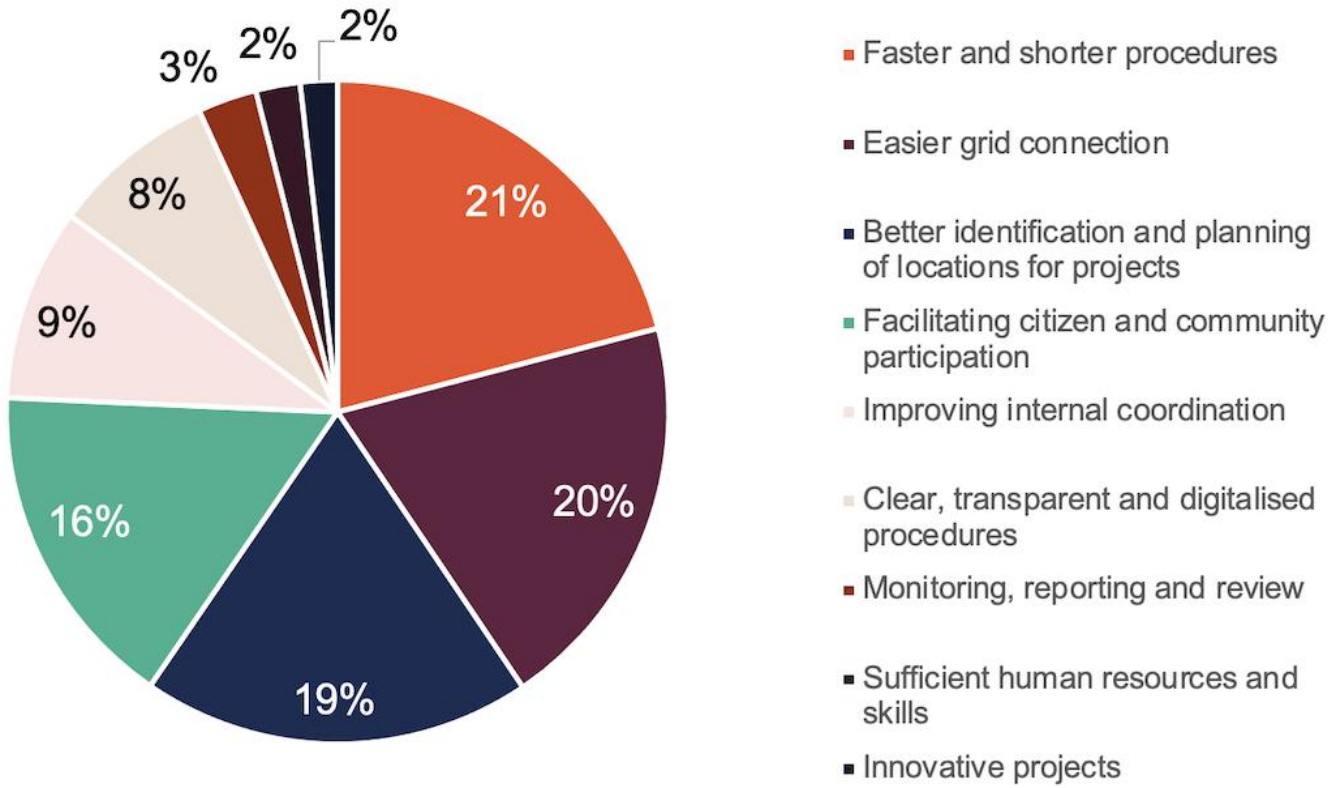
Missing spatial planning and 'go-to-areas'

- Grid connection bottlenecks
- Weak innovation and monitoring frameworks

The EU’s response: Faster, smarter, fairer permitting

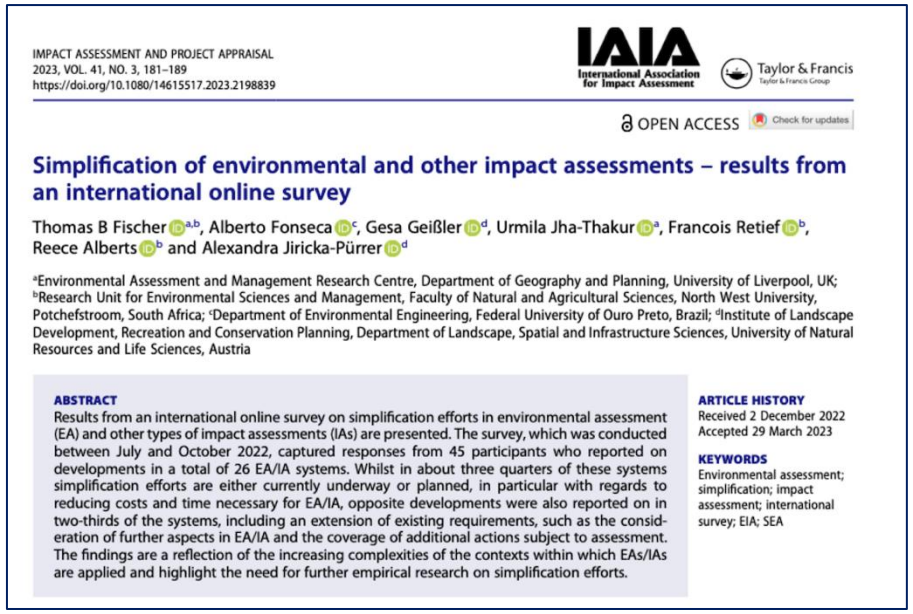
- Shorter and clearer timelines
- Digitalized and transparent procedures
- Stronger citizens participation
- Make SEA and EIA faster, smarter, and more consistent across MS
- EU wide momentum: 22 MS have introduced measure to shorten and streamline EIA processes, showing this is not just theoretical but structural shift

Positive actions by thematic area



Simplification

- ….is high on the political agenda
- ….can lead to an EA practice coming closer to or further away from the objective of the EA regulation
- ….can mean different thing



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https://doi.org/10.1080/14615517.2023.2198839

IAIA International Association for Impact Assessment

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OPEN ACCESS Check for updates

Simplification of environmental and other impact assessments – results from an international online survey

Thomas B Fischer[a,b], Alberto Fonseca[c], Gesa Geißler[d], Urmila Jha-Thakur[a], Francois Retief[b], Reece Alberts[b] and Alexandra Jiricka-Pürrer[d]

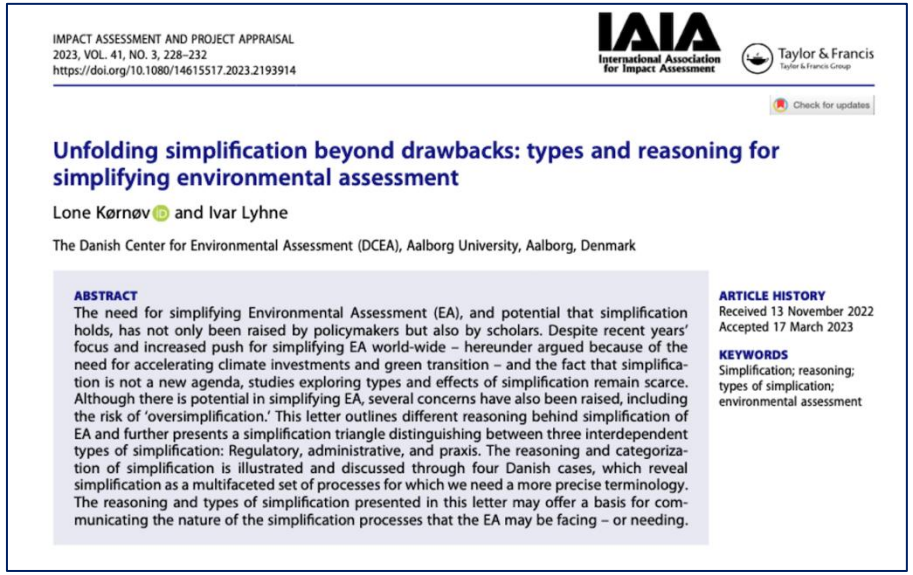
[a]Environmental Assessment and Management Research Centre, Department of Geography and Planning, University of Liverpool, UK; [b]Research Unit for Environmental Sciences and Management, Faculty of Natural and Agricultural Sciences, North West University, Potchefstroom, South Africa; [c]Department of Environmental Engineering, Federal University of Ouro Preto, Brazil; [d]Institute of Landscape Development, Recreation and Conservation Planning, Department of Landscape, Spatial and Infrastructure Sciences, University of Natural Resources and Life Sciences, Austria

ABSTRACT

Results from an international online survey on simplification efforts in environmental assessment (EA) and other types of impact assessments (IAs) are presented. The survey, which was conducted between July and October 2022, captured responses from 45 participants who reported on developments in a total of 26 EA/IA systems. Whilst in about three quarters of these systems simplification efforts are either currently underway or planned, in particular with regards to reducing costs and time necessary for EA/IA, opposite developments were also reported on in two-thirds of the systems, including an extension of existing requirements, such as the consideration of further aspects in EA/IA and the coverage of additional actions subject to assessment. The findings are a reflection of the increasing complexities of the contexts within which EAs/IAs are applied and highlight the need for further empirical research on simplification efforts.

ARTICLE HISTORY
Received 2 December 2022
Accepted 29 March 2023

KEYWORDS
Environmental assessment; simplification; impact assessment; international survey; EIA; SEA



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https://doi.org/10.1080/14615517.2023.2193914

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Unfolding simplification beyond drawbacks: types and reasoning for simplifying environmental assessment

Lone Kørnøv and Ivar Lyhne

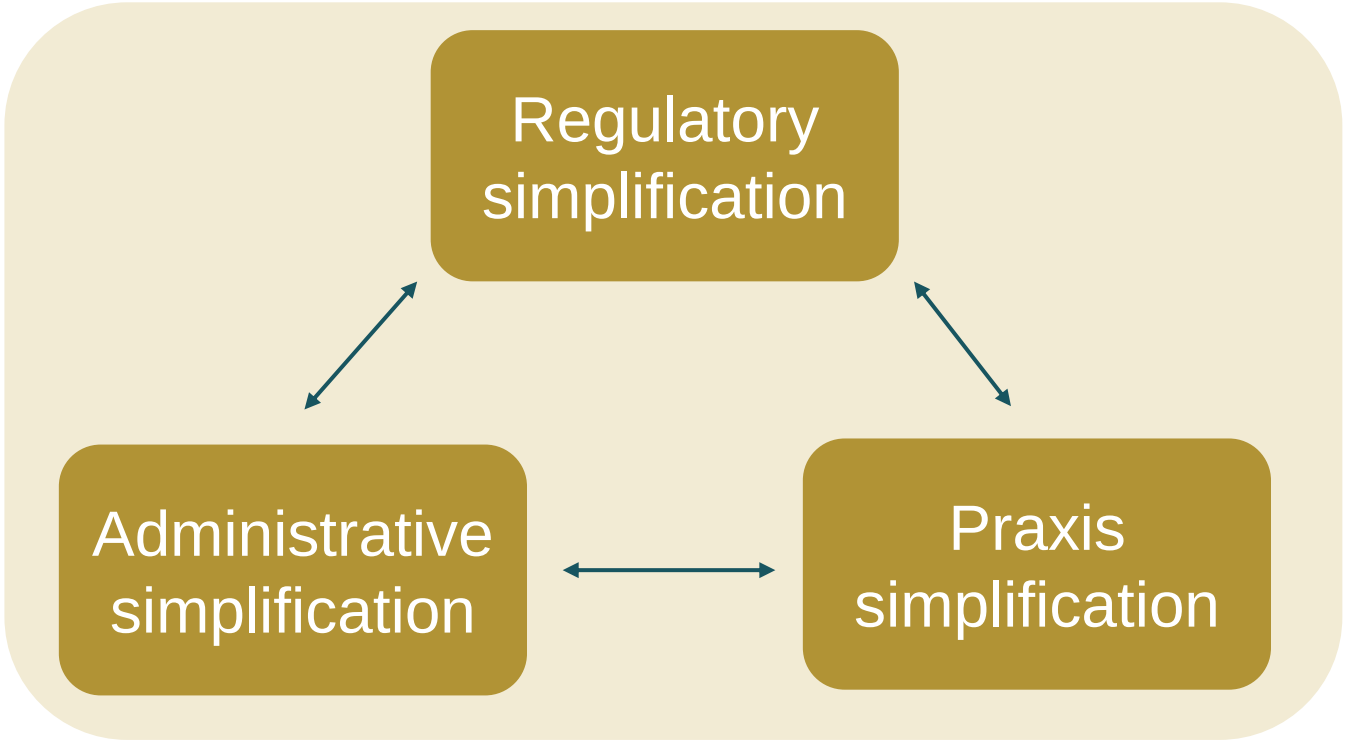
The Danish Center for Environmental Assessment (DCEA), Aalborg University, Aalborg, Denmark

ABSTRACT

The need for simplifying Environmental Assessment (EA), and potential that simplification holds, has not only been raised by policymakers but also by scholars. Despite recent years' focus and increased push for simplifying EA world-wide – hereunder argued because of the need for accelerating climate investments and green transition – and the fact that simplification is not a new agenda, studies exploring types and effects of simplification remain scarce. Although there is potential in simplifying EA, several concerns have also been raised, including the risk of 'oversimplification.' This letter outlines different reasoning behind simplification of EA and further presents a simplification triangle distinguishing between three interdependent types of simplification: Regulatory, administrative, and praxis. The reasoning and categorization of simplification is illustrated and discussed through four Danish cases, which reveal simplification as a multifaceted set of processes for which we need a more precise terminology. The reasoning and types of simplification presented in this letter may offer a basis for communicating the nature of the simplification processes that the EA may be facing – or needing.

ARTICLE HISTORY
Received 13 November 2022
Accepted 17 March 2023

KEYWORDS
Simplification; reasoning; types of simplication; environmental assessment



Reasonings:

1. Increased efficiency
2. Increased quality and effectiveness
3. Reduced complexity

Making sense of simplification

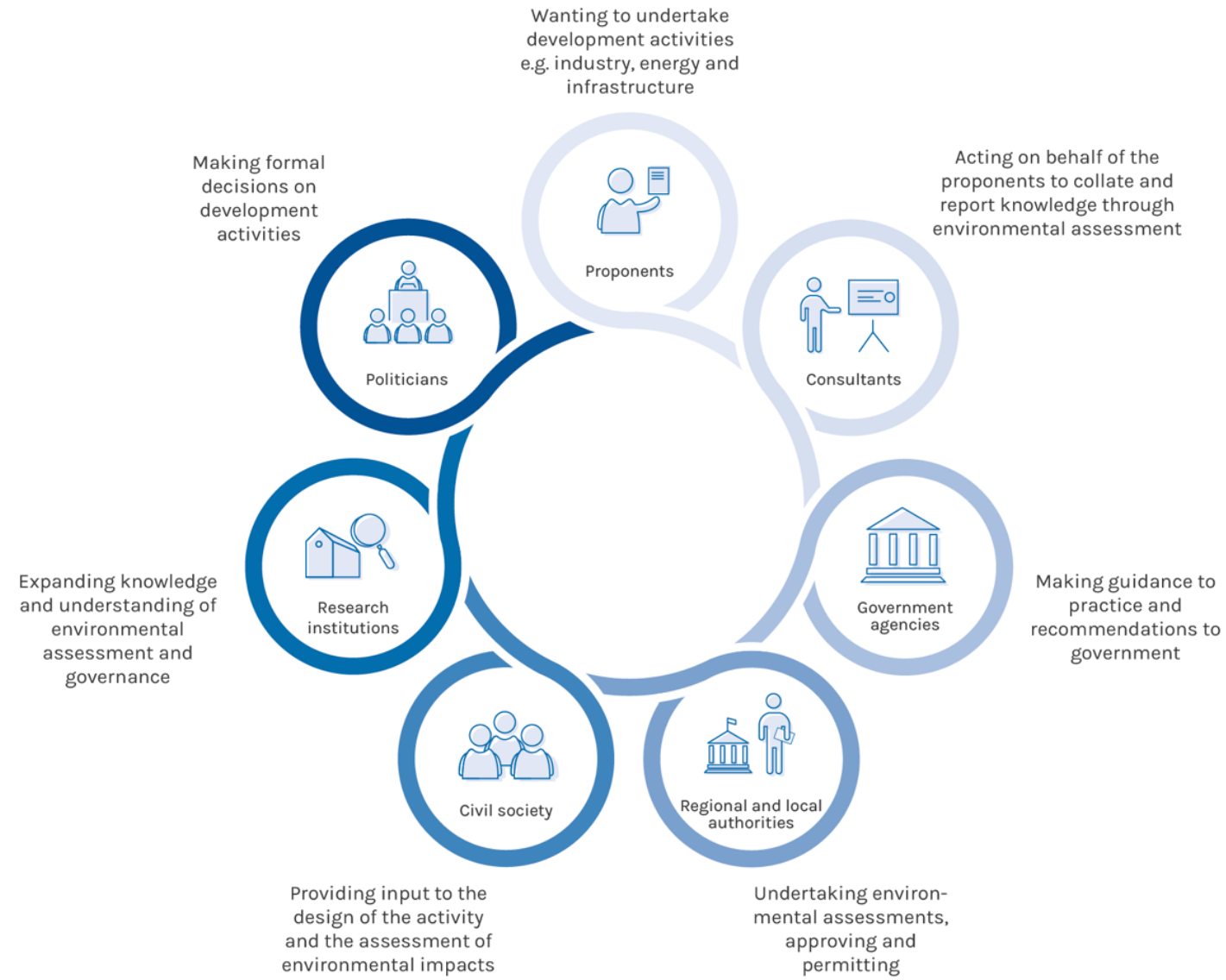
('Simplification triangle')

Simplification of EA and permitting can also have risks

- Reduced scrutiny
- Limited public input
- Weakened protections
- Increased risks

04
Agency and change

Actors involved in the SEA/EIA process



‘The tired cyclist’

Effectiveness and Tour de France analogy

- **Cyclist** ➢ Planner and EA practitioner
- **Team captain** ➢ EA project manager
- **Team** ➢ Environmental/sustainability specialists
- **Directeur Sportif** ➢ Competent authority
- **Sponsors** ➢ Decision-makers (developers and authorities)
- **Audience** ➢ Public and stakeholders
- **Tour Director** ➢ Regulators and guidance providers
- **Officials and secretaries** ➢ QA institutions and mechanisms

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https://doi.org/10.1080/14615517.2020.1848243

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Check for updates

Can Tour de France inspire SEA effectiveness? An analogy to encourage a broader systems thinking

Everyone is a change agent

Change generators

- **Key change agents** - *I will set into motion*
- **Demonstrators** – *I support the change process*
- **Patron** – *I generate support for the change process*
- **Defender** – *I keep the issue alive*

Change implementors

- **External change implementor** – *I am invited to implement*
- **External/internal** – *I develop internal implementors*
- **Internal** – *I am charged to implement*

Change adoptors

- **Early adopters** – *I will try it*
- **Maintainers** – *I adopt the change*
- **Users** – *I use the change*

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https://doi.org/10.1080/14615517.2020.1830679

IAIA International Association for Impact Assessment

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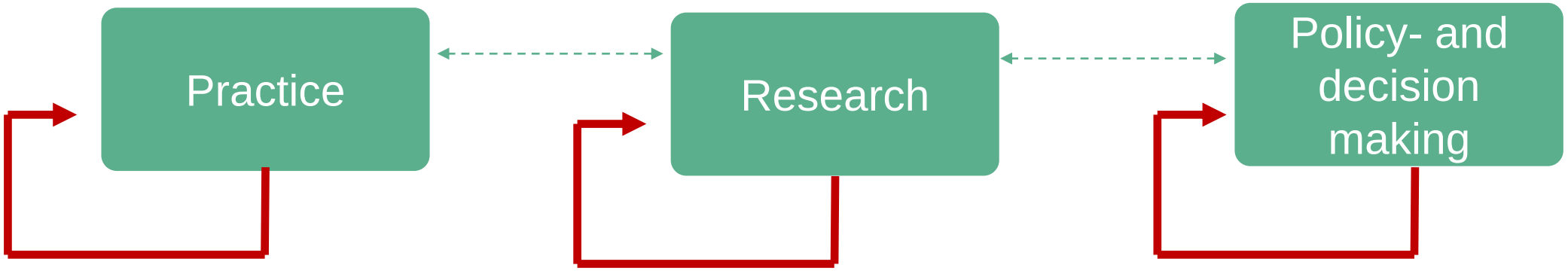
SEA as a change agent: still relevant and how to stay relevant?

Lone Kørnøv

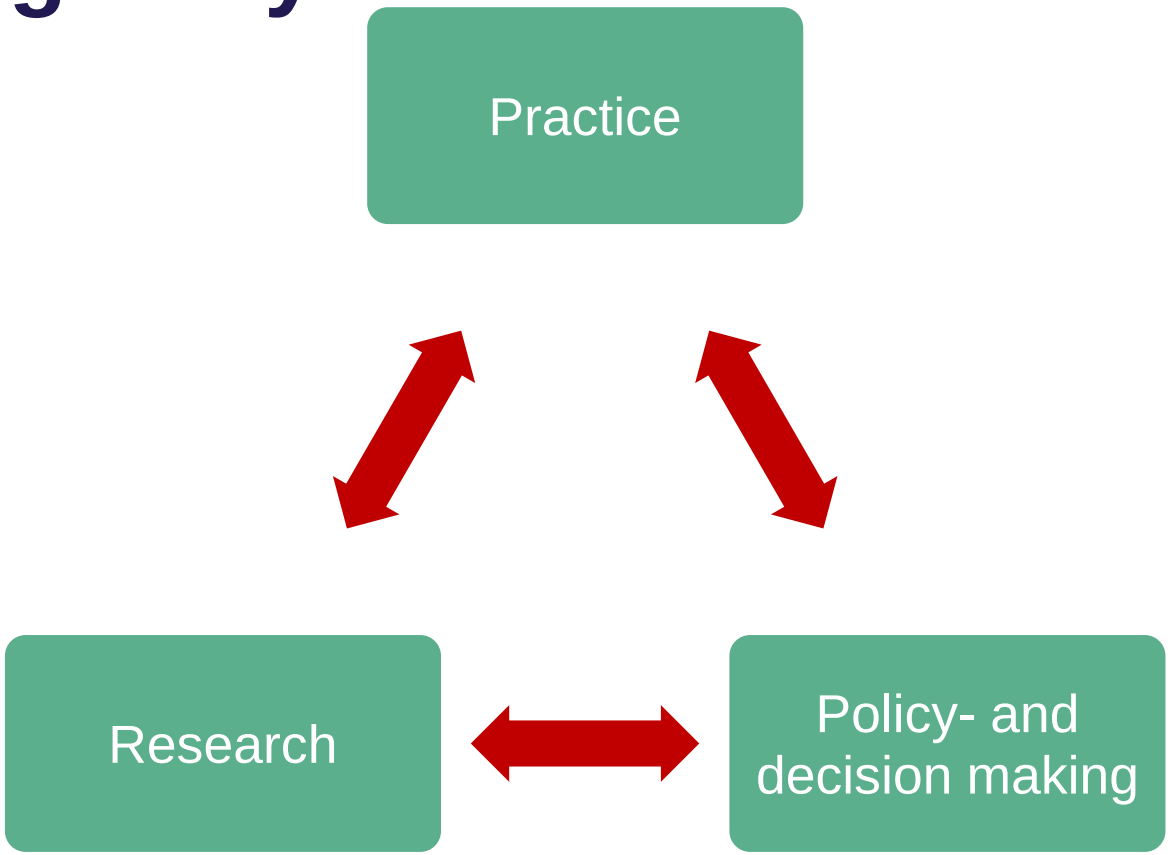
The Danish Center for Environmental Assessment, Aalborg University, Aalborg, Denmark

ARTICLE HISTORY Received 23 September 2020; Accepted 27 September 2020

Change agents with de-coupled strategies?



Connection for agency



O5

Illustrative cases of change agency through collaboration

Case 1: Digital transformation

Digitalisation to support transition and simplification: Outputs & impact

DIGITAL TOOLS

EA Hub

National EA repository for plans and projects

EA tool

One-stop-shop GIS data platform targeted EA.

LAND-LCA

GHG calculator for land take.

CAUSA

Prototype on overview of causalities in past reports

GUIDANCE

Climate

Guidance on significance assessment of climate impacts

Health

Guidance on assessment of health impacts

SDGs for EA

Guidance on localizing and linking SDGs to EA

Environmental concept

Guidance on how to understand the concept of environment

Acceleration of green transition

Faster decision-support targeted RE (2-13 months)

Economic savings

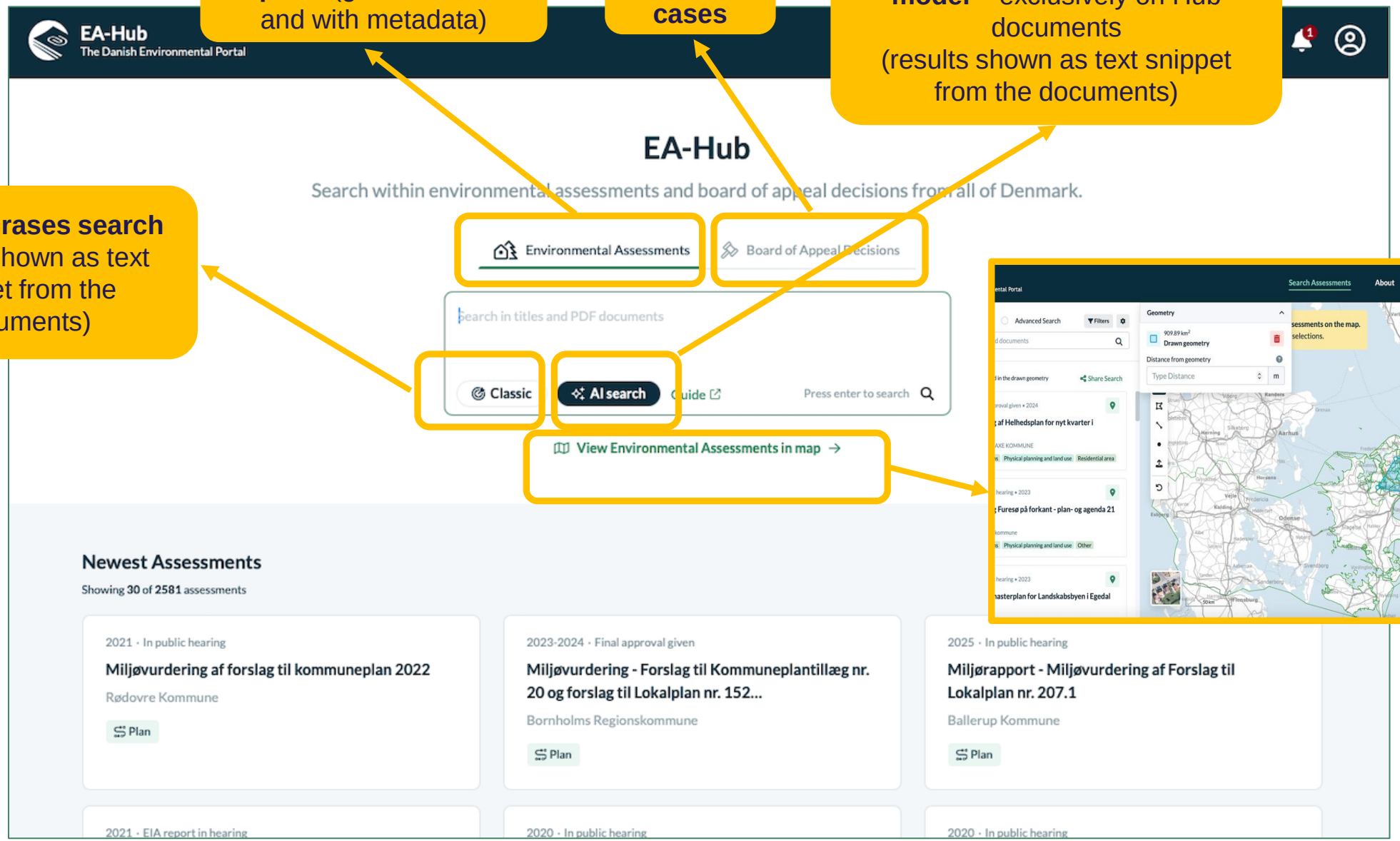
Estimate: 80 million euro/year for developers and authorities

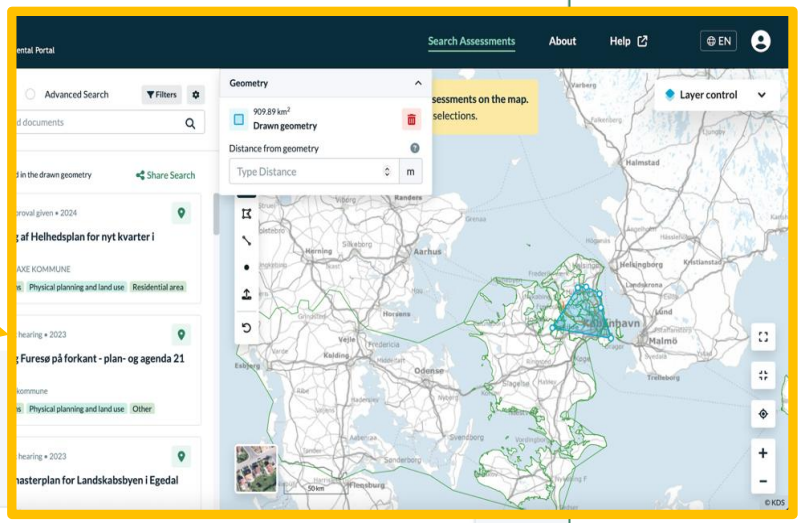
•2.500+ EIA and SEA reports (georeferenced and with metadata)

1.500 legal cases

AI search built on language model – exclusively on Hub documents (results shown as text snippet from the documents)

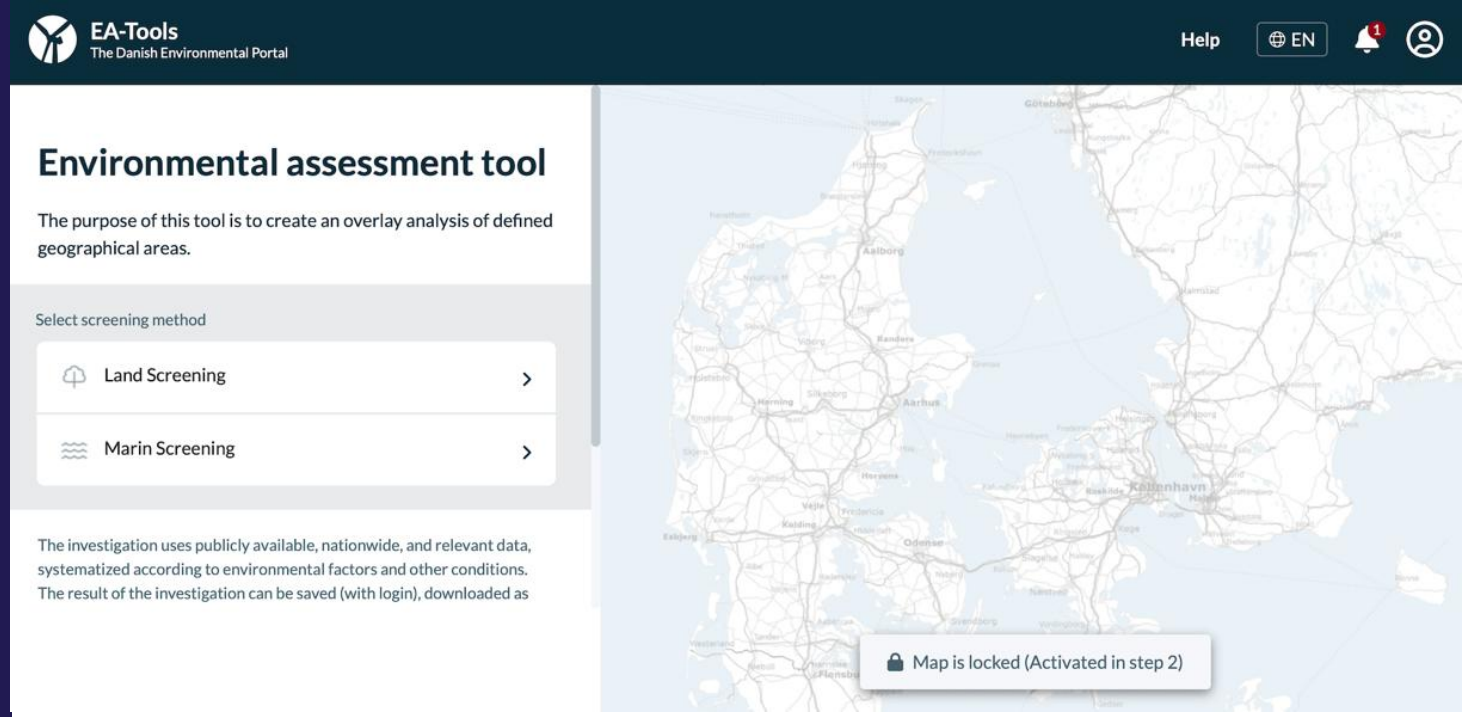
Words/phrases search (results shown as text snippet from the documents)





EA tool

- Over 700 curated GIS datasets- covering both onshore an offshore, purpose-built for environmental assessment
- Data sets related to all environmental factors



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2025, VOL. 43, NO. 4, 253–266
https://doi.org/10.1080/14615517.2025.2532919

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Laying the foundation for generative AI and multi-agent systems in environmental assessment: building a curated dataset from the Danish EA Hub

Lone Kørnøv[a], Ivar Lyhne[a] and Karl Rasmus Sveding[b]

[a]The Danish Center for Environmental Assessment, Aalborg University, Aalborg, Denmark; [b]The Danish Environmental Portal, Aalborg, Denmark

ABSTRACT
The relevance and roles of artificial intelligence (AI) within impact assessment (IA) depends critically on the quality and relevance of the underlying data. This paper explores the development of a curated dataset of environmental assessment (EA) texts to support generative AI applications, including AI agents and modular multi-agent systems. Using the Danish EA Hub as a case study, we outline the key considerations involved in creating such a dataset, with particular attention to user needs, quality assurance, structuring, copyright and ownership, ethics and mechanisms for continuous updating. The curation process is analysed through a socio-technical lens, highlighting how data preparation is shaped by technical, legal, and institutional factors. The curated dataset ensures that AI systems are trained on context-specific, procedurally aligned, and legally compliant information – addressing the risk of relying on uncontrolled online sources. Finally, we outline the future potential of this dataset to support task-specific AI agents across various EA stages, from screening to compliance. The results highlight the foundational role of curated data in enabling responsible and effective AI integration in environmental governance.

ARTICLE HISTORY
Received 26 October 2024
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KEYWORDS
Artificial intelligence (AI); AI agents; Environmental assessment (EA); Curated datasets; Socio-technical systems

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Case 2:
Capacity building

Human resources and skills are needed across Europe

	AT	BE	BE1	BE2	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Introduction of measures to ensure the availability and qualification of administrative resources																													
Member State, including regional and local authorities, cooperation with the Large-Scale Partnerships for Skills																													

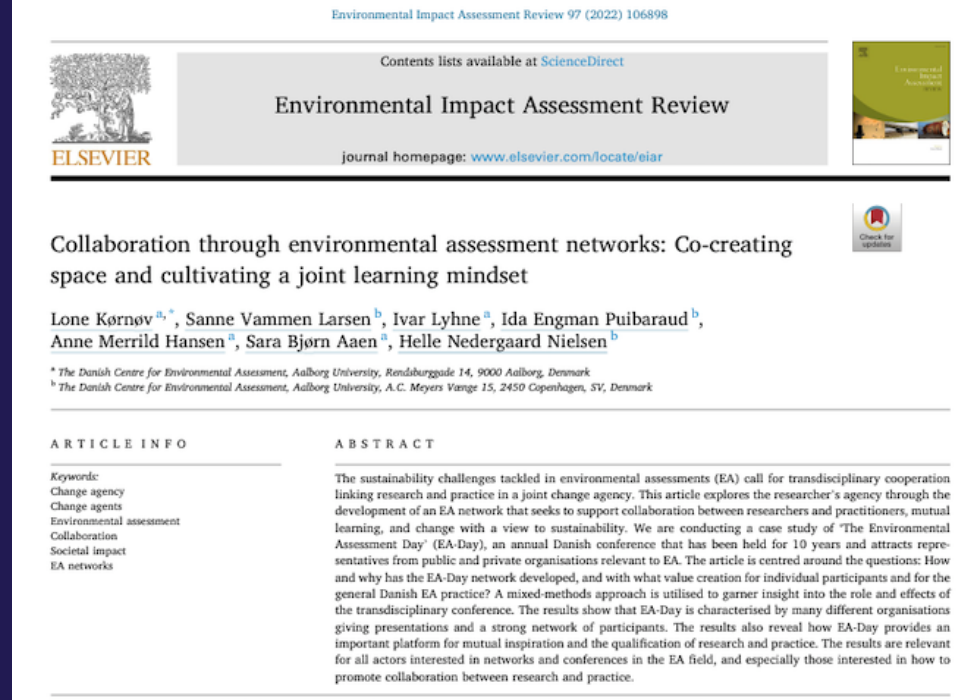
Continuing education and network for professionals

Two continuing education programmes in environmental assessment of plans (SEA) and of projects (EIA)

- Bring together key actors in the green transition – authorities, consultants, and developers
- Jointly taught
- Builds competence, trust, and shared understanding across sectors

Supported by the annual ‘Environmental Assessment Day’

- A national arena fostering professional community, dialogue, and innovation



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ELSEVIER

Collaboration through environmental assessment networks: Co-creating space and cultivating a joint learning mindset

Lone Kørnøv [a,*], Sanne Vammen Larsen [b], Ivar Lyhne [a], Ida Engman Puibaraud [b], Anne Merrild Hansen [a], Sara Bjørn Aaen [a], Helle Nedergaard Nielsen [b]

[a] The Danish Centre for Environmental Assessment, Aalborg University, Rendsburggade 14, 9000 Aalborg, Denmark
[b] The Danish Centre for Environmental Assessment, Aalborg University, A.C. Meyers Vænge 15, 2450 Copenhagen, SV, Denmark

ARTICLE INFO

Keywords:
Change agency
Change agents
Environmental assessment
Collaboration
Societal impact
EA networks

ABSTRACT

The sustainability challenges tackled in environmental assessments (EA) call for transdisciplinary cooperation linking research and practice in a joint change agency. This article explores the researcher's agency through the development of an EA network that seeks to support collaboration between researchers and practitioners, mutual learning, and change with a view to sustainability. We are conducting a case study of 'The Environmental Assessment Day' (EA-Day), an annual Danish conference that has been held for 10 years and attracts representatives from public and private organisations relevant to EA. The article is centred around the questions: How and why has the EA-Day network developed, and with what value creation for individual participants and for the general Danish EA practice? A mixed-methods approach is utilised to garner insight into the role and effects of the transdisciplinary conference. The results show that EA-Day is characterised by many different organisations giving presentations and a strong network of participants. The results also reveal how EA-Day provides an important platform for mutual inspiration and the qualification of research and practice. The results are relevant for all actors interested in networks and conferences in the EA field, and especially those interested in how to promote collaboration between research and practice.

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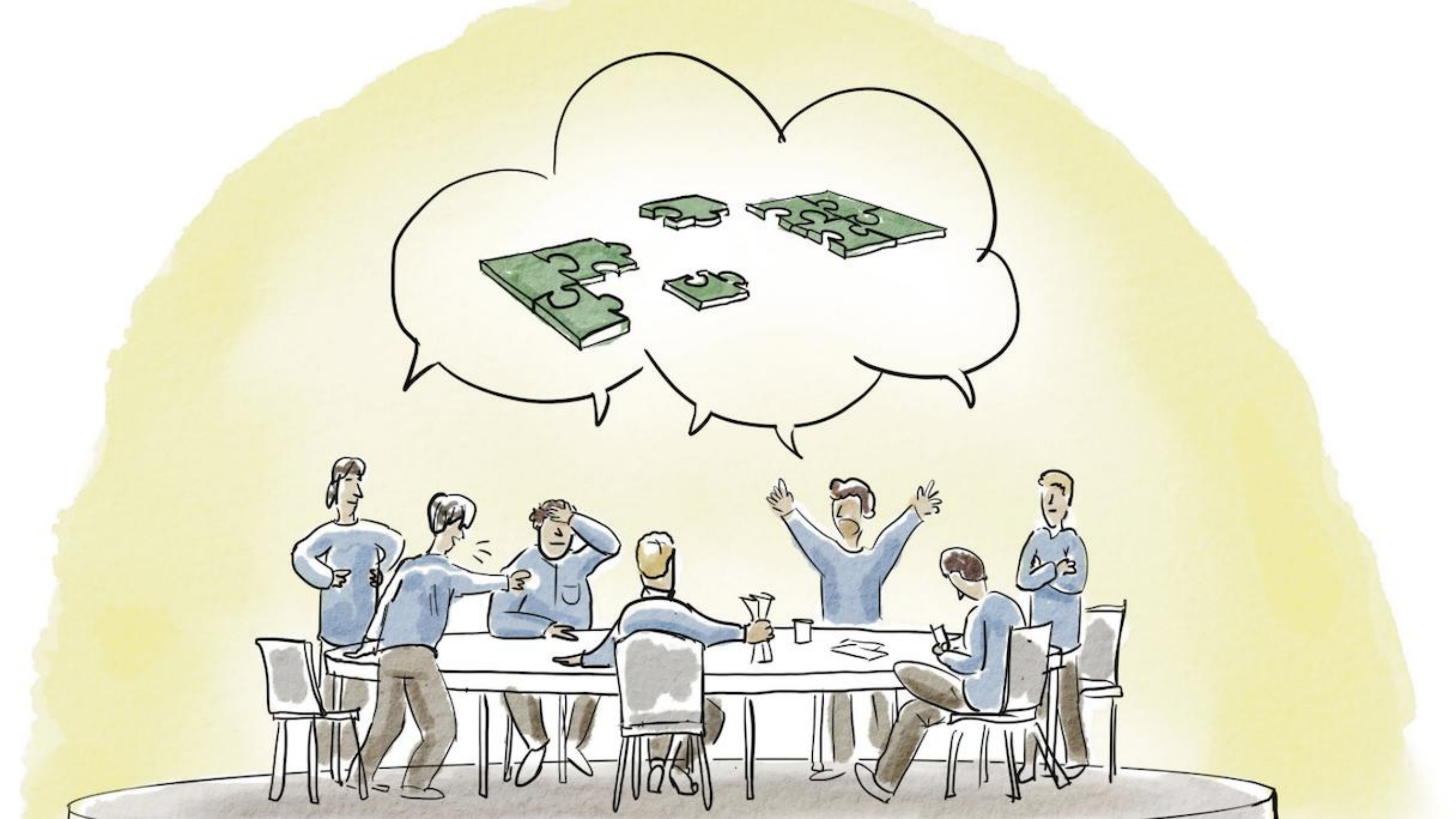
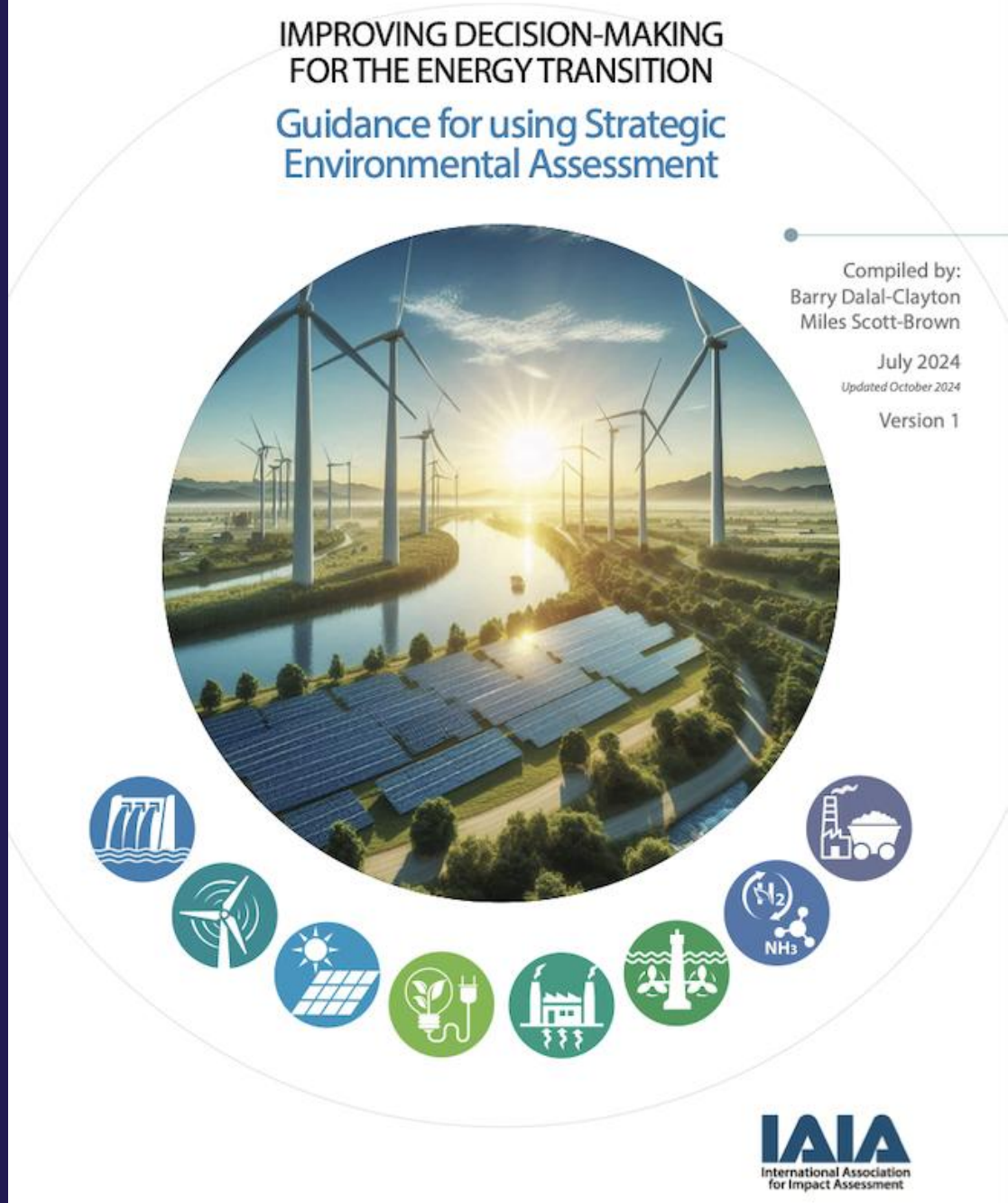


Case 3: Professional leadership and shared standards

SEA guidance for the energy transition

- Transition to renewables is accelerating – but often managed project by project
- Risk of fragmented, short-sighted approvals without strategic guidance
- SEA provides the framework for early, forward-looking energy and spatial planning
- New IAIA SEA guidance unites research, practice, and policy around good practice
- A collective act of agency



SEA Guidance

Three pathways of collective agency

Case	Focus	Type of agency	Contribution to “fitness”
Digital transformation	Tools and data infrastructure	Technological agency	Efficiency, transparency, knowledge sharing and integration
Capacity building	People and community	Human and relational agency	Skills, trust, networks
Professional leadership (guidance)	Shared standards and foresight	Institutional and professional agency	Coherence, direction, global relevance

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Closing reflections

The needs and challenges to stay relevant and fit

1. Decide to be relevant and a change agent – and take the leadership
2. Simplify wisely
3. Support a sustainable acceleration of RE through systems thinking
4. Critically embrace emerging technologies like AI
5. Reflect upon what kind of change agent you are - and who the other change agents, you engage with, and
6. Foster collaboration

Thank you for your kind attention!

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