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# **Bottlenecks and good practices of DNSH implementation in Cohesion Policy: a comparison between rural and urban areas**

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## Key messages

The 'Do No Significant Harm' principle (DNSH) seeks to ensure that European Union policies and European cohesion policy achievements comply with the objective of not significantly harming the environment and climate.

The inclusion of an EU principle like the DNSH can increase the administrative burden on Managing Authorities. However, it can deliver positive impacts in modernising and enhancing the effectiveness of public bodies regarding policy monitoring and evaluation frameworks.

In some cases, like Finland, the proposed DNSH evaluation methodology is detailed and elaborate. Other Member States, like Portugal, Italy, and Belgium, are more practical in their approach to assessing DNSH. Countries have different administrative capacity levels to assess ECP funds and requirements.

Harmonising and simplifying the implementation of the DNSH principle through increased clarity in the requirements and a harmonised policy evaluation framework is recommended. This simplification process applies to the legal basis for the inclusion of the DNSH principle across the different instruments and the DNSH policy evaluation methodologies across EU Member States, which can allow an overall comparison of the implementation of this principle.

The sound assessment of the DNSH principle requires expert knowledge of environmental legislation and processes and policy evaluation methodologies, thus implying the acquisition of external expertise in several instances.

One approach to overcoming current knowledge shortcomings is to apply territorial impact assessment (TIA) methodologies. Given the need for a place-based analytical approach, TIA methodologies can be easily adjusted to assess the implementation of the DNSH principle in urban, rural, and other specific contexts.



# 1. Introduction

## THEMATIC FOCUS

This Knowledge Piece focuses on specific bottlenecks in implementing the DNSH principle applied to ECP programmes in urban and rural areas. This contribution also analyses how the DNSH principle is evaluated in a selection of EU Member States. Moreover, this Knowledge Piece identifies potential challenges and provides solutions and recommendations on how this principle can be evaluated more effectively.

## IMPLEMENTATION CHALLENGES AND KNOWLEDGE NEEDS

As a new principle, analysing and discussing DNSH implementation in urban and rural areas is challenging, given the limited available literature on the implementation of the DNSH principle. Nonetheless, this Knowledge Piece guides how the DNSH principle in both urban and rural areas can be assessed more effectively and place-based. This Knowledge Piece guides relevant stakeholders in using the DNSH principle to implement ECP by navigating through the various dimensions.

The discussion on DNSH is relevant, as ECP implementation tends to impact environmental sustainability processes, both positively and negatively, in both urban and rural areas in all the six domains/objectives covered by the DNSH taxonomy regulation:

- Climate change mitigation
- Climate change adaptation
- Sustainable use and protection of water and marine resources
- Transition to a circular economy
- Pollution prevention and control
- Protection and restoration of biodiversity and ecosystems

The main challenges and bottlenecks found in DNSH implementation in rural and urban areas are:

- Climate change mitigation and adaptation trends have no clear territorial boundaries. Hence, it is challenging to identify with precision the effects of the assessed ECP programme in a specific rural or urban area.
- In rural areas, analysing the transition to a circular and green economy is particularly challenging given the overall reduced understanding of emerging business

models related to this 'new economic model' in agricultural and forestry-related activities in some EU rural regions.

- In certain rural areas, there might be potential challenges to restoring biodiversity and correlating the analysed ECP programme to its concrete effects in fostering sustainable use and protection of water and marine resources. The same applies to pollution prevention and control, as changes in these processes tend to take time to be verifiable. Other non-ECP programmes with similar environmental goals might also be implemented in the same region at the same time.
- In certain urban areas, there might still be a lack of reduced social and institutional commitment to promote circular economy-related processes.
- Urban areas may be where the protection and restoration of biodiversity and ecosystems are difficult to assess.

## MAIN ADDRESSEES

This Knowledge Piece addresses a broad audience of local, regional, national, and EU entities aiming to design, implement, monitor, and evaluate EU and non-EU projects/programmes/policies/ and development strategies that consider environmental sustainability goals via a sound and effective implementation of the DNSH principle.

The effectiveness of the DNSH principle's implementation is still largely unknown across the EU. Interested stakeholders can benefit from proposed recommendations, best practices, and solutions.

**'This Knowledge Piece focuses on specific bottlenecks in implementing the DNSH principle applied to ECP programmes in urban and rural areas.'**



## 2. Cohesion policy and the DNSH principle

### 2.1 Sustainability transitions challenges related to the implementation of the DNSH principle via EU Cohesion Policy in urban and rural areas

The DNSH principle “seeks to encourage economic activities, investments and reforms that are aligned with European environmental policies and strategies while excluding those that could cause significant harm to one or more of the six European environmental objectives” (FBB, 2023, p. 4). Ultimately, “when Member States apply for funding from a European fund requiring DNSH compliance, a prior DNSH assessment is required for each measure proposed, called ex-ante analysis or assessment. Member States must demonstrate that the measure will not significantly impact any of the six environmental objectives and/or what action will need to be taken to manage any risk of significant harm to any of the environmental objectives” (FBB, 2023, p. 6).

There is a clear obligation in Cohesion Policy Regulations (CPR) requiring a dedicated DNSH assessment for cohesion policy programmes at the level of types of actions. Crucially, DNSH is compulsory at the programme (i.e. type of actions) level for ECP. However, there is no legal requirement for a case-by-case assessment of selected operations (at the level of projects) that is against the principle. However, selected operations must fall within the scope of the type of action defined in the programme (that were subject to a DNSH assessment).

Put differently, the results of the Strategic Environmental Assessment (SEA) process and the DNSH assessment shall be reflected in the criteria for the selection of operations. Hence, managing authorities can define specific criteria for selecting operations that ensure compliance with the DNSH principle. Member States are responsible for implementing this principle throughout the EU Cohesion Policy programming period. Hence, it is expected that different methodological approaches are used in different Member States.

Several existing policy evaluation methodologies have been used to assess sustainability transitions challenges related to ECP investment. These include frameworks such as Cost-Effectiveness Analysis (Zhang & Liu, 2023) and Cost-Benefit Analysis (Sager, 1979), alongside the more recent impact assessment and specifically Territorial Impact

Assessment (TIA) methodologies (Medeiros, 2020). Other recent methodological approaches, such as Social Return on Investment (Hunter et al., 2022), have been promoted as a more holistic approach to demonstrating value for money (Banke-Thomas et al., 2015).

Under this prolific arena of policy evaluation methodologies and a lack of a common binding evaluation approach to assess the DNSH principle, there is a risk of high discrepancy in adopting methodologies to assess the implementation of the DNSH principle across EU Member States. As in most cases, as the analysis of the implementation of the DNSH principle is scrutinised, some bottlenecks are identified in specific studies, like a recent one which concluded that “the Climate Taxonomy fails to ensure that activities labelled as

sustainable, because of their contribution to climate objectives, do not significantly harm the transition to the Circular Economy” (EEB, 2022, p. 4).

DNSH is a recently emerged principle, and experiences along the different implementation stages are sparse. Future research can, for example, help structure challenges along the key stages:

1. Programming/DNSH ex-ante assessment
2. Implementation (e.g. calls for projects, selection criteria)
3. Monitoring (e.g. how to monitor criteria for DNSH)
4. Evaluation

The following subsections explore the challenges and bottlenecks specific to rural and urban areas before exploring assessment approaches.

#### RURAL AREA CHALLENGES AND BOTTLENECKS OF APPLYING THE DNSH PRINCIPLE

Rural areas face multiple challenges threatening rural sustainability in responding to and preparing for environmental and energy transition. These include, according to an OECD report (2020):

- Geographic remoteness
- Ageing and shrinking population
- Depletion of natural resources
- Environmental decay.

**‘Encourage economic activities, investments and reforms that are aligned with European environmental policies and strategies while excluding those that could cause significant harm to one or more of the six European environmental objectives.’**

According to a European Policies Research Centre (EPRC, 2022) report, there are five types of rural functions for characterising the diversity of rural areas and their capacity to respond to these transitions:

- Provision of ecosystem services
- Specific innovative infrastructure and services
- Provision of highly qualitative and accessible land-based products
- Distributed and diversified production system
- Social capital, cultural assets

Correspondingly, regarding the sustainability transition of rural communities, Zang et al. (2023) propose adopting a holistic, systemic lens to respond to the different demands for ecological protection, economic development, and

social improvement under the Sustainable Development Goals (SDG). They propose supporting the incubation of professional service institutions, developing ecological agriculture, a systemic Design Lab for Community Regeneration, and shaping a bio-regional circular economy based on traditionally grown plants.

For example, the OECD (2019) provides a comprehensive analytical framework with its proposed principles on rural policy (Figure 1). As can be seen, implementing the DNSH principle in rural areas can touch many distinct components related to the six main dimensions of this principle.

What is important here is to use a place-based approach to identify the idiosyncrasies of each rural region in terms of their main sustainability transition challenges and to identify the main analytical components to be evaluated, embracing the implementation of the DNSH principle.

Figure 1 OECD principles on rural policy



Source: OECD (2019)

Numerous potential challenges and bottlenecks exist in implementing the DNSH principle in ECP programmes focused on supporting EU rural areas (in the six domains covered by the DNSH taxonomy regulation). Identifying the concrete effects of the analysed ECP programme in climate change mitigation and adaptation trends in a concrete rural area is a significant challenge when these climate-related processes have no clear territorial boundaries. For example, despite macro-regional adaptation trends (e.g. Mediterranean, Alpine region), challenges exist in the availability of a greater granularity of these trends at the sub-regional level to translate adaptation trends to concrete, local, project selection criteria (e.g. climate, proofing cycling lane infrastructure for increased flooding risk).

Policies do not act in isolation. ECP programmes are commonly implemented alongside other EU, national, and/or regional development programmes/plans/strategies in any territory. As such, analysing the effects of an ECP programme on fostering sustainable use and protection of water and marine resources, a transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems is challenging.

In the case of rural areas, for instance, it could be particularly complex to analyse the transition process into a circular or green economy, given the overall developing understanding of emerging business models related to a 'new economic model' in agricultural and forestry-related activities in some EU rural regions. Further examination of existing examples, such as circular agriculture (e.g. in water reuse), climate-smart agriculture, or circular bio-economy, could prove insightful.

On the other hand, the analyses of 'pollution prevention and control', 'protection and restoration of biodiversity and ecosystems', and 'sustainable use and protection of water and marine resources' are potentially easier to analyse in rural areas than in urban areas. Even these three selected analytical domains may have a broad geographical scope and be challenging to assess in smaller urban or peri-urban areas, where, for example, a total absence or reduced levels of biodiversity are combined with challenges to restore it.

Furthermore, challenges exist in relating ECP programmes to their concrete effects in fostering sustainable use and protection of water and marine resources and pollution prevention and control, as changes in these processes tend to take time to be verifiable. At the same time, other non-ECP programmes with similar environmental goals could be implemented in the same region.

## URBAN AREA CHALLENGES AND BOTTLENECKS OF APPLYING THE DNSH PRINCIPLE

In urban areas, urban sustainability challenges result from industrial pollution, ineffective waste management, and population density (Visa, 2023), among others. Urban planning and governance processes, social networks, and political commitment affect the sound implementation of urban planning and development processes toward an effective, sustainable transition path (Soliman and Soliman, 2021).

In a more detailed and holistic approach to urban sustainability-related challenges, the European Environment Agency reminds that "about three-quarters of Europeans live in cities, according to UN-Habitat. With their concentrated population and infrastructure, cities are especially vulnerable to certain effects of climate change and other environmental stresses like heatwaves, flash floods, pollution, noise, and soil contamination. Their aggregated consumption patterns can also lead to biodiversity loss. According to our estimates, in 2020, 96% of people living in EU cities were exposed to levels of air pollution by fine particulate matter (PM2.5) above the WHO guidelines" (EEA, 2023).

The EEA, for example, proposes a conceptual framework for urban sustainability through six lenses: a green city, a low-carbon city, a resilient city, a circular city, a healthy city, and an inclusive city. Urban sustainability challenges relate to governance, culture, knowledge, finance, technology, data, and information (see Figure 2).

As suggested above, evaluating the implementation of the DNSH principle could be done through the six environmental objectives of the Taxonomy Regulation to look beyond other desirable ECP objectives (e.g., rural or urban sustainability).

Similar to rural areas, relating their main effects in ECP programmes focused on urban areas positively contributing to climate change mitigation and adaptation is challenging. Urban areas are especially important to ECP investment focused on sustainable urban transitions, as they contribute to global warming and pollution.

ECP aims to finance actions with a positive impact on specific urban policy areas, measured against Output and Result indicators and with climate and environmental contribution coefficients. The objective of the DNSH principle is to ensure that in the ECP implementation, there is no significant harm to each of the six environmental objectives. A key challenge is then to identify place-based ECP actions that can have a potential positive impact in specific urban policy areas, such

**'It could be particularly complex to analyse the transition process into a circular or green economy, given the overall developing understanding of emerging business models related to a 'new economic model' in agricultural and forestry-related activities in some EU rural regions.'**



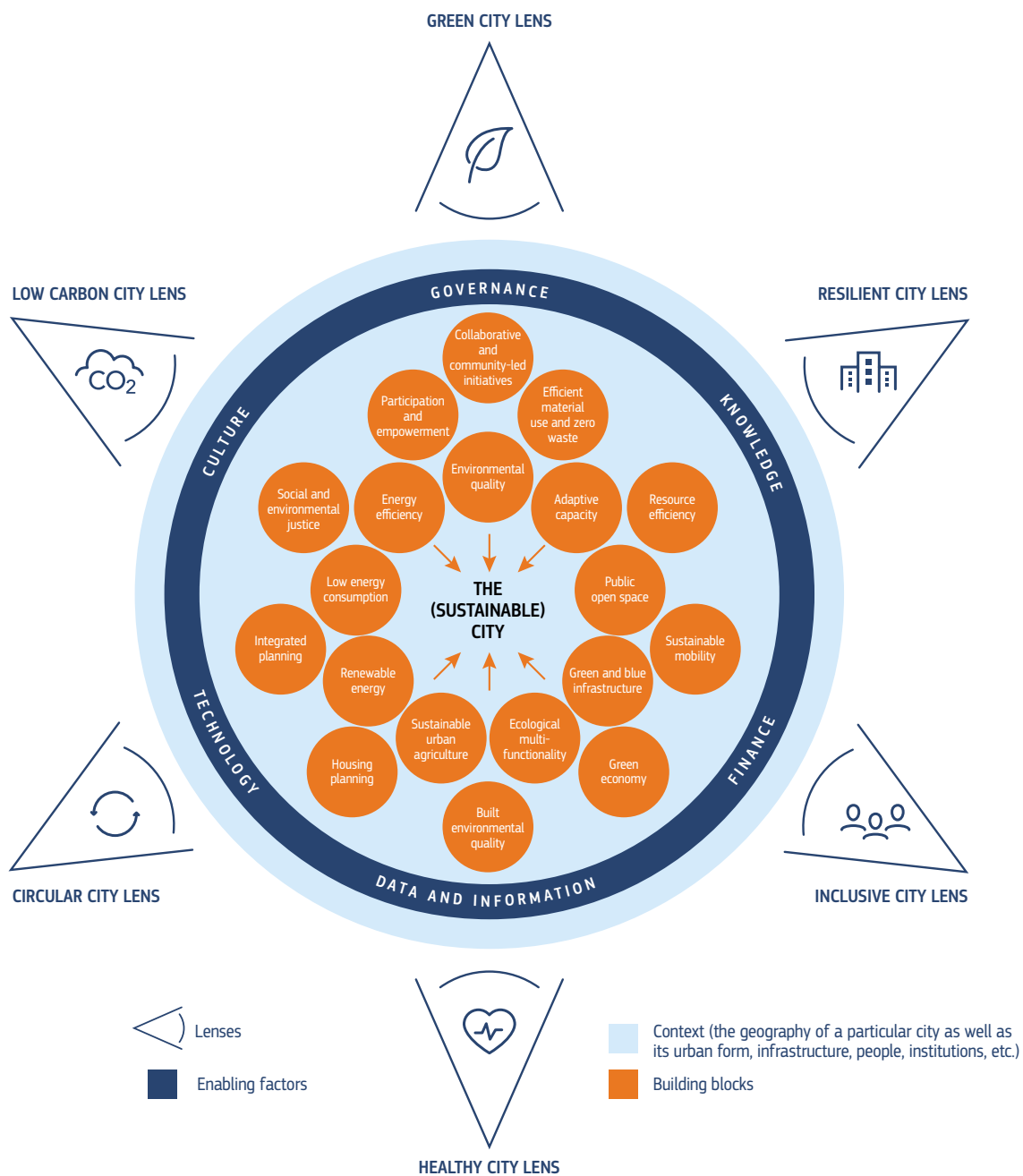
as energy efficiency buildings, intra-city renewable energy production, and sustainable and smart transportation (see more in Table 7), without negatively affecting the other environmental objectives (e.g. biodiversity loss, adaptation, circular economy).

On the other hand, urban areas could assess the transition to a circular economy as more straightforward to implement than rural areas due to the concentration of activities and people in cities. One potential challenge in analysing such processes in urban areas is where the institutional setting, social culture, and governance processes are not mature

and legal mandates towards implementing the circular economy-related urban processes and activities are not well established.

The urban circular economy can also be supported by non-ECP investments, which increases the complexity of relating the effects to ECP investments. There may be urban areas where the protection and restoration of biodiversity and ecosystems are difficult to assess and how specific types of ECP actions have contributed to reducing pollution, especially in small urban areas surrounded by a vast countryside.

Figure 1 EEA's conceptual framework for urban sustainability



Source: EEA (2023)

## 2.2 The DNSH principle applied to EU cohesion policy: Potential solutions from existing experiences and research

The European Green Deal Communication introduced the DNSP principle guiding rationale (EC, 2019). Ultimately, the attainment of the EU climate and environmental objectives should be supported by EU climate and environmental policies and all the other EU policies. Other EU policies should not negatively impact the achievement of climate and environmental objectives (Beltrán Miralles et al., 2023). ECP has a prominent role in supporting EU climate and environmental objectives.

Firstly, ECP provides significant EU financing. Secondly, a large share of ECP's total funding is directly and indirectly allocated to support environmentally sustainable projects and programmes (Medeiros et al., 2022). Hence, the DNSH

principle was integrated into the ongoing negotiations of the ECP regulation. Also, within ECP, this principle builds on earlier environmental assessment experiences (on the side of Member States) as the Strategic Environmental Assessment (SEA), the Environmental Impact Assessment (EIA), and 2014-2020 obligations for the horizontal integration of sustainable development.

Published in June 2020, the legal text establishing the EU Taxonomy for sustainable activities provided for a specific understanding of the DNSH principle in which “to be labelled as ‘environmentally sustainable’, economic activities must ‘substantially contribute’ to one of the six environmental objectives (Table 1) whilst ‘doing no significant harm’ to any of the other environmental objectives. What is considered a significant harm in each of the six environmental objectives of the DNSH?”

Table 1 The main goals of the DNSH

A: Climate change mitigation	Where that activity leads to significant greenhouse gas emissions
B: Climate change adaptation	Where that activity leads to an increased adverse impact of the current climate and the expected future climate on the activity itself or people, nature or assets
C: The sustainable use and protection of water and marine resources	Where that activity is detrimental to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to the good environmental status of marine waters
D: The transition to a circular economy	Where that activity leads to significant inefficiencies in the use of materials or the direct or indirect use of natural resources such as non-renewable energy sources, raw materials, water and land at one or more stages of the life cycle of products, including in terms of durability, reparability, upgradability, reusability or recyclability of products; that activity leads to a significant increase in the generation, incineration or disposal of waste, except the incineration of non-recyclable hazardous waste; or the long-term disposal of waste may cause significant and long-term harm to the environment
E: Pollution prevention and control	Where that activity leads to a significant increase in the emissions of pollutants into air, water, or land, as compared with the situation before the activity started
F: The protection and restoration of biodiversity and ecosystems	Where that activity is significantly detrimental to the good condition and resilience of ecosystems or detrimental to the conservation status of habitats and species, including those of Union interest.

Source: adapted from Beltrán Miralles et al. (2023)

Within ECP (European Regional Development Fund, ERDF and Cohesion Fund, CF), the DNSH principle is implemented under a shared management method between the European Commission (EC), led by the Directorate-General for Regional and Urban Policy (DG REGIO) and the national and regional authorities in the Member States. Critically, at least 30% of the ERDF and 37% of overall budgets must contribute to climate objectives. In the case of the ERDF and the CF, “the DNSH principle is included as a Horizontal

Principle under Article 9(4) of the CPR, which lays down that the objectives of the Funds shall be pursued in line with the objective of promoting sustainable development as set out in Article 11 TFEU, taking into account the UN Sustainable Development Goals, the Paris Agreement and the “do no significant harm” principle” (Beltrán Miralles et al. 2023: 22).

Within ECP, “the DNSH principle is to be ensured at the level of the type of actions defined in the programmes. The

operations/projects selected later on for funding need to fall under these types of actions included in the programme. However, the regulatory framework does not lay down any obligation requiring a project-level assessment of the compatibility with the DNSH principle.

Nevertheless, Member States can voluntarily add specific DNSH-related conditions when setting the criteria for the selection of the operations, which need then to be fulfilled by the projects to be selected for funding” (Beltrán Miralles et al., 2023, p. 23). Expectedly, any type of action with a negative DNSH assessment cannot be included in the ERDF and CF financed programmes. More specifically the EC “cannot approve the programme until all the types of actions take into account the DNSH principle.

During the implementation stage, if an operation does not fall under the types of actions defined in the programme, it cannot be selected for funding. Under these instruments, payments from the Commission to the Member States are not directly conditional to the fulfilment of specific DNSH conditions” (Beltrán Miralles et al., 2023, p. 24). Hence, it is essential to assess the DNSH principle appropriately.

## 2.3 Assessment of the DNSH principle

The EC allows for applying a simplified assessment process to analyse the implementation of the DNSH principle within ECP “for those projects with a limited risk of environmental harm to one or more of the environmental objectives”. (...) “It is important to note that the simplified assessment applies only to the environmental objective(s) concerned and that the measure must still go through a substantive assessment for the other environmental objectives” (Beltrán Miralles et al., 2023, p. 26).

The assessment of the DNSH principle should consider the following:

- Policy coherence: including the building on existing EU legislation, labelling and certification schemes or methodologies for assessing environmental footprint
- Environmental integrity: This includes the condition of being based on conclusive scientific evidence, considering both the short and long-term impacts and being based on the precautionary principle
- Level-playing field: aiming to prevent the risk of distorting market competition and creating inconsistent incentives for investing
- Usability: which includes the easiness to use and the condition to be set ‘in a manner that facilitates the verification of their compliance’ together with the preference for quantitative threshold-based TSC

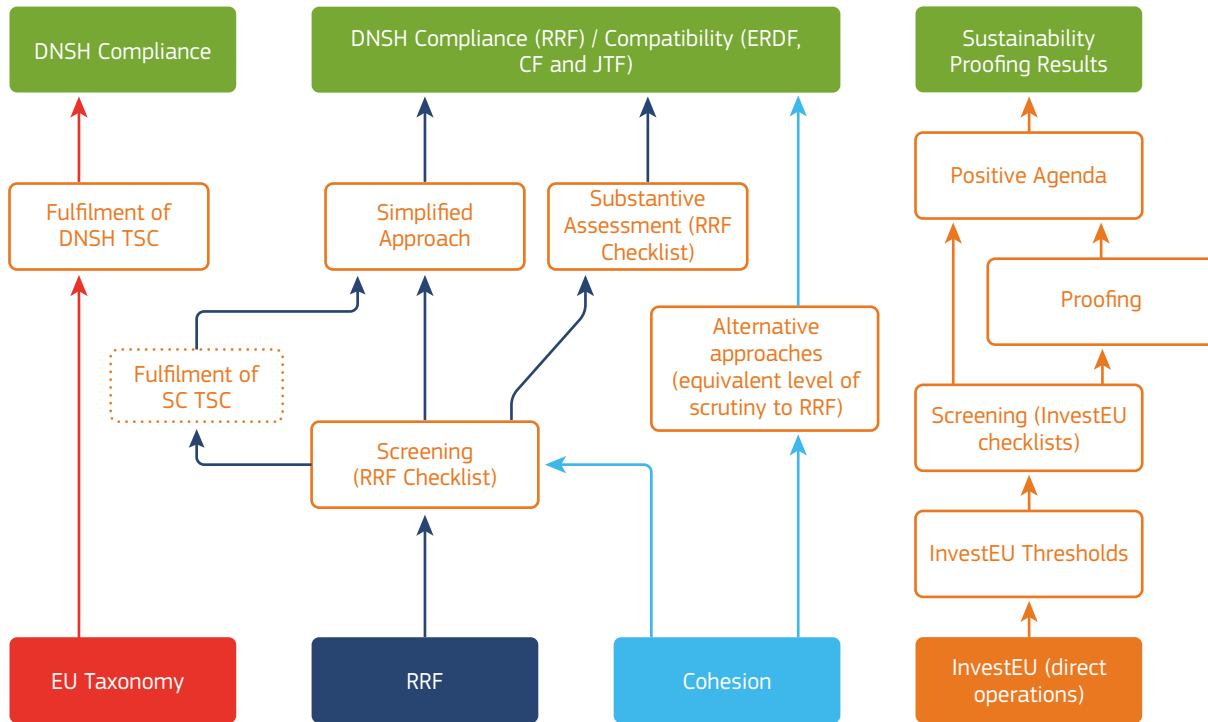
Currently, ECP regulatory frameworks “do not establish any specific processes, tools, or a mandatory approach to follow for the application of the DNSH principle. However, the explanatory note published by the Commission to help operationalise the DNSH principle under these programmes recommends that, at the level of the programmes, Member States follow the same approach taken under the Recovery and Resilience Facility (RRF) to increase consistency and avoid unnecessary administrative burden for Member States” (Beltrán Miralles et al., 2023, p. 33). This is not to suggest that other approaches are excluded.

As can be seen in Figure 3, a simplified approach of evaluation, when a measure has no or an insignificant foreseeable impact on the environmental objective, the DNSH principle should follow a substantive assessment procedure when the conditions for the simplified assessment are not met.

Regarding the governance procedures for the DNSH assessment and verification under ECP, during the programming stage, it is up to the Member States to “assess the compatibility with the DNSH principle during the process of defining their programmes, before submitting them to the Commission. The assessment is conducted at the level of types of action, with no obligation to undertake a DNSH assessment for every project (operation)” (Beltrán Miralles et al., 2023, p. 36) and to present to the CE the results of the DNSH assessment for each type of action. During the ECP programmes implementation stage, it is the responsibility of the Member States “to ensure that the DNSH principle is applied throughout the whole implementation period and is therefore taken into account for each individual operation”.

Moreover, the “Managing Authorities shall ensure that all the operations selected for funding fall within the scope of the types of actions that have previously been assessed as DNSH compatible in the programme. To do so, the Managing Authorities are to define and apply appropriate criteria during the selection procedure so as to ensure that the operations match the scope of the types of actions, with a sufficiently detailed procedure to ensure this DNSH compatibility” (Beltrán Miralles et al., 2023, p. 37). Furthermore, Member States may commit to applying specific DNSH-related criteria for the selection of operations, and “the Managing Authority must also carry out verifications to ensure that the selected operations comply, among others, with the programme, and correspond to DNSH-compliant type of actions” (Beltrán Miralles et al., 2023, p. 37).

Figure 3 Summary of the main DNSH assessment process in several EU policy instruments



Source: Beltrán Miralles, et al (2023, p. 32).

For ECP, it is important to stress that “the DNSH principle is not an eligibility requirement but a horizontal principle to be taken into account”. This explains “why the assessment of DNSH compatibility is to be carried out at the type of action level during the programming stage. Therefore, it is not a requirement for Managing Authorities to establish specific DNSH-related criteria for selecting the operations during the implementation stage. This fact, together with the shared management of the funds, also explains that Member States do not need to initially provide all evidence on DNSH compatibility to the Commission but only the results of the DNSH assessment for each type of action at the programming stage” (Beltrán Miralles et al., 2023, p. 42).

Currently, EU instruments follow different approaches for DNSH assessment. For the most part, two approaches are placed in different steps of the process of assessing the DNSH principle (Beltrán Miralles et al., 2023):

- A two-stage approach: the use of an initial screening followed, when necessary, by a more detailed assessment
- Fast track mechanisms: to exempt specific projects from going through the detailed DNSH/sustainability proofing assessment

It is also worth noting that ECP includes specific exclusion lists and exceptions to enforce the analysis of the implementation of the DNSH principle in the case of investments considered always not compliant with it if they follow certain conditions. For example, “investment in the expansion and repurposing, conversion or retrofitting of gas transmission and distribution networks, provided that such investment makes the networks ready for adding renewable and low carbon gases, such as hydrogen, biomethane, and synthesis gas, into the system and allows to substitute solid fossil fuels installations” (Beltrán Miralles et al., 2023, p. 50).

Finally, it should be highlighted that “Managing Authorities can delegate the implementation of programmes (and therefore, the defining of the criteria for the selection of the operations) to Intermediate Bodies such as other national/ regional authorities or agencies” (Beltrán Miralles et al., 2023, p. 50).

Due to its relatively recent ‘policy release’ for both private and public finance, there are currently few concrete solutions to assess the implementation of the DNSH principle effectively.

## **EU MEMBER STATES' GUIDANCE ON THE DNSH PRINCIPLE**

### **Finnish Environment Institute**

In EU Member States, for instance, the Finnish Environment Institute advances guidance to clarify what the DNSH principle means and how it should be applied based on specific questions. In detail, in the first stage, the potentially harmful impacts of the project on the six DNSH environmental objectives are assessed using a 100% ratio or a qualitative assessment to check if the project 'contributes substantially' to the environmental objective and meets the relevant 'DNSH' criteria (Forsius et al., 2022).

The objectives for which potentially harmful environmental impacts were identified in the first stage must be addressed in the second stage. Here, specific guidelines and sources of legislation for each analytical domain are provided to guide the evaluation. A concrete set of questions is then advanced to produce a detailed DNSH assessment of the measure (Table 2). As seen in Table 2, the proposed evaluation approach is lengthy as it embraces a wealth of questions that, sometimes, might not be readily answered.

Table 2 Examples of Finland's proposal for assessing the DNSH principle for pilot and demonstration projects

DNSH Goal	First Assessment Stage General assessment of the impacts Reply 'yes' or 'no'	Second Assessment Stage Detailed assessment of the impacts Reply 'yes' or 'no'	Detailed assessment of the impacts of a research infrastructure project Reply 'yes' or 'no'
1. Climate change mitigation	<ul style="list-style-type: none"> <li>• Will the project have potentially harmful impacts on climate change mitigation?</li> <li>• Will there be an increase in greenhouse gas emissions?</li> <li>• Will carbon sinks and/or carbon storage decrease?</li> <li>• Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the piloting and application of the results have significant harmful impacts on climate change mitigation?</li> <li>• Will there be a substantial increase in greenhouse gas emissions?</li> <li>• Will carbon sinks and/or carbon storage decrease?</li> <li>• Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the activities carried out as part of the research infrastructure project have significant impacts on climate change mitigation?</li> <li>• Will the project involve activities that will significantly increase greenhouse gas emissions? Will the equipment purchased for the project have a high level of energy efficiency?</li> <li>• Will there be a significant decrease in carbon sinks and/or carbon storage?</li> <li>• Will there be any other impacts?</li> </ul>
2. Climate change adaptation	<ul style="list-style-type: none"> <li>• Will the project have potentially harmful impacts on climate change adaptation?</li> <li>• Will the project increase water consumption?</li> <li>• Will the project increase the risk of flooding or drought, or exposure to extreme weather?</li> <li>• Will the project only make a limited contribution to the combating of extreme weather?</li> <li>• Will there be any other harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Can the piloting and application of the results have potentially significant harmful impacts on climate change adaptation?</li> <li>• Will the project significantly increase water consumption?</li> <li>• Will the project increase the risk of flooding, drought, or exposure to extreme weather?</li> <li>• Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the research infrastructure project impact climate change adaptation?</li> <li>• Has consideration been given to the impacts of climate change on the infrastructure to be purchased?</li> <li>• Will there be any other impacts?</li> </ul>
3. Sustainable use and protection of water and marine resources	<ul style="list-style-type: none"> <li>• Will the project have potentially harmful impacts on the sustainable use and protection of water and marine resources?</li> <li>• Can the project cause degradation of surface water or groundwater quality (for example, increase nutrient, metal or suspended solids loading, weaken the living conditions of fish or spread non-native species)?</li> <li>• Will the project increase heat stress?</li> <li>• Will there be any other harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the piloting and application of the results have potentially significant harmful impacts on the sustainable use and protection of water and marine resources?</li> <li>• Can the project cause degradation of surface water or groundwater quality? For example, could it increase the loading of nutrients, metals or other harmful and hazardous substances, significantly weaken the living conditions of fish or spread non-native species?</li> <li>• Will the project significantly increase heat stress?</li> <li>• Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the activities carried out as part of the infrastructure project have significant impacts on the sustainable use and protection of water and marine resources?</li> <li>• Can the activities cause significant degradation of surface water or groundwater quality (for example, increase nutrient, metal or suspended solids loading, weaken the living conditions of fish or spread non-native species)?</li> <li>• Can the project cause a significant increase in heat stress?</li> <li>• Will there be any other impacts?</li> </ul>

DNSH Goal	First Assessment Stage General assessment of the impacts Reply 'yes' or 'no'	Second Assessment Stage Detailed assessment of the impacts Reply 'yes' or 'no'	Detailed assessment of the impacts of a research infrastructure project Reply 'yes' or 'no'
4. Transition to a circular economy	<ul style="list-style-type: none"> <li>• Will the project have potentially harmful impacts on the transition to a circular economy?</li> <li>• Will the project increase the use of natural resources?</li> <li>• Will the project make the reuse of products or materials more difficult, or will it shorten the useful lives of products?</li> <li>• Will the project make recycling of materials more difficult?</li> <li>• Will the project increase the disposal or incineration of waste?</li> <li>• Will there be any other harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the piloting and application of the results have potentially significant harmful impacts on the transition to a circular economy?</li> <li>• Will the project significantly increase the use of natural resources? (Special consideration should be given to critical raw materials, such as rare earth elements.)</li> <li>• Will the project make the reuse of products or materials significantly more difficult, or will it shorten the useful lives of products? Has consideration been given to the recyclability of products or materials?</li> <li>• Will the project significantly increase the disposal or incineration of waste?</li> <li>• Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>• Will the activities carried out as part of the research infrastructure project have significant impacts on the transition to a circular economy?</li> <li>• Questions for research equipment and infrastructure: <ul style="list-style-type: none"> <li>• Has sustainability been a consideration in the manufacturing of the equipment?</li> <li>• Has the recyclability of materials been a consideration in the manufacturing of the equipment?</li> </ul> </li> <li>• Will using the equipment lead to increased landfill depositing or incineration of waste?</li> <li>• Questions on the building of the research infrastructure <ul style="list-style-type: none"> <li>• Has the reuse of materials been a consideration in the building design, for example, by allowing the separation of materials during repairs and demolition?</li> <li>• Will it lead to more waste incineration or landfill waste?</li> <li>• Has consideration been given to the life cycle characteristics of the buildings (such as adaptability and useful life)?</li> </ul> </li> <li>• Will there be any other significant impacts?</li> </ul>

DNSH Goal	First Assessment Stage General assessment of the impacts Reply 'yes' or 'no'	Second Assessment Stage Detailed assessment of the impacts Reply 'yes' or 'no'	Detailed assessment of the impacts of a research infrastructure project Reply 'yes' or 'no'
5. Pollution prevention and control	<ul style="list-style-type: none"> <li>Will the project cause environmental degradation (soil, water, air quality) through such factors as higher emissions or changes in land use?</li> <li>Will the project increase chemicalisation of the environment?</li> <li>Will the project cause significant emissions of harmful or hazardous substances?</li> <li>Is there a potential for higher environmental risks?</li> <li>Will there be any other harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>Will the project piloting and demonstration stage or the application of the results cause environmental degradation (soil, water, air quality) through factors such as higher emissions or changes in land use?</li> <li>Are BAT requirements (BREF documents for the chemical industry and metal processing) considered in the production?</li> <li>Will the project increase chemicalisation of the environment? For example, will there be more leaks or leaching of harmful substances into the soil, groundwater or surface water?</li> <li>Will the project cause a significant increase in the emissions of hazardous substances?</li> <li>Will the project increase other environmental risks (such as the explosion hazard)?</li> <li>Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>Can the activities carried out as part of the research infrastructure project cause such impacts as higher emissions?</li> <li>Are harmful reagents from which harmful substances can enter the environment used in the equipment to be purchased?</li> <li>Are the chemicals used in compliance with the REACH and POP Regulations?</li> <li>Will the activities cause other significant harmful emissions?</li> <li>Will there be any other significant impacts?</li> </ul>
6. Protection and restoration of biodiversity and ecosystems.	<ul style="list-style-type: none"> <li>Can the project adversely impact biodiversity or undermine the protection and/or restoration of ecosystems?</li> <li>Will the project destroy occurrences of protected or threatened habitat types or adversely impact their quality?</li> <li>Will the project reduce the size of occurrences or the geographic distribution of protected or threatened habitat types?</li> <li>Will the project destroy or adversely impact the quality of habitats of threatened species or species protected by legislation?</li> <li>Will the project reduce the population size or range of threatened species or species protected by legislation?</li> <li>Will the project make the protection and restoration of ecosystems more difficult?</li> <li>Will there be any other harmful impacts on biodiversity?</li> </ul>	<ul style="list-style-type: none"> <li>Can the pilot-scale activities and application of the results have significant harmful impacts on biodiversity or significantly undermine the protection and/or restoration of ecosystems?</li> <li>Will the achievement or maintenance of the favourable conservation status of a species or a natural habitat type be adversely affected?</li> <li>Will the project impacts extend to protected or otherwise valuable areas?</li> <li>Will there be any other significant harmful impacts?</li> </ul>	<ul style="list-style-type: none"> <li>Can the activities carried out as part of the research infrastructure project have significant harmful impacts on biodiversity or significantly undermine the protection and/or restoration of ecosystems?</li> </ul>



## Portuguese General Secretary of the Environment

Like Finland, the Portuguese General Secretary of the Environment released a report with general guidelines to better understand the implementation and assessment of the DNSH principle (Ramos, 2022). The proposed assessment approach followed the EU guidelines of a two-stage evaluation approach. During the first stage, for each DNSH goal, a simple yet fundamental question is posed: ‘Does the measure only have an insignificant predictable impact?’. If so, a simplified evaluation procedure is initiated. If not, a second evaluation stage is initiated, supported by a substantive evaluation procedure. A concrete methodological proposal to assess the Portuguese Programme for Climate Action and Sustainability (PACS) is then advanced, following the subsequent stages (Ramos, 2022, p. 11):

Step 1.1 Screening: which answers the question: “Does the action significantly harm the environmental objective under analysis?”. If the answer is “Yes”, the evaluator advances to Step 2; if the answer is “No”, the evaluation continues to Step 1.2; and if the answer is “No relation”, there is no need to continue with the evaluation.

Step 1.2 Simplified Assessment: where one of the following items is selected to justify the reason that supports such a statement:

- A: The measure has no, or only an insignificant, predictable negative impact
- B: The measure is ‘accompanied’, having been assigned a coefficient of 100% for the calculation of support for this objective, or ‘contributes substantially’ to its achievement, in accordance with Annex VI of the European Commission Regulation 2021/241, of February 12, 2021
- C: The measure contributes substantially to an environmental objective.

The second evaluation stage considers a ‘substantive impact of the measure’. The following question is posed: *What is the degree of impact of the measurement?* The three possible answers are A - high, B - moderate, and C - weak. A justification supported by technical and scientific criteria should be provided. A colour scheme is advanced with a ‘green’ colour signalling that ‘no significant impact is predicted for the action’, whereas a ‘rose’ colour signals the opposite (Table 3). As seen, the proposed methodology is both simple to implement and relevant in the justification provided to assess the impact of each of the six DNSH objectives. However, as with the Finish example, a qualified expert unit is required to make a sound evaluation. This might require external expertise

Table 3 Example of the DNSH assessment of an action from the Portuguese Program for Climate Action and Sustainability (PACS).

Action	Stage 1					
	Climate change mitigation	Climate change adaptation	Sustainable use and protection of water and marine resources	Transition to a circular economy	Pollution prevention and control	Protection and restoration of biodiversity and ecosystems
Construction and/or rehabilitation of coastal defence structures on the mainland	B	B	YES	A	YES	YES
Justification	<p><u>Climate change mitigation and adaptation to climate change:</u></p> <p>Action within the policy area “Climate change adaptation measures and prevention and management of climate-related risks: others, e.g., storms and droughts (including awareness raising, civil protection and disaster management systems and infrastructure, and approaches based on ecosystems)”, code 037, which gives a 100% support coefficient for climate and environmental change objectives ...</p> <p><u>Transition to a circular economy:</u></p> <p>The action has no predictable impact or has an insignificant predictable impact on the objective of transitioning to a circular economy and can be moderately positive if the infrastructures integrate secondary raw materials into their composition (incorporation of recycled materials) and if they are easy to disassemble for reuse, reconditioning, or recycling.</p>					

Action	Stage 2		
Construction and/or rehabilitation of coastal defence structures on the mainland	Sustainable use and protection of water and marine resources	Pollution prevention and control	Protection and restoration of biodiversity and ecosystems
	Medium negative impact	Medium negative impact	Medium negative impact
Justification	<p><u>Sustainable use and protection of water and marine resources:</u> The action may have a predictable medium-level negative impact on this environmental objective. The construction and rehabilitation of coastal infrastructure can impact marine environments, particularly due to possible interference with coastal and sedimentary hydrodynamics and the marine ecosystem, including water quality. However, if the necessary assessment, mitigation, and management measures are adopted, this can be mitigated and conserved. Therefore, the measure is not expected to harm the good status or good ecological potential of water bodies, including surface and groundwater or marine waters.</p> <p><u>Pollution prevention and control:</u> This action is not expected to result in a significant increase in pollutant emissions into the air, water, or soil. The construction and rehabilitation of infrastructure can affect coastal and sedimentary hydrodynamics and consequently lead to the accumulation of contaminants, among other potential effects on the marine environment. However, if the necessary assessment, mitigation, and management measures are adopted, these consequences of the action can be avoided.</p> <p><u>Protection and restoration of biodiversity and ecosystems:</u> The action could have significant harmful effects on ecosystems and biodiversity. For example, implementing coastal protection infrastructures can reduce erosion in certain coastal strips and an increase in other adjacent areas, compromising sedimentary dynamics and related ecosystem services. However, to implement this construction/rehabilitation, the surrounding system and implement measures that do not interfere with its dynamics must be considered. The action is not expected to significantly harm ecosystems' good condition and resilience or harm the conservation status of species and habitats, including those of Union interest.</p>		

Source: adapted from Ramos (2022), author's translation

### Example from Italy

Taking the Italian example, Bisello (2023) highlights that since the early planning phase, the DNSH principle should be followed by selecting policy avenues that avoid environmental damage. To this end, Italian entities “must carry out an accurate context analysis to identify urban, territorial, environmental, and socioeconomic constraints, and determine all the conditions for proper design, execution, and management of the work. Among the main innovations is the introduction in the calls for tenders of an evaluation system that rewards companies that: adopt innovative, high-quality construction models” (Bisello, 2023, p. 41):

- Probe to ensure the economic, social, and environmental sustainability of interventions (e.g., provide equal working opportunities, generational and gender policies and promote the employment inclusion of disadvantaged persons; ensure compliance with the principle of zero land consumption).

- Adopt high innovation and construction quality standards (e.g., professional certification in addition to environmental management certification per Eco-Management and Audit Scheme, EMAS).

Moreover, according to Bisello (2023, p. 41-42), “the design and management phase should follow a well-defined ‘sustainability protocol’ to be used also as a tool for ex-post evaluation. The protocol takes into consideration several parameters, including energy and water efficiency and indoor environmental quality, the impact of construction activities on the natural environment, the reuse, recycling, and disposal of material under the circular economy perspective, and the connection with collective and light mobility infrastructures, among others. During the execution phase, territorial offices of the Ministry of Public Works shall verify compliance with the sustainability clauses envisaged in the design by carrying out proper monitoring through

dedicated digital platforms and updating the “monitoring and evaluation checklists” designed according to the DNSH principle” for each intervention”.

A more concrete example of the evaluation of the DNSH principle from the Italian Emilia-Romagna region states that the proposed DNSP evaluation process is based on European and national guidelines. Thus, it was carried out by carefully considering the individual programme actions in two successive stages using self-assessment sheets (Table 4). The effects generated on the six environmental objectives by the assessed programme are traced back to four distinct scenarios as envisaged by the DNSH methodology (ARPAE, 2022a):

1. A: Does the measure have no or negligible impact on the objective?
2. B: Does the measure have a 100 % support ratio for an objective related to climate change or the environment, and as such, is considered to comply with the DNSH principle for the relevant objective?
3. C: Does the measure contribute “substantially” to the environmental objective?
4. D: Does the measure require an overall DNSH assessment?

Table 4 Example of a DNSH self-assessment form used by the Emilia-Romagna region on the measure: develop and strengthen research and innovation capabilities and the introduction of advanced technologies

Step 1			Step 2		
DNSH Goals	Does a measure have a foreseeable zero or insignificant impact on this objective and contribute to supporting it?	The basic motivation for choices a, b, or x	Request	Yes /No	Justification
Climate change mitigation	No, the measure requires a substantial DNSH assessment.		Is the measure expected to result in significant greenhouse gas emissions?	No	The strategic projects, responding to the priority thematic areas of the S3, with particular attention to the issues of the circular economy and adaptation to climate change, can include and integrate various types of actions ...
Climate change adaptation	No, the measure requires a substantial DNSH assessment.		Is the measure expected to lead to a greater negative impact than the current climate and the expected future climate, on the measure itself or on people, nature or property?	No	The strategic projects, responding to the priority thematic areas of the S3, with particular attention to the issues of the circular economy and adaptation to climate change, can include and integrate various types of actions, for example, the creation or strengthening of infrastructures, industrial research ...

Step 1			Step 2		
Sustainable use and protection of water and marine resources	No, the measure requires a substantial DNSH assessment		The measure could be harmful: (i) to the good status or ecological potential of water bodies, including surface water and groundwater, or (ii) to the good ecological status of marine waters?	No	The strategic projects, responding to the priority thematic areas of the S3, with particular attention to the issues of the circular economy and adaptation to climate change, can include and integrate various types of actions, e.g., creation or strengthening of infrastructures, industrial research projects in the strict sense, productive investments ...
Transition to a circular economy	No, the measure requires a substantial DNSH assessment.		The type of action is expected to: (i) result in a significant increase in the production, incineration, or disposal of waste, except the incineration of non-hazardous waste recyclable? (ii) involves significant inefficiencies, not minimised by adequate measures, in the direct or indirect use of natural resources such as energy, materials, metals, water, biomass, air and soil at any stage of their life cycle? (iii) causes significant and long-term environmental damage	No	The strategic projects, responding to the priority thematic areas of the S3, with particular attention to the issues of the circular economy and adaptation to climate change, can include and integrate various types of actions, e.g., the creation or strengthening of infrastructures and industrial research projects.
Pollution prevention and control	No, the measure requires a substantial DNSH assessment.		Is the measure expected to lead to a significant increase in emissions of pollutants into air, water or land?	No	For funding purposes, only projects considered neutral or beneficial for the environment will be selected as eligible, also in line with Regulation (EU) 2020/852 and, specifically regarding the prevention and reduction of air, water or soil pollution.
Protection and restoration of biodiversity and ecosystems	No, the measure requires a substantial DNSH assessment		The measure is expected to be (i) significantly harmful to good condition and resilience of ecosystems or (ii) harmful to the conservation status of habitats and species, including those of interest to the Union?	No	In any case, all projects are subjected to environmental assessment both during the selection phase of the companies through the requirement of compliance with the environmental regulations in force and during the assessment of the technical feasibility of the projects.

Source: Adapted from ARPAE (2022b), author's translation

In Italy, the so-called “Minimum Environmental Criteria” (MEC, or Criteri Ambientali Minimi – CAM – in Italian) was established as “environmental requirements defined for the various stages of the purchasing process, aimed at identifying the best design solution, product or service from an environmental point of view along the life cycle, considering the market availability. They were created following the adoption of the “National Action Plan on Green Public Procurement (PAN GPP)”, the main tool for implementing sustainable development strategies at the national level. From this Plan derive the Minimum Environmental Criteria, issued periodically by the Ministry of the Environment with specific Ministerial Decrees for the various product categories of works, services and supplies” (Studio Santi, 2023).

### France: Agence nationale de la cohésion des territoires (ANCT)

In France, in order to optimise the effort of the Agencies in carrying out the assessments of the DNSH principle and not to replicate the exercise already carried out within the framework of the SEA, the management authorities, in agreement with the Agence Nationale de la Cohésion des Territoires (ANCT), have chosen to develop a national framework which offers a justification for each of the assessed measures of the 2021-2027 partnership agreement. This reflects all the strategic choices of the 2021-2027 European programmes, with which the European programmes must be compatible. As part of the establishment of this national benchmark, the following methodological approaches are to be followed (ANCT, 2022):

- A: Limitation of the scope of assessment of the conformity of the measures of the partnership agreement with the DNSH principle to two of the six objectives provided for by the taxonomy regulation (2020/852). It is estimated that the strategic environmental assessments carried out in France make it possible to cover four of the six environmental objectives of the taxonomy; hence, the need to verify that the types of action retained by the plans and programs do not cause harm to the achievement of the only two objectives not covered by the EES, namely: ‘Adaptation to climate change’ and ‘Transition to a circular economy’.
- B: The establishment of a national benchmark: The national benchmark aims to determine whether the measures provided by the partnership agreement (PA) comply with the DNSH principle and on which criterion. In this context, a methodology was designed, incorporating the principles set out within reference documents produced by the EC and, in particular, the methodology proposed in the DNSH technical guidance.

### Example from Belgium

The proposed evaluation methodological approach to assess the implementation of the DNSH principle in Belgium does not differ significantly from the Portuguese and Italian examples. Put differently, the proposed questionnaire for an initial screen of the DNSH principle is relatively straightforward and comprehensive (Table 5). In the second phase, a more detailed and justified analysis is required for each of the six DNSH principles in a similar process to the Portuguese and Italian cases (DIGILAB, 2023).

Table 5 Example of the DNSH questionnaire to assess the DNSH principle in Belgium

DNSH Goals	Questions
Climate change mitigation	Does the measure risk generating significant greenhouse gas emissions?
Climate change adaptation	Is the measure likely to lead to an increase in the negative impacts of the current climate and its expected evolution on itself or the population, nature or property?
Sustainable use and protection of water and marine resources	Is the measure likely to be harmful to: A: The good status or ecological potential of water bodies, including surface water and groundwater; Or B: to the good ecological status of marine waters?
Transition to a circular economy	Does the measure risk: A: Lead to a significant increase in the production, incineration or elimination of waste, except the incineration of non-recyclable hazardous waste; B: Lead to significant inefficiencies in the direct or indirect use of a natural resource <sup>1</sup> at any stage of its life cycle, which are not minimised by adequate measures; or C: Cause significant and lasting damage to the environment concerning the circular economy?

DNSH Goals	Questions
Pollution prevention and control	
Protection and restoration of biodiversity and ecosystems	Is the measure likely to be: A: Strongly detrimental to the good state and resilience of ecosystems; Or B: Detrimental to the conservation status of habitats and species, including those of interest to the Union?

Source: adapted from BFP (2023), author's translation

### Non-Governmental Guidance on the DNSH Principle

Bowles (2023)

One methodological approach proposed by Bowles (2023), which is based on six criteria measured in percentage, in which the DNSH principle is either (Figure 4):

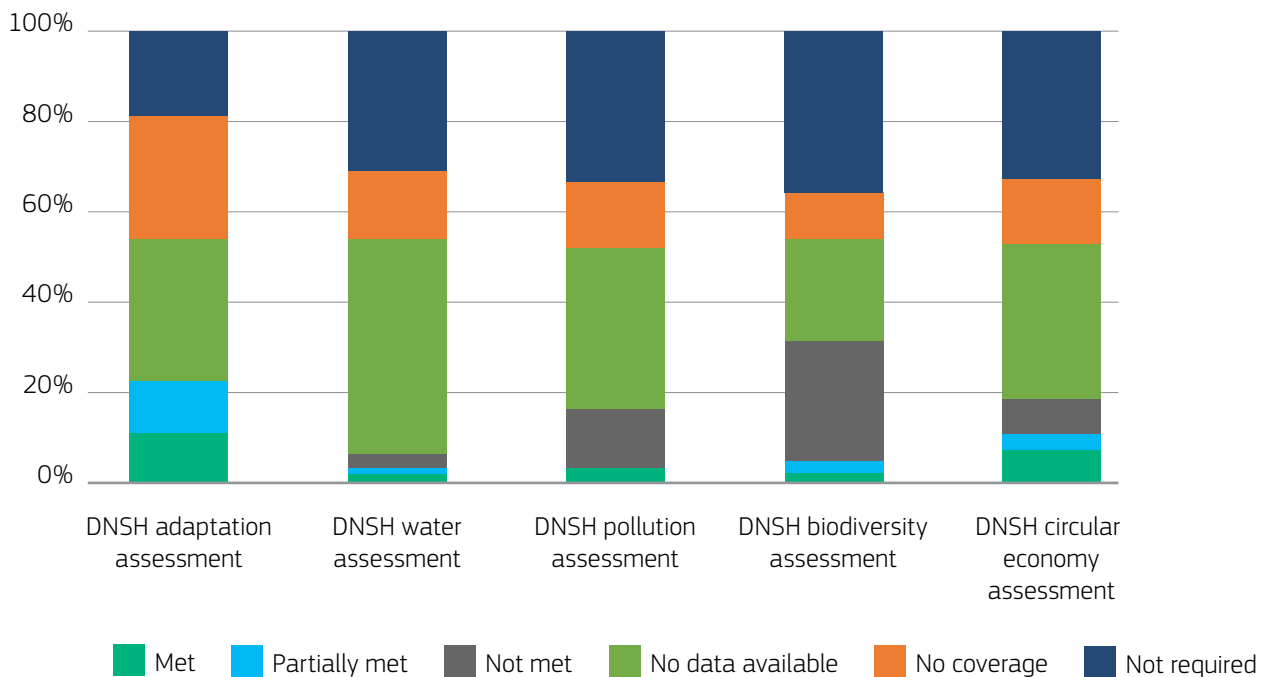
- Met
- Partially met
- Not met
- No data available
- No coverage
- Not required

In five of the six DNSH main dimensions:

1. Climate change adaptation
2. Sustainable use and protection of water and marine resources
3. Transition to a circular economy
4. Pollution prevention and control
5. Protection and restoration of biodiversity and ecosystems

Bowles (2023) presents an interesting and pragmatic methodological approach that can be applied within a more generic vision to assess the implementation of the DNSH principle. Moreover, it can facilitate comparing the implementation of the DNSH principle between different projects, programmes, and policies.

Figure 4 A five-dimension proposed approach to assess the DNSH principle



Data as Dec. 31, 2022.

Data cover 12,060 companies with 18,368 activities assessed to be substantially contributing to climate change mitigation.

Source: S&P Global Sustainable1.

## International Financial Corporation (IFC)

Non-national entities have also proposed their methodologies to assess the implementation of the DNSH principle, like the International Financial Corporation (IFC). Table (6) below summarises the main compliance actions that can be conducted, once applied, to fully meet the requirements of the EU Taxonomy in cases where the IFC Guidelines are applied (Table 6). A practical tool for assessing the DNSH/MS principles of electricity generation from wind power projects.

Table 6 The IFC rationale for assessing the DNSH principle

E&S Topic	Coverage	Summary of additional alignment actions
Climate change mitigation		Issues related to climate change mitigation are not specifically addressed by the EU Taxonomy for the wind power sector, neither through generic nor sector-specific criteria.
Climate change adaptation		A climate risk and vulnerability assessment and an adaptation plan shall be conducted for any project affected by a physical climate risk, considering climate projections and scenario analysis and the materiality assessment of the physical risks.
Sustainable use and protection of water and marine resources		<ul style="list-style-type: none"> <li>• <b>In the EU:</b> EU legislation and national transpositions on water status shall be applied.</li> <li>• <b>In third countries,</b> a good water status and a good ecological potential shall be achieved, in accordance with applicable national law or international standards, through a water use and protection management plan. Where this is not possible, it shall be justified by the lack of better environmental alternatives that are not disproportionately costly or technically unfeasible, and all practicable steps shall be taken to mitigate the adverse impact on the status of the body of water.</li> </ul>
Transition to a circular economy		<ul style="list-style-type: none"> <li>• The issues related to the transition to the circular economy are not specifically targeted in the EU Taxonomy technical screening criteria.</li> </ul>
Pollution prevention and control		<ul style="list-style-type: none"> <li>• <b>Economic activities shall not result in the production, use and marketing of the following hazardous chemicals substances:</b></li> <li>• Persistent organic pollutants, whether on their own, in mixtures or articles</li> <li>• Metallic mercury and mercury compounds, their mixtures and mercury-added products</li> <li>• Substances that deplete the ozone layer, whether on their own, in a mixture or articles</li> <li>• Electrical and electronic equipment that contains the substances listed in Directive 2011/65/EU (Annex II): lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), or polybrominated diphenyl ethers (PBDE), except where specific provisions are made.</li> <li>• Chemical substances, whether on their own, in mixtures or an article, except where specific provisions are made.</li> </ul>

E&S Topic	Coverage	Summary of additional alignment actions
Protection and restoration of biodiversity and ecosystems	■	<ul style="list-style-type: none"> <li>The overall approach to biodiversity is similar between the EU Taxonomy and the IFC PSs/WBG EHS, though the IFC PS6 better specifies a well-structured habitat classification, impact assessment and mitigation system.</li> <li>The EU Taxonomy offers a simpler structure by referring to EU Regulation in EU countries and directly to the IFC PS1 and PS6 in third countries.</li> <li>However, even when EU Taxonomy turns out to be more descriptive, the IFC PSs enable, through the ESIA, the analysis and evaluation of risks and impacts associated with biodiversity in a manner similar to what is required by EU Taxonomy.</li> </ul>
Human rights	■	<ul style="list-style-type: none"> <li>Human rights due diligence shall be conducted not only in „limited high-risk circumstances.“ The due diligence process should include assessing actual and potential human rights impacts, integrating and acting upon the findings, tracking responses, and communicating how impacts are addressed.</li> <li>Public disclosure is required so that stakeholders have sufficient information to evaluate the adequacy of an enterprise’s response to potential human rights impacts resulting from the company/project activities.</li> </ul>
Workers’ rights	■	<ul style="list-style-type: none"> <li>Both the EU Taxonomy and the IFC PSs/WBG EHS take a similar approach to worker rights, requiring all business enterprises and activities, regardless of their size, sector, or structure, to respect workers’ rights in accordance with the International Labor Organization (ILO) and the United Nations (UN).</li> </ul>

■ PSs/EHSGuidelines are sufficient to meet the requirements of the EU Taxonomy

■ PSs/EHSGuidelines partially meet the requirements of the EU Taxonomy

■ PSs/EHSGuidelines do not meet the requirements of the EU Taxonomy

■ Not applicable (no generic or specific DNSH criteria for the activity)

Source: IFC (accessed January 2024) <https://www.ifc.org/content/dam/ifc/doc/2023/excel-eutaxonomy-electricity-generation-wind-power.xlsx>

### Territorial Impact Assessment (TIA)

TIA offers another methodological approach. Unlike mainstream Environmental Impact Assessment methodologies (Yerramilli, A & Manickam, V., 2020), which, as the name indicates, are specifically focused on assessing environmental impact processes, Territorial Impact Assessment (TIA) methodologies are multi-dimensional with a specific territorial dimension. They can, thus, cope with the assessment of the interrelated aspects associated with the analysis of the implementation of the DNSH principle.

Tables 7 and 8 present a proposed matrix to assess the main impacts of implementing the DNSH principle in rural and urban areas. Table 9 shows the meaning of each evaluation score. As Bernstein et al. (2023, p. 313) conclude, “should the EC invest in studying and experimenting with alternative approaches to implementing the DNSH principle, a broad and lengthy empirical program can easily be imagined, from which further guidance could be developed”. One advantage of TIA methodologies is their long-standing use. No major guidance is likely necessary to apply them to assess the implementation of the DNSH principle.



Table 7 Examples of a TARGET\_TIA matrix to assess the DNSH principle in rural areas

Dimension	Component	Impacts
		Pos/Neg
Climate change mitigation	Reduce the extent of cropland	4
Climate change mitigation	Reduce the use of oil-driven machinery	2
Climate change mitigation	Increase forestation	-1
Climate change mitigation	Promote crop rotation	-2
	<b>Average</b>	<b>0,75</b>
Climate change adaptation	Selection of more resistant species	2
Climate change adaptation	Use a more effective water supply means	3
Climate change adaptation	Increase the use of greenhouses	-2
Climate change adaptation	Promote vertical farming	3
	<b>Average</b>	<b>1,50</b>
Sustainable water/marine resources	Use of treated water supply for farming	4
Sustainable water/marine resources	Use of desalination water for farming	2
Sustainable water/marine resources	Use a more effective water supply means	2
Sustainable water/marine resources	Reduce water course pollution	3
	<b>Average</b>	<b>2,75</b>
Transition to a circular economy	Reduction of generated wastes	3
Transition to a circular economy	Recovery of food surpluses and waste	3
Transition to a circular economy	Use of by-products and food waste	4
Transition to a circular economy	Recycling of nutrients	3
	<b>Average</b>	<b>3,25</b>
Pollution prevention and control	Promotion of ecologic agriculture	4
Pollution prevention and control	Reduced use of pesticides	3
Pollution prevention and control	Promote the use of electric machinery	4
Pollution prevention and control	Reduce the production of livestock	3
	<b>Average</b>	<b>3,50</b>
Protection/restoration of biodiversity	Promotion of a diversified production system	2
Protection/restoration of biodiversity	Provision of ecosystem services	-3
Protection/restoration of biodiversity	Qualitative/accessible land-based products	2
Protection/restoration of biodiversity	Protection of local/regional biodiversity	1
	<b>Average</b>	<b>2,00</b>
	<b>General Average</b>	<b>2,29</b>

Note: Pos/Neg: Positive/negative; Pol/Int: Policy Intensity; Reg/Sen: Regional Sensibility.

Source: Author's elaboration

Table 8 Example of a TARGET\_TIA matrix to assess the DNSH principle in urban areas

Dimension	Component	Impacts
		Pos/Neg
Climate change mitigation	Energy efficiency buildings	4
Climate change mitigation	Renewable energy production	2
Climate change mitigation	Spatial planning - compact city	-1
Climate change mitigation	Sustainable and smart transportation	-2
<b>Average</b>		<b>0,75</b>
Climate change adaptation	Protection against rising sea levels	2
Climate change adaptation	Increase green areas	3
Climate change adaptation	Use vertical farming for food production	-2
Climate change adaptation	Water and energy saving	3
<b>Average</b>		<b>1,50</b>
Sustainable water/marine resources	Wastewater reduction/treatment	4
Sustainable water/marine resources	Surface water runoff reduction/treatment	2
Sustainable water/marine resources	Sustainable water supply	2
Sustainable water/marine resources	Minimise flooding	3
<b>Average</b>		<b>2,75</b>
Transition to a circular economy	More efficient industrial processes	3
Transition to a circular economy	Recycling end-of-life treatment	3
Transition to a circular economy	Reuse and repair	4
Transition to a circular economy	Collection systems	3
<b>Average</b>		<b>3,25</b>
Pollution prevention and control	Industry chimney filters	4
Pollution prevention and control	Use of clean fuels	3
Pollution prevention and control	Relocation of factories	4
Pollution prevention and control	Promotion of cycling	3
<b>Average</b>		<b>3,50</b>
Protection/restoration of biodiversity	Increase tree plantation	2
Protection/restoration of biodiversity	Increase buildings with vegetation	-3
Protection/restoration of biodiversity	Use the building's roof as green spaces	2
Protection/restoration of biodiversity	Spatial Planning - Urban Greening	1
<b>Average</b>		<b>2,00</b>
<b>General Average</b>		<b>2,29</b>

Note: Pos/Neg: Positive/negative; Pol/Int: Policy Intensity; Reg/Sen: Regional Sensibility.

Source: Author's elaboration

Table 9 TARGET\_TIA impact score classification

	Impact Score Classification
<b>4</b>	Very Significant Positive Impacts
<b>3</b>	Significant Positive Impacts
<b>2</b>	Moderate Positive Impacts
<b>1</b>	Low Positive Impacts
<b>0</b>	Null Impacts
<b>-1</b>	Low Negative Impacts
<b>-2</b>	Moderate Negative Impacts
<b>-3</b>	Significant Negative Impacts
<b>-4</b>	Very Significant Negative Impacts

Source: own elaboration.

The application of the TIA approach illustrates one possible way of embracing the six main dimensions of the DNSH principle and suggests four potential related components for each of them. As illustrated for both urban- and rural-focused ECP programmes, the proposed analytical components would need to reflect a place-based approach, considering the local/regional contexts.

- For each component, an impact score is attributed based on the classification of Table 9.
- Then, an arithmetic average score is obtained for each DNSH objective to assess its overall impact.
- A deeper analysis of the programme measure would be required in cases where the impact is significantly negative (-3).
- The components associated with each DNSH objective can vary in number depending on the criteria used to assess it but should be balanced across the six DNSH objectives.

In addition to obtaining positive/negative impact scores, the TIA methodology allows the use of counterfactual evaluation procedures, which can be particularly helpful in analysing the DNSH principle in a selected ECP programme since ECP programmes do not act in isolation and environmental processes do not necessarily have clear demarcated boundaries (Medeiros et al., 2022). Potential also exists in achieving appropriate compatibility of the DNSH principle across EU programmes by applying a similar policy evaluation framework via a TIA methodology.

## 2.4 Current challenges and potential solutions

### KEY CHALLENGES

Several key challenges exist, including:

There is a lack of a common EU methodology to assess the sound implementation of the DNSH principle across the European Union.

Lack of detailed local and regional data associated with the six dimensions of the DNSH principle.

Reduced or limited interlinkages between the DNSH assessment and other climate and environmental national/regional plans.

- Lack of a harmonised legal basis for including the DNSH principle across the different EU policy instruments.
- Increasing administrative burden from the implementation of the DNSH principle
- Lack of a common exclusion list across EU funding instruments.
- Lack of integration of proposed DNSH evaluation principles with TIA methodologies in order to assess the actual impact of the DNSH principle in each ECP programme and in each Member State.
- The sound assessment of the DNSH principle requires expert knowledge of environmental legislation/regulations and processes, implying the acquisition of external expertise in case of limited local/regional/national administrative capacity, which in turn requires increasing the financial burden on public bodies.

## MAIN SOLUTIONS

- Potential solutions to these challenges can include:
- ECP programmes do not act in isolation, and environmental processes do not always have clear boundaries. Counterfactual evaluation techniques could improve the assessment of the implementation of the DNSH principle. Such a technique is, for example, available in some TIA methodologies like the TARGET-TIA.
- Involve Eurostat in producing an annual harmonised set of environmental indicators at the regional level (NUTS 3), which are aligned with the six environmental objectives of the DNSH principle to facilitate the monitoring and evaluation of this principle by all interested entities.
- Harmonise the legal basis for including the DNSH principle across the different EU policy instruments to reduce administrative burden and simplify its implementation and evaluation process.
- Necessary administrative capacity is required to provide national/regional/local public bodies with systematic monitoring and evaluation of public policies, programmes, and projects, including assessing the implementation of the DNSH principle.
- Harmonise the methodologies to assess the DNSH in all member states and EU policy instruments. For example, one approach could be to use place-based, considering rural and urban sustainability processes and sound TIA methodologies to anticipate (ex-ante phase) and verify (mid-term and ex-post phases) the potential impacts of ECP programmes in the DNSH principle. Another could be to follow a pragmatic, comprehensive questionnaire.



### 3. Policy recommendations and takeaways

- The legal basis for including the harmonising principle across the different EU policy instruments needs to be simplified and harmonised as a precondition for reducing the administrative burden on all involved stakeholders and entities.
- The assessment of the DNSH principle is in its early stages, and there is not yet an overall adopted methodological approach that can be used to evaluate its implementation across all EU Member States. In this regard, a harmonised monitoring and evaluation of the main impacts of the implementation of DNSH in each ECP programme and each Member State and respective region (urban and rural) would facilitate the policy assessment of this principle.
- A sound assessment of the DNSH principle benefits from a place-based approach in which the selected analytical components cover the six dimensions of this principle. This approach can also embrace local development challenges and potentials. This is particularly important when assessing the implementation of this principle in urban and rural areas, in which the environmental sustainability-related domains vary significantly. The assessment of the DNSH principle can then also be performed alongside other territorial development principles, embracing not only environmental-related aspects but also social, economic, governance, and spatial planning-related development issues.
- The approach to assessing the DNSH principle in an ECP programme targeting urban and/or rural areas needs to consider that policies and programmes do not act in isolation, and environmental processes do not commonly have defined boundaries limited to their territorial scope.
- Ideally, local, regional, and national administrations managing ECP funds should have the necessary administrative capacity to provide a sound evaluation of the implementation of the DNSH principle.
- Several methodological approaches have been proposed to assess the implementation of the DNSH principle. The author of this Knowledge Piece highlighted the advantages of using sound TIA methodologies. These may include the use of detailed and spatially targeted multi-component impact analyses, the application of comparable impact scores from negative to positive, the possibility of assessing all types of ECP programmes due to their multi-dimensional, multi-level, and flexible character, and compatibility with counterfactual policy evaluation techniques.
- Practical, comprehensive questionnaires have already been used in DNSH evaluation phases in Portugal, Italy, and Belgium.



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### Cohesions for Transitions (C4T) Community of Practice and the Academic Sounding Board (ASB)

The Knowledge Piece was developed by members of the Academic Sounding Board (ASB) as part of the Cohesion for Transitions (C4T) Community of Practice initiative. The C4T Community of Practice is a **community-based platform that aims to support EU Member States and regions in making better use of EU funds for sustainability transitions**. C4T engages national, regional, and local cohesion and sustainability transitions practitioners in sharing experience and good practices, creating partnerships and jointly identifying solutions. C4T also provides technical assistance to facilitate the development and/or implementation of sustainability transitions.

In the context of C4T, an Academic Sounding Board has been established to serve as **a scientific forum providing advice on sustainability transitions to the C4T Community of Practice and the Just Transition Platform**. It supports the advancement of knowledge related to cohesion for transitions by providing advice for the development of analytical work that is focused on cohesion policy as an enabler of sustainability transitions. Moreover, the board is an important link to the academic community. Science plays a crucial role in making state-of-the-art analytical and academic thinking available. It provides actionable knowledge to Managing Authorities and other public bodies involved in the implementation of funds through research at the intersection of cohesion policy and sustainability transitions. More information on the C4T Community of Practice is available online ([https://ec.europa.eu/regional\\_policy/policy/communities-and-networks/cohesion-4-transition\\_en](https://ec.europa.eu/regional_policy/policy/communities-and-networks/cohesion-4-transition_en))