INTEGRATING CLIMATE CHANGE INTO ENVIRONMENTAL ASSESSMENT PROCEDURES FOR PROJECTS, PLANS AND PROGRAMMES

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From legal obligation to reasoned decision: how to build a proportionate, legally robust and administratively workable method for assessing climate in environmental impact assessment and strategic environmental assessment.

The gap between the 'what' and the 'how'

Environmental assessment has established itself as one of the most robust instruments of public governance. It is rule-bound, predictive, participatory and, above all, binding: no plan, programme or project of any significance reaches approval without passing through it. Over the past decade, the instrument has explicitly incorporated a new requirement — the consideration of climate change — through the European directives on environmental impact assessment and strategic environmental assessment, national environmental assessment legislation, and successive energy transition and climate laws. The norm is now unambiguous: the effects of a given action on the climate must be identified, described and assessed across both dimensions — mitigation and adaptation — using the best available information at any given time.

Yet that normative clarity coexists with considerable practical indeterminacy. The law sets out the **what** — integrating mitigation and adaptation — but does not resolve the **how**. It does not tell an assessor how to determine what depth of climate analysis to require for a given file, what thresholds should motivate a condition or a refusal, or how to translate the inherent uncertainty of climate projections into a decision that must be legally sound. That gap between the obligation and its application is the real problem, and it manifests unevenly across the parties involved: the environmental authority faces the challenge from heterogeneous procedural frameworks and with uneven technical capacity; developers confront a diffuse object, in which the complexity of climate effects — long-term, cumulative, synergistic and uncertain — is frequently resolved through purely descriptive treatment; and practitioners find little genuinely operational guidance.

The value of integrating climate into environmental assessment does not lie in raising requirements uniformly, but in applying them with judgement where the climate variable is truly significant. An ambitious but unworkable methodology ends up reduced to a formality; an excessively lax one cannot sustain the reasoning behind a condition, nor withstand scrutiny in an appeal. The challenge, then, is one of proportionality: matching rigour to relevance. Achieving this requires a method built on four foundations — the legal grounding that underpins it, the lessons drawn from approaches that already work, the materiality principle that orders the effort, and the tools that translate it into everyday administrative practice.

The climate variable is not discretionary

A climate integration method is only useful if it is defensible. A technically brilliant analysis counts for little if it cannot hold up legally against a specific file. The first foundation is therefore not methodological but normative: demonstrating that the consideration of climate is not a voluntary addition that the assessor incorporates out of environmental sensitivity, but a mandatory and binding requirement that runs through the entire legal order.

That grounding operates on two levels. The first is that of **procedural law** — the rules that directly govern how an environmental assessment is conducted and that already require analysis of the action's contribution to mitigation and adaptation, consideration of greenhouse gas emissions generated throughout the full service life, and provision of the measures necessary to reduce, offset or adapt to the increase in climate risk. The second level, less obvious and often neglected, is that of **concurrent sectoral legislation**: the body of laws and plans that, without directly regulating environmental assessment, bindingly condition the climate content of what is being assessed.

It is worth dwelling on this second level, because it is where sound analysis makes the difference. The climate variable intersects with at least three major bodies of law, each associated with a distinct climate vector:

- **Spatial planning and natural heritage** (resilience and carbon sinks vector). Territorial planning — from overarching guidelines to municipal urban plans — conditions the design of alternatives and the allocation of land uses. Green infrastructure, far from being ornamental, operates as a legal imperative to protect carbon sinks and mitigate risks.
- **Water resources, soil protection and hazards** (adaptation and extreme events vector). Water and soil are the physical vectors most severely affected by climate. Water legislation, hydrological plans and flood risk management plans legally constrain the viability of alternatives as floodplain areas expand or the frequency of extreme events increases.
- **Circular economy, waste, air and health** (mitigation and microclimate vector). The obligation to prioritise recycled and locally sourced materials directly conditions the carbon footprint calculation, including Scope 3 indirect emissions, whilst air quality and public health legislation requires assessment of phenomena such as the urban heat island effect.

The outcome of this exercise is not an inventory of rules, but a **matrix of binding sectoral constraints**: a tool that makes it possible to identify which specific provision of territorial or sectoral planning underpins each climate measure required in an environmental document. The idea of treating climate and territory in an integrated way is not new: the European Commission itself, in its 2013 guidance on integrating climate change and biodiversity into environmental impact assessment, noted that both issues are so closely interrelated that it is advisable to address them jointly and at the early stages of the procedure, when it is still possible to reduce the vulnerability and enhance the resilience of natural and human systems. To this foundation is added a layer of strategic planning — climate and energy strategies, national adaptation plans, European climate resilience and do-no-significant-harm criteria, and the scientific backing of the Intergovernmental Panel on Climate Change — which is not itself binding but provides the environmental authority with additional grounds for reasoning. Grounding the method in this way makes it defensible against any file, not merely applicable: that is the difference between a criterion that holds up in an appeal and one that collapses.

Learning from those who already do it

No methodological framework should start from scratch. Before designing anything, it is worth looking to those who have already travelled this path — and doing so critically: not as a passive bibliographical exercise, but as an action-oriented comparative analysis (*benchmarking*) capable of distinguishing what is transferable from what is not. A sound comparative analysis answers three

questions for each reference: what level of technical maturity it has, whether it is easy to use for the intended audience, and whether it fits the regulatory framework in which it will be applied.

The scrutiny can be organised across three scales. At the **international and European scale**, the European Commission's guidelines on climate resilience proofing of infrastructure (*climate proofing*) and the taxonomy criteria on doing no significant harm (DNSH) set the binding framework; to these are added the analytical frameworks of reference agencies such as the Irish Environmental Protection Agency, the Dutch water authority, or, most notably, the sectoral calculators and diagnostic tools of the French Agency for Ecological Transition (ADEME), whose emissions calculation method is one of the most widely used European references. At the **national scale**, the methodological guides produced by climate change offices and the more advanced regional frameworks show how climate integration in environmental assessment crystallises in practice. And at the **regional or local scale**, the knowledge and tools generated within the territory itself — risk maps, high-resolution climate scenarios, flood viewers — ensure legal compatibility and territorial relevance.

Some references are particularly noteworthy. The International Association for Impact Assessment synthesised in 2018 the international best practice principles for integrating climate change into impact assessment. The Institute of Environmental Management and Assessment, now the Institute of Sustainability and Environmental Professionals, published two reference guides that are best read together: one on the assessment of greenhouse gas emissions and their significance, dating from 2017 and revised in 2022, and another on climate change resilience and adaptation in environmental impact assessment, from 2020. At the national level, the guide to the assessment of climate change-related risks produced in 2023 by the Spanish Climate Change Office offers a conceptual risk framework and a sequence of assessment stages with quantitative, semi-quantitative and qualitative approaches, directly transferable to adaptation analysis. Direct engagement with these materials — many available only in English or French — avoids the filters and loss of nuance introduced by working with second-hand translations or summaries.

Just as important as looking outward is looking inward. Reviewing environmental decisions already issued — impact statements and strategic environmental statements from recent years — provides an empirical diagnosis of how the administration currently translates the climate vector into genuinely binding conditions. That analysis reveals which formulations work and are replicable, and where the gaps and bottlenecks lie. A method designed on this knowledge does not start from a blank page: it reinforces the dynamics that the environmental authority has already internalised and corrects only what does not work. That is the difference between imposing an alien system and refining one's own.

Materiality and proportionality: the guiding principle

Here lies the conceptual heart of the approach. The most common mistake when integrating climate into environmental assessment is conflating two levels that practice tends to merge: the **administrative procedure** applicable to a given file — its mandatory legal channel — and the **level of technical rigour** that file merits according to its climate relevance. These are distinct things. The fact that a project follows the simplified procedure does not mean its climate analysis should be superficial; nor does following the ordinary procedure require deploying the full analytical arsenal if its climate incidence is minor.

Separating the two levels makes it possible to operationalise the proportionality principle through a

sequence of three linked decisions. **First**, the procedure — simplified or ordinary — is determined in accordance with environmental assessment legislation. **Second**, a **climate materiality filter** is applied, which classifies the action along two axes — its potential carbon footprint (mitigation) and its vulnerability or exposure (adaptation) — and thereby calibrates the depth of analysis required. **Third**, mitigation and adaptation are bindingly integrated at each stage of the procedure. The materiality filter distributes files across differentiated levels of rigour, ranging from a basic climate core resolved through checklists and streamlined justifications, to a detailed level requiring quantitative emissions calculation and spatial modelling of vulnerability, so that effort is concentrated where it truly matters.

This approach is not an isolated invention; it aligns with the logic adopted by the European Commission itself in its guidance on climate resilience proofing of infrastructure for the 2021–2027 period. That document organises the process around two pillars — mitigation and adaptation — and two successive phases: an initial screening and a detailed analysis that is only triggered when the screening justifies it, precisely to reduce the administrative burden. This is the same idea that underpins the materiality filter: not subjecting all files to the same level of effort, but reserving in-depth analysis for the cases that warrant it.

On this logic, it is worth incorporating an additional mechanism: **climate risk scaling**. Its function is to prevent a high-impact action from evading detailed analysis simply because its ordinary legal channel is the simplified procedure. By setting objective thresholds for carbon footprint or vulnerability, the method equips the environmental authority with a reasoned and defensible criterion for upgrading a file from the simplified to the ordinary procedure when the climate links are critical. The power to redirect is usually already provided for in legislation; what the method adds is precision about the threshold at which that redirection is triggered, converting a generic faculty into an objective criterion. This avoids the two symmetrical failures: under-demanding assessments that dilute rigour, and disproportionate burdens that paralyse irrelevant files.

This approach also addresses a very real problem: that of an administration with uneven technical capacity. A method that offers a minimum core applicable to all files and progressive deepening for those that require it is, by definition, more workable than one that demands the same of all. Proportionality is not a concession to convenience: it is the condition for rigour to be applied where it matters most.

Mitigation as decision, adaptation as risk

Integrating climate means attending simultaneously to two relationships of opposite sign: the impact of the action on the climate (mitigation) and the impact of the climate on the action (adaptation). Both require operational treatment, not merely narrative. It is also worth clarifying terminology, since the word 'mitigation' carries two meanings that specialist guides carefully distinguish: in the parlance of environmental assessment it denotes any measure to eliminate, reduce or compensate for an impact, whilst in climate language it refers specifically to the reduction of emissions. It is used in this second sense throughout what follows.

Mitigation must be treated as a decision-making element, not merely a descriptive one. For years, a project's emissions balance has been presented as contextual data that rarely conditioned the decision. The qualitative shift consists in emissions generated over the full service life of the action — and the measures to reduce or offset them — genuinely entering into the assessment of impact and, where appropriate, into the decision itself and its conditions. This means calculating,

not merely stating, the carbon footprint across its various scopes, comparing it against reference climate targets, and using that balance as a real discriminator between alternatives. The guides of the Institute of Sustainability and Environmental Professionals are clear on precisely this point: every emissions assessment must culminate in a conclusion on the significance of the effect, not stop at the inventory.

Adaptation, for its part, requires operationalising climate risk analysis: translating the concepts of exposure, sensitivity and adaptive capacity into judgements proportionate to each action, supported by regionalised scenarios and projections and supplemented, where gaps exist, by reliable official sources. The national guide to the assessment of climate change-related risks offers a useful framework here, decomposing risk into its constituent factors — the climate hazard, exposure and vulnerability — and sequencing the assessment through stages running from scoping to the identification of critical points. The underlying technical challenge is to translate the inherent uncertainty of climate projections into a legally sound condition: neither paralysing a file through excessive predictive caution, nor ignoring a real risk on account of its probabilistic nature.

These two logics do not apply equally across all scales. The room for manoeuvre differs markedly between the assessment of plans and programmes and that of projects. In **strategic environmental assessment** — plans and programmes — a proactive, co-design approach is possible: setting bespoke decarbonisation targets and structuring resilience at the macro scale, because the instrument is still giving shape to the territory. In **project environmental impact assessment**, by contrast, the logic of technical conformity predominates: the project must translate into the construction design of the chosen alternative the climate guidelines already established by higher-level planning. Recognising this divergence avoids the error of applying to a specific project questions that only make sense in the context of a plan, and vice versa.

Tools, geographic information and validation in practice

A methodological framework that remains on paper does not change administrative practice. The final step — and the most demanding — is to translate the logic into instruments that practitioners can use every day. It is worth distinguishing here between two audiences with different needs.

On one hand, the **environmental authority** needs operational guides and tools — ideally differentiated for projects and for plans and programmes — that guide the assessor through decision trees, stage-by-stage prompting questions, emissions calculation and risk analysis modules, catalogues of measures, and, most valuably, ready-made arguments and standard conditions that can be transferred directly into the decision. On the other, the **developers and professionals** who draft environmental documents need technical guidelines that anticipate what the environmental authority will require, at the appropriate level of detail and with the right sources. The practical aim of the latter is straightforward: reducing the back-and-forth of the file — those returns and requests for supplementary information that delay timelines and erode trust between the parties.

Two elements raise the rigour of the overall approach. The first is **geographic information technology as an integration standard**. The systematic cross-referencing of alternative designs against official climate risk mapping delivers a precision that qualitative analysis cannot match. The key is to avoid imposing disproportionate burdens: the method should not require developers to generate new primary climate models, but rather the administration to disseminate its scenarios and vulnerability maps in open, interoperable formats, so that drafting teams can carry out

rigorous spatial cross-referencing on a shared basis.

The second element is **validation through real piloting**. A methodology, however robust on paper, is of no value if it cannot withstand the information, time and budget constraints of a real file. It is therefore advisable to subject the guides and tools to an operational trial on representative cases — an urban plan in a municipality exposed to sea-level rise, an infrastructure project with a high carbon footprint, an intervention in a flood-risk area — and, above all, to a stress test with those who will subsequently apply them. This is not a complacent validation exercise, but one that asks without concession whether the checklists are intelligible, whether the modelling burden is manageable, and whether the calculation factors are realistic. The observations gathered feed into a rapid correction cycle. This review logic — involving those who commission, those who process and those who will apply the method in use, inspired by international models of independent technical review — is what guarantees the real-world utility of the product and reduces the risk of rework.

A methodology for matching rigour to relevance

Integrating climate change into environmental assessment is not an additional chapter to append to impact studies, nor a descriptive formality to complete in order to satisfy a regulatory requirement. Properly understood, it is a decision-making instrument: a system capable of determining, with objective criteria, how much climate analysis each action warrants, and of translating that analysis into defensible conditions that genuinely reduce emissions and strengthen the resilience of the territory.

The elements set out here are not isolated pieces, but the components of **a specific methodology proposed in this article** for integrating climate into environmental assessment. In summary, the method is articulated around four design decisions that operate in sequence. First, an explicit **legal grounding** that anchors each climate requirement in both procedural law and concurrent binding sectoral legislation, making it defensible against any file. Second, a **comparative basis** built on international, national and local references that have already demonstrated their utility, and on examination of decisions already issued. Third, a **climate materiality filter with risk scaling** that classifies each action according to its carbon footprint and vulnerability, calibrates the level of rigour accordingly, and sets objective thresholds for upgrading critical files as a matter of course. And fourth, a **set of operational tools, validated through real piloting**, that treat mitigation as a decision-making criterion and adaptation as risk analysis, and carry the method through to the desk of the assessor and the drafter of the environmental document.

The true measure of success is not how many pages of climate analysis are incorporated into a file, but whether the final decision is more rigorous, more proportionate and more defensible than before. The methodology proposed here does not aspire to demand more, but to demand the right things where they matter — and to do so in a way that every party to the procedure, those who decide, those who process and those who apply it, can use with confidence. Matching rigour to relevance: in that apparently modest formula lies much of the real effectiveness of climate policy in the territory.

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