

Reverse Environmental Assessment Analysis for the adaptation of projects, plans, and programs to the effects of climate change in the EU. Evaluation of the proposal for an EIA Directive

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1. INTRODUCTION

It is clear that mitigation measures are not enough to tackle climate change effects and, therefore, some adaptation measures will be needed to improve resiliency. The new *Reverse Environmental Impact Assessment* (REIA) analysis, so named by Professor Michael B. Gerrard¹, evaluates the impacts that the “transformed environment” -a result of the adverse effects of climate change- may cause to a project, plan, or program, in order to allow those undertaking these activities to act proactively.

There are many countries that have taken action accordingly. The EU has elaborated “Guidances” on integrating climate and biodiversity into either the Environmental Impact Assessment (EIA) or the Strategic Environmental Assessment (SEA) processes. Regardless of its importance, and despite the inclusion of some references to the adaptation of the projects to climate change, the review of the Directive 2011/92/EU on the EIA does not make a clear commitment for the REIA tool, losing a great opportunity to introduce this new instrument into the legal systems of all EU Member States to really meet its goal of achieving a high level of environmental protection, adapting the EIA to new challenges, among others, climate change.

2. ADAPTATION TO CLIMATE CHANGE IN THE EU

2.1. The EU Adaptation Strategy Package

The EU adopted in April 2013 a Strategy on Adaptation to Climate Change². Its overall aim is to contribute to a more climate-resilient Europe, enhancing the preparedness and capacity to respond to the impacts of climate change at local, regional, national, and EU levels, developing a coherent approach and improving coordination. Specifically, the strategy’s objectives refer to:

¹ Professor Michael B. Gerrard, Andrew Sabin Professor of Professional Practice at Columbia Law School, is director of the Center for Climate Change Law (Columbia University), Associate Chair of the faculty of Columbia University’s Earth Institute, and partner in charge of the New York office of Arnold & Porter LLP.

² European Commission. “An EU Strategy on Adaptation to Climate Change”, COM (2013) 216, 16th of April 2013. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:DKEY=725522:EN:NOT> (January 2014).

- a) The guarantee for joint approaches and full coherence between national adaptation strategies and national risk management plans by i) encouraging all Member States to adopt comprehensive adaptation strategies, for which the EU will provide financial support through the LIFE instrument³; ii) supporting the exchange of good practice between Member States, regions, cities, and other stakeholders; and iii) building upon the success of its pilot project “Adaptation strategies for European cities”⁴. Adaptation action by cities will, in particular, be developed in coordination with other EU policies following the model of “the Covenant of Mayors”⁵, an initiative of more than 4,000 local authorities voluntarily committed to improving the quality of urban life by pursuing EU climate and energy objectives;
- b) The promotion of a better informed decision-making process, driving innovation forward and supporting the market deployment of innovative climate adaptation technologies; refining the knowledge gaps and identifying the relevant tools and methodologies to address them. The findings will address the need for better interfaces among science, policymaking and business, and will also be used to improve the information available on the Climate-ADAPT platform⁶;
- c) Mainstream adaptation measures into EU policies and programs, as a means to “climate-proof”⁷ EU action. Adaptation has already been mainstreamed in the regulation of specific sectors, such as the environment, and some other legislative proposals that include the integration of adaptation, have been already tabled.

In short, the main objective is to integrate the adaptation measures into EU policies and regulations at all territorial levels (national, regional and local). For that purpose, the EU adaptation policies are incorporated in:

- The EU Adaptation Strategy, recognizing the importance of the EIA for climate resiliency (climate proofing)⁸; promoting greater coordination and information-

³ LIFE is the EU’s financial instrument supporting environmental and nature conservation projects throughout the EU. <http://ec.europa.eu/environment/life/> (January 2014).

⁴ <http://eucities-adapt.eu/cms/> (January 2014).

⁵ www.eumayors.eu/ (January 2014)

⁶ <http://climate-adapt.eea.europa.eu/> (January 2014).

⁷ “Climate proofing” understood as part of a wider process of mainstreaming or as its equivalent, implies a resiliency guarantee against the effects of climate change and includes the integration of the adaptation policy with the ones designed for mitigation purposes. Pelling, M. *op.cit.* p. 42. Pelling, *op.cit.*, p. 42.

⁸ “Climate proofing most often appears in the literature on mainstreaming adaptation. Persson and Klein (2009) propose that climate proofing may be less ambitious than mainstreaming, but in avoiding a ‘semantics’ debate, they use the terms interchangeably. In the book *Mainstreaming Climate Change Development*, Gupta (2010, p.77) develops climate proofing as a stage within mainstreaming in which “... all policies, programmes and projects are subjected to climate proofing to ensure that they are resilient with respect to the impacts of climate change”. Given the suggestion of climate proofing as an operational or subordinate aspect to mainstreaming by these authors, it seemed necessary first to define mainstreaming in order to understand in what context climate proofing should be defined”. Sveiven, S. “Are the European Financial Institutions climate

sharing among Member States, and ensuring that adaptation considerations are addressed in all relevant EU policies;

- The Climate-ADAPT platform, to support European countries in adapting to climate change, helping users to access and share information on: expected climate change in Europe; current and future vulnerability of regions and sectors; national and transnational adaptation strategies; adaptation case studies and potential adaptation options; and tools that support adaptation planning⁹;
- The Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment and Strategic Environmental Assessment tools, helping Member States improve the way in which climate change and biodiversity are integrated in Assessment Tools carried out across the EU.

European countries are at different stages of preparing, developing, and implementing adaptation strategies. To date, according to the Climate-ADAPT platform, 15 countries have elaborated their adaptation strategy. Increasingly, additional actions and measures are being taken at regional and local levels. It should be noted the adaptation measures developed by the UK, Holland, Germany, and Finland (among others)¹⁰, are especially active in the matter, while in some others, like Spain, the adaptation policy is contradictory (to say the least) as, on the one hand, it formally complies with the EU Guidelines (Spain has elaborated on an adaptation Plan, working programs for its development and even monitoring programs to control the level of compliance), but on the other hand, the regulatory reforms that would need to add urgent adaptation measures not only are not included but, in some cases, go in the opposite direction.

2.2. The incorporation of the Reverse Environmental Assessment tool in the EU. Analysis of the new EIA Directive and the Guidances on climate change integration into the Environmental Assessment analysis.

The government of the city of New York (especially starting with the Bloomberg administration, 2002-2013, and since Hurricane Sandy), is committed to the prevention (mitigation) of the effects of climate change, and, increasingly, to the preparation (adaptation) for those that are already inevitable and will result devastating. These efforts were emphasized and strengthened in June 2013 under the title “A stronger, more resilient NY”¹¹, as part of the City’s PlaNYC effort, which was launched in 2007. This Plan includes recommendations for improving the resiliency of the city’s infrastructure, and it is essentially oriented towards the protection of the coast and the existing buildings (Chapters 3 and 4); the acceleration of the economic recovery (Chapters 5 to 8); the preparation of the community response (Chapters 9 to 11); the protection of the environment and the remediation of the damages (Chapters 12 and 13).

proofing their investments”. IVM Institute of Environmental Studies Report. R-10/07, Nov 2010., p. 11.

⁹ <http://climate-adapt.eea.europa.eu/> (January 2014).

¹⁰ <http://climate-adapt.eea.europa.eu/countries> (January 2014).

¹¹ <http://www.nyc.gov/html/sirr/html/report/report.shtml> (January 2014).

Amid hectic activity in the city of New York on the elaboration of climate change strategies¹², Professor Michael Gerrard, Director of the Center for Climate Change Law at Columbia University, has drawn attention to the increasing interest that the consideration of the effects of climate change is creating in the Environmental Impact Assessment analysis in the US. What he has called “Reverse Environmental Impact Assessment Analysis”¹³ (REIA) takes the environment (transformed by the effects of climate change), for the first time, as a reason for the possible damages caused to a certain project. In this respect, some State and Federal government agencies have elaborated upon some protocols, enabling the REIA to incorporate all the possible effects of climate change into the current Environmental Impact Assessment tool. This is the case of the Draft NEPA Guidance on consideration of the Effects of Climate Change and Green House Gas Emissions of the Council on Environmental Quality (CEQ), and the Commissioner’s Policy on Climate Change and DEC action of the New York Department of Environmental Conservation (DEC)¹⁴.

On a National level, countries like the UK, Holland, Canada, Australia¹⁵ or the island nation of Kiribati¹⁶, have also prepared protocols to include the possible impacts of climate change in the EIA, and others like Germany, are studying it with great interest¹⁷.

Also, some international organizations for development assistance have included guidances for the consideration of climate change impacts in the projects; primarily the Organization for Economic Co-operation and Development (OECD), the US Agency for International Development¹⁸, the World Bank¹⁹ and the Caribbean Development Bank²⁰.

¹² “One area where New York is a national leader is resilience to climate change”. Gerrard, M. *Michael Bloomberg’s Environmental Record. Bill de Blasio’s Promises*, New York Law Journal, Vol. 250, n° 95, November 14, 2013, p. 3.

¹³ Gerrard, M. *Reverse Environmental Impact Analysis: Effect of climate change on projects*. New York Law Journal. Vol. 247 n° 45, March 8, 2012.

¹⁴ *Vid.* Gerrard, M. *Reverse Environmental Impact Analysis (...), op.cit.* p. 1.

¹⁵ “While Netherlands includes climate change through a Strategic Environmental Assessment (SEA), Canada and Australia have taken the route towards CC integration through project level EIAs”. Prasad Modak & Namrata Ginoya, *Challenges to Integrate Climate Change Considerations in Environmental Impact Assessment*, 33rd Annual Meeting of the International Association for Impact Assessment, 13 – 16 May 2013, Calgary Stampede BMO Centre | Calgary, Alberta, Canada p. 1.

¹⁶ *Vid.* Gerrard, M. *Reverse Environmental Impact Analysis (...), op.cit.* p.2.

¹⁷ German Federal Cabinet. “Adaptation Action Plan of the German Strategy for Adaptation to Climate Change”. 31st August, 2011, p. 9.

¹⁸ http://pdf.usaid.gov/pdf_docs/PNADJ990.pdf (January 2014).

¹⁹ <http://siteresources.worldbank.org/INTSAFEPOL/1142947-1116497123103/20507401/Chapter2GlobalAndCrossSectoralIssuesInEA.pdf> (January 2014).

²⁰ http://www.preventionweb.net/files/8263_Source20Book51.pdf (January 2014).

	Level 1 Intension	Level 2 Guidance	Level 3 Implementation
Developed Countries	Spain	Australia	Australia
	European Union	Canada	Canada
	Canada	Netherlands	Netherlands
	United Kingdom	New Zealand	New Zealand
Developing Countries	Bangladesh	Grenada	
	Dominica	Kiribati	
	Kiribati	Trinidad and Tobago	
	Saint Lucia	Caribbean Community	
	Samoa		
	Solomon Islands		
	Caribbean Community		
Multilateral Organizations	Asian Development Bank		
	Inter-American Development Bank		
	The World Bank		

*Progress in mainstreaming climate change in EIA (OECD & AECOM 2011), table 1
from Prasad Modak & Namrata Ginoya 2013, p. 1.*

But the adaptation not only has to be considered for “projects”. According to the OECD, there are three critical moments (or levels) in the consideration of climate change risks in policy decisions:

- The *national level*, in which the policy decisions may affect all activity sectors in the national territory;
- The *sectoral level*, in which the decisions of the authorized administration in a specific sector are made, concerning either the entire nation (national jurisdiction) or a specific region or province (in the decentralized nations, when the specific jurisdiction has attributed it to them); and
- The *project level*, regarding the decisions concerning a specific authority, which is the only competent participant on the project and whose basic objectives and parameters have been fixed previously (e.g. budget).

The EIA is primarily a project level tool²¹, because its objective is the identification of the possible impacts of a specific project on the environment. Therefore, the SEA should operate in the two other broader levels (national and sectoral)²². Regardless

²¹ Organization for Economic Co-operation and Development (OECD). “Integrating Climate Change Adaptation into Development Co-operation. Policy Guidance”, 2009, p. 123.

²² The following main differences were identified by the European Commission: 1) the objectives of the SEA are expressed in terms of sustainable development, whereas the aims of the EIA are purely environmental; 2) the SEA requires the competent authorities to be consulted at the screening stage; 3) the SEA requires an assessment of reasonable alternatives and has an explicit provision concerning the use of information from other sources; and 4) the SEA includes requirements on monitoring and quality control. European Commission. Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the application and effectiveness of the EIA Directive (Directive 85/337/EEC, as amended by Directives 97/11/EC and 2003/35/EC). Brussels, 23.7.2009, COM(2009) 378 final, p. 9.

of the level in which the assessment should operate, it is clear that the environmental assessment tools should be able to consider the vulnerability of a project, plan, or program, to climate change, and its adaptation capacity. In other words, the REIA could also be transported to the SEA, in order to evaluate the potential impacts that the climate change could provoke in a project, plan, or program.

The EU has elaborated two different Directives for both procedures. Although different, their common principle is to ensure that plans, programs and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorisation: a) EIA Directive (Directive 85/337/EEC), has been amended three times (in 1997, 2003 and 2009). This amendments were codified by Directive 2011/92/EU, and now this one is being modified again; and b) SEA Directive (Directive 2001/42/EU).

The white Paper of the European Commission titled "*Adapting to climate change: Towards a European framework for action*" (2009)²³ includes the EU commitment for "setting guidelines and exchanging good practice to ensure that account is taken of climate change impacts when implementing the EIA and SEA Directives and spatial planning policies". This commitment can also be found in the EU Adaptation Strategy package²⁴ as a priority for the European Commission when pointing out that "(...) mainstream adaptation measures into EU policies and programs is the way to 'climate-proof' EU action"²⁵. This has derived into the publications of the Guidance on Integrating Climate Change and Biodiversity into the EIA and the SEA²⁶.

The Guidances refer to four key questions:

- a) The fast identification of the key issues, with input from relevant authorities and the stakeholders;
- b) Evaluation of whether the project may significantly vary GHG emissions and, if relevant, determination of the scope of an emission assessment (mitigation);
- c) The establishment of clear scenarios for the EIA and identification of the main concerns with respect to climate change adaptation as well as with the rest of issues related to this, and which should be taken into account in the EIA (adaptation)²⁷. In this regard, the vulnerability of any project facing climate change must be assessed according to the type of infrastructure, the

²³ Brussels, 1.4.2009, COM (2009) 147 final.

²⁴ http://ec.europa.eu/clima/policies/adaptation/what/documentation_en.htm (January 2014).

²⁵ Communication from the Commission to the European Parliament, The Council, the European Economic and Social Committee and the Committee of the Regions. "An EU Strategy on adaptation to climate change". COM(2013) 216 final, p. 9.

²⁶ <http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf> and <http://ec.europa.eu/environment/eia/pdf/SEA%20Guidance.pdf>. (January 2014).

²⁷ The vulnerability of any project to the effects of climate change must be assessed considering the type of infrastructure that is going to be constructed, the activity to be developed, its geographic localization and the estimated Lifetime of the project. Organization for Economic Co-operation and Development (OECD). *op.cit.*, p. 19.

activity to be developed, its geographical location, and the life expectancy of the project;

- d) The identification of the main concerns regarding the biodiversity and its interaction with the rest of the issues that should be taken into account in the EIA.

Once the risks (vulnerabilities) and the views of the main stakeholders have been identified, the Guidances difference between: i) the possible mitigation options as a precautionary approach of the project, plan or program, bearing in mind that some mitigation measures that address climate change can themselves have significant environmental impacts and may need to be taken into account; ii) the selection of the most appropriate mix of alternatives and/or mitigation measures to use in planning the adaptation of the project, plan, or program to climate change (“low-regret”, “no-regret” and “win-win-win” options); iii) its impact on the biodiversity of the project, plan, or program (focusing on ensuring “no-net-loss”)²⁸.

Given that climate change is generating great interest in the environmental assessments and that adaptation is a relatively new concept (at least compared to mitigation²⁹) and the references to adaptation in the EU Guidances, all efforts to date have been to include climate change in the environmental assessment regulation from a mitigation perspective, that is, the estimation of the potential contribution to the reduction of the GHG emissions of a specific project, plan, or program, if undertaken. Therefore, the other dimension of the fight against climate change is being forgotten; the one referred to the capacity of a project, plan, or program to adapt to the new climate conditions that, according to the AR5, are now inevitable³⁰.

Despite the interest of the EU to include the adaptation to climate change into the EIA and the SEA analysis, as already seen, the draft Directive that is now under preparation only refers to the first one (that is why the draft Directive only modifies Directive 2011/92/EU, and not yet Directive 2001/42/EC), although the EU Guidance for the EIA indicates that “many alternatives and mitigation measures important from the point of view of biodiversity and climate change should be addressed at strategic level, in a Strategic Environmental Assessment (SEA)³¹.”

As a result of the review process, the European Commission adopted, on the 26th of October 2012, a proposal for a new Directive that would modify the one currently in force (Directive 2011/92/EU on the EIA). After 25 years of experience, since the first EIA Directive (Directive 85/337/EEC), a revision that would also include the

²⁸ European Commission. “Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment”, European Union, 2013; European Commission. “Guidance on Integrating Climate Change and Biodiversity into Strategic Environmental Assessment”, European Union, 2013.

²⁹ According to Larsen (2013), a 71% of the EIA reports analyzed in his report have assessed climate change: 68% of those have dealt with mitigation and 5% with adaptation and 7% with baseline adaptation. Larsen, S.V., *op.cit.*, p. 2.

³⁰ The predictions indicate that in Europe the temperatures will rise between 2.1°C and 4.4°C in 2080, with a greater increase in the East and the South of the continent. Borrás Petinat, S. “Adaptación al cambio climático en la Unión Europea”, included in Borrás Petinat, S. (Dir.) & Villavicencio Calzadilla, P. (Coord.), *op.cit.*, p. 168.

³¹ European Commission, “Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment”, European Union, 2013, p. 35.

new legislative changes and the actual EU policy and jurisprudence of the EU Court of Justice, was necessary. Hence, the proposal for a Directive on the EIA intends to reduce the bureaucratic constraints and facilitate the evaluation of all the potential impacts without diminishing any of its previous environmental guarantees. Also, the proposal includes an evaluation of the new challenges in the EIA process that are important for the EU, as the resource efficiency, climate change, biodiversity, and disaster prevention³². The Guidances on integrating climate change and biodiversity into EIA complement the proposal, but are not included in it.

The integration in the EIA of the challenges derived from climate change are included in some of the articles of the proposal for a Directive and in its Annex III and IV, some of which have also been modified recently by the European Parliament (amendments of 9th of October, 2013), as follows:

I. Article 3 (of the proposal for a Directive):

“The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with Articles 4 to 11, the direct and indirect significant effects of a project on the following factors:

(a) population, human health, and biodiversity, with particular attention to species and habitats protected under Council Directive 92/43/EEC and Directive 2009/147/EC of the European Parliament and of the Council;

*(b) land, soil, water, air and **climate change**;*

(c) material assets, cultural heritage and the landscape;

(d) the interaction between the factors referred to in points (a), (b) and (c);

(e) exposure, vulnerability and resilience of the factors referred to in points (a),

(b) and (c), to natural and man-made disaster risks.”

It is important to highlight, hereby, that:

- The reference on art. 3 (d) to the interaction between climate change and the rest of the elements (population, human health, biodiversity, land, soil, water, air, material assets, cultural heritage and the landscape –letter (d)-) or even on 3 (e), to their exposure (contrast) to the risks of extreme events (caused by natural disasters or by human activities) are to be understood in the context of the traditional EIA, that is to say, exclusively in the analysis of the effects of a certain project on the environment (dismembering it in different elements, among others, the climate change). Therefore, this new

³² National experts raise concerns about the quality of EIAs, as they are often too descriptive and do not include relevant data to characterize environmental impacts. This issue is particularly relevant, among others, in cases where environmental issues not yet covered by the Directive, such as climate change, disaster risks, resource efficiency or biodiversity, are addressed in a superficial manner in the EIA report and in subsequent decisions. In this case, the results of the public consultation show that the majority (52.5 %) of respondents consider that synergies should be improved between the EIA and other EU policies. That synergies are not sufficiently exploited currently is due to the fact that the new environmental issues are not expressly referred to in the Directive; hence there is little incentive for developers and competent authorities to account for the impacts of their projects in these areas. European Commission. “Commission Staff Working Paper. Impact Assessment. Accompanying the document. Proposal for a Directive of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment”, Brussels, 26/10/2012, SWD (2012) 355 final, pp. 14 and 15.

version of article 3 is still considering the effects of the project in terms of mitigation policy, and not including a REIA.

- One of the amendments proposed by the European Parliament on the 9th of October 2013³³, even though it does not change the previous conclusions: i) replaces the reference to “climate change” of article 3 letter (b) with the broader term “climate”: it being understood that the “climate” is the “factor” and not the “effect”, which is the “climate change”, produced mainly by human activity; and ii) specifies that the climate change effects are *likely* due to natural and human-made risks, matching scientific uncertainty used by the IPCC report (notwithstanding the “extremely likely” conclusions of the AR5).

II. The Annex III and IV are replaced by the following (pieces of the text in the proposal for a Directive):

“Annex III- Selection criteria referred to in Article 4 (4).

1. Characteristics of Projects:

The characteristics of projects must be considered with particular regard to: (...)

*(g) impacts of the project on climate change (in terms of greenhouse gas emissions including from land use, land-use change and forestry), **contribution of the project to an improved resilience, and the impacts of climate change on the project (e.g. if the project is coherent with a changing climate);”.***

According to the Annex III, the likelihood of significant impacts (for the projects enumerated in Annex II and for the purpose of determining if the project should be subject to an EIA or not) must be considered in relation to criteria set out with particular regard to nature, complexity, location, and size of the proposed project [Annex III, paragraph 3, letters (a) to (I)] and would be based on objective factors, such as the scale of the project, the use of valuable resources, the environmental sensitivity of the location, and the magnitude or irreversibility of the potential impact³⁴.

However, the letter (g) of Annex III refers, on the one hand, to the assessment of the impacts of the project on climate change (mitigation policy), and on the other hand, to the adaptation capacity of the project to the effects of the new climate situation. Therefore, in this last case, it could be regarded as a REIA.

“Annex IV- Information referred to in Article 5 (1) (the content of the environmental report):

“(…) 3. A description of the relevant aspects of the existing state of the environment and the likely evolution thereof without implementation of the project (baseline scenario). This description should cover any existing environmental problems relevant to the project, including, in particular, those relating to any areas of a particular environmental importance and the use of natural resources.

³³ European Parliament. Amendment of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, Wednesday, 9 October 2013 - Strasbourg: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2013-0413+0+DOC+XML+V0//EN> (January 2014).

³⁴ The EU Court of Justice case-law has stressed the need for "sufficiently reasoned" (C-75/08) screening decisions, which contain or are accompanied by all the information that makes it possible to check that the decision is based on adequate screening (C-87/02). COM (628) final, p. 5.

4. A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular, population, human health, fauna, flora, biodiversity and the ecosystem services it provides, land (land take), soil (organic matter, erosion, compaction, sealing), water (quantity and quality), air, climatic factors, climate change (greenhouse gas emissions, including from land use, land use change and forestry, mitigation potential, **impacts relevant to adaptation, if the project takes into account risks associated with climate change**), material assets, cultural heritage, including architectural and archaeological ones, landscape; such a description should include the inter-relationship between the above factors, as well as the exposure, vulnerability and resilience of the above factors to natural and manmade disaster risks”.

5. A description of the likely significant effects of the proposed project on the environment resulting from, inter alia:

(a) the existence of the project;

(b) the use of natural resources, in particular land, soil, water, biodiversity and the ecosystem services it provides, considering as far as possible the availability of these resources **also in the light of changing climatic conditions**;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the elimination of waste;

(d) the risks to human health, cultural heritage or the environment (e.g. due to accidents or disasters);

(e) the accumulation of effects with other projects and activities;

(f) **the greenhouse gas emissions**, including from land use, land use change and forestry;

(g) the technologies and the substances used;

(h) hydromorphological changes.

The description of the likely significant effects should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-, medium- and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at EU or Member State level, which are relevant to the project.

8. An assessment of the natural and man-made disaster risks and risk of accidents to which the project could be vulnerable and, where appropriate, a description of the measures envisaged to prevent such risks, as well as measures regarding preparedness for and response to emergencies (...).”.

Annex IV includes the necessary information for the preparation of the Environmental Report “(...) that may reasonably be required for making informed decisions on the environmental impacts of the proposed project, taking into account current knowledge and methods of assessment, the characteristics, technical capacity and location of the project, the characteristics of the potential impact, alternatives to the proposed project and the extent to which certain matters (including the evaluation of alternatives) are more appropriately assessed at different levels including the planning level, or on the basis of other assessment requirements. (...)”(art. 5.1 in its redrafting). In short, Annex IV points out the need to take account of: i) the reference to the state of the environment; ii) the description of the environmental elements that could be affected by the execution of the project and its evolution (specifically, those resulting from the GHG emissions – letter (f)- or those that make the project vulnerable in order to prevent the risks).

It seems therefore clear, at least up until this point, that this is a mitigation policy (regarding the effects, in terms of GHG emissions, of the construction of a project on the environment) and not yet an adaptation of the project to the effects of climate change (effects of the changes on the environment that eventually would affect the

project). Nonetheless, Annex IV points 4 and 8 seem to go a bit further to this respect, though timidly, when indicating that:

- (Point 4) the environmental report (art. 5 (1)) should include (among other things) impacts relevant to adaptation, if the project takes into account risks associated with climate change;
- (Point 8) the environmental report should also include an assessment of those environmental risks (natural or human made) that might affect the project and the necessary measures for the adaptation of the project to them. Therefore, this reference could be considered as a REIA.

On top of that, the EU has elaborated two Guidances for the integration of climate change (and biodiversity) into the EIA and the SEA analysis. On the one hand, the EIA Guidance establishes some necessary stages in the assessment process, focusing in the more sensitive areas, summarized as follows:

<i>Stages</i>	<i>Description</i>
1. Identifying climate and biodiversity concerns in EIA:	<ul style="list-style-type: none"> - Identifying key issues early on, with input from relevant authorities and stakeholders; - Determining whether the project may significantly change GHG and defining the scope of any necessary GHG assessment (climate change mitigation concerns); - Being clear about climate change scenarios used in the EIA and identifying the key climate adaptation concerns and how they interact with the other issues to be assessed in EIA; - Identifying the key biodiversity concerns and how they interact with the other issues to be assessed in the EIA.
2. Analyzing the evolving baseline trends	<ul style="list-style-type: none"> - It is a moving baseline (especially for long-term projects) - It should be considered: i) trends in the key indicators over time; ii) divers of change; thresholds/limits; iv) key areas that may be particularly adversely affected by the worsening environment trends; v) critical interdependencies; vi) benefits and losses brought by these trends and their distribution; and vii) climate change vulnerability.
3. Identifying alternatives and mitigation measures: in the early stages of the project, alternatives are different ways in which the developer can feasibly meet the project's objectives. Many alternatives and mitigation measures should be addressed at a strategic level, in a SEA.	<ul style="list-style-type: none"> - <u>Climate change mitigation</u>: precautionary approach bearing in mind that some EIA mitigation measures that address climate change can themselves have significant environmental impacts and my need to be taken into account. - <u>Climate change adaptation</u>: selection of the most appropriate mix of alternatives and/or mitigation measures, depending on the nature of the decision and the level of tolerated risks. Types of measures: i) measures that strengthen the project's capacity to adapt to new climate conditions; ii) risk reduction mechanisms; iii) measures to control or manage certain identified risks; iv) measures that improve the ability of the project to operate under identified constraints; and v) measures that better exploit certain opportunities offered by the environment. - <u>Biodiversity</u>: precautionary principle focused on no-net-loss i) avoiding irreversible loss; ii) seeking alternative solution that minimize biodiversity loss; iii) using mitigation to restore biodiversity resources; iv) compensating for unavoidable loss with similar biodiversity value; and v) optimizing environmental benefits.
4. Assessing significant effects	<ul style="list-style-type: none"> - <u>Long-term and cumulative nature of effects</u>: i) recognizing cumulative effects early on in the EIA process, ii) paying attention to the evolving baseline; iii) distinguishing between magnitude and significance and use significance criteria; iv) where possible, promotion of casual chains or network analysis to understand the interactions and associated cumulative effects between the elements of the projects and the environment. - <u>Complexity of the issues and cause-effect relationships</u>: use of simplified models and best-case and worst-case scenarios. - <u>Uncertainty</u>: avoid complex or obscure language.
5. Monitoring and adaptive management	<ul style="list-style-type: none"> - Generation of recommendations for <u>monitoring</u> the impact of

	<p>implementing a project to identify any unforeseen adverse effects;</p> <ul style="list-style-type: none"> - Adaptive management: iterative method of decision making in the face of uncertainty that reduces uncertainty by continuous monitoring. EIA may facilitate adaptive management by clear acknowledging assumptions and uncertainty and proposing practical monitoring arrangements to verify the correctness of the predictions made.
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On the other hand, the SEA Guidance establishes the tools and approaches for the integration of climate change and biodiversity in that assessment analysis. It also gives the opportunity to address problems that could arise in an early stage, thus avoiding unnecessary costs.

Stages	Description
1. Consideration of climate change scenarios	<ul style="list-style-type: none"> - Climate scenarios: either affecting the implementation of the proposed plan or program or worsening its impact on biodiversity and other environmental factors. These are the factors to be included: changing temperatures; changing rainfall patterns and extreme rainfall events; windstorms; changing sea levels; and other potential extreme climatic conditions. - Socio-economic scenarios: most of the direct manifestations of climate change will cause further secondary and indirect effects that should be considered in the assessment.
2. Analyze evolving baseline trends	The baseline environment will be unstable, particularly for plans and programs resulting in large infrastructure projects with a long planning or long-lasting effects (+20 years). To be able to understand how the proposed plan or program could impact on the future environment and how its implementation might be impacted by the changing environmental context, it is essential to consider the following aspects: i) trends in key issues over time; ii) drivers of change (direct: changes in land use and land cover, external inputs such as emissions, introduction of new species, etc. and indirect: demographic, socio-political, economic, cultural, technological processes or interventions.); iii) thresholds/limits; iv) key areas that may be particularly adversely affected by the worsening environmental trends; v) critical interdependencies (water supply, flood defenses, energy supply, etc.) and vi) benefits and losses.
3. Vulnerability	Analysis of the expected impacts, risks, and adaptive capacity of a region or sector to the effects of climate change. It includes an assessment of the region's or sector's ability to adapt.
4. Policy consistency and coherence	The UE requires environmental protection objectives to be set at international, Community or Member State level, which are relevant to the plan or program. These objectives must be assessed when a SEA is prepared. Two sets of objectives: i) assessment objectives (minimal/bottom-line targets or standards that the proposed plan or program must meet); and ii) aspirational objectives (long-term environmental goals to be considered).
5. Assess alternatives that make a difference in terms of climate change and biodiversity impacts	<p>Considering alternatives should encourage the planning process to look for better ways to meet human needs without contributing to climate change, and minimize the risks resulting from previous development patterns and the likely expected climate change phenomena. The analysis should: i) consider the context of different climate change scenarios and climate impacts, and possible reasonable alternative climate change futures; ii) examine alternative ways of achieving the plan or program objectives, in particular if it is likely to have adverse impacts in the integrity of the biodiversity or cannot be addressed via mitigation measures; and iii) aim for "no-net-loss" of biodiversity and/or improvement in biodiversity.</p> <p>The SEA may apply the precautionary principle when there is uncertainty about the nature of the potential risks and adjust the proposed plan or program to a "non-regret" or "low-regret" measures rather than risk causing major problems during its implementation.</p>

Both tools, the EIA and the SEA, as described in the EU Guidances are today absolutely essential before undertaking or designing any project, plan, or program,

not only due to their important environmental advantages but also their socio-economic benefits.

3. CONCLUSION

Despite the absence of a clear support for the development of a real adaptation policy in the European EIA regulation, its spirit (reflected in the preamble of the proposal for a Directive) pretends to address “(...) issues that are important to the EU as a whole, such as adaptation to climate change and disaster prevention, and has a role to play in the achievement of Europe’s 2020 objectives for sustainable growth”³⁵, through the promotion of “(...) the environmental, social and economic resilience (...) so as to deal with climate change throughout the Union’s territory in an efficient manner. Climate change adaptation and mitigation responses need to be addressed across many of the sectors of Union legislation”³⁶, in the hope that the adaptation of the EIA to new challenges will provide high benefits at moderate to high costs for developers and public authorities³⁷.

This idea is, moreover, reinforced in the EU Guidances on integrating climate change and biodiversity into EIA and SEA. That is why it could be stated that the proposal for a Directive:

- Outlines the most important questions regarding climate change affecting a project;
- Includes (although with an unclear wording) the concern for the adaptation of a project to the effects of climate change;
- Together with the EU Guidances, takes into account the assessment of the eventual climate conditions that might affect the project³⁸, that is, incorporates for the first time a REIA; and
- Finally, offers a new method of assessment in key issues for the lifetime of the project in a more effective manner, highlighting the opportunities to obtain more ambitious objectives for the protection of the environment. With respect to climate change this means, for example, the possibility of exploring the synergies and conflicts between mitigation and adaptation to avoid the so-called “maladaptation”³⁹. The long-term nature of climate change and the uncertainty of its real effects (regarding time, geographical location, and intensity), make it very difficult to consider both the mitigation and the adaptation goals simultaneously in the EIA analysis, even if its achievement proves to be decisive for the long-term viability of the project. Indeed, long-term projects are much more vulnerable to progressive climate changes, which affect the environmental baseline on which the EIA is based⁴⁰.

³⁵ European Commission, COM (2012) 628 final, *op.cit.*, p. 8.

³⁶ European Commission, COM (2012) 628 final, *op.cit.*, p. 10.

³⁷ European Commission, COM (2012) 628 final, *op.cit.*, p. 4.

³⁸ European Commission, “Guidance...”, *op.cit.* p. 13.

³⁹ European Commission, “Guidance...”, *op.cit.*, p. 14.

⁴⁰ European Commission, “Guidance...”, *op.cit.*, p. 16.

Therefore, the proposal for a EIA Directive is a step forward in the right direction to climate-proof the EU policy but, given the clarity of the Guidances (which are previous to the proposal), it could have been even more effective to include an explicit provision of the REIA analysis in the text of the proposal, as this new tool soon will be (in fact, it is today) essential and unavoidable for any EU action.