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Aligning high climate and biodiversity ambitions in 2021 and beyond: why, what, and how?

Alexandra Deprez, Aleksandar Rankovic, Juliette Landry, Sébastien Treyer, Lola Vallejo, Henri Waisman (IDDRI)

Climate change and biodiversity loss have long been interconnected challenges, and the need to address them together has recently gained prominence in the scientific and political mainstream. The focus of discussions centres often primarily on maximizing climate-biodiversity *synergies*–e.g. scaling up nature-based solutions (NBS). But looming *trade-offs* also exist between both issues–the achievement of biodiversity conservation goals could be severely compromised if some land-based climate mitigation and carbon-dioxide removal (CDR) measures are deployed at a very large scale. This would weaken the capacity of ecosystems to sequester carbon, thereby potentially impeding the ability to reach net-zero greenhouse (GHG) emissions and thus meet the Paris Agreement's global climate goals.

It is necessary to find ways to better align high climate and biodiversity ambitions and actions. This Study addresses the *why, what,* and *how* of doing so.

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KEY MESSAGES

'Net-zero and biodiversity positive' ambition means (1) ambitious action to 2030 and (2) coordinated planning to 2050 towards: i) rapid and deep economy-wide emission cuts, and ii) conserving carbon and biodiversity-rich ecosystems, iii) sustainable land use including nature-based solutions (NBS) in particular in the agri-food system, iv) greater emphasis on demand-side management measures, v) using CDR primarily to compensate for hard-to-abate marginal emissions, not as an 'easy' way out of ambitious mitigation.

The 2021 climate and biodiversity 'super-year' (e.g. CBD COP15, UNFCCC COP26 and the UN Food Systems Summit) offers several opportunities to push for a qualitative redefinition of ambition towards greater coherence in domestic action for climate & biodiversity, and to ensure a step change in collective accountability:

- (Re)defining global goals towards a more aligned approach, as part of the COP26 and COP15 political declarations;
- Tasking scientific subsidiary bodies (SBST(T)A) with identifying most effective actions for both climate and biodiversity;
- Tasking the implementation subsidiary bodies (SBI) to suggest how to integrate overlapping climate and biodiversity considerations into relevant domestic plans (NDCs, NBSAPs) and their transparency requirements (synchronizing reporting timelines, specifying data needs),
- Tasking the research community to build upon IPCC and IPBES preliminary joint work, to assess and design transformation pathways that are both net-zero and biodiversity positive.

National scale convergence and coherence implies not only ensuring consistent development of NDCs and LT-LEDS for climate and NBSAPs for biodiversity, but also that sectoral plans (for instance the national strategic plans for the implementation of the EU Common Agricultural Policy) are legally made compatible with both climate and biodiversity planning documents.

Real economy actors and local authorities both play a critical role in bringing about these necessary transformations, as do critical conditions in governance (democratic processes, participation and inclusion, rights based approaches).

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EXECUTIVE SUMMARY

WHY IS ALIGNING CLIMATE AND BIODIVERSITY AMBITIONS NECESSARY?

The dual challenge of climate change and biodiversity loss require an ambitious and coordinated response. Addressing them separately risks compromising the world's ability to successfully halt climate change, while preserving ecosystems and meeting other Sustainable Development Goals. There are at least four major ways in which climate change and biodiversity issues are linked:

- **1. Climate change hurts biodiversity**: climate is already one of the main drivers of biodiversity loss, and its impacts are set to accentuate in coming years. Efforts to keep temperature rise below 1.5ºC are therefore key to reversing biodiversity loss.
- **2. Biodiversity is essential to climate mitigation and adaptation:** terrestrial and marine ecosystems play a major function in enhancing resilience to climate change, regulating climate, and acting as carbon sinks.
- **3. Climate change and biodiversity loss share root causes** which are linked to unsustainable production and consumption (e.g., in agri-food systems and energy production), resulting in damaging land-use changes (e.g. deforestation and land-degradation).
- **4. Some climate mitigation solutions hurt biodiversity, in turn potentially compromising the world's ability to reach net-zero emissions:**[1] deploying land-based Carbon-Dioxide Removal (CDR) such as Bioenergy with Carbon Capture and Storage (BECCS) or afforestation at very large scale is set to severely negatively affect biodiversity conservation and food security goals.

Establishing separate climate and biodiversity governance fora in the 1992 Rio Earth Summit–the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD)–was essential to make concrete progress on each issue. However, the issues are now so intertwined when considering the need to reach net-zero greenhouse gas (GHG) emissions, that it is key to address them in a coherent way and overcome silos and risky misalignments.

WHAT IS NEEDED TO ALIGN CLIMATE AND BIODIVERSITY AMBITIONS?

Taking a systemic view of climate and biodiversity linkages reveals a fuller picture of the transformative changes needed in order to successfully address both challenges, and the importance of aligning high climate and biodiversity ambitions and action in the short, medium and long term. In the run-up to COP26, States are being called upon to concretely demonstrate 'high climate ambition'–i.e. net-zero emissions so as to keep in reach the Paris Agreement's goal of keeping temperature rise 'well below 2ºC', ideally 1.5ºC–across the short term (green and resilient COVID-19 recovery plans), medium term (ambitious updated NDCs to 2030), and long term (concrete plans to achieve mid-century net-zero emissions). These three scales are equally important to define 'high biodiversity ambition': (1) States are also called to 'nature-proof' their recovery plans, (2) 2030 is the key time horizon of the Convention on Biological Diversity (CBD)'s post-2020 Global Biodiversity Framework (GBF), and (3) 2050 is the horizon of CBD's overarching vision and the 'Global Stocktake'.

Aligning high climate and biodiversity ambitions requires pushing further for coordinated action, addressing four interlinkages:

- **1. Acknowledging ambitious climate mitigation up to 2030 as a key urgent priority**. Rapid emissions reduction is the *sine qua non* condition to keep the 1.5ºC goal in reach without needing to recur to very large-scale CDR

1 Throughout this *Study,* we use the term 'net-zero' emissions to designate reaching net-zero CO_2 emissions, i.e. "when anthropogenic CO_2 emissions are balanced globally by anthropogenic CO_2 removals over a specified period" (IPCC, 1.5ºC SR SPM, 2018). We prefer this term over 'climate neutrality' or 'carbon neutrality' which are sometimes used interchangeably with 'net-zero', but are less scientifically rigorous. See Rogelj, J. *et al.*, (2021), "Three ways to improve net-zero emission targets," *Nature,* Comment, https://www.nature.com/articles/d41586-021-00662-3#ref-CR6

deployment, which would severely compromise the permanence of biodiversity conservation and NBS throughout coming decades, and potentially compromise the attainment of net-zero GHG emissions itself. Ambitious climate mitigation to 2030 must therefore prioritize: (1) deep economy-wide decarbonization and fossil-fuel phase-out, (2) sustainable land use including NBS.

— **2. Conserving carbon and biodiversity-rich ecosystems and scaling-up other carbon-sequestering NBS is also key.** Indeed, NBS such as ecosystem conservation, restoration, and sustainable agriculture could provide up to 30% of global mitigation in 2050 to reach 1.5ºC, or 15 billion $GtCO_2e$ annually (Roe *et al.*, 2019). Yet the limitations and risks of NBS should also be taken into account, namely: (1) the risk of non-permanence of carbon sinks, (2) the risk that NBS be misdefined and/or used by actors in an 'offsetting' scheme, as a way to divert and distract efforts away from deep decarbonization (i.e. the risk of when it comes to 'net-zero' focusing more on the 'net' than on the 'zero').

— **3. Underscoring the key role of profound demand-side transformations** to reach high climate and biodiversity goals—the all too often forgotten factor of the equation.

— **4. Ensuring coherence of climate and biodiversity planning to 2050:** mid-century high climate ambition should be redefined as 'reaching net-zero in a biodiversity-positive way'—i.e. plans to reach net-zero emissions must maximize economy-wide decarbonization in order to minimize dependence on large-scale CDR (and the resulting pressures on land-use change and biodiversity). There is a need to underscore that the emission reduction pathways to reach the 1.5ºC goal that use very large-scale BECCS deployment are incompatible with biodiversity conservation and should therefore not be considered as climate ambition.

HOW TO IMPROVE ALIGNMENT OF CLIMATE AND BIODIVERSITY AMBITIONS?

Aligning climate and biodiversity ambitions requires mobilizing a puzzle of levels and actors. A couple of potential starting points include:

— **1. Building national coherence through multilateral action:** Domestic climate and biodiversity coordination would help concretely maximize climate-biodiversity synergies and minimize trade-offs on the ground. To aid this process, at the COP15 of the Convention on Biological Diversity (CBD) and COP26 of the United Nations Framework Convention on Climate Change (UNFCCC) Parties could call for the establishment of more structured joint work programmes between the two Conventions, including:

- **Assessment of the best options for coordinated action on climate change and biodiversity, on a scientific basis** (e.g. key issues such as NBS, bioenergy and land-based CDR)–through joint UNFCCC SBSTA (Subsidiary Body for Scientific and Technological Advice) and CBD SBSTTA (Subsidiary Body on Scientific, Technical, and Technological Advice) work programme.
- **Guidance to better harmonize existing relevant information across Nationally Determined Contributions (NDCs) and National Biodiversity Strategies and Action Plans (NBSAPs) (**e.g. ecosystem restoration goals), **as well as coherently integrate biodiversity in NDCs, and climate objectives in NBSAPs**–through a joint work programme of the Subsidiary Body for Implementation (SBI) from the CBD and UNFCCC.

— **2. Defining or refining in an integrated manner global goals, accountability mechanisms, and anticipating new governance issues:** Aligning climate and biodiversity ambitions and action within governance, especially of the CBD and UNFCCC, should not be viewed as an aim in itself but oriented towards helping advance national climate and biodiversity policymaking and planning.[2]

- **Defining or refining global goals**: explicitly refining climate ambition by integrating biodiversity to select those Paris-compatible emission reduction pathways most aligned with reaching biodiversity goals and other SDGs, for instance in the COP26 Decision. On the road to CBD COP15, develop further the post-2020 GBF's climate change mitigation and adaptation target.
- **Building greater climate-biodiversity collective accountability:** by gradually harmonizing over the coming decade the reporting in the Paris Agreement's and CBD's transparency mechanisms. The SBIs could launch joint work on how to make connection, how and which data to collect, etc.
- **Better integrating the climate-biodiversity nexus in research**, and especially the modelling communities, feeding into the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) nascent joint work.
- **Anticipating new governance issues relevant for both climate and biodiversity arenas:** for instance, CDR, a looming crunch issue in the international climate arena.[3] To ensure we are able to reach ambitious climate *and* biodiversity goals, it is key that CDR's role be understood as a way to compensate for hard to abate marginal emissions remaining after profound economy-wide decarbonization, rather than as an 'easy' way out instead of ambitious mitigation.

2 This *Study* focuses on interactions between the UNFCCC and CBD, but acknowledges the UNCCD is a key area of work moving forward in 2021, given UNCCD COP15 and the Rio Conventions High-Level Summit.

3 Solar Radiation Management (SRM)—global and local interventions to intentionally counteract greenhouse gases warming by reflecting solar radiation—is another looming contentious issue in the international climate arena. However, given the IPCC does not consider SRM to be a mitigation strategy (IPCC Global Warming of 1.5°C Special Report), it is beyond the scope of this *Study*.

— **Real economy transformation towards a 'net-zero *and* biodiversity positive' economy:** While the Paris Agreement jumpstarted the concept of a 'net-zero economy' (i.e. to date, over 1,100 companies, 450 cities and 22 regions have made climate neutrality commitments[4]), the concept of a 'biodiversity positive' economy is even more nascent. To reach ambitious climate and biodiversity goals, two key issues include clarifying options towards:
  - **A sustainable agri-food system:** The approach taken should be systemic (centring on climate, biodiversity *and* food security and nutrition), and centring on a farm-to-fork approach as a whole rather than just on the agricultural sector.
  - **A greater emphasis on demand-side management, including lifestyle shifts:** The IPCC's Global Warming of 1.5°C Special Report shows that lowering reliance on mass-scale CDR to reach a 1.5ºC emission reduction pathways requires deploying strong demand side measures (including reduced energy demand and food sustainability shifts).

— **Non-state actor mobilization**: The climate change-biodiversity nexus reveals the key role Non-State Actors (NSAs) have in implementing on-the-ground measures that jointly address both challenges. In particular, in responding to rising land-use tensions between agriculture, biodiversity and ecosystems conservation and bioenergy, and also in advocating for coordinated responses to these two challenges at national and international levels. Likewise, it is in the interest of NSAs, and especially subnational governments to push for greater climate-biodiversity alignment in international arenas, given they will be on the frontline of those tensions on the ground.

WHEN?

Creating greater global and national-scale political traction is key to help advance more aligned climate and biodiversity ambition and coordinated action in 2021 and beyond. At the international scale, the super-year 2021 includes many key moments to jumpstart greater alignment: COP15, COP26, the G7, G20. In 2022 key moments could be an implementation Rio Summit, the HLPF, Stockholm+50 and UNEA-5, and in 2023 the Paris Agreement Global Stocktake.

4 See Race to Zero: https://racetozero.unfccc.int/

1. WHY IS ALIGNING CLIMATE AND BIODIVERSITY AMBITIONS NECESSARY?

1.1. No high climate or biodiversity ambition without reciprocal integration

The dual challenge of climate change and biodiversity loss require an ambitious and coordinated response.

They have long been interconnected challenges, and the need to address them together has recently gained prominence in the scientific and political mainstream.[5] Addressing them separately risks compromising the world's ability to successfully halt climate change, while preserving ecosystems and meeting other Sustainable Development Goals. Climate change and biodiversity issues are linked in at least four ways.

1.1.1. Climate change hurts biodiversity

Climate change is the third largest driver of biodiversity loss, and its impacts on biodiversity is set to accentuate in coming years (IPBES GAR, 2019). The UNFCCC Convention text (1992, Article 1) already recognizes the impacts of climate on ecosystems, and these have been increasingly documented in the scientific literature and highlighted over several IPCC assessments, including in the IPCC's Global Warming of 1.5°C Special Report (IPCC SR 1.5ºC, 2019). Both the IPCC SR 1.5ºC and the IPBES GAR underline the significant benefit to biodiversity of keeping temperature rise to 1.5°C rather than 2°C, and to reach the 1.5ºC goal without 'temperature overshoot', which requires taking ambitious climate mitigation measures up to 2030 (IPCC SR 1.5ºC, Summary for Policymakers (SPM), 2019).

Therefore, *both* climate *and* biodiversity communities should view ambitious climate mitigation in the coming decade as a key urgent priority, in order to keep the 1.5ºC goal in reach.

1.1.2. Biodiversity is essential for attaining climate mitigation and adaptation goals

Both terrestrial and marine ecosystems play a major function in regulating climate, as well as enhancing adaptation and resilience to climate change.[6] This has been documented increasingly in recent IPCC reports (e.g., the IPCC Special Report on Climate Change and Land (IPCC SR Land, 2019) and the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (IPCC SROCC, 2019)) and in the IPBES GAR. The carbon sink role of ecosystems was already recognized in the UNFCCC Convention's preamble, but has been given a much stronger emphasis in the Paris Agreement's collective mitigation goal. Article 4.1 states that: "Parties aim to reach global peaking of greenhouse gas emissions as soon as possible […] so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century", in order to keep to reach the collective long-term goal of keeping temperature rise "well below 2ºC" (Article 2). Reaching greenhouse gas (GHG) neutrality by the second half of the century indeed requires a greater reliance on carbon sinks, therefore placing ecosystems at the centre of ambitious climate action. Studies have estimated that 'nature-based solutions (NBS) could provide up to 37% of mitigation needed up to 2030 to reach the 2°C, when implemented with biodiversity safeguards (Griscom *et al.*, 2017), and up to 30% of global mitigation in 2050 to reach 1.5ºC, or 15 billion $GtCO_2e$ annually (Roe *et al.*, 2019). Recent research indicates however that under a business as usual emissions scenario (i.e. no ambitious emission reduction

5 E.g. the recent IPBES/IPCC co-sponsored workshop, the Beijing Call for Biodiversity Conservation and Climate Change, COP26 UK COP26 Presidency's Nature campaign, Leaders' Pledge for Nature, the High Ambition Coalition for Nature and People, and the upcoming Rio Conventions Summit

6 This *Study* focuses primarily on the climate-biodiversity nexus on land, yet its main conclusions also apply to the ocean. For the interaction between climate-biodiversity and the ocean, see Sala, E. *et al.* (2021) Protecting the global ocean for biodiversity, food and climate. *Nature*. https://doi.org/10.1038/s41586-021-03371-z

measures taken), the resulting temperature increase may reduce by half ecosystems' carbon uptake (i.e. their capacity to act as carbon sinks), and this as early as 2040, rather than the end of the century as was previously projected (Duffy *et al.*, 2021). Ecosystems can also play a central role in climate adaptation strategies.[7]

This underscores the importance that, *alongside* conducting ambitious economy wide emission reductions (Point 1 above), preserving and restoring biodiversity be understood not as an 'add-on' to climate action but a necessary condition to reach net-zero CO_2 emissions.[8] The growing impacts of climate change on biodiversity will require to even further decrease the other drivers of biodiversity loss (habitat destruction, unsustainable use of ecosystems, pollution, biological invasions).

1.1.3. Climate change and biodiversity degradation share root causes

These root causes are linked to unsustainable modes of production and consumption (e.g., in agri-food systems or energy sector), which may result in land-use changes (e.g. deforestation and land degradation) that are damaging to climate and biodiversity. This is very often induced or amplified by subsidies towards fossil fuels or harmful practices in agriculture or fisheries (OECD, 2019). Moreover, climate change and biodiversity loss interact to create and compound harms to people's lives, livelihoods, well-being and rights.

This highlights the importance for climate and biodiversity 'high ambitions' to place greater emphasis on the need for profound demand-side transformations. For example, concerning land and ocean use in the post-2020 Global Biodiversity Framework (GBF), a 'high biodiversity ambition' should not only call for putting 30% of the planet under a protected status by 2030, but most importantly call for a sustainable use of the remaining 70%.[9]

1.1.4. Some climate mitigation solutions hurt biodiversity, in turn potentially compromising the world's ability to reach net-zero GHG emissions

The existence of trade-offs between climate and biodiversity and the importance of minimizing them remains often a key blind-spot in discussions, perhaps because these trade-offs may: (1) not be fully understood by policymakers, (2) seem distant or abstract, (3) not be yet fully elucidated by science (i.e. especially how not conserving biodiversity may compromise the ability to reach net-zero), and/or (4) because emphasizing the opportunities created by addressing climate and biodiversity together is more appealing and creates more collective enthusiasm and support than pointing out the trade-offs that exist. Crossing the IPBES GAR, IPCC SR Land, IPCC SR 1.5ºC and other recent scientific studies allows to map out the positive or negative impacts on biodiversity of an array of climate mitigation or Carbon-Dioxide Removal (CDR) measures (Deprez *et al.*, 2019). Those measures with the most highly severe negative biodiversity impacts appear to be the very widespread use of bioenergy to replace fossil fuels, and large-scale deployment of land-based CDR through Bioenergy with Carbon Capture and Storage (BECCS) or afforestation (see Annex 1 for an overview assessment of the biodiversity and food security impacts of a set of climate mitigation measures when deployed at a large scale).

A very large-scale deployment of bioenergy and BECCS is projected to highly compromise food security goals–increasing by up to 150 million the number of food insecure people (IPCC SR Land, 2019)– and biodiversity conservation–given that up to half of ideal bioenergy growing areas is situated in biodiversity hot-spots (Santangeli *et al.,* 2016), that bioenergy is largely projected to be grown in monocultures (IPBES GAR, 2019). While none of these measures have yet been deployed at such scale, this risks being the case in the upcoming decades if GHG emissions are not ambitiously reduced by 2030.

Already today, significant bioenergy depends on the burning of intact forests–in Europe, the energy from this wood biomass is greater than that from solar and wind power combined.[10] This is already highly contested for its negative consequences on climate change and biodiversity. Indeed, burning standing forests is not 'carbon neutral': burning wood biomass is highly carbon-inefficient, emitting more CO_2 than coal, and new trees planted take several decades to absorb back the carbon, even as there is a need to ambitiously reduce GHG emissions in the next decades.[11] Current wood biomass burning practices also severely negatively impact biodiversity: to feed biomass powerplants in Europe (such as Drax in the United Kingdom, transformed from old coal-power plants), tons of wood pellets are exported annually from the Southeast United States, including

7 This *Study* focuses primarily on the link between biodiversity conservation and climate mitigation, but the link with climate adaptation is equally essential. Biodiversity conservation is already a common climate adaptation strategy, with Ecosystem Based Adaptation promoted over the past several years under the CBD and UNFCCC. See Chong, J. (2014) Ecosystem-based approaches to climate change adaptation: progress and challenges. *Int Environ Agreements* 14, 391–405 (2014). https://doi.org/10.1007/s10784-014-9242-9

8 Throughout this *Study,* we use the term 'net-zero' emissions to designate reaching net-zero CO_2 emissions, i.e. "when anthropogenic CO_2 emissions are balanced globally by anthropogenic CO_2 removals over a specified period" (IPCC, 1.5ºC SR SPM, 2018). We prefer this term over 'climate neutrality' or 'carbon neutrality' which are sometimes used interchangeably with 'net-zero', but are less scientifically rigorous. See Rogelj, J. *et al.*, (2021), "Three ways to improve net-zero emission targets," *Nature,* Comment, https://www.nature.com/articles/d41586-021-00662-3#ref-CR6

9 Rankovic, A, & Babin, D. (2019). Defining and achieving a post-2020 ambition – insights from a conversation in Tokyo. *Towards Post-2020* #1. Post 2020 - EU Support Project, Expertise France.

10 Grunwald, M. (March 2021), The 'Green Energy' That Might be Ruining the Planet, Politico https://www.politico.com/news/magazine/2021/03/26/biomass-carbon-climate-politics-477620

11 Ibid, and also, Letter Regarding Use of Forests for Bioenergy (2020) https://www.woodwellclimate.org/letter-regarding-use-of-forests-for-bioenergy/

ADDENDUM: THE IMPORTANCE OF CLARIFYING NBS' ROLES AND RELATED CHALLENGES

Nature-based solutions (NBS)–which comprise a wide range of approaches that deliver ecosystem services through the protection, restoration, or sustainable management of natural ecosystems–are often a central focus in discussions on the climate and biodiversity nexus.[1] NBS' 'win-win-win' characteristic for climate mitigation, adaptation, and biodiversity conservation (underlined above) underscores how key it is to scale them up. Yet NBS also tend to act as a magnet concept that focalises all the attention, thereby eclipsing and obscuring a more systemic view of the full links between climate and biodiversity, and the full set of actions needed to successfully address both crises.

The term NBS is sometimes misused, with some actors placing bioenergy production, BECCS and monoculture tree plantations behind it, despite these practices' negative impacts on biodiversity.[2] However, there is a growing recognition among various actors, including the business community of the need to promote the deployment of 'high-quality NBS.'[3] In terms of governance, indigenous peoples and local communities (IPLCs) play a key role, given the demonstrated benefits for biodiversity conservation when their rights are upheld that keep land management in their hands (Dinerstein *et al.*, 2019).

However, when discussing NBS, it also key to acknowledge and address their limits and challenges. Including the non-permanence of natural carbon sinks, and the difficulties of scaling-up NBS efforts such as in the 4 per 1000 initiative,[4] given the active engagement it requires with decentralized actors, costly monitoring and reversibility. There is also a key risk with regards to finance and offsetting: while greater NBS finance is needed, it is key to ensure that climate finance from voluntary and regulated carbon markets (i.e. the Paris Agreement's Article 6) be not seen as a 'cash-cow' for NBS and biodiversity financing at all costs, without keeping in mind the utmost importance of ensuring the climate integrity of this finance. In other words, it is important to clearly counter 'tree-washing', by which some actors such as fossil fuel companies seek to place monoculture afforestation as an NBS, or use ecosystem restoration or tree planting in an 'offsetting' perspective to distract away from decarbonizing their operations.[5]

1 The International Union for Conservation of Nature (IUCN) defines NBS as "actions to protect, sustainably manage and restore natural or modified ecosystems, that address societal challenges (e.g., climate change, food and water security or natural disasters) effectively and adaptively, simultaneously providing human well-being and biodiversity benefits." NBS therefore include a wide range of approaches that deliver ecosystem services through the protection, restoration, or sustainable management of natural ecosystems. Related concepts include, for example, green and blue infrastructure, ecosystem-based adaptation, ecosystem-based mitigation, ecosystem-based disaster risk reduction, and natural water retention measures. The NBS literature is very extensive, but for further insights, see "The Nexus Report: Nature-Based Solutions to the Biodiversity and Climate Crises," https://www.foundations-20.org/nexus-report-naturebasedsolutions/, and "Expertise on #7 – Nature-based solutions: harnessing the potential for ambitious post-2020 biodiversity outcomes" https://4post2020bd.net/resources/expertise-7-nature-based-solutions-harnessing-the-potential-for-post-2020-biodiversity/

2 Monoculture tree plantation also have lesser climate mitigation benefits than more biodiversity-based options such as natural reforestation with native species. See Lewis, S. et al. (2019). Regenerate natural forests to store carbon. Nature, 568.

3 Nevertheless, the definition of 'high-quality' NBS needs to be refined. For example, the WBSCD defines 'high quality' NBS as those that "ensure, at a minimum, no net loss of nature and biodiversity, as well as no net harm for people. Business should correctly identify and mitigate any risk of adverse effects on these two dimensions through appropriate safeguards." (emphasis ours). This implies that the harm of nature and biodiversity can be compensated elsewhere. The WBCSD Report does not specify if it considers bioenergy production to be an NBS or not. See WBCSD (2020), "Mapping nature-based solutions and natural climate solutions", https://www.wbcsd.org/Programs/Food-and-Nature/Nature/News/New-WBCSD-report-helps-business-accelerate-consistent-and-credible-actions-for-climate-and-nature, and see also the IUCN Global Standard for NBS: https://www.iucn.org/theme/nature-based-solutions/resources/iucn-global-standard-nbs

4 The 4 per 1000 Initiative seeks to improve agricultural soil carbon through different types of sustainable agricultural practices that can be considered as NBS. See: https://4p1000.org/

5 See: Mackenzie, K. (March 2021), Big Oil's Net-Zero Plans Show the Hard Limits of Carbon Offsets, *Bloomberg,* https://www.bloomberg.com/news/articles/2021-03-01/big-oil-s-net-zero-plans-show-the-hard-limits-of-carbon-offsets

BOX 1: BIODIVERSITY-(IN)COMPATIBLE CLIMATE PATHWAYS

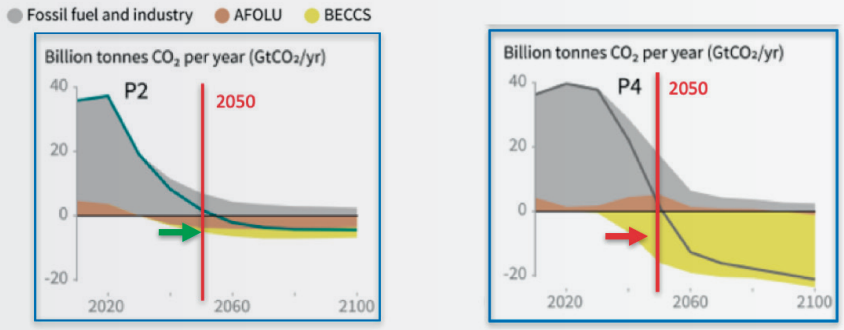
The IPCC 1.5ºC Special Report clearly shows that at least some level of CDR (or 'negative emissions') must be deployed up to 2050 in order to reach net-zero CO_2 emissions by mid-century, and therefore limit temperature rise to 1.5ºC by 2100. Yet it is important to specify what is meant when saying that 'large-scale CDR' is needed to reach the 1.5ºC goal—indeed, across the IPCC's Report's four illustrative emission pathways, the amount of CDR deployed varies widely. BECCS is the CDR measure most broadly used in IPCC climate scenarios. In P2 and P4– two of the four IPCC SR 1.5ºC illustrative pathways–BECCS is scaled up to 1.4 Gt/yr by 2050 for P2 and 16 Gt/yr in 2050 for P4 (Huppman *et al.*, 2018). This results in widely different scales of land used for bioenergy crop production by 2050: 0.9 million km^2 in P2, *versus* 7.2 million km^2 in P4.[1] This amounts to planting bioenergy crops on 7% of global agricultural land by 2050 in the P2 scenario (an area the size of Nigeria), and 33% of global agricultural land in the P4 scenario (an area the size of Australia.) While we may consider both of these as 'large-scale' CDR, we see that there is a vast difference of scale between them.[2]

Looking closely at the P2 and P4 pathways clearly shows that in order to reach both climate *and* biodiversity goals, it is important to avoid widespread CDR and BECCS deployment (see Annex 2 for an overview of climate mitigation and CDR measures' positive or negative biodiversity and food security impacts, when deployed at scale in these two emission pathways). In the P2 scenario, the need to recur massively to 'negative emissions' in the 2030-2050 decades is avoided by conducting ambitious climate mitigation in the 2020s and 2030s through: (1) rapid and deep energy system decarbonization and AFOLU (agriculture, forestry, and other land use) emissions reduction, (2) significant energy demand reduction, and food system transformation (e.g. food waste reduction, diet shift), (3) optimisation of carbon sequestration in current land use. In contrast, in the P4 scenario which also reaches net-zero CO_2 emissions by mid-century, weak climate mitigation in the 2020s and 2030s must be compensated by deploying widespread BECCS by 2050 across, as specified above, an area the size of Australia.

Such a scale of bioenergy deployment would come at great cost to biodiversity conservation and agricultural lands, given that half of potential bioenergy production areas are situated in biodiversity hotspots, primarily in the tropics (Santangeli *et al.*, 2016). This would likely threaten the permanency of many NBS and biodiversity conservation put place today.

The IPCC also projects that such a large scale of bioenergy deployment would raise the number of food insecure people by 150 million (IPCC SR Land, 2019), thereby compromising Sustainable Development Goals, and especially SDG 2 (Zero Hunger).

The extreme example of the P4 scenario illustrates the real and serious negative trade-offs between climate and biodiversity goals that loom ahead in coming decades if we do not ambitiously reduce GHG emissions today: the less we mitigate climate change today, the more we will in coming decades recur to widespread land-based CDR, thereby placing greater pressure on land use and threatening the permanence of any ecosystem conservation and NBS put in place today. These negative impacts on biodiversity of large-scale CDR highlights how short-sided it is to view climate-biodiversity linkages being only about promoting nature-based solutions. Rather, there is a need for the up-scaling of NBS and nature conservation to be carried about in parallel to ambitious mitigation up to 2030. This also underscores the need to ensure climate action up to 2030 and that planning to reach net-zero emissions by 2050 is coherent with regards to biodiversity conservation.



Graph redrawn from Figure SPM3, IPCC, 2018: Summary for policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above preindustrial levels.

Furthermore, as noted above, additional attention needs to be given to ensure that bioenergy practices carried out have minimal negative biodiversity impacts. Indeed, all emission pathways use bioenergy crops, albeit in amounts that are much lower than in P4. Yet current bioenergy practices, such as those carried out in Europe, already face strong criticism for lacking biodiversity safeguards (Searchinger *et al.*, 2018), thereby having significant negative impact on biodiversity today.

1 As a point of comparison, P1, the illustrative pathway with the least bioenergy use, and no BECCS use, projects that by 2050 only 0.2 million km^2 will be needed to grow bioenergy crops.

2 The IPCC SR Land defines 'large-scale' deployment as that leading to significant GHG emission reductions, of at least 3 $GtCO_2$/yr (IPCC Land SR, Summary for Policymakers (SPM), 2019).

from mature trees in hardwood forests that are a global biodiversity hotspot.[12] Furthermore, biomass burning has contributed in Europe to significant recent increases in harvested forest area and biomass loss: a 49% and 69% increase respectively between 2016 to 2018 relative to 2011-2015 (Ceccherini *et al.*, 2020). The authors note that this is in part driven by wood-based bioenergy, and argue that "if such a high rate of forest harvest continues, the post-2020 EU vision of forest-based climate mitigation may be hampered, and the additional carbon losses from forests would require extra emission reductions in other sectors in order to achieve carbon neutrality in 2050". The impacts of biomass burning are such that in February 2021, over 500 scientists addressed to President Biden, EU Commissioner Van der Leyden and other leaders an open letter warning them of the risks they take in undermining climate and biodiversity goals including net-zero emissions, if they persist in subsidizing the burning of wood for energy.[13]

This underscores three important elements for the climate community: (1) following the series of recent mid-century net-zero emission announcements by major economies (e.g. EU, China, United Kingdom, and soon the United States, etc.), countries must demonstrate concrete strategies and plans to reach their net-zero goals through emission reduction pathways that maximize ambitious decarbonization, in order to limit or minimize the deployment of land-based CDR (see Box 1 on biodiversity-(in)compatible climate pathways); (2) the international climate community should recognize that some emission pathways to reach the 1.5ºC are *not* compatible with biodiversity conservation (i.e. P4 in Box 1), and thereby refrain from considering them as 'climate ambition', (3) States need to stop subsidizing wood biomass burning and review profoundly the climate and biodiversity loopholes in their biomass energy policies.[14]

In turn, the biodiversity community and those promoting NBS should not only call for immediate biodiversity action but *also for the need to ensure 'permanence' of ecosystem protection over coming decades.* This underscores the importance that they not only (1) emphasize preserving ecosystems and upscaling NBS, but at the same time also (2) underscore the urgency of ambitious climate mitigation in the 2020-2030 decade, as the *sine qua non* condition to achieve the 1.5ºC goal and net-zero CO_2 emissions by mid-century *without needing to recur to very large-scale CDR deployment*, which risks severely overriding biodiversity conservation and NBS implemented today.

1.2. Almost 30 years after the Rio Earth Summit, risky misalignments remain

Given the complexities of climate and biodiversity issues, it is understandable that different international arenas (e.g. the UNFCCC and CBD) and national instruments and policies have been developed to make progress in tackling each issue separately. As any type of political issue, reducing complexity in negotiations and policy development is necessary in order to make progress. The treatment of these issues in separated governance arenas does not, in itself, impede the ability for creating greater coherence and alignment between goals. The UNFCCC and CBD, negotiated simultaneously at the Rio Earth Summit, do not explicitly refer to each other. However, the UNFCCC Convention text does explicitly mentions the impacts of climate change on ecosystems, and the role of marine and terrestrial ecosystems as carbon sinks (Article 1). In turn, the CBD Convention text, while not explicitly mentioning climate change, stresses the need to address the causes of biodiversity loss (e.g., preamble, or Article 7. c), which includes climate change. In the objectives they pursue, the UNFCCC and the CBD, as well as the United Nations Convention to Combat Desertification (UNCCD), are highly "compatible treaties" (Maljean-Dubois & Wemaëre, 2017). More recently, the role that the Paris Agreement's 'net-zero' goal (Article 4.1) gives to carbon sinks, and the repeated calls for a closer collaboration with the UNFCCC in recent CBD COP decisions, for instance, further highlight this broad alignment between both issues and their main dedicated international instruments.

On the scientific front, research has also progressively over the decades shed light on climate and biodiversity interdependencies, disseminating knowledge *via* political science interfaces with the creation of the IPCC (1988) and IPBES (2012). While some promising more formal joint work has been launched (namely in the first IPBES-IPCC co-sponsored workshop on biodiversity and climate change in December 2020), research gaps remain (See Section 3.3).

Climate change and biodiversity are governed in dedicated international arenas, with only a partially overlapping set of actors (e.g. civil society organisations, national government implementers and negotiation teams, scientists, etc.).[15] This specialization has resulted, despite some attempts of alignment in the 'spirit of Rio,' in a treatment in silos that today poses a series of limitations for action on both sides. We can point to at least three such limitations:

— **Cognitive dissonance between climate and biodiversity issues**. The specialization of research and international expertise has to date impeded the development of a realistic and comprehensive exploration of possible sustainability pathways that are fully compatible between both issues

12 Grunwald, M. (March 2021), The 'Green Energy' That Might be Ruining the Planet, Politico https://www.politico.com/news/magazine/2021/03/26/biomass-carbon-climate-politics-477620

13 Letter Regarding Use of Forests for Bioenergy (2020) https://www.woodwellclimate.org/letter-regarding-use-of-forests-for-bioenergy/

14 Ibid. The authors of the letter call upon specific policy measures: "The European Union needs to stop treating the burning of biomass as net-zero in its renewable energy standards and in its emissions trading system. Japan needs to stop subsidizing power plants to burn wood. And the United States needs to avoid treating biomass as net-zero or low carbon as the new administration crafts climate rules and creates incentives to reduce global warming."

15 While there is an almost full overlap between those countries Party to the UNFCCC and to the CBD (with a significant exception being the US, which has not ratified the CBD), there is partial to no overlap between UNFCCC and CBD negotiation teams, and national implementers.

(e.g. the inclusion of emission reduction pathways in the IPCC SR 1.5ºC that if deployed, would have highly deleterious biodiversity impacts, cf. Box 1).

— **Inconsistent political ambitions**. The separation between climate and biodiversity within international governance fora, national government officials (negotiators and policy-makers), and scientific communities creates inconsistencies in the visions and advocacy developed by political leaders as well as by civil society and business leaders. At a political level, this separation results in the creation of separate political momentums and separate series of pledges, that tend to address issues in silos and treat the question of consistency as an 'add-on' topic at best. One example is countries' net-zero pledges and plans, which make no mention of their compatibility with biodiversity objectives. At a more technical level, Parties' negotiating teams for each Convention tend to work separately and on the basis of political instructions that lack coherence and integration, therefore advancing positions in different processes that lack sufficient coordinated across climate and biodiversity issues.[16]

— **Impeded implementation.** When translated at the implementation level, the silos between climate and biodiversity result in inconsistencies between national strategies and commitments across both issues. An analysis of the restoration commitments made by countries in the context of the Rio conventions' 'Restoration Decade' finds that "in many cases where countries have submitted commitments under at least two of the Rio Conventions and/or the Bonn Challenge, the numbers of hectares and the types of restoration measures differ" (Sewell *et al.*, 2020). Parties' UNFCCC Nationally Determined Contributions (NDCs) and CBD National Biodiversity Strategies and Action Plans (NBSAPs) are seldom coordinated, which can have the following negative consequences: (1) create potential risks for the realism of national goals on both sides, if they do not sufficiently take into account the full set of constraints imposed by addressing both challenges simultaneously, (2) result in counterproductive policies (e.g. climate policies that harm biodiversity), (3) deter or even impede an integrated approach of climate and biodiversity policy implementation by local and subnational governments, (4) send contradictory and misaligned messages to Non-State Actors (e.g. hampering funding agencies' ability to conduct coherent implementation at project-level, and weakening businesses' capacity to mobilise across both issues in an integrative manner), and (5) create or exacerbate competition for resource mobilisation (including human resources). The silos between climate and biodiversity may result in similar consequences, when we take the development of climate goals (e.g. mid-century net-zero emissions) and the lack of inclusion of biodiversity into long-term strategies (i.e. the Paris Agreement's Long-term Low Emissions and Development Strategies (LT-LEDS)).

When taken together, the aforementioned silos between climate and biodiversity result in *risky misalignments*. For climate goals, it is imperative to have a better understanding of biodiversity goals, because healthy and resilient ecosystems are essential to achieve net-zero globally and for adapting to climate change in many sectors. Hence, climate mitigation or CDR 'solutions' that may seem to work on paper (e.g., very large scale deployment of BECCS) may actually impede the achievement of climate goals in return, if they further hamper the ability of ecosystems to sequester carbon by degrading or destroying them. On the other hand, strongly advocating for scaling-up NBS, without placing careful attention on political tensions present in climate discussions around the pace of decarbonization, can contribute to 'tree-washing' strategies, as recently seen on the side of major political leaders and businesses.

As can be observed in different contexts, for instance at a national level,[17] these misalignments can also result in tensions and oppositions between climate-focused and biodiversity-focused actors, which is strategically counter-productive as it weakens the environmental front in the struggles taking place to put our societies onto sustainability pathways.

2. WHAT IS NEEDED TO ALIGN CLIMATE AND BIODIVERSITY AMBITIONS?

2.1. Aligning climate and biodiversity ambitions across a puzzle of levels, actors, and timescales

When it comes to better aligning climate and biodiversity ambitions, ideas are sometimes advanced of creating very formalized connexions between the Rio Conventions or their COPs, or even merging the Conventions. This paper rather seeks to find a better climate-biodiversity alignment in the ambitions, and more importantly, in their implementation. In line with Section 1, we believe that taking into account a multi-level governance and a multi-actor perspective is essential in all attempts to better bring about the alignment of climate and biodiversity ambitions:

— **Multi-level governance:** the processes that are created or reinforced at the international level must be imagined and assessed on the basis of the type of positive dynamics they encourage at the domestic and other levels. Learnings from on-the-ground implementation at local and sub-national levels must be brought to international fora, thereby

16 Exceptions to this may be found, especially among delegations in which the same persons negotiate in both Conventions—yet this is, more often than not, due to lack of resources; it would therefore be interesting to assess whether these delegations have more aligned messages and strategies or not.

17 For the example of France, see Laurans, Y. and Rankovic, A. (2017). A biodiversity-compatible climate plan for France? IDDRI *Issue Brief*, № 09/17.

enabling greater sharing of best-practices on issues and solutions to better align the goals in practice (namely as discussed in the Edinburgh Process for Subnational and Local Governments on the development of the post-2020 GBF).[18]

— **Multi-actor perspective**: the respective role and added-value of multilateral instruments, national policies, local actors, scientific communities, civil society, businesses, etc., must be taken into account in defining and implementing aligned climate and biodiversity ambitions.

Taking a systemic view of climate and biodiversity linkages reveals a fuller picture of the transformative changes needed in order to successfully address both challenges, and the importance of aligning high climate and biodiversity ambitions and action in the short, medium and long terms.

Five years after the Paris Agreement, 'high climate ambition' is often being framed as aiming for net-zero CO_2 emissions by mid-century in order to reach the 1.5ºC goal.[19] In advance of COP26, expectations are being placed on States to demonstrate ambitious climate action across short, medium and long-term scales, by: (1) submitting an updated NDC by Glasgow, demonstrating ambitious policies and goals for the defining 2020-2030 decade, (2) backing up the mid-century net-zero announcements countries have recently made (e.g. EU, China, USA, Japan, UK, South Korea, etc.) with detailed plans describing how to concretely reach them,[20] (3) fully walking the talk by ensuring their COVID-19 recovery plans accelerate the low-carbon transition rather than lock-in high carbon infrastructure and processes.

The short, medium and long-term scales are equally important in defining 'high biodiversity ambition'[21]: (1) 2030 is the key time horizon for action of the post-2020 GBF,[22] (2) 2050 represents the long-term time horizon of the CBD's overarching vision and goals, and also of the transparency mechanism (which would also include a 2030 timeline) that could be inserted in the post-2020 GBF, and (3) States are also being called to 'nature-proof' their COVID-19 recovery plans.

Aligning high climate and biodiversity ambitions requires pushing the call for ambitious action and coherence one step further, in an integrated manner:

1. **Ambitious climate and biodiversity action by 2030:** This means conducting deep economy-wide decarbonization (i.e., fossil-fuel phase-out, demand-side shifts in energy and food, sustainable agriculture), as well as the need to mainstream biodiversity conservation and NBS (i.e., implementing the '30 by 30' target, halt ecosystems and ecosystem services degradation and stop unsustainable use of biodiversity). Aligning climate and biodiversity strongly underscores the key importance of ambitious climate action to 2030, not just for climate outcomes but also in order to preserve biodiversity and ecosystem health now and in coming decades, and therefore our ability to reach both climate and biodiversity goals;

2. **Ensuring coherence, synergy, and integrity of climate and biodiversity planning to 2050:** mid-century high climate ambition should be redefined as reaching net-zero emissions in a biodiversity-positive way, in other words, there is a need to ensure that 'net-zero, nature positive' truly becomes a reality, which importantly implies that net-zero emissions is attained by mid-century through emission reduction pathways that maximize economy-wide decarbonization in order to minimize dependence on large-scale CDR (and the resulting pressures and negative impacts on land-use change and biodiversity).

2.2. Key guiding principles for aligning climate and biodiversity ambitions

Maximizing synergies and minimizing trade-offs between climate and biodiversity necessitates coordinating responses and stronger, more collaborative efforts by actors at all levels: international governance arenas, national and subnational governments that implement policies, and non-state actors (private sector, civil society) that act on the ground.

Below are eight key guiding principles which can help ensure that efforts by various actors and at different scales at the intersection of climate and biodiversity are truly oriented towards constructing and aligning high climate and biodiversity ambitions, rather than remaining partial (e.g. purely focusing on synergies–such as scaling-up NBS implementation), or worst, being counterproductive (e.g. utopic proposals such as 'merging' the Rio Conventions, which may diverge efforts from achievable ambitions).

While the examples below are mostly focused on the international level, they aim to be sufficiently general so as to be easily developed further and applied to different scales and sets of actors.

18 The Edinburg Process, held throughout 2020 by the Scottish Government, brought together subnational and local governments across the world to discuss biodiversity protection implementation and mainstreaming, given that up to "two thirds of biodiversity legislation are adopted and enacted at the subnational and local level" across the world (Mouat and Coetzee, 2020). The links between climate and biodiversity were discussed during a side-event IDDRI co-hosted with the Scottish government; for an overview of outcomes, see: https://www.iddri.org/en/publications-and-events/blog-post/reinforcing-key-role-subnational-governments-maximise-synergies. For a full summary of outcomes including on climate and biodiversity, see the Edinburgh Process' Information Paper for the Open Ended Working Group (OEWG) 3.

19 We emphasize here 'high ambition' primarily from a mitigation perspective but climate finance and adaptation goals are equally important.

20 The Paris Agreement invites Parties to submit by 2020 Long-Term Low Emission Development Strategies (LT-LEDS).

21 Even though in the run-up to COP15 ambition is sometimes reduced to the goal of 30% of terrestrial and marine surfaces as protected areas by 2030 ('30 by 30').

22 2030 is the timeline for the Action Targets of the post-2020 GBF, that need to set the path to achieving the 2050 Goals.

BOX 2. PROPOSED KEY GUIDING PRINCIPLES FOR ALIGNING HIGH CLIMATE AND BIODIVERSITY AMBITIONS AND ACTIONS

1. Aligning climate and biodiversity high *ambitions*: going above and beyond purely *linking* the two issues or governance realms. Growing efforts to link the two issues (e.g. IPCC-IPBES joint workshop on climate and biodiversity interlinkages) are a positive and necessary starting point. However, focusing on aligning *high ambitions* orients efforts towards what should be the ultimate objective: ensuring both climate *and* biodiversity goals are met, without one compromising the other. For example, at the international level, aligning climate and biodiversity high ambitions could be translated as ensuring that the goals of both the UNFCCC and Paris Agreement *and* those of the CBD and post-2020 GBF are met.

2. Operationalizing 'net-zero and biodiversity positive' ambition: emphasizing reciprocal integration in climate and biodiversity arenas: As demonstrated in Section 1.1, reciprocal integration of climate objectives and priorities into biodiversity governance, and *vice versa*, is key to align high ambitions without 'mandate overlap' between Conventions. In other words, the UNFCCC does not need to govern all the intricacies of the issues at the climate-biodiversity nexus, but could work with the CBD whose mandate it is to address biodiversity issues. This greater integration necessitates going beyond formal links between conventions at the level of Secretariats. There are nascent efforts in the direction of reciprocal integration, such as the COP25 UNFCCC Decision's recognition of the "need to address biodiversity loss and climate change in an integrated manner," and the development of the term 'net-zero nature positive'. Yet there is a key need to go beyond, to ensure that 'net-zero nature positive' includes redefining climate ambition in a way that integrates fully biodiversity as, for instance: "limiting temperature rise to 1.5°C through emission reduction pathways that are biodiversity and food security compatible" (Deprez *et al.*, 2019). A concrete consequence would be that the climate community single out those 1.5ºC emission pathways that would have severe biodiversity impacts (e.g. IPCC 1.5ºC P4 scenario with widespread BECCS deployment in Box 1), and exclude these from being considered as 'climate ambitious' or as a beneficial route for Parties to take collectively.

3. Maximizing synergies *and* minimizing trade-offs: taking a comprehensive approach. This stands as the most key and problematic blind spot in the current global discussions on linking climate and biodiversity, a large "elephant in the room". The need to link and address together climate and biodiversity has fortunately entered the international political mainstream (e.g. Beijing Call for Biodiversity Conservation and Climate Change, NBS Stream at the 2019 UNSG Climate Action Summit, the UK COP26 Presidency's Nature Stream, High Ambition Coalition for Nature and People, Leader's Pledge for Nature, the post-2020 GBF's working climate goal, the Rio Conventions Summit set to be held in 2021, etc.). While these efforts are all laudable and well intentioned, in our view many still seem incomplete. As mentioned in Section 1.1, the framing is often primarily on maximizing synergies between climate and biodiversity (e.g. actions that benefit both issues, epitomized by NBS), while de-emphasizing or even not at all acknowledging the existence of potentially severe trade-offs between the two issues (e.g. climate mitigation or CDR measures such as large-scale bioenergy or BECCS use that have highly deleterious impacts on biodiversity). There is a need for greater focus on actively minimizing these trade-offs, namely by promoting ambitious climate mitigation up to 2030 to minimize reliance on land-based CDR.

4. Acting now and planning ahead: creating climate-biodiversity alignment in both short-term actions *and* long-term planning. This is a second (and related) key gap in the dominant approaches to the climate-biodiversity nexus: most actors focus only on the here and now (e.g. the need to maximize NBS), while failing to also take a long-term view. Yet focusing on mid-century action is a crucial part of the puzzle, as it is at this time scale that the major trade-offs between climate and biodiversity will be visible (c.f. Box 1 on biodiversity-(in)compatible climate pathways). Indeed, to truly maximize synergies and minimize trade-offs, it is necessary both to focus on the need for ambitious action on climate mitigation (including scaling-up NBS) up to 2030, but also to plan to reach mid-century goals. Ambitiously mitigating climate change in the coming decade is indeed key to reduce GHG emissions as drastically as possible in order to avoid needing to recur in the run-up to 2050 to large scale CDR to compensate for prior inaction (c.f. Box 1). In turn, long-term climate planning—i.e. countries' net-zero goals and plans to reach these goals—should demonstrate compatibility with biodiversity conservation and sustainable land and biodiversity use priorities. Concretely, this could mean that countries should be called upon to demonstrate how their chosen plans to reach net-zero emissions (which might include large-scale BECCS, etc.) minimize their impact on biodiversity, and are thereby truly 'net zero & nature positive.' In turn, the biodiversity community and those who advocate for NBS should concurrently call for upscaling NBS today *and also for the need to ensure 'permanence' of ecosystem protection up to 2050.* To this end, they should push for ambitious climate mitigation to 2030, in order to reduce dependence on large-scale CDR deployment up to 2050 (See Section 1.1).

5. Enabling greater domestic coherence and coordination: orienting all climate-biodiversity alignment efforts towards concrete on-the-ground implementation. This principle is paramount in our view. Improving countries' internal domestic climate and biodiversity

policymaking and implementation, and implementation of international treaties (e.g. Paris Agreement and UNFCCC, CBD) would go a long way to improving alignment of these issues at an international level (this is developed further in Section 3.1). Yet building better bridges between the UNFCCC and CBD, and between climate and biodiversity in other governance arenas (e.g. G7, G20) can play a key role in propelling and harmonizing these more coordinated climate-biodiversity responses at different governance levels, and help ensure COVID-19 recovery plans do not lock us into high-emission pathways which would have negative climate and biodiversity consequences. In other words, building better bridges between the UNFCCC and CBD *are not an end in and of itself*, but each 'bridge' must be oriented towards improving alignment of domestic climate and biodiversity action. The need for such an emphasis was already identified in 2011 by the Rio Conventions Joint Liaison Group (JLG) between the three Secretariats, which established it as the JLG's first guiding principle.[1]

6. Prioritizing pragmatism over idealism: working from the current state of climate and biodiversity governance rather than aiming for full convergence. Given the urgent need to align climate and biodiversity ambitions and action in the next 10 years, it is key to privilege pragmatism and realism, by working with current governance regimes as they are and propose concrete ways to improve alignment. Bridges between the UNFCCC and CBD should be designed in such a way that they can be more widely embraced by Parties to each Convention or Agreement and readily implementable, all while also supporting greater climate and biodiversity alignment and ambition. For instance, the harmonization of policy instruments or reporting could be envisaged, joint work on cross-cutting science issues, or joint monitoring (see Section 3.1). To the contrary, ideas that are highly politically or legally unwieldy should be avoided, in particular that of 'merging' the Rio Conventions or their COPs. Such merging would be highly unpractical, due namely to: (1) the complexity of each international governance regime means such a radical convergence would take significant effort and time, which is lacking given the urgency needed for action, (2) it would likely gather strong opposition from many Parties, and may be legally too complex given that not all States are Party to the two Conventions.[2]

7. Aiming for durable transformation: viewing the 2021 climate and biodiversity 'super-year' not as an end point but a starting point for transformation over the coming decade. Given that both COP15 and COP26 are major COPs in their respective regimes, 2021 is viewed as a climate and biodiversity 'super-year' offering a key opportunity to build greater links between these two issues. However, while creating political links between COP15 and COP26 is of critical importance and in itself a challenging task, it is key that this does not lead these two COPs to be viewed as the end points of greater climate and biodiversity alignment within international governance. Rather, this 'super year' should be viewed as a *starting point* to concretely jumpstart the development of greater alignment of climate and biodiversity ambitions across all scales of governance and across all actors throughout the coming decade. Regarding improving links and coordination in international governance between UNFCCC and CBD, it is key not to rush on what COP15 and COP26 can provide as 'joint' outcomes, but rather truly take a 'long-term horizon', for instance to launch approaches to improving coordination in concrete and operable ways (e.g. through joint UNFCCC SBSTA-CBD SBSTTA work on synergies *and* trade-offs, or joint SBI work on how to better coordinate planning, reporting, and accountability across Conventions).

8. Unleashing creativity and innovation: building upon alignment efforts to date but accelerating implementation. At the international level for instance, a number of efforts to further align action between climate and biodiversity governance have seen the day over the past years and decades. This includes the Joint Liaison Group (JLG) between the three Rio Convention Secretariats but which appears to have been dormant since 2016.[3] There have also been intermittent discussions in the Conventions' different SBs (e.g. UNFCCC SBSTA discussion in 2004, catapulted by the JLG, and discussions in CBD), yet these do not appear to have produced much concrete change. They seem strongly insufficient or inadequate in light of the need for greater coordinated climate and biodiversity action as called for by science.

1 "As synergies and coordination can be best implemented at the national level, the JLG will primarily support Parties in the achievement of national level synergies and coordination among the Rio Conventions." Terms of Reference and Modus Operandi for the Joint Liaison Group between the Three Rio Conventions (2011).

2 Significantly, the United States is not a Party to the CBD.

3 The JLG was created in 2001 at the behest of the Rio Convention Executive Secretaries. The JLG represents a valuable and laudable effort to create synergies and links between the Rio Conventions, and future convergence efforts should include thinking through how to make the JLG most valuable (while at the same time being realistic of what it can deliver). However, these links appear to have been taken up only intermittently by the COP decision bodies, and with annual meetings halted since 2016, the JLG appears to be currently dormant. In 2017, the three Rio Convention Executive Secretaries made an official proposal for a "Project Preparation Facility (PPF): to increase financing for large-scale, transformative projects which integrate action on land degradation, biodiversity loss, and global warming," which appears to have never been taken up by Parties. This indicates that despite all the good-will of the secretariats, there is only so much they can do without proper Party buy-in. See: "UN Heads call for assistance to address linked climate change, biodiversity and desertification threats" https://www.unccd.int/news-events/un-heads-call-assistance-address-linked-climate-change-biodiversity-and-desertification

3. HOW TO IMPROVE ALIGNMENT OF CLIMATE AND BIODIVERSITY AMBITIONS?

Sections 1 and 2 highlight how developing a comprehensive, reciprocal integration of the two issues requires fully integrating *both* the synergies and trade-offs between climate and biodiversity. A term such as 'net-zero and biodiversity positive' can be a useful umbrella for ambition, both capturing the positive synergies and preventing negative trade-offs. Even more, taking a systemic view of climate and biodiversity linkages reveals a fuller picture of the transformative changes needed in order to successfully address both challenges, and the importance of aligning high climate and biodiversity ambitions and action in the short, medium and long terms.

Building off from the above Sections, we here advance several starting points to jumpstart better alignment of climate and biodiversity ambition and implementation across: domestic policymaking and implementation, international governance arenas, research communities, real economy transformation and NSAs mobilisation. The proposals are synthesized in Table 1.

3.1. Building national coherence, both domestically and through international action

Greater domestic coordination in climate and biodiversity policy implementation (e.g. joint planning that considers key synergies and trade-offs), and of implementation of international treaties (e.g. through coordinated positions between focal points and negotiating teams) play a key role for concretely maximizing climate-biodiversity coherence and synergies, and minimizing trade-offs on the ground. Indeed, improved national coordination can play a key role in ensuring a strong 'Earth compact' in order to have a stronger weight in domestic policy and political arbitrages, especially mainstreaming environmental priorities throughout economic sectors and in post-COVID-19 recovery plans.

Yet to date, silos remain in the majority of countries between ministries and teams in charge of climate and biodiversity policy (both international negotiation teams and domestic policy implementation teams). While some States are starting to develop greater coordination, often these efforts remain relatively nascent, even in States where greater calls for climate-biodiversity convergence have been made at the highest level of governance, by the Head of State.

Improving domestic alignment would also go a long way to improving alignment of these issues at an international level. Domestic climate and biodiversity coordination should therefore be viewed as the ultimate aim of all climate and biodiversity alignment efforts (as emphasized in Section 2.2).

At COP15 and COP26, Parties could make joint calls for the establishment of a more structured work programme between the two Conventions. This could take the form of:

- Joint assessment by the UNFCCC's SBSTA and CBD's SBSTTA of the best options for coordinated action on climate change and biodiversity, on a scientific basis. Important foci of this joint work plan could be on assessing synergies (e.g. NBS) but especially trade-offs (e.g. bioenergy and land-based CDR such as afforestation and BECCS), and on how to reach the Paris Agreement's global net-zero goal in a way that respects global biodiversity goals.
- Joint guidance by the two Conventions' Subsidiary Bodies for Implementation (SBIs) for the development of NDCs that include biodiversity concerns, as well as NBSAPs that reflect climate objectives.

Such structured initiatives at the international level could help bring the actors in charge of climate and biodiversity closer together at the domestic level, as well as create more synergies in relation to these topics in civil society. Focusing UNFCCC-CBD efforts on greater harmonization for instance of NDCs and NBSAPs could help better standardize national convergence which in turn could: (1) provide greater support domestically for Parties that have already embarked on a process of harmonization or are considering it; (2) equip climate and biodiversity ministry teams to advocate more effectively internally for greater coordination; and (3) provide subnational governments and NSAs with conceptual examples to propel this as well.

National scale convergence and coherence implies not only to ensure consistent development of NDCs and LT-LEDS for climate and NBSAPs for biodiversity, but also that sectoral plans (for instance the national strategic plans for the implementation of the EU Common Agricultural Policy) are legally made compatible with both climate and biodiversity planning documents.

3.2. Aligning ambitions and actions at the international level: global goals, accountability, research, finance, and new governance issues

At the international level, the definition of global goals and the accountability mechanisms are two major entry points for aligning high climate and biodiversity ambitions. Both require important scientific discussions, but they also require dedicated strategic thinking. There is also a need for greater alignment in research, finance, and anticipating new cross-cutting governance issues such as CDR.

Defining or refining global climate and biodiversity goals and advancing mutual integration across UNFCCC and CBD: The announcements to reach net-zero CO_2 emissions by mid-century, adopted by a rising number of countries, take its origin in the Paris Agreement's Article 4.1. As stressed in Section 1.1, natural carbon sinks occupy a central role in the goal, alongside the reduction of GHG emissions

(peak and reduce).[23] As described in Section 2, there is a need to explicitly refine the concept of climate ambition by integrating biodiversity, to select those Paris-compatible emission reduction pathways most aligned with reaching biodiversity goals and other SDGs, for instance in the COP26 Decision.

In practical terms, the Paris Agreement's Article 4.1 puts a very strong emphasis on preserving natural carbon sinks in terrestrial, coastal, and marine ecosystems. Yet, we find that this is not sufficiently commented or taken into account in discussions taking place on the future of the CBD: having an ambitious and better implemented post-2020 GBF (compared to its predecessors) is also necessary to achieve the net-zero emissions goal of the Paris Agreement, and maximize the chances to keep global warming below 1.5ºC or 2°C by the end of the century. This, in itself, is also necessary to achieve biodiversity goals (a further illustration of how the treaties' goals can be highly synergetic).

How could a better alignment of global goals take place, and what additional support to implementation could it bring? Section 2.2 argues that redefining climate ambition by integrating biodiversity could be helpful to discriminate between emission reduction pathways and select those that are most aligned with reaching biodiversity goals and other SDGs. In turn, the on-going elaboration of the post-2020 GBF offers a venue for integrating climate into biodiversity ambition. The current draft of the post-2020 GBF contains a 2030 action target on climate change mitigation and adaptation. On the road to CBD COP15, it will be necessary to clarify if and how this target should be made more specific, with or without quantified elements (see Box 3).

Developing greater collective climate-biodiversity accountability: At the level of global governance, greater climate-biodiversity accountability could be developed by building connections between individual and collective accountability mechanisms under the UNFCCC and CBD (i.e. the Paris Agreement's transparency framework, and the GBF's transparency requirements). Here, also, there is an interplay of technical-scientific and strategic dimensions. How and which data to collect, how (or not) to make connections between procedures on each side, how to gradually synchronize or at the least harmonize the transparency mechanisms at the UNFCCC and CBD in the coming decade. For this, a range of possibilities exist, and must be assessed through a strategic lens (what is it that we want to achieve?). Developing a greater expectation of climate-biodiversity collective accountability could help 'pressure' Parties to both the UNFCCC and CBD to be held more explicitly accountable for reaching the global goals of *both*

23 The full Article 4.1 reads: "In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and *removals by sinks of greenhouse gases in the second half of this century*, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty."(stressed by us).

BOX 3. HOW TO INCLUDE A CLIMATE TARGET IN THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK?

In the Paris Agreement, the full Article 4.1 reads:

"In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and *removals by sinks of greenhouse gases in the second half of this century*, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty."(stressed by us).

Regarding the climate target in the post-2020 GBF, several questions need to be further addressed in the negotiations. In line with Section 2.1, we believe there are two interconnected levels of reflection that require a deeper conversation between climate-focused and biodiversity-focused actors:

i) **A technical-scientific level**. A quantified climate change mitigation target in the post-2020 GBF could take several forms: an absolute value in tons of sequestered carbon in ecosystems by 2030, a percentage of increase of existing stocks, or a percentage of the efforts required to meet the goals of the Paris Agreement (which was the option chosen in an earlier version of the post-2020 GBF). For each option, it is possible to find figures, ranges, debates, and controversies, in the scientific literature. If it were *only* a technical question, the pending work needed would simply amount to choosing among options and finding consensus around a given figure.

ii) **A strategic level**. But how to choose? Ultimately, it is necessary to think about what added-value such a target could bring to the coordinated implementation of climate and biodiversity goals in the Paris Agreement and CBD. Which of the options would be seen as the most useful on each 'side'? Which would seem as the most salient to NSAs, or to those facilitating joint political momentum and commitments? Which could be the most easily reflected in, e.g., NDCs and NBSAPs? Taking into account the political dynamics and tensions in the climate and biodiversity arenas, are there options that could be seen as the more useful on the climate side than others?

Conventions in a coherent way. In the climate arena, greater joint accountability could be developed by having the formal Paris Agreement Global Stocktake (GST), and informal civil society developments around the GST moment (e.g. the Independent Global Stocktake (iGST)) assess climate-biodiversity linkages. This could be a key moment to explicitly question the validity of 1.5C or 2ºC emission pathways that compromise the attainment of global biodiversity goals and other SDGs (e.g. SDG 2 'Zero Hunger'). A similar development could be imagined in the post-2020 GBF global stocktake component if it is put in place. This could provide windows for collective learning and progress, for instance by identifying where progress and limitations have occurred in different key sectors. Additional options for creating greater collective climate and biodiversity accountability could be the establishment of a recurrent, Heads of State level, "Rio Conventions Implementation Summit".

Improving integration of the climate-biodiversity nexus in research: This will be necessary, especially for the communities of modellers, in the coming years to support these reflections and to feed into the assessment work done by the IPCC and the IPBES. The December 2020 IPBES-IPCC co-sponsored workshop on biodiversity and climate change is a promising start, but there is much need for greater collaborative research across climate and biodiversity scientific communities. When crossing the IPCC 1.5ºC Special Report, IPCC Land Special Report and IPBES Assessment Report, two research gaps that appear on the climate-biodiversity nexus include: (1) the lack of a comprehensive overview of mitigation and CDR measures' impacts on biodiversity and food security, at different scales of deployment and through different methods, (2) the lack of integration of biodiversity data and concerns in climate Integrated Assessment Models (at least those used in the IPCC 1.5ºC report) (Deprez *et al.*, 2019). An open question also remains of how joint IPCC-IPBES work will concretely feed into upcoming UNFCCC and CBD COPs.

Anticipating new governance issues that are relevant across both climate and biodiversity international arenas: One key example is CDR, given land-based CDR as a looming crunch issue in the climate arena.[24] For those less familiar with the issue, CDR and the need to govern it may seem far off in the future. Yet the growing attention on reaching net-zero CO_2 emissions by mid-century (further accelerated by countries' recent announcements and the UK COP26 Presidency's net-zero focus) renders CDR (and especially land-based CDR) a looming major issue in the international climate arena. As explained above, to reach climate and biodiversity goals it is key that CDR's role be understood as a way to compensate for hard to abate marginal emissions remaining after profound economy-wide decarbonization, rather than as an 'easy' way out instead of ambitious mitigation. This is why it is key that the plans countries propose for reaching their mid-century goals minimize the use of CDR, in order to ensure biodiversity conservation is not overturned or severely compromised. Yet actors in the climate sphere that are currently reflecting on how CDR could be governed approach this issue through a narrow climate lens: while they raise the question of equity and mention CDR may have potential sustainability issues, they do not at all address the fact that large-scale CDR may have highly severe negative biodiversity and food security impacts that may ultimately compromise our ability for reaching climate and biodiversity goals.[25] There is an urgent need to: (1) clarify the incompatibility of emission pathways using very large-scale CDR with reaching biodiversity goals, and (2) launch joint work by the UNFCCC and CBD Subsidiary Bodies on addressing CDR and bioenergy issues. It is also key to bring CDR to other relevant arenas in which it can be governed, such as the Committee on World Food Security, given the land-use tensions that are set to rise between bioenergy, biodiversity conservation, *and* agriculture.

Ensuring sustainable finance for climate and biodiversity: As described in Section 1.1, ensuring sustainable finance for climate and biodiversity, with environmental integrity, is key. To this end, biodiversity safeguards are needed in voluntary and regulated carbon markets (i.e. the Paris Agreement Article 6 outcome), in order to ensure that finance for ecosystem restoration and other NBS not be used by companies in an offsetting perspective.[26] Development Finance Institutions (DFIs) also have a key role to play in mainstreaming climate and biodiversity throughout their entire project portfolios.

3.3. Real economy transformation: aligning climate and biodiversity to push forward sectoral transformations and demand-side shifts

Climate and biodiversity alignment efforts should also focus on promoting real economy transformations that would benefit both issues concurrently, given the fact that, as noted in Section 1.1, climate change and biodiversity loss share root causes linked to unsustainable modes of production and consumption (e.g. agri-food system and energy production). Therefore, the need to better align climate and biodiversity could be invoked and help increase pressures towards the sustainable transformation of these economic sectors (e.g. on fossil-fuel, agricultural, and bioenergy subsidies reform, given its quantified

24 Solar Radiation Management (SRM)—global and local interventions to intentionally counteract greenhouse gases warming by reflecting solar radiation—is another looming contentious issue in the international climate arena. However, given the IPCC does not consider SRM to be a mitigation strategy (IPCC Global Warming of 1.5°C Special Report), it is beyond the scope of this *Study*.

25 https://www.c2g2.net/governing-large-scale-carbon-dioxide-removal-are-we-ready/, and Fyson, C. *et al.* (2020), Fair-share carbon dioxide removal increases major emitter responsibility, *Nature Climate Change,* https://doi.org/10.1038/s41558-020-0857-2

26 See: Mackenzie, K. (March 2021), Big Oil's Net-Zero Plans Show the Hard Limits of Carbon Offsets, *Bloomberg,* https://www.bloomberg.com/news/articles/2021-03-01/big-oil-s-net-zero-plans-show-the-hard-limits-of-carbon-offsets

negative impact on climate but also biodiversity (OECD, 2019)). For instance, Drax, which used to be the largest coal-power plant in the United Kingdom before converting to wood pellet burning, receives over 1 billion USD in subsidies per year, despite the aforementioned negative biodiversity and climate impacts of wood biomass burning.[27] Highlighting climate-biodiversity links and the negative impact of our economic models that favor over-consumption can help to shed a greater focus on the profound importance of demand-side shifts, which are rarely center of debate (at least in the international climate governance arenas such as the UNFCCC, more so perhaps in biodiversity conversations).

Different concrete paths for action can be imagined within different governance arenas. Regarding the UNFCCC, COPs have in recent years become global climate 'action-forcing' events (Biniaz, 2020), with events developed at each COP to further promote real economy transformation towards decarbonization, including through sectoral Climate Action Pathways. It is therefore key to promote at UNFCCC COPs actions to further advance the profound sectoral transformations and demand-side shifts towards more sustainable consumption that are needed to maximize climate-biodiversity synergies and minimize tradeoffs. Given the UK COP26 Presidency's Nature Campaign and emphasis on accelerating progress to mid-century net-zero, one opportunity in the run-up to Glasgow would be to further demand that NSAs that are advancing net-zero goals (e.g. through the Race To Zero Campaign) put forth how these are in coherence with biodiversity conservation.

Towards a net-zero *and* biodiversity positive economy: Successfully reaching both climate and biodiversity goals requires a profound transformation of production (and consumption) systems. The Paris Agreement truly jumpstarted the 'net-zero economy', which has now entered the mainstream: in addition to over 120 countries, to date over 471 cities, 23 regions, 1,675 businesses, 85 of the biggest investors, and 569 universities have made net-zero commitments.[28] However, these net-zero commitments remain to date difficulty comparable, with varying and sometimes vague definitions (i.e. over whether CO_2 or all GHG are included, and whether the emissions covered are only those under their direct control or also in their supply chains).[29] The concept of a 'biodiversity positive' economy is arising but still remains at an even more nascent state. Furthermore, the integration of climate and biodiversity ambitions is still pending: akin to States' commitments, NSAs are not yet ensuring their net-zero goals and plans to reach them are compatible with biodiversity conservation.

Sustainable agri-food systems: a major elephant in the room: Achieving climate and biodiversity positive food systems, from land use to consumers throughout the supply chain, and unlocking demand-side management measures, including shifts in lifestyles, will be key for a successful alignment of climate and biodiversity ambitions. It seems particularly important to take: (1) a systemic approach in this sector, centring not only on climate and biodiversity but also food security, and (2) a food system approach (from farm to fork rather than just the land sector). Several events this year (UN Food Systems Summit, COP15 and COP26, etc.) offer opportunities to push forward further the food sector's transformation towards biodiversity and climate goals. Especially relevant this year is the Forest, Agriculture and Commodity Trade (FACT) Dialogue launched recently by the COP26 UK Presidency, which seeks to bring concrete solutions to help halt tropical deforestation due to agricultural commodities, by bringing together countries that export and import agricultural products.[30] In relation to the UNFCCC, two additional venues relevant in coming years might be the Koronivia Joint Work on Agriculture process to integrate biodiversity safeguards, and the Marrakesh Partnership's Land Use Climate Action Pathway for greater agricultural sectoral transformation.[31] Other sectors of the real economy would also necessitate the same step forward towards defining climate and biodiversity positive development (infrastructures and spatial planning, for instance), that will then be both a clearer attractor for innovation, and enable the definition of regulations in complex negotiations on sustainable finance and sustainable trade.

Demand-side management: another elephant in the room: Demand-side management is needed to ensure reduced energy demand and food sustainability shifts is a key measure to mitigate climate change and address biodiversity loss. The IPCC 1.5ºC Special Report clearly shows that emission reduction pathways that recur the less to CDR deploy ambitious demand-side measures up to two decades to bring down GHG emissions more drastically. Demand-side management implies behaviour changes in individuals' lifestyles: this is often viewed as complicated and lengthy, and may explain why it is rarely discussed and acted upon in governance arenas such as the UNFCCC. However, promoting these behaviour changes namely in the food and energy system despite the lengthy time horizon is essential, given that technological solutions that are sometimes proposed instead of behaviour changes (e.g. BECCS, and other CDR measures) also have a long timeline in terms of maturity to be commercialized and deployed at a large scale (beyond the other sustainability problems they may pose).

27 See: Grunwald, M. (March 2021). The 'Green Energy' That Might be Ruining the Planet, Politico https://www.politico.com/news/magazine/2021/03/26/biomass-carbon-climate-politics-477620

28 Race to Zero website, https://unfccc.int/climate-action/race-to-zero-campaign

29 See Rogelj, J. *et al*., (2021), "Three ways to improve net-zero emission targets," *Nature,* Comment, https://www.nature.com/articles/d41586-021-00662-3#ref-CR6

30 See: https://www.tropicalforestalliance.org/en/insights/blogs/fact-dialogue-launches-to-help-accelerate-the-end-of-commodity-driven-deforestation

31 Two specific arenas of action might be: Impact 1: Land degradation and deforestation stopped, and world's landscapes restored, and Impact 2: Transition to low carbon, resilient and sustainable food systems achieved Climate Action Pathway: Land use. Action Table, November 2019: https://unfccc.int/documents/201832

Two potential governance arenas in which this issue can be addressed in the coming years are the SDG process (cf. SDG 12) and Stockholm+50.

3.4. Non-State Actors' mobilization

The climate change-biodiversity nexus reveals the key role NSAs have in implementing on-the-ground measures that jointly address both challenges. In particular, in responding to rising land use tensions between agriculture, biodiversity and ecosystems conservation and bioenergy, and also in advocating for coordinated responses to these two crises at national and international levels. Likewise, it is in the interest of NSAs, and especially subnational governments to push for greater climate-biodiversity alignment in international arenas, given they will be on the frontline of those tensions on the ground.

Firstly, addressing climate change and biodiversity, as well as other crucial challenges such as food security, nutrition or water provision, demonstrate the leading role of subnational governments, especially in the implementation of NBS. The territorial approach adopted by regional, municipal and local authorities, through their direct control on spatial planning, natural resources and land management, can provide significant benefits for appropriate NBS measures. For instance, subnational governments are in the right position to engage in reducing energy use and demands, but also in promoting sustainable land management and sustainable consumption e.g. through procurement policies. This is even more vital to prioritise ambitious GHG emissions reductions as subnational governments are on the frontline against climate change and biodiversity loss, and will be directly challenged by land-use conflicts (as stated in Section 1.1). Their concerns, lessons learnt, and implementation issues, at the very grassroots level, should contribute to higher-level discussions and aligning climate and biodiversity policies.

Secondly, subnational governments represent an ideal laboratory of experimentation, based on concrete threats and conflicts, but also a diversity of solutions. Their experience should not be undermined and should instead be scaled up and shared. The Edinburgh Process for Subnational, Regional and Local Governments on the development of the post-2020 GBF was launched with this specific aim.[32] Various platforms and networks exist, such as Local Governments for Sustainability (ICLEI), Region 4, the Biodiversity Action Agenda and the Climate Action Agenda for NSAs' commitments and engagement, for subnational governments to convey their messages and experience. Both national governments and international frameworks need to consider subnational governments' needs within the formulation process of targets, strategies, action plans and national policies, as well as their implementation. Recognizing and supporting innovative measures and joint efforts undertaken at other scales is also a critical question. Specifically, several initiatives were undertaken by subnational governments to avoid trade-offs and maximize synergies between climate and biodiversity, e.g. integrated strategies on carbon sinks which are also high-valued ecosystems.

Thirdly, climate and biodiversity action have in common the importance of inclusion, participation, and of the mobilisation of key social actors, in order to ensure a just and sustainable transition. This is as much an issue of ensuring key rights of specific communities like Indigenous people and local communities (whose role for the conservation of biodiversity is particularly stressed in the global assessment report of IPBES, 2019), or in terms of land tenure rights (as stressed in the voluntary guidelines on the governance of land tenure developed in the framework of the UN Committee on World Food Security), given the importance of the land sector at the interface between climate, biodiversity and food security, and also concerning political rights, access to information, participation and justice, as exemplified by the different litigation cases where action by civil society plays a key role to question national scale arbitrages on climate or biodiversity. Democratic and participatory processes as well as rights based approaches, reinforced by independent scientific expertise, are thus a key condition for the transformation towards a high climate and biodiversity ambition.

In that respect, multi-level interactions and exchanges on best (and worst) practices and challenges encountered should be advanced in aligning strategies between climate change and biodiversity at the international level. The CBD COP15 and UNFCCC COP26 represent an interesting window of opportunity in that perspective. Subnational governments should be properly consulted, on the one hand, and, on the other hand, their leading role should be supported by an integrated implementation process.

32 An Edinburgh Process Information Paper for OEWG 3 (March 2021) highlights the following takeaways on linkage between climate change and biodiversity: "(1)Subnational authorities would contribute strongly from the bottom-up to a greater convergence of climate and biodiversity policies, having established regional and global networks to share lessons on the challenges, best practices, multi-level interactions, and increased mobilization to deliver enabling conditions and means of implementation for local action; (2) They face diverse realities, especially on growing land-use conflicts, which need to be taken into account by the international community; (3) It is crucial for States to implement highly coordinated climate and biodiversity ambitions; to properly consult with the subnational level when formulating and implementing national climate and biodiversity strategies and policies; and explore multi-level interactions to help delineate clearer roles for each governance level; (4) It is imperative that subnational governments are better integrated into the implementation process and that States, global and regional networks reflect subnational voices."

Table 1. Options of how to improve climate and biodiversity alignment

Where? / How ?	Within the UNFCCC & CBD Processes	Outside
Building national coherence	SBSTA-SBSTTA joint work on climate-biodiversity synergies and tradeoffs, especially CDR-bioenergy SBIs joint development of guidelines for NDC-NBSAPs harmonization, including bioenergy safeguards	Domestic efforts to create greater coherence between national climate and biodiversity policymaking and planning, and between negotiating teams.
Aligning ambitions and actions at the international level	**Global Goals**: Climate target in the Global Biodiversity Framework (GBF). **Accountability**: (1) Harmonizing transparency frameworks under the Paris Agreement and GBF, (2) Paris Agreement Global Stocktake: a moment to ensure we are truly on path to 'net-zero nature positive'—i.e. on 1.5ºC emission pathways that do not recur to excessive land-based CDR **Research**: Joint IPCC-IPBES work feeds into UNFCCC-CBD **Finance**: Biodiversity safeguards in Paris Agreement Article. 6 (carbon markets) **New governance issues - CDR**: UNFCCC and CBD Subsidiary Bodies launch joint work on CDR and bioenergy (namely clarifies the incompatibility of 1.5ºC emission pathways using very large-scale CDR with reaching biodiversity goals)	**Accountability**: (1) The SDG process HLPF as a forum for additional accountability. (2) Civil society demands greater collective climate-biodiversity coherence and accountability at COP15-COP26, and in the run up to Global Stocktake (i.e. through iGST) **Research**: Greater development of joint research by climate and biodiversity scientific communities, to close gaps. **Finance**: Role of DFIs, and biodiversity safeguards for voluntary carbon markets, to avoid 'tree-washing' (overly focus on offsetting). **New governance issues – CDR**: Bring this issue to other arenas where it can be also governed, including the Committee on World Food Security
Real economy transformation	**Agriculture**: Koronivia Joint Work: Work with CBD to integrate biodiversity safeguards	**Agriculture**: (1) COP26 UK Presidency Forest, Agriculture and Commodity Trade (FACT) Dialogue, (2) Marrakesh Partnership: biodiversity in agriculture sector transformation **Demand-side transformation**: The SDG process (cf. SDG 12) and Stockholm + 50
Non-state actor mobilization	Edinburgh Process CBD OEWG consultation	Increased NSAs mobilization for aligning high climate and biodiversity ambitions and actions.

4. CONCLUSION: WHEN?

All the above demonstrates the key need to accelerate political traction to align climate and biodiversity ambitions and action in 2021 and beyond. There is indeed a key importance of looking at sequencing towards more aligned ambition and coordinated action in 2021 and beyond, at international and national scales, while also highlighting the importance of communication, science, and campaigning. At the international scale, there is a need for **global traction** to push for this cultural shift and its institutionalization. A key question is: what would be the political impetus towards COP15 and COP26 but also beyond 2021 for aligning global climate and biodiversity ambitions?

— **2021: At COP15 and COP26** – several key issues could be addressed to jumpstart joint work on: (1) greater alignment in NDCs/NBSAPs, (2) reporting and accountability (SBIs, common monitoring tools), and (3) synergies and trade-offs (SBSTA/SBSTTA). The **G7 and G20** also represent opportunities to ensure a stronger narrative on aligned climate and biodiversity ambitions and action, around the idea of "net-zero and biodiversity positive" pathways.

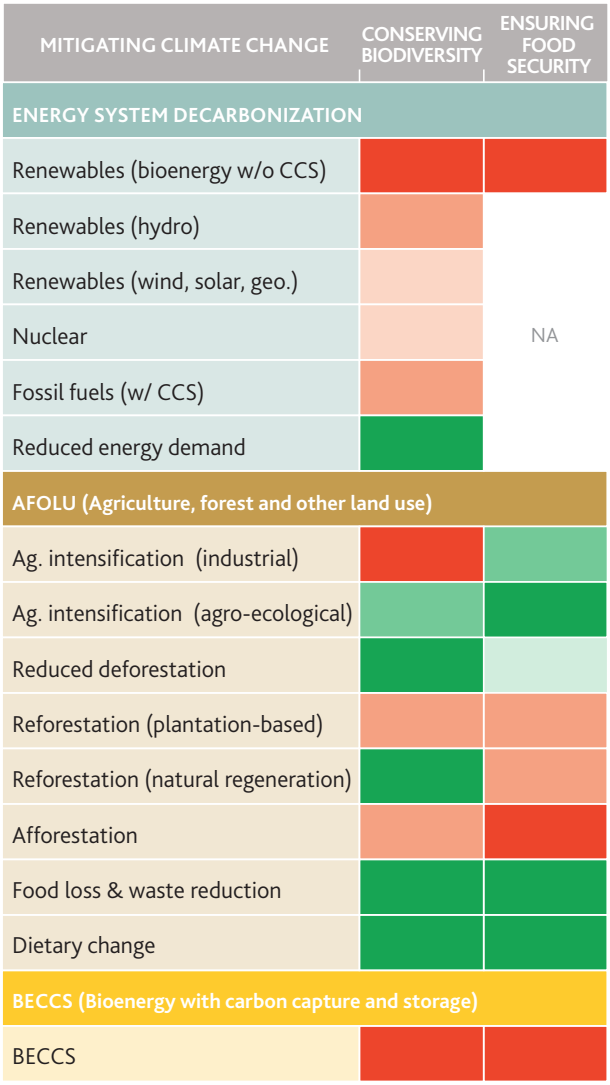
— **2022:** Ideas included: (1) an implementation summit in 2022 after the three Rio COPs, (2) the High Level Political Forum (HLPF) of SDGs as an important place to advance an integrative vision, (3) Stockholm+50 and the Fifth session of the United Nations Environment Assembly (UNEA-5) as key moments for creating additional political traction at the global scale.

— **2023:** The **Paris Agreement Global Stocktake** is a key moment to integrate biodiversity into global climate accountability towards reaching carbon neutrality and long-term collective climate goals.

TABLE 2. Sequence in 2021-2023 for aligning climate and biodiversity ambitions and actions towards 2030 and 2050

Key events (tentative sequence and dates)	Rio Conventions High-Level Summit	CBD COP15	UNFCCC COP26	UNEA-5	Stockholm+50	Paris Agreement Global Stocktake
Date	September 2021	October 2021	Nov 2021	Feb 2022	Jun 2022	End of 2023
Outcome	• Leaders' pledge + HAC for national coordination • Call for convergence of NBSAPs and NDCs • International coherence	• SMART target for mitigation (and adaptation?) • Enable convergence of planning reporting and review • Mirror decision?	• Commitment to be 100% biodiversity neutral, and biodiversity positive where possible • Mirror decision?	Discuss instruments and coordination	Create an Implementation Conference for the Rio Conventions	Ensure action and planning toward reaching net-zero emissions by mid-century is compatible with biodiversity conservation
Other key events	2021: UNSG Food Systems Summit, UICN WCC, HLPF Heads of State meeting in Spain, UNCCD COP15, G7, G20			2022: Agenda 2030 as a place to monitor coherence and weigh together on other "sectorial" SDGs		

ANNEX 1: OVERVIEW OF CLIMATE MITIGATION MEASURES' IMPACTS ON BIODIVERSITY AND FOOD SECURITY



Note: The magnitude of mitigation measures' biodiversity and food security impacts are not additive. The NA sign is to be understood as there being no direct interaction between those energy sector measures and food security (IPCC Land, CH 5. p.481-485).

NB: Food security impacts are drawn from the IPCC SR Land and IPCC SR 1.5ºC reports,[1] while biodiversity impacts are assessed based on expert judgement and synthesis of available literature (IPCC, IPBES, and other peer-reviewed articles).[2] 'Large-scale deployment' is understood here as resulting in significant CO_2 emission reductions, or above 3 Gt CO_2/yr removals, as per the IPCC's definition in the IPCC SR Land.[3]

1 The food security impacts of AFOLU measures, BECCS, and bioenergy without CCS are drawn from IPCC Land SPM, Figure 3. The impact of the other energy sources and reduced energy demand are drawn from IPCC Land, CH 5. p.481-485.

2 No single criteria exist to assess the biodiversity impact across mitigation/CDR measures, in contrast with climate mitigation (CO_2 emissions) or food security (amount of food insecure people).

3 We therefore only assess here measures that have this high GHG emissions reduction potential. For AFOLU, we take up the measures that the IPCC Land SR lists as having this potential, (except for agroforestry and increased soil organic matter) (IPCC Land SPM, 2019). For CDR, we only take up BECCS and afforestation, the two CDR measures deployed extensively in 1.5°C scenarios (IPCC 1.5 SPM, 2018).

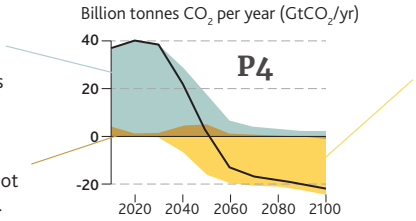
ANNEX 2: POTENTIAL BIODIVERSITY AND FOOD SECURITY IMPACTS OF TWO 1.5°C CLIMATE PATHWAYS

A tale of two 1.5 °C net-zero worlds...

The role of the energy system, AFOLU, and BECCS in two 1.5°C pathways[1]

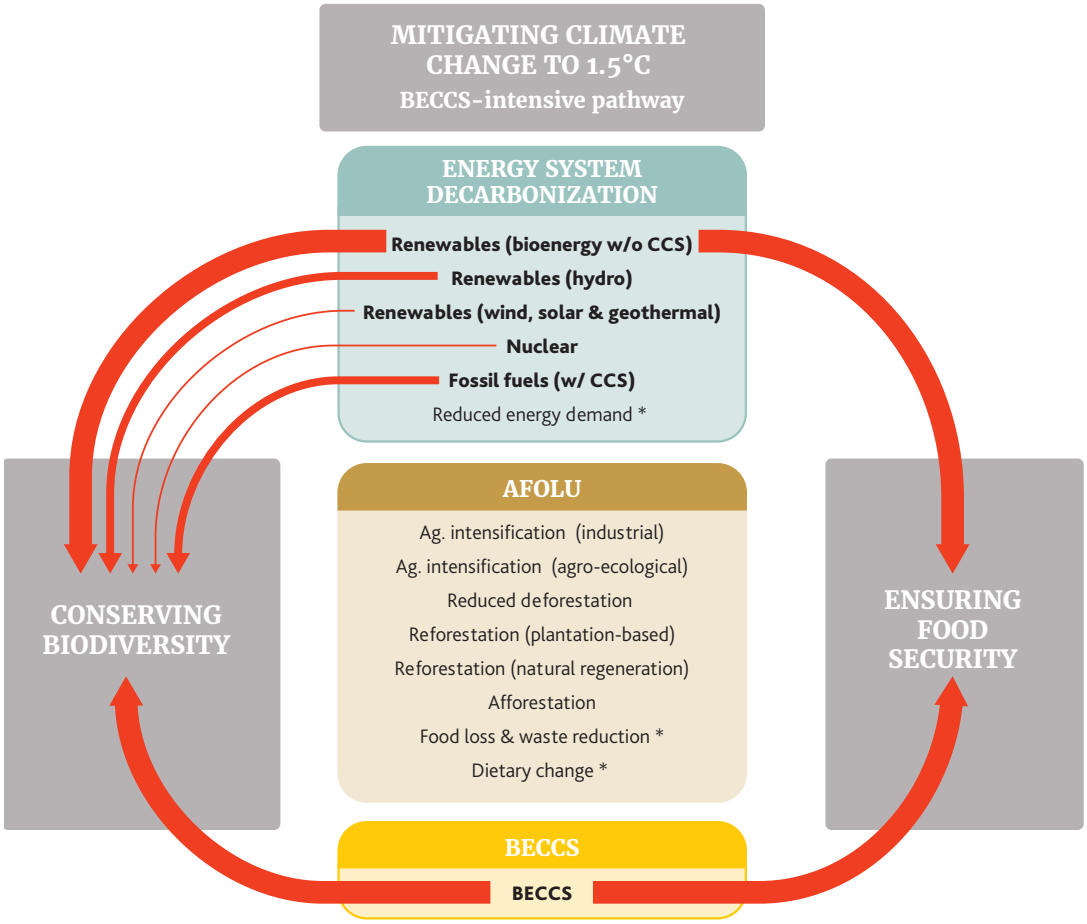
Slow **energy system** transition (i.e. late decarbonization with increased energy demand) requires greater efforts later efforts in coming decades.

AFOLU emissions are not consistently reduced through 2050 and the sector does not contribute to carbon-dioxide removal (CDR).



Reaching 1.5° C in spite of slow energy system transition requires massive CDR deployment—resulting in P4 in widespread Bioenergy with Carbon-Capture and Storage (**BECCS**) deployment (33% of global cropland in 2050 would be allocated to energy crops).[2]

The biodiversity and food security impacts of climate mitigation measures



KEY MESSAGES

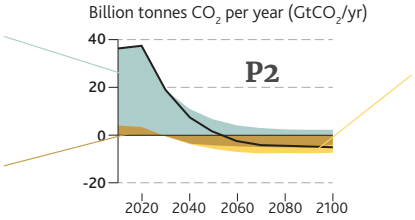
This Figure provides a schematic overview of the main positive or negative impacts on biodiversity and food security of two 1.5°C pathways: (1) one that is BECCS-intensive (e.g. P4), and (2) one with early deep decarbonization (e.g. P2). We highlight the impacts of measures within those families of measures that are deployed at scale in each pathway (i.e. energy system and BECCS in a P4-type pathway; energy system and AFOLU in a P2-type pathway). Climate and biodiversity interactions, and in particular the significant negative impacts of a BECCS intensive pathway reinforce three imperatives: 1) to rapidly decarbonise the energy system (privileging low-carbon energy sources that have the least negative biodiversity impacts) and reduce AFOLU emissions, 2) to reduce the demand of energy and other natural (e.g. agricultural) resources, and 3) to increase carbon sequestration in current land uses, avoiding massive land-use changes. These three elements should guide countries' enhanced Paris Agreement climate commitments in 2020.

1 The graphs representing the P4 and P2 emissions pathways are redrawn from Figure SPM3, IPCC, 2018: Summary for Policymakers. In: *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels* (full citation at the end of the paper).
2 Huppman, D. *et al.,* (2018), IAMC 1.5°C Scenario Explorer and Data hosted by IIASA.

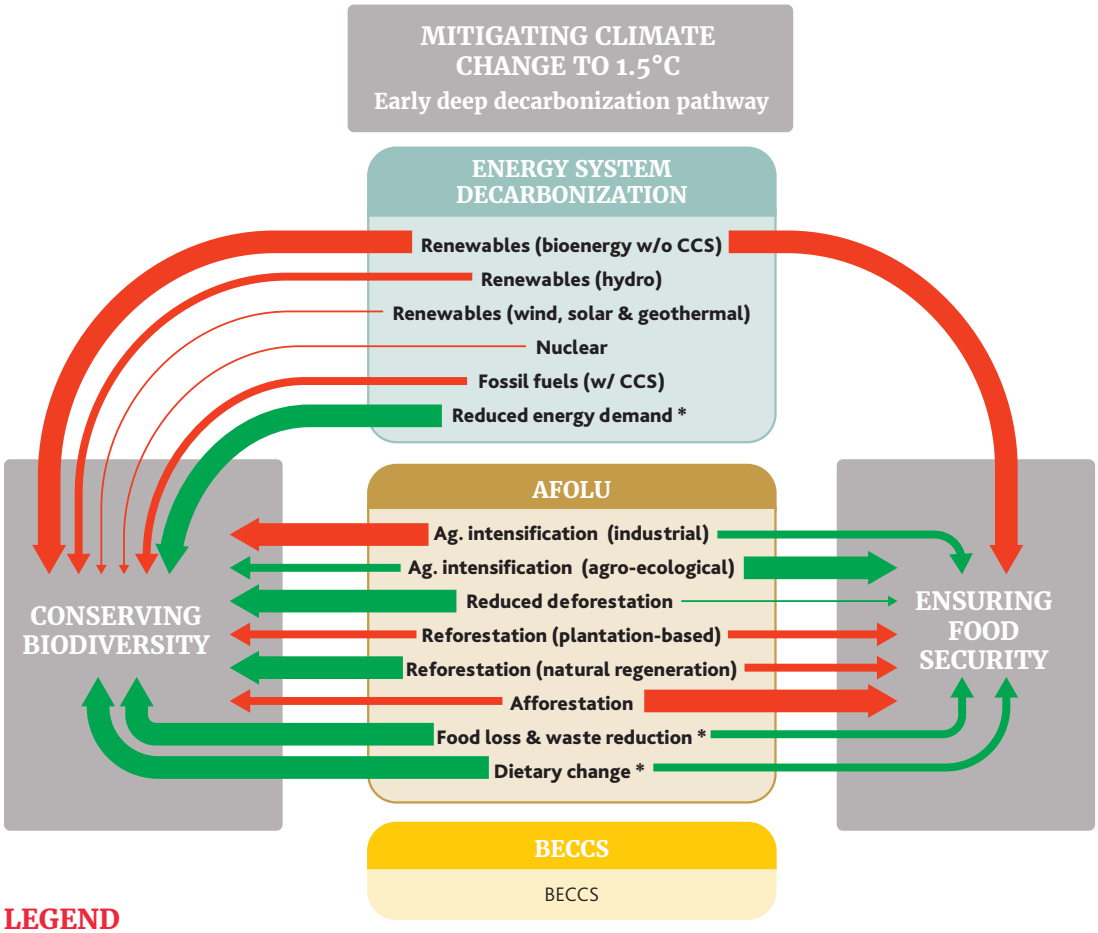
...and their biodiversity and food security impacts

Rapid **energy system** transition (i.e. deep decarbonization and strong energy demand reduction) results in steeper reductions now and need for less efforts in coming decades.

AFOLU sector goes from being net-emitter to a net sink (through emissions reductions and use of AFOLU CDR measures).



Rapid energy transition means significantly less CDR needed than in P4—resulting in low **BECCS** deployment (only 7% of global cropland in 2050 would be allocated to energy crops).[2]



LEGEND

SOCIETAL GOALS

FAMILIES OF MITIGATION MEASURES

Mass deployment | Limited deployment

* **Demand side measures**

IMPACTS OF CLIMATE MITIGATION MEASURES ON BIODIVERSITY AND FOOD SECURITY

when measures are deployed at scale

	Positive	Negative
Large	←	→
Moderate	←	→
Small	←	→

BIBLIOGRAPHICAL REFERENCES

Biniaz, S. (2020). After Madrid, W(h)ither the COP? *Columbia Law School.*

Ceccherini, G. *et al.* (2020). Abrupt increase in harvested forest area over Europe after 2015. Nature 583, 72–77. https://doi.org/10.1038/s41586-020-2438-y

Deprez, et. al (2019). Towards a climate change ambition that (better) integrates biodiversity and land use. IDDRI, *Study* N 08/19.

Dinerstein, E. *et al.* (2019). A Global Deal For Nature: Guiding principles, milestones, and targets, *Science Advances* https://doi.org/10.1126/sciadv.aaw2869

Duffy, K. A. *et al*. (2021). How close are we to the temperature tipping point of the terrestrial biosphere? Science Advances 7 (3). DOI: 10.1126/sciadv.aay1052

Hof, C. *et al.* (2018). Bioenergy cropland expansion may offset positive effects of climate change mitigation for global vertebrate diversity. *Proceedings of the National Academy of Sciences*, *115*(52), 13294–13299. https://doi.org/10.1073/pnas.1807745115

Huppman, D. *et al.* (2018). IAMC 1.5°C Scenario Explorer and Data hosted by IIASA, Integrated Assessment Modeling Consortium & International Institute for Applied Systems Analysis, 2018. https://doi.org/10.5281/zenodo.3363344

IPBES (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondizio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. https://doi.org/10.1590/1676-0611201600010001

IPCC (2018). Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp12.

IPCC (2019). Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)].

IPCC (2019). Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)].

Maljean-Dubois, S. and Wemaere, M. (2017). Climate Change and Biodiversity. Ed. Elisa Morgera et Jona Razzaque. Biodiversity and Nature Protection Law, III, Edward Elgar Publishing, 2017, Elgar Encyclopedia of Environmental Law series, 978-1-78347-424-0. https://hal.archives-ouvertes.fr/halshs-01675503

Mouat, J. and Coetzee, I. (2020). The Edinburgh Process: Empowering Subnational and Local Governments for an Effective and Inclusive Biodiversity Framework, *Towards Post-2020 Dialogue with #18,* https://4post2020bd.net/resources/dialogue-with-18-edinburgh-process/

OECD (2019). Biodiversity: Finance and the Economic and Business Case for Action, report prepared for the G7 Environment Ministers' Meeting, 5-6 May 2019.

Roe, S., et al (2019). Contribution of the land sector to a 1.5 °C world. Nature Climate Change. 9, 817–828. https://doi.org/10.1038/s41558-019-0591-9.

Santangeli, A. *et al.* (2016). Global change synergies and trade-offs between renewable energy and biodiversity. *GCB Bioenergy*, *8*(5), 941–951.

Sewell, A., van der Esch, S., Löwenhardt, H. (2020). Goals and Commitments for the Restoration Decade. A global overview of countries' restoration commitments under the Rio Conventions and other pledges. PBL Netherlands Environmental Assessment, PBL publication number: 3906

https://www.pbl.nl/sites/default/files/downloads/pbl-2020-goals-and-commitments-for-the-restoration-decade-3906.pdf

UNFCCC (1992). Convention

UNFCCC (2015). 1.CP/21, The Paris Agreement

Aligning high climate and biodiversity ambitions in 2021 and beyond: why, what, and how?

Alexandra Deprez, Aleksandar Rankovic, Juliette Landry, Sébastien Treyer, Lola Vallejo, Henri Waisman (IDDRI)

The Institute for Sustainable Development and International Relations (IDDRI) is an independent think tank that facilitates the transition towards sustainable development. It was founded in 2001. To achieve this, IDDRI identifies the conditions and proposes the tools for integrating sustainable development into policies. It takes action at different levels, from international cooperation to that of national and sub-national governments and private companies, with each level informing the other. As a research institute and a dialogue platform, IDDRI creates the conditions for a shared analysis and expertise between stakeholders. It connects them in a transparent, collaborative manner, based on leading interdisciplinary research. IDDRI then makes its analyses and proposals available to all. Four issues are central to the institute's activities: climate, biodiversity and ecosystems, oceans, and sustainable development governance.
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CONTACT
alexandra.deprez@iddri.org

Institut du développement durable et des relations internationales 41, rue du Four – 75006 Paris – France

www.iddri.org
@IDDRI_English

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