Supplementary Information

A) Details to Figure 2

Abbreviations in the Figure: E – effects of changes in structure and functioning of ecosystems (E1 – the contribution of individual ecosystems to the total landscape/seascape functioning; E2 – disappearance of the most vulnerable ecosystems; E3 – reduction of species population size, reduction and fragmentation of species' ranges and disruption of population structure because of habitat loss and fragmentation); ED – effects of changes in diversity of ecosystems, heterogeneity of landscapes and seascapes (ED1 – weakening and destabilization of landscape/seascape functioning because of loss of ecosystem/habitat diversity; ED2 – influence of landscape heterogeneity on local species persistence; ED3 – influence of landscape heterogeneity on genetic diversity and evolution); GD – effects of changes in genetic and phenotypic diversity (adaptation of populations to new conditions through genetic and phenotypic variations and plasticity; adaptive evolution of populations and species); S – effects of changes in functioning, population size and range of individual species (S1 – changes in local species composition due to alteration of species range, local extinctions, alteration of abundance and functioning (including changes in phenology); S2 – changes in ecosystem structure and functioning due to changes in key species abundance and functioning; S3 – changes in genetic diversity due to changes in population size, range and dispersal ability; SD – effects of changes in local species diversity, species composition and interspecific relations (SD1 – weakening and destabilization of ecosystem functioning due to loss of local species diversity; SD2 – biotic homogenization as a result of species shift, local extinctions and invasions; SD3 – changes in selection pressure because of alteration of species composition and interspecific relations (including effects of alien species invasions); SD4 – impact of altered species composition on species capacity to track climate change and species extinctions as a result of cascading effects.

1. INTRAPOPULATION and INTRASPECIFIC DIVERSITY

1.1 Expected changes

Very strong selection under environmental stress can lead to a genetic diversity loss if only a few individuals survive, or some local populations disappear (***GD***). Selective harvesting can also significantly decrease the genetic diversity of exploited species. For example, so-called fisheries-induced evolution moves exploited populations toward earlier reproduction, slower growth, and increased reproductive effort. It can make fish populations more robust to overexploitation, but it can also reduce their resilience to natural fluctuations (1). Changes at other biodiversity levels can also impact genetic diversity, such as reduction in species population size, shift, reduction and fragmentation of species ranges (***S3***), changes in interspecific relations (***SD3***) and change in landscape heterogeneity (***ED3***).

1.2 Impacts on upper levels (GD)

Adaptation of populations to new conditions through standing genetic and phenotypic variations

Intrapopulation and intraspecific diversity underpins population fitness, stability and functioning (3, 4) as well as the ability to adapt and evolve in a changing environment (5, 6). Variation in physiological, phenological, behavioural or morphological traits can allow species to cope with rapid climatic changes within their range and future climate changes may be met in many cases by existing genetic variations (7, 8). Projections of species' ranges that do not consider intraspecific diversity, can drastically underestimate the negative effects of global changes on biodiversity (6, 9). Moreover, the presence or absence of metapopulations (individual populations constituting a species) as one of the aspects of intraspecific diversity are important of species fitness, adaptability and capacity to keep up with global changes (10).

Adaptation of populations due to phenotypic plasticity

Phenotypic plasticity allows a rapid (within the individual's lifetime) behavioural, physiological or morphological adjustment of populations to novel conditions whereas evolutionary responses require at least several generations (6, 11). Incorporating phenotypic plasticity in models reduce species extinction risk (12, 13), but if the models assume uniformly high plasticity, simulations may underestimate the loss of species habitats (13). Phenotypic plasticity may in fact have negative consequences for species survival in the long term because it can weaken selection pressure, and thus, slow down evolutionary adaptation (6, 11). Evolution of phenotypic plasticity is projected as a possible response to global changes, and high phenotypic plasticity is expected to be selectively advantaged in the face of increasing climatic instability (14).

Adaptive evolution, "evolutionary rescue" of populations and species

Rapid adaptive evolution can ensure population survival in situ ("evolutionary rescue" (5). The crucial question is whether species will be able to adapt fast enough. The ability of many species for rapid microevolution at the same time scale as ecological processes (5, 11) supports the view that rapid adaptation can occur in the face of global change, although it is difficult to separate the results of evolutionary adaptation from phenotypic platicity in real populations (15, 16).

Species with low capacity to evolve and high risk of extinction are likely to be those with a small population size, low reproductive output and long generation times, a low level of genetic variations of adaptive traits, and/or low dispersal ability (11, 17). In reality, some of these "risky" traits can be compensated. Trees, for example, are long-living organisms in relation to the speed of current global changes. However, high levels of genetic diversity and large effective population sizes of many tree species allow rapid microevolution and enhance their chances of adapting within a few generations (18).

An important feedback occurs between the rate of the evolutionary response and genetic diversity. Strong selection pressure under environmental stress will tend to reduce genetic diversity and may promote extirpation of local populations, reducing the possibility to react to future selective challenges (6, 11). Moreover, all species have limits to their capacity for adaptive response to changing environments (17, 19). Hard physiological boundaries constrain the evolution of terrestrial organisms' tolerance to high temperatures. Analysis of thermal tolerance of hundreds of terrestrial ectotherm, endotherm and plant species showed that tolerance to heat is largely conserved across taxa, while tolerance to cold varies between and within species (20).

1.3 Preservation of long-term evolutionary potential of biodiversity

The vital importance of preservation of existing biodiversity should not overshadow the necessity to maintain the ecological and evolutionary processes that can generate biodiversity in the future (21). The options for future adaptation and diversification can be maintained through preservation of phylogenetic diversity, species evolutionary distinctiveness (21), areas with high speciation rates i.e. 'sources' of diversity, and/or evolutionary refugia and connectedness in landscapes (22).

2. INDIVIDUAL SPECIES

2.1 Expected changes

The impact of direct drivers (harvesting; climate change, pollution, and disturbance) on individual species lies in alteration of their physiology, behaviour, functioning, individual and population size. Other impacts come from other biodiversity levels as the results of changes in habitat characteristics (***E3, ED2***), species interactions (***SD4, SD5***), genetic diversity and species' adaptability (***GD***). Species can react to these direct pressures either by adapting to new conditions in situ through standing phenotypic and genetic variations, phenotypic plasticity and rapid adaptive evolution or they can avoid new conditions by shifting their distribution. Widespread species with large populations and high fecundity have higher chances to persist and adapt in situ, whereas species with small populations and low fecundity should survive through migration (23). Local adaptation should be expected to be a more important response than migration in highly fragmented habitats including islands (24). In reality, however, adaptive and spatial responses are components of the same general response (25).

Species climate ranges are predicted to shift hundreds of km during the 21st century (26, 27). The future of biodiversity thus depends also on species' capacity to shift their range fast enough to keep pace with climate change. Climate in the tropics is predicted to be quickly outside the range of relatively small recent historical variability, despite the fact, that absolute changes in climatic parameters will be the greatest in the north. Moreover, in the tropics, latitudinal temperature gradients are largely absent and the distances to potential cool refuges are maximal (28). Yet, polar species will be also at high risk because in high latitudes (above 50◦N) these distances are large due to a great projected increase in temperature (28).

Species with low dispersal capacity (many plants, freshwater molluscs, amphibians, reptiles, some birds and mammals) will likely not be able to keep up with climate change, while others (migratory birds, large mammals, some butterflies) have a chance of success (29). Due to their more rapid range shifts (estimates of average rate are from 19 km a^{-1}, (30) to 72 km per decade (31,32)) marine species may have better chances to keep up with climate than terrestrial species, although this would not be the case for marine species with low dispersal capacity. Moreover, globally, 12.0% of projected spatial trajectories for climatic niches on land and 5.4% of ocean trajectories terminate in "climate sinks" (i.e. areas where climate conditions locally disappear and further migration is impossible due to geographic barriers) (32).

Along with species dispersal capacity and natural geographical barriers, future range shifts will depend on changes in species interrelations (***SD4***) and human-driven habitat loss and fragmentation (***E3***). The joint impact of different drivers in principle can facilitate or inhibit range alterations, however, for the 21st century, ranges of many terrestrial (33-36) and freshwater (37) plants and animals are projected to contract by tens of percent as a result of changes in land use and climate. If the reduction in the range and abundance of a species has crossed a certain critical point, then its extinction becomes inevitable, although it might occur not immediately but after substantial delays. This phenomenon called "extinction debt" means that long-term effects of global change can be more severe than observed now (38,39,40) such that even if we halt negative global changes today, transient eco-evolutionary dynamics would ensure centuries of further biodiversity alterations. On the other hand, it gives a window of opportunity for species conservation.

2.2 Impacts on upper levels

S1 – Changes in local species composition due to alteration in species ranges, abundance and functioning or local species extinctions,

Expected species range shifts will lead to local extirpations of "originally" native species and arrivals of climatic migrants. As a result, large species turnover both in marine and terrestrial ecosystems is projected (see section 3). An additional particular threat will be the projected changes in the distribution of pests, pathogens and disease vectors (41, 42).

Disproportionate harvesting reduces primarily populations of top predators and large-sized organisms. In marine ecosystems continuation of unsustainable fishing are expected to lead to shifts to alternative ecosystem states because of the loss of keystone species and top predators and a decrease in the marine trophic index (43). Different responses of species on climate change will lead to mismatches in phenology and disruption of spatial association between species (44). Alteration of species phenology may result in temporal mismatch in trophic interactions and in mutualistic interactions. Species in higher trophic positions can be more sensitive to changing temperatures and thus, climate change can cause a decline in carnivore abundance or exacerbate predation with further trophic cascades (45). In the Arctic, changes in plankton abundance can propagate to higher levels of the marine food web and even to terrestrial ecosystems through birds and mammals linking marine and terrestrial ecosystems (46). Climate-driven alteration of competitive relationships thus can cause changes in communities, which will be further exacerbated by pollution, eutrophication and acidification which also influence species performance, change community structure and generally decrease species richness.

S2 – Changes in ecosystem structure and functioning due to changes in key species abundance and functioning

When alterations of range and abundance occur in key or habitat-forming species, they can have pervasive effects that propagate through entire communities (45, 47). For example, in marine ecosystems, the climate-driven loss of dominant habitat-forming species can result in community phase shifts. Decrease in tropical fish herbivory leads to shifting from coral to macroalgal dominance. Increase in temperate urchin grazing leads to a replacement of algal forests to 'barren' ecosystems. Such "tropicalization" of temperate marine communities could become a global phenomenon (48). In terrestrial ecosystems, abrupt climate change impacts on trees that play a key role in ecosystem functioning may have profound consequences for forest ecosystems as a whole (49) McDowell, 2015 #6277.

2.3 Feedbacks to lower levels

S3 – Changes in genetic diversity due to changes in population size, range and dispersal ability

Reduction in population size leads to the loss of genetic diversity, increased inbreeding, decrease in population fitness and further decline in population size. This feedback is known as an "extinction vortex" (50). If effective population size falls below a threshold value (about 1000 reproducing individuals) then the population cannot maintain genetic variations in the long term (50). The loss of genetic diversity reduces the chances of evolutionary rescue (***GD***). Many populations of conservation concern have small effective population sizes, and thus, are prone to high rates of inbreeding, lack of adaptive capacity and evolutionary response (51).

Expected range reduction will lead to the genetic diversity loss because of decrease in effective population size and extinction of local populations. Range fragmentation leads to smaller populations with lower genetic variability and breaks species metapopulation structure and gene flow undermining adaptive capacity of small isolated populations (6). Increase in connectivity among populations may enhance levels of local genetic diversity and thus, increase population fitness and adaptability (52) but also may have negative effects as outbreeding depression, the loss of local adaptations and reduction in genetic differentiation between local populations (11). Range shift by itself can lead to reduction of genetic diversity because only part of the original genetic variation moves to a newly colonized habitat, and because of genetic drift and strong selection pressure in small founder populations (11, 53). Overall genetic diversity is predicted to be lost if core populations become extinct before gene flow restores diversity in newly established populations (11, 53). Projections neglecting a possible loss of intraspecific diversity can underestimate negative effects of global changes on biodiversity because diversity losses could greatly exceed those at the scale of morphospecies (6, 11) and at the same time can overestimate of a population's adaptability under rapid environmental change (54).

3. SPECIES DIVERSITY

3.1 Expected changes

The changes in species abundance and shifts of species' ranges are expected to be the main causes of future alteration of species diversity and species composition. Human-driven introduction of alien species can be considered as a direct impact on species diversity and composition (55). Species invasions (i.e "organisms introduced by man into places out of their natural range of distribution, where they become established and disperse, generating a negative impact) can disrupt native species composition and interspecific relationship (56). An increase in species richness can be expected at the regional scale if the number of new non-native species simply adds to native species richness or exceeds the number of locally extinct native species, and at the local scale, different changes can occur depending on local processes (57).

Biodiversity hotspots may experience an average loss of 31% of their area because of climate change, primarily at low latitudes. Climate change might also negatively influence 25% of endemic plant and vertebrate animal species per hotspot on average (58). Globally, from 7.9% (59) to 10% (60) of terrestrial and aquatic plant and animal species are predicted to become extinct due to climate change during the 21st century. Depending on the underlying socio-economic drivers, future land-use change combined with climate change may result in an average loss or an increase in species richness (61). The range of estimates of projected extinctions for different taxonomic groups is quite large - from 0% to more than 50% (59, 62). Extinction risks for exploited marine fish and invertebrates are projected as 4% - 7% which is, on average, lower than projections for terrestrial species due to expected greater freedom of movement in the sea (27).

Heterogeneity in species responses to global changes could disrupt existing communities and create new no-analogue communities, where species co-occur in historically unknown combinations. Possible shifts towards generalists and smaller size species are expected as a result of multiple studies (e.g., 63-66) both due to genetic and phenotypic changes in species, and changes in species composition. The combined impacts of these changes, extinctions and invasions are expected to make novel communities highly homogeneous. It often is also be assumed that novel communities will be less stable than native communities, because interspecific relations do not have a long history of co-adaptation (67).

3.2 Impacts on upper levels

SD1 – Weakening and destabilization of ecosystem functioning due to loss of local species diversity

Since species diversity is the structural base determining the magnitude and stability of ecosystem functioning, it should be expected that the loss of native species diversity will alter ecosystem functioning which has been shown for both for single trophic level communities and for trophic cascades (3, 68, 69).

SD2 – Biotic homogenization due to species shift, local species extinctions and invasions

Projections for terrestrial and aquatic biodiversity predict disproportionate loss of evolutionary and functionally distinct species, rare and endemic species that are expected to reduce functional and species diversity (70-76). In some cases, expected species range shift can lead simultaneously both to a severe decline in functional diversity within communities, and to an increase in functional similarity among communities as predicted for fish species in French streams (70). In other cases, a paradox of gaining α-diversity but losing β-diversity is expected (77). Generally, invasions of alien species and a decline in native specialist species and disproportional loss of taxonomic, phylogenetic of functional diversity will lead to biotic homogenization of ecological communities and landscapes/seascapes reducing the differences between communities and their uniqueness (77, 78).

3.3 Feedbacks to lower levels

SD3 – Changes in selection pressure due to alteration of species composition and interspecific relations

Changes in species composition alter selection pressure and affect genetic diversity. For example, a reduction in pollinator abundance may lead to selection favouring self-fertilization in plant populations, leading to a decrease in genetic diversity (11). Pest invasions may catastrophically decrease genetic diversity of target species. Species invasions may result in hybridization, out-breeding depression and a decrease in genetic diversity. However, hybridization may also introduce new genetic variations which can facilitate adaptation to changing conditions (5). Generally, environmental changes provoke an eco-evolutionary response, that integrates ecological and evolutionary responses of species interacting within communities (17, 79).

SD4 – Species extinctions as a result of cascading effects of alteration of species composition, and impact of altered species composition on species' capacity to track climate change

Alteration of species composition and interspecific relations may lead to cascading co-extinctions (62, 67). The loss or depression of key species, including top predators and pollinators, as well as invasions and reinforcement of pests and pathogens can destroy species relationships most strongly, lead to cascade alteration of community and secondary species extinctions (62, 80): Analyses of a large amount of local species extinctions and extinction risks showed that only a small part of extinctions is directly caused by climate change or anthropogenic drivers. Instead, many studies implicate species interactions and extinction of associated species as an important proximate extinction cause (62, 81).

Changes in species composition and interspecific interactions may have important consequences for species range dynamics. Competition may prevent species from tracking their climatic niche or enhance expansion rates (17). Predators can directly limit prey range or, conversely, improve the prey distribution if specialist predators stabilize prey population (82). Mutualistic interactions, such as plant-pollinator relations, are expected to slow down tracking environmental change because of their lower effective colonization rate (17). The interplay between species relations which impact species dispersal in opposing directions makes accurate predictions of range shifts difficult (83). Incorporating species interactions in species distribution models can both slow down the predicted movement of species following climate change (39) and expand predicted range (84).

4. ECOSYSTEMS

4.1 Expected changes

Habitat loss remains an important negative driver of biodiversity changes for many species (35, 61). On islands in the Southeast Asian and the Pacific region, sea-level rise due to climate change has been simulated to lead to loss from 3% to 32% of coastal areas and secondary habitat loss caused by the displacement of human due to sea-level rise can lead to an equal or even higher range loss than primary effects of sea-level rise (85). Likewise, aquaculture and deep-sea mining will become increasingly important factors of freshwater and marine habitat loss (43). However, climate change is now becoming increasingly important globally (see main manuscript text), including impacts on ecosystems are results of changes in species in key species abundance and functioning (***S2***) and of alteration of local species diversity (***SD1***).

4.2 Impacts on upper levels

E1 – The contribution of individual ecosystems to the total landscape/seascape ecosystem functioning

Integral landscape or regional ecosystem functioning depends on the state and functions of all ecosystems and habitats. Maintenance of landscape multifunctionality requires preservation of landscape-level habitat diversity (86, 87).

E2 – Disappearance of the most vulnerable ecosystems in landscapes/seascapes and regions

Different ecosystems, habitats and communities within a landscape or a region vary greatly in the risk of collapse and extinction. Thus, disappearance of the most vulnerable ecosystems, habitats and communities and decrease in landscape/regional diversity of ecosystems/habitats should be expected as a probable result of climatic or human impacts. This, in turn, will decrease landscape heterogeneity and increase biotic homogenization and its consequences (***ED2, ED3***).

4.3 Feedbacks to lower levels

E3 – Reduction in species population size, reduction in, and fragmentation of species' ranges, disruption of population structure because of habitat loss and fragmentation

Fragmentation of both terrestrial and aquatic ecosystems leads to disruption of species metapopulations, isolation and extinction of local populations, violation of life cycles, breaking of migration routes. Smaller habitat patches sustain smaller populations, which are likely to fall into an "extinction vortex" (***S4***). Habitat fragmentation leads to genetic diversity loss and decreases species adaptability (***S5).*** Habitat destruction and fragmentation are expected to reduce the possibilities of species to survive in suitable microclimatic refugia and to hamper species climatic migrations (29, 88, 89). Human land use may prevent mammals' migration at wide areas where species dispersal velocities could allow them to keep pace with climate change in undisturbed habitats (90). Synergistic effects enhancing the negative impact of both climate change and habitat loss are observed for existing species (91) and projected for future species distributions (35, 92).

5. DIVERSITY OF ECOSYSTEMS

5.1 Expected changes

Changes in individual ecosystems (***E2***) and biotic homogenization due to species invasions, shifts and local extinctions (***SD2***), as well as expansion of human made types ecosystems (urban (93) and agricultural ecosystems, agroforestry systems, specific ecosystems related to aquaculture, technical systems, etc.) are expected as the main causes of future alteration of diversity of ecosystems and habitats.

5.2 Impacts on upper levels

ED1 – Weakening and destabilization of the total landscape/seascape functioning because of loss of ecosystem/habitat diversity

The projected biotic homogenization and the loss of diversity of local communities may reduce the variability of biological responses to disturbances across individual communities. This will increase vulnerability to climate- and human-driven impacts and compromise the potential for landscape- and regional-level buffering. Homogenization may also decrease landscape resistance to future species invasions because spatial heterogeneity reduces the expansion of invasive species. Shrinking or disappearance of the most vulnerable ecosystems and habitats will reduce their regional or landscape diversity, which may have negative consequences for large-scale ecosystem multifunctionality (87).

5.3 Feedbacks to lower levels

ED2 – The influence of landscape heterogeneity on local species persistence

Habitat heterogeneity and microclimatic variability which provides microrefugia increase the species ability to survive under climate change (94, 95). Microrefugia may be located within species' ranges, especially for species with wider distributions, or may be reached over much shorter distances than those implied by range shifts (88). Incorporating microclimatic variability into species distribution models predicts a greater local species persistence (89, 96). However, microclimate buffering may be significantly reduced by habitat fragmentation. For example, in the Atlantic forests of Brazil, temperature buffering effect of forests is reduced near edges up to 20 m inside the forest and 12% of the remaining forests have altered microclimate conditions because of fragmentation (97).

ED3 – The influence of landscape heterogeneity on genetic diversity and evolution

Landscape and habitat heterogeneity results in spatial variations of environmental conditions that require local adaptations. These spatial patterns influence intraspecific diversity, adaptive capacity of populations and species and the probability of evolutionary rescue. The discrepancy between intraspecific gene flow and habitat heterogeneity may substantially reduce projected species' range and the likelihood of evolutionary rescue (98). A species can sustain faster environmental shifts, develop a wider range and greater local adaptation when a spatial environmental variation is not excessively high (99). Moreover, rapid adaptation is favoured by a good match between the coarseness of the trait's genetic architecture (many loci of small effects versus few loci of large effects) and the coarseness of the landscape (the abruptness of transitions in environmental conditions (54). In the long-term, highly uniform habitats and biotic homogenization may compromise the potential for future speciation because of the limited spatial variability in species diversity and composition (100).

B) Overview of the Aichi Biodiversity Targets, the draft targets for biodiversity in the post-2020 global biodiversity framework, and related SDGs listed in Table 1

1) The five strategic goals listed under the Aichi Targets (see https://www.cbd.int/sp/targets/)

A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
B: Reduce the direct pressures on biodiversity and promote sustainable use
C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
D: Enhance the benefits to all from biodiversity and ecosystem services
E: Enhance implementation through participatory planning, knowledge management and capacity building

2) A comprehensive presentation of goals and targets of the post-2020 global biodiversity framework was sent out for review in the document CBD/WG2020/2/3 released in 6 January 2020 (see https://https://www.cbd.int/doc/c/3539/9fe5/d7f2e35051986addba4ec258/wg2020-02-03-add1-en.pdf). Note that we have used the notation from the more recent draft monitoring framework table since it includes updated goals and targets as well as the draft components of these; see https://www.cbd.int/sbstta/sbstta-24/post2020-monitoring-en.pdf. Numbers in [ ] in the text emphasise their draft status.

3) Table S1: Formulations of Aichi Targets (AT #) and their related Post-2020 draft goals and targets, (POST20 #) and Sustainable Development Goals (SDG #). Unless otherwise stated AT and SDG begin with: "By 2020…", while the Post-2020 draft targets start with: "By 2030…". For the Post-2020 goals and targets we have indicated the Goals (GA, GB or GC, which have a 2050 perspective) and the Targets (T # or T#.#) along with their components where appropriate. For the SDGs we have also indicated the targets within each SDG goal (#.#).

AT5 (B):	POST20 GA, T1, T2	SDG 6, 14, 15
... the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	GA The area, connectivity and integrity of natural ecosystems increased by at least [X%]… GA1 Increased extent of natural ecosystems... GA2 Ecosystem integrity and connectivity.. GA6 Protection of critical ecosystems. T1…. [50%] of land and sea areas globally are under spatial planning addressing land/sea use change, retaining most of the existing intact and wilderness areas. T1.2 Prevention of reduction and fragmentation of natural habitats due to land/sea use change. T1.3 Priority retention of intact / wilderness areas. T2 protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least	6.6.... protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes" 14.2... sustainably manage, and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration, to achieve healthy and productive oceans. 15.1... ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. 15.3 By 2030, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land- degradation neutral world.

	30% of the planet with the focus on areas particularly important for biodiversity (and all components).	15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide benefits which are essential for sustainable development. 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, ... protect and prevent the extinction of threatened species.
AT6 (B): … all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	POST20 GB, T4, T8 GB Nature's contributions to people have been valued, maintained or enhanced through conservation and sustainable use, supporting the global development agenda for the benefit of all people. GB2 Nature's material contributions including food, water and others. T4 …ensure that the harvesting, trade and use of wild species of fauna and flora, is legal, at sustainable levels and safe (and all components). T8 …ensure benefits, including nutrition, food security, livelihoods, health and wellbeing, for people, especially for the most vulnerable through sustainable management of wild species of fauna and flora. T8.1 Sustainable management of aquatic wild species of fauna and flora, including fisheries.	SDG 14 14.2 – see above. 14.4… effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible at least to levels that can produce maximum sustainable yield as determined by their biological characteristics. 14.6 … prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation. 14.7 By 2030 increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

AT7 (B): … areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	POST20 GB, T4, T9, T8 GB2 - see above. T4 - see above. T8.2 Sustainable management of terrestrial wild species of fauna and flora. T9 support the productivity, sustainability and resilience of biodiversity in agricultural and other managed ecosystems through conservation and sustainable use of such ecosystems, reducing productivity gaps by at least [50%] (and all components).	SDG 2, 6, 15 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality. 6.6 as above. 15.2 ... promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and increase afforestation and reforestation by x% globally.
AT9 (B): ... invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	POST20 T5: T5 ...manage, and where possible control, pathways for the introduction of IAS, achieving [50%] reduction in the rate of new introductions, and eradicate, control and manage IAS to eliminate or reduce their impacts, including in at least [50%] of priority sites (and all components).	SDG 15 15.8…introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems, and control or eradicate the priority species.
AT10 (B): By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	No clear equivalent.	No clear equivalent.
AT11 (C): ... at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	POST20 GA, T2, T12 GA6 – see above. T2 …protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least 30% of the planet with the focus on areas particularly important for biodiversity (and all components).	SDG 10, 14, 15 14.5 …conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. 15.1 – see above.

AT12 (C): … the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	POST20 GA, T3 GA3 Prevent extinction and improve the conservation status of species. GA4 Increase the population and health of species T3…ensure active management actions to enable wild species of fauna and flora recovery and conservation, and reduce human-wildlife conflict by [X%] (and all components).	SDG 15.5 (see above).
AT13 (C): ... the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	POST20 GA, GC, T9, T12 GA5 Maintaining genetic diversity GC The benefits, from utilization of genetic resources are shared fairly and equitably. GC1 Access to Genetic resources GC2 Sharing of the benefits T9.1…Sustainable management of agricultural biodiversity, including soil biodiversity, cultivated plants and farmed and domesticated animals and of wild relatives T12 …increase by [X] benefits shared for the conservation and sustainable use of biodiversity through ensuring access to and the fair and equitable sharing of benefits arising from utilization of genetic resources and associated traditional knowledge (and all components).	SDG 2, 10 2.5 … maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge as internationally agreed. 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.
AT14 (D): ... ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	POST20 GB, T1 GA6 – see above. GB2 – see above. T1.2, 1.3 – see above. T1.4 Restoration of degraded ecosystems. T1.5 Maintenance and restoration of connectivity of natural ecosystems.	SDG 6, 14, 15 6.6, 14.2, 15.1, 15.2, 15.3, 15.4 - see above.

AT15 (D): ... ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	POST20 GB, T1, T7 GB1 Nature's regulating contributions including climate regulation, disaster prevention and other T1 – see above. T7… increase contributions to climate change mitigation adaption and disaster risk reduction from nature-based solutions and ecosystems based approached, ensuring resilience and minimising any negative impacts on biodiversity (and all components).	SDG 14, 15 6.6, 14.2, 15.1, 15.2, 15.3, 15.4 - see above.

Supplementary References

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