## How we depend on biodiversity

Human wellbeing is critically dependent upon biodiversity – in more ways than economic assessments currently demonstrate.

# Wellbeing

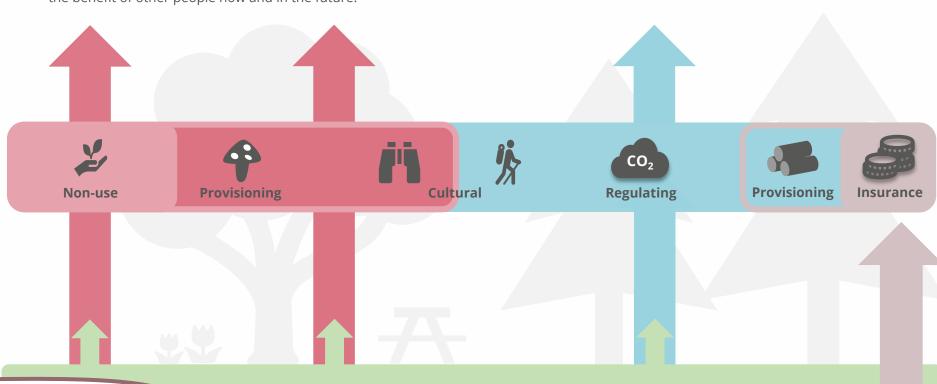
For a fuller view of the contribution of biodiversity to human wellbeing, economic assessment has to value the outcomes (direct benefits, including non-use values) *and* account for the associated dependencies (indirect benefits, resilience and insurance values) on biodiversity.

### **Direct contribution to wellbeing**

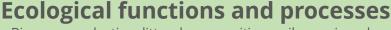
Nature-based recreation, foraging/wild foods, appreciation of natural landscapes and the positive contributions of all this to our physical and mental health, as well as **non-use values** for the protection of plants and animals for their own sake, and for the benefit of other people now and in the future.

#### **Indirect contribution to wellbeing**

Contributions to the production of physical goods traded in markets (e.g. timber) and services that are not (e.g. air quality). The scale of the contribution and aspects of biodiversity that matter most vary across goods, services and locations.







Biomass production, litter decomposition, soil organic carbon storage, pest control, and pollination...





#### Resilience

The capacity of ecological functions and processes to recover from changes in environmental conditions – for example due to management changes or external pressures - and continue to provide benefits critically depends on biodiversity. Greater levels of biodiversity can mean that different aspects of an ecosystem are more resilient to future shocks such as fire, drought, disease, invasive species and habitat loss. If biodiversity is depleted the capacity to recover in the future can be diminished, even if there is no detectable change in the present day.

#### **Insurance value**

Species diversity can reduce variability in financial returns for forest products. The amount forest managers are willing to pay for the risk reduction that more diverse forests offer is the insurance value of biodiversity.









Attributes of species and ecosystems







Diversity

**Biodiversity** is the variety, abundance and genetic make-up of plants (trees, grasses, ferns, lichens, and mosses), fungi, and animals (mammals, birds, amphibians, reptiles and insects). It is multi-dimensional including 'genetic diversity' (the variety of genes within a particular species), 'species diversity' (the variety of species within a habitat or area), and 'ecosystem diversity' (the variety of ecosystems within a given area, including the communities of organisms within it). Further dimensions include species richness, abundance and distribution, functional traits (e.g. predator vs. prey), tropic position (food chain level), and role in ecosystem processes.