

## Mediation of sensory impacts

### Summary of natural capital assets and drivers of change

A three-tier (red/amber/green) assessment of: (1) the importance of natural capital assets to ecosystem service provision; and (2) the influence of drivers of change on these natural capital assets.

		Natural capital assets				
Importance of natural capital asset to ecosystem service		Atmosphere	Habitats	Species	Water	
Drivers of change	Anthropogenic	Habitat modification				Influence of drivers on natural capital assets
		Pollution				
	Climate change impacts	Weather conditions				

## Description of ecosystem service

Vegetation is the main (natural) barrier used to reduce noise and light pollution, limiting the impact it can have on human health and the environment.

### Ecosystem service: classification according to CICES

Section	Division	Group	Class
Regulation and maintenance	Mediation of waste, toxics, and other nuisances	Mediation by biota and ecosystems	Mediation of sensory impacts

**Natural capital assets providing the service:** identification and hierarchical classification of the key natural capital assets that provide or enable the ecosystem service (Leach *et al.* in review)

Level 1	Level 2	Level 3	Level 4
Abiotic	Functional	Atmosphere	Atmospheric gases Atmospheric processes
		Water	Surface
Biotic	Biodiversity	Habitats	Coastal Inland surface waters Woodland and forests Unvegetated or sparsely vegetated Agriculture and croplands Urban and developed areas Habitat complexes
		Genetic resources, and plant, animal, fungal, and algal species	Wild Domestic, commercial

**Narrative description of the natural capital asset- ecosystem service system:** generic description of the way in which natural capital assets provide the ecosystem service.

Mediation of sensory impacts is delivered through the atmosphere, habitats, species and water.

- **Atmosphere** - Atmospheric elements such as rain and wind are important assets in regulating air pollution.
- **Habitats** - Habitats serve as barriers and buffers that mediate the impact of light, noise and smells.
- **Species** - Vegetation is the main natural barrier used to reduce noise and light pollution and is key in reducing air pollution, including smells.
- **Water** - Water is used in urban planning strategies for buffering of noise pollution through water structures such as water fountains. The service, in this type of strategy, is sensitive to alterations in the provision of water. This asset is limited to noise attenuation and does not impact other types of sensory impacts, like visual or smell. Other assets can provide this service and alteration of the service can be reversed naturally. There is medium uncertainty in the relationship.

## Drivers of change in the asset-service system

<b>Driver of change</b>	<b>Asset affected</b>	<b>Likely response of asset</b>	<b>Effect on variability of service provision</b>	<b>Human action or natural variation</b>	<b>Timescale</b>	<b>Spatial characteristics</b>	<b>Reference</b>
Habitat modification	Atmosphere, Habitats, Species, Water	Changes in intensity and extent.	Vegetation alteration can degrade or cause loss of service.	Human action	Short term	Local	Radford & James 2013.
Pollution	Atmosphere, Habitats, Species, Water	Alters conditions: temperature, humidity, rainfall.	Pollution may alter presence and condition of urban and suburban vegetation, and may diminish plants gas absorption capacity.	Human action	Short-mid term	Global	Radford & James 2013.
Weather conditions	Atmosphere, Habitats, Species, Water	Alters conditions: temperature, humidity, rainfall.	Climatic conditions affect air pollution levels and absorption by vegetation. Climate change may alter vegetation. Droughts may cause disruption of water for sound attenuation.	Human action / Natural variation	Short-mid term	Global	Radford & James 2013.

## Information and data

**Data needs:** Identification of data needed to assess the current of historical state of the asset-service system.

Description of data need	Classification	Aspect of the system
Change in atmospheric conditions	Atmosphere	Natural capital asset
Change in habitat quality	Habitats	Natural capital asset
Change in species abundance and occurrence	Species	Natural capital asset
Change in availability of surface and ground water	Water	Natural capital asset
Change in land use and land cover	Habitat modification	Driver of change
Change in level of pollution	Pollution	Driver of change
Change in the seasonality of temperature, precipitation and wind	Weather conditions	Driver of change

## References

Leach, K. (in review). A common framework of natural capital assets for use in public and private sector decision making.

Radford, K. G., & James, P. (2013). Changes in the value of ecosystem services along a rural–urban gradient: A case study of Greater Manchester, UK. *Landscape and Urban Planning*, 109(1), 117–127.