

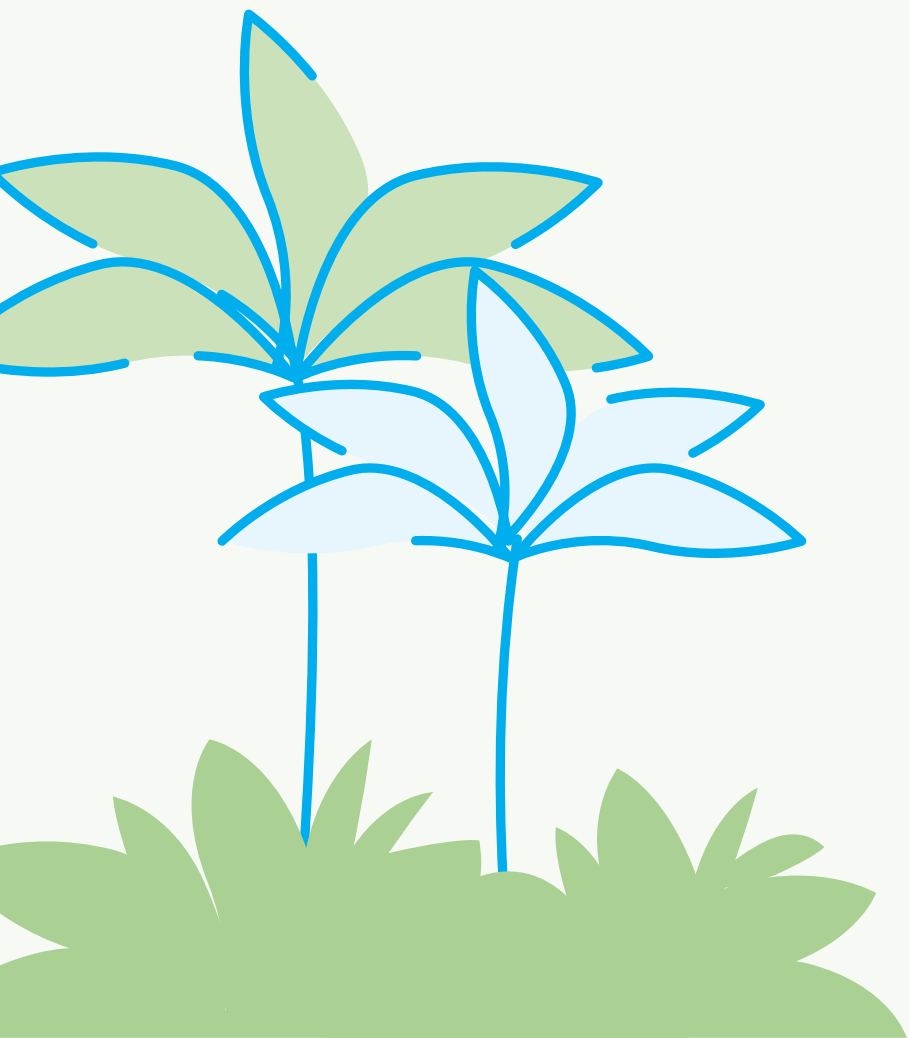
The logo for Ramboll, featuring the word "RAMBOLL" in a bold, sans-serif font. The letter "O" is stylized with a white diagonal slash through it. The logo is contained within a white rounded rectangular box.

RAMBOLL

Creating thriving hubs for technology and biodiversity with the Americas Biodiversity Metric

# Data centers and biodiversity





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# Introduction

Society's increasing appetite for digital connectivity, knowledge sharing, and accelerating technology innovation has driven the rapid expansion of digital infrastructure. To meet this demand, companies that rely on cloud-based services, artificial intelligence, and virtual reality are expanding their data infrastructure and data center portfolios, with broad implications for nature. Unique challenges, such as the need for extensive land area, energy usage and associated linear infrastructure, and water, have led to data center development in rural settings with existing energy infrastructure, where land, water, and biodiversity are abundant. While industry leaders have mainly focused their sustainability commitments on achieving carbon and water neutrality and product circularity, there is now a growing emphasis on biodiversity.



Biodiversity is vital to maintaining a functional planet and represents a common thread linking climate, water, and nature. Focusing on biodiversity offers ample opportunities to achieve broader sustainability goals. Since the adoption of the Kunming-Montreal Global Biodiversity Framework by nearly 200 nations at the COP15 United Nations Biodiversity Conference in December 2022, the call to “take urgent action to halt and reverse biodiversity loss” has resonated globally across all levels of government and business. Leading technology companies are already taking steps to protect biodiverse habitats by minimizing and optimizing building footprints, preserving sensitive and unique habitats, and incorporating native habitat restoration.<sup>1</sup> Other companies have embarked on initiatives to blend engineering and ecology by using nature-based solutions to create more sustainable and regenerative data center designs.<sup>2</sup>

Initiatives and ideas like these are building momentum and becoming increasingly important as public awareness and interest among financial institutions grow, and globally relevant policies and regulations are enacted. For example, the European Union's (EU) Corporate Sustainability Reporting Directive (CSRD), which went into effect in January 2023, requires most companies with a substantial business footprint in the EU, including those based abroad, to measure and

transparently disclose nature-related impacts, including biodiversity. Similarly, England recently mandated that all businesses impacting natural habitats must ensure a 10% post-development net gain in biodiversity<sup>3</sup>. Ultimately, regulatory, reputational, shareholder, and market pressures will move companies to become nature positive – a state where nature is measurably improved from a defined baseline condition.



## Demonstrating nature-positive targets increasingly requires repeatable, defensible, and scientifically sound methods.

However, consistently and robustly measuring changes in biodiversity at scale across diverse geographies remains challenging. To address this, Ramboll experts, with support from NatureServe, developed the Americas Biodiversity Metric 1.0, an adaptation of the government-developed Natural England Biodiversity Metric 4.0<sup>4</sup>.

The Americas Biodiversity Metric 1.0 leverages significant research and stakeholder input gathered over more than a decade during the development of the Natural England metric, with key adaptations to facilitate robust assessments of site-level biodiversity in the Americas. This first-of-its-kind tool for the Americas can serve as the basis for demonstrating no net loss or biodiversity net gain, similar to the statutorily required tool used to deliver the biodiversity net gain policy in England.





# Americas Biodiversity Metric 1.0

The Americas Biodiversity Metric 1.0 (Metric) is a biodiversity quantification tool designed to measure the biodiversity value of sites across the Americas. This is possible through alignment with established vegetation classification systems<sup>5</sup> (i.e., International Vegetation Classification (IVC), US National Vegetation Classification (USNVC), and Canadian National Vegetation Classification (CNVC) developed through collaboration among NatureServe, the Ecological Society of America, federal agencies, and regional non-governmental organizations). The Metric is underpinned by robust habitat assessment protocols such as NatureServe's Ecological Integrity Assessment (EIA) framework.

## Get the Americas Biodiversity Metric 1.0

With the Americas Biodiversity Metric 1.0, developed by Ramboll, you can quantify biodiversity value for sites across the Americas, and achieve measurable net positive outcomes for nature. By evaluating biodiversity value, the metric can be used to inform and enhance decision-making processes for land use planning, design, development siting, and land management.

[Click to download](#)



Core to the Metric is the ecological principle that habitats of larger size and higher quality are better able to support the range of species typically associated with a given habitat, making them more valuable to biodiversity. As such, the Metric utilizes a framework that assigns biodiversity value to habitats using the product of **four main variables**:

1. Habitat size
2. Habitat condition
3. Global conservation priority
4. Strategic significance



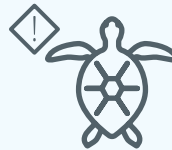
Habitat size  
(hectares)

X



Condition

X



Conservation  
priority

X



Strategic  
significance

=

Baseline  
biodiversity  
unit

**01. Habitat size** refers to the spatial amount of contiguous habitat of the same type, measured in hectares.

**02. Habitat condition** is a measure against the optimum state for a given habitat and is often driven by previous and current land use and management practices, as well as environmental stressors such

as invasive species, browsing pressure, and climate change. Condition is measured using a prescribed set of assessment criteria within the Metric, including quality indicators uniquely tailored to each broad habitat type. These include visual indicators focused on plant species composition, community structure, and anthropogenic disturbance to assign a condition rating (i.e., poor, moderate, good).

**03. Global conservation priority** is driven by NatureServe's Global Rank Status for ecosystems .

**04. Strategic significance**, or local relevance for biodiversity, involves a qualitative assessment of the habitat's importance at a local scale. This assessment is informed by published strategy and planning documents or state-level or regional conservation status.

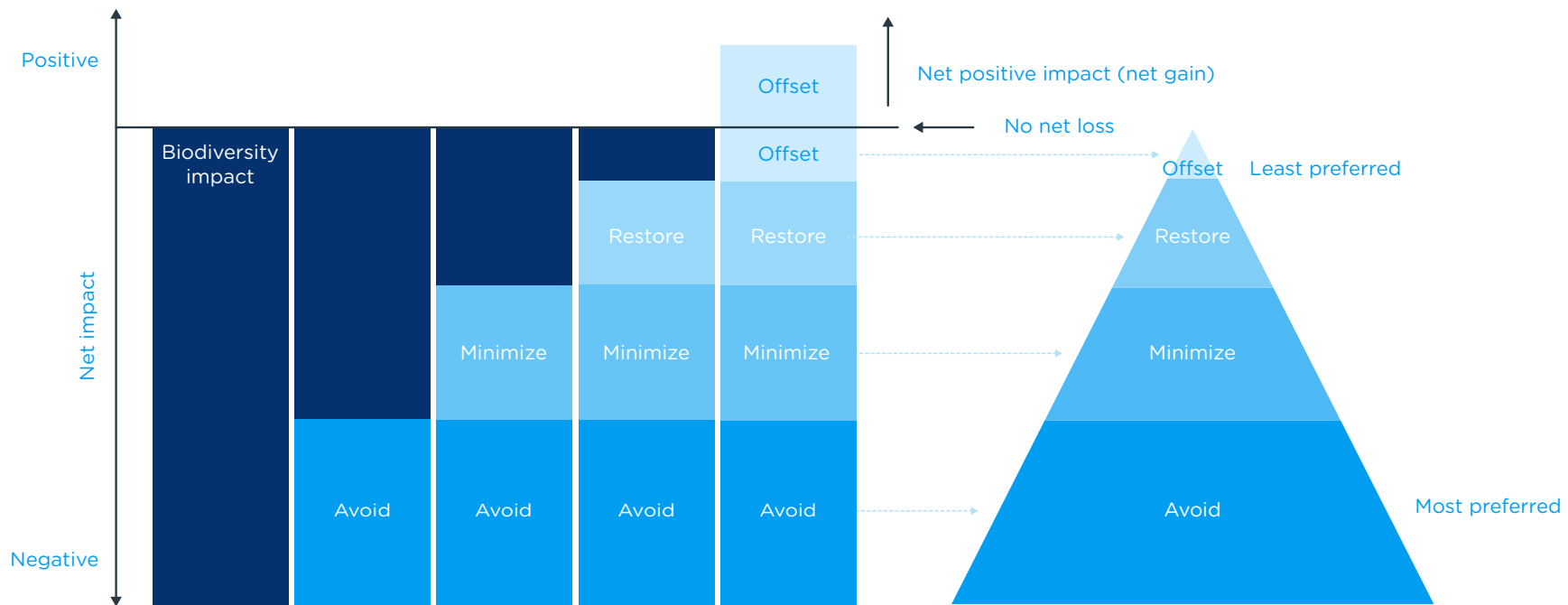
The Metric generates a score, expressed in biodiversity units, which can then be used to evaluate baseline biodiversity value, consistently track changes over time, perform alternatives analyses, and support the land-use decision-making process in alignment with the mitigation hierarchy (Figure 1), guiding companies away from a “business as usual” approach to development and toward integrating biodiversity concerns in a quantifiable way.

The mitigation hierarchy is a decision-making tool in development processes aimed at minimizing nature-related impacts. It emphasizes best practices: first, avoiding and minimizing negative impacts; second, considering restoration options; and finally, exploring potential offsets.

Importantly, the Metric can demonstrate biodiversity net gain relative to baseline conditions through

conservation actions, restoration projects, and/or management practices.

It includes built-in calculations that promote avoidance and minimization of negative impacts, prioritize enhancement (such as repair and restoration) over creation (like compensation and offset), and place greater importance on onsite interventions over offsite interventions. This approach leverages nature to achieve positive biodiversity outcomes.



Adapted from Jones et al. 2019 One Earth

Figure 1. The mitigation hierarchy

# Data center development:

## Americas Biodiversity Metric 1.0 in practice

The Americas Biodiversity Metric 1.0 can be utilized to inform and enhance decision-making throughout the data center development process, from site screening and selection to landscape design and facility operation.

**Biodiversity baseline and pre-screening**-In the initial stages of site selection, the Metric can serve as a pre-screening tool to evaluate potential data center sites based on their biodiversity value. Companies can use this tool to identify sites with lower biodiversity scores in alignment with the mitigation hierarchy principle of “avoidance”. This approach helps prioritize sites that minimize impacts on biodiversity from the outset, potentially leading to more attainable compliance during the due diligence process.

Given that larger, higher quality habitats typically support species with special conservation status, and

some habitats like wetlands often have high conservation priority and biodiversity scores, selecting a site with the lowest biodiversity score can reduce regulatory hurdles, such as fewer protected habitats onsite.

Additionally, a key component of the Metric’s biodiversity baseline or pre-screening process is the incorporation of local considerations, such as local habitat rarity and relative importance. These are evaluated using local conservation strategies, biodiversity action plans, and municipal comprehensive planning documents. By incorporating these considerations early in the baseline and pre-screening phases, companies can demonstrate a commitment to identifying suitable sites that align with the needs of both nature and the local community.

**Sustainable land use planning and design**-Once a data center site is selected, the Metric can be applied

throughout the land use planning and design phase. This enables data center developers and other stakeholders to make informed decisions consistent with the mitigation hierarchy. The Metric facilitates the identification of habitats within the proposed data center footprint that should be avoided, particularly those with higher biodiversity value and/or longer restoration return times. It also promotes minimizing impacts on high-value habitats and guides efforts for restoration and offsetting where necessary.

This approach enables developers to assess land use and development plans based on biodiversity value and potential impacts, facilitating comparisons of different scenarios to minimize biodiversity loss. It also assists in identifying target locations, habitats, and actions to achieve specific sustainability goals.



What is unique to this type of biodiversity metric is its capability to assess biodiversity value within both the built environment and natural settings. It incorporates a range of tested habitat quality indicators that signify ecological value and function. These efforts can address challenges such as water provisioning and purification, micro-climate regulation, noise mitigation, and aesthetic value. Furthermore, designing and managing for biodiversity can enhance certification opportunities through programs like Leadership in Energy and Environmental Design (LEED) and the Sustainable SITES Initiative (SITES).

## This holistic approach provides insights into maximizing biodiversity value on a data center site, particularly in maintaining restoring ecosystem functions and providing ecosystem services.

### Facilities operation

Using the Metric to evaluate operational data center facilities can optimize biodiversity potential across an existing portfolio. The Metric identifies areas of high and low biodiversity value, enabling the prioritization of habitats for preservation and identifying those with greater potential for biodiversity uplift.

By understanding the types and conditions of onsite habitats, companies can develop targeted strategies to achieve biodiversity uplift goals. These strategies involve specific management actions that align with the Metric's condition assessment criteria and guide the progression of habitats along a desirable ecological trajectory. The approach also considers site constraints such as security, health and safety, pest management, critical infrastructure, future capital investments, aesthetic qualities, and employee and visitor perception. This process is designed to deliver biodiverse habitats

while improving the facility's aesthetic quality, creating thriving spaces for flora and fauna, and improving employee health and wellbeing. Additionally, the Metric is an important monitoring tool, providing a standard methodology to track progress and guide ongoing management to ensure successful habitat improvement.

### Alignment with global reporting frameworks and policies

The Americas Biodiversity Metric 1.0 provides standard quantification of biodiversity value, applicable across diverse sites and geographies. This common language facilitates the evaluation and comparison of organizational assets, such as data center portfolios, and supports integrating site-level biodiversity actions into broader corporate sustainability goals, including no net loss of biodiversity, biodiversity net gain, and nature positive targets, all in alignment with global reporting frameworks.

The Metric provides a common framework for conducting biodiversity assessments and documenting risks and opportunities across a corporate portfolio. It aids in identifying material ecosystem impacts through data collection and ensures a consistent methodology for monitoring these impacts. By aligning with global initiatives and frameworks such as the EU's CSRD, European Sustainability Reporting Standards (ESRS), Taskforce on Nature-related Financial Disclosures (TNFD), and Science Based Targets Network (SBTN), the Metric supports target setting, progress monitoring, and compliance with reporting and disclosure requirements. Additionally, transparent reporting of positive environmental policies can enhance a company's brand and reputation, demonstrate its commitment to sustainability, and potentially accelerate the process of securing local support and regulatory approval for data center development.



# Delivering biodiversity

The use of a robust and defensible tool to support decision-making, evaluate progress against targets, and consistently and transparently report outcomes is critical for becoming a nature-positive organization. With a global team of over 400 ecologists, biologists, biodiversity consultants, and natural resource specialists [🔗 implementing nature-positive actions and nature-based solutions](#), Ramboll is uniquely positioned to help technology companies deliver on sustainability targets, including biodiversity, as they expand their data center portfolios to meet societal demands.



# References & Authors

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<sup>2</sup>Microsoft (2024). 2024 Environmental Sustainability Report. Accessed May 2024: <https://www.microsoft.com/en-us/corporate-responsibility/sustainability/report?icid=SustainabilityHomepage01Report2024>

<sup>3</sup>UK Public General Acts, 2021c.30, Schedule 14.

Biodiversity Gain as a Condition of Planning Permission. Accessed June 2024: <https://www.legislation.gov.uk/ukpga/2021/30/schedule/14/enacted>

<sup>4</sup>Natural England (2023). Biodiversity Metric 4.0 Calculation Tool. <https://publications.naturalengland.org.uk/publication/5850908674228224>

<sup>5</sup>Faber-Langendoen, D., Baldwin, K., Peet, R.K., Meidinger, D., Muldavin, E., Keeler-Wolf, T. and Josse, C. (2018).

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<sup>6</sup>Faber-Langendoen, D., J. Nichols, L. Master, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, A. Teucher, and B. Young (2012). NatureServe Conservation Status Assessments: Methodology for Assigning Ranks. NatureServe, Arlington, VA.



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