



# Spatial intelligence and business: data application for a nature positive and net zero future



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## Executive summary

Momentum is growing for action towards a nature positive global economy to complement ongoing action on net zero under the Paris Agreement. However, taking action for nature is more complex than for net zero. Unlike greenhouse gas (GHG) emissions, nature has multiple layers, and is inherently location-specific. Therefore, as consensus builds on the need to recognize the ‘climate-nature nexus’, location-specific, land- and seascape level approaches that include all stakeholders are needed to harmonize sometimes competing demands, and ultimately deliver on global nature and climate goals.<sup>1</sup>

‘Spatial intelligence’ is the use of spatial (or ‘location-specific’) data, tools, analysis and visualization, to inform sound decision-making.<sup>2</sup> It can be used by a range of actors to support action on nature and climate. Specifically, spatial intelligence can help businesses to:

- play a critical role in supporting national spatial planning processes to help mediate competing uses of, and rights to, land for agriculture, industry, infrastructure, nature conservation etc;
- evaluate their impacts and dependencies on nature and assess related risks and opportunities;
- transform their business strategies and make robust commitments to support a nature positive, net zero economy;
- demonstrate eligibility to access green finance and related products (i.e. finance that requires the use of spatial intelligence or where spatial intelligence is used by financial institutions to inform investment decisions); and
- assess and transform their own operations and value chains to deliver on their commitments in line with those set out at the national and global levels (e.g. ensuring business actions to mitigate impacts and make positive contributions take into account the spatial context of activities).

Emerging technological developments and an increase in the availability of spatial data are making it increasingly possible to design spatially intelligent outcomes – the onus is now on businesses to act, striving for cooperation at the land- and seascape level between government, business, and civil society more broadly. To date, the lack of a shared understanding of what spatial intelligence is (and its potential uses for integrated action on nature and climate), the lack of transparency and accessibility of spatial intelligence, and the lack of application of high-quality spatial intelligence have been barriers to action. Businesses can now act to help overcome these barriers. The quality and availability of spatial tools and data is now sufficient to drive integrated net zero and initial nature positive action– including assessing, measuring, and optimizing operations. These initial actions could help to kickstart a scalable process of continuous improvement as the quality of data and clarity around metrics and indicators improves over time.

## Introduction: the need for spatial intelligence to deliver on nature and climate action

**The world is facing both nature and climate crises, which require urgent, integrated and concerted action informed by location-specific information.** The Paris Agreement codified national commitments to keep the increase in global temperatures “*well below 2°C above pre-industrial levels*” and to pursue efforts towards staying within 1.5°C. The [Intergovernmental Panel on Climate Change](#) (IPCC) scenarios for emission reductions are clear. Staying within 1.5°C of pre-industrial levels requires net zero CO<sub>2</sub> emissions by 2050 at the latest. The IPCC scenarios show that this requires both massive, rapid decarbonization, and a significant contribution from nature-based solutions (e.g. the protection, restoration and sustainable management of natural carbon sinks).<sup>3,4</sup> Strategies are needed to reduce and adapt to these nature and climate crises.

**Businesses and investors are responding.** With regulatory and public pressure increasing (e.g. through regulation and litigation around nature and climate impact that extends across value chains), businesses have started to act. Financial institutions are increasingly looking at how spatial intelligence can be brought into investment decision making, while some insurers are starting to explore how spatial intelligence can help inform their products and premiums. There is growing momentum for action towards a nature positive economy, alongside net zero targets.<sup>5,6</sup> For example:

- more than 2,200 businesses covering over a third of global economy market capitalization were working with the [Science Based Targets initiative](#) (SBTi) to set 1.5°C aligned targets at the end of 2021<sup>7</sup>; and
- over 1,100 businesses (with combined revenues of USD\$ 5 trillion) are calling on governments to adopt policies to reverse nature loss in this decade as part of the ‘Nature is Everyone’s Business’ pledge.<sup>8</sup>

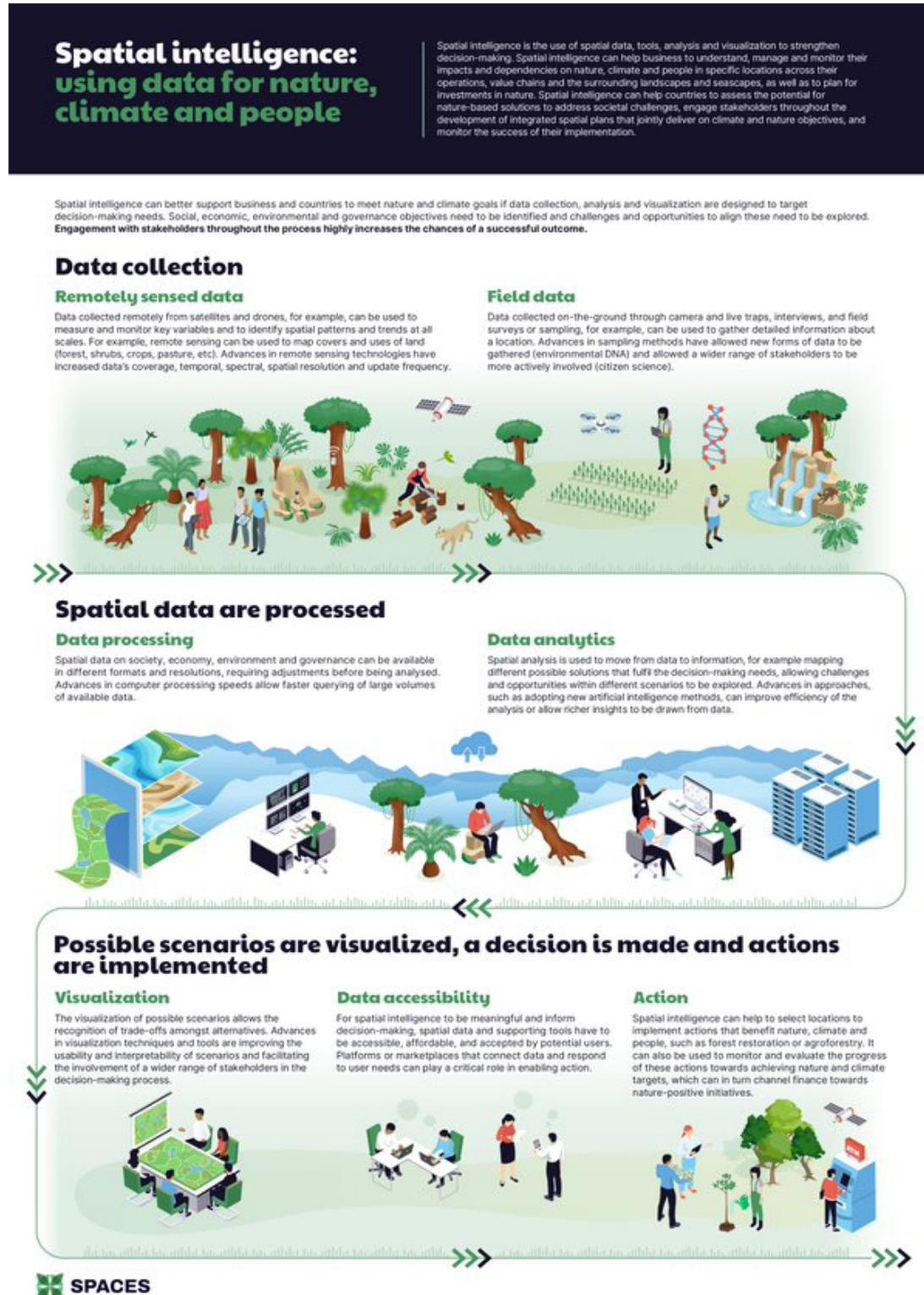
**Delivering on global goals for nature and climate requires location-specific information on nature-related impacts and dependencies (and associated risks and opportunities) for business and society.** This understanding is needed because land use and land-use change are the biggest drivers of nature loss, result in greenhouse gas emissions, and weaken carbon sinks.<sup>9</sup> The activity (e.g. the type of industrial process) undertaken in a place and the geographic context influences the extent and type of impacts on communities, nature and climate. Addressing them therefore requires location-specific solutions.

**‘Spatial intelligence’ is the use of spatial (or ‘location-specific’) data, tools, analysis and visualization designed to inform sound decision-making across land- and seascapes** (Figure 1).

Among other applications, spatial intelligence can help:

- businesses to understand, manage and monitor impacts and dependencies on nature and climate in specific locations across their operations and supply chains;
- the finance sector to support green finance and manage their investment portfolio; and
- countries to assess the potential for nature-based solutions to address societal challenges, consult with stakeholders to develop integrated short-, medium- and long-term **spatial plans** (as mentioned in the draft post-2020 global biodiversity framework)<sup>10</sup> that deliver on nature and climate objectives, and monitor the success of their implementation.

Figure 1: Spatial intelligence – using data for nature, climate and people<sup>11</sup>





**The importance of spatial intelligence is increasingly recognized in global goals and targets.** For instance, spatial planning is ‘Target 1’ of the draft post-2020 global biodiversity framework. From a business perspective, [TNFD’s v0.2 beta framework](#) highlights the need for metrics and targets to align at “global, national, and local levels”, highlighting the importance of location-specific information to inform decision making (i.e. spatial intelligence).

**Without spatial intelligence, “a large share of supply chain impact [and dependencies] on nature and climate will be overlooked, potentially leading companies to experience regulatory risks, poor public perception, and disruptions to raw material availability”.**<sup>12</sup> These risks also apply to managing direct (and to some extent) downstream operations. Integrating nature and climate for decision making and action remains a key challenge.

**The collection and application of nature data (e.g. data on biodiversity, water security, and ecosystem services data in general) is much more complex than energy-related greenhouse gas (GHG) emission data.** Nature is multi-variate, and ‘measuring’ nature requires defining and tracking multiple underlying and location-specific indicators (compared to GHG emissions, which are a single, location-agnostic indicator). As a result, a lack of high quality, up to date nature (and specifically biodiversity) data has been a barrier to integrated nature and climate action.

**Thankfully, the growing availability and quality of spatial data (for nature, climate and relating to company asset and pressure data), and the tools and processing power needed to analyze and interpret it, are increasing the potential for a greater uptake of spatial intelligence.** The onus is now on business to act and make the use of spatial intelligence the norm, improving precision and ambition over time as science and technology evolves, in service of climate, nature and people.

## Potential: how can spatial intelligence drive business impact on nature and climate?

Businesses can structure their actions towards a nature positive world by assessing their impacts and dependencies, committing to targets, transforming their actions and disclosing the outcomes, as is illustrated below (Figure 2).

Figure 2: Key actions that businesses can take to signal they are making meaningful contributions to help reverse nature loss and contribute to an equitable, nature positive future.<sup>13</sup>

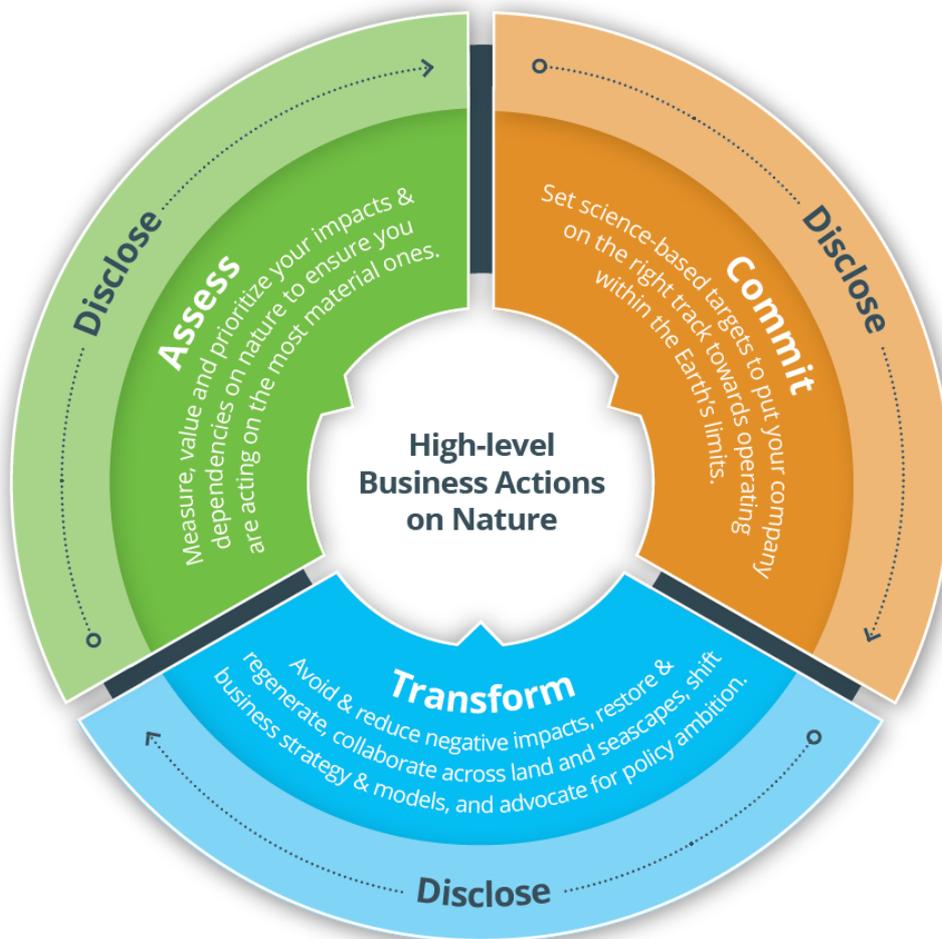


Table 1 below shows the role spatial intelligence can play in supporting businesses to assess, commit, transform and disclose towards a nature positive and net zero future. For each of these uses, different public and/or private spatial information, data and tools are needed and used.

Table 1: How spatial intelligence can support businesses to assess, commit, transform and disclose towards a nature positive and net zero future

High-level action	Within this high-level action, spatial intelligence can...
Assess	<p>...enable businesses to more accurately understand the scale and location of their impact and dependencies on nature across their operations and supply chains. Spatial and asset-level insights allow for a more thorough assessment of risks, opportunities, dependencies and impacts - from the physical asset-level upwards. Operational information can be aggregated at the company, sectoral, portfolio or national level, and can be connected to nature and climate features such as protected areas, special management zones for areas with high conservation value, low ecosystem integrity, and water stress (including from public sources).<sup>14</sup> This allows spatial intelligence to help identify and prioritize areas of greatest risks (e.g. climate, deforestation, etc).<sup>15,16</sup> Spatial intelligence can support the development of a baseline view of natural capital at and surrounding a company’s operational locations and across its supply chain.</p> <p>...enable the financial sector to identify nature and climate-related financial risks and opportunities within their own portfolios. The financial sector needs spatial data and tools to inform investment, engagement and divestment activities (e.g. demonstrate eligibility to access some green finance). They will benefit from the latest technological advancements as they allow for location-specific tracking and monitoring of investment and/or insurance risks and impacts.</p>
Commit	<p>...help set science-based nature and climate targets and associated metrics to disclose performance. As interpretation of spatial data can help more comprehensively identify risks and opportunities, spatial intelligence can help inform more accurate and comprehensive but achievable targets. These targets can take many forms. For example, the <a href="#">Science Based Targets Network</a> (SBTN) (Box ) responds to the demand for more methods, guidance and tools for businesses to set science-based targets for nature and climate (including biodiversity, land, freshwater, and oceans).</p>

High-level action	Within this high-level action, spatial intelligence can...
Act / Transform	<p>...enable businesses to take action on the drivers and impacts of nature loss and climate change (e.g. through reduction in greenhouse gas emissions) that impact their business activities in specific locations. For example, spatial intelligence can inform operational decisions on nature-based solutions by identifying where, within a business' land holdings and broader landscapes, integrating trees into farming practices (agroforestry) could deliver the highest impact for climate mitigation and biodiversity outcomes, as well as improving soil health.</p> <p>...help integrate nature and climate action across all spheres of control and influence. Integrated spatial planning efforts together with other businesses and stakeholders (e.g. with governments working on <a href="#">National Biodiversity Strategy and Action Plans</a> (NBSAPs), sub-national authorities) can help to operationalize key targets for nature and climate. Integrated strategies that address both nature and climate are often more efficient and can be more cost effective.<sup>17</sup> Spatial intelligence can help businesses:</p> <ul style="list-style-type: none"> <li>• at a site level to tailor specific on-the-ground actions;</li> <li>• at a broader land-and seascape level (outside of company boundaries) to identify opportunities for nature-based solutions; and</li> <li>• at a national and regional level to help businesses identify their contributions to overall national nature and climate commitments.</li> </ul>
Disclose (for all high-level actions)	<p>...help define and measure what progress looks like and embed this in business strategies. Increased quality and availability of spatial data make it easier to monitor, report and verify actions at high precision and in near real-time. Tracking progress can also support reporting against other frameworks and standards (e.g. Global Reporting Initiative (GRI), Corporate Sustainability Reporting Directive (CSRD) etc.).</p> <p>...increase transparency to inform investment (e.g. for some forms of green finance), engagement, and divestment commitments, by locating, tracking and monitoring financial risks and investment impacts. One initiative working towards this is the <a href="#">Taskforce on Nature-related Financial Disclosures</a> (TNFD) (Box ). The TNFD recently launched version 0.2 of its beta disclosure framework, which includes guidance on assessing and disclosing location-specific impacts and risks.</p>

*Box 1: The Science Based Targets Network*

The **Science Based Targets Network (SBTN)** is “a collaboration of leading global non-profits and mission driven organizations working together to equip companies as well as cities with the guidance to set science-based targets for all of Earth’s systems.”<sup>18</sup> The SBTN’s Initial Guidance defines five distinct steps in the process of setting science-based targets for nature and improving businesses’ impact on nature. It also highlights the importance of spatial intelligence, for instance highlighting that “spatial data is at the core of understanding nature risk and impacts (as well as physical climate risk)”.<sup>19</sup> Further guidance and target setting methods are due to be released in 2023 and over 90 companies have joined the Corporate Engagement Program to help shape future guidance.

*Box 2: The Taskforce on Nature-related Financial Disclosures*

The **Taskforce on Nature-related Financial Disclosures (TNFD)** is a global, market-led initiative with the mission to develop and deliver a risk management and disclosure framework for organizations to report and act on evolving nature-related risks. The ultimate aim is to support a shift in global financial flows away from ‘nature negative’ outcomes and towards nature positive ones.<sup>20</sup> The TNFD framework seeks to provide recommendations and guidance on nature-related risks and opportunities relevant to a wide range of market participants. In June 2022, the TNFD released the second beta version of its risk and opportunity management and disclosure framework. This framework includes guidance on assessing and disclosing location-specific dependencies, impacts, risks and opportunities for market consultation. TNFD recognizes the importance of spatial intelligence in their work, highlighting the “fundamental importance of location and spatial data” and “geospatial analysis”.<sup>21</sup> They have also recently launched the *Nature-related Data Catalyst* responding to “the data challenges and gaps identified in the TNFD’s Data Landscape Discussion Paper released in March 2022”.<sup>22</sup> This program runs in parallel with company pilot testing of the beta versions of the TNFD’s framework.<sup>23</sup>

## Opportunities: to use new data to drive spatial intelligence

Rapid advancements in the quality and availability of nature-related spatial data have made it easier for businesses to take integrated action to assess, commit, transform and disclose in relation to nature and climate goals. The ongoing ‘data revolution’ has led to a rapid increase in the frequency, resolution and range of spatial data that is available to help inform spatial intelligence.<sup>24</sup> Examples include:

- **remote sensing** (e.g. via satellites and drones) can facilitate monitoring and measurement in areas that previously could not be tracked, and of new key variables, like forest cover at very high resolution (10m square scale or in the form of 3D images). This information could be used to quantify, for example, the amount of biomass (and associated carbon storage) in vegetation.
- **widely available mobile technologies** to gather nature data anytime, anywhere in the world through citizen science networks. An example of this is [iNaturalist](#), which allows any individual with a smartphone to share georeferenced photographs of species into a globally accessible database for expert identification.
- **emerging technologies** that are starting to support more detailed detection and monitoring of biodiversity at a larger scale (e.g. collection of eDNA<sup>25</sup> using simple field kits).<sup>26</sup>
- **Artificial Intelligence (AI) and especially machine learning** coupled with increased processing power and (cloud) storage can (when set up and implemented appropriately) allow complex databases to be combined, automatically processed, evaluated and presented in a descriptive way, increasing the relevance of outputs and reducing the time and effort needed for analysis.

The accessibility and usability of spatial intelligence is increasing as technological advancements make it easier to use and apply the spatial data collected. The data market is seeing a general shift from directly selling unprocessed data, to selling “analyzed information as a service” on data analysis platforms or within spatial tools, which make the data usable for a wider audience.

The following examples illustrate how spatial data collection can be combined with integrated planning to achieve key outcomes, and how emerging technologies are helping to support businesses to assess their impacts and dependencies on nature, commit to science-based targets and transform their business actions towards a nature positive and net zero future.

- **Example 1: Optimizing the efficiency of business activities through higher resolution and real-time tracking and monitoring data.** As an example, a large commodity producer and distributor could assess the nature and climate impact of their agricultural activities in North America. Farmers were supported to use in-field data (e.g. soil samples), remote sensing and crop and soil health modelling to acquire production information such as tillage practices, nutrient and pest management and yield changes. This assessment showed that soil health management systems could increase farmers’ incomes by 80-90%. Using this assessment, they can then commit to “*advance regenerative agriculture practices across 10 million acres of land in North America by 2030*”. Actioning this commitment, they can transform their activities by paying farmers for improved soil health and

positive environmental outcomes, using in-field data, remote sensing and crop and soil health monitoring.<sup>27</sup>

- **Example 2: Nature and climate risks can be predicted and quantified with more accuracy.** For instance, by combining in-depth company and supply chain analysis with tropical forest base maps (acquired using high resolution satellite data and made publicly available through the NICFI Satellite Data Program), [AidEnvironment](#) is conducting high-resolution, near real-time monitoring of deforestation in global commodity supply chains and publishing improved risk analyses for multiple stakeholders. This **assessment** is part of the consortium project ‘Chain Reaction Research’, which has contributed to over 15 financial institutions (with a total of nearly USD\$ 4 trillion assets under management) **committing** to incorporating deforestation considerations in their investment criteria. This **transforms** the way their portfolio companies act on deforestation.<sup>28,29</sup>
- **Example 3: Increase and enable the transparency of business activity impacts on nature and climate.** In a climate mitigation example, organizations such as Carbon Mapper and Climate TRACE are harnessing new types of satellites and AI to **assess** location-specific methane and CO<sub>2</sub> emissions.<sup>30</sup> With these data, entities are developing a public portal to make the data available for use by investors, industry, governments, and private citizens so they can **commit to transforming** greenhouse gas accounting, expedite repair of leaks, support disaster response, and improve environmental resilience.<sup>31,32</sup> Oil and gas companies themselves can also **transform** their actions using these data; aerial surveys allowed Triple Crown to alter its operations to reduce methane emissions by 90 percent over the course of just eight months. The surveys cost about USD\$ 25,000 and resulted in a profit of about USD\$ 400,000 from natural gas the company was able to prevent from leaking.<sup>33</sup>
- **Example 4: Technological advancements facilitate integrated nature and climate scenario analysis to enable planning, decision making and risk management.** Assessing future scenarios is directly relevant for most companies as, for instance, 66% of major global companies are projected to have at least one asset at high physical risk in 2050 under the impact of climate change.<sup>34</sup> As an example, a consumer goods company [Unilever](#) recently completed a detailed **assessment** of water scarcity impact on their crop yields, concluding that this could lead to a USD\$ 1.3 to 1.8 billion loss in annual profits by 2050. Unilever subsequently **committed** to implementing water stewardship programmes in 100 locations in water-stressed areas by 2030. This has **transformed** the water demand of farmers in Prabhat, India, saving more than 50 billion liters of water.<sup>35,36</sup> Investors and insurers are following suit. Climate scenario modelling by insurance company Aviva has concluded that uncontrolled climate change is far worse for their business and customers than the cost of taking action now. Aviva states that it is now working on transforming its portfolio accordingly.<sup>37</sup>

## Barriers: What are the barriers to greater use of spatial intelligence by business?

**Many businesses do not see the direct relevance of spatial intelligence to their operations.** This lack of awareness and understanding (including a lack of common definitions) means that the potential of spatial intelligence in helping to achieving business objectives, and climate and nature outcomes, is not fulfilled. Most importantly, it also leads to a lack of asset data collection and transparency. Where there is interest, businesses are often uncertain on how they can support and engage with national spatial planning processes and may not yet fully grasp the transformative potential of spatial intelligence for climate, nature, and people in their own operations and supply chain.

**Within businesses, ‘conceptual capacity’ remains a barrier to greater use of spatial intelligence.** Data must be processed, packaged and tailored to specific business needs and use cases. **Even where businesses recognize the importance and potential of spatial intelligence,** few organizations have the in-house capacity or knowledge to analyse, interpret and act on spatial data for nature and climate. Instead, they often rely on consultancies or service providers to collect, interpret, analyze and store data. This reduces the opportunities to develop capacity for spatial intelligence within an organization and may cause challenges and complexity for businesses that want to publicly share data that is collected and stored by a third party (e.g. a consultant).

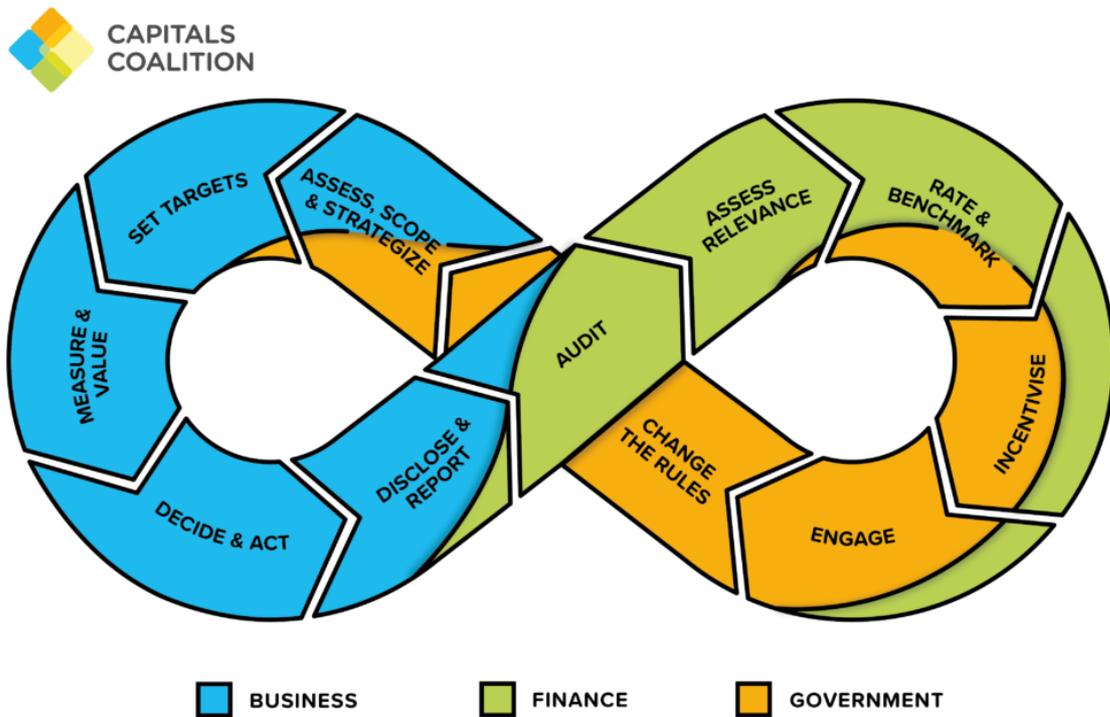
**Sustainable funding models are needed to financially support relevant technologies and authoritative, high-quality data for spatial intelligence.** At present the nature data— and specifically biodiversity data — needed for operationalizing targets and location-specific planning is often out of date, patchy and inaccessible. High-quality, authoritative data and tools require investment and businesses are currently failing to mobilize sufficient financial resources for spatial intelligence for nature and climate. This leads to the under-provision and inaccessibility of high-quality, unbiased and integrated spatial data.<sup>38</sup> The benefits of using spatial intelligence are great, but this needs to be articulated as a business case to invest.

**It can be difficult to identify how spatial intelligence can answer specific business needs, and consequently find the right tool for spatial intelligence in the defined context.** Many private and public providers have created tools to process large and complex datasets to support business applications. The SBTN has compiled and reviewed a draft list of over 140 tools currently on the market that support business action on climate and nature.<sup>39</sup> No tool is able to satisfy all steps of a specific business use-case and many are not aligned, meaning that businesses currently draw on different tools, using a combination of in-house analytics and the support of spatial intelligence providers to gain specific insights. For example, a company might use three different tools ([WWF’s Risk Filter](#), [MapSPAM](#), and WRI’s [Aqueduct](#) water risk atlas) to assess water quality and quantity.<sup>40</sup> Low awareness and capacity within businesses means it can be challenging to navigate the tools landscape. This can result in barriers to uptake or excessive resources required for the ‘planning’ rather than ‘implementation’ phases of spatial intelligence.

## Action: What steps can businesses take to increase the use of spatial intelligence?

Businesses (including private investors and insurers), governments, data collectors, technology providers (e.g. remote sensing companies), tool developers, standard setters, the scientific community and society at large can all help to further drive nature and climate action through the use of spatial intelligence. Some of the steps to action that spatial intelligence can support for business, finance and government are illustrated in Figure 3.

Figure 3: Key steps to action for business, finance and government that can be supported by spatial intelligence



From a review of literature and discussions with a wider group of stakeholders, potential actions for all actors to increase the use of spatial intelligence include those listed in Table 2.

Table 2: An overview of potential key actions for all stakeholders to drive nature and climate action through spatial intelligence

Action area	<b>Make integrated nature and climate action a priority and commit to spatially driven implementation.</b> Advocating and incentivizing the widespread use and funding of spatial planning and spatial intelligence.	<b>Set up and invest in high-quality, transparent spatial data collection and sharing, analysis and intelligence that drives nature and climate action.</b> Aligning on shared data (sharing) standards and principles for spatial intelligence and embracing the need for ‘radical transparency’.	<b>Act inclusively and collaboratively - kickstarting action now and improving precision and ambition over time.</b> Investing and sharing high-quality, authoritative data and best practices.
<b>Key actions for all stakeholders</b>	<ul style="list-style-type: none"> <li>• <b>Championing and communicating the central role of spatial intelligence in delivering integrated strategies for climate, nature and people</b> within organizations, across supply chains and throughout the spatial intelligence ecosystem, including through support for and investment in capacity building. Showcase examples of success to guide this ecosystem on what can, and should, be done.</li> <li>• <b>Push for policy change to require businesses to use spatial data in regulation and within voluntary and mandatory standards</b> (e.g. deforestation, due diligence, and sustainability reporting requirements), and to disclose their data publicly (e.g. location of operations, data from Environmental Impact Assessments), which could be used by local communities and governments.</li> <li>• <b>Drive (private) funding towards spatial intelligence.</b> For instance, with a “1% for open data pledge” for spatial consulting services,</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Align on spatially explicit metrics</b> (e.g. <a href="#">Align, TNFD</a>) with business consensus and across voluntary and mandatory requirements, in line with a nature positive and net zero world.</li> <li>• <b>Develop shared spatial intelligence principles</b>, including calling upon (and, where appropriate, working with) standard setters to develop: <ul style="list-style-type: none"> <li>○ Key design principles for tools and data to help unlock widespread and harmonized usage;</li> <li>○ Data verification standards and criteria to incentivize collection of spatial data that is interoperable; and</li> <li>○ Data sharing standards.</li> </ul> </li> <li>• <b>Build institutional capacity</b> to use spatial planning and spatial intelligence as key tools to deliver on global goals for nature, climate and people, for and beyond risk management. Share lessons learned and</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Partner with data collectors, tool developers and the scientific community to co-design fit-for-purpose spatial intelligence technologies</b> that combine nature and climate data, use high-quality data that respond to key use cases and business needs, and make it accessible to businesses via appropriate mechanisms.</li> <li>• <b>Invest in and developing sustainable business models for data and data access</b>, including support for and development of new and/or accessible data and tools in multiple languages.</li> <li>• <b>Take initial ‘no-regret’ actions</b>, iteratively developing nature positive and net zero plans and strategies as the quality of spatial intelligence and accompanying science improves.</li> <li>• <b>Ensure strategic planning</b> is an inclusive, participatory process involving</li> </ul>

Action area	<b>Make integrated nature and climate action a priority and commit to spatially driven implementation.</b> Advocating and incentivizing the widespread use and funding of spatial planning and spatial intelligence.	<b>Set up and invest in high-quality, transparent spatial data collection and sharing, analysis and intelligence that drives nature and climate action.</b> Aligning on shared data (sharing) standards and principles for spatial intelligence and embracing the need for ‘radical transparency’.	<b>Act inclusively and collaboratively - kickstarting action now and improving precision and ambition over time.</b> Investing and sharing high-quality, authoritative data and best practices.
	directing 1% of their project costs to open license spatial data providers / platforms (such as Global Forest Watch) and fund public data for spatial intelligence.	support broader industry capacity-building efforts.	consultation with local communities and interested stakeholders.
<b>Actions for business</b>	Use spatial intelligence to understand the nature and climate impacts and dependencies of operations, across value chains, and within landscapes. Use this understanding to set science-based targets.	Collect and disclose data (e.g. location of sites, nature data collected through EIAs, climate and biodiversity monitoring data etc.) for operations and up- and downstream value chains to monitor and make strategic nature and climate-related decisions.  Engage in processes to generate shared standards and principles that are practical and useful.	Collaborate on pilots to demonstrate what is possible using spatial intelligence, and iterate on existing guidance and frameworks with lessons learned.  Make data and intelligence interoperability a requirement for procurement and support capacity building to deliver on this.
<b>Actions for investors</b>	Use spatial intelligence to understand the nature and climate impacts and dependencies within and across investment portfolios.  Require portfolio companies to assess and disclose their nature and climate impacts and dependencies and consider these as part of the investment	Invest in technology and capacity that supports the long-term sustainability and success of spatial intelligence e.g. early-stage investments in promising technologies and/or investing in computational capacity / facilities to increase performance of spatial intelligence software and algorithms. <sup>1</sup>	Use spatial intelligence to map, channel and scale investment into nature and/or climate positive activities, engage with portfolio companies to help them transform, and divest from those that are not (e.g. integrating biodiversity into carbon markets etc.).

<sup>1</sup> Systemiq believes that emerging technologies such as eDNA can help inform business action for nature and is supporting the further development of these services through impact investing and venture capital.

Action area	<b>Make integrated nature and climate action a priority and commit to spatially driven implementation.</b> Advocating and incentivizing the widespread use and funding of spatial planning and spatial intelligence.	<b>Set up and invest in high-quality, transparent spatial data collection and sharing, analysis and intelligence that drives nature and climate action.</b> Aligning on shared data (sharing) standards and principles for spatial intelligence and embracing the need for ‘radical transparency’.	<b>Act inclusively and collaboratively - kickstarting action now and improving precision and ambition over time.</b> Investing and sharing high-quality, authoritative data and best practices.
	process (e.g. to demonstrate eligibility to access green finance).		
<b>Actions for insurance</b>	Use spatial intelligence to understand the nature and climate impacts and dependencies within and across insurance portfolios.	Require organizations to assess and disclose their nature and climate impacts and dependencies to increase transparency and consider these as part of the insurance process.	Use spatial intelligence to develop innovative insurance products for natural assets and nature-based solutions, which help communities, farmers, business etc. to manage nature and climate risk
<b>Actions for governments</b>	Strengthen regulation to increase incentives for business to use, share and fund spatial intelligence, for example, deforestation due diligence reporting requirements or minimum standards for chain-of-custody certification for food and land use commodities.	Open source government data (where possible), setting clear their spatial planning outcomes with businesses, and consider Setting and sharing clear national and regional spatial plans to create clarity for businesses and share underlying government data where possible.	Support research and development into emerging (digital) technologies for spatial data collection, analysis and use (e.g. through public procurement or other mechanisms).
<b>Actions for standards and framework developers (e.g. SBTN/ TNFD)</b>	Strengthen standards and frameworks that require the monitoring of a common set of metrics and indicators	Create verification standards and criteria to incentivize spatial data collection in a uniform manner.  Find ways to stimulate data sharing among and between the public sector and business.	Work with data users and data providers to develop principles for the effective design of tools that utilize spatial intelligence to inform action on nature, climate and people, ensuring they are usable.



*Box 3: Call to action*

**World Business Council for Sustainable Development (WBCSD) invites all businesses to:**

- share their knowledge and experience of using spatial intelligence;
- highlight their reflections on the action areas mentioned above;
- share good practice examples; and
- join one of WBCSD's piloting working groups.



**SPACES is a collaborative coalition to advance spatial intelligence for nature, climate, and people.** SPACES aims to mobilize a network of technical and implementation partners, convened by UNEP-WCMC and Systemiq, that together make spatial intelligence widely available and used by governments, businesses, NGOs, communities, and finance to operationalize commitments and targets, frame integrated strategies for nature, climate, and people, and promote transparency and accountability. For more information, please visit [www.spacescoalition.org](http://www.spacescoalition.org), or contact [info@spacescoalition.org](mailto:info@spacescoalition.org)

### **About UNEP-WCMC**

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) is a global Centre of excellence on biodiversity. The Centre operates as a collaboration between the UN Environment Programme and the UK-registered charity WCMC. Together we are confronting the global crisis facing nature.

### **About Systemiq**

Systemiq, the system change company, was founded in 2016 to drive the achievement of the Sustainable Development Goals and the Paris Agreement, by transforming markets and business models in five key systems: nature and food, materials and circularity, energy, urban areas, and sustainable finance. A certified B Corp, Systemiq combines strategic advisory with high-impact, on-the-groundwork, and partners with business, finance, policymakers and civil society to deliver system change. Systemiq has offices in Brazil, France, Germany, Indonesia, the Netherlands and the UK. Find out more at [www.systemiq.earth](http://www.systemiq.earth)

### **About the World Business Council for Sustainable Development (WBCSD)**

WBCSD is the premier global, CEO-led community of over 200 of the world's leading sustainable businesses working collectively to accelerate the system transformations needed for a net zero, nature positive, and more equitable future.

We do this by engaging executives and sustainability leaders from business and elsewhere to share practical insights on the obstacles and opportunities we currently face in tackling the integrated climate, nature and inequality sustainability challenge; by co-developing "how-to" CEO-guides from these insights; by providing science-based target guidance including standards and protocols; and by developing tools and platforms to help leading businesses in sustainability drive integrated actions to tackle climate, nature and inequality challenges across sectors and geographical regions.

Our member companies come from all business sectors and all major economies, representing a combined revenue of more than USD\$ 8.5 trillion and 19 million employees. Our global network of almost 70 national business councils gives our members unparalleled reach across the globe. Since 1995, WBCSD has been uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

Together, we are the leading voice of business for sustainability, united by our vision of a world in which 9+ billion people are living well, within planetary boundaries, by mid-century.



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Systemiq believes that emerging technologies such as eDNA can help inform business action for nature, and is supporting the further development of these services through impact investing and venture capital.

## References/titles

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- <sup>2</sup> Many terms can be used for this process. For example, the draft post-2020 global biodiversity framework includes the term ‘spatial planning’. However, as spatial planning is more commonly associated with government processes, the term spatial intelligence has been used to encompass a wider scope.
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