



SAN FRANCISCO

Nature Positive: Cities' Efforts to Advance the Transition

INSIGHT REPORT

APRIL 2025

WORLD
ECONOMIC
FORUM



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Foreword



Daniel Lurie
Mayor of San Francisco,
USA

The world we call home is experiencing a climate crisis. The rapid deterioration of ecosystems around the globe has contributed to extreme weather events in our cities and exposes the tangible impact of climate change each year. For our remedy, San Francisco has chosen the path of climate action, blending nature-positive solutions with innovative economic revitalization. From Ocean Beach to the Bay, San Francisco's natural beauty was first stewarded by the Ramaytush Ohlone, the original caretakers of our home, and now San Francisco's green and thriving future lies in our hands.

Here in San Francisco, all residents deserve to live a safe, healthy and productive life. Our city can deliver that by having clean, thriving neighbourhoods surrounded by a natural environment. To accomplish this, we have employed sustainable management and

restoration of healthy ecosystems as one of the most important tools for biodiversity, community connections to nature and overall quality of urban life. A healthy environment means healthy neighbourhoods. San Francisco is where people and nature thrive together.

For decades, our city's parks and natural areas have been managed by multiple city, state and federal agencies. Habitat restoration, urban greening and climate resilience work have been governed by various management plans by many departments. One of my first priorities was to reorganize my administration's oversight structure to provide more efficient and coordinated city management for residents. Under a new structure, our lands management, transport and climate departments are working more closely to collaborate on the best nature-based outcomes for our city.

Climate resilience is important both for our communities and San Francisco's natural heritage. Ecological resilience, established through nature-based solutions, builds capacity for our local ecosystems to adapt dynamically to climate change. Through our Climate Action Plan, we have specifically supported connecting all San Francisco residents to nature every day for their mental and physical well-being, with emphasis on those communities that have been, and will be, most adversely impacted by pollution and climate issues.

Community involvement is central to the implementation of our Climate Action Plan. Land management agencies and local non-profits have been organizing community participation in local parks and natural resource stewardship for decades. Many hands and solutions will be required to implement our climate work. It cannot be fully realized without a broad coalition of actors dedicated to collaborative problem-solving.

San Francisco is a centre of climate innovation. Our city remains the best location to cultivate partnerships, promote innovation and grow a bold climate economy for the future. That has been evident from our long history of environmental leadership.

San Francisco's nature-positive work holds a unique role in the constellation of climate action sectors in the Climate Action Plan. Conserving and restoring natural ecosystems and connecting everyone to nature involves many dimensions that collectively create a foundation for achieving the goals of this report. The recommendations in this report will go hand in hand with our nature-based climate actions and are also key to our economic recovery as we blend our natural beauty into the communities of tomorrow. I welcome everyone to visit our city and see our work in action. Our natural landscapes truly offer an only-in-San Francisco experience.



About the series

Nature Positive: Cities' Efforts to Advance the Transition is published by the World Economic Forum in collaboration with Oliver Wyman. It is part of the World Economic Forum's Nature Positive Transitions report series outlining pathways sectors and cities can take to halt and reverse nature loss by 2030 – the mission at the heart of the Global Biodiversity Framework (GBF).

The series consists of two parts: sector transitions and city transitions. These reports highlight the relevance of nature-related risks, identify the impacts and dependencies of the economy and society on nature, and provide guidelines for city and business leaders on key actions to accelerate the nature-positive transition.

The Nature Positive Transitions reports build on the New Nature Economy Report series, a collaboration between the World Economic Forum's Centre for Nature and Climate and the Centre for Urban Transformation.

Sector reports:

[Nature Positive: Role of the Cement and Concrete Sector](#)

[Nature Positive: Role of the Household and Personal Care Products Sector](#)

[Nature Positive: Role of the Chemical Sector](#)

[Nature Positive: Role of the Mining and Metals Sector](#)

[Nature Positive: Role of the Offshore Wind Sector](#)

[Nature Positive: Role of the Port Sector](#)

[Nature Positive: Role of the Automotive Sector China Deep-dive](#)

Cities reports:

[Nature Positive: Guidelines for the Transition in Cities](#)

[Nature Positive: Leaders' Insights for the Transition in Cities](#)

[Nature Positive: Financing the Transition in Cities](#)

[Nature Positive: Cities' Efforts to Advance the Transition – Durban](#)

Finance reports:

[Financing the Nature-Positive Transition: Understanding the Role of Banks, Investors and Insurers](#)

About this paper

Each of the five champion cities of the [Nature-Positive Cities](#) initiative has engaged with the World Economic Forum and Oliver Wyman to identify ongoing nature-related efforts, pinpoint the main challenge areas impeding a successful nature-positive transition and define required actions to address them.

The champion cities are: San Francisco (USA), Barranquilla (Colombia), Belem do Pará (Brazil), Durban (South Africa) and Incheon (Korea).

Following extensive engagement with the city of San Francisco, this paper aims to assess and illustrate the city's greatest challenges and barriers hindering radical progress towards being nature-positive, and identifies potential solutions to overcome these challenges. The exemplary solutions are intended to spotlight innovative approaches and provide inspiration to city officials globally.



A dedicated work with the five champion cities of the Nature-Positive Cities initiative was deployed to:



Understand and explore key elements of each city's nature strategy, including nature-related targets and ongoing projects and initiatives that have a positive impact on nature



Identify challenges related to each city's nature-positive transition



Outline solutions to detected challenges



Facilitate connection with the private sector and support innovators to progress on the transition

Executive summary

Increasing data collection and management will be vital for harnessing all city capabilities and ensuring a nature-positive future.

Overview

The city is currently managing an affordable housing shortage amid a post COVID-19 pandemic economy, coupled with environmental challenges such as rising sea levels and inland flood risks, the impact of fires in the state and urban heat island effects.

San Francisco has a range of ecosystems, such as coastal scrublands, sand dunes and oak woodlands, with the Pacific Ocean on one end and the San Francisco Bay on the other.¹ The city also has a significant freshwater environment, including lakes, creeks, wetlands and riparian ecosystems.

San Francisco is a city of

 **808,988** people

housed on 121 square kilometres (km²) of land, located on the west coast of the United States.

It has a surface area of

 **121.5** km²
in 2020

There is a population density of

 **6,689** per km² in 2023

Key statistics

Gini coefficient (equality metric): 0.53²

Endemic species: San Francisco sits within the California Floristic province, a well-known biodiversity hotspot. Half of all agricultural produce used by US consumers originates from this hotspot.³ The city is home to 17 rare and endangered plant species, and endangered animal species including the mission blue butterfly, the California red-legged frog and the western snowy plover.⁴

Gross domestic product (GDP): \$655 billion in 2022⁵



Summary of enabling environment

San Francisco has a strong history of nature conservation and advocacy, with numerous government agencies and community-based organizations supporting and contributing to this mission. Despite strong advocacy for nature across the board, the city faces the following obstacles:

- Identifying sufficient sources of finance for nature initiatives (either from public or private sources)
- Collecting, tracking and reporting against the achievement of nature objectives with concrete data
- Coordinating initiatives across various organizations
- Communicating its nature-related achievements and efforts



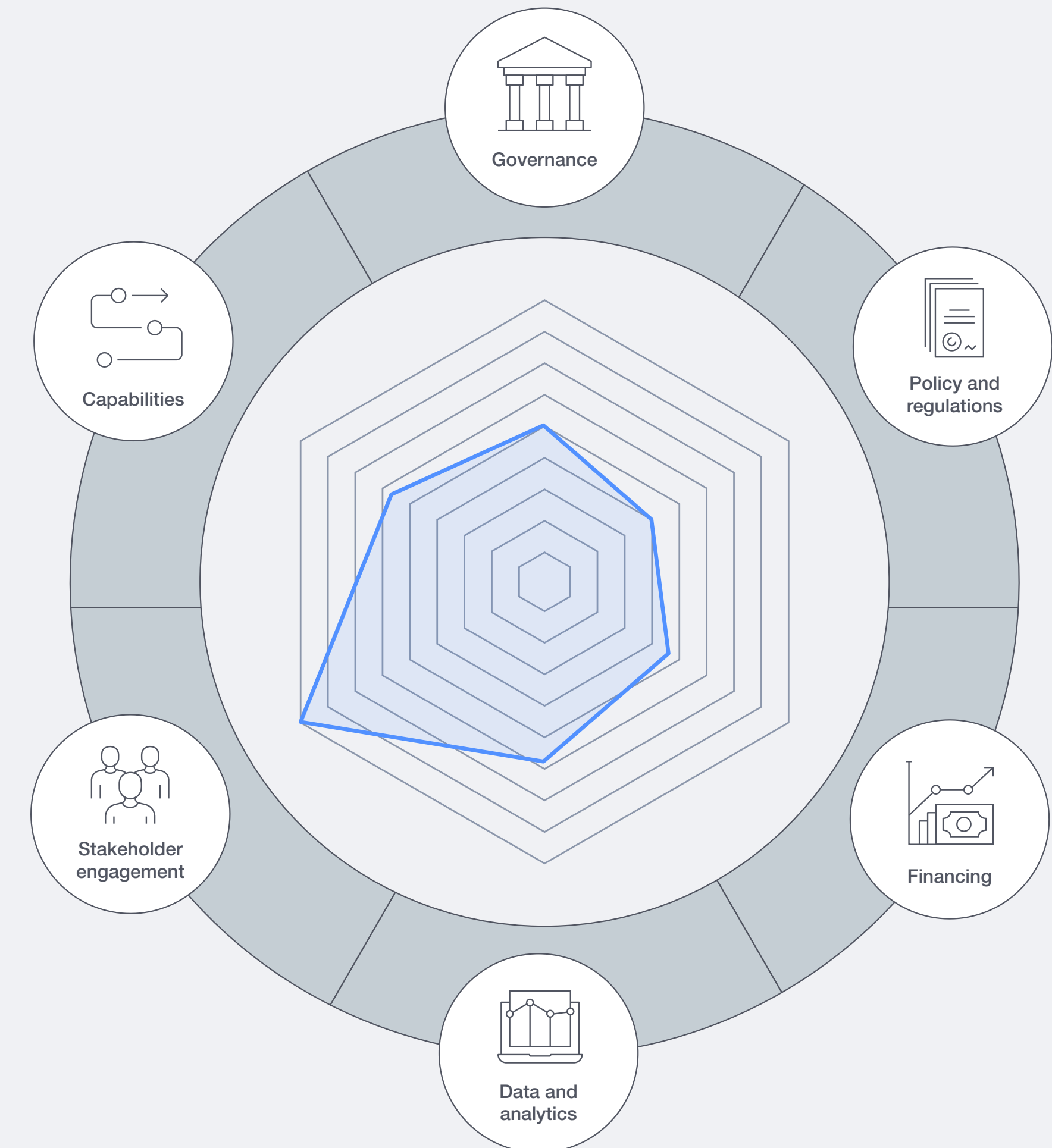
Select the icons to discover more

Key initiatives

- **Managing natural habitats and ecosystems in support of net zero carbon sequestration opportunities and trade-offs in the Alameda Watershed:**⁶ The San Francisco Utilities Commission and San Francisco Estuary Institute authored a plan to assess the carbon sequestration capabilities of the Alameda Watershed and its contribution towards a state-defined net zero emissions target.
- **Public-private collaboration for nature restoration on Yerba Buena and Treasure Islands:** The city government established a new set of obligations for developers and the city to restore the natural environment, eradicate invasive species on the island, encourage community stewardship and develop in ways that mutually benefit people and the environment.
- **India Basin Park restoration and community development:** This programme was developed in collaboration with the public and private sectors. It aimed to revitalize the waterfront area by enhancing habitats, improving public access to the waterfront and developing community spaces in a historically underserved region.

FIGURE 1

Snapshot of San Francisco's enabling environment for a nature-positive transition



Source: World Economic Forum.

Challenges and recommendations



Governance

Challenges identified

- Decentralized management of nature across the city governance levels means many biodiverse areas are neglected and community engagement is lacking.

Improvement areas

- Prioritize and coordinate delivery of cross-agency solutions and ensure all initiatives are accessible to all stakeholder groups.
- Track community-based organization (CBO) projects and integrate them into nature-management processes.



Policy and regulation

Challenges identified

- Social and economic crises (e.g. affordable housing) may be prioritized over delivery of the nature agenda.
- The lack of a formal, standalone biodiversity strategy or nature action plan detailing targets, specific initiatives and nature investment/management priorities impedes the city's ability to deliver initiatives with tangible nature outcomes.
- Difficult-to-enforce policies (such as the [Biodiversity Program](#)) and limited incentives for the private sector to invest in nature mitigate the impact of finance.

Improvement areas

- Formalize a dedicated nature action plan to identify and implement nature-specific solutions for the city.
- Reassess city codes through a nature lens and redesign policies to facilitate and encourage greater private-sector nature-positive action.



Financing

Challenges identified

- Reliance on limited government finance and restrictions on public funding allocations prevent investment in nature-positive initiatives.
- Transaction costs are high due to burdensome application requirements and reporting.
- Financing comes on a project-by-project basis, limiting the scale and impact of the nature-related initiatives.

Improvement areas

- Strengthen relationships and collaboration with the private sector to unlock catalytic finance for nature and facilitate partnership on nature initiatives.
- Explore external financial mechanisms such as green and multilateral development banks to provide loans and guarantees for project preparation and environmental projects.
- Invest in community stewardship initiatives that can maintain green spaces, while collaborating with government departments.

Challenges and recommendations continued



Data and analytics

Challenges identified

- Several non-standardized data sets limit collaboration, transparency and data sharing among all relevant stakeholders.
- A lack of coordinated data management programmes, methods and tools means biodiversity goals and targets are not measured against.

Improvement areas

- Develop a standard data-collection-and-visualization tool to facilitate collaborative management, share insights, enable nature-informed decision-making and engage the community.
- Convene a data working group as part of Reimagining San Francisco to tackle the citywide problem of data standardization and collection.



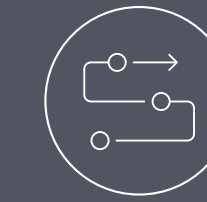
Stakeholder engagement

Challenges identified

- A large number of initiatives championing nature causes can result in competition and disjointed activities among them.
- Biodiversity is often underrepresented in environmental education campaigns.
- Public awareness of the significant nature conservation efforts by the city and local non-governmental organizations (NGOs) is lacking.

Improvement areas

- Identify and cultivate strong relationships with select private-sector partners to strengthen cross-sector collaboration on nature initiatives in the city.
- Introduce community gardens and biodiverse landscapes in public housing facilities and underserved parts of the city to provide accessible natural spaces.
- Develop a biodiversity curriculum unit to embed into schooling initiatives at primary and secondary levels.
- Prioritize raising awareness of ecological conservation and nature restoration work, so that more of the public can be engaged.



Capabilities

Challenges identified

- Training materials required to upskill staff on nature and environmental topics are not always updated.
- There's insufficient focus on mainstreaming biodiversity into city planning processes.
- Potential leader reticence to champion nature-positive solutions in San Francisco limits progress.
- Ineffective use of volunteer pools limits the benefit of corporate volunteer initiatives for city nature objectives.

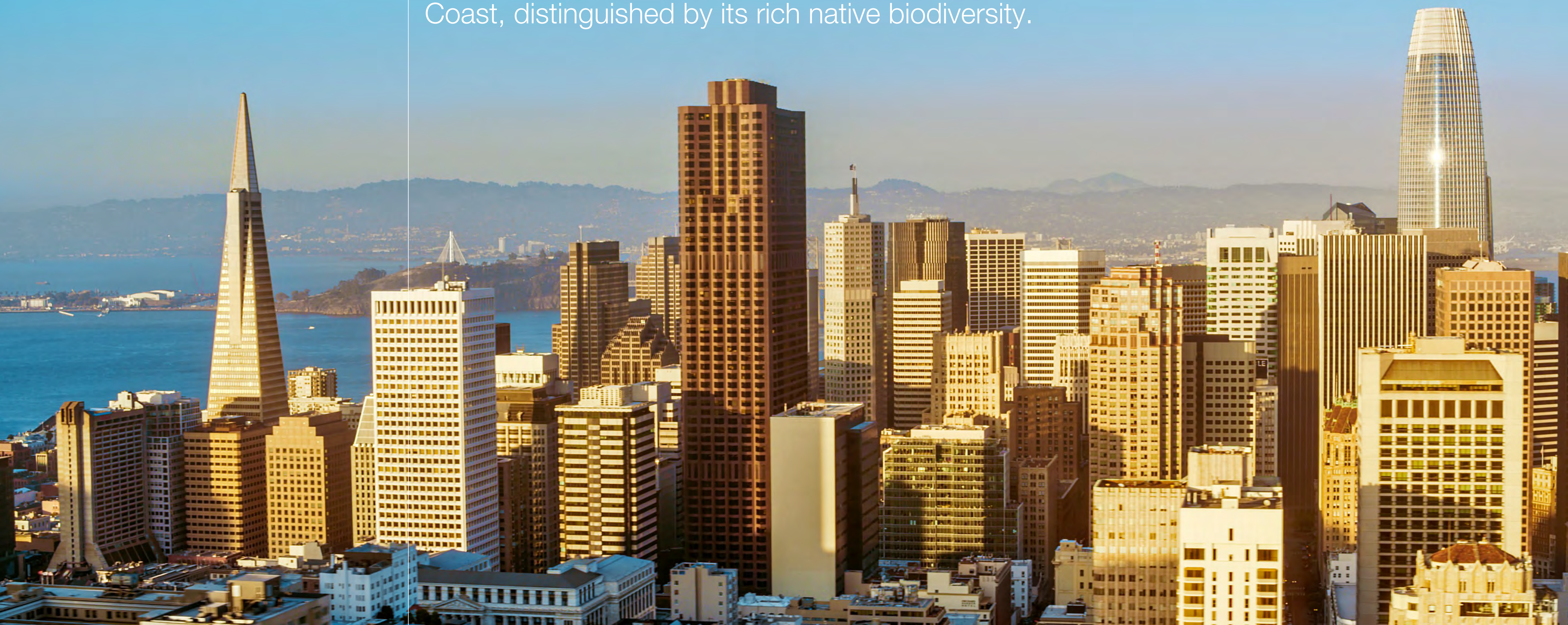
Improvement areas

- Update and tailor core nature-focused training curriculums for staff across departments.
- Mandate a “biodiversity champions” programme for all relevant departments, with special emphasis on the Planning Department.
- Develop a clear volunteer engagement initiative to address resource constraints and increase citizen nature awareness and advocacy.

1

City overview

San Francisco is a city and county on the US West Coast, distinguished by its rich native biodiversity.



1.1 San Francisco

San Francisco, officially the City and County of San Francisco, is located on the west coast of California, on the north end of the San Francisco Peninsula, which separates the bay from the Pacific Ocean. San Francisco is the fifth most densely populated county in the US, and in 2022, just over 800,000 people resided there. San Francisco is hilly, with varied topography, and is in close proximity to the San Andreas, Calaveras and Hayward faults, which result in frequent earthquakes.^{7,8}



Surface area

121.5 km²

in 2020



Population

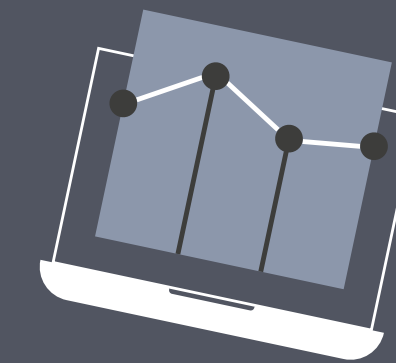
808,988

people

Gross domestic product growth

2.1%

in 2022-2023¹⁰



Population density

6,689

p/km² in 2023⁹





Select the tabs to discover more

1.2 Situational context



Economical and developmental context

KEY STATISTICS

414,581

housing units in the city

10,259

new homes needed per year between 2023-2031



Local biodiversity and the natural environment

San Francisco's gross domestic product (GDP) in 2022 was \$655 billion, and approximately 60% of the revenue originated from information, professional and business services, and financing, insurance and real estate.¹¹

The four industries that employ the most people in San Francisco are professional, scientific and technical services, public administration, healthcare and social assistance, and information services, which account for more than half a million people together.¹²

Due to housing affordability concerns in California, which have been prevalent since the 1970s, the Regional Housing Needs Allocation (RHNA) operates to help cities address housing inaccessibility and present them with opportunities to overcome this issue.¹³ In 2022, there were only 414,581 housing units in San Francisco, and the RHNA stated that an additional 10,259 homes would need to be built per year between 2023 and 2031 to meet rising demand.¹⁴

Due to the ongoing affordable housing crisis, among other social crises, the nature agenda is often deprioritized.



Nature and climate change strategies





1.2 Situational context



Economical and developmental context



Local biodiversity and the natural environment



Nature and climate change strategies

KEY STATISTICS

0.95°C

rise in mean temperature between 1950-2005

3,500

regional plant species

340

species of breeding birds

San Francisco sits within the California Floristic Province, which is a biodiverse zone that runs the length of the state of California. The biodiversity in the region is high and varies considerably, encompassing grasslands, chaparral, woodlands, and alpine and coastal forests. The province harbours 3,500 plant species, 61% of which are endemic.¹⁵ Additionally, San Francisco is situated in the Golden Gate Biosphere, which includes urban, multi-use and wildland habitats, and both marine and terrestrial ecosystems.¹⁶



The main threats to terrestrial and marine biodiversity in the region include:¹⁷

- Transformation of natural areas for urbanization
- Expansion of large-scale agricultural sites
- Habitat encroachment
- Introduction of invasive alien species
- Suppression of natural fires
- Pollution (stormwater, sewage, industrial, trash)
- Freshwater diversion and loss of wetlands
- Human-induced climate change leading to rising sea levels



1.2 Situational context



Economical and developmental context



Local biodiversity and the natural environment



Nature and climate change strategies

KEY STATISTICS

12

miles of trails created through parks to enjoy nature, vistas and views

98%

of green waste repurposed into landscape materials and returned to parks

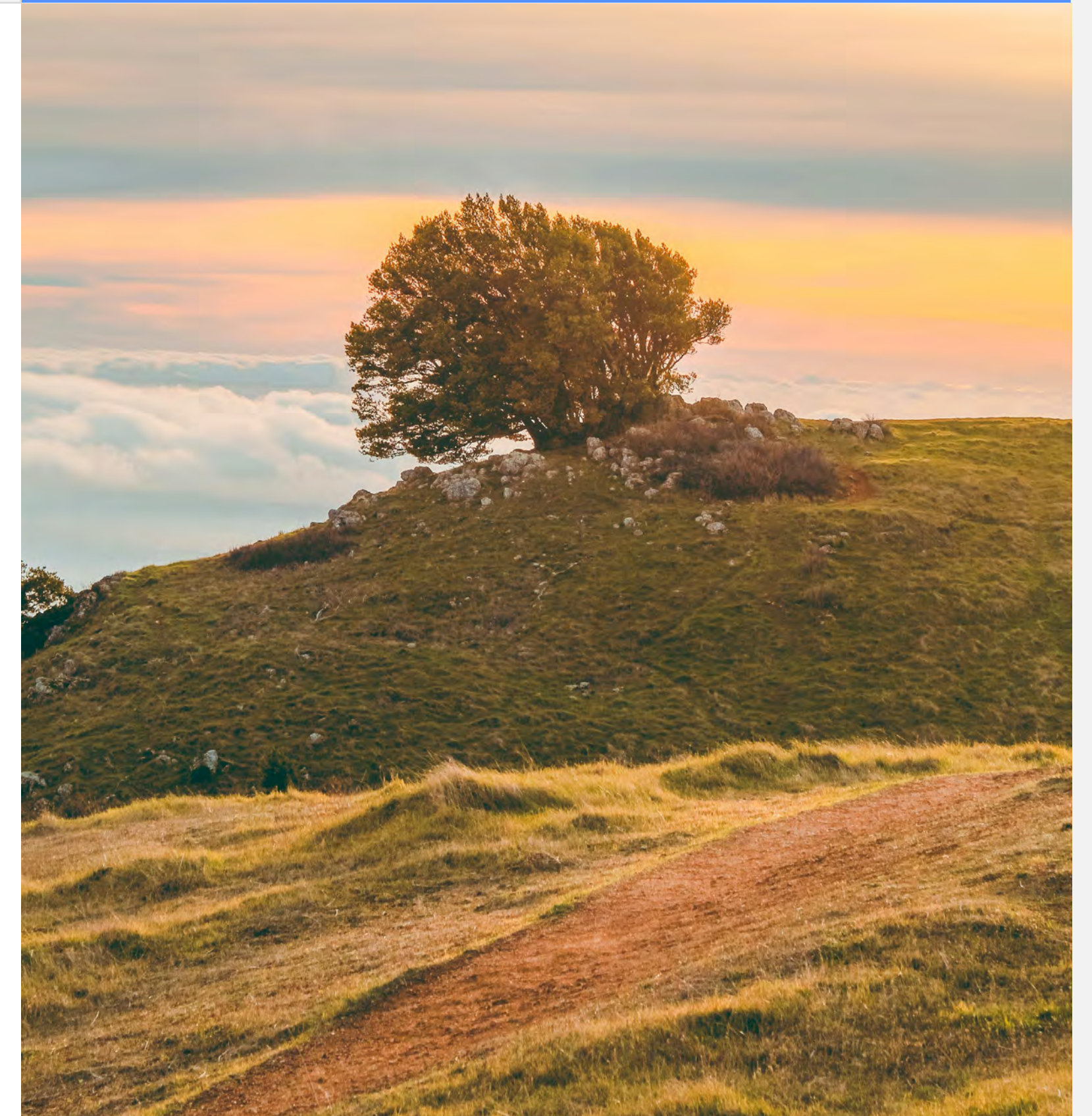
Over

30,000

locally native plants planted in parks from 2021-2025

City-level strategies to address climate change and protect and restore nature:

- **Climate Action Plan:** The Healthy Ecosystems Chapter promotes adaptation strategies and the implementation of nature-based solutions. The plan presents seven strategies ranging in complexity, such as increasing community participation and Indigenous science, restoring parks and natural areas, and maximizing biodiverse green spaces.
- **Biodiversity Program:** Established in 2013 and strengthened in 2017 and 2018 through city resolutions, the programme’s main purpose is to support conservation and management of natural resources. It has identified five goals for the city to strive towards to address diminishing urban biodiversity.
- **Natural Resource Management Plan:** First established in 1995, the Recreation and Park Department’s *Natural Resource Management Plan* guides the restoration and management of the city’s natural areas.





2

Assessment of enabling environment

Governance improvements prioritize cross-agency solutions and coordination to align with county and state nature objectives.

2.1 System enablers

An assessment of the system-enabling environment has highlighted six enablers that have the most impact in shifting the dial on nature-positive solutions in cities. These enablers are critical in mitigating risk, maximizing the potential of private investment and cultivating private-sector participation in nature-related initiatives at the city level. Further detail on each enabler is provided in the World Economic Forum's 2024 [Nature Positive: Guidelines for the Transition in Cities](#) report.



Select the segments to discover more



○ DEFINITION

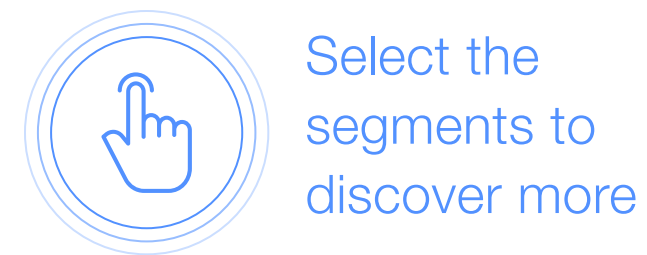
Structures, units and official roles and processes in place to oversee nature-positive efforts

◇ SUB-COMPONENTS

- Governance operations

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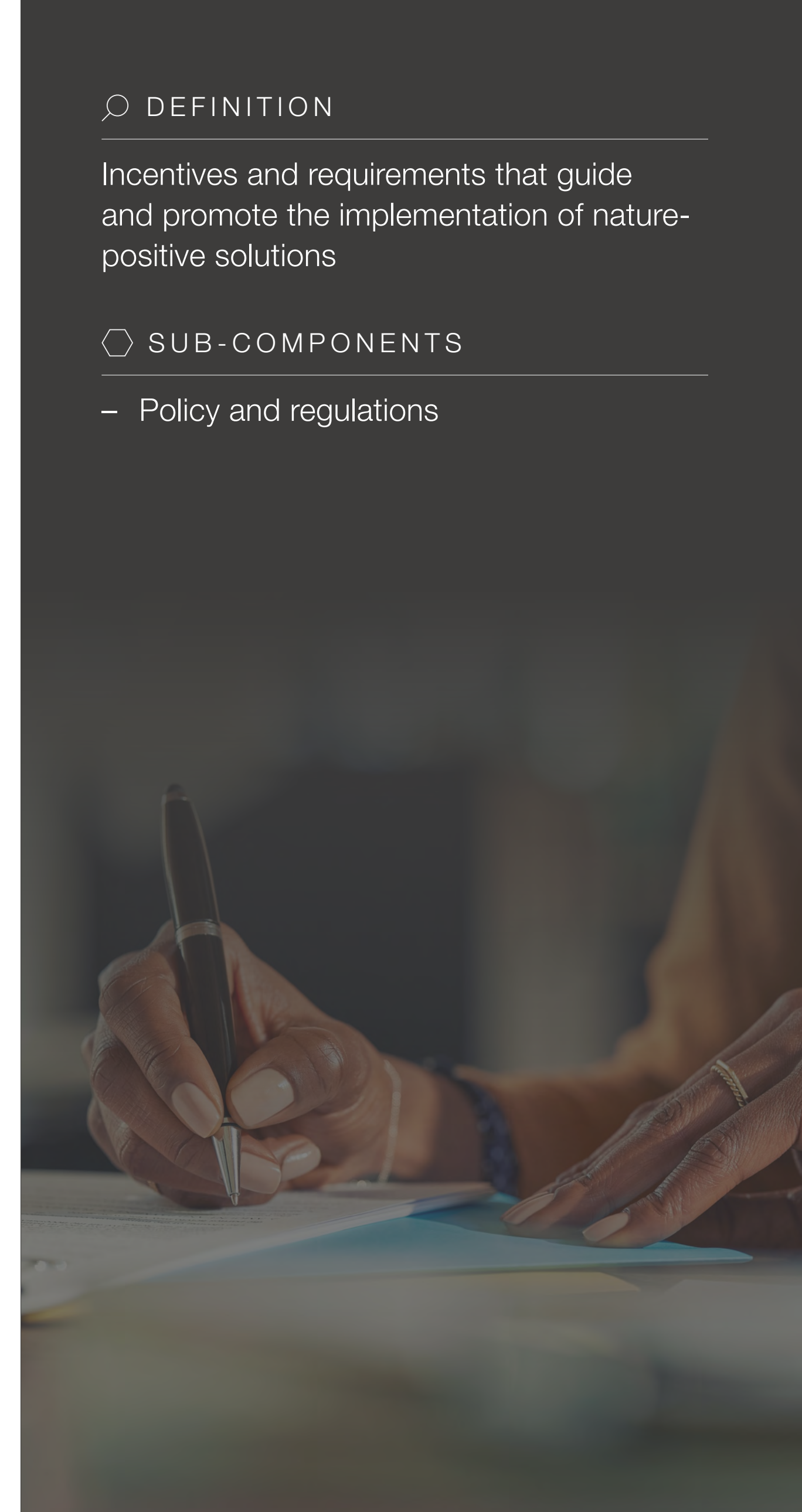


○ DEFINITION

Incentives and requirements that guide and promote the implementation of nature-positive solutions

◇ SUB-COMPONENTS

- Policy and regulations

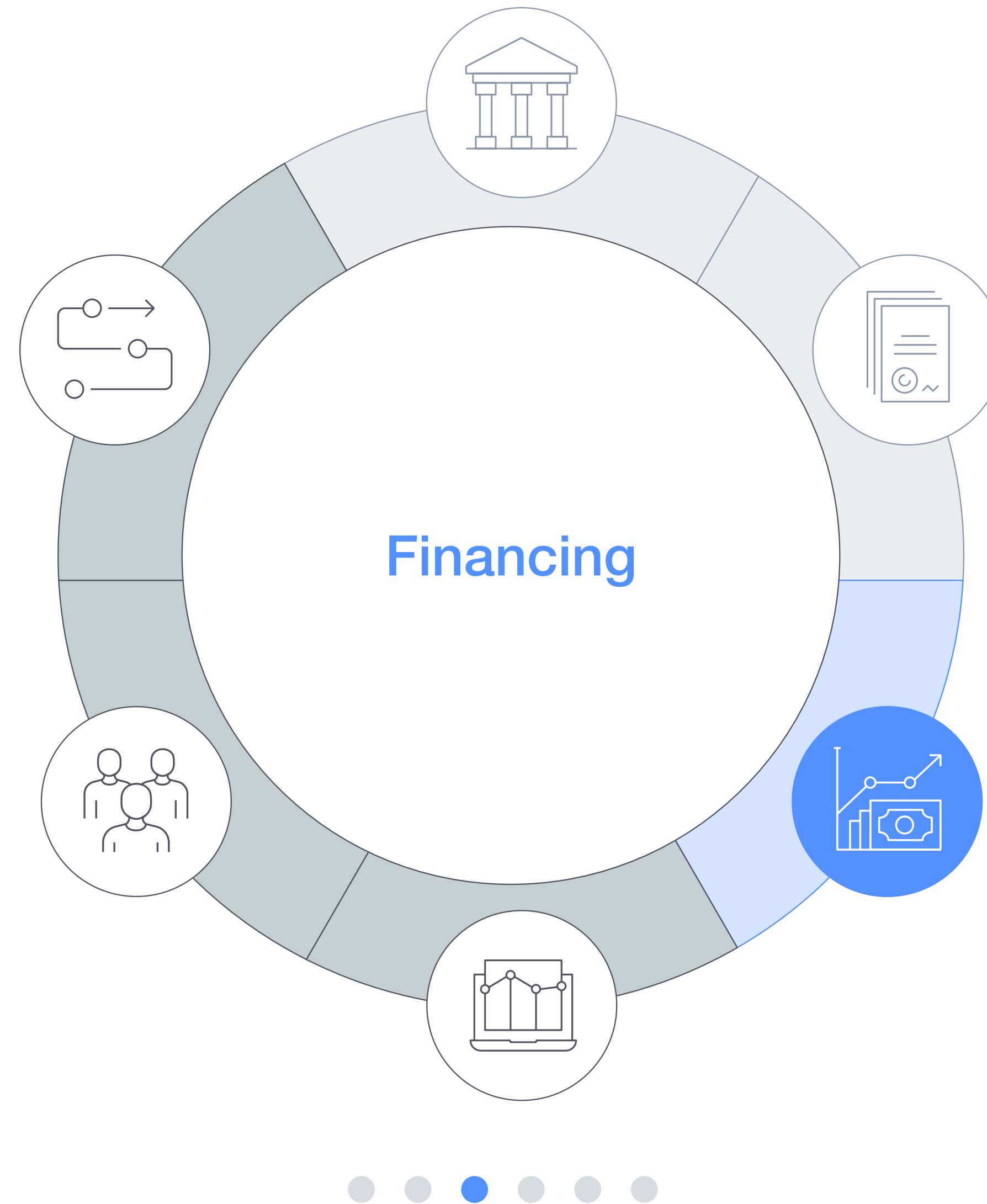


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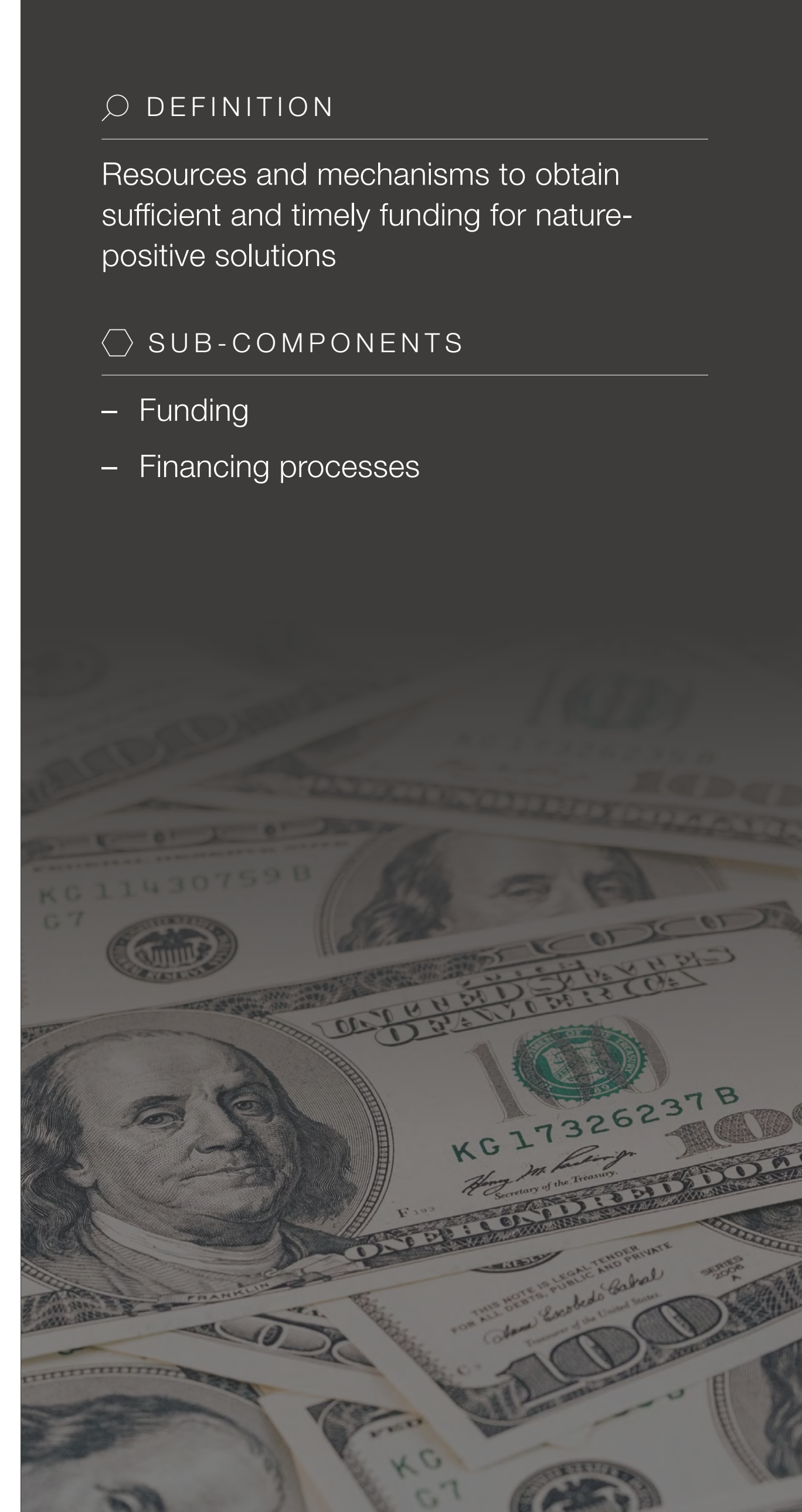


○ DEFINITION

Resources and mechanisms to obtain sufficient and timely funding for nature-positive solutions

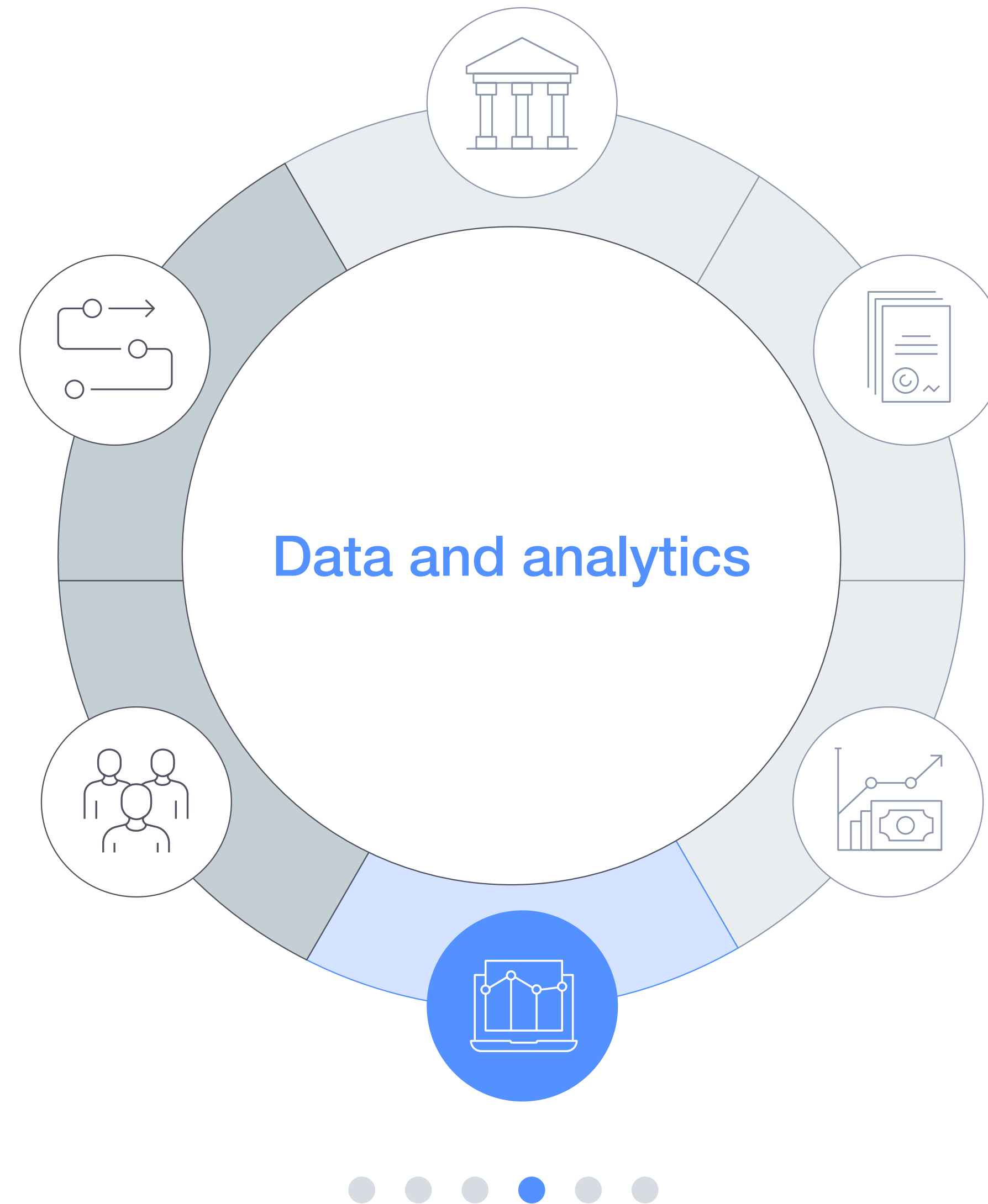
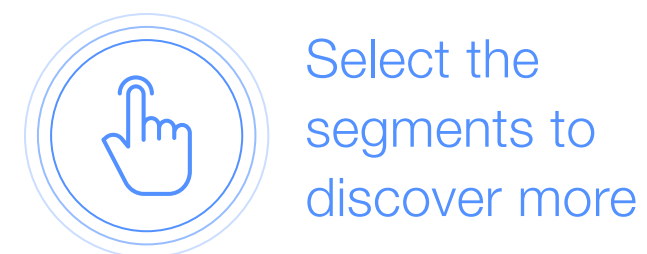
◇ SUB-COMPONENTS

- Funding
- Financing processes



2.1 System enablers

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○ DEFINITION

Processes and systems to gather and manage data on nature risks and impacts, and to harness analyses to inform decision-making

◇ SUB-COMPONENTS

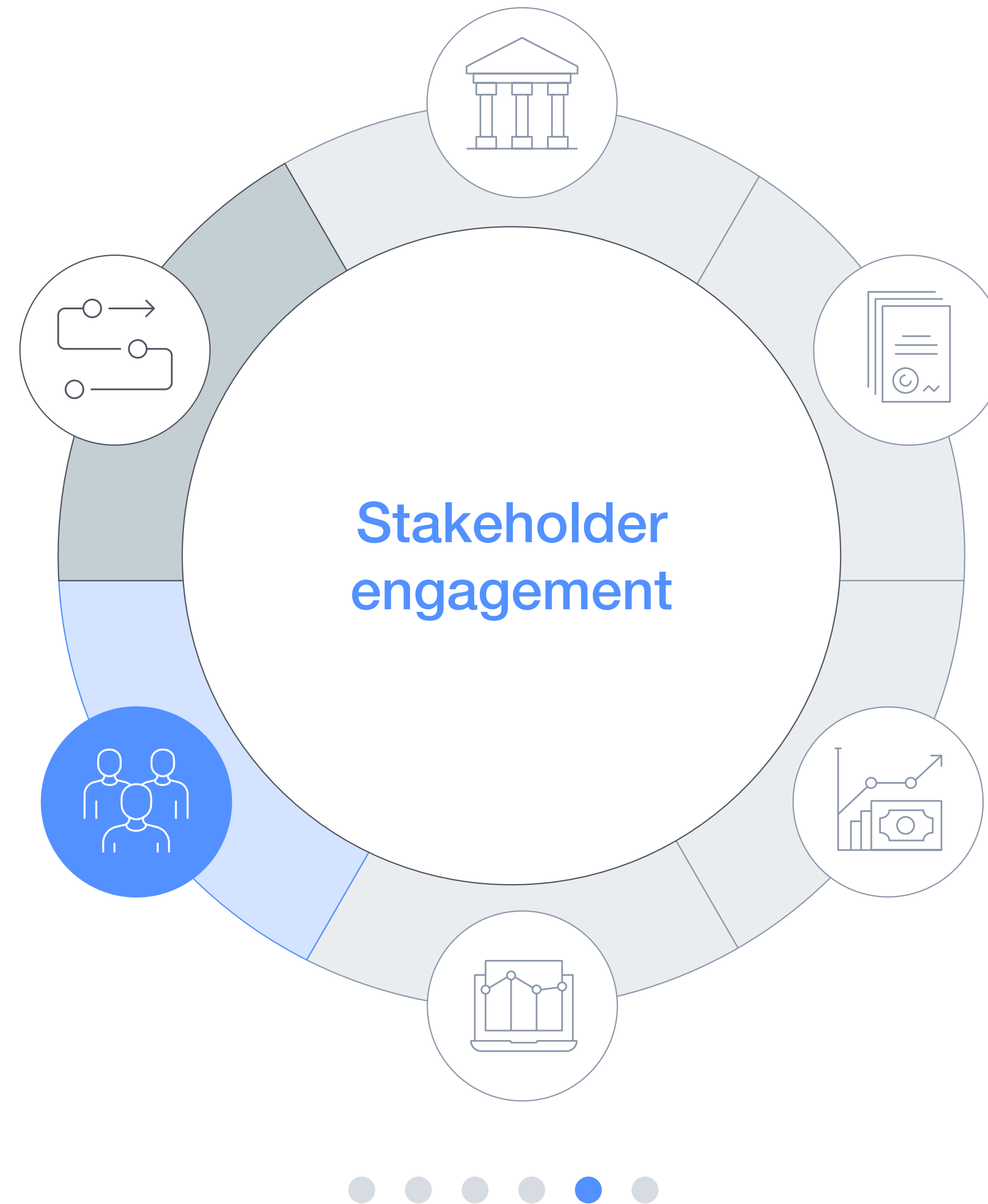
- Data management
- Risk and impact analytics

2.1 System enablers

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Select the segments to discover more



○ DEFINITION

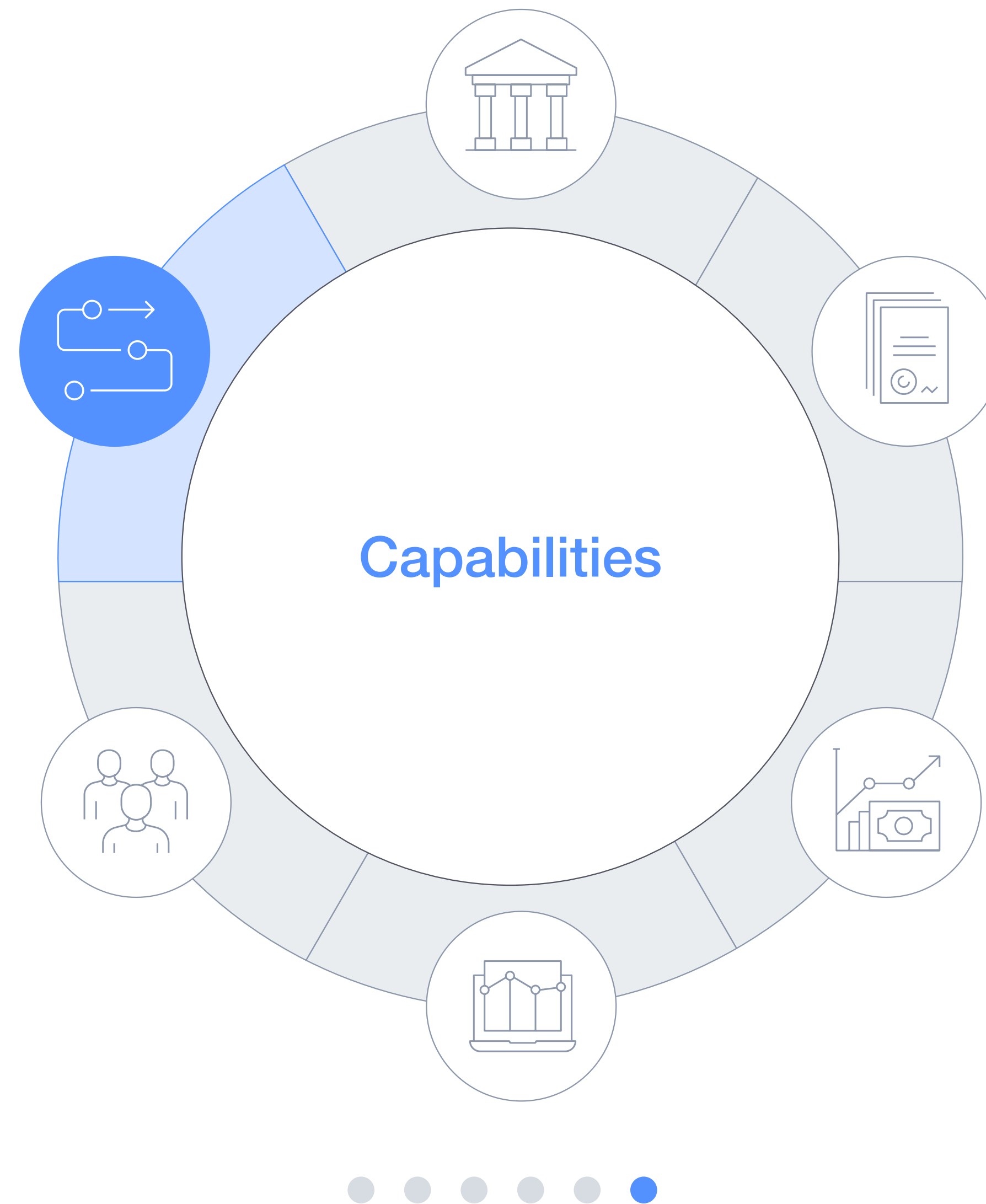
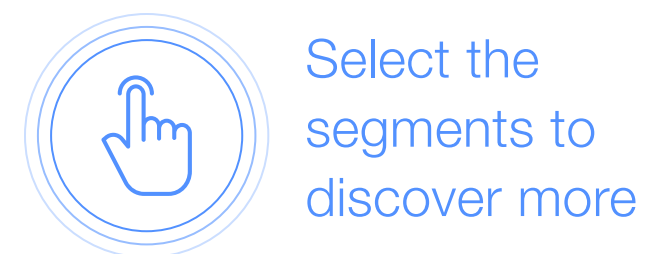
Strategies and channels used to engage relevant stakeholders and communicate the benefits of nature-positive solutions

◇ SUB-COMPONENTS

- Communication
- Community engagement

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○ DEFINITION

Availability and talent of human resources, and adoption of a culture of innovation

◇ SUB-COMPONENTS

- Human capital
- Research and innovation

2.2 Governance

Overview

Land and water management in San Francisco sits under the jurisdiction of multiple city, state and federal agencies such as San Francisco Recreation and Parks, California State Parks and the Presidio Trust.

Agencies coordinate with one another through various committees and advisory bodies, including Reimagining San Francisco, the Biodiversity Interagency Working Group and the Urban Forestry Council (see Figure 2).

Reimagining San Francisco is a city-wide alliance of organizations and individuals pursuing a variety of sustainability objectives. These goals include making 30% of San Francisco biodiverse green space by 2030 (also called 30 by 30), creating a comprehensive network of biodiverse corridors for local wildlife and people, and ensuring everyone in the city has access to nature.

The Biodiversity Interagency Working Group is the key committee managing the Biodiversity Program. It supports collaborative conservation planning and management, ecological restoration and public education.

The Urban Forestry Council advises city departments on urban forestry issues, including developing the urban forest plan, conducting public education, securing resources and developing standards of tree care.

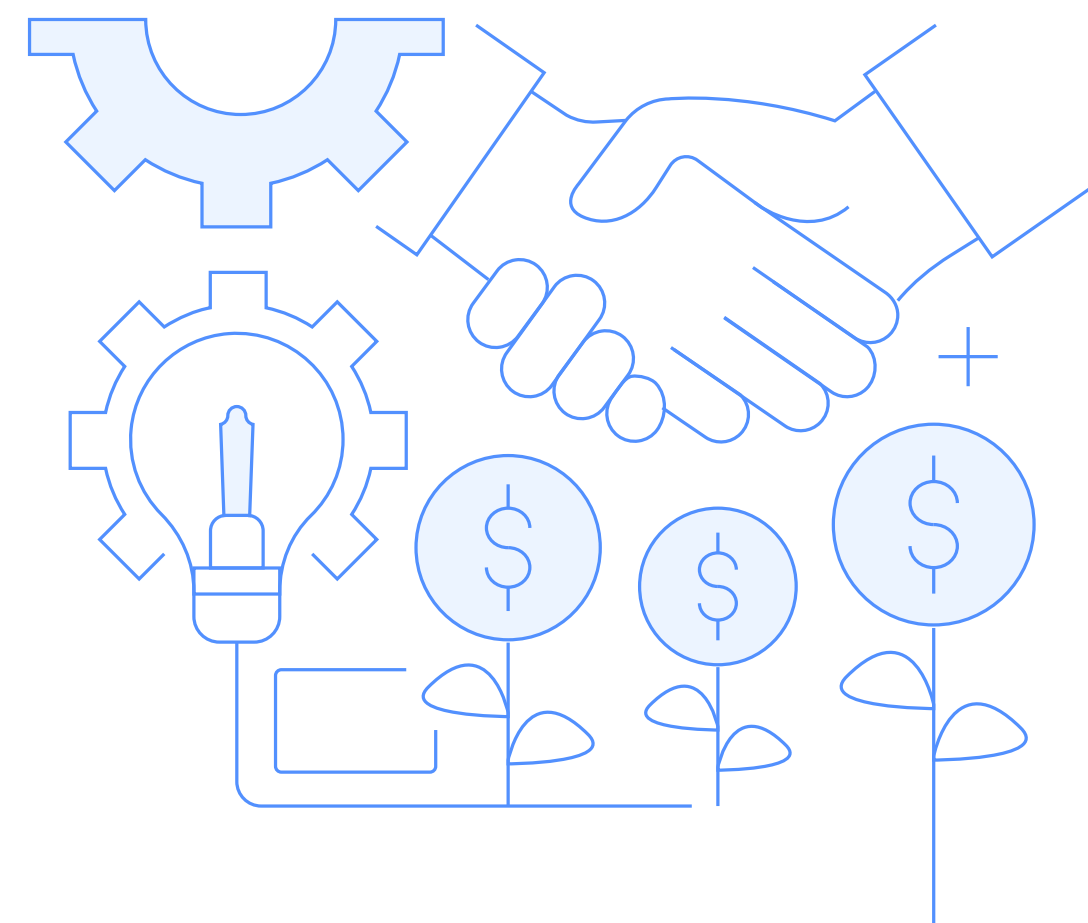
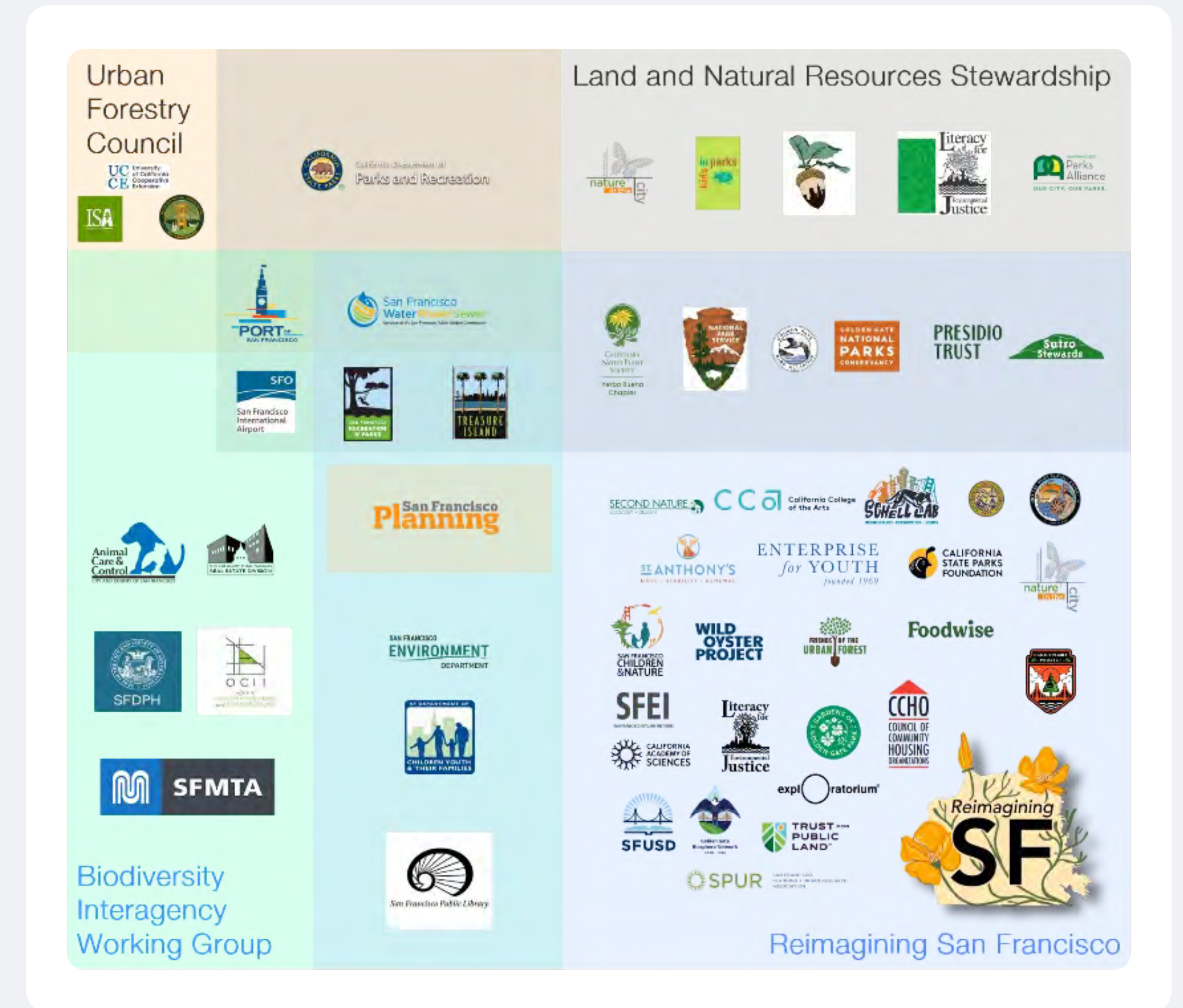


FIGURE 2

Interagency groups and associated members



Source: World Economic Forum.

Governance arrangements


At present, the city has begun to work towards greater interagency collaboration and coordination with the goal of becoming more nature-positive. These steps include:

- 1 Monthly interagency coordination meetings among land management agencies and not-for-profits to manage and monitor parks and natural lands
- 2 Establishing a methodology and baseline measurement of biodiverse green space to measure 30-by-30 progress in alignment with the [C40 Urban Nature Accelerator](#) commitment
- 3 Launching Reimagining San Francisco, a citywide alliance focused on increasing accessible biodiverse greenspace
- 4 Collaboration among city agencies Recreation and Parks, the Public Utilities Commission, Animal Care and Control, as well as the Presidio Trust and the National Park Service to implement a coexistence programme between people and coyotes (and other wildlife) in San Francisco¹⁸




Challenges identified

- Decentralized management of nature across the city governance levels means many biodiverse areas are neglected and community engagement is lacking.



Improvement areas

- Prioritize and coordinate delivery of cross-agency solutions and ensure all initiatives are accessible to all stakeholder groups.
- Track community-based organization (CBO) projects and integrate them into nature management processes.



2.3 Policy and regulations

Overview

Responsibility for climate and nature management in the US is dispersed across agencies from the state level through to the federal level.

At the federal level, four government offices are responsible for ensuring economic growth, energy security and a healthy planet through environmental means.¹⁹ At the state level, California has associated climate regulators, policies and initiatives that ultimately support San Francisco's climate management strategy.²⁰

San Francisco's climate and nature strategy is defined through the *Climate Action Plan*, which has a Healthy Ecosystems chapter focused on urban forestry and biodiversity. Goals outlined in this chapter are some of the more affordable objectives to implement. Initial assessments conducted through organization partnerships have estimated that approximately between \$2-22 billion will be needed for the city to implement and achieve the objectives outlined in the *Climate Action Plan*.

Policies such as the San Francisco Biodiversity Program, which was introduced by the city and aims to support collaboration and interagency cooperation for conservation planning and management, are difficult to enforce.



Challenges identified

- Social and economic crises (e.g. affordable housing) may be prioritized over delivery of the nature agenda.
- The lack of a formal, standalone biodiversity strategy or nature action plan detailing targets, specific initiatives and nature investment/management priorities impedes the city's ability to deliver initiatives with tangible nature outcomes.
- Difficult-to-enforce policies (such as the [Biodiversity Program](#)) and limited incentives for the private sector to invest in nature mitigate the impact of finance.



Improvement areas

- Formalize a dedicated nature action plan to identify and implement nature-specific solutions for the city.
- Reassess city codes through a nature lens and redesign policies to facilitate and encourage greater private-sector nature-positive action.



2.4 Financing

Overview

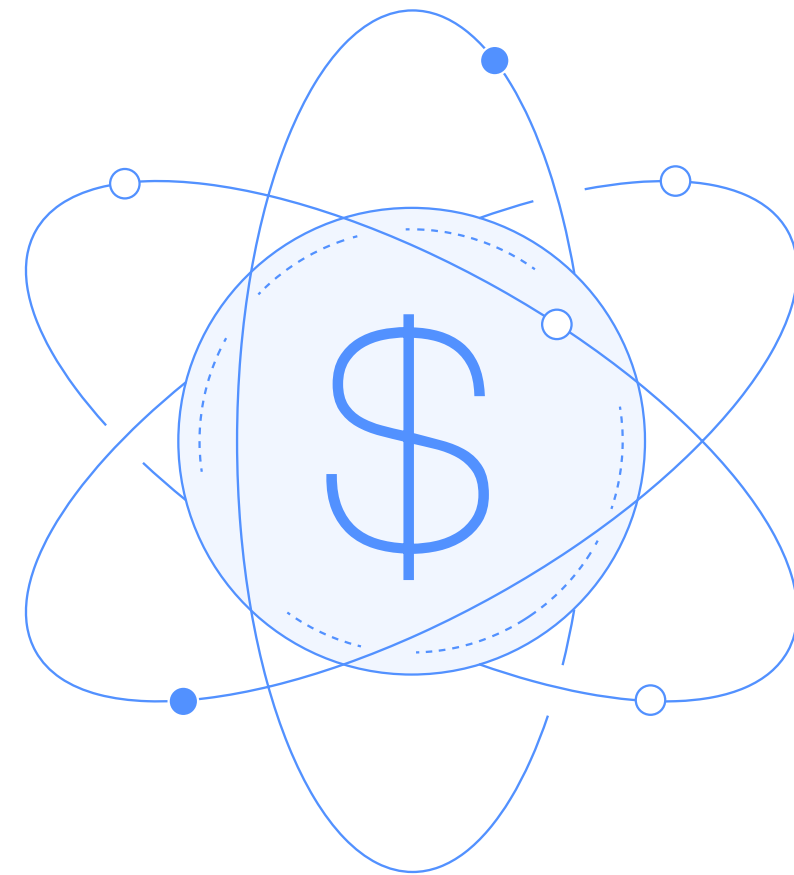
Financing has been identified as one of the most urgent barriers to the nature-positive transition that the city faces. At present, the city relies on a few different revenue sources to sustain its activities:

- 1 Tax revenue
- 2 Utility service fees
- 3 Lease revenue and commercial fees
- 4 Developer obligations
- 5 Grant funding

A long-standing bond programme used heavily by the Recreation and Parks and Port Departments is a major funding scheme in the city. As part of this scheme, the city issues public debt and then repays investors with property tax income. At present, the solution to sourcing funding is largely ad-hoc and opportunistic.

Short-term measures to raise funds include the adaptation of general obligation (GO) bonds (making them applicable for climate offsetting through green decarbonization and for retrofitting houses to be zero-emissions). A parcel tax or a gross-receipts tax could also be used to raise funds.²¹ Parcel taxes defined by square footage rather than income, however, have been shown to have an unequal impact on underserved communities.

City agencies and not-for-profits apply for and routinely receive grant funding from state and federal sources for on-the-ground ecological restoration, trail construction and urban forestry projects.



Budget allocation

City agencies work with a range of contractors and grantees to help achieve nature goals, providing grant funding to local non-profits and community organizations, and supplying contracts to local businesses. This is done using a competitive bidding process that includes issuing requests for proposals (RFPs) to award grants and contracts to businesses and organizations for a wide array of programmes, projects and services.

San Francisco Environment Department (SFE) submitted a \$1.4 million proposal to the State of California Natural Resources Department's [Urban Greening Program](#) to install a wild native plant landscape at a several-acre public housing site in Bayview Hunters Point. However, the programme's funding for 2024 was cancelled due to state budget shortfalls.

The San Francisco Public Utilities Commission (SFPUC) will unveil a reach of Yosemite Creek in southeast San Francisco. This will be used to divert stormwater from the combined system and provide access to wildlife habitats and nature for residents.²²

San Francisco Public Works was recently awarded \$12 million from the Inflation Reduction Act (IRA) Grant.²³ This funding supports Street Tree Nursery's goal to grow and plant thousands of street trees.





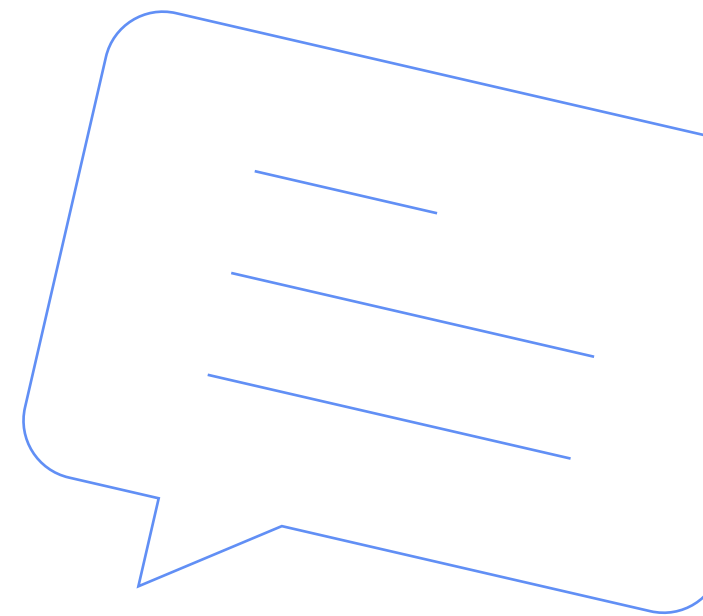
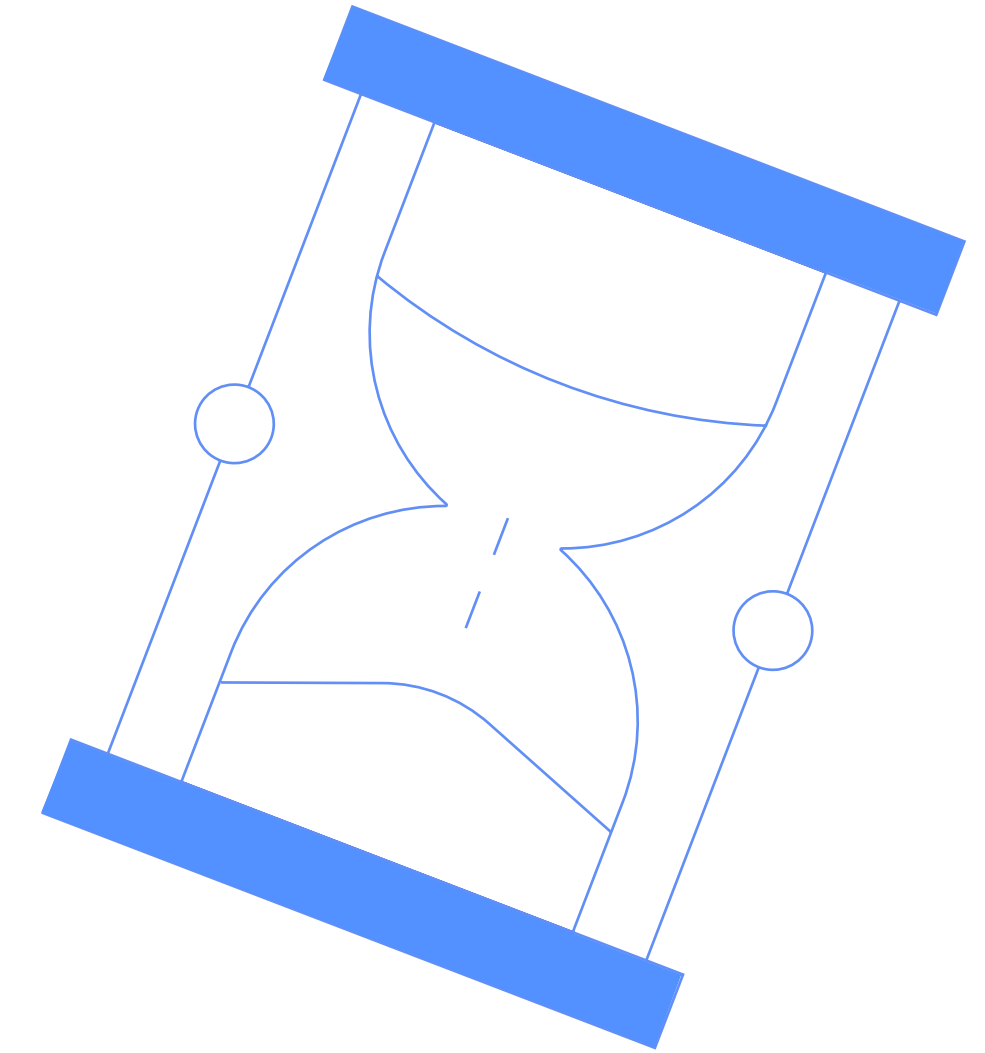
Challenges identified

- Reliance on limited government finance and restrictions on public funding allocations prevent investment in nature-positive initiatives.
- Transaction costs are high due to burdensome application requirements and reporting.
- Financing comes on a project-by-project basis, limiting the scale and impact of the nature-related initiatives.



Improvement areas

- Strengthen relationships and collaboration with the private sector to unlock catalytic finance for nature and facilitate partnership on nature initiatives.
- Explore external financial mechanisms such as green and multilateral development banks to provide loans and guarantees for project preparation and environmental projects.
- Invest in community stewardship initiatives that can maintain green spaces, while collaborating with government departments.



2.5 Data and analytics

Overview

Nature data within San Francisco is managed at city, state and federal levels by individual organizations, as needed for internal purposes. Some groups maintain data for external use. For example, the Yerba Buena Chapter of the California Native Plant Society (CNPS) maintains lists of all locally native plant species and locally significant native plants. Some city data is published publicly – for example, geographical information on street trees is published by Public Works on San Francisco’s Open Data Portal. Other urban forestry data is only found in the *Annual Urban Forest Report*, which is published by the Urban Forestry Council and posted on the San Francisco Environment Department’s website.

Collection, tracking and management of nature data is a challenge for most organizations. Within the city, environmental data systems and processes are not standardized across agencies, and currently are not managed in a single repository. The city is in the process of creating a database of all municipal biodiversity laws.

The city is also aiming to establish a methodology to standardize measurements of biodiverse greenspace, which will enable the tracking of biodiversity metrics.

Reporting on human health and well-being indicators is underway, and is currently being used to identify communities in the city most affected by pollution and other health risks. Insights from the analysis are starting to inform cross-department maps as well as policies and resources to promote community health. This work has emerged following the adoption of the [Environment Justice Framework](#), which ensures all residents live in and enjoy equitable environments, a key focus San Francisco’s nature agenda.



Challenges identified

- Several non-standardized data sets limit collaboration, transparency and data sharing among all relevant stakeholders.
- A lack of coordinated data management programmes, methods and tools means biodiversity goals and targets are not measured against.



Improvement areas

- Develop a standard data-collection-and-visualization tool to facilitate collaborative management, share insights, enable nature-informed decision-making and engage the community.
- Convene a data working group as part of Reimagining San Francisco to tackle the citywide problem of data standardization and collection.

2.6 Stakeholder engagement

Overview of communications

Citizen communication on nature-conservation and climate change sits under the remit of not-for-profits and government agencies alike, with public education efforts dating back decades.

Engaging the public in nature awareness and stewardship is a major focus of the San Francisco Biodiversity Program and the Reimagining San Francisco initiative. Among the multitude of organizations and departments managing parks, open spaces and the built environment, each has their own community engagement programme.

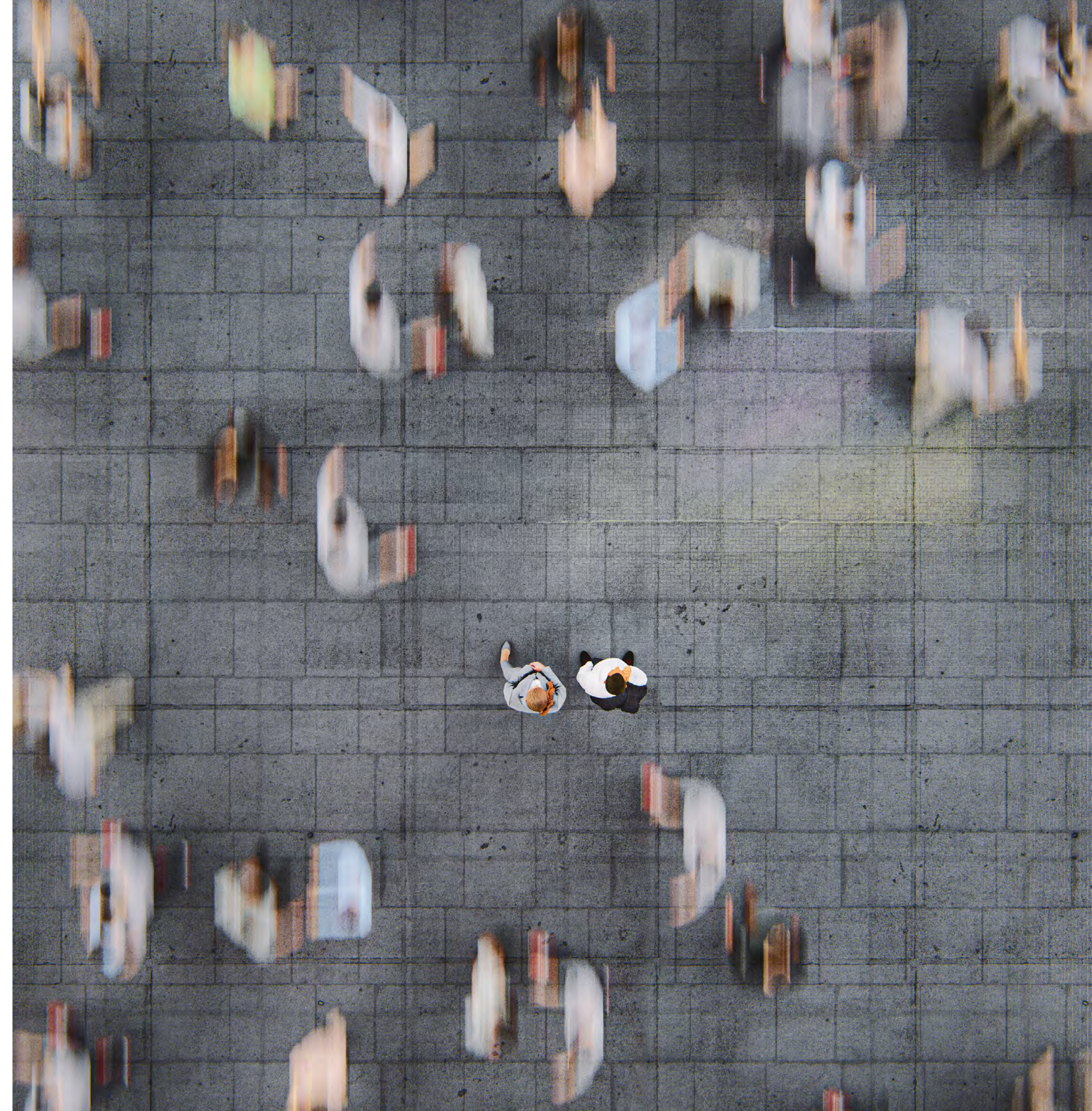
San Francisco takes pride in its efforts to engage traditionally underserved communities and implement climate action equitably across the city in alignment with the four social and economic lenses of the *Climate Action Plan*. Specifically, the plan outlined in the Healthy Ecosystems chapter aims to increase equitable community participation and the inclusion of diverse perspectives in nature-based climate solutions. This can be accomplished through meaningful efforts to prioritize Indigenous science and traditional ecological knowledge.

Overview of collaborations

San Francisco's partnerships with local organizations represent an important avenue to accomplishing the city's nature-positive changes. City agencies and non-profit organizations form partnerships to achieve greater urban reforestation.

Many small, grassroots non-profits support the city by raising funds via private philanthropy. They also receive city or state grants facilitating on-the-ground work in cooperation with local land management agencies. These agencies include the San Francisco Recreation and Parks Department, the San Francisco Water Department and the University of California at San Francisco Mount Sutro Open Space Preserve.

Some city agencies have long-standing partnerships with community organizations. For example, San Francisco Public Works and the Friends of the Urban Forest work together on a shared goal of planting 30,000 new sidewalk trees.



International collaboration

Since 2005, the city has been a part of the C40 network, a global community of mayors leading united action on climate challenges in cities. Since joining the network, San Francisco has developed a range of accelerators including:

- **Towards Zero Waste Accelerator:**
To embrace the circular economy in cities and limit the amount of waste heading to landfills and incinerators
- **Urban Nature Accelerator:** Cultivating urban nature landscapes in cities to improve physical and mental health of citizens, and provide a natural buffer against environmental catastrophe
- **Clean Construction Accelerator:** Limiting the carbon footprint of the construction sector and encouraging the adoption of sustainable practices and material use

The city is also part of a range of networks that aim to promote certain agendas among cities (including biodiversity, active transport, clean energy use and waste minimization).



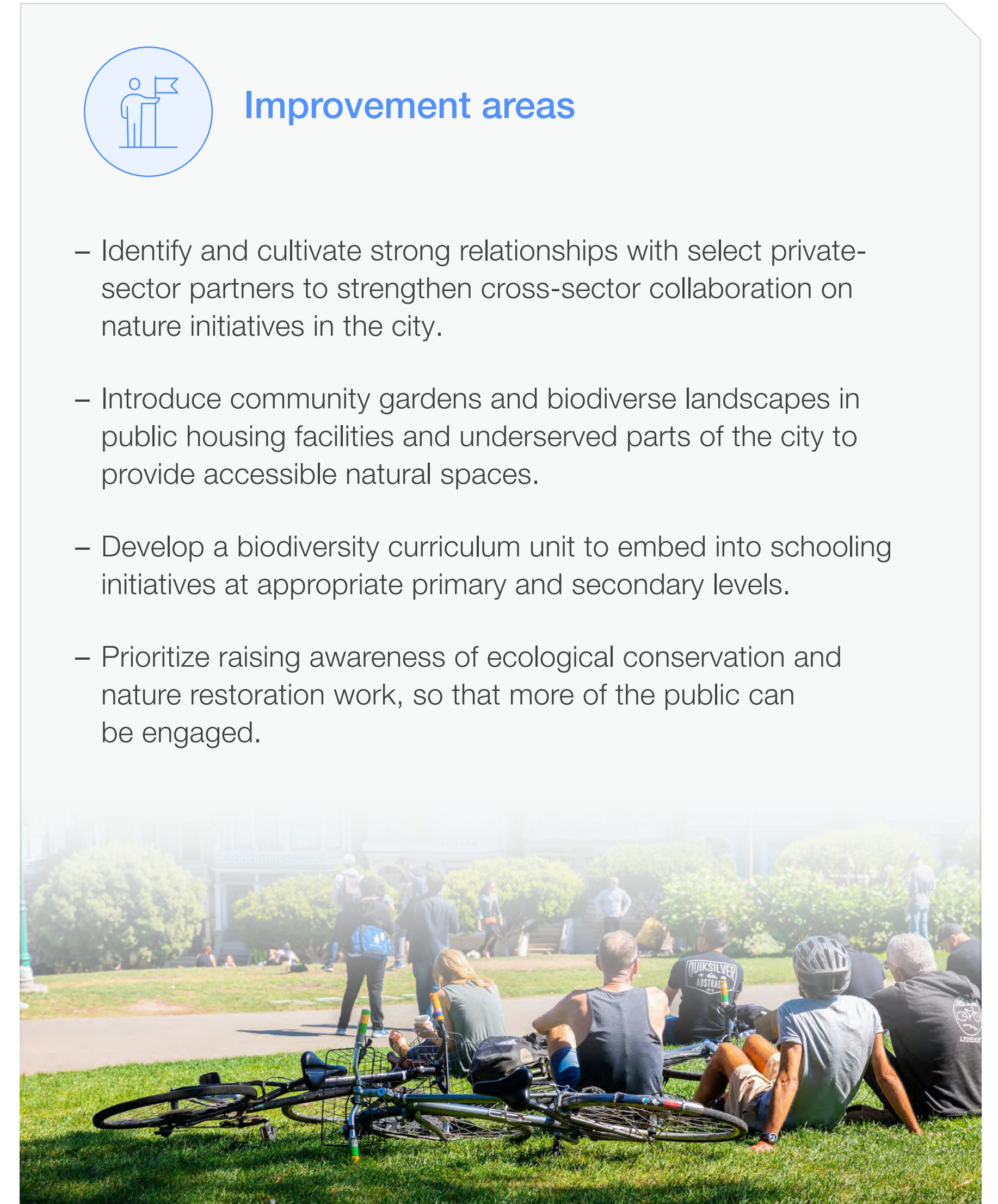
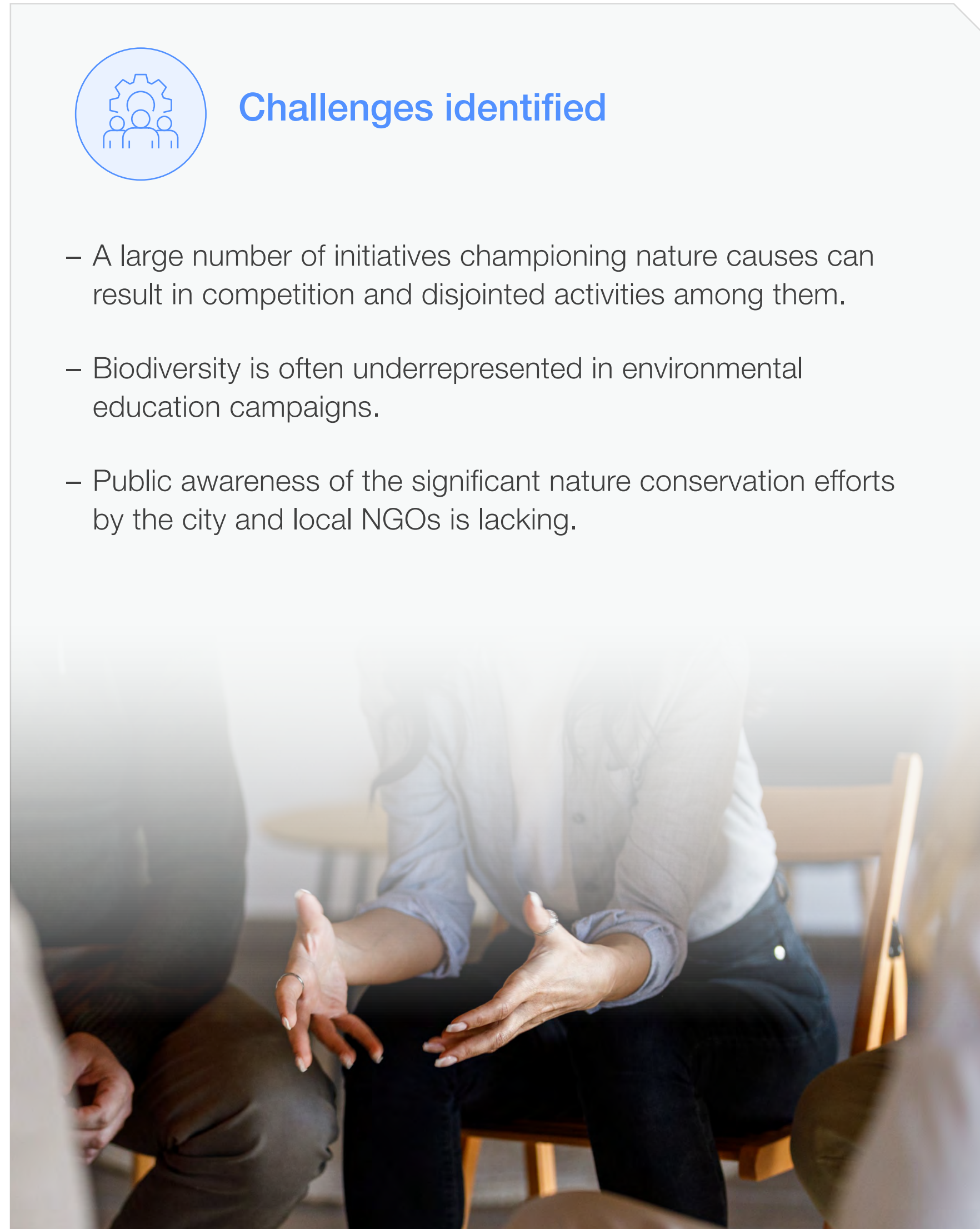
Challenges identified

- A large number of initiatives championing nature causes can result in competition and disjointed activities among them.
- Biodiversity is often underrepresented in environmental education campaigns.
- Public awareness of the significant nature conservation efforts by the city and local NGOs is lacking.



Improvement areas

- Identify and cultivate strong relationships with select private-sector partners to strengthen cross-sector collaboration on nature initiatives in the city.
- Introduce community gardens and biodiverse landscapes in public housing facilities and underserved parts of the city to provide accessible natural spaces.
- Develop a biodiversity curriculum unit to embed into schooling initiatives at appropriate primary and secondary levels.
- Prioritize raising awareness of ecological conservation and nature restoration work, so that more of the public can be engaged.



2.7 Capabilities

Overview

City programmes to enhance skills and capabilities for government staff are necessary to develop a strong foundation of knowledge on nature across municipal departments.

At present there is a high reliance on the prior knowledge of staff, with limited specialized nature-related upskilling and training programmes available.

Ensuring the availability of key resources is essential for embedding nature-positive action into government departments' operations. San Francisco aims to ensure that appropriate skills are available through initiatives with schools and universities, and through partnerships with the private sector.

Students

Students are an integral part of the volunteer and support workforce, which is an important supplement to the nature conservation efforts conducted across the city. School programmes promote environmental education and stewardship, complemented by field trips to national park sites in the school district, from a young age.

Private sector

Private-sector participation, while limited, presents a great opportunity for the city to enhance capabilities and resources. Various private-sector leases and events help to supply funding to major departments such as Recreation and Parks.

At present, there are limited coordinated methods for sourcing key nature restoration and conservation skills and capabilities, or conducting internal training. There's also incomplete understanding of which skills are available to make use of across departments.



Challenges identified

- Training materials required to upskill staff on nature and environmental topics are not always updated.
- There's insufficient focus on mainstreaming biodiversity into city planning processes.
- Potential leader reticence to champion nature-positive solutions in San Francisco limits progress.
- Ineffective use of volunteer pools limits the benefit of corporate volunteer initiatives for city nature objectives.



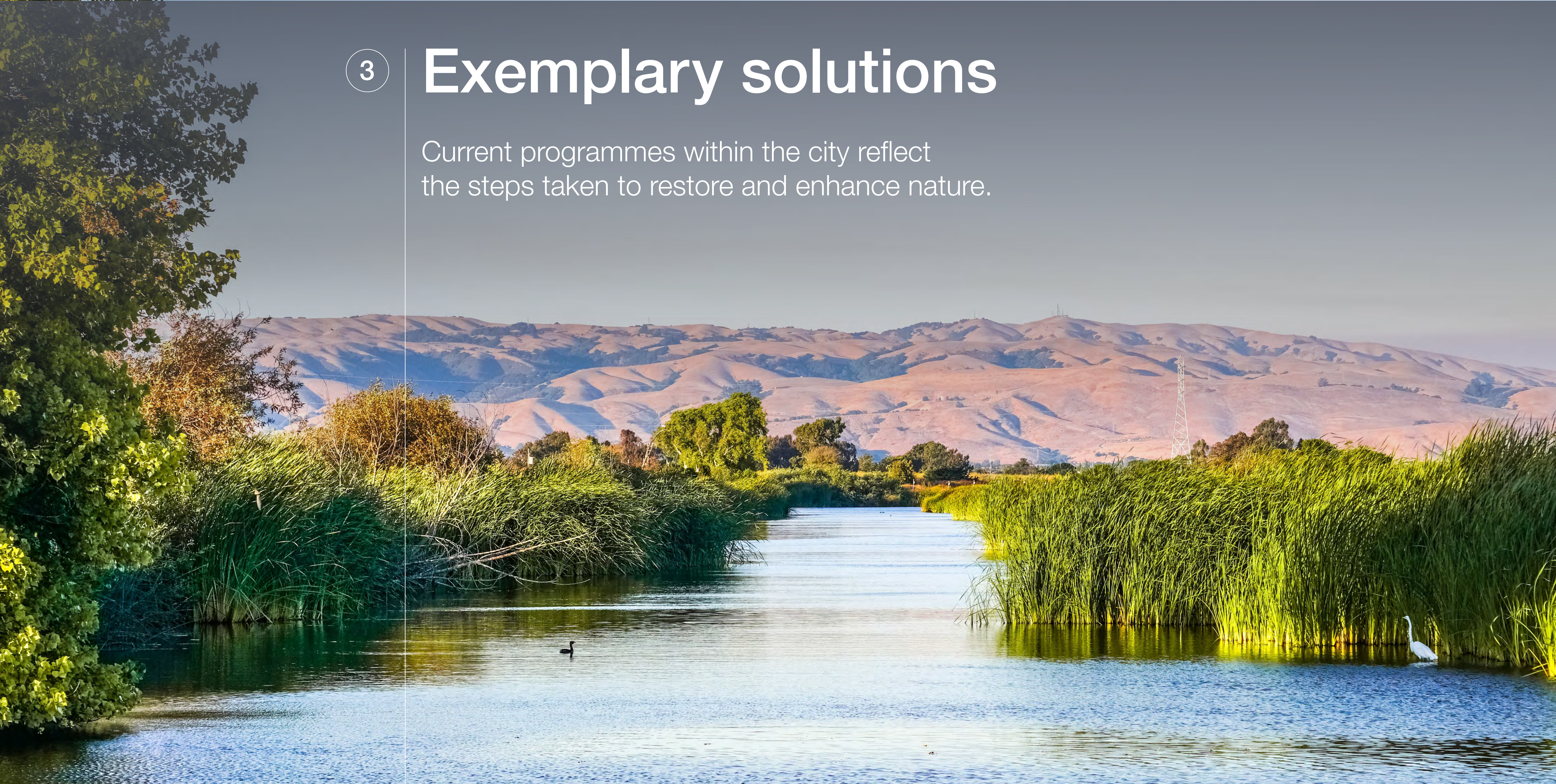
Improvement areas

- Update and tailor core nature-focused training curriculums for staff across departments.
- Mandate a “biodiversity champions” programme for all relevant departments, with special emphasis on the Planning Department.
- Develop a clear volunteer engagement initiative to address resource constraints and increase citizen nature awareness and advocacy.

3

Exemplary solutions

Current programmes within the city reflect the steps taken to restore and enhance nature.



CASE STUDY 1

Managing natural habitats and ecosystems in support of net-zero carbon sequestration opportunities and trade-offs in the Alameda Watershed



Challenge

Ambitious net-zero greenhouse gas (GHG) emissions targets set by the state and local action plans pose significant challenges for San Francisco. To meet net-zero GHG emissions targets, decision-makers and land managers are looking to California’s open space – its forests, grasslands, shrublands and wetlands – to help reduce GHG emissions and draw down atmospheric carbon dioxide (CO₂).

Protecting carbon stocks and increasing carbon sequestration can support climate change mitigation and maintain healthy, resilient ecosystems. To support city land managers in making informed carbon management decisions, the Alameda Watershed Carbon Assessment offers scientific guidance on the watershed’s current and potential performance as a natural climate solution.

Source: San Francisco Public Utilities Commission. (n.d.). *Regional Watersheds*. <https://www.sfpuc.gov/about-us/our-systems/regional-watersheds>.

CASE STUDY 2



Solution

The San Francisco Public Utilities Commission (SFPUC) and the San Francisco Estuary Institute conducted an analysis of the current and future carbon sequestration potential of the Alameda watershed lands (40,000 acres of land owned by the county).²⁴ This assessment was framed by two main objectives: to quantify current carbon stocks in the Alameda Watershed and to evaluate opportunities to enhance carbon sequestration in its vegetation and soils. The study provided insight into the relative carbon sequestration potential of different ecosystem types, and the extent to which the city can rely on carbon sequestration to achieve net zero by 2040.

Analysis of the current levels of carbon storage highlighted six potential carbon management strategies to be used across the watershed that may be applicable to other open spaces in the state.

CASE STUDY 3



Impact

The watershed stores 2.5 million tonnes of carbon within its ecosystems (as of 2022). The riparian forests and oak woodlands in the watershed store as much carbon per acre as the Amazon rainforest, with 80% of the carbon being stored in soil organic matter.²⁵

A central tenet of this analysis is that the value of any management action depends on the ecological context. While the analysis demonstrated that the six potential strategies can increase carbon sequestration and restore biodiversity, an important finding was that open space preservation, i.e. simply keeping wild open spaces whole and healthy, is the most effective strategy.

The study played a key role in San Francisco’s assessment of the potential for and limits of carbon sequestration in achieving the city’s GHG reduction goals. The most important conclusion from the analysis was that even with an “all-in” approach that implements all carbon farming strategies, regardless of co-liabilities and economics, the maximum annual carbon sequestration would equal 0.4% of San Francisco’s 1990 GHG emissions. While the city’s lands are critically important for local and regional biodiversity, they cannot be relied upon significantly for a carbon sequestration strategy relative to the city’s emissions reduction targets.

CASE STUDY 1

Public-private collaboration for nature restoration on Yerba Buena and Treasure Island



Challenge

Yerba Buena Island is a steep and rocky island, situated in the San Francisco Bay between San Francisco and Oakland. The island is densely vegetated, and non-native and invasive species pose a threat to the native habitat.

The purpose of the Yerba Buena and Treasure Island redevelopment project is to build a new neighbourhood for San Francisco while enhancing the natural environment, creating a regional destination, providing public access, preserving and restoring wildlife habitats, and protecting views.²⁶

The vision for the islands is to involve volunteer and non-profit support in community stewardship of the island's natural resources. The city has held various community volunteer events over the years including bioblitzes and habitat restoration, and community engagement work will accelerate as more people move into new housing on the two islands.

CASE STUDY 2



Solution

The developer conducting the redevelopment on Yerba Buena Island maintains an obligation to the city to fund the conservation and restoration of nature. This includes both the restoration of the natural environment of Yerba Buena Island and the creation of nature-rich open spaces on Treasure Island.

As a result, two large stormwater wetlands of native plants were created on Yerba Buena Island to capture stormwater runoff from the development.

Additionally, there are several other native revegetation projects in the works, such as demonstration gardens, and new parklands and open spaces, all planted with native flora.

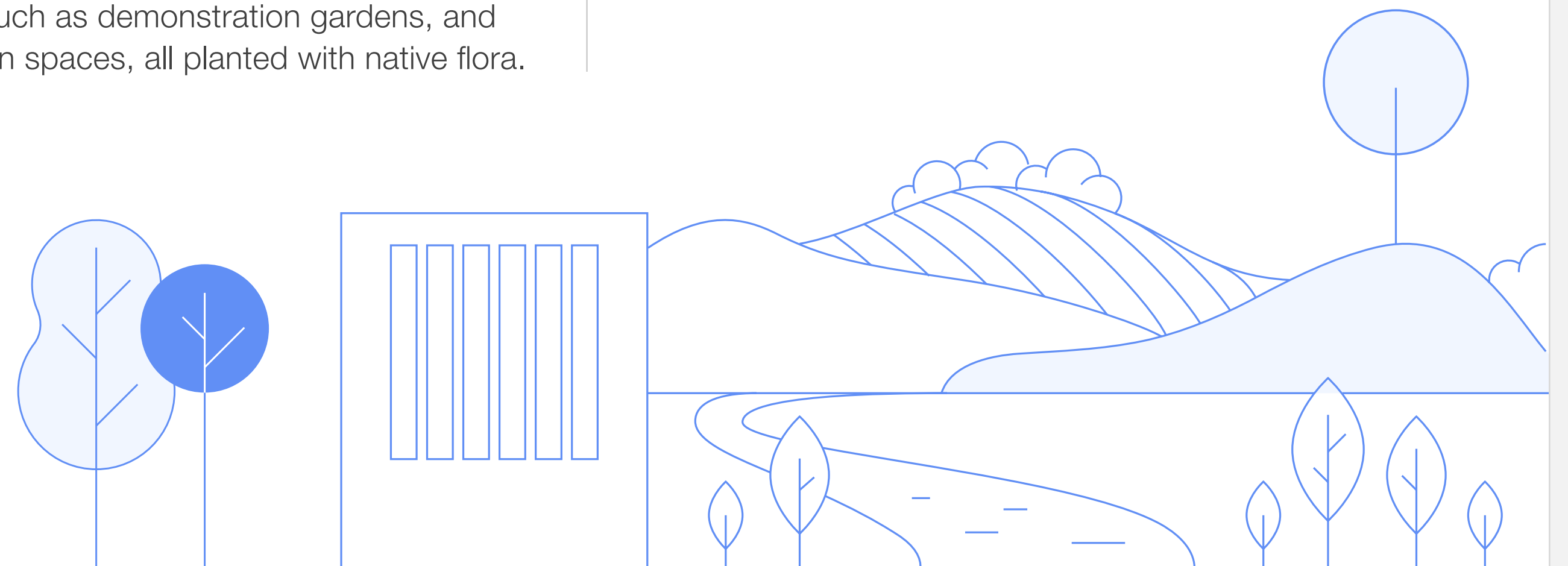
CASE STUDY 3



Impact

The project will create approximately 290 acres of new open space and parks, split across Yerba Buena and Treasure islands. This is in stark contrast to the previous condition of the island – a site of ageing infrastructure, former naval operations, vacant buildings and few public amenities.

After redevelopment, there will be ample space for pedestrians and cyclists, and a linked public transport ferry network.



CASE STUDY 1

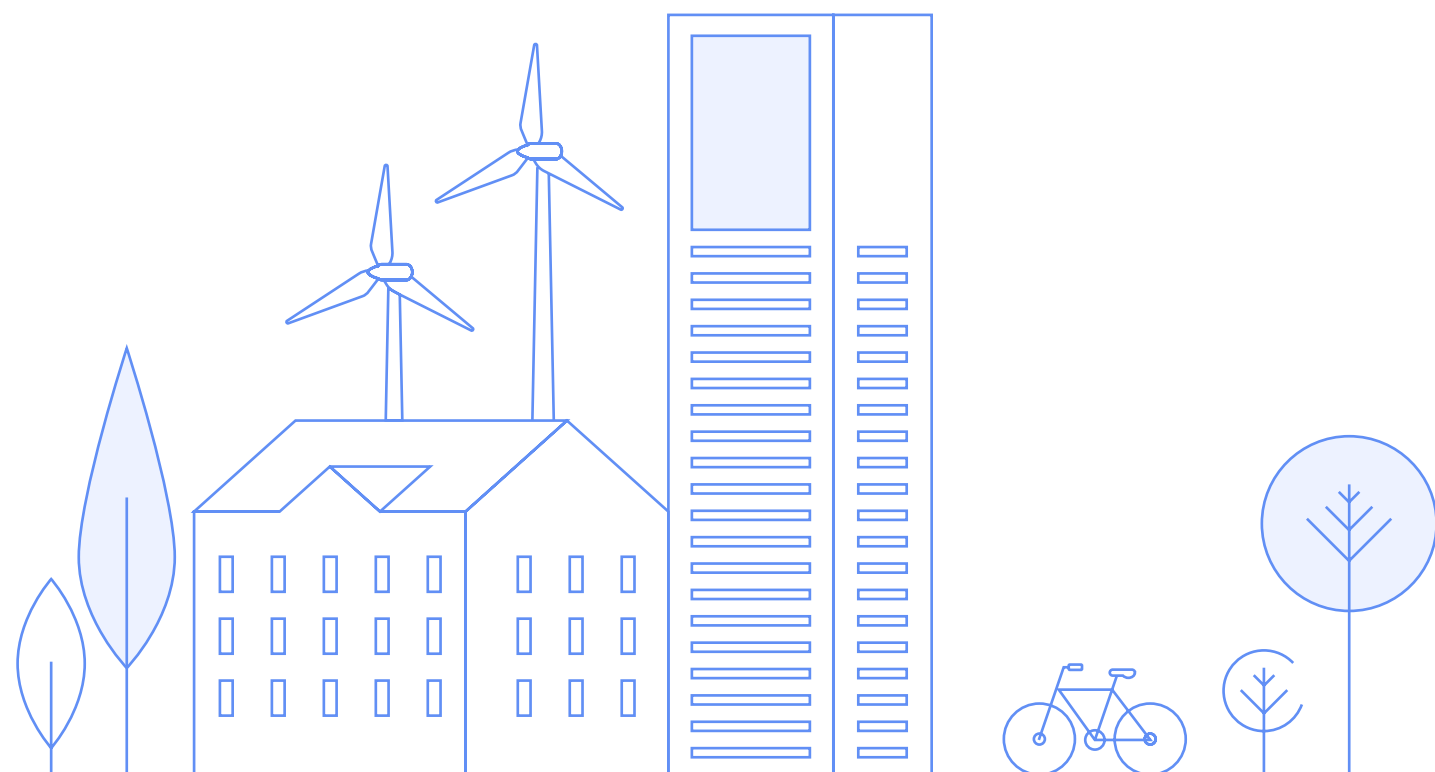
India Basin Park Restoration and Community Development



Challenge

The San Francisco Recreation and Park Department acquired a key property at India Basin, 900 Innes (a waterfront property in San Francisco’s Bayview Hunters Point neighbourhood) to turn a former industrial boatyard into a community site.

The region has remained a crucial site for the ecological and social health of the city’s historically underserved southeast communities.



CASE STUDY 2



Solution

To implement this project, the city, through the Recreation and Park Department, developed a partnership with Trust for Public Land, the San Francisco Parks Alliance and the A. Philip Randolph Institute.

Key activities that the city has implemented include:

- Conducting analysis to determine the vulnerability of the site and brownfield cleanup impacts, such as the effects of soil excavation in removing contaminated soil
- Accessing brownfield funds to finance cleanup activities and conduct community outreach
- Identifying the potential climate risks across the shoreline to determine the impact of sea-level rise
- Evaluating the impact of different solutions on specific coastal processes and their vulnerability to sea-level rise

CASE STUDY 3



Impact

The India Basin Waterfront Park Project will combine the existing India Basin Shoreline Park area and an adjacent property into a single waterfront that incorporates parks, trails and open space systems, and closes a gap in the San Francisco Bay Trail.

The project will also be part of an envisioned 64-acre corridor of green space and implement measures to increase resilience to sea-level rise, restore habitats, cultivate interconnectivity, conserve biodiversity and provide on-site stormwater treatment.

The landmark [Equitable Development Plan](#) (EDP), a first for San Francisco, ensures this waterfront park will benefit current Bayview Hunters Point residents and preserve the culture, identity and history of the neighbourhood. It provides a blueprint for delivering a park designed by – and for – the community while improving economic opportunity and environmental health for its residents.

Conclusion

Globally, cities are being asked to contend with their relationship to nature as expectations around nature stewardship evolve. Some cities have risen to this challenge, such as the City of San Francisco, which has developed numerous nature-positive initiatives and promoted nature in urban environments.

San Francisco has strengthened its connection with nature through:

- Its strong track record of environmental communication and stewardship, evident through communications campaigns and engagement programmes
- Making numerous government agencies and departments, from the city to the state level, responsible for managing elements of nature
 - (through the course of this initiative alone, the city has strengthened inter-departmental cooperation and alignment)
- Creating a task force with the capabilities necessary to develop and implement nature action plans

However, to further the transition, there is a clear opportunity for the city to:

- Capitalize on the precedent of successful public-private partnerships that have enabled the city to address climate challenges such as rising sea levels, and develop sustainable solutions to the challenges impeding nature finance
- Define a standardized method to collect, categorize and share data to facilitate more insightful decision-making, leading to greater outcomes for nature

This paper is part of a series of publications advocating for the regeneration of nature in – and by – urban areas. The series will help local leaders internalize nature’s values into macroeconomic and microeconomic decisions. It will also provide best practices and further guidance on governance arrangements, incentives, regulations, stakeholder engagement, capacity-building priorities, impactful solutions and funding opportunities for more resilient, prosperous and equitable cities.



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Endnotes

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