



NATURAL SOLUTIONS TOOLKIT

GEOSPATIAL DECISION SUPPORT TOOLS AND
WEB APPS TO CATALYZE CONSERVATION

Technology accelerates everything it is applied to. It holds the promise to propel conservation solutions so that they scale to global environmental challenges. The Nature Conservancy (TNC), along with global, regional and local partners, have developed the **Natural Solutions Toolkit**—a mapping tool platform and a suite of web apps across coastal, floodplain, freshwater, land and ocean environments. The first program to be established within the Toolkit was Coastal Resilience, which began in 2007; it now represents the largest geospatial decision support system for conservation and climate adaptation at TNC.

With a common goal of highlighting the value of nature in reducing risk and enhancing resilience locally and globally, the Toolkit provides powerful science and technology resources for planning.

A variety of programs and projects use the Toolkit:



A global **Coastal Resilience** program addresses coastal hazards, particularly sea level rise and storm surge, with nature-based adaptation and risk mitigation solutions



Natural Climate Solutions illustrates a country's potential to mitigate climate change with nature by reducing CO₂ levels relative to their commitment to the 2015 Paris Agreement



Mapping Ocean Wealth explores and maps ecosystem services such as fishery production, carbon sequestration, natural coastal protection, and recreation and tourism in determining global and regional ocean wealth



The **Protecting Water Atlas** provides information about the world's watersheds to advance solutions for securing water quality and quantity for people and nature



The **Floodplains by Design** program in the U.S. facilitates integrated, multi-benefit floodplain management and flood risk reduction decisions



A **Freshwater Network** supports U.S. statewide and regional decision-making regarding the status and trends of freshwater resources



A **Blueways Conservation** tool supports marine conservation and planning in the U.S. Gulf of Mexico for enhanced management of our oceans



The **Natural Resource Navigator** in New York allows planners and managers to make climate-smart decisions to sustain natural resources

SOLUTIONS & ACTIONS

There is an increasing need to inform decisions with sound science and the use nature-based solutions by:

- developing hybrid approaches that link natural and built defense structures to reduce the risks of sea level rise and storm surge
- managing freshwater resources in innovative ways to benefit nature, economy, and society
- connecting freshwater resources to coastal habitats and communities
- accounting for multiple ocean benefits provided by various ecosystems through comprehensive marine planning
- illustrating mitigation pathways that reduce CO₂ levels through improved management of forest, wetland, and grassland ecosystems
- reducing water treatment costs for downstream cities while improving biodiversity and human health in upstream watersheds
- using water markets to incentivize conservation and reallocate saved water back to freshwater and estuary ecosystems

MAPS & APPS

With this mapping platform users can:

- view potential impacts of sea level rise, surge from storms and hurricanes, and inland flooding
- optimize the design of new marine protected areas to deliver multiple benefits, from fish production to coastal protection to carbon storage and tourism value
- visualize a snapshot of a country's potential to mitigate climate change using nature
- identify watersheds where land-based conservation activities have the greatest potential to contribute to water security and other sustainability goals
- see how water management decisions made far upstream affect coastal resources downstream
- identify countries and river basins where water market strategies can be used to reduce human and ecological impacts from water shortages

The Toolkit enables smart, targeted investment in online mapping technology where web apps are customized to meet specific planning and decision-making needs.



NETWORK

A global network of practitioners utilize these tools for protecting and revitalizing natural and human communities, for instance:

- assessing social-ecological vulnerability and prioritizing mangrove and coral reef restoration in partnership with the Red Cross in Grenada

- guiding U.S. sea level rise policy and developing a cooperative agreement with the Navy to actively manage strategic retreat
- identifying open space preservation in the Southeast U.S. to reduce flood insurance premiums
- determining the costs and benefits of natural and built infrastructure with the hotel industry and Swiss Re in Mexico
- partnering with FEMSA Foundation and the Inter-American Development Bank on assessing the potential for water funds to deliver water security and other co-benefits
- computing water budgets to assist states in the Gulf of Mexico in crafting scientifically-sound water policy

By applying cutting-edge web mapping technology to the world's biggest threats, the Toolkit offers scientifically credible nature-based solutions that will enhance livelihoods and make communities more resilient.

NATURAL SOLUTIONS TOOLKIT

Operating around the world with over 100 customized web apps that meet specific planning needs, explore the full suite of Toolkit sites at:

- maps.coastalresilience.org
- maps.oceanwealth.org
- freshwaternetwork.org
- maps.protectingwater.org
- maps.bluewaysconservation.org
- maps.naturalresourcenavigator.org



TECHNOLOGY PARTNERS INCLUDE:

