

SUSTAINABLE PROSPERITY FOR ANDROS



A MASTER PLAN FOR PEOPLE & THE ENVIRONMENT

The Island of Andros lies 40 miles to the west of Nassau, the capital of The Bahamas. Encompassing a land area of 2,300 square miles, an area greater than all other 700 Bahamian islands combined, Andros remains largely undeveloped. Vast mangrove and coppice forests, the third largest coral reef in the world, seagrass beds, sand flats, and a concentrated system of blue holes support the country's commercial and sport-fishing industries, nature-based tourism activities, agriculture, and freshwater resources. Yet the full potential of Andros remains untapped; the island lacks the essential infrastructure and educational opportunities, including training programs, to support its people's livelihoods and those of generations to come.

The central challenge confronting the Government of The Bahamas is to design a sustainable development plan that will harness the island's wealth of natural assets without sacrificing the very ecosystems that underlie its economy and sustain the well-being of its citizens.

To address this challenge, the Office of the Prime Minister (OPM), with support from the Inter-American Development Bank (IDB), is engaging in an innovative process to design a Master Plan for Andros Island. The goal is to identify public and private investment opportunities, policy recommendations, zoning guidelines, and other management actions to guide sustainable development. In consultation with Androsians, government agencies, NGOs, and other stakeholders, OPM and its partners have designed several alternative scenarios for future development of Andros. With funds from the IDB Biodiversity and Ecosystem Services Program, OPM is working with The Natural Capital Project to use open-source computer software to explore how those different future development scenarios might impact fishing, tourism, coastal protection, and other benefits that nature provides to people. This information will help shape the Master Plan.

WHAT DO ANDROSIANS & BAHAMIANS WANT FOR THE FUTURE OF ANDROS?

Since July 2015, the project team (OPM, SEV Consulting Group, The College of The Bahamas, the Natural Capital Project, and The Nature Conservancy) held public meetings, site visits, and one-on-one conversations in homes and workplaces on Andros. Eight major issues emerged that Androsians and Bahamians would like addressed by the Master Plan:

1. Education and capacity building
2. Food and water security
3. Climate and coastal resilience
4. Livelihoods and income equality
5. Transportation for people and goods
6. Land tenure security, land use planning, and enforcement
7. Strengthening local government
8. Health and well-being

Through stakeholder engagement, OPM and its partners also identified eight activities occurring in and around Andros that require multi-sectoral management: coastal development, protected area management, mining and dredging, transportation of goods and people by water, agriculture, fishing, forestry, and nature-based tourism. Climate change and invasive species arose as two other critical drivers of change on Andros that must be considered in development planning. Using hand-drawn maps, Androsians indicated where these activities occur now and where they should be located in the future.



After working with stakeholders in community meetings, the team digitized hand-drawn maps and put them together with other spatial information to create maps of possible future scenarios for Andros.

HARNESSING NATURE'S VALUES TO ACHIEVE SUSTAINABLE DEVELOPMENT

Stakeholders spoke often about the elements of Andros they want to retain into the future and the importance of nature for their way of life and for local incomes. From these discussions, OPM and its partners identified a set of outcomes—that reflect the shared values of Androsians—to compare alternative development plans.



Thriving Lobster Fisheries



Vibrant Tourism



Communities Protected From Coastal Hazards by Natural Habitats



Intact Coastal, Marine and Freshwater Ecosystems

WHAT IS A DEVELOPMENT SCENARIO?

A scenario describes how Andros might look given a particular suite of development and investment decisions. By clearly outlining a vision for the future, scenarios play an important role in sharing information, illustrating options for a pathway to the future, and building consensus for a plan. To create alternative scenarios for Andros, OPM and its partners gathered information from Androsians, policy documents, and the scientific literature and grouped the range of desired outcomes and recommendations into four future storylines, all of which include projections of sea-level rise and are represented by detailed spatial data that translate each storyline to different maps of a future Andros.

Alternative Future Scenario Descriptions For Andros

- **Business As Usual:** represents a future similar to the current situation with little investment in new infrastructure, educational opportunities, or development.
- **Conservation:** gives priority to ecosystem health and protection of habitats and species rather than economic development. For example, this scenario includes the ratification of a National Park for the Andros barrier reef, but no new coastal development.
- **Sustainable Prosperity:** blends human development and conservation goals by investing in critical infrastructure and education to achieve a nature-based economy that can be sustained over time. Examples of activities include daily ferries from Nassau, small and mid-sized Bahamian owned businesses (e.g., hotels, processing factories for local goods), community agriculture, and mangrove restoration as both a natural means of shoreline protection from storms and a habitat for lobster.
- **Intensive Development:** gives priority to major economic development rather than ecosystem health and protection of habitats and species. Example activities include construction of a cruise ship port in North Andros, large, energy intensive resorts and luxury housing developments, expanded mining activities, and seawalls along the entire east coast of the island.

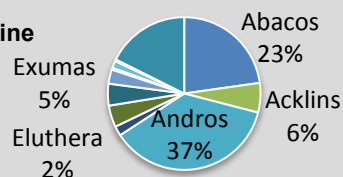
ADVANCING ECOSYSTEM SERVICE VALUATION TO ASSESS SCENARIOS

Several studies by The Bahamas National Trust, The Nature Conservancy, and others have assembled considerable information about the ecosystems and species on Andros and their current economic value. OPM and The Natural Capital Project built on this knowledge about Andros using InVEST (open source software) to estimate the economic and social value of ecosystems and to reveal which scenarios, zoning guidelines, and investment priorities will enhance livelihoods, food and water security, coastal resilience, and access to education for Androsians and all Bahamians.

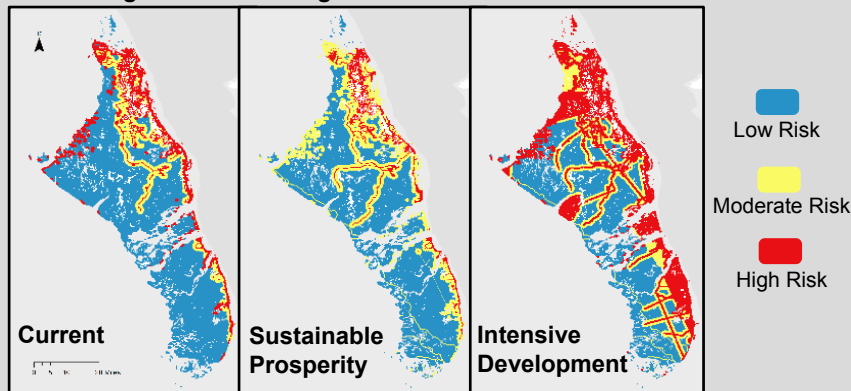
Safeguarding Fisheries Production For The Bahamas

Mangrove habitat within 250 m of the coastline

Andros' mangrove forests and seagrass beds are nursery habitats for lobster fished throughout the Bahamas. Andros boasts nearly 40% of the 1,150 sq km of mangrove habitat near the coastline of The Bahamas.



Risk of degradation to mangroves



Nursery habitat for lobster

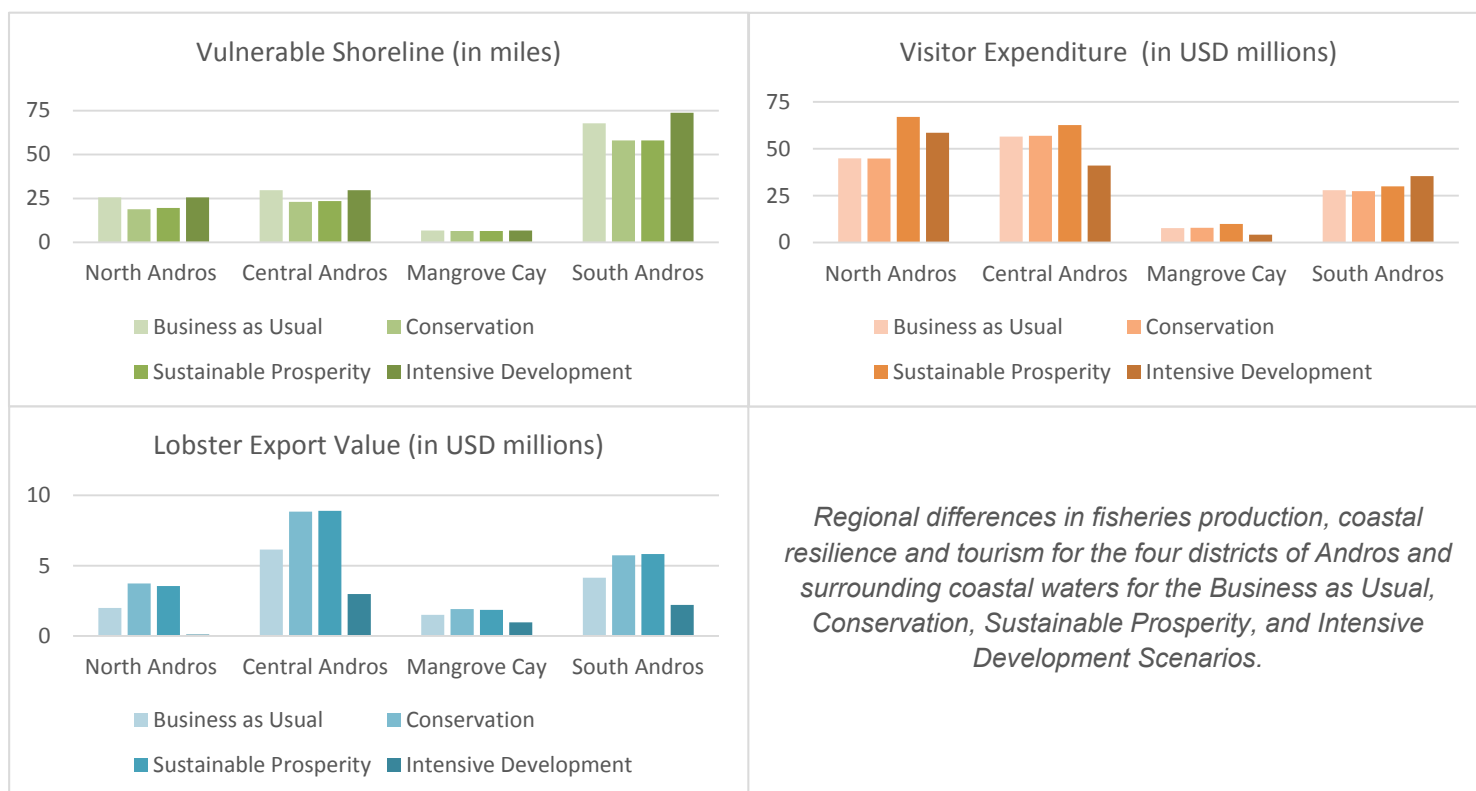
Population models and economic information enabled the team to forecast how lobster catch and revenue might change under scenarios with different amounts and quality of nursery habitat.



Using 2015 as a baseline and projecting 25 years in the future to 2040—the time horizon for the National Development Plan—the ecosystem service analysis estimates:

- The Sustainable Prosperity scenario would reduce the coastal and marine habitat at high risk of degradation from human activities by 35% relative to the Business As Usual scenario and to a 10th of the area at high risk under Intensive Development.
- Safeguarding ecosystems under the Sustainable Prosperity and Conservation scenarios would increase the export value of lobster catch provided Andros by almost 50% from \$14 million USD (in Business As Usual) to \$20 million USD. Intensive Development would decrease the country-wide catch by 11% from approximately \$66 to \$58 million USD annually due to degradation of nursery habitats in and around Andros.
- The Sustainable Prosperity and Conservation scenarios would enhance climate and coastal resilience of Andros by reducing the risk to 20-30 miles of the populated east coast of the island that would otherwise be highly vulnerable to erosion and flooding in Business As Usual and Intensive Development scenarios.
- The Sustainable Prosperity scenario would increase tourism expenditures in Central and South Andros by 7-10%, by 30% in Mangrove Cay, and by 50% in North Andros, offering an opportunity to enhance local livelihoods throughout the island. In contrast, the Intensive Development scenario would concentrate tourism in the North and South districts, where expenditures are predicted to be 30% more than the Business As Usual scenario, and cost Central Andros and Mangrove Cay \$15 million and \$3.5 million, respectively, further exacerbating patterns of unequal distribution of wealth.

Results indicate the Sustainable Prosperity scenario will produce a similar delivery of fishery and coastal protection services compared to the Conservation scenario, a higher delivery of services than the Business As Usual scenario, and lower the risk of coastal, marine, and freshwater degradation relative to Intensive Development.



Stakeholder Response

In January 2016, stakeholders from each district reviewed the digitized maps of the alternative development scenarios to ensure they captured the differing visions of the future among stakeholders and to discuss the modeled outcomes for tourism, fishing, resilience from coastal hazards, and marine and freshwater habitats. Stakeholders generally expressed a preference for the Sustainable Prosperity scenario, but pointed to the importance of including education, health, and governance policies and interventions in the Master Plan to accompany investments in natural and built infrastructure. Fewer stakeholders expressed a preference for the Conservation and Intensive Development futures.

FUTURE DIRECTIONS

Over the coming months, the government intends to refine the Sustainable Prosperity scenario into an actionable Master Plan for Andros, inclusive of general zoning guidelines and other management actions, infrastructure recommendations, and fully-endorsed public and private sector investment priorities that safeguard ecosystems while maximizing economic and social benefits to people. OPM anticipates a draft of the master plan for review by the Cabinet and stakeholders in early fall 2016. While the Sustainable Prosperity scenario will be the basis for the Master Plan and future development, elements of the Conservation and Intensive Development scenarios may be considered as the needs of Androsians change.

A PILOT FOR OTHER ISLANDS AND COUNTRIES

The Andros case illustrates how sustainable development planning with science and stakeholders can accomplish habitat protection and major gains in infrastructure and development goals.

Two key lessons emerged that can be used on other islands in The Bahamas in the future:

- Full and iterative engagement among policy-makers, scientists, and stakeholders in building alternative visions of the future focuses and legitimizes the planning process.
- Measuring and comparing changes in the benefits of nature across scenarios helps people identify shared goals and understand trade-offs.

Through this process OPM, The College Of The Bahamas, The Nature Conservancy and SEV Consulting Group leadership have gained the experience needed to conduct sustainable development planning using a framework that includes information about nature's values to people. The Natural Capital Project's InVEST software suite is designed to be applicable to other locations with different management, conservation, and development goals. With technical training for local Bahamian personnel and leadership from these institutions, the process used on Andros could be scaled to develop master plans for islands throughout the archipelago and for other countries in the Caribbean, Latin America, and beyond.

