

# Management Strategy Plan for Natural Infrastructure Mitigation Program (NIFMP)



*DMS Natural Infrastructure Flood Mitigation Program*

# Contents

|           |                                                     |           |
|-----------|-----------------------------------------------------|-----------|
| <b>1.</b> | <b>Introduction.....</b>                            | <b>3</b>  |
| <b>2.</b> | <b>Development of the Conceptual Framework.....</b> | <b>4</b>  |
| 2.1       | Models Considered for the Conceptual Framework..... | 4         |
| 2.1.1     | GOST Model.....                                     | 4         |
| 2.1.2     | Logic Model.....                                    | 5         |
| 2.1.3     | Choice of GOST Model over Logic Model .....         | 5         |
| 2.2       | GOST Model Development.....                         | 5         |
| 2.2.1     | Model Goals .....                                   | 5         |
| 2.2.2     | Model Objectives .....                              | 6         |
| 2.2.2.1   | Define Success.....                                 | 6         |
| 2.2.2.2   | External Coordination.....                          | 6         |
| 2.2.2.3   | Internal Integration .....                          | 6         |
| 2.2.2.4   | Evaluate NBS Projects .....                         | 7         |
| 2.2.2.5   | Improvement of the State of Practice.....           | 7         |
| 2.2.2.6   | Improvement of the State of Research.....           | 7         |
| 2.2.2.7   | Expand Procurement Process.....                     | 7         |
| 2.2.2.8   | Long Term Funding Strategy.....                     | 7         |
| 2.3       | Description of the Conceptual Framework.....        | 8         |
| <b>3.</b> | <b>Development of Management Strategy.....</b>      | <b>16</b> |
| <b>4.</b> | <b>References .....</b>                             | <b>16</b> |

## Figures

|             |                                                     |    |
|-------------|-----------------------------------------------------|----|
| Figure 2-1: | Structure of a Logic Strategic Planning Model.....  | 5  |
| Figure 2-2: | Define Success .....                                | 9  |
| Figure 2-3: | External Coordination.....                          | 10 |
| Figure 2-4: | Internal Integration.....                           | 11 |
| Figure 2-5: | Evaluate NBS Projects .....                         | 12 |
| Figure 2-6: | Improvement of State of Practice and Research ..... | 13 |
| Figure 2-7: | Expand Procurement Process .....                    | 14 |
| Figure 2-8: | Long Term Funding Strategy .....                    | 15 |

# 1. Introduction

In 2020, North Carolina HB 1087 amended the Department of Environmental Quality (DEQ) Division of Mitigation Services (DMS) enabling legislation, adding responsibility for “restoration and monitoring of projects or land acquisitions that create or restore flood storage capacity...to reduce flood risk by creating or restoring flood storage capacity in streams, wetlands, and floodplains.” Based on the legislative directive, The Natural Infrastructure Flood Mitigation Program (NIFMP) was created by DEQ/DMS.

HB 1087 added “the enhancement or restoration of flood storage capacity” to the Ecosystem Restoration Fund... for appropriations and grants supporting projects that enhance flood storage capacity and mitigate flood risk”, though no project funding was added with this legislation. HB 1087 also stated that “projects funded under this section shall meet all of the following requirements:

- (1) Be consistent with plans for restoration and enhancement of stormwater management or flood storage capacity included in basin wide plans developed under G.S. 143-214.10.
- (2) Be designed and constructed to provide for a quantifiable increase in flood storage capacity in the designated watershed or sub-watershed based on the difference between the total number of acre-feet of flood storage in the watershed or sub-watershed before project commencement and after project completion.
- (3) Incorporate a mechanism for post-construction monitoring.”

DEQ and DMS further clarified the intent of HB 1087 by adding specific program requirements:

- Developing currency for assessing and satisfying flood mitigation needs.
- Addressing the multiple environmentally unique regions of North Carolina.
- Requiring collaboration with a broad range of stakeholders to whom the program’s vision and goals must be communicated.
- Investigating and tracking the effectiveness of a broad range of nature-based solutions.

The NIFMP is employing strategic planning to effectively achieve the complex and interrelated goals and activities required by HB1087.

In November 2023, the NCDEQ DMS contracted with the Vendor to assist in the development of a strategic plan (Plan) for the development of the NIFMP. The contract scope reiterated goals supported and approved by DEQ senior management and the NIFMP advisory board.

The Plan will be developed into two tasks:

- Task 1. **Development of Conceptual Framework** - use the defined NIFMP goals and initial notes developed by DMS to map out a conceptual framework of strategic planning objectives, strategies, and tasks.

- Task 2. **Development of a Strategic Plan for Managing the NIFMP** - expand the Conceptual Framework, developed in Task 1, based on feedback provided by DMS, by adding additional structure and implementation details to bring the Plan closer to a final product.

This report presents the history and results of the development of the conceptual framework, referenced in Task 1 above.

## 2. Development of the Conceptual Framework

The Conceptual Framework (Framework) is a map of the strategic planning objectives, strategies, and tasks for the NIFMP to effectively pursue its mission. The Task 1 Framework segregates and couples major NIFMP goals with efforts needed to attain those goals. Task 2 will add scheduling, resource needs, and interrelationships between different NIFMP goals, objectives, strategies, and tasks.

### 2.1 Models Considered for the Conceptual Framework

This section of the report outlines the results of multiple discussions between the Vendor and the NIFMP Program Manager and the DMS Director, to develop a model for the Framework. Based on the program goals, a structured strategic plan using the GOST model was the intuitive starting place for the Framework. A Logic Model was also considered as an alternative thought model.

These models, and the decision on which model to use, are discussed below.

#### 2.1.1 GOST Model

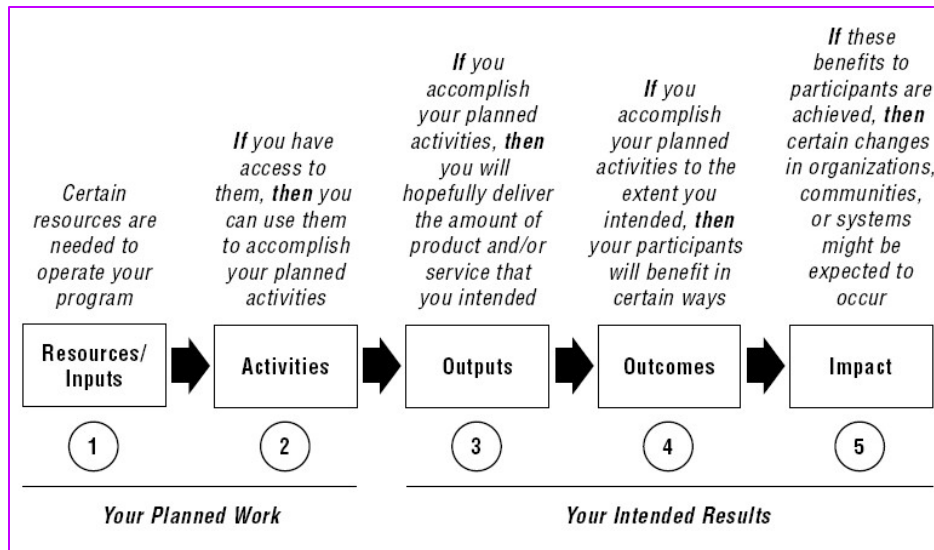
The GOST Model was invented by [Peter Gollwitzer](#) as a framework for strategic planning, using a structure of **G**oals, **O**bjectives, **S**trategies, And **T**actics/Tasks. The components may be defined as below (Birt 2023):

- A **Goal** is a short statement of the desired outcome to be accomplished over a long timeframe, usually three to five years. It is a broad statement that focuses on the desired results and does not describe the methods used to get the intended outcome.
- **Objectives** are specific, actionable targets that need to be achieved within a smaller time frame, such as a year or less, to reach a certain goal. Objectives describe the actions or activities involved in achieving a goal.
- A **Strategy** is a specific plan you'll use to meet objectives and goals. Like objectives, they are very specific, though these provide more details about how your teams and departments will achieve goals through actions.
- A **Tactic/Task** is a specific activity that contributes towards pursuing a strategy. Needed assets and specific timelines are assigned to tasks, for the purpose of planning.

## 2.1.2 Logic Model

A Logic Model uses a structure of Inputs, Activities, Outputs, Outcomes, and Impact, to facilitate strategic planning. While similar to GOST approaches in showing how smaller activities and products will be aggregated to meet higher order aims, Logic Models differ specifically in their attempt to identify interdependencies among elements and describe all resources necessary to fulfil each element. The figure below outlines the strategic approach:

**Figure 2-1: Structure of a Logic Strategic Planning Model**



## 2.1.3 Choice of GOST Model over Logic Model

In discussion with the Program Manager, and after a detailed presentation of both the GOST and Logic Models, the Program Manager chose to use the GOST Model to develop the Conceptual Framework. The GOST Model better represents the DMS approach to the NIFMP development. The GOST Model was therefore adopted as the thought model for the NIFMP.

## 2.2 GOST Model Development

After the decision to rely on the GOST Model, the Vendor used the deliverables and tasks cited in the Agreement, notes from the Program Manager, and multiple information-gathering meetings with the Program Manager, to develop a GOST model to frame the pursuit of the NIFMP mission as outlined in the Agreement.

### 2.2.1 Model Goals

Through deliberation by the Board and approval from DEQ senior management, five key tenets for the program were developed:

1. Implement nature-based projects in North Carolina that contribute to the statewide effort to improve resilience from flooding hazards and impacts.
2. Measure, demonstrate, and communicate the effectiveness of nature-based solutions for flood resilience.
3. Leverage DMS's long-standing expertise and commitment to public-private partnerships to deliver effective nature-based solutions.
4. Identify and prioritize nature-based solutions for flood resilience to address community needs, maintain working lands, and provide ecologic benefits.
5. Maintain consistency with complementary resilience initiatives, e.g., the Flood Resiliency Blueprint, NCORR programs and other state and local programs.

These tenets were structured to fit the GOST Model and were implemented as the starting point for the model.

## **2.2.2 Model Objectives**

Based on discussions with the Program Manager, the GOST Model objectives were divided into eight categories. These objectives form the foundation of the Framework and are individually discussed below.

### **2.2.2.1 Define Success**

When adding the enabling legislation for the NIFMP, HB 1087 amended the DMS requirements to include “restoration and monitoring of projects or land acquisitions that create or restore flood storage capacity...to reduce flood risk by creating or restoring flood storage capacity in streams, wetlands, and floodplains.” Though HB 1087 conceptually defined program success, a numerical currency is essential to measure the flood storage capacity added by the program. HB 1087 cited “gains in acre-feet of flood storage capacity from projects funded under G.S. 143-214.11A” but gains in acre-feet (ac-ft) does not uniformly quantify reductions in site-specific flooding impacts in all areas. Further, the focus of reducing flooding impacts vary depending on the interests of different regional stakeholders.

### **2.2.2.2 External Coordination**

External coordination is important to maintain consistency with complementary North Carolina flood mitigation resilience initiatives, e.g., the Flood Resiliency Blueprint, NCORR programs, and other state and local programs. Utilizing the Blueprint tool and River Basin Action Strategy efforts will help DMS prioritize flood resilience project locations based on hotspot locations. In some cases, the NIFMP may be a better fit for implementing unfunded NBS projects or delivering the NBS implementation of Blueprint projects. External coordination also includes providing feedback data and a continued information exchange to inform on what NBS projects would be beneficial for regional flood storage goals.

### **2.2.2.3 Internal Integration**

Integrating nature-based solutions (NBS) into DMS's current watershed planning activities can be accomplished by utilizing outputs from the Blueprint tool and cross referencing this information with existing DMS compensatory mitigation needs to maximize flood resiliency. For example, compensatory mitigation projects, such as wetland, stream and buffer restoration, can be expanded to include a NBS flood resilience component and serve multiple DMS goals.

#### **2.2.2.4 Evaluate NBS Projects**

DMS NBS projects should be monitored for the following purposes:

- To develop overarching strategies and metrics to monitor flood stage reduction as defined by the project currency, and
- To quantify the effect of NBS on flood resilience.

This process is already underway as DMS is using a matrix of metrics for defining performance on the Stoney Creek project, which will serve as a useful pilot project for this task.

Data collected as part of these monitoring efforts will be maintained in a database to inform the future selection of NBS resilience strategies and target future project investments. This improves the efficiency of projects and improves the state of practice as discussed in **2.2.2.5**, below.

#### **2.2.2.5 Improvement of the State of Practice**

Tools and guidebooks will be developed to inform the selection, design, maintenance, and monitoring of NBS. Topics will include expected gains, limitations, and secondary benefits from different NBS strategies. Effective combinations of grey and green infrastructure will also be discussed. Training opportunities will be identified and/or developed.

#### **2.2.2.6 Improvement of the State of Research**

Sound NBS practice should be based on verified experience and/or research. A synthesis of available research on the effective use of NBS strategies for flood resilience in North Carolina will be developed, and gaps in knowledge will be identified. From this, research needs statements will be developed, along with research funding and partnerships. These research efforts are expected to foster innovative and improved NBS strategies.

#### **2.2.2.7 Expand Procurement Process**

To implement NBS projects, NIFMP project-specific procedures for procurement should be targeted to solicit the best flood mitigation fit for the project conditions and capture the best proposals. These procurement procedures should include the review of technical proposals for adequate design, criteria for monitoring project performance, maintainability, and other success criteria. Current procurement practices, including matching projects to different procurement approaches such as the Full Delivery Model, design/build, and design/bid/build, will be evaluated and improved, as needed. Procurement approaches from other agencies and review of the success of past projects will be evaluated to advise current DMS procurement practices.

#### **2.2.2.8 Long Term Funding Strategy**

The development of a funding stream for projects includes the ongoing searches for grant funding, opportunities for joint projects with other programs and agencies, and engaging the legislature. The success of obtaining funding from these sources, depends on continuing communication with all parties to stay abreast of their priorities and activities, and to inform them of the NIFMP's activities. The NIFMP Advisory Board can be utilized as a liaison for developing these cross agency and cross program collaborations. Both external and internal coordination (**2.2.2.2** and **2.2.2.3**, respectively) will facilitate capturing ongoing funding.

## 2.3 Description of the Conceptual Framework

The figures below provide a description of the Conceptual Framework, using the structure of the eight Objectives of the GOST model.

Figure 2-2: Define Success

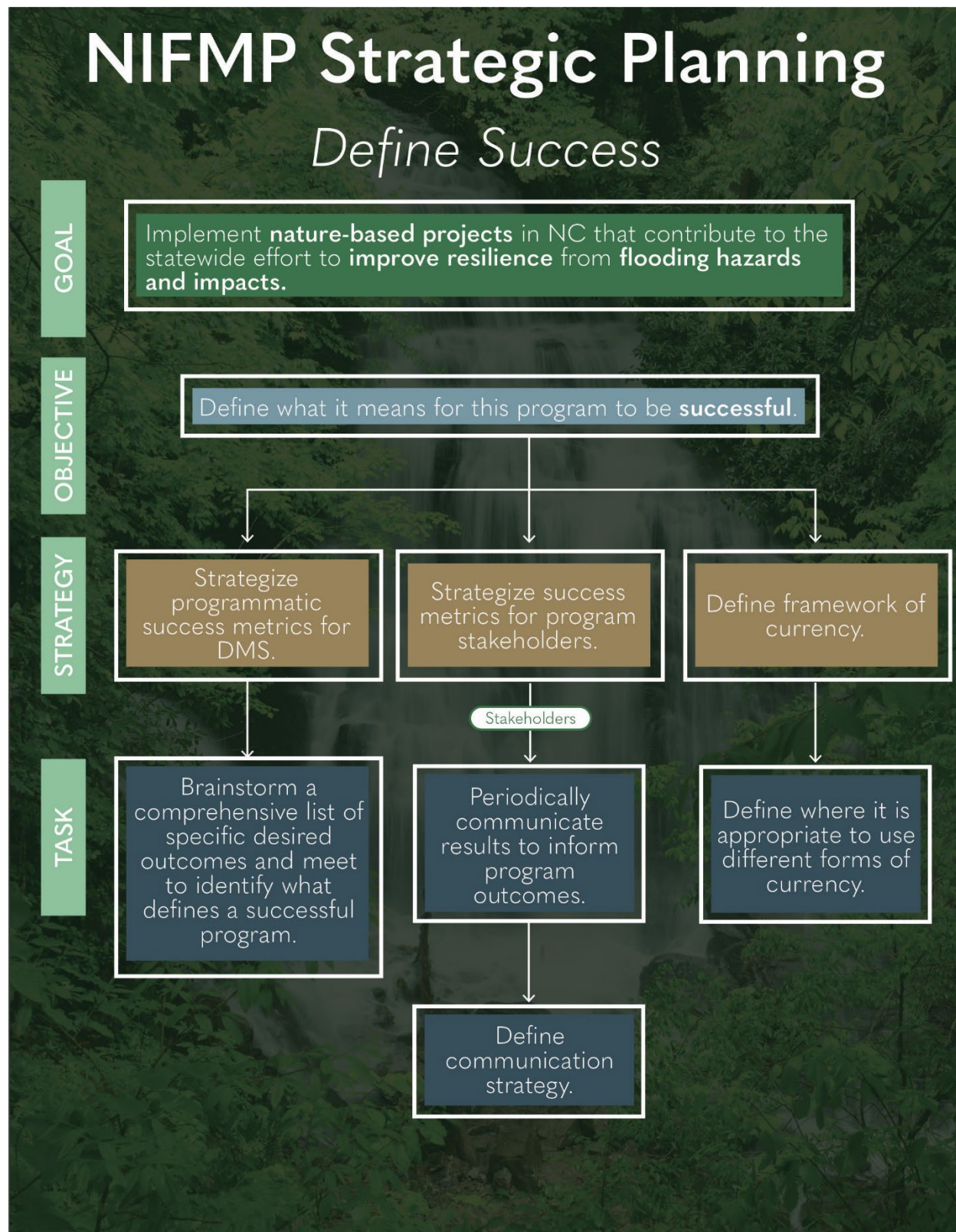


Figure 2-3: External Coordination

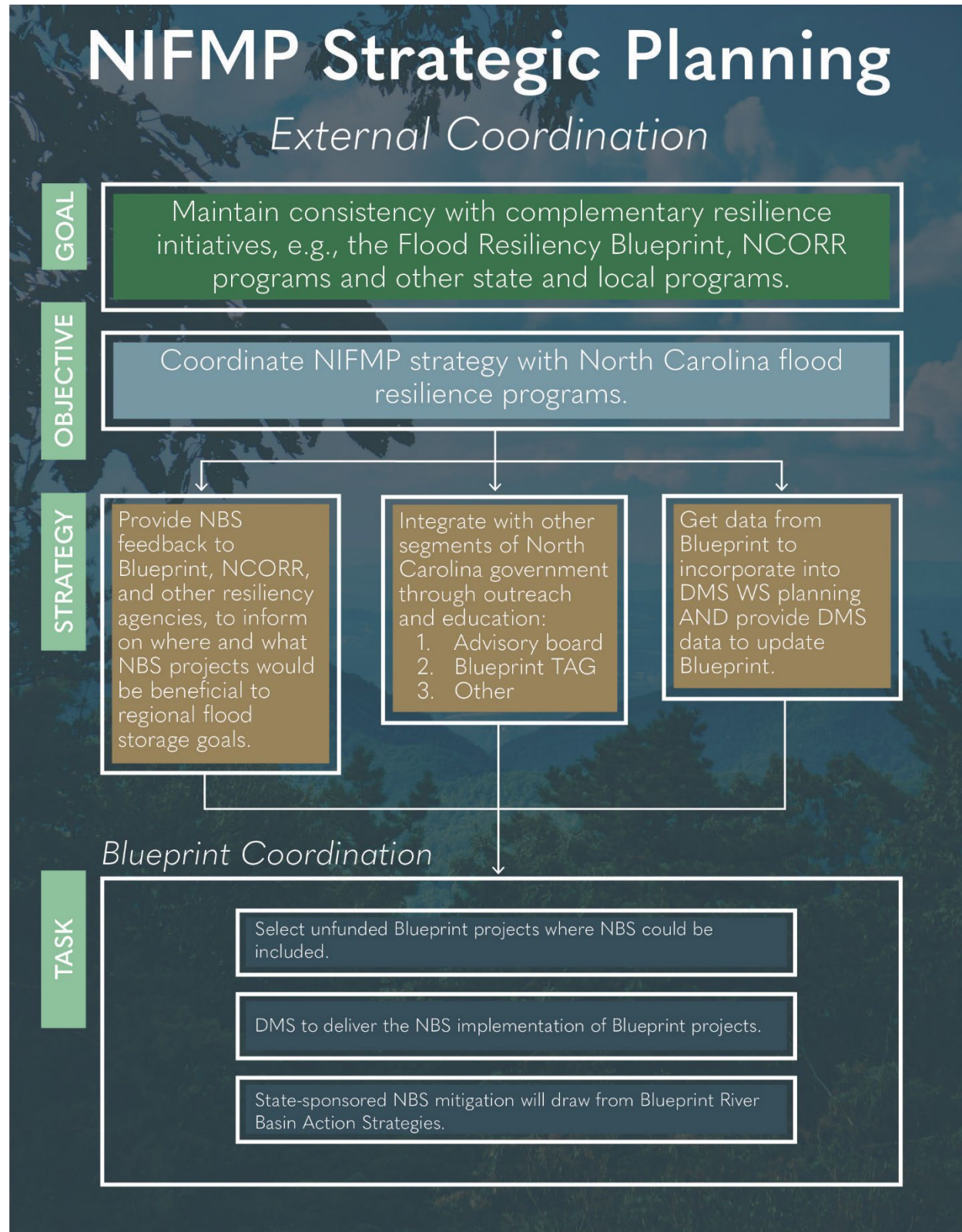


Figure 2-4: Internal Integration

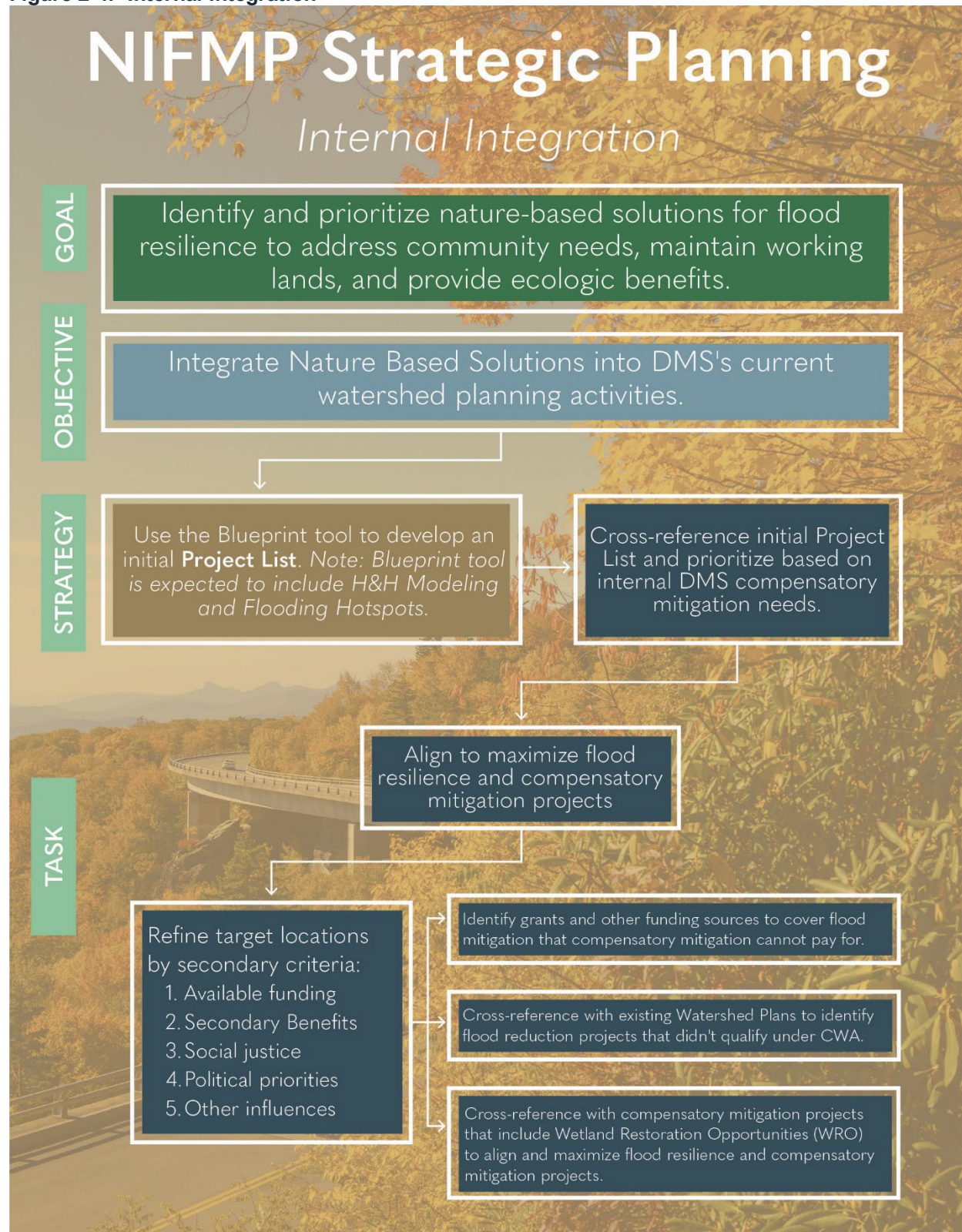


Figure 2-5: Evaluate NBS Projects

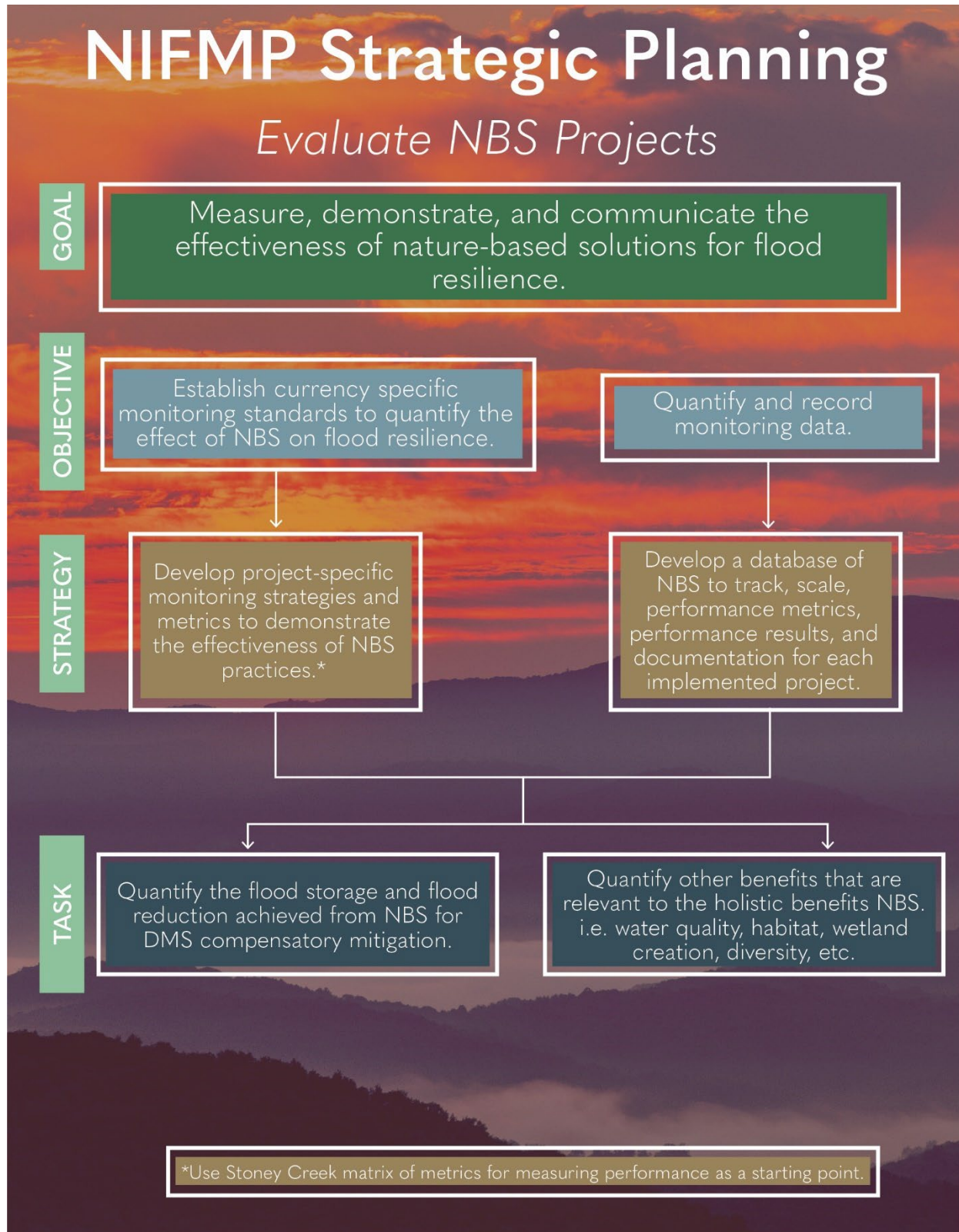


Figure 2-6: Improvement of State of Practice and Research

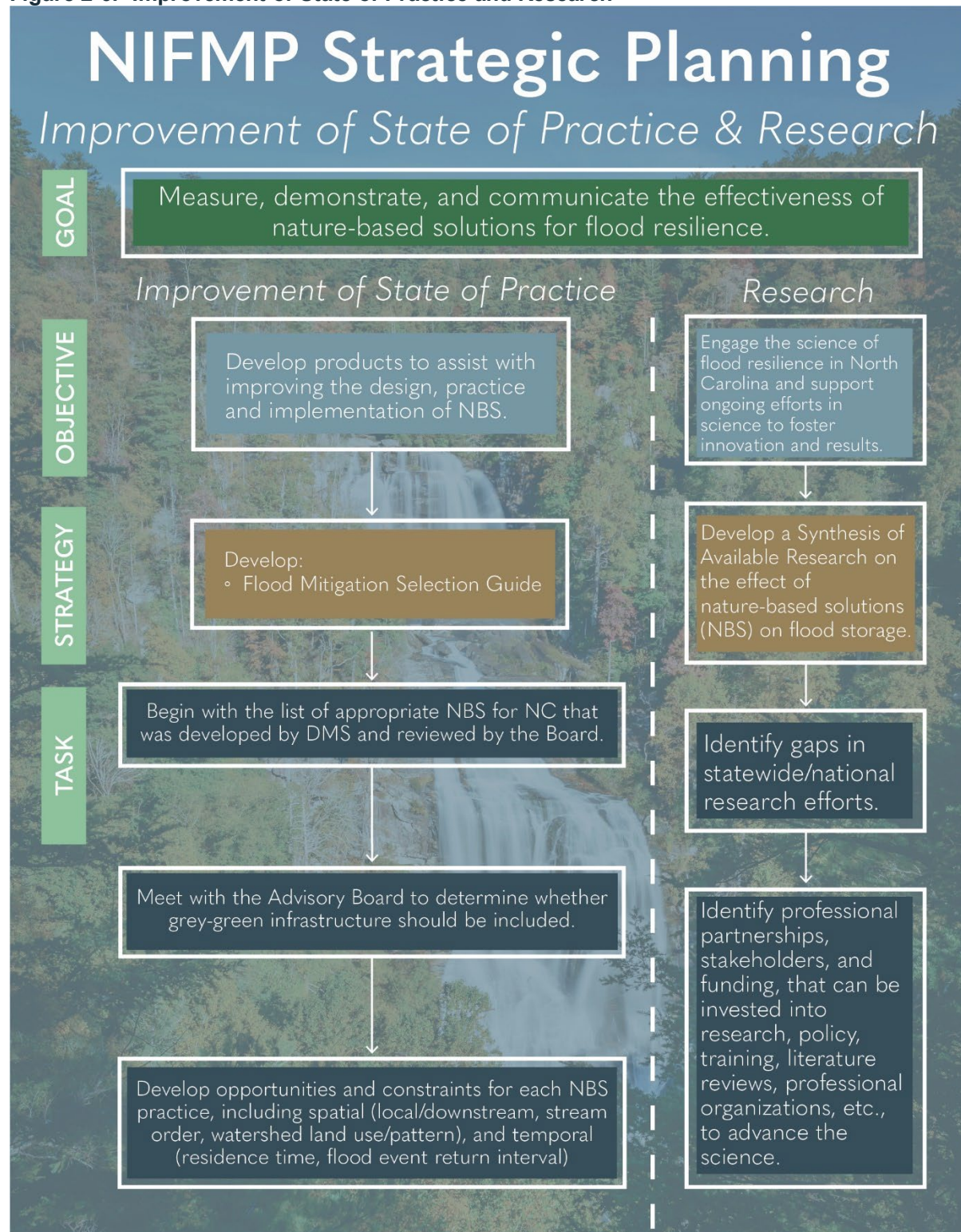


Figure 2-7: Expand Procurement Process

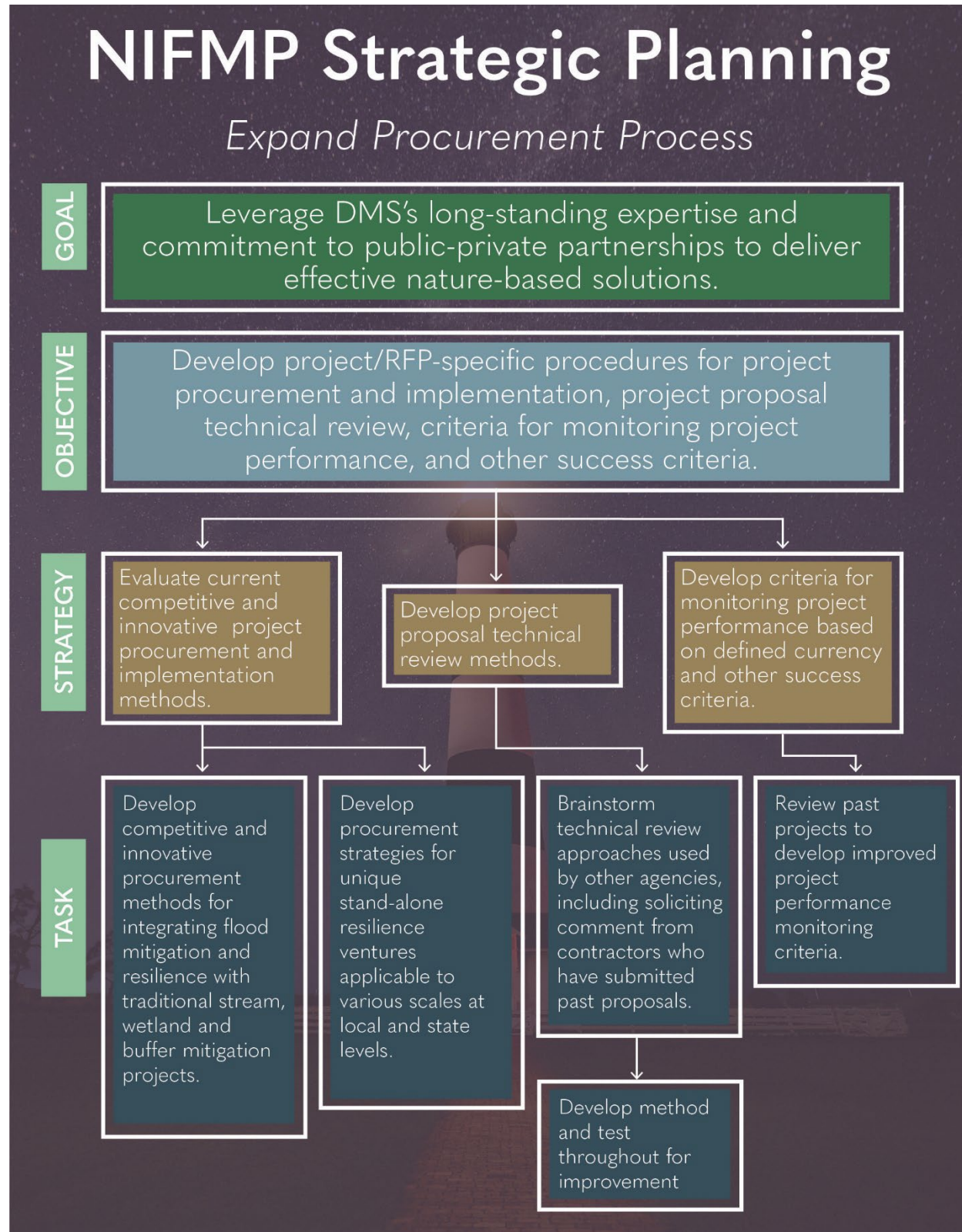
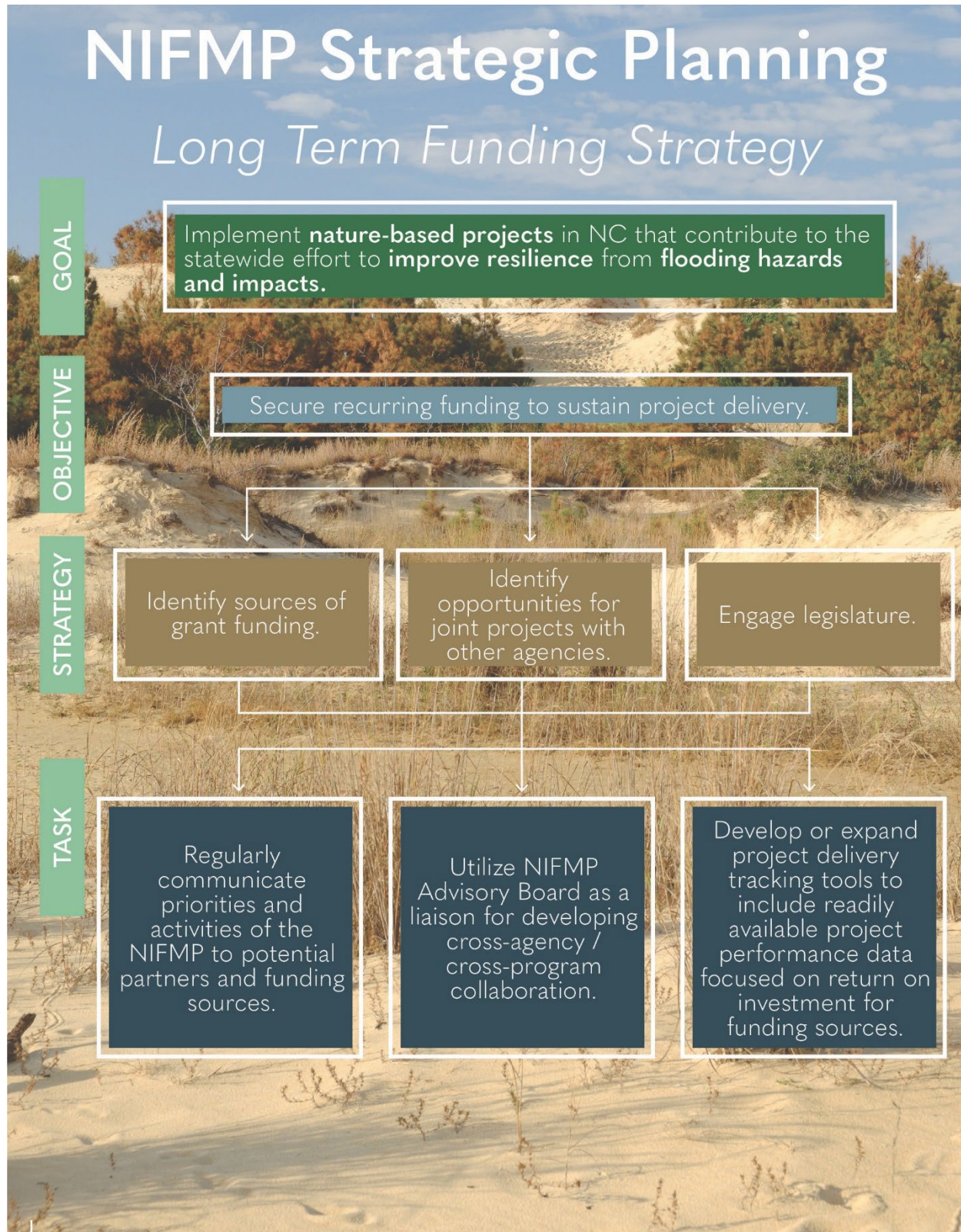


Figure 2-8: Long Term Funding Strategy



### 3. Development of Management Strategy

This part of the project report will be developed as part of the conclusion of Task 2.

the Vendor will first edit the Conceptual Framework, developed in Task 1, based on feedback provided by the Program Manager, others within DMS and the Advisory Board. The intent of Task 2 will be to add structure and implementation details to bring the Plan closer to a final product.

### 4. References

1. Jamie Birt (2023), [Goals vs. Objectives: What's the Difference? | Indeed.com](#)

