

A Guide to Eco-DRR Practices for Sustainable Community Development [Summary Version]

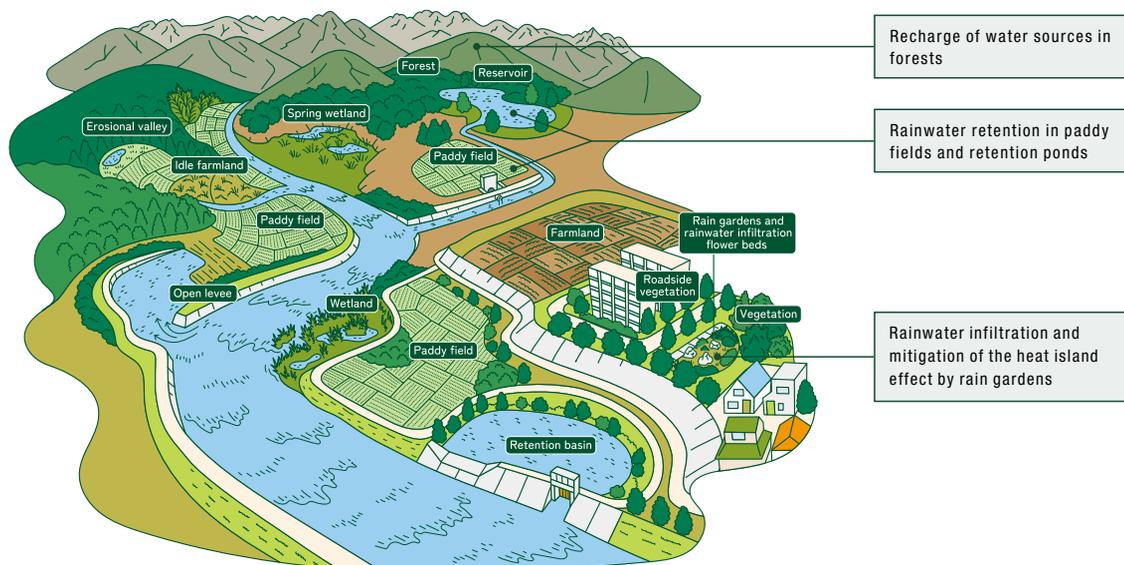
-Using Potential Map of Ecosystem Conservation/Restoration to Promote Eco-DRR

This guide provides information and methods that can be used to promote Eco-DRR (Ecosystem-based Disaster Risk Reduction), an approach that contributes to establishing resilience of the community to natural disasters and also the conservation of biodiversity. Eco-DRR also contributes to social and economic development of communities.

This guide specifically describes how to create and use the "ecosystem conservation/restoration potential map" to visualize areas that have potential to implement Eco-DRR. Such areas include wetlands or important areas for biodiversity conservation (i.e., where ecosystem conservation and restoration can contribute not only to biodiversity conservation but also to DRR).

Eco-DRR activities focused on the Ecosystem Conservation/Restoration Potential Map

This guide focuses on water-related disasters and its Eco-DRR. This is because disasters caused by large typhoons and heavy rains have become more frequent in recent years. The conservation of wetlands, floodplains, and other disturbed environments is also an issue from the perspective of biodiversity conservation.



Approaches to Implement Eco-DRR Using the Ecosystem Conservation/Restoration Potential Map

● The pursuit of new measures

In inclusion in local government policies and implementation of individual projects, the Ecosystem Conservation/Restoration potential map can be used as a basis to understand the local situation. By confirming the local situation based on an evaluation using the potential map, possible to consider specific measures based on the role of ecosystem conservation and restoration in regional development and DRR.

● Reevaluation of current/previous activities

The evaluation of existing nature restoration activities and other relevant local initiatives using the potential map enables to identify the various social and economic benefits. Furthermore, the project will be developed into an initiative that contributes to disaster prevention/mitigation and the local economy by devising ways to elicit various effects.

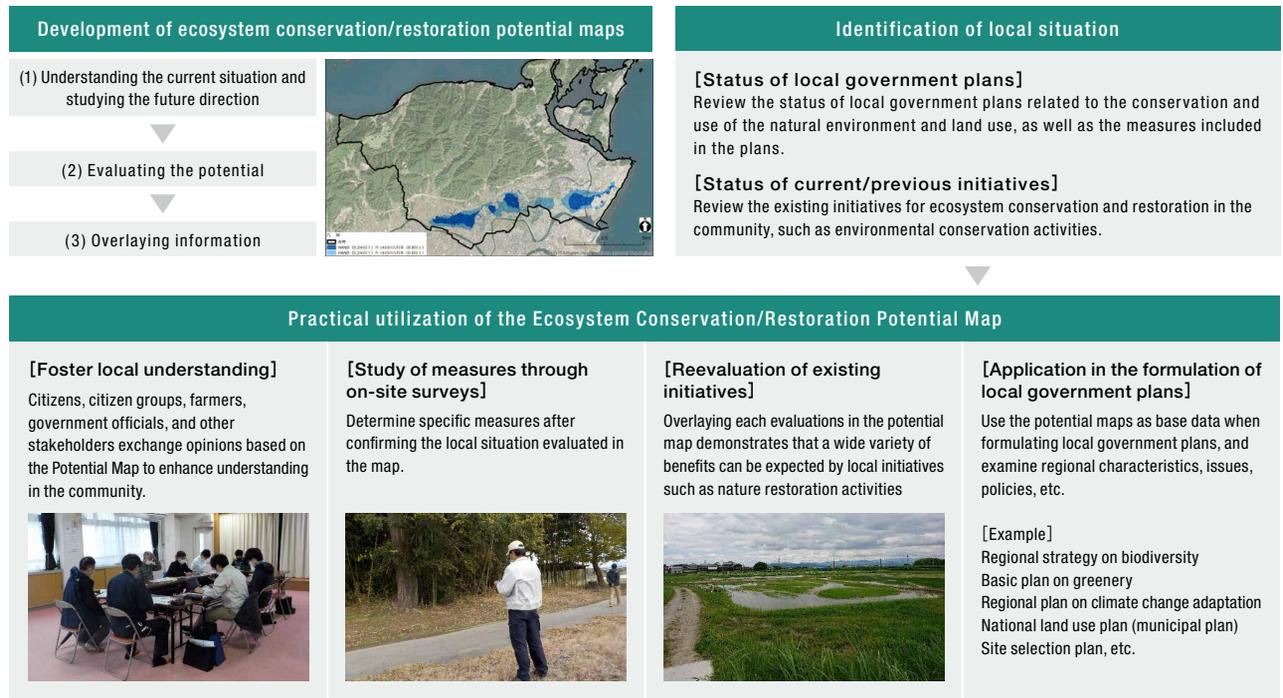
In implementing Eco-DRR, it is recommended that a cross-cutting framework be established through collaboration among stakeholders, including local governments (prefectures, cities, towns and villages), river management entities, local residents, and civil society organizations.



1. Naruto City, Tokushima Prefecture Promotion of collaborative efforts by local stakeholders
2. Tomisato City, Chiba Prefecture Use of a hill-bottom as a community field

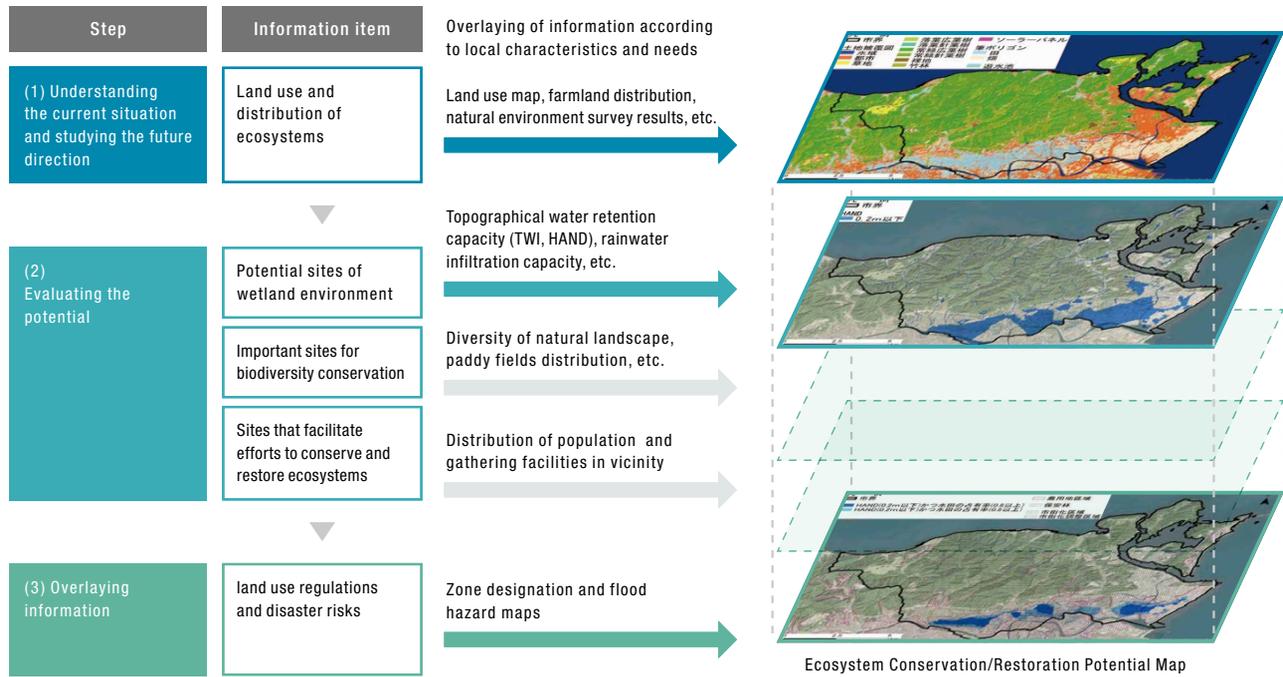
Flow of Study Using the Ecosystem Conservation/Restoration Potential Map

The potential map is a tool to identify the locations where conservation and restoration of ecosystems may contribute not only to biodiversity conservation but also to DRR (i.e. locations with Eco-DRR potential). The map is created through three steps: (1) understanding the current situation and studying the future direction, (2) evaluating the potential, and (3) overlaying the information.



Method to Create Ecosystem Conservation/Restoration Potential Map

The Ecosystem Conservation/Restoration Potential Maps is created by overlaying statistical analyses and geospatial information using GIS (Geographic Information System).



TWI (Topographic Wetness Index): used to identify the areas where water is likely to accumulate in a watershed scale.
 HAND (Height Above Nearest Drainage Index): used to identify the areas where water is likely to accumulate locally (i.e., areas with drainage issues).

Examples of Using the Ecosystem Conservation/Restoration Potential Map

The following are possible options that local governments can take to create/use potential maps, ranging from relatively simple initiatives to those that require long-term consideration.

An Ecosystem Conservation/Restoration Potential Map will provide an overall view of the region and will enhance understanding among the many stakeholders involved in cross-cutting collaboration across government departments, agricultural activities, environmental conservation activities, and other relevant initiatives.

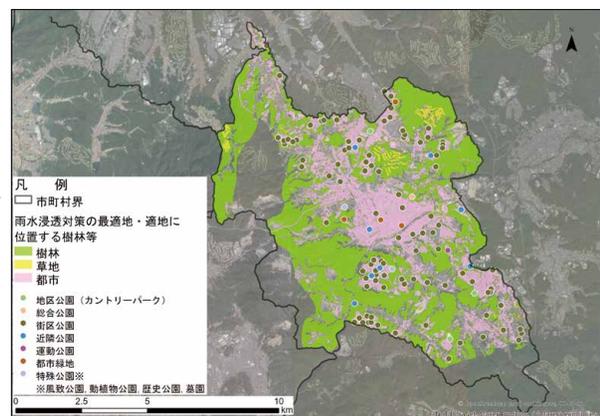
● Evaluation of DRR functions of environmental conservation activities, etc.

Purpose	
Identify possible effectiveness of existing environmental conservation activities to DRR as well, by using potential maps to understand the characteristics of activity sites.	
Methods to create a potential map	
Ex) To evaluate activities in areas where temporary retention of rainwater can be expected:	
Potential evaluation	Potential as wetland (TWI, HAND, etc.)
Overlying information	Location of existing environmental conservation activities, etc.



● Designation of zones for green spaces, etc. with rainwater infiltration functions

Purpose	
Identify green spaces or other types of areas where rainwater infiltration can be expected.	
Methods to create a potential map	
To identify green spaces with rainwater infiltration functions	
Potential evaluation	Rainwater infiltration functions expected from topography, geology, etc.
Overlying information	Distribution of green space



Consideration of New and Specific Measures to Increase the Potential

In order to consider and implement specific measures, it is necessary to confirm the situation on site, targeting locations which were evaluated in the potential map. This guide outlines the on-site survey sheet, which lists necessary items of field verification, and the specific measures to enhance DRR and biodiversity conservation functions.



Hill-bottom in the Inbanuma watershed (Tomisato City, Chiba Prefecture)



Rain garden at Shijo Horikawa intersection (Kyoto City, Kyoto Prefecture)

Impacts Expected from Eco-DRR

Eco-DRR brings multiple benefits to comprehensively address various issues facing a region, not only for DRR and biodiversity conservation, but also in terms of society and economy.

Society	
<ul style="list-style-type: none"> • DRR • Venue for environmental education 	<ul style="list-style-type: none"> • Community building through local activities • Formation of a good landscape
Economy	
<ul style="list-style-type: none"> • Increase in real estate value • Tourism resource 	<ul style="list-style-type: none"> • Eco-tourism, etc.
Environ-ment	
<ul style="list-style-type: none"> • Biodiversity conservation • Absorption and accumulation of carbon dioxide 	<ul style="list-style-type: none"> • Risk Mitigation of heat wave exacerbated by climate change



Contents of the “Guide for Ecosystem-based DRR for Sustainable Community Development”

CHAPTER.1 What is Eco-DRR?

- The principal plans which incorporate the social contexts and related ideas that require Eco-DRR.
- The relationship between ecosystem conservation/restoration and DRR: (1) Hazard mitigation, (2) Exposure avoidance, (3) Vulnerability reduction
- Specific examples of Eco-DRR (Eco-DRR to mitigate flood risk through the conservation and restoration of ecosystems), which is the main target of this guide
- Various social and economic benefits expected from Eco-DRR
- Cross-sectional collaboration system based on regional characteristics and issues, etc.

CHAPTER.2 Promotion of Eco-DRR Using Ecosystem Conservation/Restoration Potential Map

- Overall flow to use Ecosystem Conservation and Restoration Potential Maps
- Three steps to create a potential map : (1) Understanding the current situation and examining the direction of the project, (2) Evaluation of potential, (3) Overlaying information
- Necessary Data to create potential maps, evaluation indicators and calculation methods
- Potential map utilization options, expected roles and key points
- Basic concept and specific measures to increase functions of DRR and biodiversity conservation
- Administrative plans related to Eco-DRR, and way forward to utilize Potential Maps for further discussions
- Systems that can be used for securing funds, designation and certification of areas
- Implementation of case studies, etc.

CHAPTER.3 Reference

[Publication of Base Maps]

Major indicators introduced in this guide that are important to evaluate the Eco-DRR potential sites, are published and provided on the following website.

Browse on Website

Ministry of the Environment
Environmental Assessment Database (EADAS)
<https://www2.env.go.jp/eiadb/ebidbs/>



Download GIS data

Ministry of the Environment
(Nature Conservation Bureau, Biodiversity Strategy Office) Website
<https://www.biodic.go.jp/Eco-DRR/index.html>

