Resource Mapping Tool

Overview

The Resource Mapping Tool enables communities, regions, and global stakeholders to visualize and inventory their economic, environmental, and social assets to support implementation of the Nested Sovereignty Framework. This GIS-based tool combines digital mapping with traditional knowledge systems to create comprehensive resource maps that inform currencies, cooperatives, commons governance, and trade zones while honoring indigenous stewardship practices.

Version: 2.0 (2025)
Available formats: Web application, offline desktop application, paper-based mapping kit
Languages: Available in 10 languages with visual interfaces for low-literacy contexts

2. Technical Architecture

Digital Platform Components

Web/Desktop Application Features

- **Layered GIS Mapping:** Vector and raster layers with adjustable visibility
- **Data Collection Forms:** Customizable templates for resource documentation
- **Asset Inventory Database:** Searchable repository of mapped resources
- **Analytics Dashboard:** Metrics on resource distribution and equity
- **Export Functions:** Data export in multiple formats (CSV, GeoJSON, PDF)
- **Privacy Controls:** Community-determined access permissions

Offline Functionality

- **Offline Data Collection:** Cache for field data entry without connectivity
- **Sync Protocol:** Data synchronization when connectivity is available
- **Low-Bandwidth Mode:** Simplified interface for limited connectivity
- **SMS Data Entry:** Text-based data submission option

Technical Specifications

- **Map Engine:** Open-source Leaflet/OpenLayers with custom styling
- **Data Storage:** Decentralized IPFS with local caching
- **Device Compatibility:** Web, desktop, tablet, and mobile options
- **Minimum Requirements:** Functions on 3G connections and basic smartphones
- **Accessibility:** WCAG 2.1 AA compliant with screen reader support

Paper-Based Components

Community Mapping Kit

- **Large Format Maps:** Printed base maps of community area
- **Transparent Overlays:** Plastic sheets for different resource categories
- **Icon Stickers:** Visual resource markers with legend
- **Field Notebooks:** Structured forms for resource documentation
- **Digitization Guide:** Protocol for converting paper maps to digital format

3. Resource Categories and Classification

Economic Resources

- **Productive Assets:** Farms, workshops, factories, service providers
- **Infrastructure:** Transportation, communication, utilities, public facilities
- **Skills & Knowledge:** Local expertise, traditional practices, specialized abilities
- **Markets & Exchange:** Trading locations, distribution networks, value chains
- **Financial Resources:** Community banks, credit unions, lending circles

Environmental Resources

- **Land Resources:** Arable land, forests, grazing areas, protected spaces
- **Water Resources:** Rivers, lakes, groundwater, catchment areas
- **Biodiversity:** Flora, fauna, ecosystems, seed banks
- **Energy Resources:** Renewable sources, traditional fuels, potential sites
- **Mineral Resources:** Extractives, building materials, traditional medicines

Social & Cultural Resources

- **Social Infrastructure:** Meeting spaces, community centers, gathering sites
- **Cultural Assets:** Heritage sites, ceremony locations, artistic venues
- **Care Networks:** Childcare, elder care, healthcare, mutual aid systems
- **Educational Resources:** Schools, training centers, knowledge holders
- **Governance Spaces:** Decision-making venues, traditional governance sites

Digital Commons

- **Connectivity:** Internet access points, mesh networks, radio communication
- **Data Resources:** Community-owned datasets, monitoring systems
- **Digital Infrastructure:** Servers, blockchain nodes, shared computing
- **Software Resources:** Open-source tools, local applications, shared platforms
- **Digital Skills:** Programming, maintenance, user support capabilities

4. Data Collection Methodology

Participatory Mapping Process

Preparation Phase

1. Form diverse mapping team (50% women/non-binary and indigenous representation)
2. Define mapping objectives and scope
3. Customize data collection forms for local context
4. Gather existing maps and resource documentation
5. Conduct training on mapping tools and protocols

Field Mapping Phase

1. Conduct community transect walks with diverse stakeholders
2. Document resources using structured forms or digital entries
3. Capture GPS coordinates or mark locations on base maps

4. Collect qualitative information about each resource
5. Document traditional usage patterns and governance

Validation Phase

1. Present draft maps to community assemblies
2. Incorporate feedback and corrections
3. Verify sensitive information with knowledge holders
4. Conduct gap analysis for missing resources
5. Finalize resource classification and attributes

Data Collection Templates

Basic Resource Documentation Form

- Resource name/identifier: _____
- Resource category: _____
- Location (GPS or description): _____
- Ownership/governance type: □ Private □ Public □ Common □ Contested
- Current uses: _____
- Historical/traditional uses: _____
- Access restrictions: □ None □ Seasonal □ Membership □ Permission □ Other: _____
- Condition: □ Abundant □ Sufficient □ Declining □ Scarce □ Unknown
- Sustainability concerns: _____
- Cultural significance: _____
- Supporting photo/documentation: _____
- Additional notes: _____

Traditional Knowledge Documentation

(Note: Always follow indigenous protocols for knowledge documentation)

- Traditional name(s): _____
- Knowledge holder(s): _____
- Permission for recording: □ Yes □ Limited □ No
- Seasonal availability/use: _____
- Traditional governance practices: _____
- Stories/teachings associated: _____
- Intergenerational transmission process: _____
- Publicly shareable aspects: _____
- Protected aspects: _____

5. Visualization Features

Map Layers and Symbology

Layer Categories

- **Base Layers:** Topographic, satellite imagery, simplified schematic
- **Administrative Layers:** Boundaries, jurisdictions, traditional territories

- **Infrastructure Layers:** Roads, utilities, public facilities
- **Natural Resource Layers:** Water, forests, arable land, biodiversity
- **Social Resource Layers:** Meeting spaces, care networks, cultural sites
- **Economic Layers:** Markets, workshops, farms, cooperatives
- **Analysis Layers:** Accessibility, density, flow patterns

Symbology System

- **Intuitive Icons:** Visual representations for major resource types
- **Color Coding:** Consistent palette for resource categories
- **Size Variation:** Relative importance or capacity indicators
- **Pattern Fills:** Ownership or access pattern indicators
- **Directional Markers:** Flow and relationship indicators

Visualization Modes

Standard Map View

- Conventional GIS display with multiple toggleable layers
- Zoom functionality from regional to building-level detail
- Search and filter capabilities for resource types

Relationship View

- Network diagram showing connections between resources
- Flow visualization for value and material exchange
- Dependency mapping for critical resources

Timeline View

- Seasonal availability of resources
- Historical changes in resource patterns
- Future projections based on climate and usage data

Equity Analysis View

- Distribution patterns relative to population
- Access barriers and distance analysis
- Governance representation visualization

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6. Indigenous Knowledge Integration

Cultural Protocols

Permission and Consent

- Explicit permission process for documenting traditional knowledge
- Tiered consent system for different sharing levels
- Clear documentation of knowledge ownership
- Right of withdrawal at any time

Knowledge Protection

- Option for partial documentation (publicly shareable portions only)

- Community-controlled access permissions
- Encryption for sensitive cultural information
- Non-digital backup systems for traditional knowledge

Recognition and Attribution

- Proper attribution to knowledge holders and communities
- Integration of traditional place names and terminologies
- Recognition of traditional governance authorities
- Documentation of historical stewardship

Indigenous Mapping Methods

Traditional Territory Documentation

- Boundary mapping based on traditional use and relationships
- Seasonal movement patterns and cyclical resource use
- Story-based mapping connecting places to cultural narratives
- Documentation of traditional markers and navigation systems

Cultural Landscape Approach

- Integrated cultural-ecological systems mapping
- Sacred and ceremonial site documentation (with appropriate protections)
- Cultural keystone species and relationships
- Traditional management regimes and practices

Indigenous Classification Systems

- Local taxonomies and categorization systems
- Traditional seasonal calendars
- Relational categorization of resources
- Language-based classification integration

7. Analysis and Decision Support

Resource Assessment Tools

Quantity Assessment

- Inventory counts and measurement tools
- Carrying capacity calculators
- Sustainable yield estimators
- Scarcity/abundance indicators

Quality Assessment

- Condition rating systems
- Contamination/degradation indicators
- Restoration potential calculators
- Cultural integrity measures

Accessibility Assessment

- Distance and travel time calculators
- Barrier identification tools
- Seasonal availability trackers
- Equity of access analyzers

Decision Support Features

Scenario Planning

- "What-if" modeling for resource management options
- Climate change impact projections
- Usage pattern simulators
- Governance arrangement comparisons

Equity Analysis

- Distribution justice calculators
- Access gap identifiers
- Representation adequacy measures
- Benefit sharing analyzers

Sustainability Assessment

- Regeneration rate calculators
- Extraction impact estimators
- Long-term viability projections
- Intergenerational equity measures

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8. Implementation Guide

Quick Start Process (Minimum Viable Mapping)

Day 1: Planning and Preparation

- Form core mapping team (3-7 people with diverse perspectives)
- Identify 3-5 priority resource categories for initial mapping
- Gather existing information and base maps
- Review basic mapping techniques with team

Week 1: Initial Mapping

- Conduct community transect walks focusing on priority resources
- Document key resources using simplified forms
- Create rough draft map with main resource locations
- Share draft with small feedback group

Week 2-4: Basic Map Development

- Refine resource locations and attributes
- Add core information about access and governance
- Develop simple legend and visualization

- Present to broader community for input

Month 2: Practical Application

- Use initial map for one framework component (e.g., cooperative planning)
- Document gaps and needs identified during use
- Make iterative improvements based on application
- Plan for more comprehensive mapping as needed

Comprehensive Implementation (3-6 Months)

Month 1: Foundation

- Establish diverse mapping team with formal roles
- Develop detailed mapping plan with community input
- Customize tools and templates for local context
- Conduct comprehensive training for mapping team

Month 2-3: Data Collection

- Implement systematic mapping of all resource categories
- Conduct focused interviews with knowledge holders
- Document resource flows and relationships
- Begin digitization of collected information

Month 4: Validation and Analysis

- Host community validation sessions for collected data
- Conduct gap analysis and supplementary mapping
- Develop initial analysis of resource patterns
- Create draft visualizations and reports

Month 5-6: Application Integration

- Link resource map to framework components
- Develop governance recommendations for mapped commons
- Create resource-based currency backing proposals
- Establish monitoring system for resource changes

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9. Offline-Accessible Summary

[Note: This section uses simple language and visual icons for low-literacy contexts]

What is resource mapping?

- Making pictures of what your community has
- Showing where important things are located
- Understanding how resources are connected
- Planning how to use and share resources fairly

Types of resources to map:

- Places where things are made or grown
- Natural areas like forests and water

- Community meeting places
- Traditional and cultural places
- Skills and knowledge people have
- Markets and trading places

How to make a resource map:

1. Form a diverse team
2. Walk through the community together
3. Mark important places on a map
4. Write information about each place
5. Share the map with the community for feedback
6. Use the map to make plans

Ways to create maps:

- Paper maps with drawings
- Computer or phone application
- Taking pictures with location information
- Voice recordings about places
- Simple forms to fill out

How maps help communities:

- Shows what resources can support local currency
- Identifies opportunities for cooperatives
- Helps plan fair sharing of resources
- Connects communities for ethical trade
- Protects traditional knowledge and places

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10. Integration with Framework Components

Community Currency Integration

- Identify and quantify value-producing assets for currency backing
- Map circulation patterns for currency design
- Document local production capacity for economic sovereignty
- Visualize potential currency users and acceptance points

Cooperative Development Support

- Identify complementary resources for cooperative formation
- Map skill distribution for cooperative membership
- Visualize resource gaps addressable through cooperatives
- Document potential markets and supply chains

Commons Governance Application

- Define spatial boundaries of common-pool resources
- Document current governance arrangements

- Map user communities and stakeholders
- Visualize access patterns and equity considerations

Ethical Trade Zone Planning

- Map cross-community resource flows
- Document regional production specialization
- Visualize transportation and exchange infrastructure
- Identify opportunities for regional value addition

AUBI Implementation Support

- Map distribution of needs across communities
- Visualize potential contribution activities
- Document infrastructure for distribution
- Track impact patterns from distributions

By using this tool, communities can create comprehensive resource maps that support sovereignty, ensure equitable access and governance, enable interoperability between systems, and adapt to changing conditions—all aligned with the core principles of the Nested Sovereignty Framework.