Introduction to Participatory GIS and P3DM

By Giacomo Rambaldi
grambaldi@iapad.org

NEA Global Workshop
Cambridge, UK, 24-28 October 2022

BESNet
Biodiversity and Ecosystem Services Network

unesco

UN environment programme WCMC

About

PGIS

Participatory Geographic Information Systems

What is it all about?

- Participatory GIS (PGIS) is an emergent practice in its own right, developing out of participatory approaches to development and spatial information management and communication.
- The practice is the result of a spontaneous merger of Participatory Learning and Action (PLA) methods with Geographic Information Technologies (GITs).

A practice …

- That builds on visual language, multimedia, and multiple spatial dimensions.
- That integrates indigenous and local spatial knowledge with other data.
- Wherein geo-spatial tools, methods and technologies are integrated.
- That relies on multidisciplinary teams, skills and approaches.
- Synergetic with Participatory Video (PV) and social media applications.

In which contexts?

- Recording and safeguarding ever-evolving intangible cultural heritage.
- Documenting and evaluating existing knowledge on biodiversity and ecosystem services.
- Identity building among disadvantaged Indigenous Peoples and local communities.
- Awareness raising, education and social learning.
- Facilitating communication and advocacy.
- Community-based planning and natural resource management.
- Adapting to climate change including disaster risk reduction.
- Managing and ameliorating territorial conflicts.
- Engaging communities in biodiversity conservation.

Tools, methods and technologies

Ground maps

Images courtesy Dave de Vera, PAFID

Tools, methods and technologies

Image by © G. Rambaldi/NIPAP

Tools, methods and technologies

Image courtesy of CyberTracker Conservation, © Rolex/Eric Vandeville

Tools, methods and technologies

Image courtesy of J. Nelson/FPP

Tools, methods and technologies

Image by G. Rambaldi/CTA

Tools, methods and technologies

Image courtesy of Mello, UNOSAT

Tools, methods and technologies

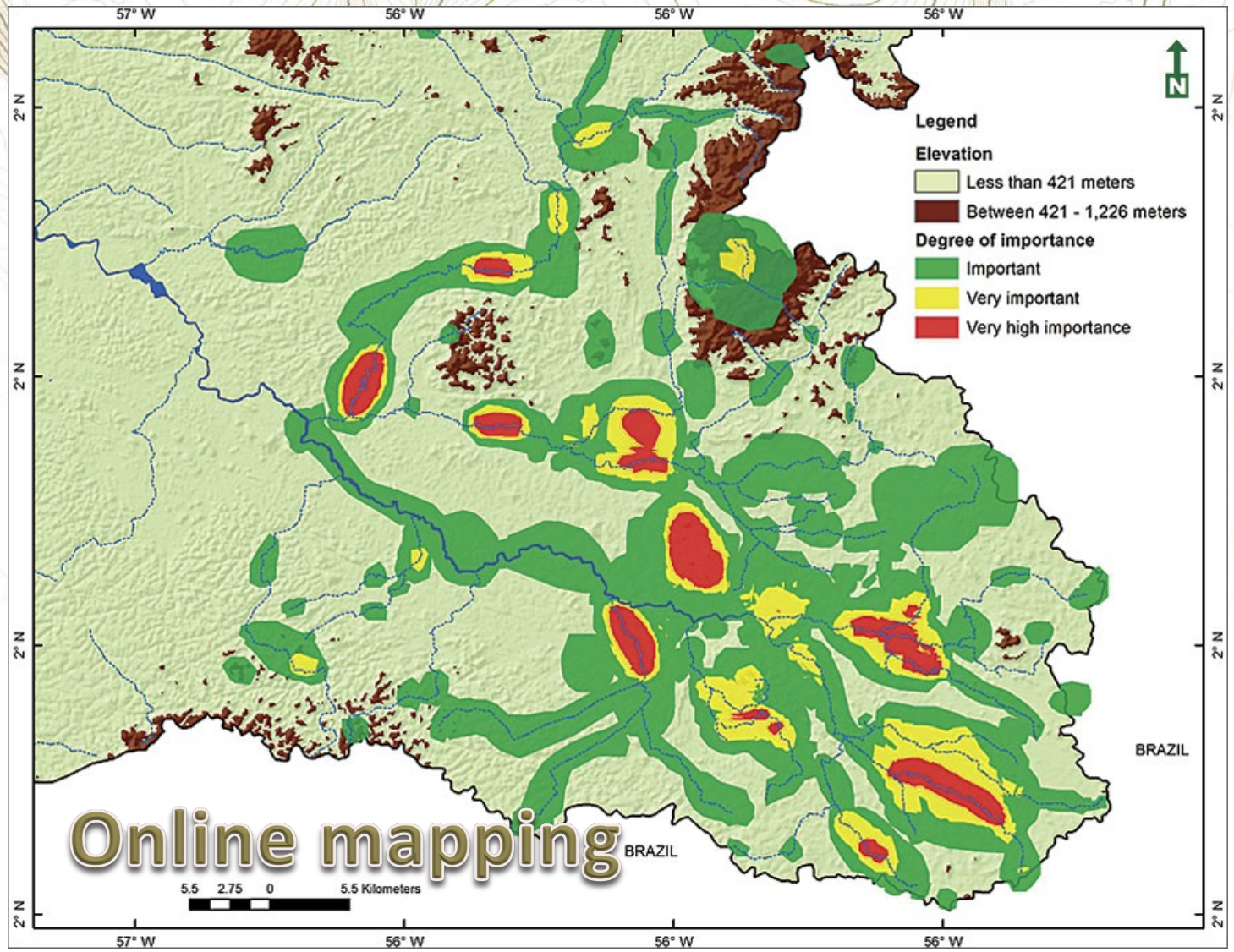


Image courtesy of Conservation International Suriname

Award-winning
best practice

World Summit Award
WINNER 2007

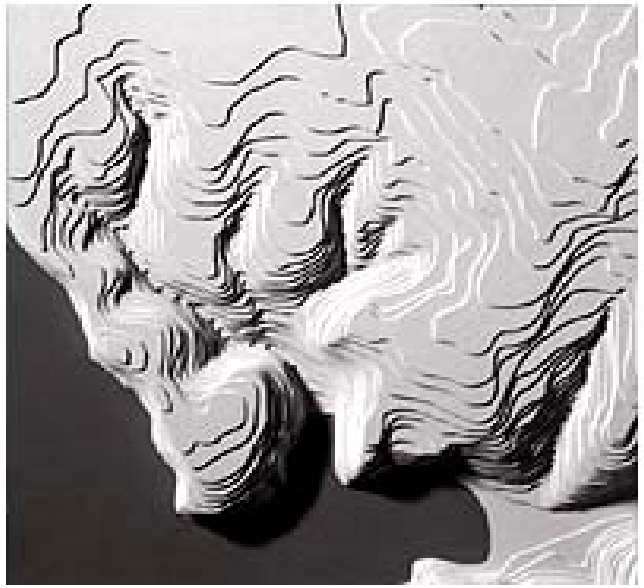
About

Participatory 3D Modelling (P3DM)

Participatory 3D Modelling (P3DM)

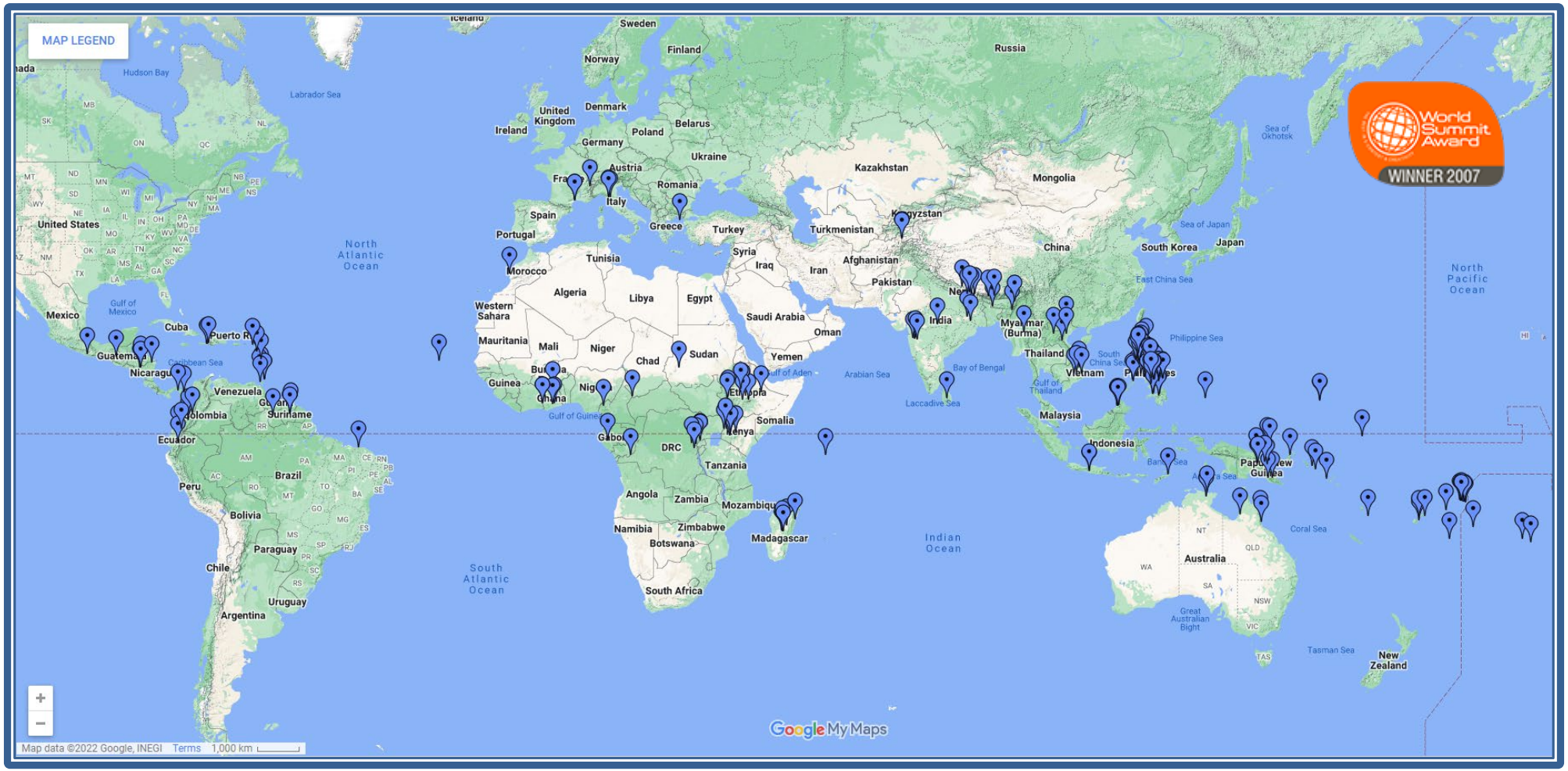
P3DM merges traditional spatial information …

… with local spatial knowledge

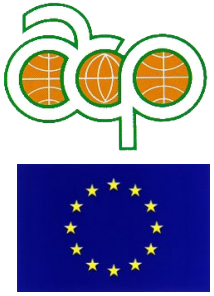


P3DM works best at scales larger than or equal to 1:10,000

P3DM around the Globe



P3DM c/o Development Actors



FORD FOUNDATION

AGA KHAN FOUNDATION


Vietnam
1:10,000 scale
Image by G. Rambaldi/CTA

Image courtesy of MELCA Ethiopia


Philippines
1:10,000 scale
Image by G. Rambaldi/NIPAP

Chad

Image courtesy of AFPAT

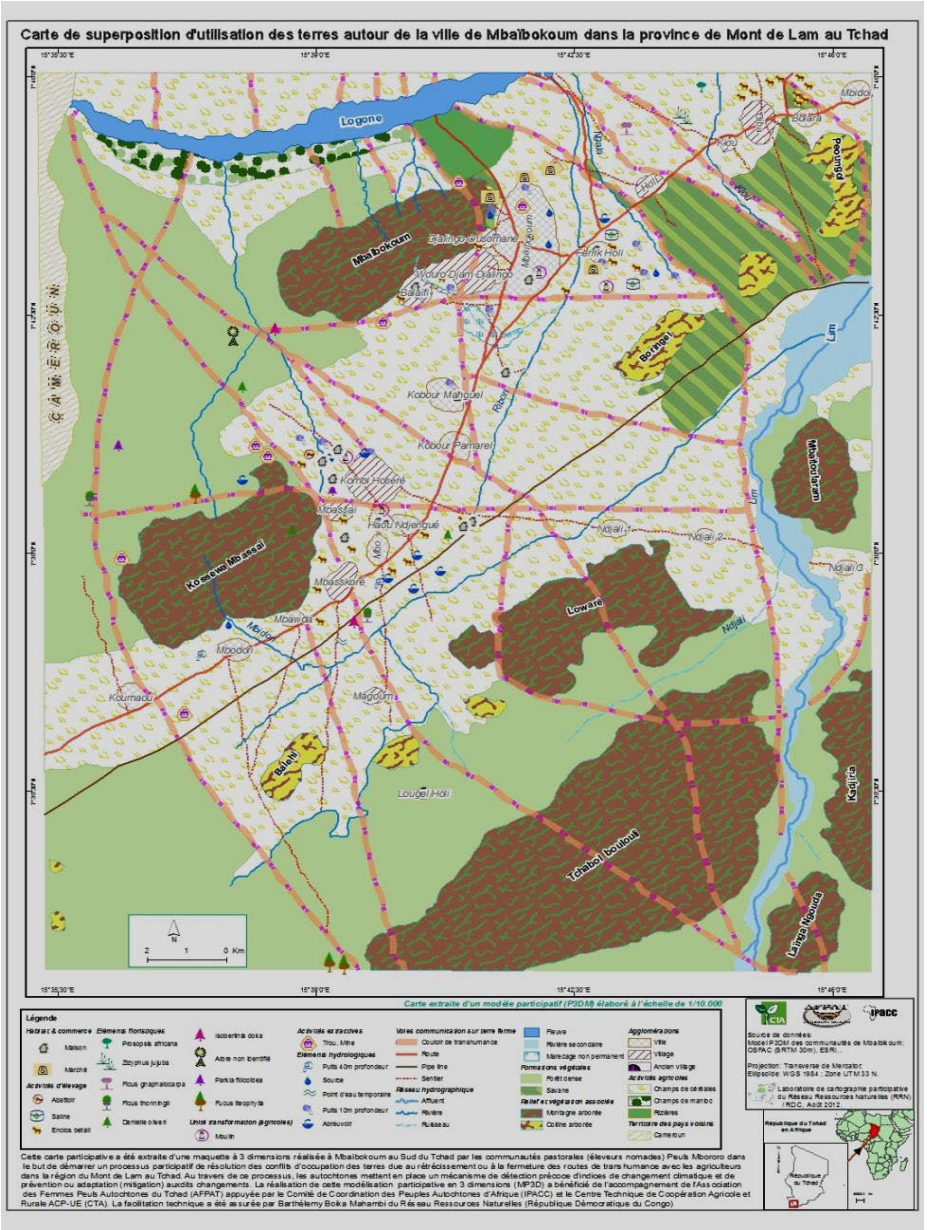
Chad

Image courtesy of AFPAT

Chad

Digital outputs

Data sets and layered maps in French and Fufuldé



Map courtesy of AFPAT & CTA


Kenya
1:10,000 scale
Image by G. Rambaldi/CTA


Papua New Guinea
1:10,000 scale
Image courtesy of Kenn Mondiai

Gabon

1:10,000 scale

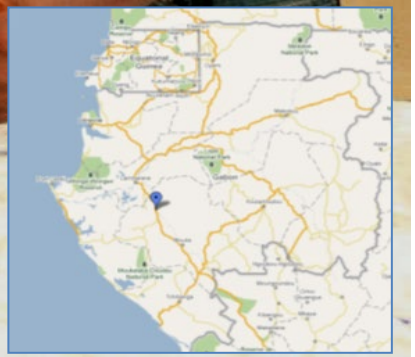
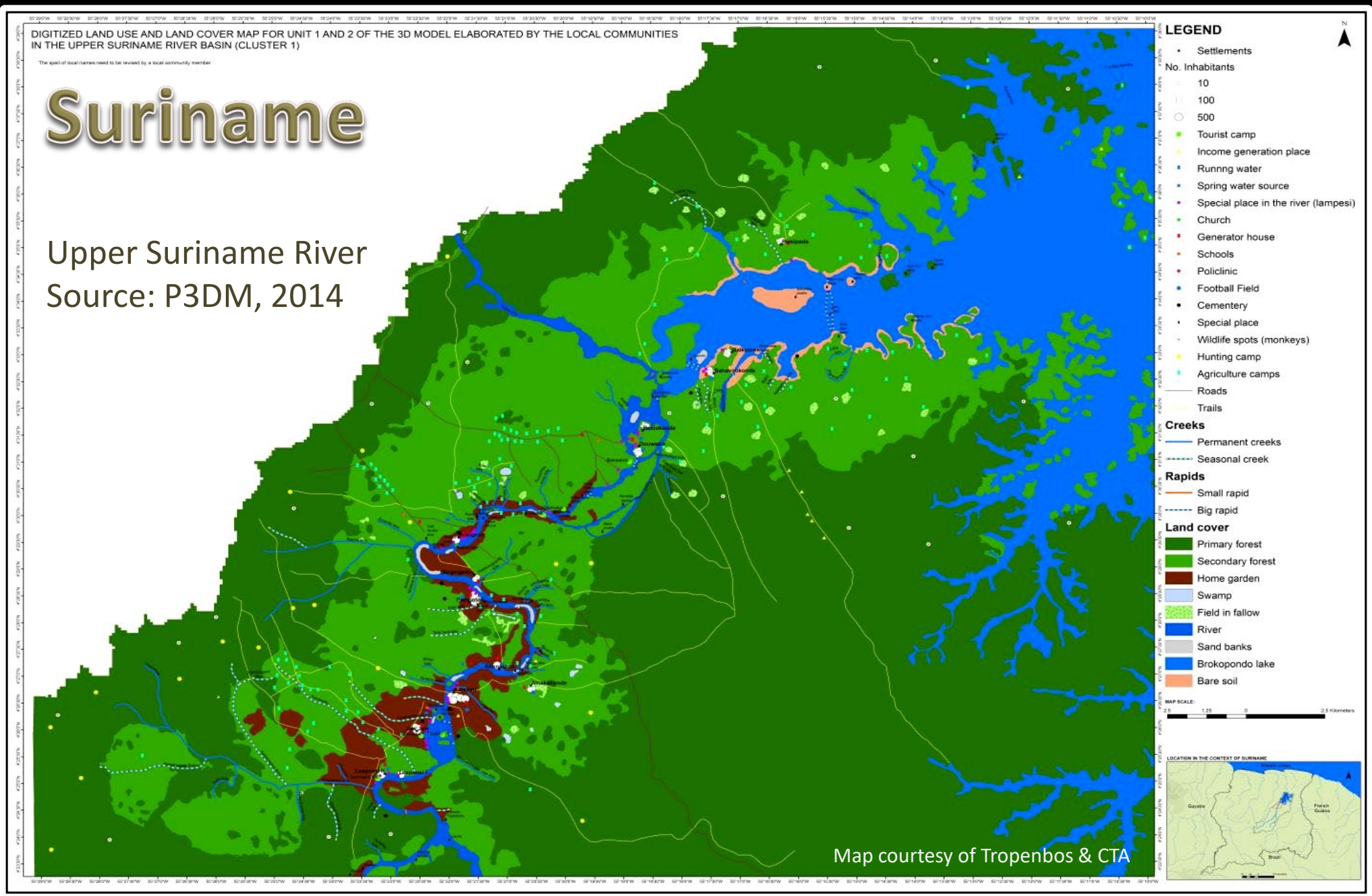


Image by G. Rambaldi/CTA


Suriname
1:10,000 scale
Image by G. Rambaldi/CTA


DIGITIZED LAND USE AND LAND COVER MAP FOR UNIT 1 AND 2 OF THE 3D MODEL ELABORATED BY THE LOCAL COMMUNITIES IN THE UPPER SURINAME RIVER BASIN (CLUSTER 1)
The spell of local names need to be revised by a local community member
Suriname
Upper Suriname River
Source: P3DM, 2014
LEGEND
Settlements
No. Inhabitants
10
100
500
Tourist camp
Income generation place
Runnng water
Spring water source
Special place in the river (lampesi)
Church
Generator house
Schools
Policlinic
Football Field
Cementery
Special place
Wildlife spots (monkeys)
Hunting camp
Agriculture camps
Roads
Trails
Creeks
Permanent creeks
Seasonal creek
Rapids
Small rapid
Big rapid
Land cover
Primary forest
Secondary forest
Home garden
Swamp
Field in fallow
River
Sand banks
Brokopondo lake
Bare soil
MAP SCALE:
2.5 1.25 0 2.5 Kilometers
LOCATION IN THE CONTEXT OF SURINAME
Guyana
French Guiana
Brasil
Map courtesy of Tropenbos & CTA

1:10,000 scale

Image by G. Rambaldi/CTA

ASARECA
Transforming Agriculture for Improved Livelihoods

Uganda

1:10,000 scale

Image courtesy of IIRR & CTA

Image courtesy of SPREP

Guyana and Suriname

1:100,000 scale

Image courtesy of Debora Linga/ Tribal Peoples Development

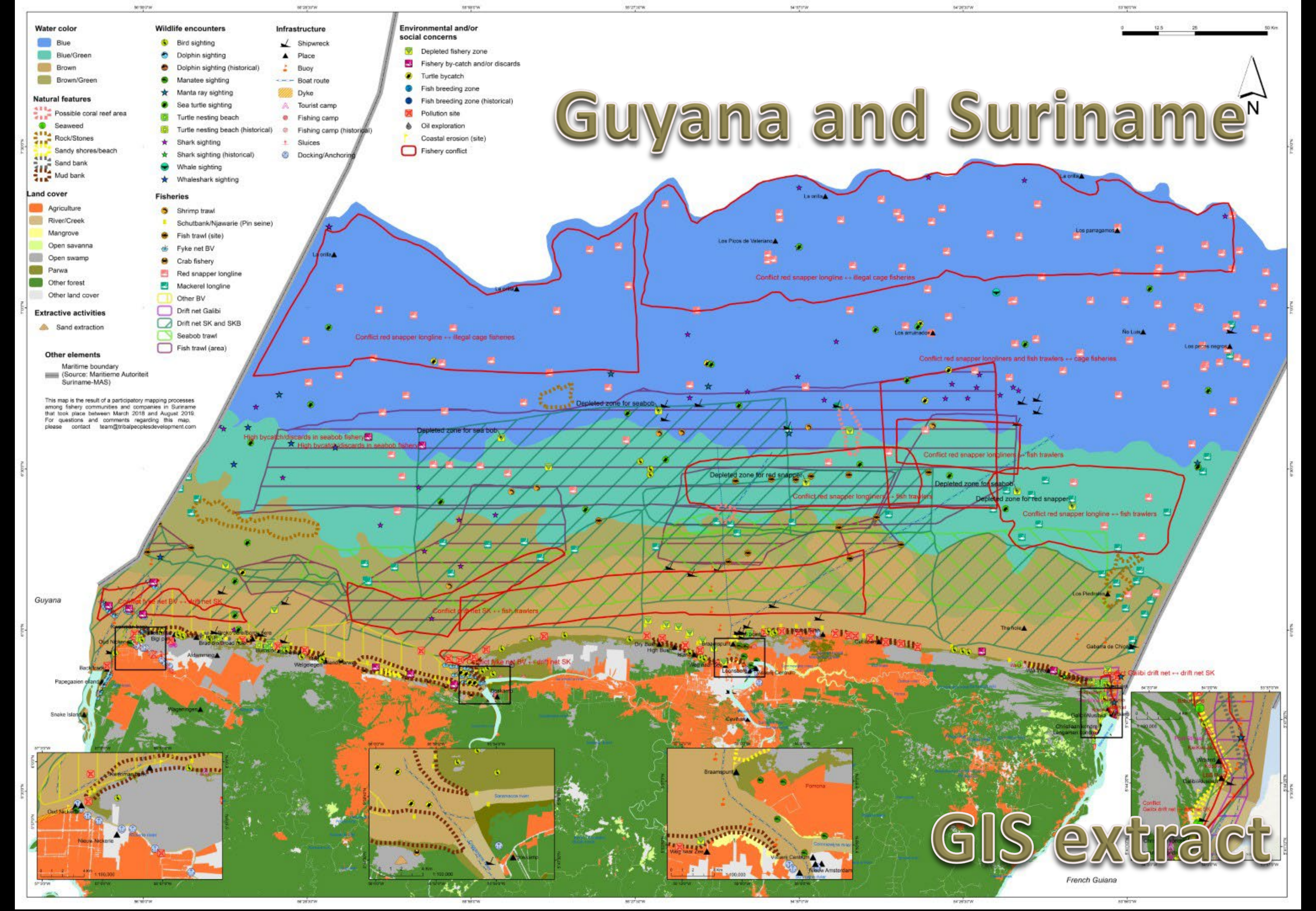

Guyana and Suriname
GIS extract
Water color
Blue
Blue/Green
Brown
Brown/Green
Natural features
Possible coral reef area
Seaweed
Rock/Stones
Sandy shores/beach
Sand bank
Mud bank
Land cover
Agriculture
River/Creek
Mangrove
Open savanna
Open swamp
Parwa
Other forest
Other land cover
Extractive activities
Sand extraction
Other elements
Maritime boundary (Source: Maritieme Autoriteit Suriname-MAS)
This map is the result of a participatory mapping processes among fishery communities and companies in Suriname that took place between March 2018 and August 2019. For questions and comments regarding this map, please contact team@tribalpeoplesdevelopment.com
Wildlife encounters
Bird sighting
Dolphin sighting
Dolphin sighting (historical)
Manatee sighting
Manta ray sighting
Sea turtle sighting
Turtle nesting beach
Turtle nesting beach (historical)
Shark sighting
Shark sighting (historical)
Whale sighting
Whaleshark sighting
Fisheries
Shrimp trawl
Schutbank/Njawarie (Pin seine)
Fish trawl (site)
Fyke net BV
Crab fishery
Red snapper longline
Mackerel longline
Other BV
Drift net Galibi
Drift net SK and SKB
Seabob trawl
Fish trawl (area)
Infrastructure
Shipwreck
Place
Buoy
Boat route
Dyke
Tourist camp
Fishing camp
Fishing camp (historical)
Sluices
Docking/Anchoring
Environmental and/or social concerns
Depleted fishery zone
Fishery by-catch and/or discards
Turtle bycatch
Fish breeding zone
Fish breeding zone (historical)
Pollution site
Oil exploration
Coastal erosion (site)
Fishery conflict
0 12.5 25 50 Km
N
Conflict red snapper longline ↔ illegal cage fisheries
Conflict red snapper longline ↔ illegal cage fisheries
Conflict red snapper longliners and fish trawlers ↔ cage fisheries
Depleted zone for seabob
Depleted zone for sea bob
High bycatch/discards in seabob fishery
High bycatch/discards in seabob fishery
Conflict red snapper longliners ↔ fish trawlers
Depleted zone for red snapper
Conflict red snapper longliners ↔ fish trawlers
Depleted zone for seabob
Depleted zone for red snapper
Conflict red snapper longline ↔ fish trawlers
Conflict fyke net BV ↔ drift net SK
Conflict drift net SK ↔ fish trawlers
Conflict fyke net BV ↔ drift net SK
Conflict Galibi drift net ↔ drift net SK
Guyana
French Guiana

Image by G. Rambaldi/CTA

Fiji

Image by G. Rambaldi/CTA

Image by G. Rambaldi/CTA

Image by G. Rambaldi/CTA

National NEA priority ecosystems

- **Botswana:** T.b.d.
- **Dominican Republic**: Marine, Coastal and Terrestrial
- **Malawi**: Terrestrial, Wetlands and Aquatic
- **Thailand**: Coastal and Marine

P3DM suitability by ecosystem

- Terrestrial ★★★★★
- Coastal ★★★★★
- Lakes ★★★★★
- Marine ★★★★
- Wetlands ★

P3DM technical requirements, by ecosystem

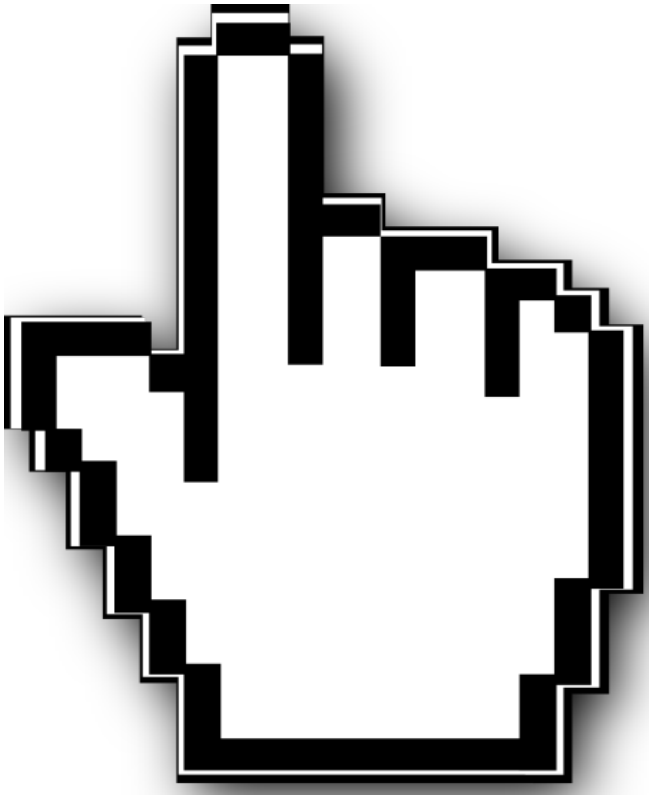
Ecosystem	Preconditions (availability of …)
Terrestrial	High resolution (HR) digital elevation model (DEM)
Coastal	Bathymetry + HR DEM
Lake	Bathymetry + HR DEM for the terrestrial component (catchments)
Marine	Bathymetry (+ HR DEM if islands are included)
Wetland	N/A

P3DM good practice

Preconditions:

- Indigenous, local and scientific knowledge holders collaborate on a peer-to-peer basis.
- Multiple P3DM exercises and follow-up workshops / studies are conducted nationwide to cover diverse, representative ecosystems and socio-economic environments.
- P3DM practice is embedded in a long-lasting, articulated (multi-actor) intervention, in the position to deal with follow-up arrangements to accommodate new realities emerging from the process.

Thank you



BESNet
Biodiversity and Ecosystem Services Network

unesco

Supported by:

Federal Ministry
for the Environment, Nature Conservation,
Nuclear Safety and Consumer Protection

based on a decision of
the German Bundestag

SwedBio
A programme at Stockholm Resilience Centre