



Overview of Geoinformatic Options-by-Context (GeOC) Framework and Tools for Supporting SLM *Targeting* and *Outscaling*

GeOC team

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Problems

- Constraints for promoting SLM practices to achieve LDN at scale
 - Diverse socio-economic and biophysical context
 - Limited resources
 - Ineffectiveness of “uniform blanket” approach for wide spread successful adoption of SLM practices
- Lack of tools supporting comparative analyses/assessments of place-based SLM options by context, thereby supporting better targeting and out-scaling efforts



Aim

To provide land users, projects/programs and policy decision-makers with a web-based tool as being:

- platform for integrating multi-disciplinary, multi-form and multi-scale data on SLM options and their contexts
- plausible, robust extrapolation domains for guiding decisions on selecting/using/studying/outsourcing of SLM options-in-context
- an open platform for docking data (system-whole completed, standardized) from different projects into integrative/holistic and converging actions for promoting SLM practices at scale.

GeOC

- 
- **Geo-informatic Options-by-Context (GeOC) - A framework & tool** for defining, monitoring, assessing and co-learning place-based SLM options fitted to the social-ecological contexts
 - Key question: WHAT WOULD WORK BEST IN WHERE / WHAT CONDITIONS?
 - Key assumption: Context-matched recommendation/ implementation is more feasible and cost-effective compared to “uniform blanket” way (business-as-usual).
 - A knowledge/data integration tool (rather than a specific operational simulation model)
 - ✓ Standardize and correlate available data
 - ✓ Support targeting and out-scaling in the face of contextual and data diversity
 - i ➤ Pre-conditions for GeOC’s usefulness: Large and diverse available data on innovation options and contexts

Geo-informatics Options by Context (GeOC) tool

GeOC online platform integrates (1) standardized system characterizing SLM with (2) user-friendly Web-GIS

Web-based GIS

- Web-based GIS for key functions (filtering/querying, zonal statistics, spatial similarity analysis)
- Global GIS database of divers and performance/impact indicators of SLM

Sustainable Land Management (SLM)

- Web-based form for importing standardized and completed SLM options by context
- Database of SLM options by Context

Matched Synchronized

Lists of GIS data allow users to select contextual criteria, and/or impact indicators for options-by-context analysis

Functions:

- Basic GIS functions (zooming, drawing, etc.)
- Contextual similarity analysis (delineating similar socio-ecological context over a large area)

Submitted SLMs

ID	Name	Status	Action
31	jeouir technique	Review	Review Request View Delete

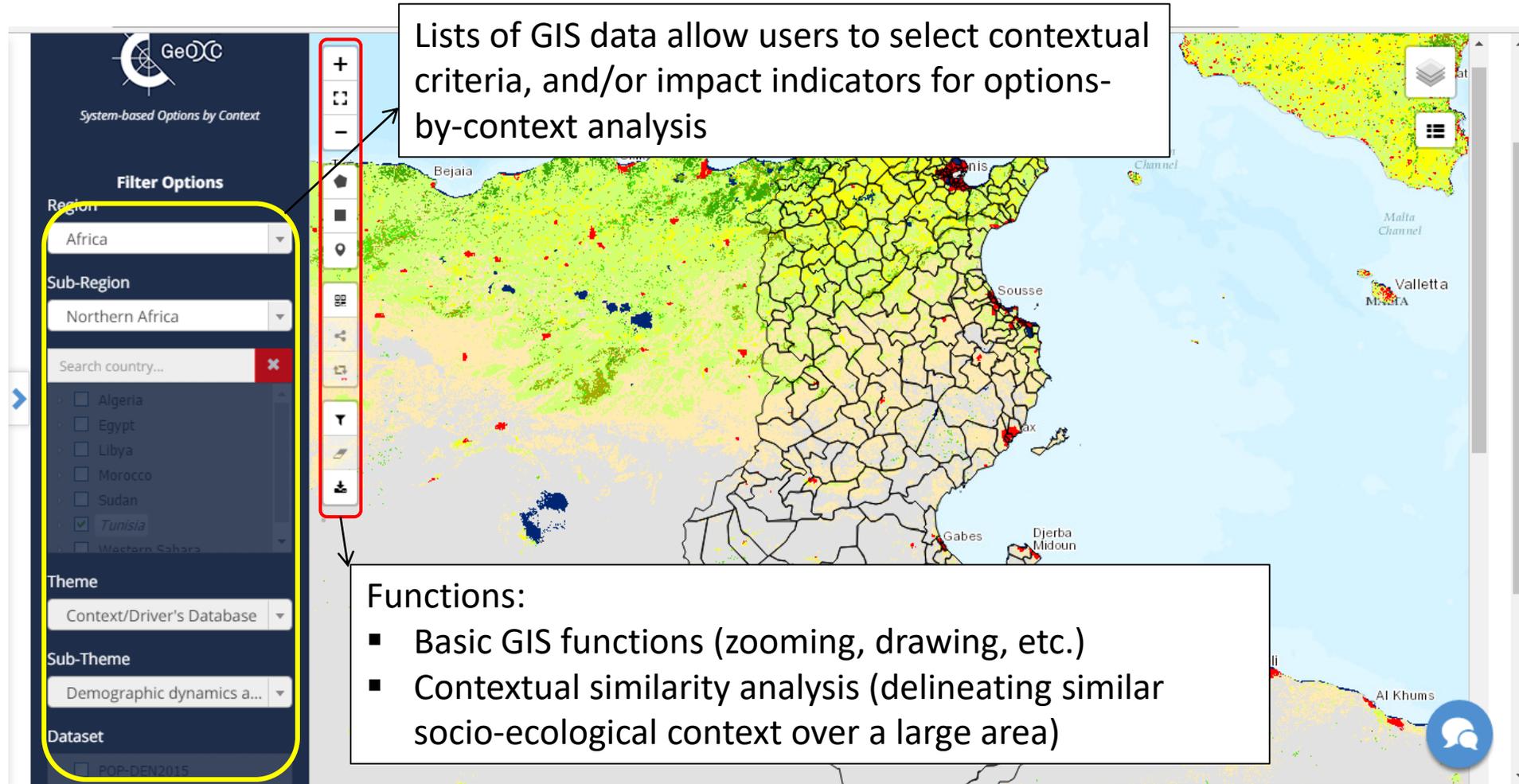
Showing 1 to 1 of 1 entries

Approved SLMs

ID	Name	Action
14	check dams gabions or stones	View Delete

The WebGIS part of GeOC tool

Graphic interface of GeOC's WebGIS and key functions



The screenshot displays the GeOC WebGIS interface. On the left, a 'Filter Options' sidebar is visible, containing dropdown menus for 'Region' (set to Africa), 'Sub-Region' (set to Northern Africa), and 'Theme' (set to Context/Driver's Database). Below these are search and selection options for countries, with Tunisia selected. A red box highlights a vertical toolbar on the left side of the map, containing icons for zooming, panning, and other GIS functions. A white callout box with a black border points to this toolbar, containing the text: 'Lists of GIS data allow users to select contextual criteria, and/or impact indicators for options-by-context analysis'. Another white callout box with a black border points to the map area, containing the text: 'Functions: Basic GIS functions (zooming, drawing, etc.) Contextual similarity analysis (delineating similar socio-ecological context over a large area)'. The map itself shows a geographical area with a grid overlay and various colored data points. Labels on the map include 'Bejaia', 'Tunis', 'Sousse', 'Gabes', 'Djerba Midoun', 'Al Khums', 'Valletta MALTA', and 'Malta Channel'. The GeOC logo and 'System-based Options by Context' are visible at the top left of the interface.

Lists of GIS data allow users to select contextual criteria, and/or impact indicators for options-by-context analysis

Functions:

- Basic GIS functions (zooming, drawing, etc.)
- Contextual similarity analysis (delineating similar socio-ecological context over a large area)

Further details in: [Diwediga et al.](#)

Template for completed, standardized SLM characterization

- Location:
 - ✓ Uploaded, or, directly mapped (supported by mapping tool)
- Context/potential drivers
 - ✓ Automatically retrieved from multi-attribute spatial database
 - ✓ Generated by projects
- Technological description of the SLM option
- Interactions with other components of agricultural systems
- Adoption (risks considered)
- Impacts (multi-criteria)

3	Field of information	Your input	Note: please field the lined boxes, with the use of the provided formats or information lists if you are asked in the Note column.	Note
4				
5				
6	PART 1: GENERAL INFORMATION			
7				
8	1.1. Name of the SLM Technology			
9		1.1 Name:	Jessours rainwater harvesting in southern Tunisia	Max 70 letters including spaces
10		1.2 Locally used name:	"Jessours"	Max 70 letters including spaces
11		1.3 Country:	Tunisia	Select from the provided list
12			Tunisia	
13	1.2 Documentors and Resources Persons/Information			
14	Main Documentor			
15		Name (first name + last name):	Turkey	
16		Sex (M/F):	Turkmenistan	
			Turks and Caicos Islands	
			Tuvalu	
			Uganda	
			Ukraine	
			United Arab Emirates	
	2.3.1 Illustrative photo 1:			Insert a photo
	Caption of photo 1	Technical sheme for jessour (ref: Taamalah et al., 2010, "Gestion durable de terres en Tunisie, Bonnes pratiques agricoles", p:7)		
	2.3.2 Illustrative photo 2:			Insert a photo
	Caption of photo 2	An overall view of an area arranged in Jessour in		
	3.1 Purposes of the SLM Technology (max. 3 most important purposes):			
	3.1.1 The 1st most important purpose	Reduce land degradation (soil, water, vegetation)		Select from the provided list
	if the main purpose was selected as "Other ...", please specify			
		Restore/rehabilitate land degradation (soil, water, vegetation)		Max 70 letters including spaces
		Reserve ecosystems		

Web-based SLM interfaces

You must fill in the information with **RED ASTERISK ***

3.1 Purposes of the SLM technology

3.1.1 Most important purpose *

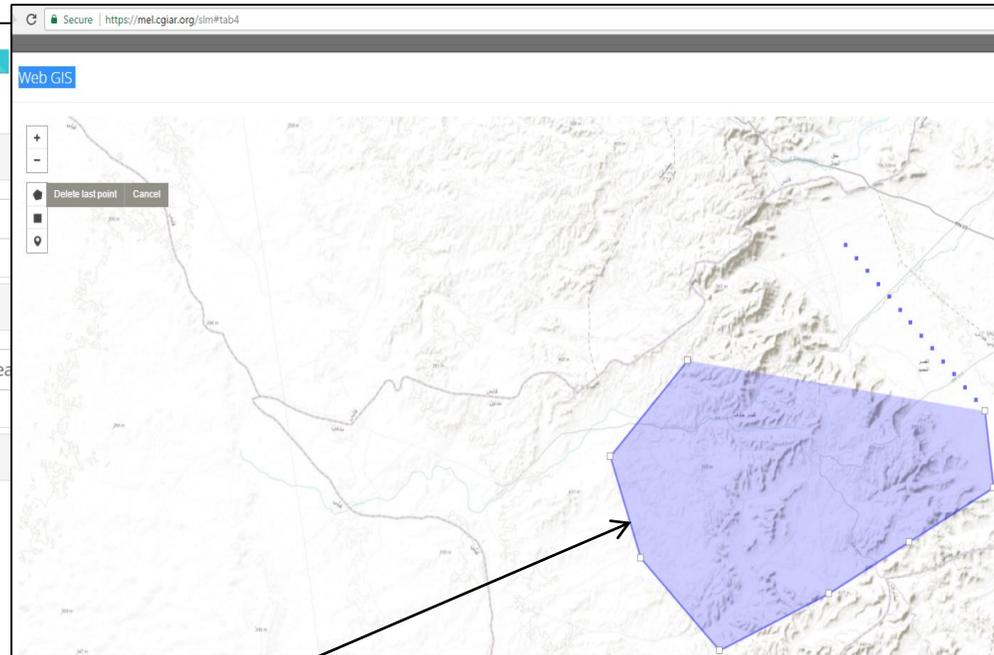
3.2 Type of the SLM technology

3.2.1 Most relevant SLM type *

3.3 SLM measures comprising the SLM technology

3.3.1 Type of agronomic measures

- S1: Terraces
- S2: Bunds, banks
- S3: Graded ditches, channels waterways
- S4: Level ditches, pits
- S5: Demarcation



2

Description of the SLM Technology

3

Purpose and Classification Of SLM Technology

4

Geographic Location and Socio-Ecol context/Environ

Information with **RED ASTERISK ***

Locations where the SLM Technology has been applied

Web GIS
Upload File
URL

Submitted SLMs				
New +				
15 records				Search: <input type="text"/>
ID	Name	Status	Action	
31	Jessour technique	Review	Approve	Review Required
			View	Reject
Showing 1 to 1 of 1 entries				
Prev Next				
Approved SLMs				
15 records				Search: <input type="text"/>
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14	check dams gabions or stones	View	Delete	

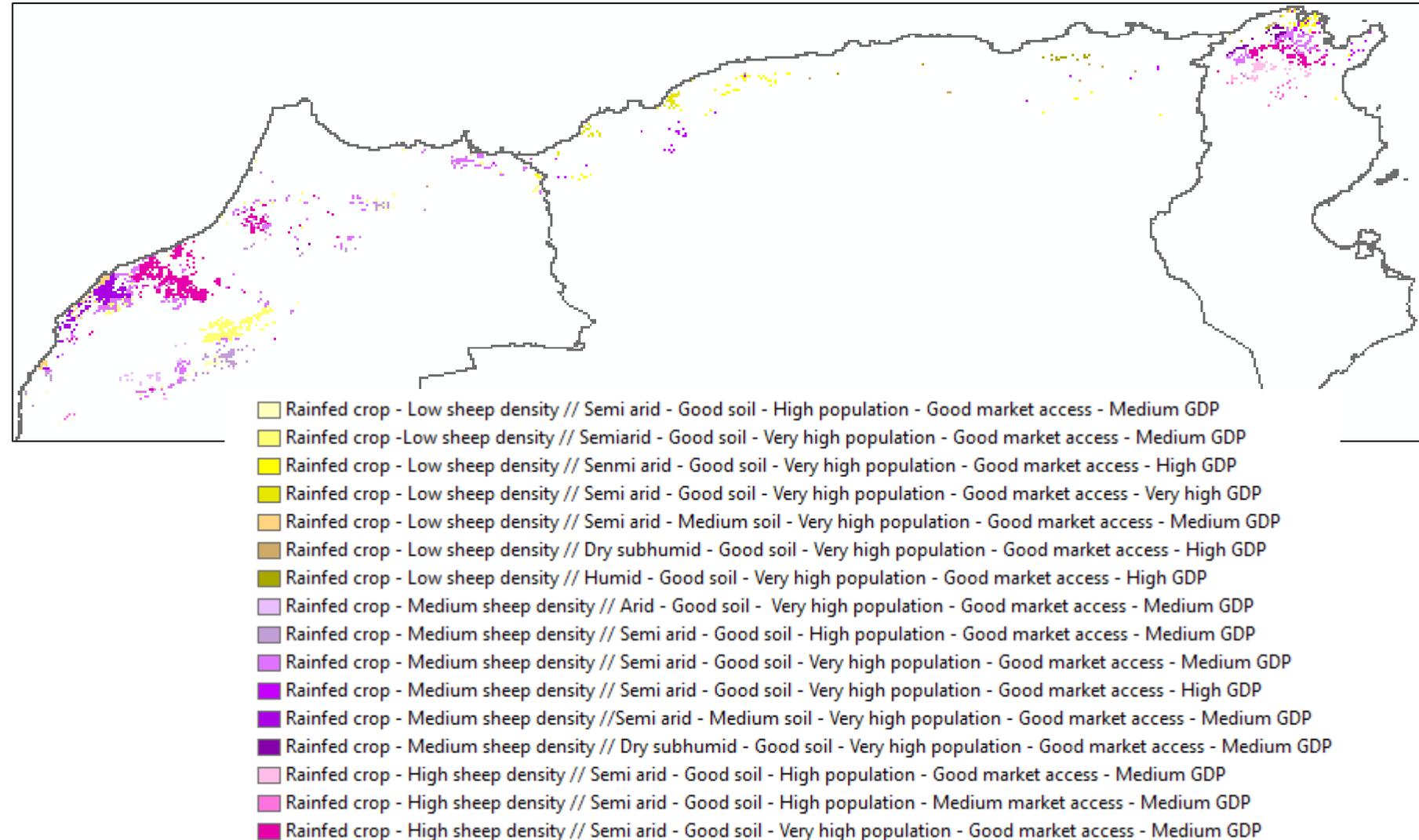


GeOC's Key Function 1 – Systemized data integration and storage

- Systemized data integration and storage
 - ✓ Couple descriptive data with spatial data
 - ✓ Systemize and standardize land/FS/LS management options
 - ✓ Multi-variate dataset for multi-usages rather than factsheets
 - ✓ Both off-line and online media for maximal accesses (by all) & links to Big Data
 - ✓ Peer-review for data QC

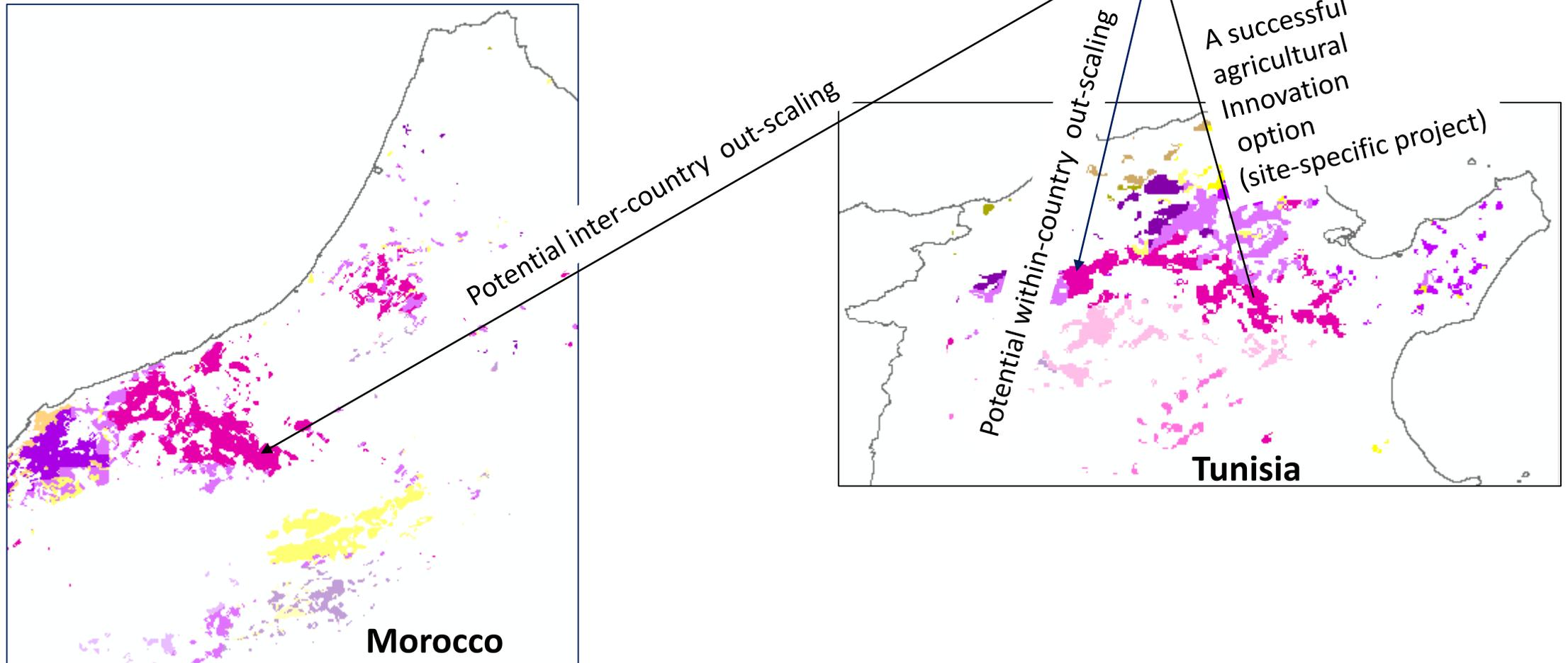
GeOC's Key Function 2 - Functional Context Socio-Ecological Types (fCSET) as extrapolation domains

- fCSET: a set of key contextual factors which influence adoptions and performance of SLM.
- fCSETs in Rainfed Cropland in three Magreb countries (Tunisia-Algeria-Morocco)

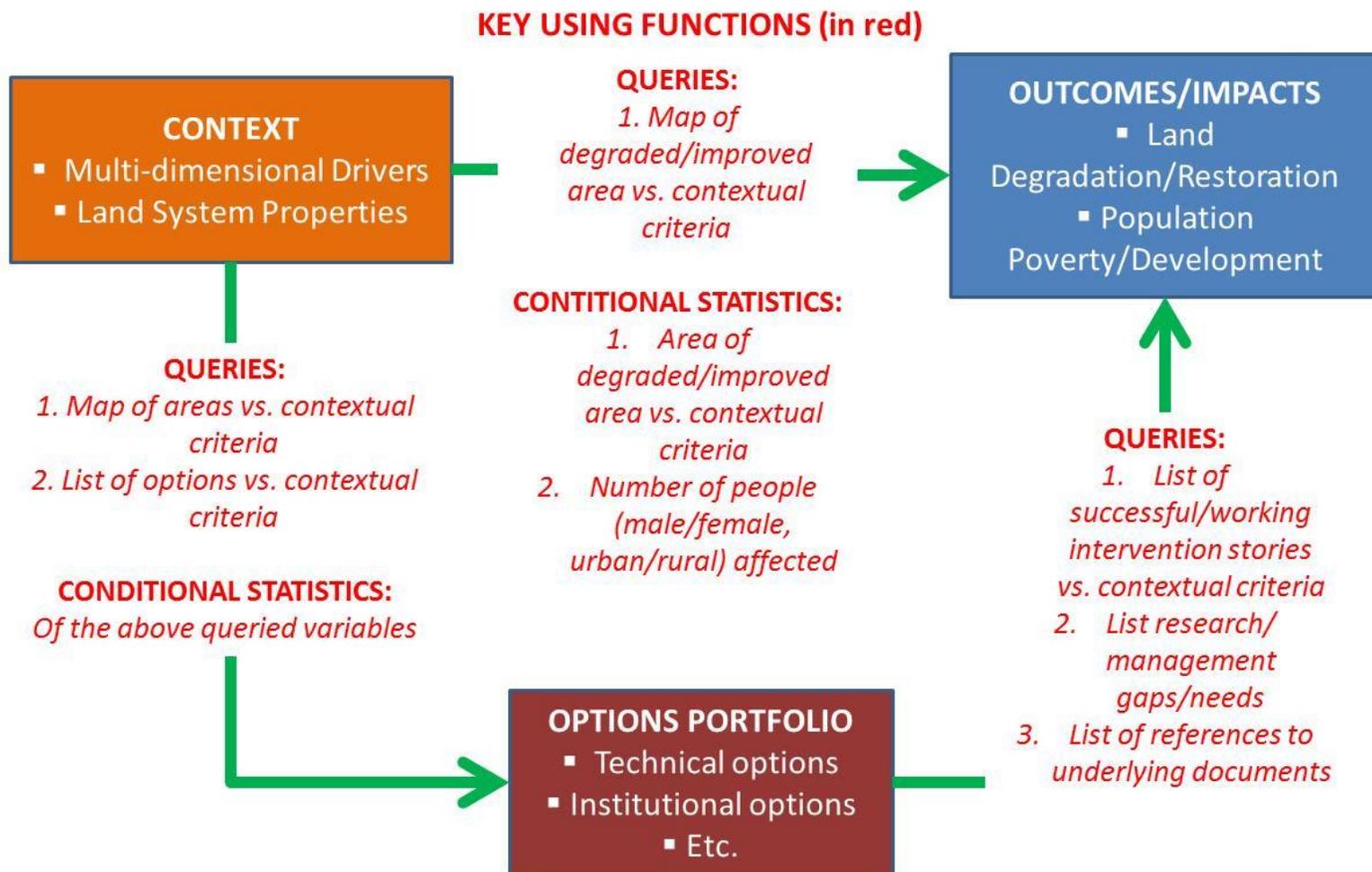


How the fCSET map can be used for supporting out-scaling efforts

■ Rainfed crop - High sheep density // Semi arid - Good soil - Very high population - Good market access - Medium GDP



GeOC's Key Function 3 – Flexible, purposeful queries

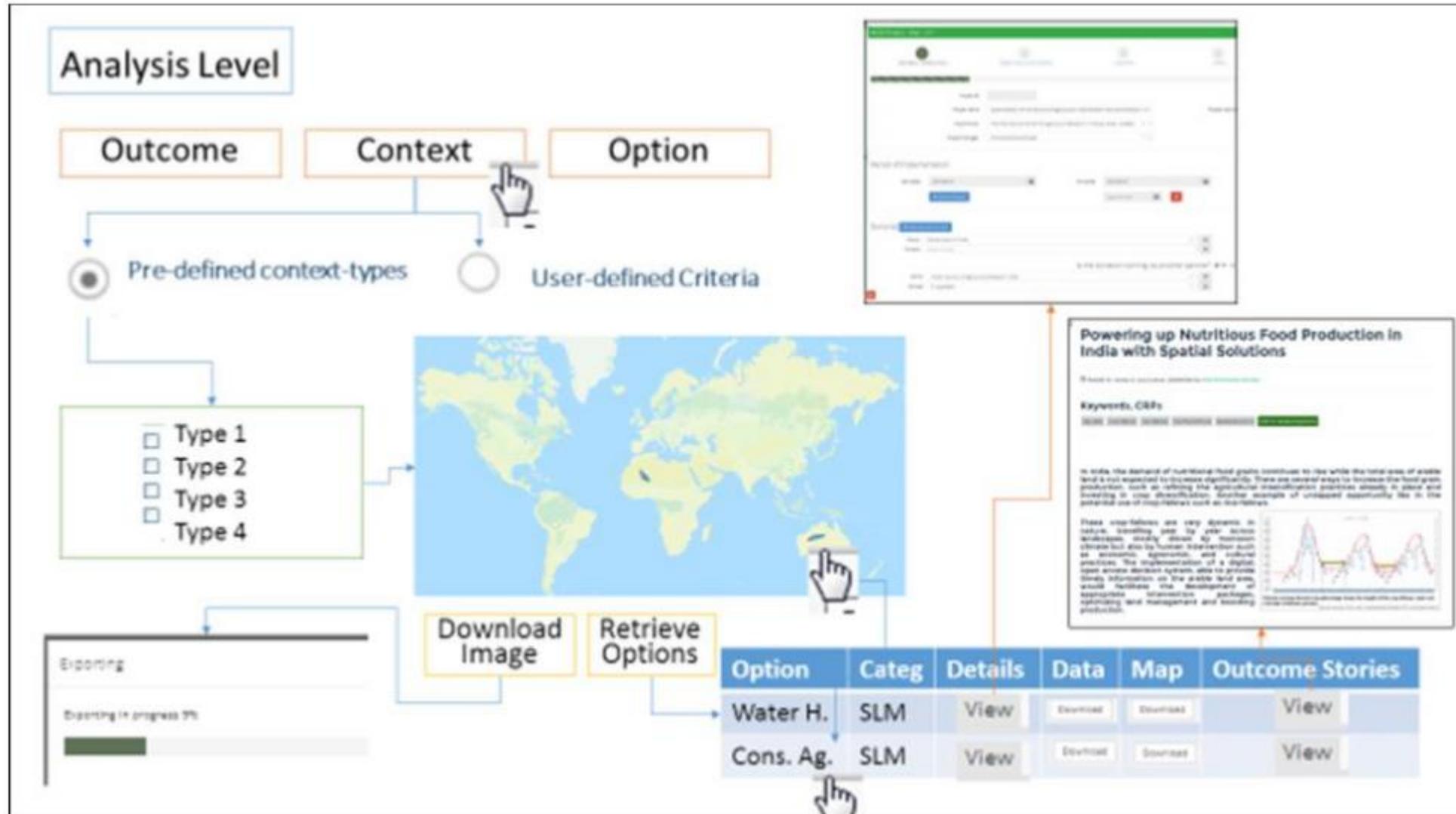


■ Queries

- ✓ User-defined criteria
- ✓ Multiple entry points:
 - . Given a context, what option works? Where?
 - . Given a potential option, what context is favored? Where?
 - . Given a region of interest, explore the space of available options by existing contexts
- ✓ Both results in descriptive statistics and spatial distribution
- ✓ Comparative views

Common Use Case 1: Context-based analysis of SLM options

Given a socio-ecological context (either pre-provided by fCSET data, or defined by users' criteria), users are able to list and compare available SLM options



Current availability and next

Current availability

- ✓ Alpha version of online GeOC and sub-tools, integrated with MEL
- ✓ Global and regional GIS datasets
- ✓ National OxC SLM datasets: Tunisia (40+) (GIZ/BEAF); Ethiopia, Kenya, Mali, Niger (EC-IFAD) and bilaterral; Italy (EU-H2020) (on working)

Next

Tools:

- Improve sub-tool WebGIS to host more national GIS data
- Improve sub-tool SLM template to capture better farming system innovation options (including innovations in cropping and livestock production); session for cost-benefit assessment
- New GUI module/tab for comparative analysis across options and contexts

Data:

- SLM data for national test use cases
- National/regional GIS data in the countries/regions of test use cases

Online tools and tutorial video clips

GeOC links for GeOC tools:

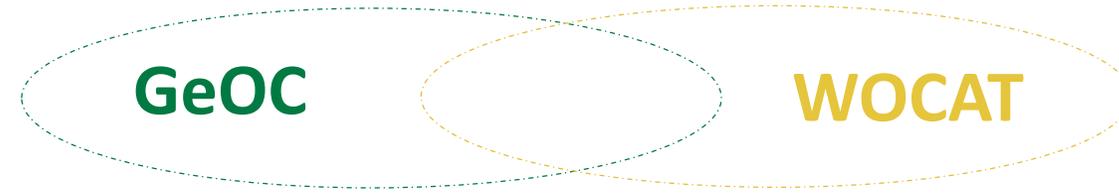
- WebGIS: <https://mel.cgiar.org/slm/visualization> (users'/testers' registration needed)
- SLM form/data: <https://mel.cgiar.org/slm/> (users'/testers' registration needed)
- Approval: <http://mel.cgiar.org/slm/approval> (only for the tool admin)

Five tutorial video clips (Available on You Tube:

<https://www.youtube.com/watch?v=NLpd9vY21CA&list=PLRIsJ0x4IVjn1NUkaWPcIVswWv5jKtEVH>)

- Introduction of GeOC tool - motivation, goals, potential users ([video clip 1](#))
- Introduction of the WebGIS tool- key functions ([tutorial video clip 2](#))
- Use case 1: Context-based analysis: searching implemented SLM options with a defined context ([tutorial video clip 3](#))
- Use case 2: Option-based analysis: searching similar context(s) given a considered SLM option ([tutorial video clip 4](#))
- General introduction of the web-based SLM input form ([tutorial video clip 5](#))

Commonality and Complementarity of GeOC-WOCAT



Data
(SLM techn.)

More oriented to spatially explicit, prevalently non-point SLM options, linked to a well defined socio-ecological context (e.g., improved wheat varieties adapted to a range of conditions)

More oriented to store/provide a menu of case study -based solutions;
needs limited (optional) georeferencing and context characterization (e.g., recharge well)

Products

Fit options to contexts;
Develop and analyze out-scaling scenarios.
Support decision

Documented SLM options;
Evaluation framework
Guidance to practitioners in the of their own options through SH-oriented multi-questionnaires

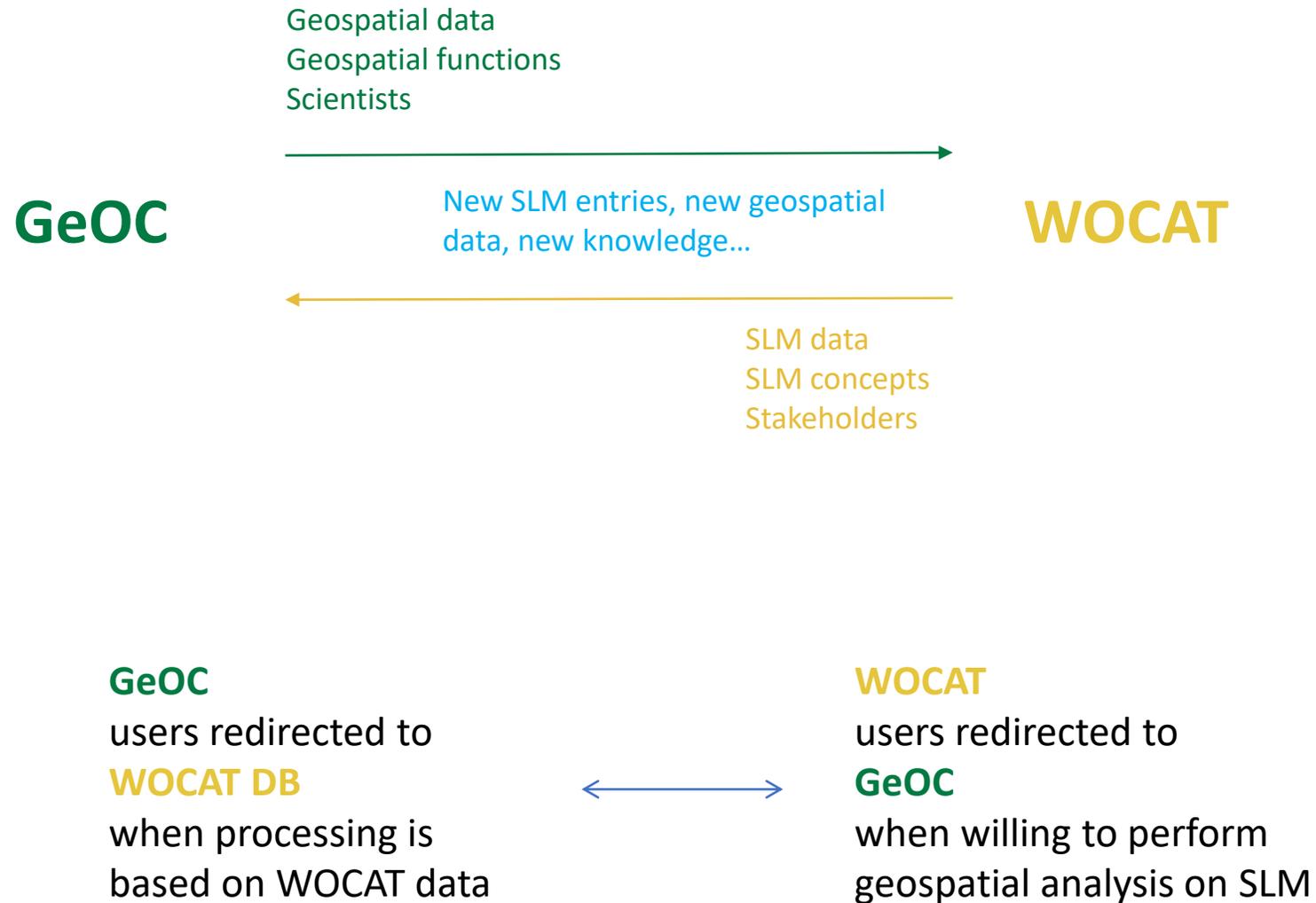
Main
assets/functionality

Geospatial analysis (science-driven procedures, data)

Online DB
People
knowledge

HIGH COMPLEMENTARITY

Direction of current attempt making operational linkage GeOC-WOCAT



Global
Geo-informatics
Options by Contexts



*A tool for better
investment decisions
in agriculture and
rural development*



Thank You!