

LIFE
LU²CF
Atlas

Facing key challenges in GHG accounting in the land use & forestry sector in Greece and Bulgaria

The LIFE LULUCF Atlas project & Moja Global collaboration

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Co-director of
Moja Global



National
Technical
University
of Athens



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INSTITUTE OF OCEANOGRAPHY

EEA/JRC LULUCF Workshop, 27 – 28 May 2026, Copenhagen



Co-funded by the European Union

Background



EU Regulations 841/2018 and 1999/2018 on reporting & compliance rules, as amended by 839/2023



Need to support national **Governance and Policy making** in the LULUCF sector (NECP, National strategies & PaMs)



Enhanced MRV systems

- Geographically explicit land use conversion tracking
- Moving to Tier 2 /3 methods for all carbon pools
- Continuous monitoring of ecosystem health and carbon dynamics



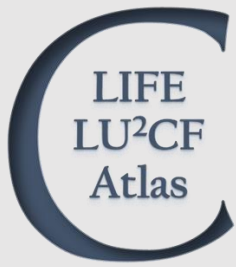
Current status in Greece & Bulgaria

- Limited use of geographically explicit data
- Fragmented national datasets with high lag times
- Only Tier 1 and Tier 2 methods are applied
- High climate risk areas not yet identified & systematically monitored
- Limited resources available to enhance the MRV system
- Weak collaboration among key LULUCF stakeholders & decision makers



The challenge

Transitioning from fragmented datasets and low-tier methods to geographically explicit, wall-to-wall tracking of land uses and carbon stock change



LIFE LULUCF Atlas project

LIFE24-GIC-EL-LIFE LULUCF ATLAS - GAP-101212908

Facing key challenges in GHG accounting in the land use & forestry sector



Duration: 01/01/2026 – 31/12/2029



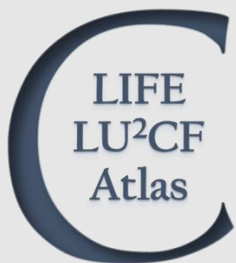
Budget: Total Budget: 1,5 M €
(60% EU co-funding)



LULUCF Atlas because...

it aims to translate complex land-use data into actionable climate governance, fundamentally acting as a tool for navigation and structural organization at national level.





LIFE LULUCF Atlas Consortium

Coordinator



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Associated partners



MINISTRY OF
ENVIRONMENT
& ENERGY



REPUBLIC OF BULGARIA
Executive Environment
Agency

Beneficiaries



Consulting company
Despoina Vlachaki



Non-governmental organization (BG)
Dr. Lora Stoeva



School of Forestry & Natural
Resources, Forest Management Lab
Prof. Spyros Galatsidas



University of Patras, Department of
Sustainable Agriculture
Ass. Prof. Dimitrios Triantakostas



Institute of Mediterranean Forest
Ecosystems & Forest Research Institute
Dr. Nikolaos Proutsos



Hellenic Center for Marine Research,
Institute of Oceanography
Dr. Eugenia Apostolaki

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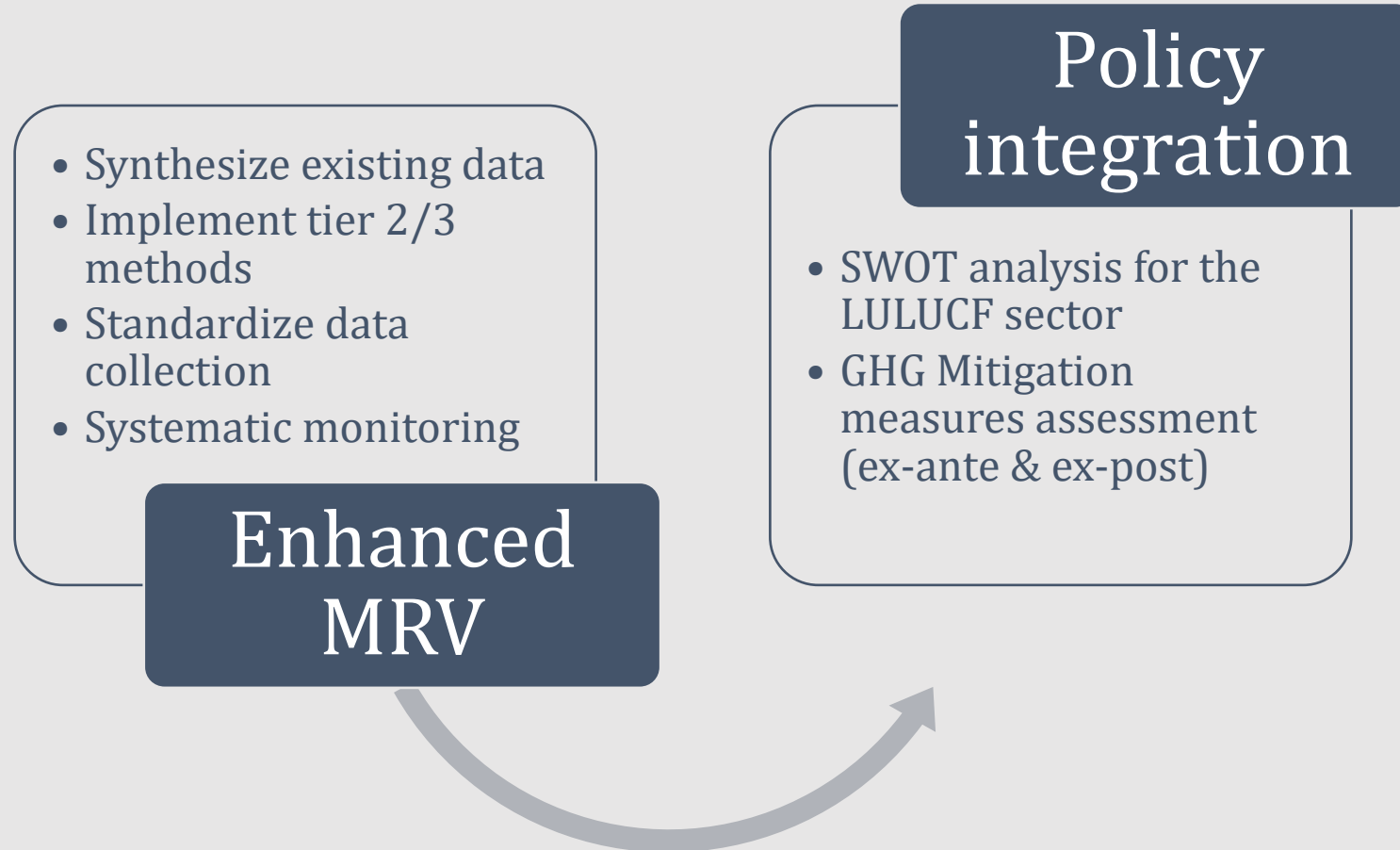
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Project Snapshot & National Objectives

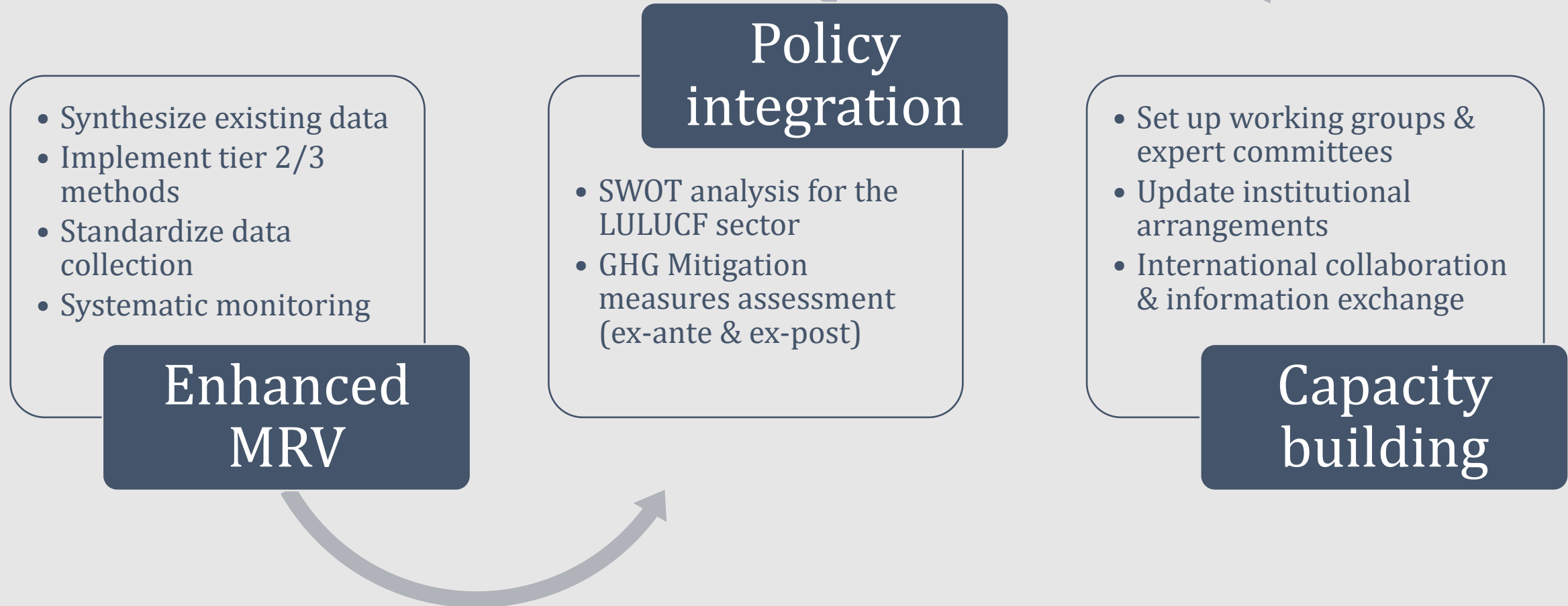
- Synthesize existing data
- Implement tier 2/3 methods
- Standardize data collection
- Systematic monitoring

Enhanced
MRV

Project Snapshot & National Objectives



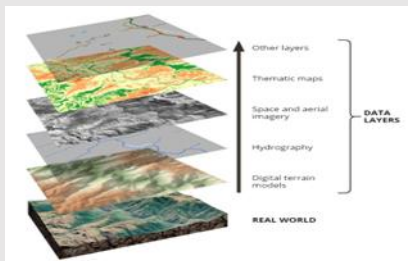
Project Snapshot & National Objectives



Enhanced National MRVs (GR & BG)

Geographically Explicit Inventories

- Land use change tracking
- Natural disturbance tracking
- Identification & monitoring of high climate risk areas



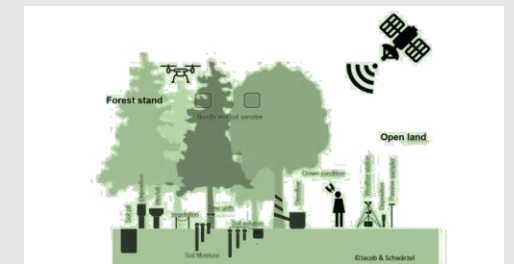
Application of higher tier methods

- Forest land
- Cropland
- Grassland
- Settlements



Monitoring framework (only GR)

- Forest health status
- Bioclimatic factors
- Standardization of forest data collection
- Database interoperability



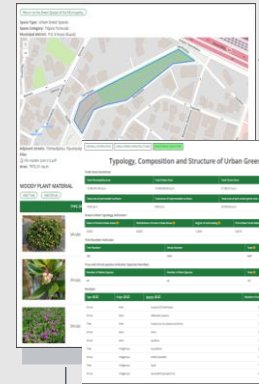
Pilot Accounting of Non-Traditional Sinks



Coastal wetlands - Blue carbon (GR)

(*Posidonia oceanica* sea grass meadows)

- Pilot estimation of carbon fluxes based on IPCC methodology & measurements from the South Aegean



Settlements (GR & BG)

(Street trees & parks)

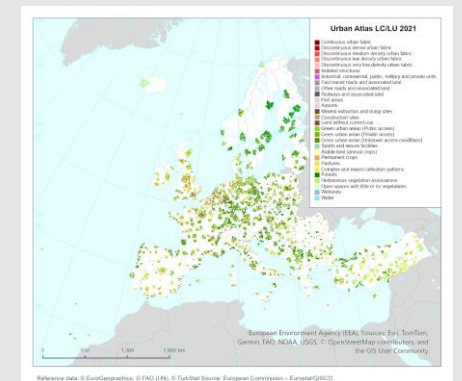
- Estimation of carbon fluxes in urban green areas for the 10 largest Greek cities / Pilot estimation in BG

[LIFE GrIn cooperation platform](#)
(municipal urban green)

[Copernicus Urban Atlas](#)
(EU urban green areas)

Site detail

Species	Age	Age 1-20	Age 21-40	Age 41-60	Age 60+	CO2 (kg)	CO2 (kg/year)
COSE	Cypress sempervirens	70	87%	0%	0%	1,680,000	1,760
LAVO	Laurus nobilis	2	20%	30%	0%	1,142	0.82
PIST	Pinus brutia	4	0%	70%	30%	6,124	0.71



[GreenTree database](#) (individual trees)

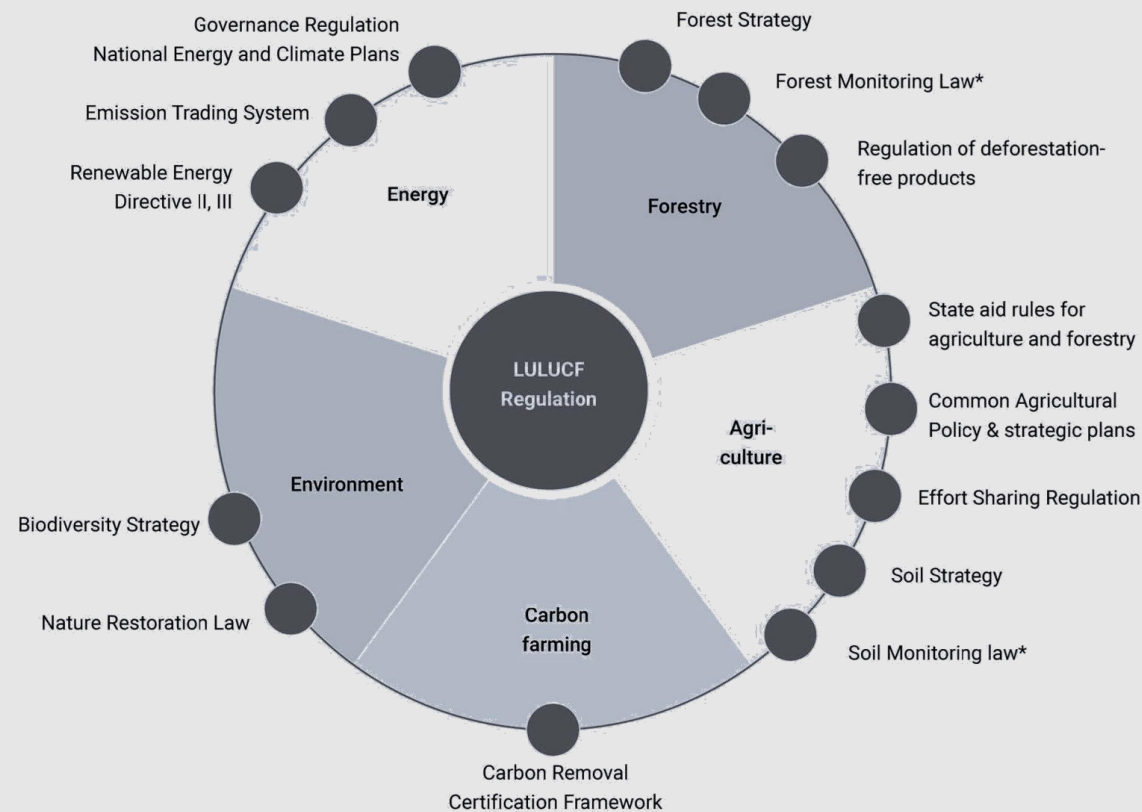
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National Policy Integration & Governance

- Update of the Joint Ministerial Decision (GR)/ MOU (BG) on the National GHG Reporting Technical Inter-Ministerial Working Groups
- Prioritize PaMs for the LULUCF sector through a climate related SWOT analysis (GR & BG)
- Design and pilot test a framework for the evaluation of climate policy & measures (GR & BG)
- Carbon Certification Schemes investigation & linkage with national LULUCF inventories (GR & BG)



Source: Boettcher et al., 2021

↳ **Publication of 4 Policy briefs and 8 Official/ government Reports**

Stakeholder Engagement & Capacity Building



1. Support on data collection and standardization
2. Consultations and peer review of the project outputs (i.e. basemaps, methods & tools applied, forest monitoring framework, etc.)
3. Collaboration on the assessment of policies and measures (i.e. BTR, NECP)



4. Update of the Joint Ministerial Decision (GR)/MOU (BG) on the National GHG Reporting Technical Inter-Ministerial WGs
5. Establishment of a National LULUCF Working Group in each country (GR&BG)
6. Co-design of climate and forest monitoring networks (GR)





can pave the way,
but the work needs to continue to...



Further improve
Activity Data &
methods applied



Plan better,
building on
synergies &
collaborations



Secure support
and financial
resources for the
After-LIFE period

Thank you!

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The logo for moja global, featuring a stylized white circle with a green dot inside, positioned above the text.

**moja
global**

**Introduction to
moja and FLINT**

What is moja global?

moja global is a not-for-profit organization and project under the Linux Foundation founded in 2015.

moja global helps the world meet increasingly ambitious climate and biodiversity goals by making nature and climate intelligence accessible to all.

Over 200 scientific contributions reference the modelling frameworks and tools developed by the experts behind moja global's innovative platforms.

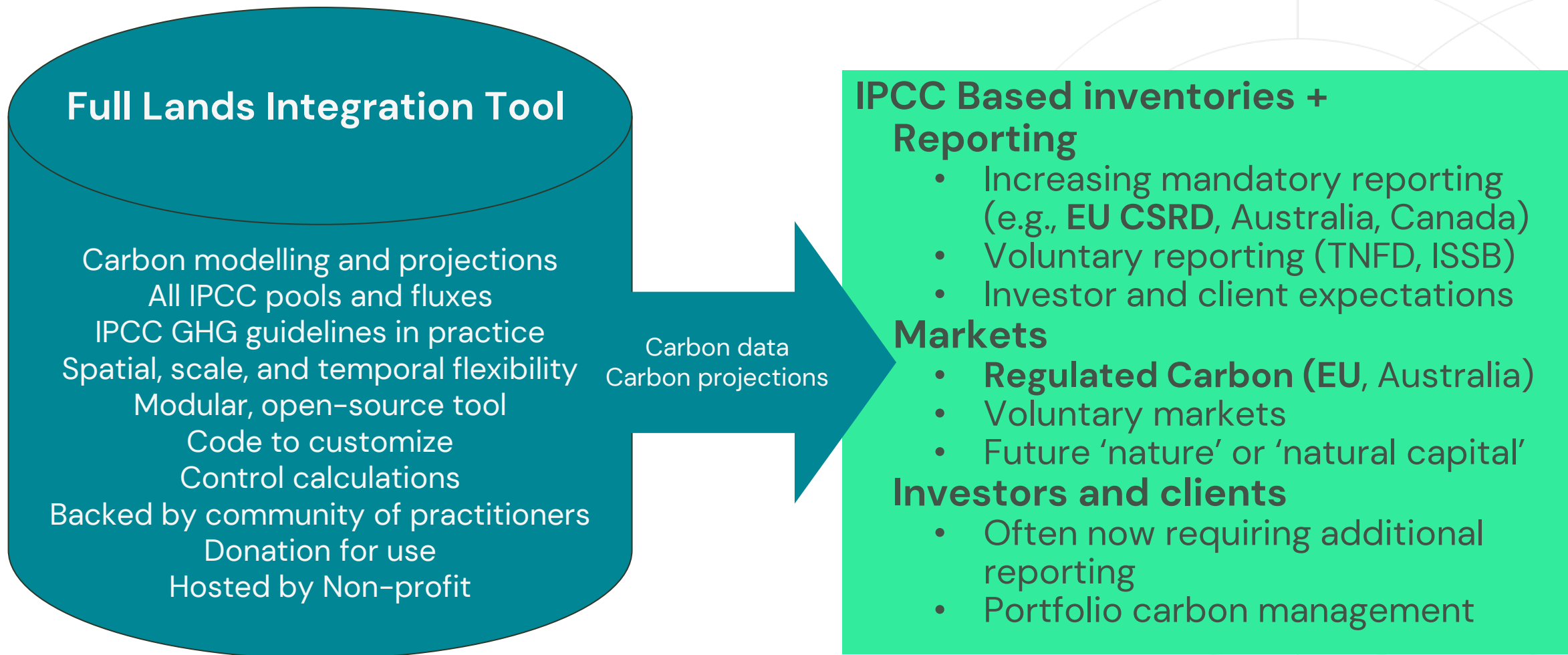
What is FLINT?

FLINT stands for the Full Lands Integration Tool – it is moja global's premier open-source software for measuring greenhouse gas emissions and removals from the land sector. Build from Canada and Australia IPCC LULUCF inventories.

FLINT software is a simulation platform designed to integrate science-based open-source models to estimate and report carbon stocks and fluxes.

Collaboration with Greece (and Bulgaria)

- **Objective:** Build in-country capacity for C modelling and reporting
- **Greece:** Application of GCBM/FLINT to pilot region; subsequent application to all of Greece. Spatially-explicit modelling for forest ecosystem carbon budget, retrospective (from 1990) and projective modelling. GCBM is based on the science of the CBM-CFS3 already used in several EU countries and by JRC.
- Analysis of C in harvested wood products.
- **Bulgaria:** – Application of GCBM/FLINT to pilot region
- **Phase 1:** moja global will assist with training, model implementation, data compilation and preparation, model runs, interpretation of results, and future development. (6 months)





Moja Global

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Global Head of Climate, Biodiversity, and ESG, IWC (International
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