European Commission Knowledge Centre on Earth Observation

Mark Dowell

European Commission – Joint Research Centre



HELLENIC REPUBLIC

MINISTRY OF

DEVELOPMENT AND INVESTM

Learn more here:



European

Commission





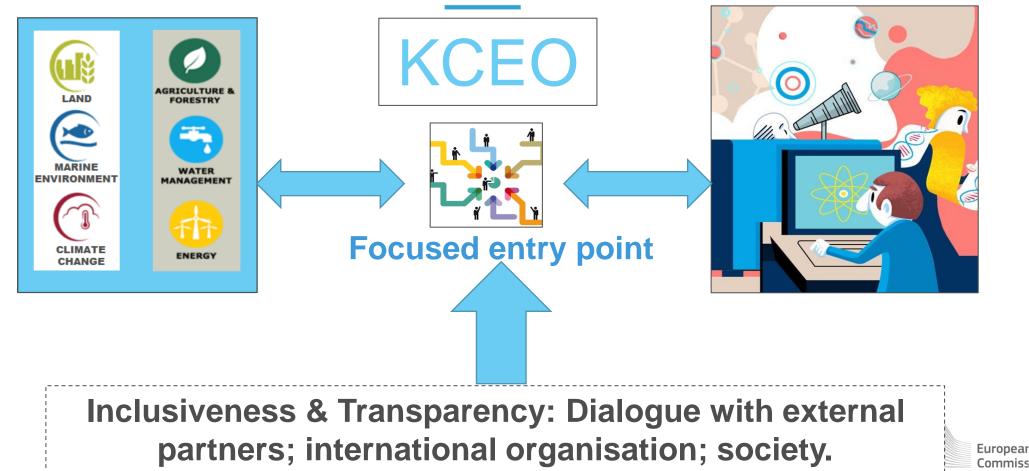
KCEO Focus

Pillar 1: Policy Uptake & Coherence

15+ DGs



Pillar 2: Mainstreaming R&I



2

Typology of policy areas in KCEO

28 relevant policy areas identified (in red those with Copernicus Thematic Hub correspondence)

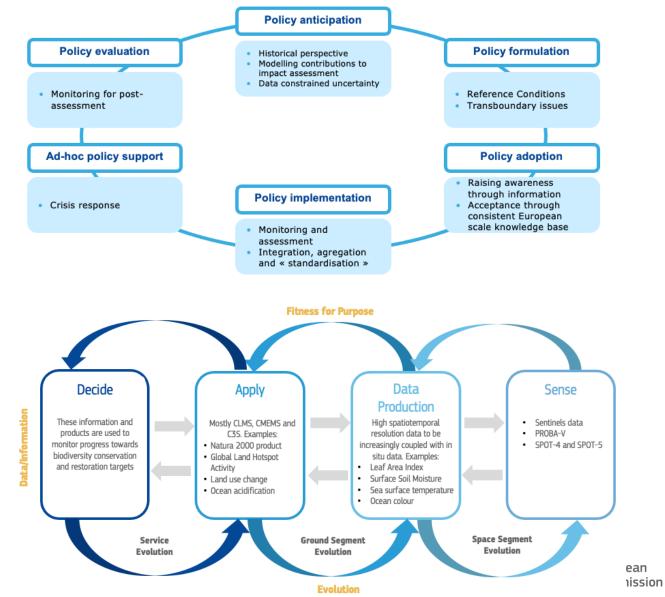
- n Policy area
- 1 Agriculture
- 2 Food security
- 3 Forestry
- 4 Biodiversity
- 5 Plant health
- 6 Soils
- 7 Raw materials
- 8 Inland Water
- 9 Coastal zones
- 10 Fisheries and aquaculture
- 11 Marine pollution
- 12 Marine strategy and Maritime Spatial Planning
- 13 Climate change mitigation
- 14 Climate change adaptation

- n Policy area15 Arctic and polar regions
- 16 Air quality
- 17 Environmental compliance
- 18 Transport
- 19 Energy
- 20 Regional and urban policies
- 21 Health
- 22 Tourism
- 23 Cultural and natural heritage
- 24 Support to natural and man-made disasters
- 25 International development and cooperation
- 26 Sustainable Development Goals
- 27 Migration and Home affairs
- 28 Defence and Security



Deep Dive Methodology – Summary of steps

- 1. Policy needs assessment
- 2. Value Chain assessment
- **3.** Translation of needs into quantitative requirements
- Assessment of fitness for purpose with regards to existing products, services, infrastructure, capacities
- 5. Gap analysis and recommendations for evolution

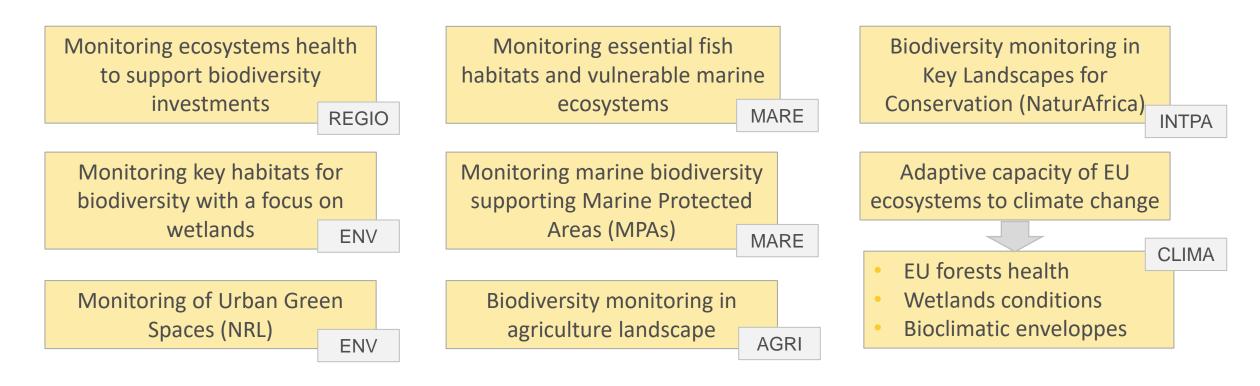


Deep Dive outcome Implementation options (Mark's initial suggestions)

- 1. Though Copernicus Evolution
- 2. Through Copernicus thematic hubs
- 3. Through other relevant programmes (e.g. DestinE)
- 4. Needs additional research => Horizon Europe
- 5. Implementation by DGs themselves, building on Core Services
- 6. DGs contribution to Core Service resourcing
- 7. Limited KCEO/JRC prototyping activities



Overview of use cases analysed



KCBD

Indicators to monitor progress towards the targets of the EU Biodiversity Strategy for 2030



Potential EO support to targets of the Biodiversity Strategy 2030

		EU Biodiversity Strategy Targets												Copernicus Product			
#	RS - Biodiversity Product (*)	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16															
1	Biological effects of fire disturbance				x												Burnt Area (+NDVI, LAI, FCOVER)
2	Biological effects of irregular inundation				x												Soil Water Index (+NDVI, LAI, FCOVER)
3	Leaf Area Index		x		x												Leaf Area Index
4	Land Cover	х	x	x	x			x	x	x	x						Land Cover, CLC
5	Ice Cover habitat	х	x		x												RLIE S1+S2
6	Above ground biomass		x		x												NA
7	Foliar NPK Content						х							x			NA
8	Net primary productivity							x	x								Dry Matter Productivity
9	Gross primary productvity							x	x								Gross Dry Matter Productivity
10	FAPAR		x		x												FAPAR
11	Fraction of vegetation cover							x	x								Fraction of vegetation cover (FCOVER)
12	Plant area index profile		x		x												NA
13	Urban habitat														x		1.Urban Atlas; 2.GHSL
14	Vegetation canopy height	х	x	x	x												NA
15	Habitat structure				x												NA
16	Ecosystem Fragmentation	x			x												Corine Land Cover
17	Ecosystem structural variance	х			x												Corine Land Cover
18	Land surface phenology peak							x	x								Vegetation phenology and productivity suite HR VPP
19	Land surface phenology green-up							х	x								Vegetation phenology and productivity suite HR VPP
20	Land surface phenology senescence							x	x								Vegetation phenology and productivity suite HR VPP
21	Carbon cycle		x		x												NA
22	Chlorophyll content and flux	х		x													Chlorophyll content and flux

(*) RS products prioritized as EO biodiversity metrics in Skidmore et al. (Nature ecol & evol, 2021)

Roadmap layout and options (22-24)

	Q2 22	Q3 22	Q4 22	Q1 23	Q2 23	Q3 23	Q4 23	Q1 24	Q2 24	Q3 24	Q4 24
Deep Dive 1 Biodiversity											
Deep Dive 2 CC Adaptation & Urban											
Deep Dive 3 Compliance Assurance											
Deep Dive 4 Cultural, Natural, World H eritage											
Deep Dive 5 SDGs											
Deep Dive 6 Energy											
Deep Dive 7 Raw Materials											
Deep Dive 8 Health											curope

Key points

- 1. User and Policy Driven EuroGEO (& GEO) needs & requirements landscape mapping
- 2. Think about **applications thoughout the policy cycle** not just implementation
- 3. Build <u>tracible</u> & <u>sustainble</u> value chains not only for policy but also to enable a strong downstream service ecosystem
- 4. Infrastructure that can be regionally/locally and thematically tailored
- 5. Importance of the last mile implications for user interace
- 6. Interoperable systems addressing "fractal" user requirements







Science – Policy - Service

e-shape Pilots	EU Policy Themes	Copernicus Service
Agro Industry	Agriculture	
Assessing Geo-hazard Vulnerability of Cities & Critical Infrastructures		
Dive: Diver Information on Visibility in Europe	Food Security	
DynaCrop: Unlocking EO Intelligence Across the Food Value Chain	rood Security	
EO-based Phytoplankton Biomass for WFD Reporting	Forestry	
EO-based Pollution-Health Risks Profiling in the Urban Environment	Biodiversity	
	Plant Health	
EO-based Surveillance of Mercury Pollution	S <mark>oi</mark> ls	
EO-based Surveillance of POPs Pollution	Inland Water	
EO4D_ASH: EO Data for Detection, Discrimination & Distribution (4D) of Volcanic Ash	Coastal Zones	
EU-CAP Support	Fisheries and Aquaculture	Copernicus Marine Service (CMEMS)
EYWA: EarlY WArning System for Mosquito-Borne Diseases	Marine Pollution	
FRIEND	Marine Strategy and M <mark>a</mark> ritime Spatial Planning	
Forestry Conditions: Climate Service	Climate Change Mitigation	Constrainty Francesco Management Service (CEMS
GEOSS for Disasters in Urban Environment		Copernicus Emergency Management Service (CEMS
Global Carbon and Greenhouse Gas Emissions Group on Earth Observations Global Agricultural Monitoring Initiative (GEOGLAM)	12 Climate Change Adaptation	
High Photovoltaic Penetration at Urban Scale		
Hydropower in Snow Reservoir: Climate Service	Arctic Policy	Copernicus Atmosphere Monitoring Service (CAMS
mproved Historical Water Availability & Quality Information Service		
inking EO and Farm IoT for Automated Decision Support	Air Quality	
Merging Offshore Wind Products	Environmental Compliance	
Monitoring Fishing Activity		Copernicus Climate Change Service (C3S
MountaiNow	Tran <mark>s</mark> port	
ReSAgri: Resilient & Sustainable ecosystems including Agriculture & food	E	
	Energy	A281.
Rheticus® AquaculturePlus	Regional and Urban Policies	Copernicus Land Monitoring Service (CLMS
Sargassum Detection for Seasonal Planning		Copernicus Land Monitoring Service (CLMS
Satellite Earth Observation-Derived Water Bodies & Floodwater Record Over Europe	Health	
Seasonal Preparedness	Tourism	Copernicus Security Service (CSS
Service for SDG 2.4.1 and 15.3.1 Indicators Assessment		
Super-resolution Air Quality Monitoring Service	Cultural and Natural Heritage	
Jrban Resilience to Extreme Weather: Climate Service		
Vegetation-Index Crop-Insurance in Ethiopia	Support to Natural and Man-Made Disasters	
WindSight: First Class Input Data for Wind Energy Models		
nySITE		
mySPACE	International Development and Cooperation	
myVARIABLE	Sustainable Development Goals	
nextSENSE: Solar Energy Nowcasting & Short-Term Forecasting System		Highcharts.

