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Unveiling the Use & Potential of Earth Observation in Land and Water Management for SDG Reporting and Decision-making in North African Countries

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GMES AND AFRICA

African Union

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GMES & Africa

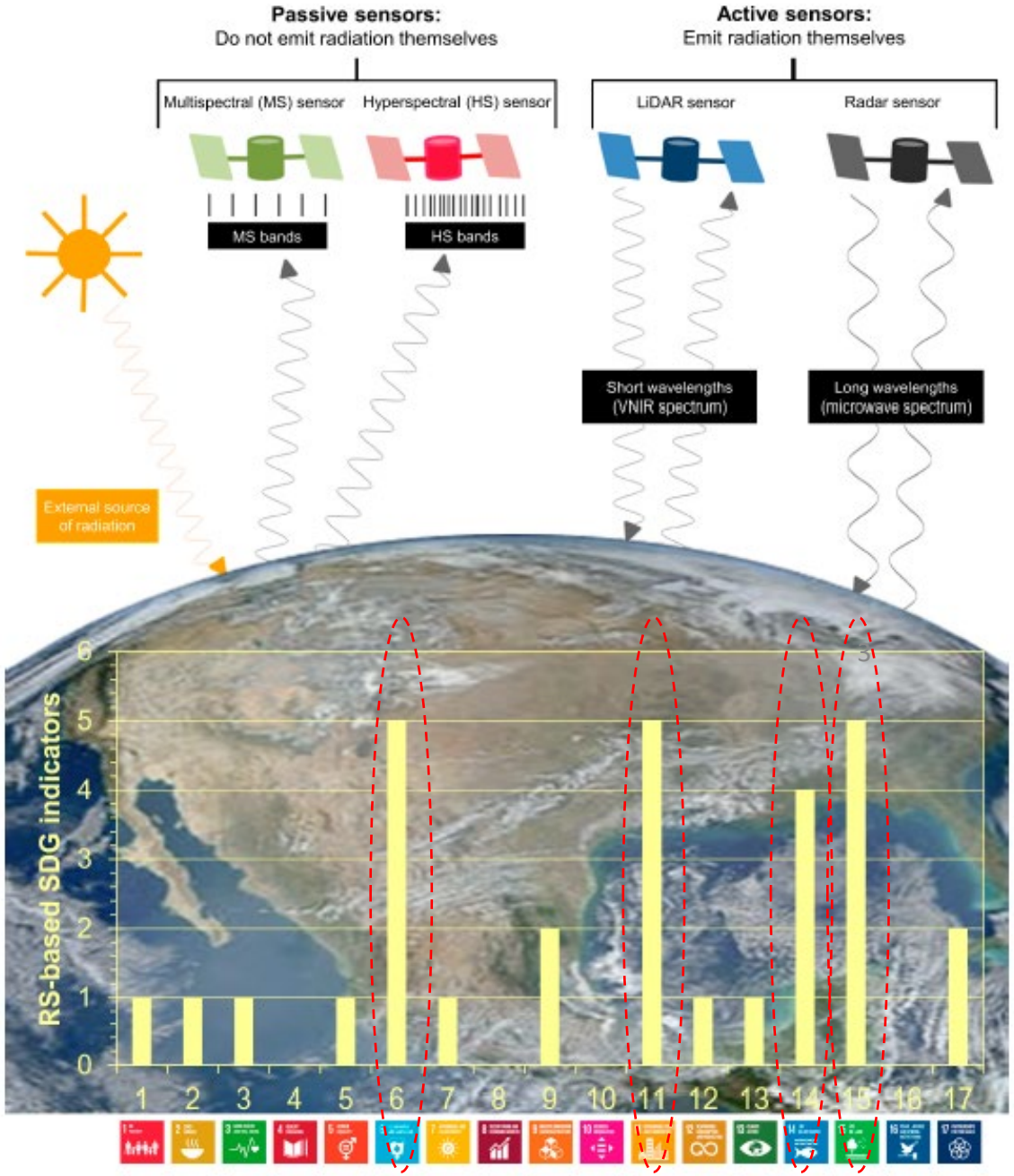
OSS North Africa Consortium

Regional study on EO integration in Decision Making

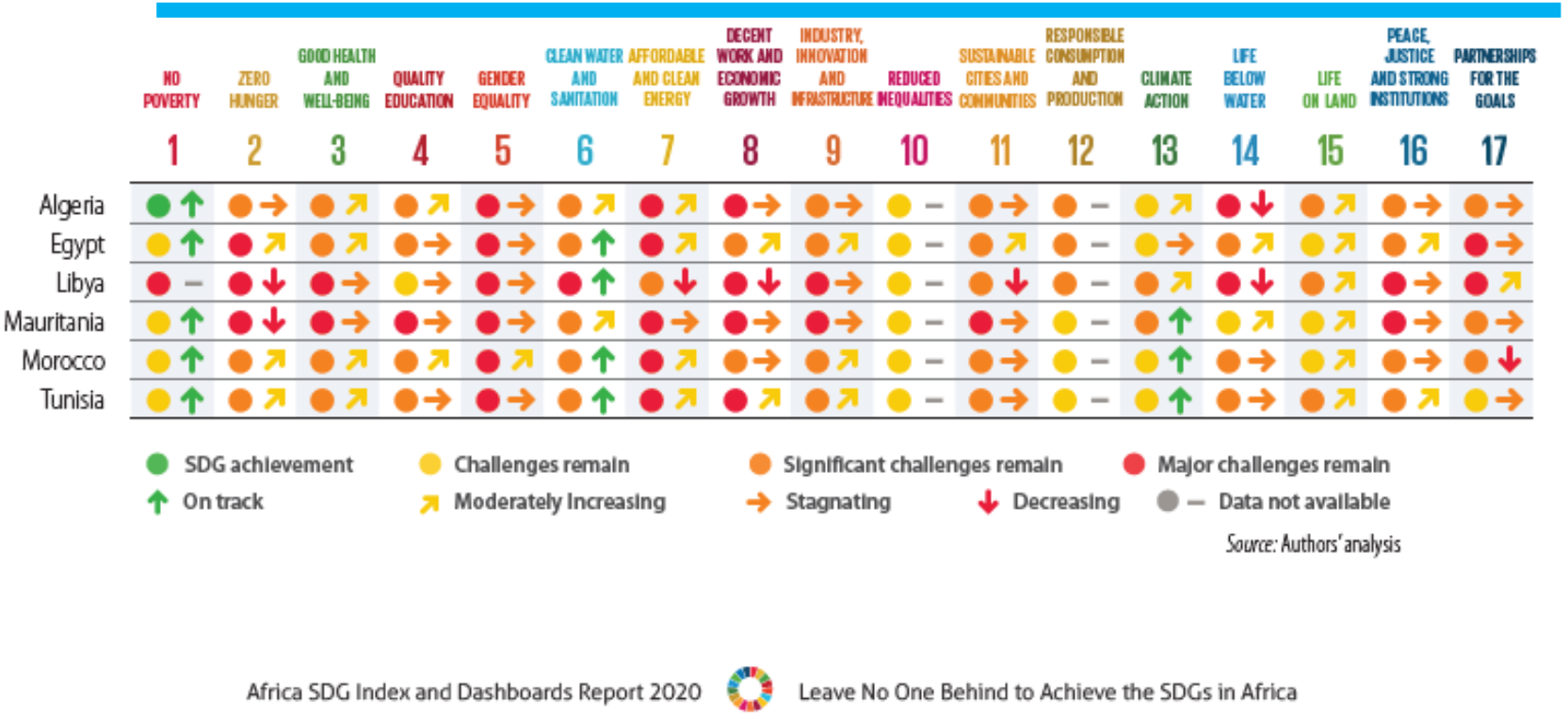
CRTEAN

EO linkages with SDGs Goals, Targets, and Indicators

SUSTAINABLE DEVELOPMENT GOALS



SDGs monitoring in North African countries



Africa SDG Index and Dashboards Report 2020 — Leave No One Behind to Achieve the SDGs in Africa

- **North Africa** is among the most economically developed region having 4 of its 6 countries in the top 6 ranks, and the **highest regional score** at 61.87.
- North Africa looks well-placed to remain a top SDG performer, with moderate improvements or an on-track rating of 52%, although progress on many goals is insufficient to reach SDG targets.

OBJECTIVES

Assess EO use for SDG reporting and decision-making in North African (NA) countries

Reviews the state of the art in the use of EO for water and natural resources management (WNR) and decision-making

Discusses the key technical and operational considerations to integrate the EO dimension in decision support and policy making

Explores some opportunities of using EO in WNR management

Present the roadmap for WNR managers, policymakers and stakeholders

METHODOLOGY

Data

Results

Validation

1st Step

Retrospective analysis
National studies

2nd Step

Stakeholder's recruitment/selection

3rd Step

Online Questionnaire

Current use of EO for WNR management in North Africa and the potential of operational services

Potential of EO-based operational services in support to decision making for water and natural resources management

Limitations and constraints

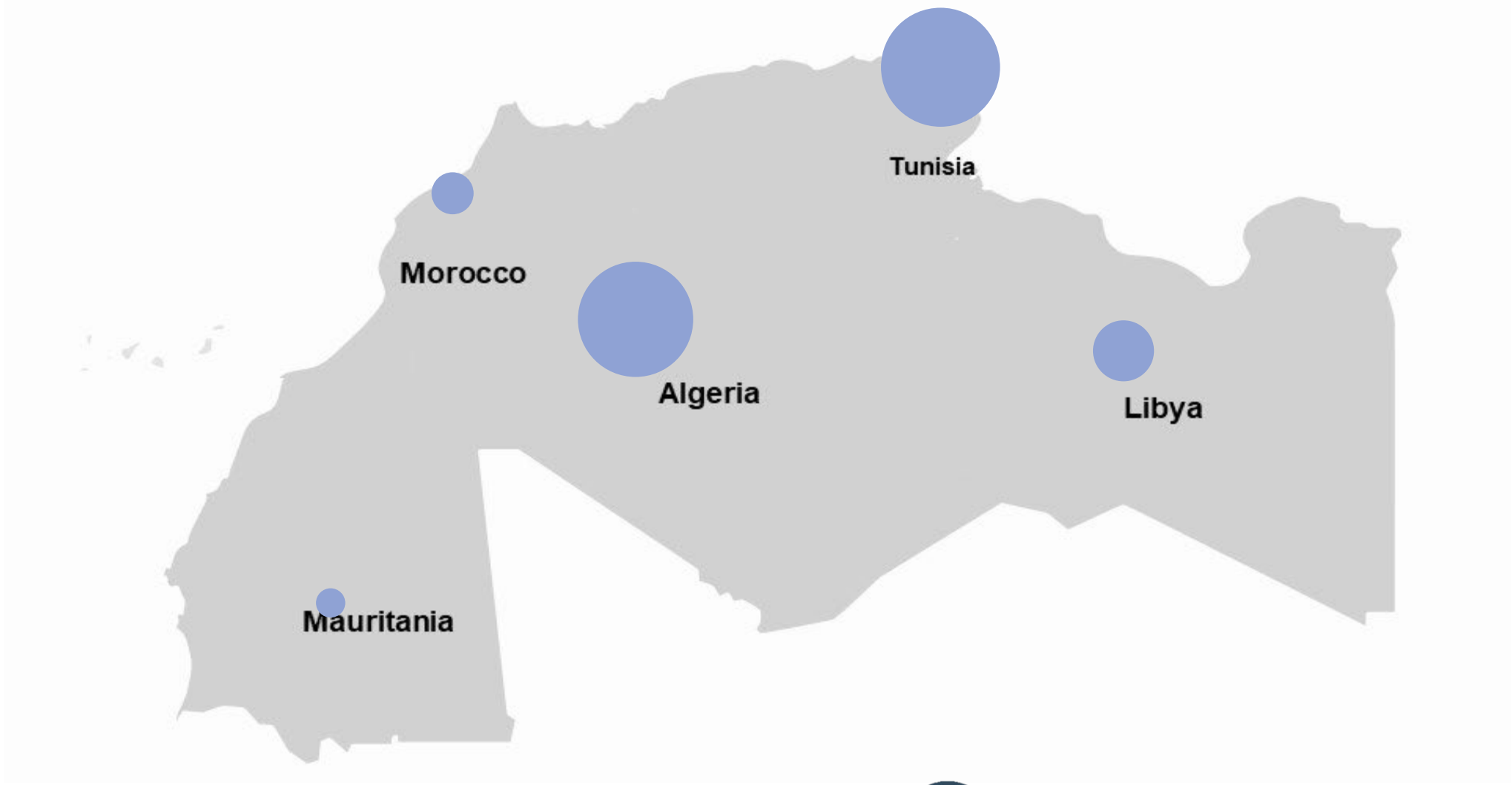
Road Map

4th Step

Workshop of Restitution
(OSS Consortium)

Regional Study of EO for Integrated planning and decision support in North Africa

Online Survey

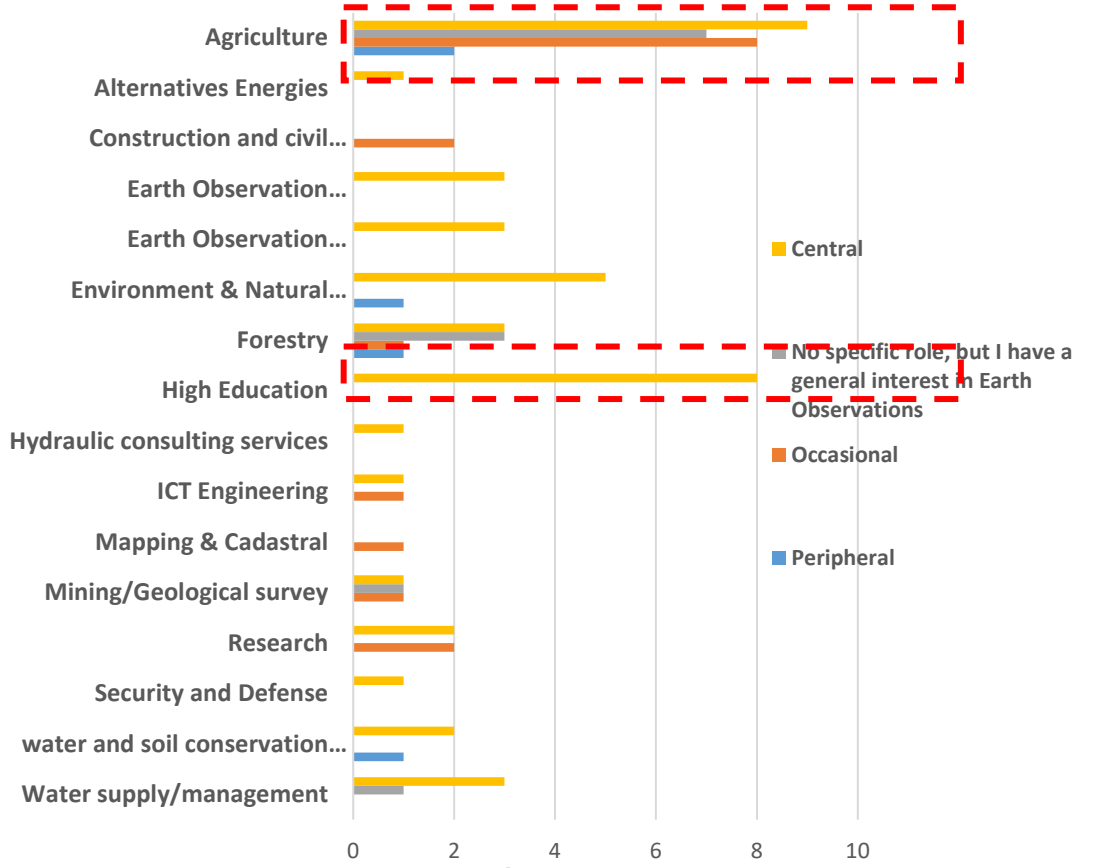


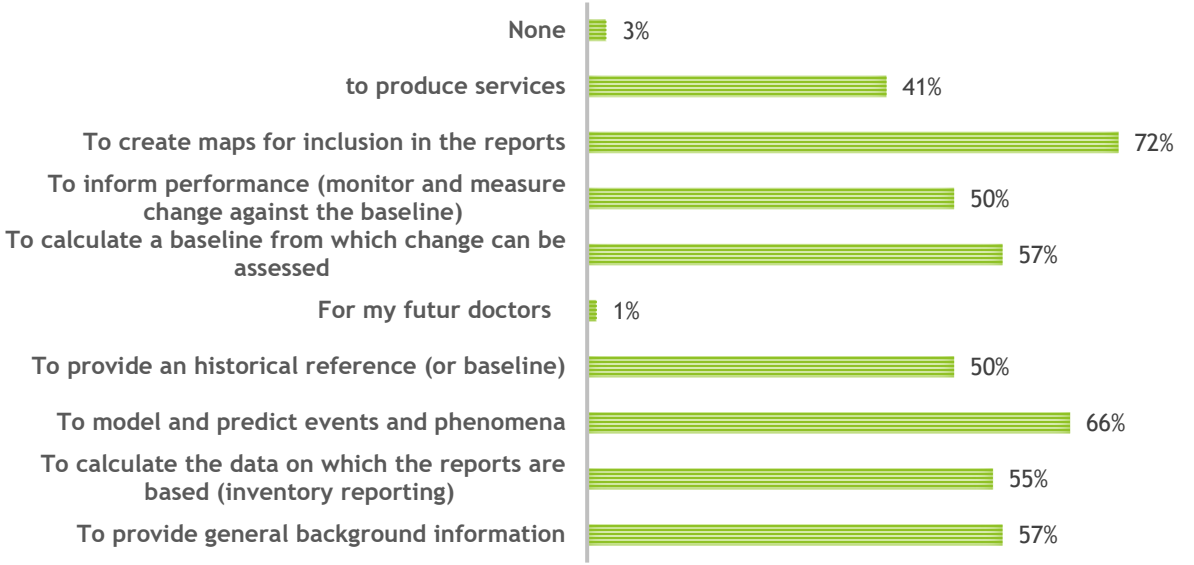
15% Entire region

RESULTS

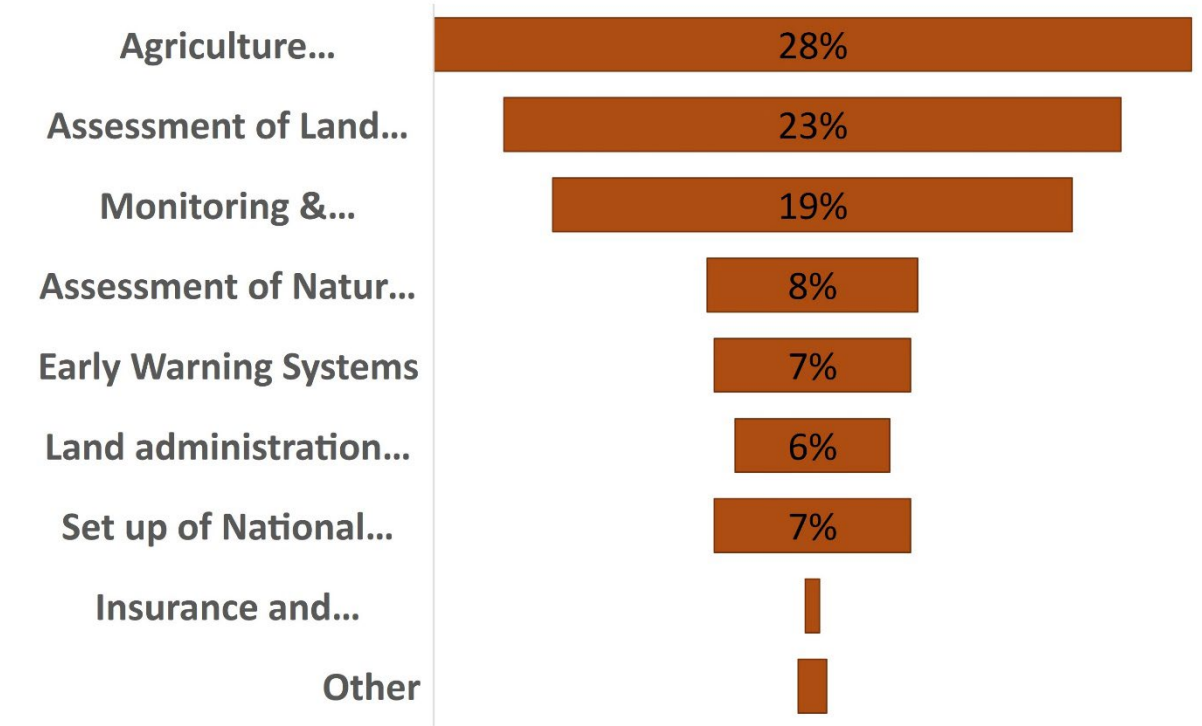
Current state use of EO for Water & Natural Resources management

- **Public Sector Dominance:** The majority of survey respondents are employed in public administration at various levels, underscoring the significance of EO in government decision-making.
- **Enhanced EO Awareness:** There is a notable increase in awareness regarding the value of EO data, technologies, and services among survey participants.
- **Strong Demand for EO Services:** Respondents expressed a keen interest in utilizing EO services across a wide range of water and natural resources sectors.
- **Central Role of EO:** Earth observations were identified as pivotal in sectors such as agriculture, research, and higher education.
- **Future EO Engagement:** Participants indicated a strong desire to engage in the use or provision of EO technologies and services in the future.

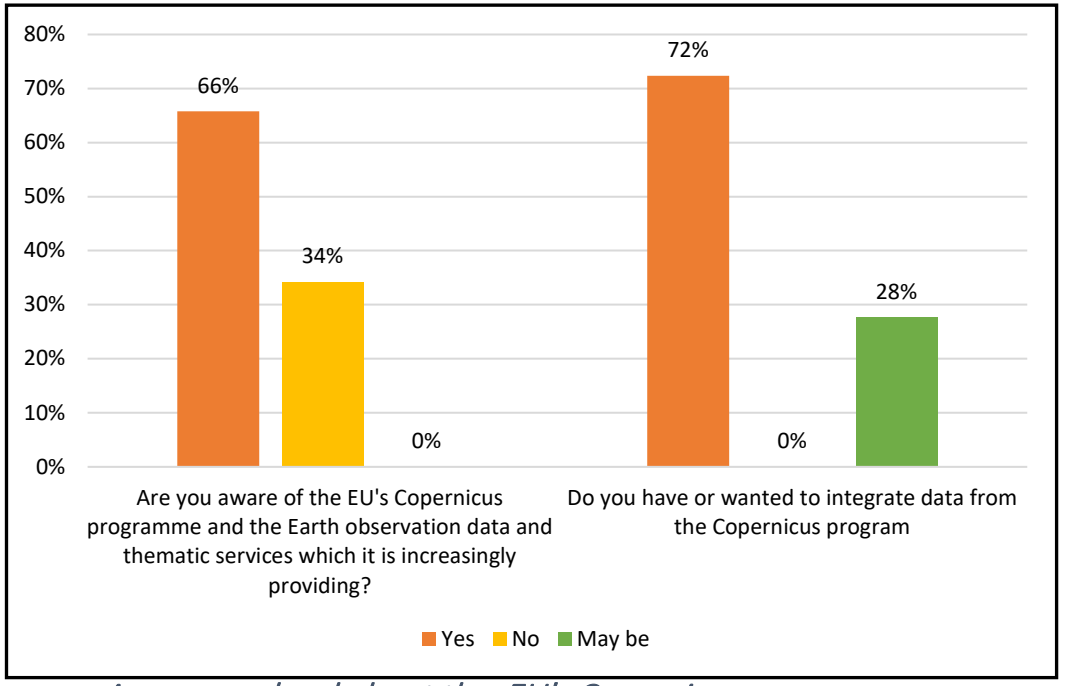




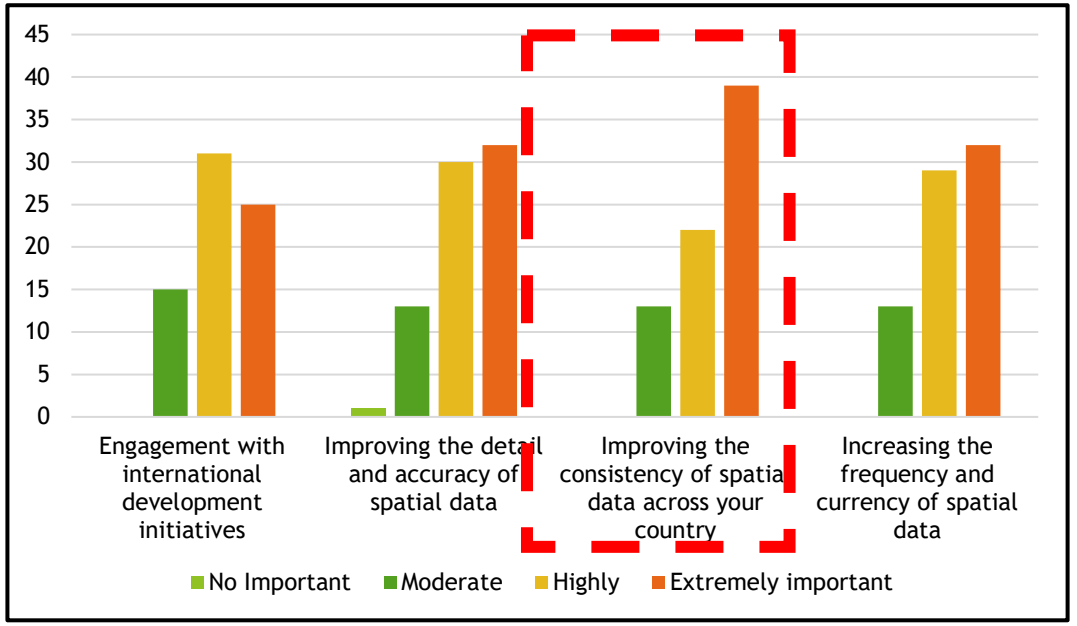
- **EO as Strategic Assets:** Emerging EO data flows as future strategic assets for water and natural resources management and that the global cooperation is essential for easy access to Earth observation systems and open data
- **Copernicus Program Awareness:** The EU's Copernicus program and its associated EO data and thematic services were widely recognized by respondents.



Scope of services using EO data in the responding organisations



Awareness level about the EU's Copernicus programme

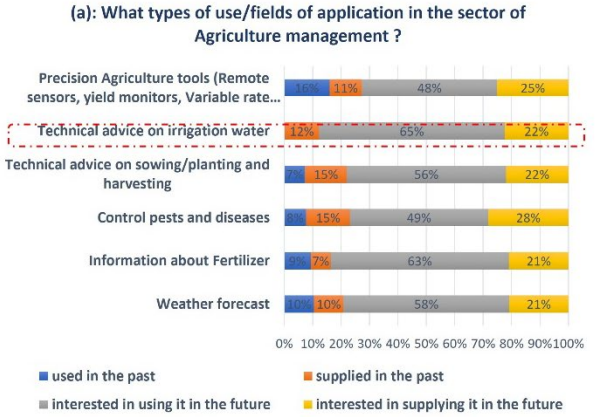


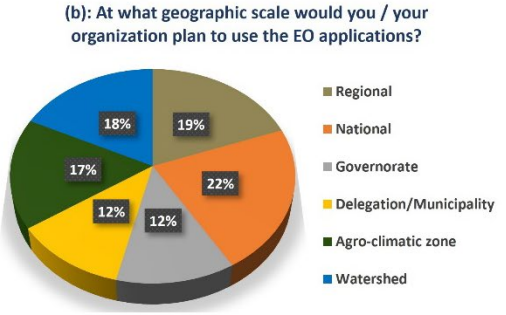
The need for Earth Observation according to different issues

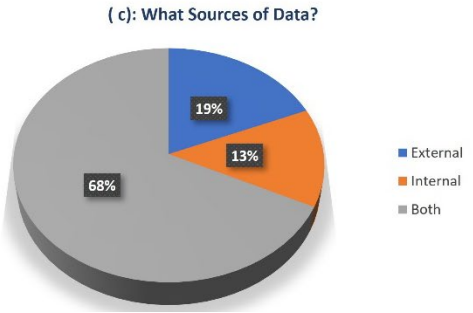
Potential use of EO for WNM

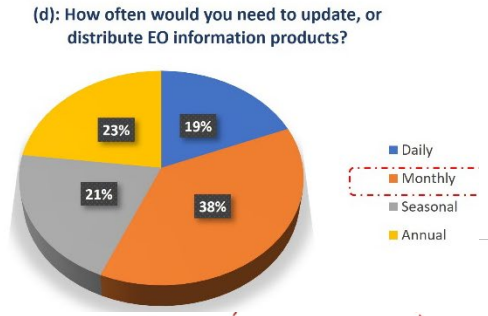
- **Successful Project Implementation:** Several projects integrating EO products, both completed and ongoing, have been successfully implemented in North Africa within national and international frameworks.
- **Focus Areas:** These projects have concentrated on key areas such as monitoring irrigated areas, evapotranspiration, and land degradation.
- **Knowledge Transfer and Documentation:** A comprehensive synthesis of these projects is essential to capitalize on acquired knowledge and experiences, establishing a robust database related to GMES and Africa services.
- **North African Engagement:** Partners in North Africa have demonstrated a strong interest and commitment to implementing GMES services, aligning with their daily missions and tasks.
- **Complementary Nature of Copernicus Services:** Copernicus services can effectively complement existing national platforms, enabling enhanced data analysis and decision-making through calibration with field data and institutional specifications.

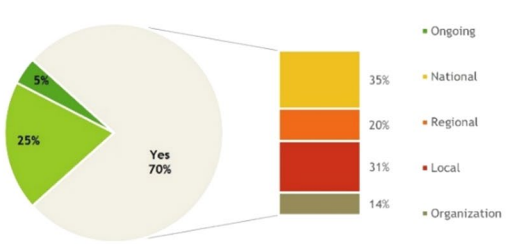
Agriculture management services



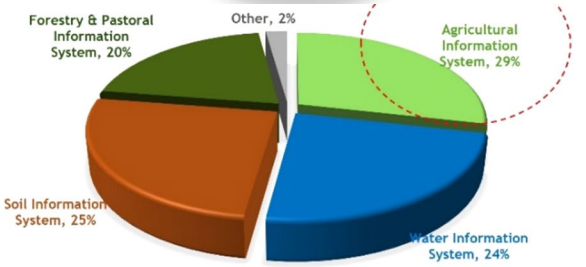




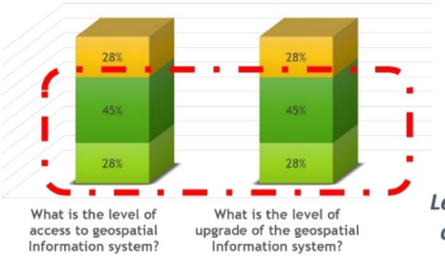




Level use of Geospatial Information System



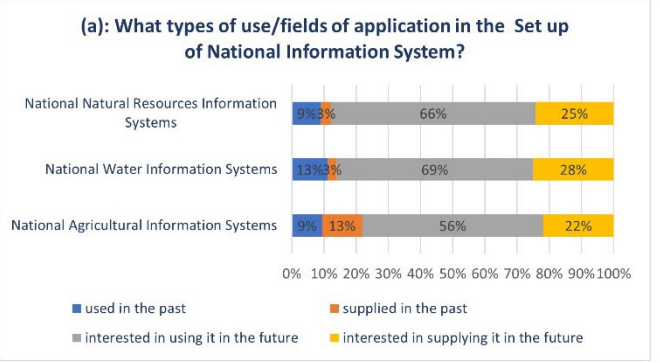
Fields of application of Geospatial Information System

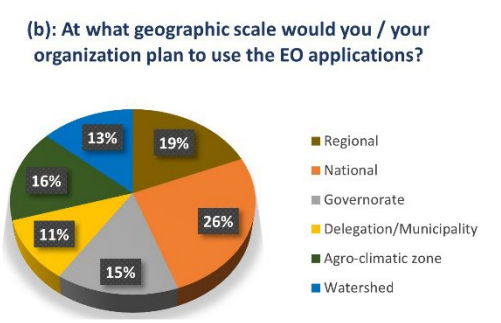


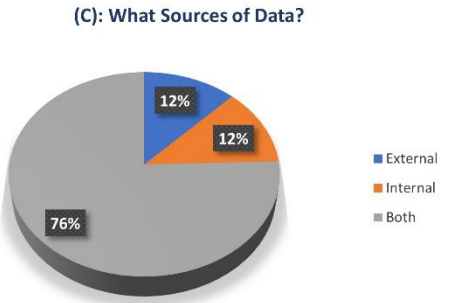
Level of access and upgrade of Geospatial Information System

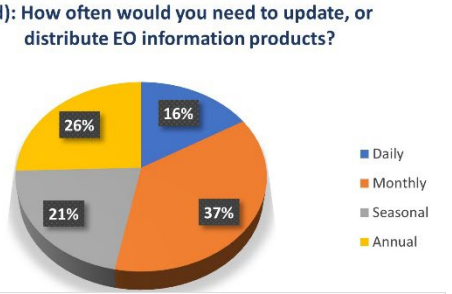
Limitations & Constraints

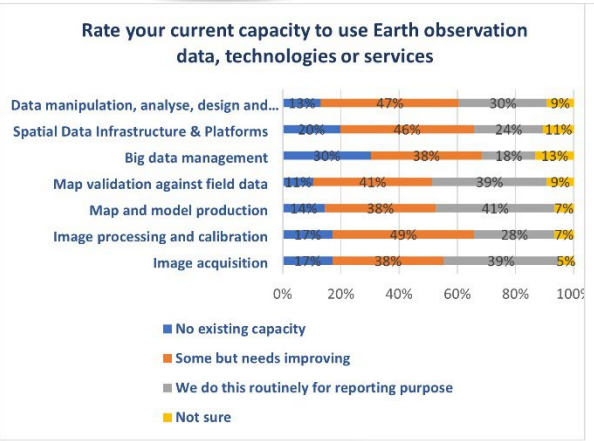
- **Limited EO Sector Development:** The upstream and midstream EO sectors in North African countries were found to be underdeveloped, indicating a substantial opportunity for growth and investment.
- **Geospatial platform Challenges:** Access to and upgrades of National Geospatial platform were identified as limitations in many regions.
- **Training Needs:** A lack of professional training programs was highlighted as a significant barrier to improving competencies and skills in geoinformatics and EO informatics, particularly among local authorities.
- **Technical, Capacity, and Institutional Obstacles**: The establishment of consistent and relevant WNR monitoring systems at various levels in North African countries is impeded by technical, capacity, and institutional challenges.

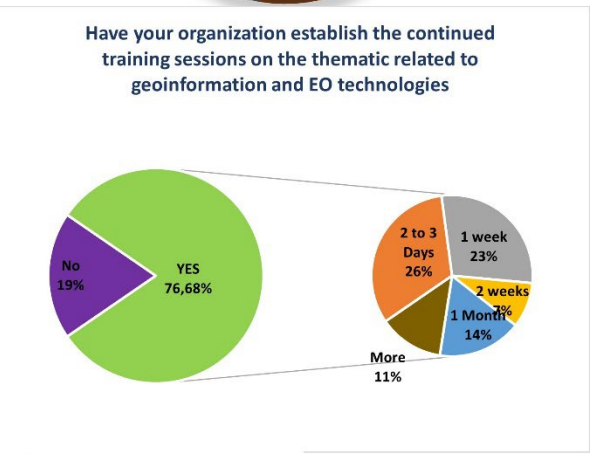












- **Technical and Implementation Hurdles:** The implementation of EO for WNR services in North Africa faces substantial technical and implementation challenges, including capacity development, standardized protocols, and ground truthing efforts.

- **Disparity Between EO Success and WNR Systems:** Despite the successful application of EO technologies in environmental science models, meteorology, and agriculture, North African countries often lack consistent and operational WNR end-user systems.

- **Data and Information Fragmentation:** Acquired data and information are frequently fragmented and underutilized, hindering effective WNR monitoring.

- **Private Sector Underrepresentation:** The study identified a notable disparity between the public and private sectors in the utilization of geo-information data, emphasizing the need for increased private sector involvement and equitable financing to promote sustainable development initiatives

Proposed actions to strengthen the Earth Observations use in North African countries

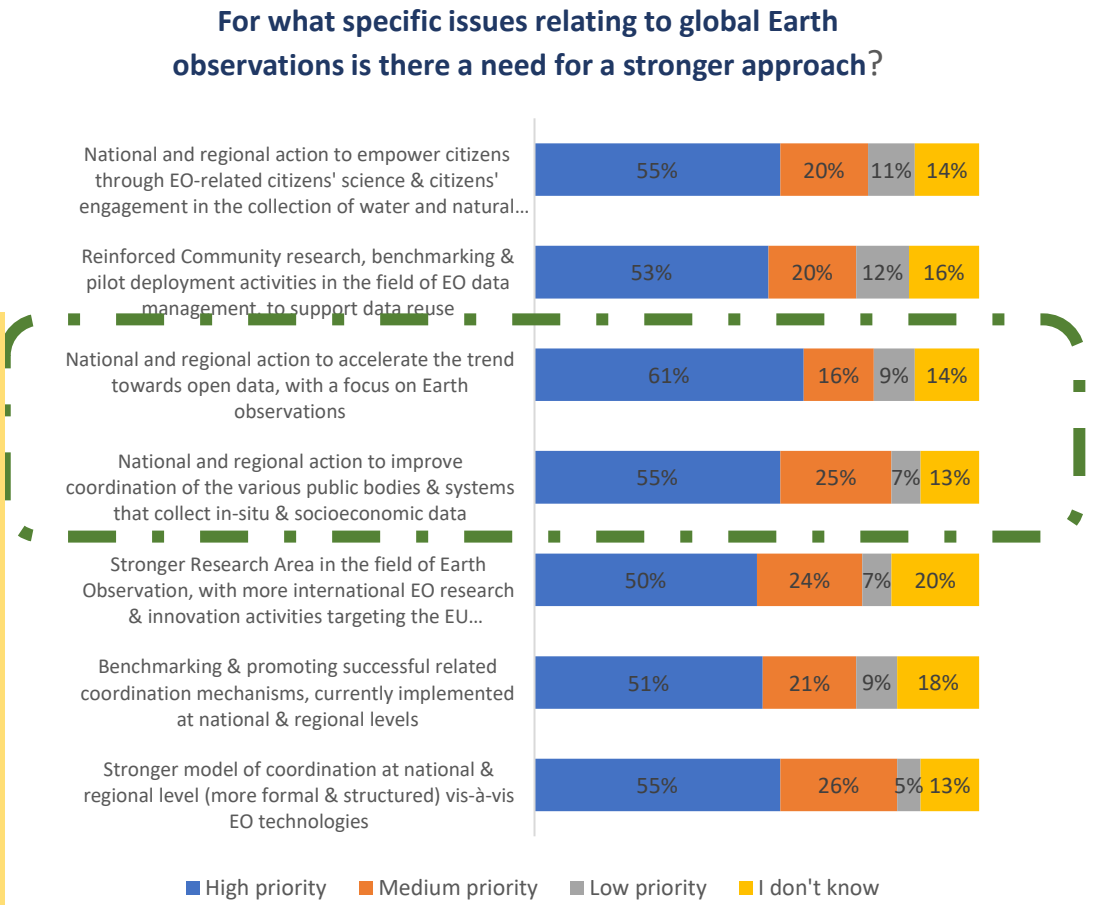
Priority Actions:

- **Open Data and Citizen Engagement:** Respondents prioritized accelerating open data policies and empowering citizens through EO-related citizen science initiatives.
- **Enhanced Coordination:** Establishing a stronger, more formal coordination model at national and regional levels was also deemed essential.

Improving the Position of the Copernicus EO Service Industry:

- **North African Forum:** Respondents favored the establishment of a dedicated forum for ongoing dialogue between North African stakeholders and European businesses.
- **Public-Private Partnerships:** PPPs were identified as crucial for facilitating stakeholder engagement and promoting the uptake of Copernicus services.
- **Increased Awareness:** Raising awareness about Copernicus EO services among local companies, particularly SMEs and startups, was considered essential for fostering new business opportunities.

Proposed actions to strengthen the Earth Observations use in North African countries



Roadmap for EO integration in WNR management

ROAD MAP

1.Establish a Conducive Environment: Foster a supportive environment that enables the long-term sustainability of EO-based WNR management

2. Enhance Data Accessibility: Promote access to EO data and innovative tools to facilitate their effective utilization.

3. Prioritize Capacity Building: Invest in robust capacity building programs to equip stakeholders with the requisite skills and knowledge.

4. Foster Collaborative Relationships: Strengthen collaboration between EO providers and end-users to ensure that services align with their specific needs and requirements.

5. Reinforce National and Regional Strategies: Strengthen existing national and regional strategies to integrate EO into sustainable development planning and decision-making processes

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