



محمية المحيط الحيوي  
للربط القاري المتوسطي  
الأندلس - المغرب



Reserva de la Biosfera  
Intercontinental del  
Mediterráneo  
Andalucía. España - Marruecos



# Analysis of transboundary water ecosystems and Green / Blue Infrastructures: A bottom-up approach.

Intercontinental Biosphere Reserve of the Mediterranean – Andalucía - Morocco



**Rediam**

The AQUACROSS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.





Ensure stakeholder engagement, knowledge exchange and social learning across aquatic ecosystems to achieve practical policy solutions and to co-create concepts and develop products, share experiences with implementing policies and respective management approaches, as well as provide critical feedback on project outputs as a contribution to the general discussion within the context of the GEF-7.



## Expected outputs, participants will be:



Understand how to identify and assess drivers and pressures of aquatic ecosystems, understand causalities between biodiversity, ecosystem functions and services;

Acquire knowledge on the exchange of data, information and research results through an information platform and forecast biodiversity and ecosystem service provision.



Advance science and knowledge by contributing to the integration of biodiversity, freshwater, coastal and marine knowledge, concepts, information, methods, and tools across multiple research fields.

Connect policy, businesses and society by improving ecosystem-based management; thus, resulting in broader constituencies for conservation and expanded possibilities to guide decision-making, as well as opportunities to add or create new value to protected areas and manage aquatic ecosystems sustainably outside of these areas.



# The strait of Gibraltar unites us!





# Spain



**JUNTA DE ANDALUCIA**

CONSEJERÍA DE MEDIO AMBIENTE Y ORDENACIÓN DEL TERRITORIO



Agencia de Medio Ambiente y Agua  
**CONSEJERÍA DE MEDIO AMBIENTE  
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Delegación Permanente  
de España ante  
la UNESCO



Alianza  
por la  
Solidaridad



MANCOMUNIDAD DE MUNICIPIOS  
DEL CAMPO DE GIBRALTAR



PARQUE NATURAL  
Los Alcornocales



PARQUE NATURAL  
Del Estrecho



**AYUNTAMIENTO  
DE TARIFA**



ENTIDAD LOCAL  
AUTÓNOMA DE  
FACINAS



# Agreement in between Andalusia and IOC-UNESCO



Event:  
Author:

[www.aquacross.eu/](http://www.aquacross.eu/)





المملكة المغربية  
ⵜⴰⴳⴷⴰⵢⵜ ⵏ ⵍⵎⵖⵔⵉⴱ  
ROYAUME DU MAROC



الوزارة المنتدبة لدى وزير الطاقة و المعادن و الماء و البيئة المكلفة بالبيئة  
ⵜⴰⴳⴷⴰⵢⵜ ⵏ ⵍⵎⵖⵔⵉⴱ ⵏ ⵍⵎⵖⵔⵉⴱ ⵏ ⵍⵎⵖⵔⵉⴱ ⵏ ⵍⵎⵖⵔⵉⴱ ⵏ ⵍⵎⵖⵔⵉⴱ  
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MINISTRE DELEGUE AUPRES DU MINISTRE DE L'ENERGIE, DES MINES,  
DE L'EAU ET DE L'ENVIRONNEMENT, CHARGE DE L'ENVIRONNEMENT



Organisation  
des Nations Unies  
pour l'éducation,  
la science et la culture

Royaume du Maroc



Haut Commissariat aux Eaux et Forêts  
et à la Lutte Contre la Désertification







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¡Muchas gracias!

Merci!

Thank you!

Спасибо

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# General context and Case Study 2

Intercontinental Biosphere Reserve of the Mediterranean – Andalucía - Morocco

IOC-UNESCO

8/11/2018



**Rediam**

The AQUACROSS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.





- ≡ **Name:** Knowledge, Assessment, and Management for AQUATIC Biodiversity and Ecosystem Services aCROSS EU Policies (AQUACROSS)
- ≡ **Type of project:** Research and Innovation
- ≡ **Funding:** Horizon 2020
- ≡ **Budget:** ca. 7 million EUR
- ≡ **Duration:** 1 June 2015—30 November 2018



# AQUACROSS Partners



Intergovernmental  
Oceanographic  
Commission



IMARES

WAGENINGEN UR



cesam

universidade de aveiro  
centre for environmental  
and marine studies



UNIVERSITY OF  
LIVERPOOL



UCC

University College Cork, Ireland  
Coláiste na hOllscoile Corcaigh

Stockholm Resilience Centre  
Sustainability Science for Biosphere Stewardship



Stockholm  
University



INCDDD TULCEA



BASQUE CENTRE  
FOR CLIMATE CHANGE  
Klima Aldaketa Ikergai





# The Challenge



- ≈ Biodiversity provides ecosystem services crucial for human well-being. As biodiversity is declining, despite existing environmental policies, there is an urgent need to both **document** and **evaluate** :
1. effects of drivers of change to biodiversity,
  2. links between biological diversity, ecosystem functions and resilience, and in turn to ecosystem service provision

These actions will help ensure effective **policy** and **sustainable development**.





# AQUACROSS – General context



## AQUACROSS (Knowledge, Assessment, and Management for AQUatic Biodiversity and Ecosystem Services aCROSS EU policies



AQUACROSS has received funding from the European Union's Horizon 2020 Programme for Research, Technological Development and Demonstration under Grant Agreement no. 642317.



1. To **support the coordinated implementation** of the EU 2020 Biodiversity Strategy and international biodiversity targets;
2. To explore, advance and support the implementation of the **EBM** concept across aquatic ecosystems;
3. To specifically identify and test **robust, cost-effective and innovative management and business models and tools**; and,
4. To **mobilise policy-makers, scientists, businesses and societal actors** to learn from real-world experiences, co-build and test project work, and ensure end-users' uptake of project results.



# Policy Context



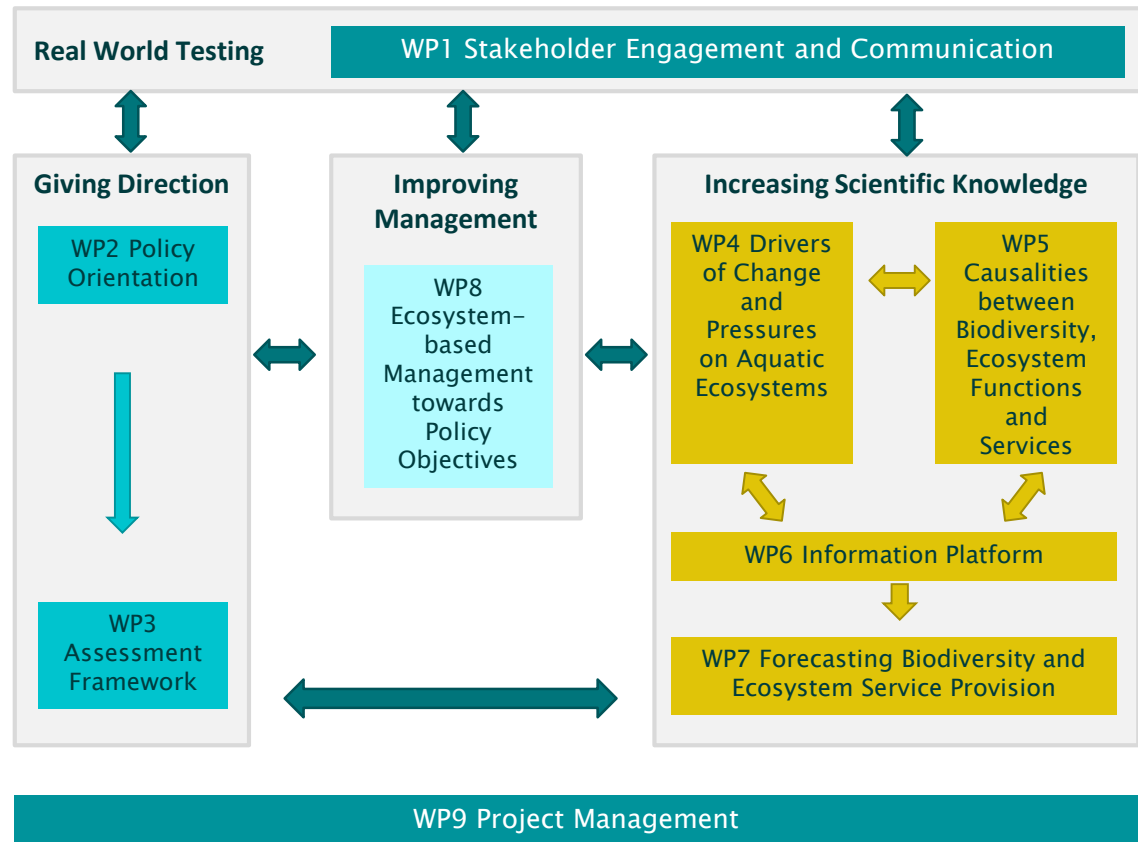
- ≡ Biodiversity Strategy
- ≡ Birds and Habitats Directives
- ≡ Water Framework Directive
- ≡ Marine Strategy Framework Directive



# Pillars of AQUACROSS

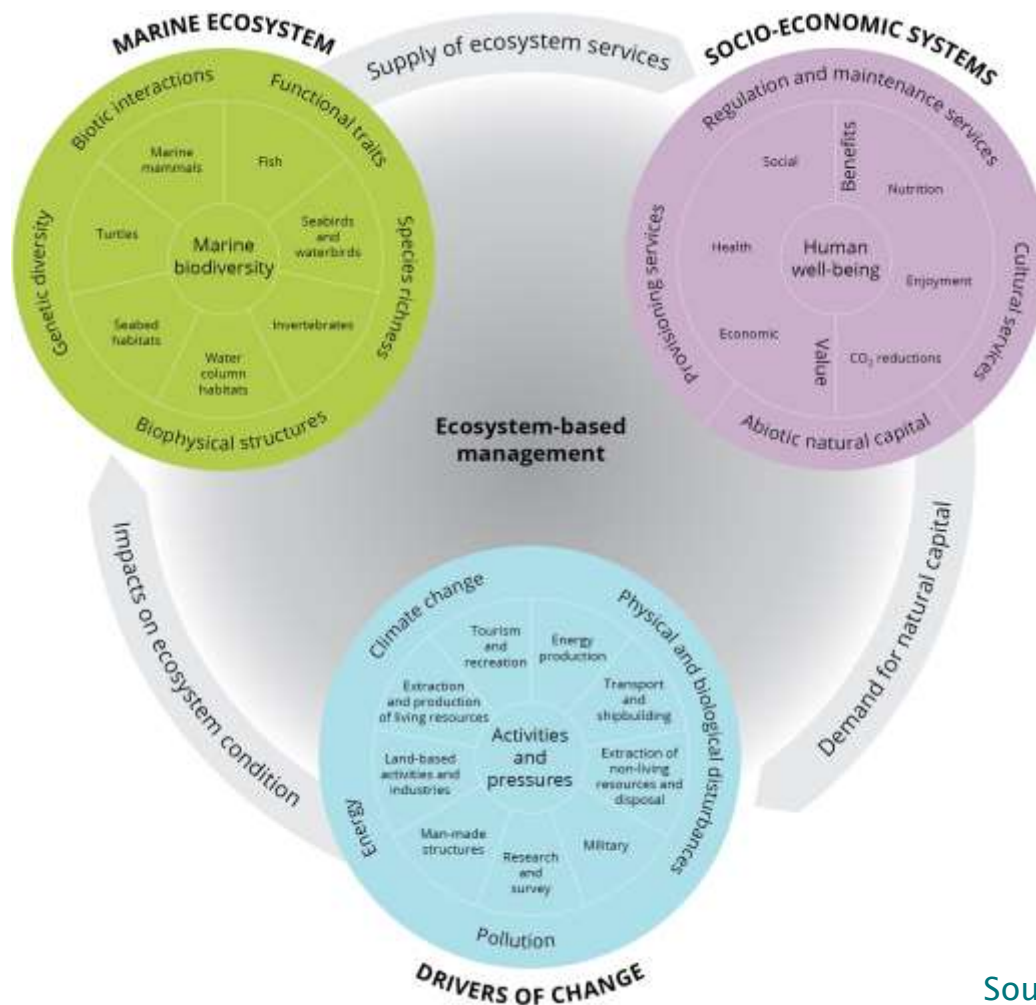


- 🌊 **Pillar 1: Real world testing**
- 🌊 **Pillar 2: Giving direction**
- 🌊 **Pillar 3: Increasing scientific knowledge**
- 🌊 **Pillar 4: Improving management**
- 🌊 **Case studies across all pillars**





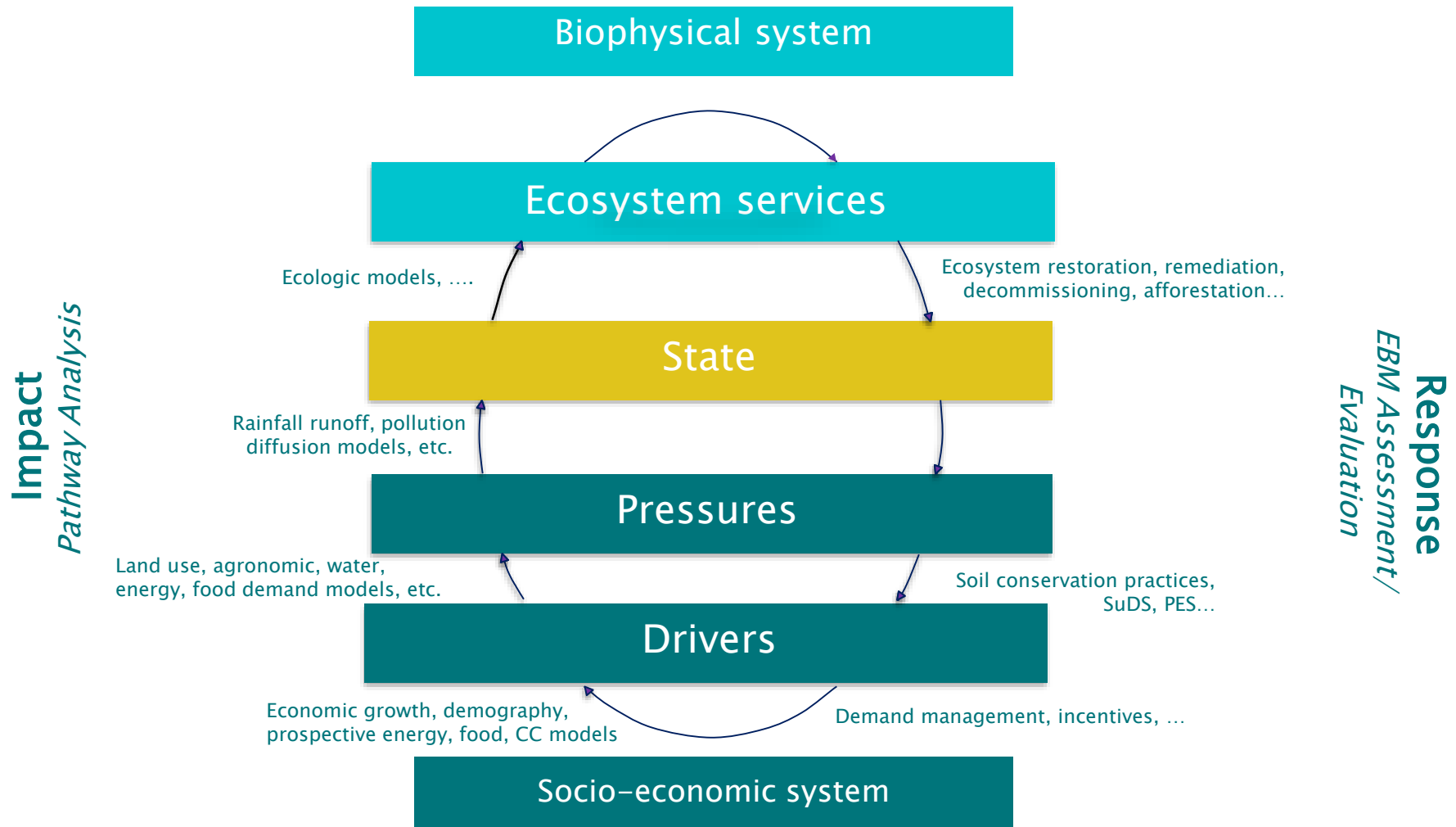
# Understanding EBM



Source: EEA, 2015. State of Europe's seas.



# AQUACROSS Assessment Framework



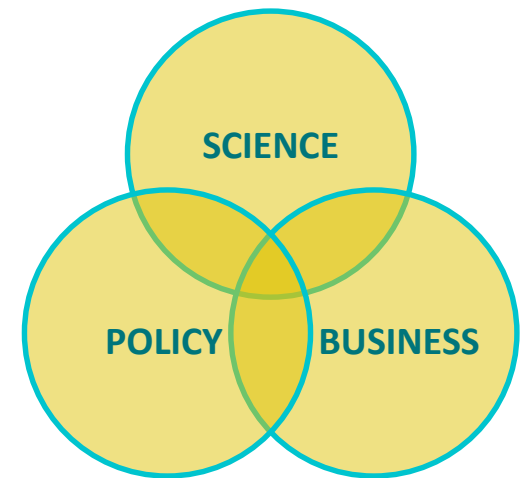


A key objective of AQUACROSS is to mobilise policy-makers, scientists, businesses and societal actors....

≡ Dedicated **task on stakeholder engagement** within case studies and project workshops

≡ **Science–Policy–Business Think Tank**

- Acts as external advisory board
- Provides expert advice and consultation
- Composed of 10 high-level experts and 8 case study representatives





## Location of AQUACROSS case studies

-  Case Study 1 Trade-offs in ecosystem-based fisheries management in the North Sea aimed at achieving Biodiversity Strategy targets
-  Case Study 2 Analysis of transboundary water ecosystems and green/blue infrastructures in the Intercontinental Biosphere Reserve of the Mediterranean Andalusia (Spain) – Morocco
-  Case Study 3 Danube River Basin – harmonising inland, coastal and marine ecosystem management to achieve aquatic biodiversity targets
-  Case Study 4 Management and impact of Invasive Alien Species in Lough Erne in Ireland
-  Case Study 5 Improving integrated management of Natura 2000 sites in the Vouga River, from catchment to coast, Portugal
-  Case Study 6 Understanding eutrophication processes and restoring good water quality in Lake Ringsjön – Rönne å Catchment in Kattegat, Sweden
-  Case Study 7 Biodiversity Management for Rivers of the Swiss Plateau
-  Case Study 8 Ecosystem-based solutions to solve sectoral conflicts on the path to sustainable development in the Azores

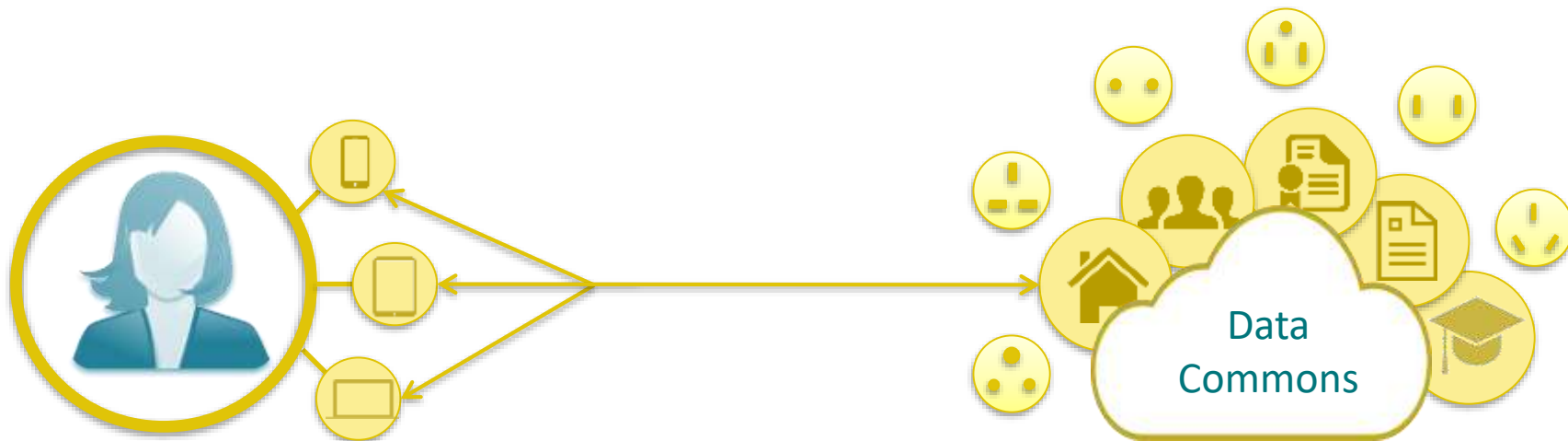




- ≈ AQUACROSS will **identify** policies affecting the achievement of EU and international biodiversity objectives.
- ≈ Project work will assess the **operational policy demand** for aquatic biodiversity protection and identify **synergies and operational policy barriers**.
- ≈ Ultimately, this will result in **policy recommendations** to protect aquatic biodiversity







## ≡ Data Information Platform

- Integrates various datasets into a data catalogue (metadata)
- Provided direct access to datasets and information compiled from the project

## ≡ Data Viewer

- Based on Open Source Software
- Used to facilitate visual identification of project analysis

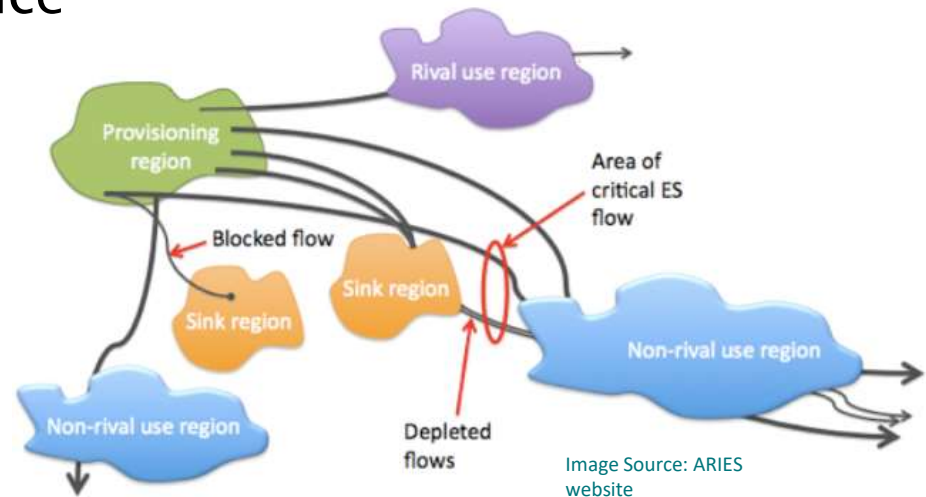


## Mapping ecosystem services

- ARIES (Artificial Intelligence for Ecosystem Services)

## Forecasting biodiversity and ecosystem service provision:

- Participatory modelling
  - Narratives
  - Cognitive mapping
- Social-ecological modelling





# AQUACROSS Expected Impacts



AQUACROSS will directly support policy-makers and managers of aquatic ecosystems in the following ways:

- ≈ A **consolidated outlook on EU policy** for biodiversity and aquatic ecosystems (i.e. objectives, terminology, concepts).
- ≈ A **coherent set** of EBM assessment methods and models and clear guidance on the selection of EBM measures and supporting/financing instruments.
- ≈ **Improving EBM** will result in:
  - (i) the development of broader constituencies for conservation and expanded possibilities to guide decision-making;
  - (ii) opportunities to add or create new value to protected areas; and
  - (iii) further opportunities to manage aquatic ecosystems sustainably outside of protected areas.





- ≡ AQUACROSS Assessment Framework
- ≡ Policy recommendations at global and local scale
- ≡ Policy and innovation briefs
- ≡ Guidance on indicators, methods and tools for assessing ecosystem services and functions
- ≡ Data information platform
- ≡ Case study storytelling maps





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Merci!

Thank you!

Спасибо

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# Case Study 2 – Methodology and Results

Intercontinental Biosphere Reserve of the Mediterranean: Andalusia - Morocco

IOC-UNESCO

8/11/2018



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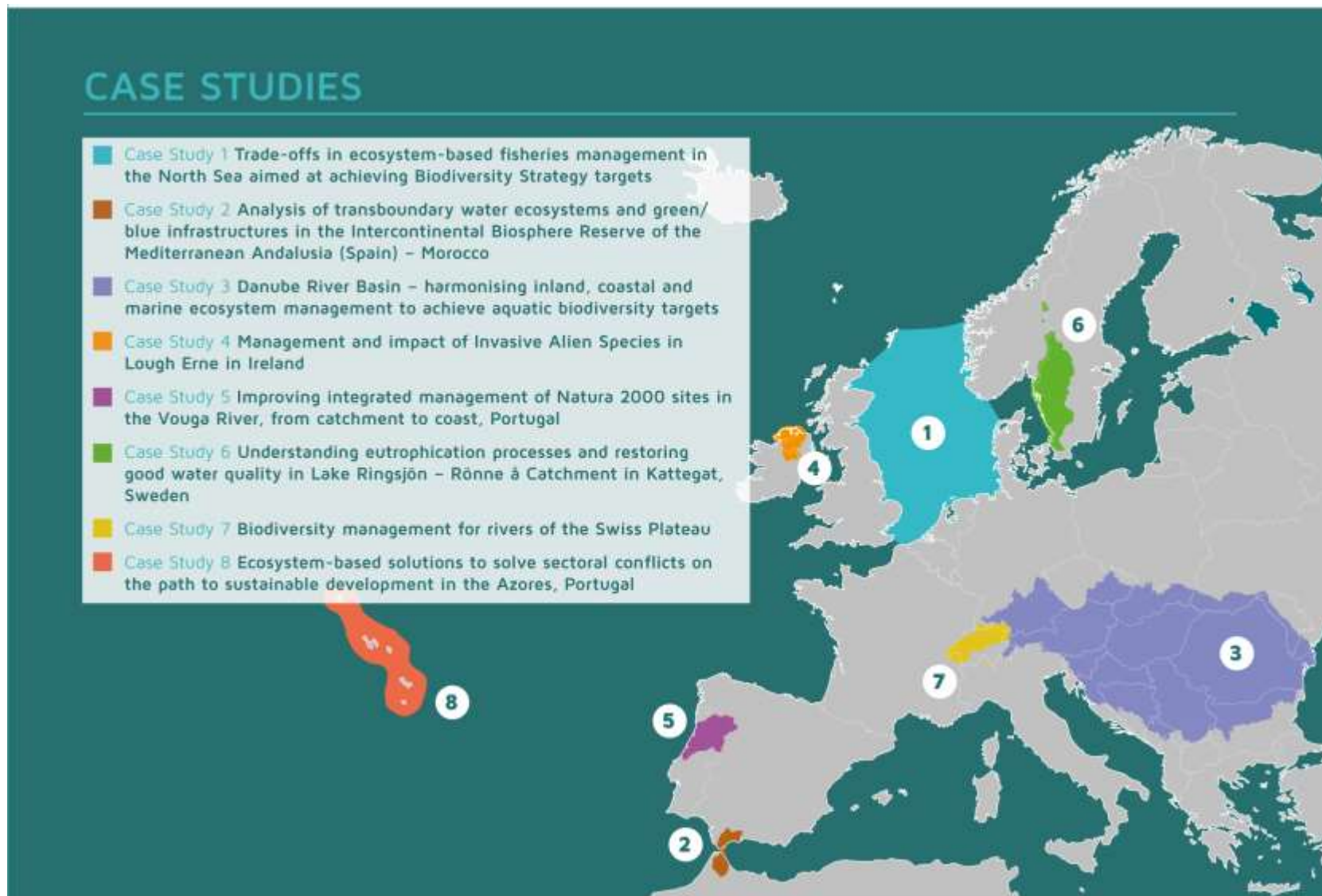




# AQUACROSS – Case Studies

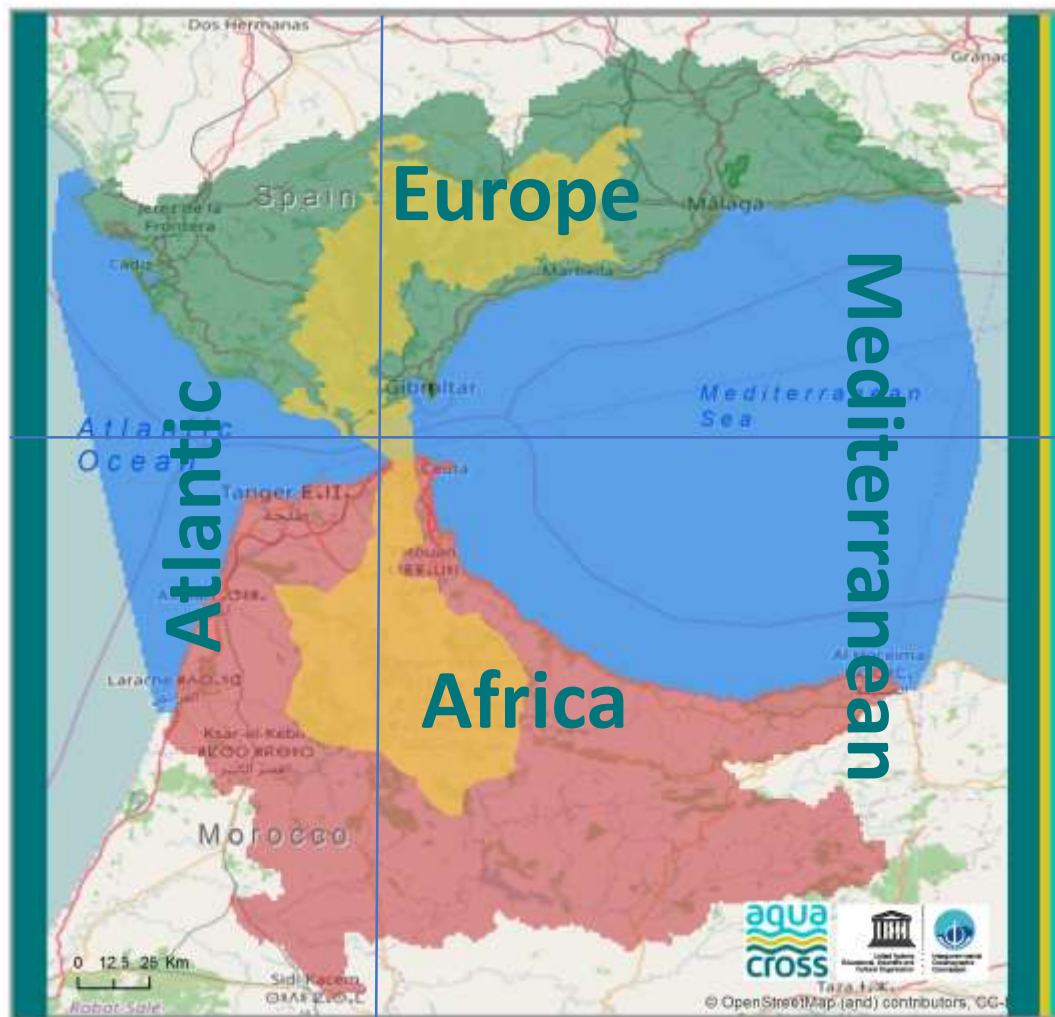
## CASE STUDIES

-  Case Study 1 Trade-offs in ecosystem-based fisheries management in the North Sea aimed at achieving Biodiversity Strategy targets
-  Case Study 2 Analysis of transboundary water ecosystems and green/blue infrastructures in the Intercontinental Biosphere Reserve of the Mediterranean Andalusia (Spain) – Morocco
-  Case Study 3 Danube River Basin – harmonising inland, coastal and marine ecosystem management to achieve aquatic biodiversity targets
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-  Case Study 7 Biodiversity management for rivers of the Swiss Plateau
-  Case Study 8 Ecosystem-based solutions to solve sectoral conflicts on the path to sustainable development in the Azores, Portugal





# Case study 2 – In between 2 seas & 2 countries

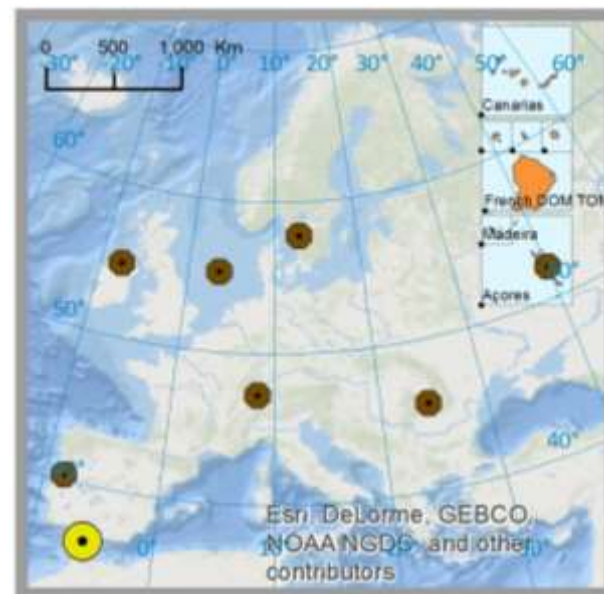


Intercontinental Biosphere Reserve of the Mediterranean – Andalusia (Spain) Morocco (IBRM) and its Area of Influence Legend

- Administrative boundaries of the IBRM
- Morocco IBRM Aol
- Andalusia (Spain) IBRM Aol
- Marine IBRM Aol
- Out of the study area

- CS2 - IBRM
- AQUACROSS Case Studies

Data source:  
© WaterBase for the Morocco river basins;  
© REDIAM for the Spain River Basin Districts V4;





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Reserva de la Biosfera  
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## AQUACROSS Case Study 2 at the Intercontinental Biosphere Reserve of the Mediterranean: Andalusia (Spain) – Morocco



ENTIDAD LOCAL  
AUTÓNOMA DE  
**FACINAS**



AYUNTAMIENTO DE  
**TARIFA**



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**OBJETIVOS DE DESARROLLO SOSTENIBLE**  
17 OBJETIVOS PARA TRANSFORMAR NUESTRO MUNDO

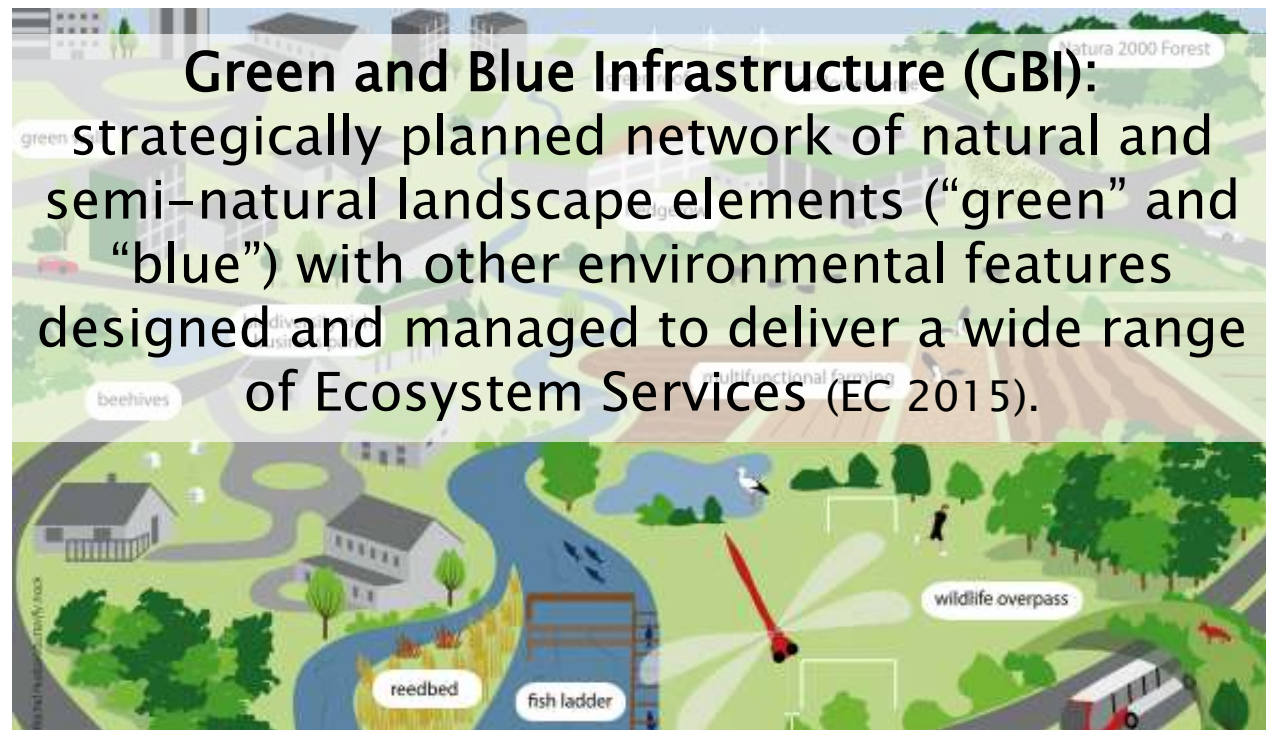


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# Case Study 2 – Main objective

Apply best practice examples of **Ecosystem-based management (EBM)** for **aquatic ecosystems** through the development of direct recommendations to promote **Green and Blue Infrastructures** for the management planning of **transboundary water ecosystems**.



Source: EC 2015



# Why Green and Blue Infrastructure

- GBI emphasizes the importance of ensuring the provision of ecosystem services for human well-being
- GBI maintains and preserves **biodiversity and ecosystem services**
- GBI is an **ecosystem-based solution** because: favours landscape permeability, climate change adaptation and may reduce vulnerability to weather and climate extreme events
- GBI is **promoted by EU** policies



Karhu 2011



# Case Study 2 - Key issues for GBI design



- Implementation of the AQUACROSS Assessment Framework to develop a Green and Blue Infrastructure (GBI)
- Inclusion of **stakeholder objectives**: synergies and conflicts between **exploitation and conservation** goals: **GBI with multiple zones**
- GBI based on **spatial conservation prioritisation** of areas according to **biodiversity** features, **ecosystem condition** and **ecosystem services**
- Best spatial allocation for an **ecosystem-based management plan** for the **restoration** of degraded ecosystems in the GBI
- Co-creation with local stakeholders**: two rounds of workshops held in Tarifa (Spain) and Tangier (Morocco).



# Case Study 2 - Main methodological steps

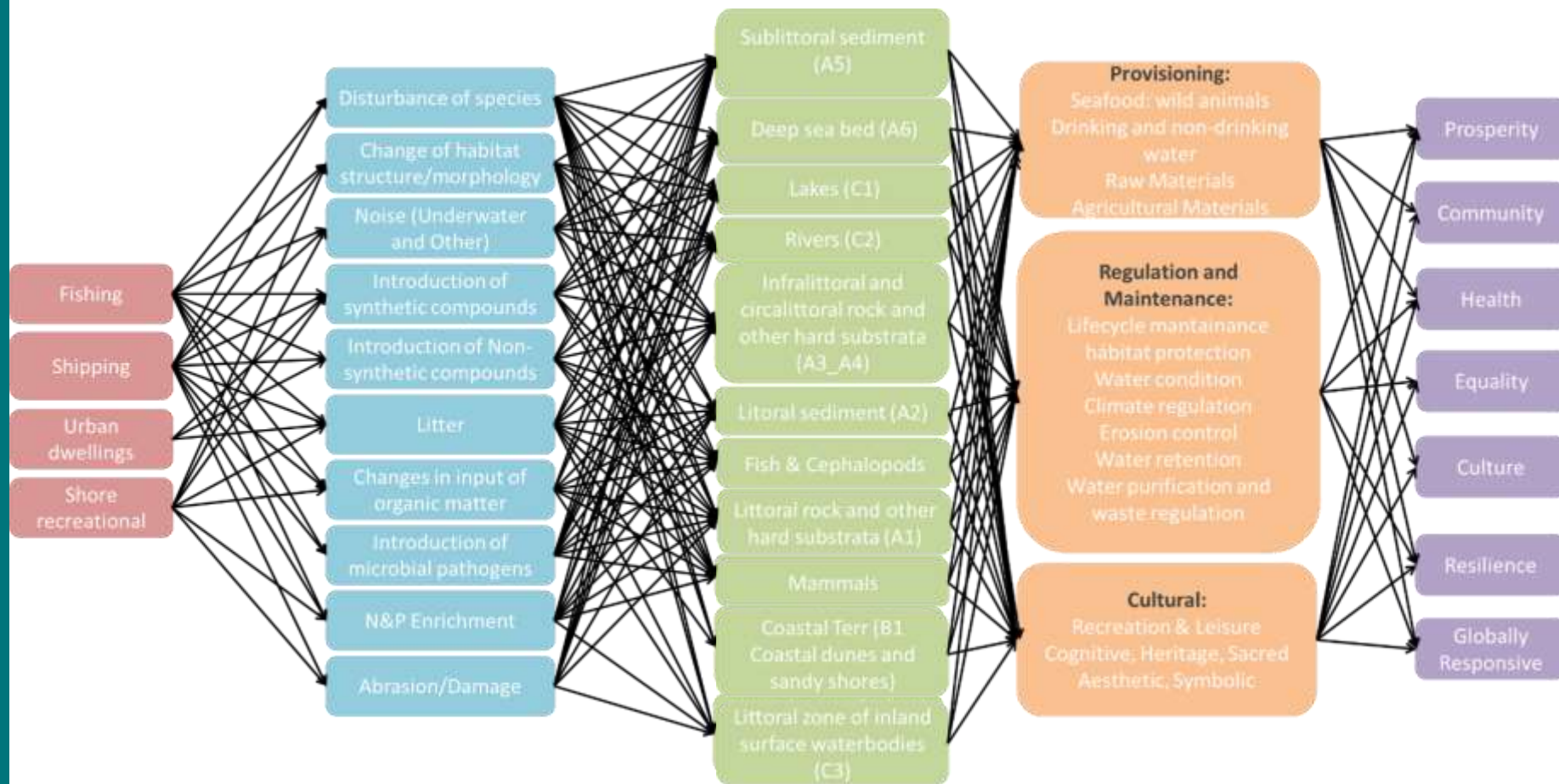


- I. Assessment of the **Socio-Ecological System (SES)**
- II. Mapping **relevant features and indicators for GBI** design (i.e. prioritization features)
- III. Establishing **management objectives and conservation targets**
- IV. Cost-effective spatial design: **Marxan with Zones**



# I - SES Assessment: Linkage matrix framework

## Socio-Ecological System: Activities- Pressures-Ecosystems- ESs





# I - SES Assessment: Linkage matrix framework



## AQUACROSS Assessment Framework

≡ **Activities causing the main pressures,**  
those which:

- have more linkages,
- occur very frequently,
- are acute or chronic,
- are widespread,
- and exogenous

(Robinson & Culhane 2017)



**Aquaculture; fishing; shipping; urban dwelling and commercial development; shore recreational activities.**





# II - Mapping relevant features

## Spatial extent and planning unit resolution

*Engage the stakeholders*

Stakeholders  
consultation



Determine the spatial  
resolution and the spatial  
extent



### Planning units and case study boundaries

- Intercontinental Biosphere Reserve of the Mediterranean (IBRM)
- Coastal sea planning units (1 sq. km grid)
- Marine planning units (10 sq. km grid)
- Freshwater planning units (Sub-catchment level 12)
- Northern section of the case study (IBRM Aol)
- Marine IBRM case study
- Southern section of the case study (IBRM Aol)
- Out of the study area

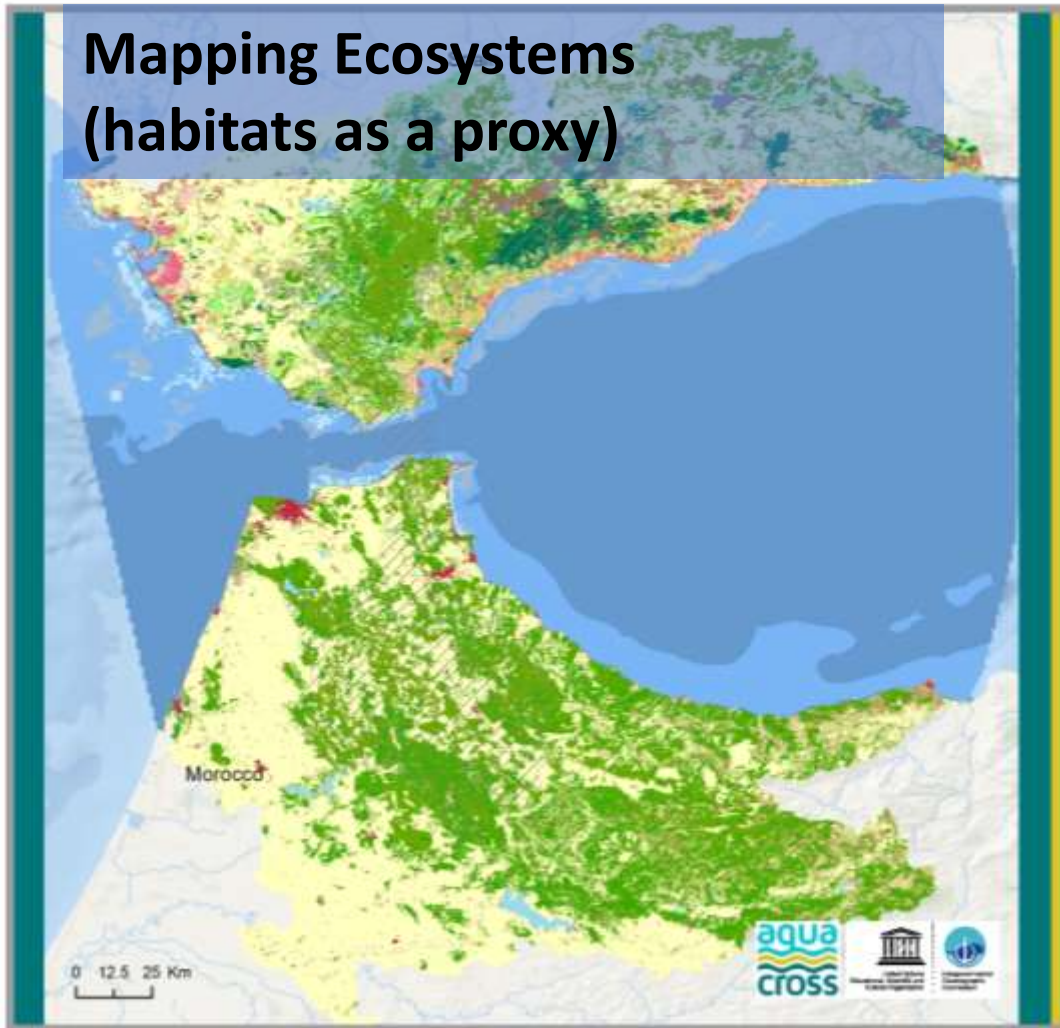
Data Sources  
© HydroSHEDS for river basins and sub-catchment (Lahmer, B., Verdin, K., Jarvis, A., 2008)  
© European Environmental Agency (EEA) (2015): coastline - definition of 10 km buffer  
© Open Street Map for base map  
© REDAM for IBRM administrative boundaries





# II - Mapping relevant features

## Mapping Ecosystems (habitats as a proxy)



## Habitat types: EUNIS nivel 2 ation level 2

- X1 Estuaries
- A Marine habitats
- A3 Infralittoral rock and other hard substrata
- A4 Circalittoral rock and other hard substrata
- A5 Sublittoral sediment
- A6 Deep-sea bed
- B Coastal habitats
- B1 Coastal dunes and sandy shores
- B3 Rock cliffs, ledges and shores, including the supralittoral
- C1 Surface standing waters
- C2 Surface running waters
- C3 Littoral zone of inland surface waterbodies
- D Mires, bogs and fens
- D5 Sedge and reedbeds, normally without free-standing water
- E Grasslands and land dominated by forbs, mosses or lichens
- E1 Dry grasslands
- E2 Mesic grasslands
- E3 Seasonally wet and wet grasslands
- E6 Inland salt steppes
- E7 Sparsely wooded grasslands
- F Heathland, scrub and tundra
- F2 Arctic, alpine and subalpine scrub
- F5 Maquis, arborescent matorral and thermo-Mediterranean brushes
- F6 Garrigue
- F7 Spiny Mediterranean heaths (...) and related coastal cliff veg
- FR Shrub plantations



# II - Mapping relevant features

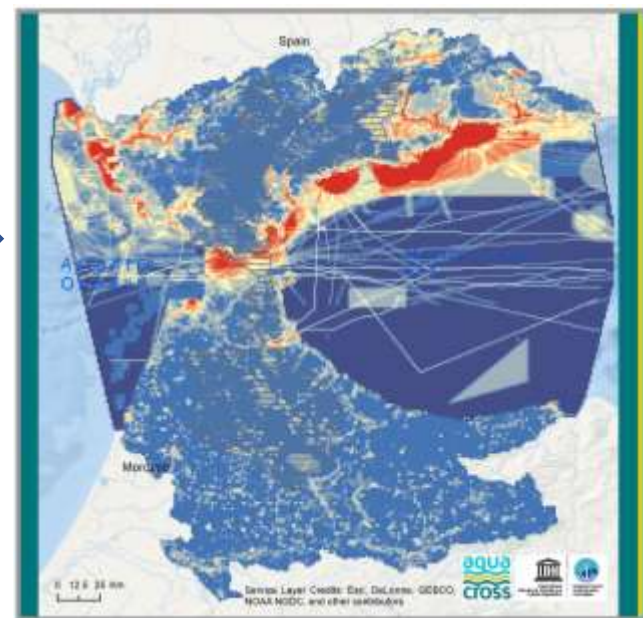
## Mapping activities and pressures



Freshwater and coastal  
areas



Marine area

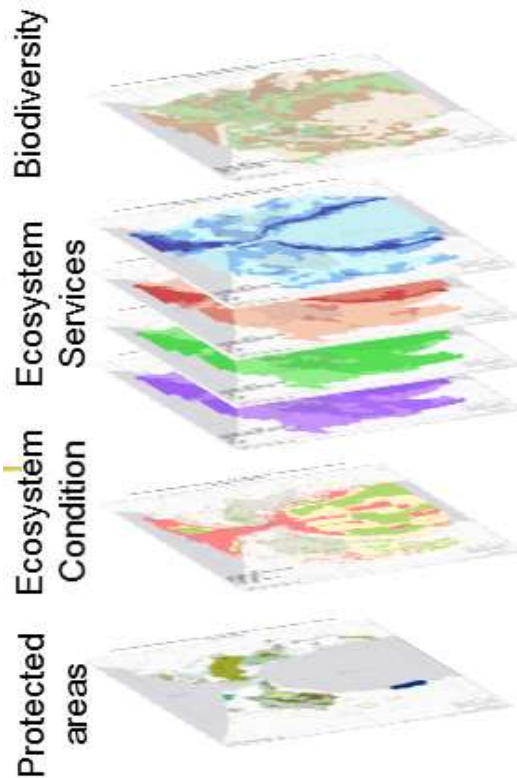


Human footprint index

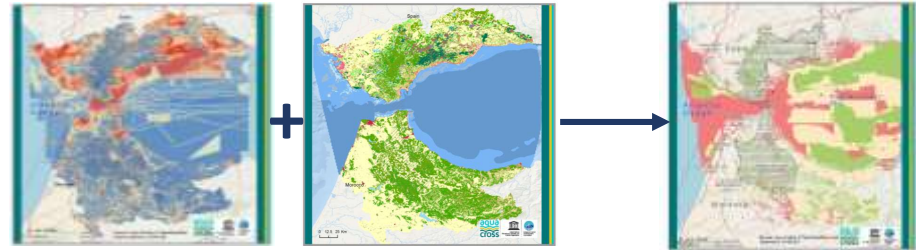


# II - Mapping relevant features

## Mapping prioritization features



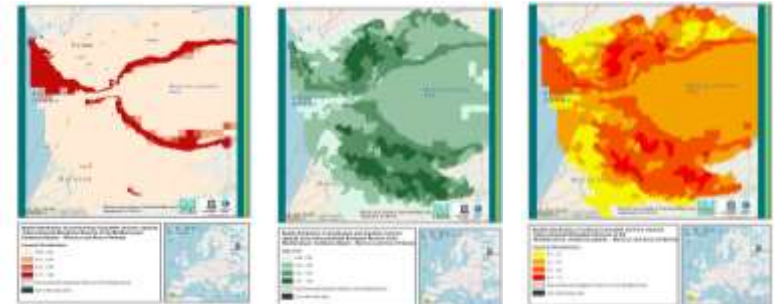
Human footprint + Ecosystem types → ECOSYSTEM CONDITION



ECOSYSTEM SERVICES



Matrix  
linkage:  
Ecosystems-  
Biota vs ESs



Provision

Regulating and  
maintenance

Cultural

BIODIVERSITY



Endangered  
Species  
Distribution  
Model (SDM)



# III – Establishing objectives and targets

Stakeholders  
consultation



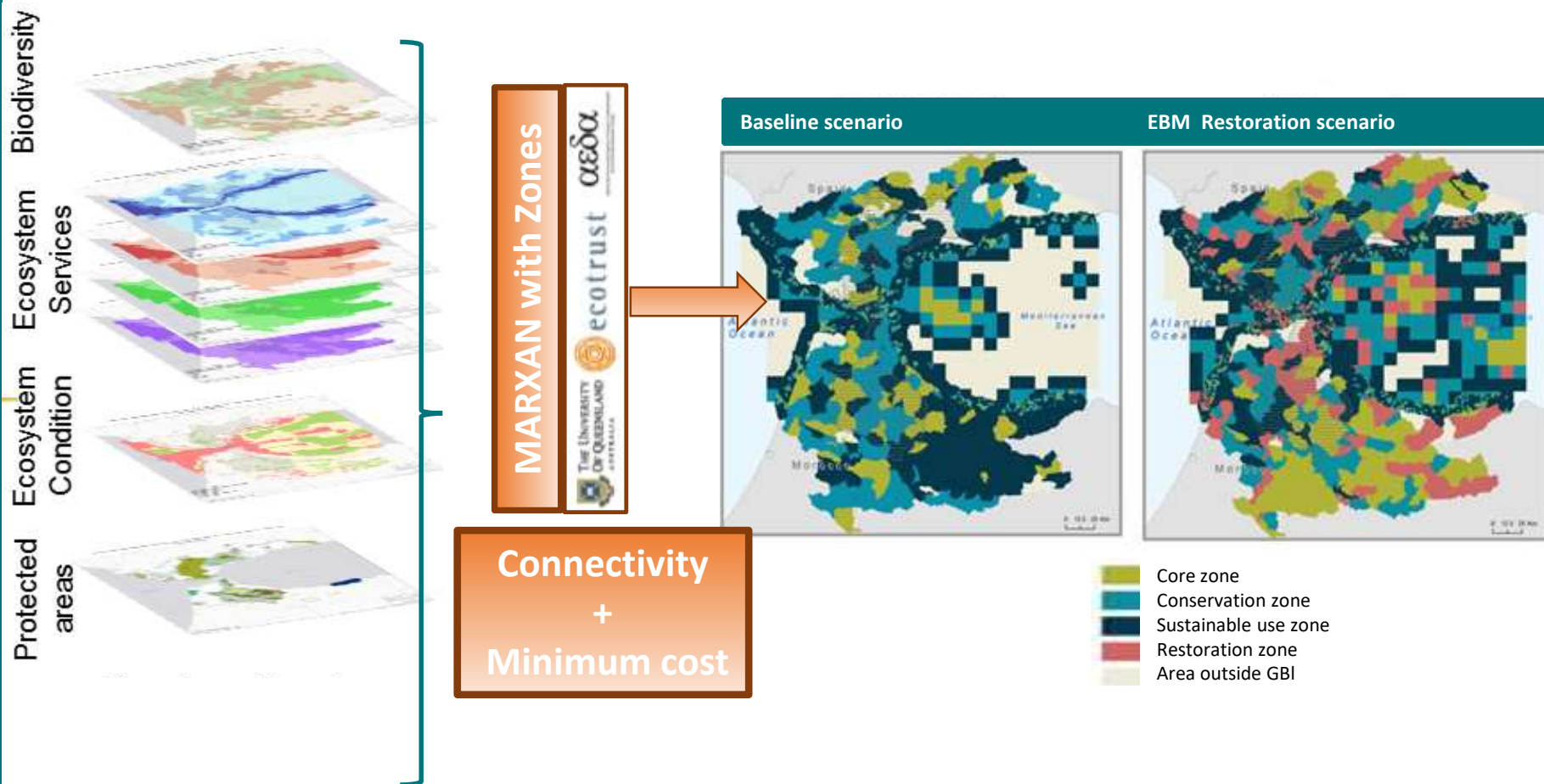
- **Two scenarios:** baseline and restoration
- **Multi-zone GBI** (conservation and exploitation goals)
- Conservation targets for prioritization features  
(**biodiversity, ecosystem condition, ecosystem services**)

Zones	Conservation targets (as %)									
	Core		Conservation		Sustainable use		Restoration		Total	
Scenario	BS	EBM	BS	EBM	BS	EBM	BS	EBM	BS	EBM
Biodiversity	9	9	5.25	5.25	0.75	0.75	-	0.79	15	15.79
Endangered species	12	12	7	7	1	1	-	1.05	20	21.05
Protected areas covering aquatic ecosystems	100	100	0	0	0	0	-	0	100	100
ES regulation and maintenance	9	9	5.25	5.25	0.75	0.75	-	0.79	15	15.79
ES cultural	0	0	9	9	6.00	6	-	1.35	15	16.35
ES provisioning	0	0	0	0	75	75	-	0	75	75
Habitats at unfavourable status	0	0	0	0	0	0	-	15	-	15
Habitats at favourable status	9	9	5.25	5.25	0.75	0.75	-	0.79	15	15.79



# IV – Cost-effective spatial planning

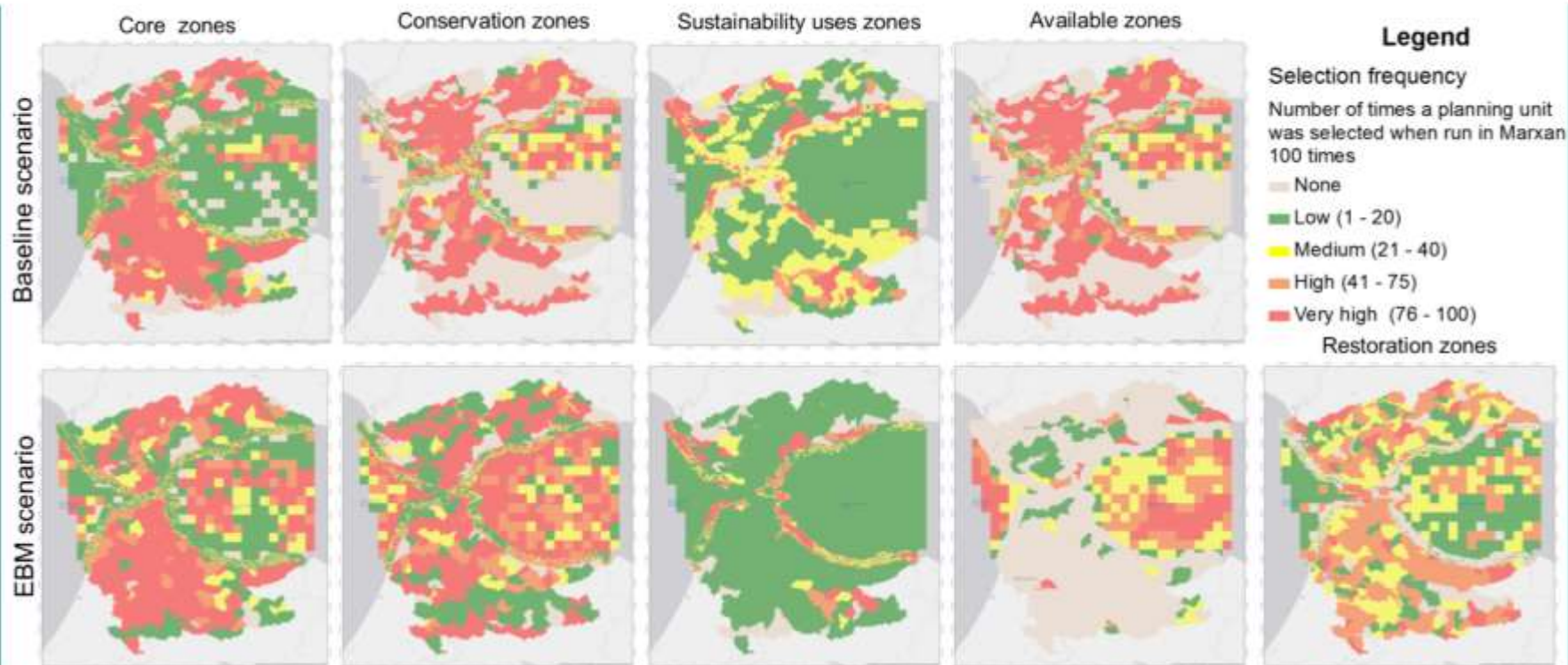
## Best solution using Marxan with Zones





# IV – Cost-effective spatial planning

Frequency of selection of the planning units (#100 runs)





# Key messages



- ≡ Efficient allocation of ecosystem-based restoration measures can be explicitly included in an optimal spatial planning design of a GBI
- ≡ GBI multi-zoning approach accounts for potential trade-offs, and maximize co-benefits, between ecosystem services and biodiversity
- ≡ Restoration areas improve the connectivity across GBI while meeting the target 2 of the EU biodiversity 2020
- ≡ GBI successfully achieves a transboundary spatial planning across different aquatic ecosystems





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¡Muchas gracias!

Merci!

Thank you!

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# The AQUACROSS Information Platform and storytelling tool

Managing the data for the development of AQUACROSS Case Studies

IOC-UNESCO

8/11/2018



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The AQUACROSS project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.





1. How AQUACROSS data has been managed?
2. Which technology is behind the AQUACROSS IP?
3. How the data has been collected, published, manipulated, interrogate and visualized?



# 1. How AQUACROSS data has been managed?

- ≡ Survey to understand the practices of the partners, case studies leaders and stakeholders;
- ≡ Data types and storage
- ≡ Data organization, documentation and metadata
- ≡ Data access and intellectual property
- ≡ Data sharing and reuse
- ≡ Data preservation and archiving



## D6.1 AQUACROSS data management plan






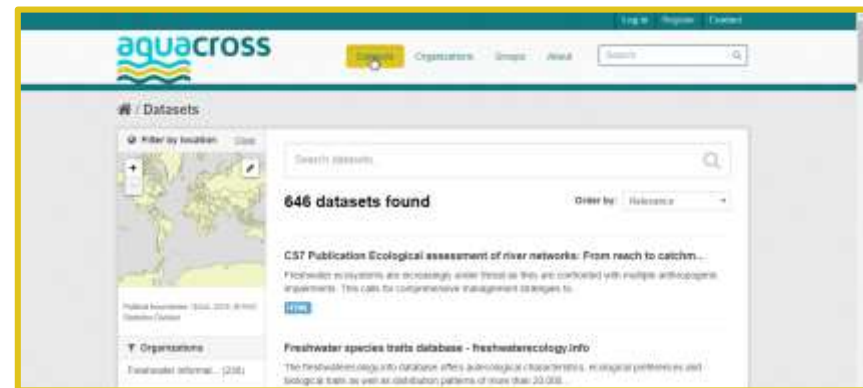


1. How AQUACROSS data has been managed?
2. Which technology is behind the AQUACROSS IP?
3. How the data has been collected, published, manipulated, interrogate and visualized?



## 2. Which technology is behind the IP?

- 
 The AQUACROSS IP architecture is based on CKAN framework;
- 
 Interoperability with other information platforms led by the European Commission, EU Agencies and the Joint Research Centre;
- 
 Spatial Data Infrastructure in the context of INSPIRE under implementation within the AQUACROSS IP architecture



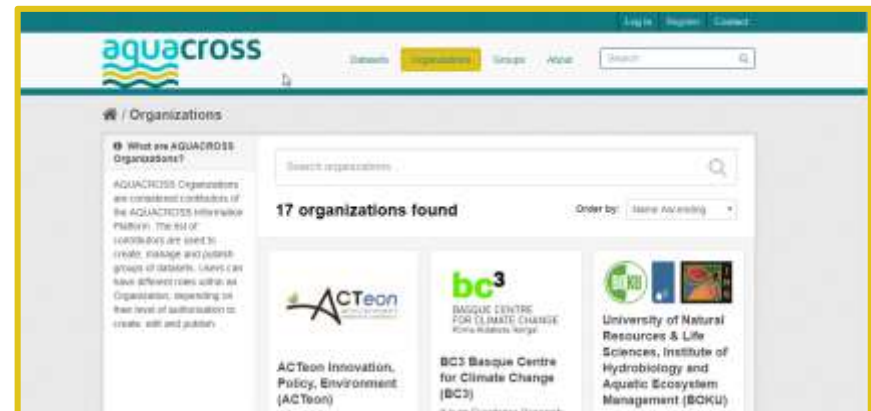
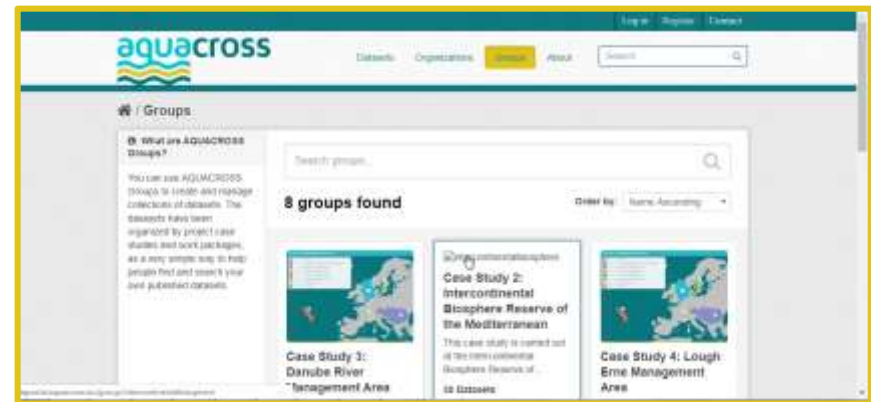


# 2.1 AQUACROSS IP - <http://dataportal.aquacross.eu/>



- Objective... to provide a single point of access to both
  - the internally produced and external data required by
  - project partners, scientists and general public

- AQUACROSS Information is organized by:
  - Case studies;
  - Organizations;





1. How AQUACROSS data has been managed?
2. Which technology is behind the AQUACROSS IP?
3. How the data has been collected, published, manipulated, interrogate and visualized?



### 3 - How the data has been collected?



CONSEJERÍA DE MEDIO AMBIENTE  
Y ORDENACIÓN DEL TERRITORIO



European Environment Agency



Activities- Pressures - Ecosystems - Biodiversity



# 3 - How the data has been published and visualized? Information Platform



Publication of the case study results



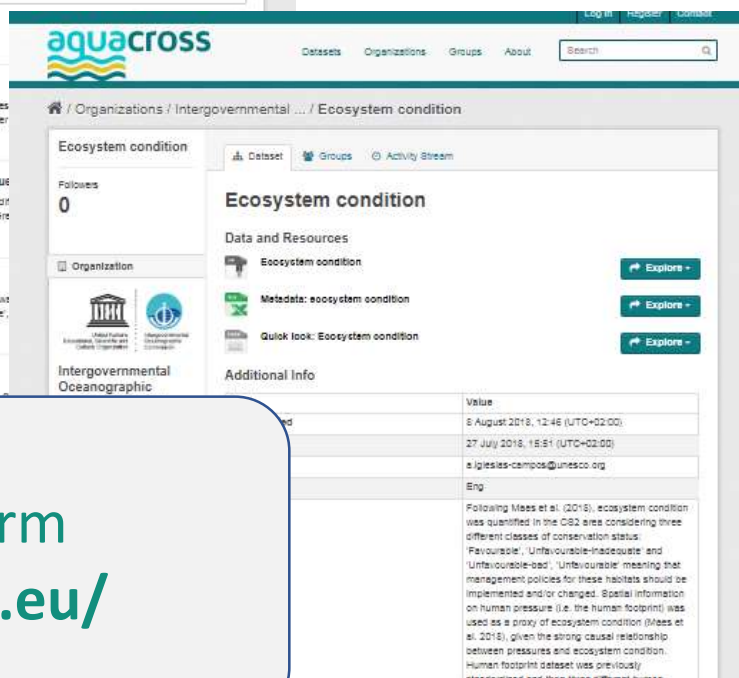
Case study description



Visit the Information platform  
<http://dataportal.aquacross.eu/>

11/21/2018

Case study data metadata





### 3 - How the data has been published and visualized? Storytelling tool – [ibrm.aquacross.eu/](http://ibrm.aquacross.eu/)



Publication of the case study results



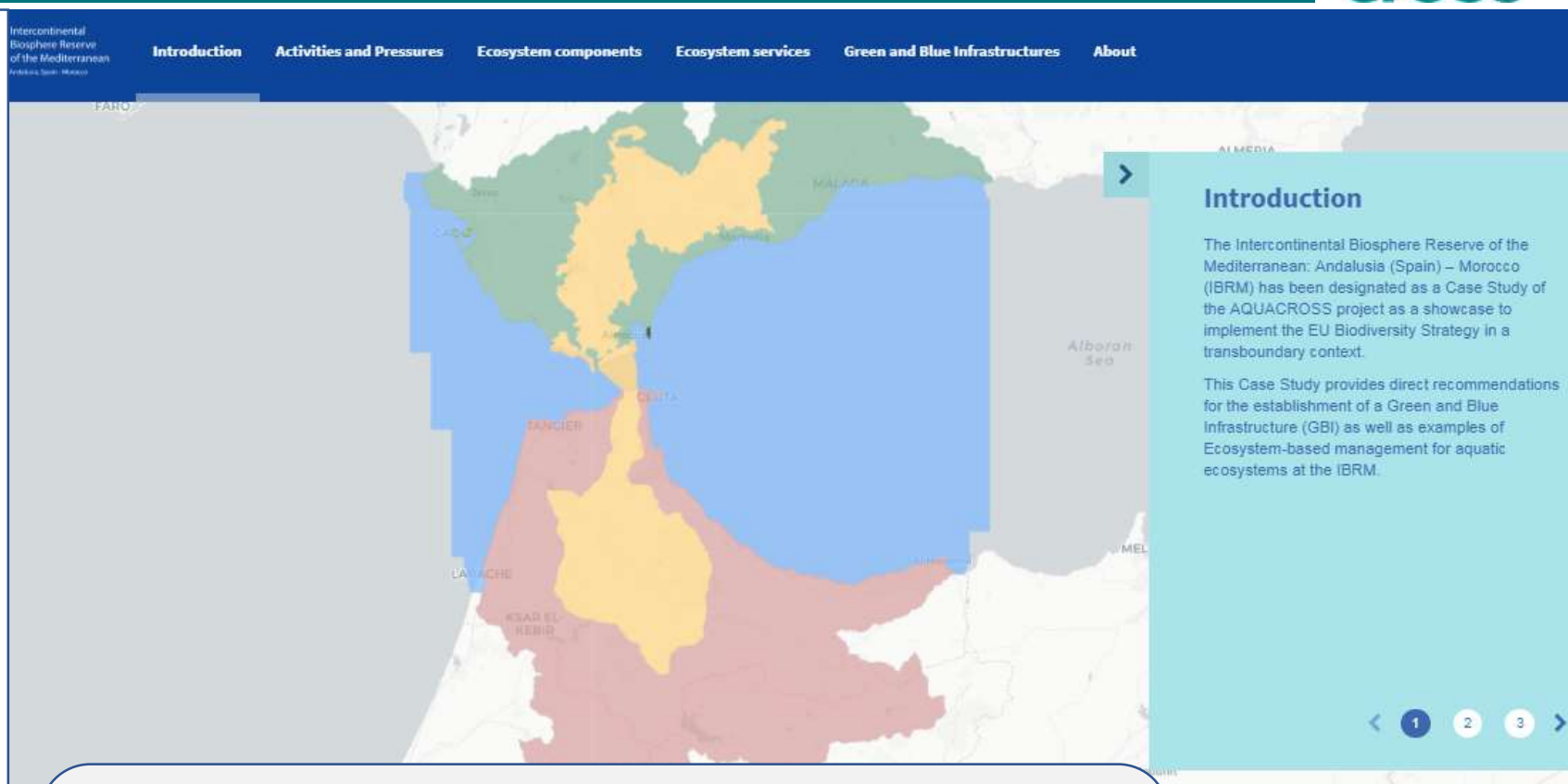
Visit the Case study storytelling tool  
[ibrm.aquacross.eu](http://ibrm.aquacross.eu)



### 3 - How the data has been published and visualized? Storytelling tool – [ibrm.aquacross.eu/](http://ibrm.aquacross.eu/)



Publication of the case study results



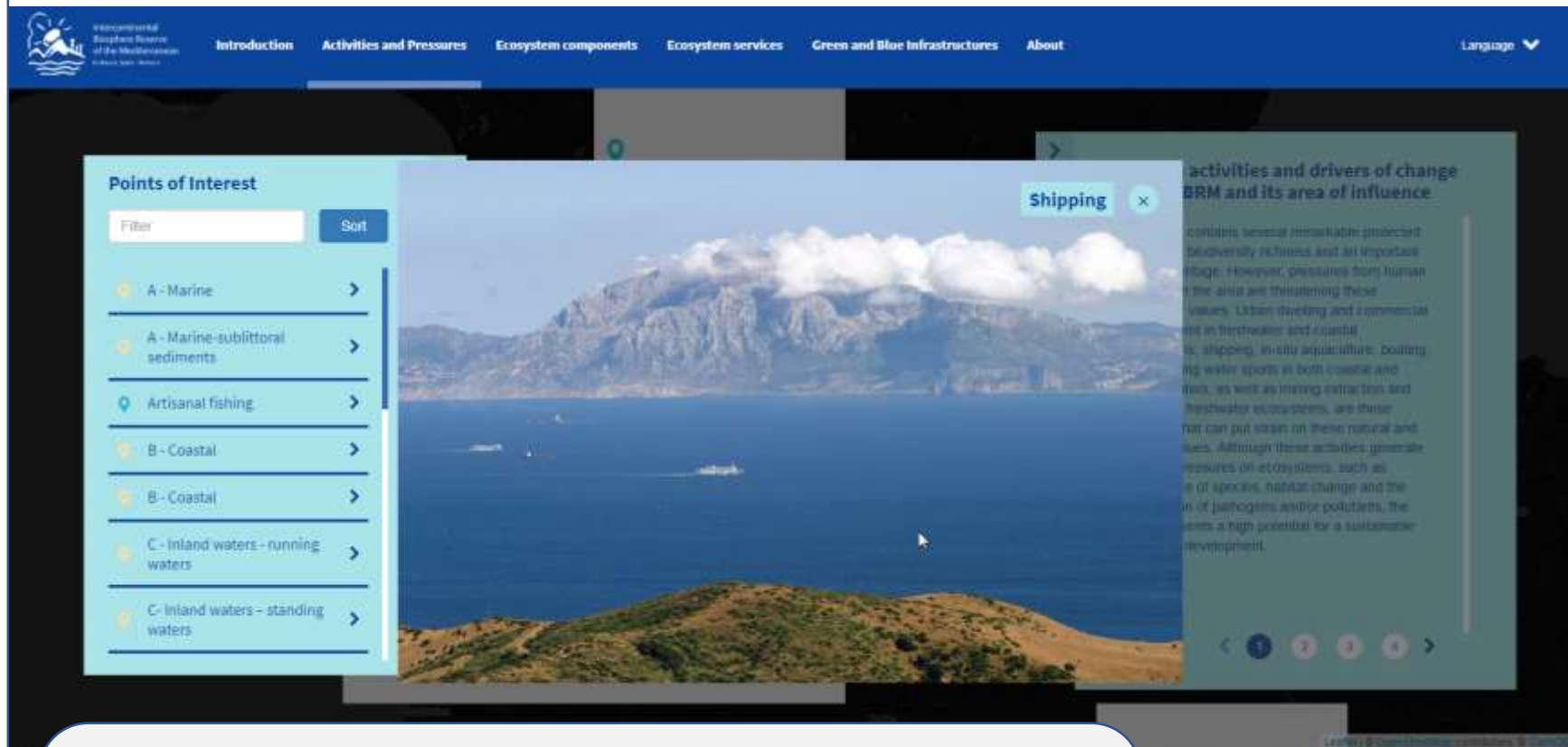
Visit the Case study storytelling tool  
[ibrm.aquacross.eu](http://ibrm.aquacross.eu)



### 3 - How the data has been published and visualized? Storytelling tool – [ibrm.aquacross.eu/](http://ibrm.aquacross.eu/)



Publication of the case study results



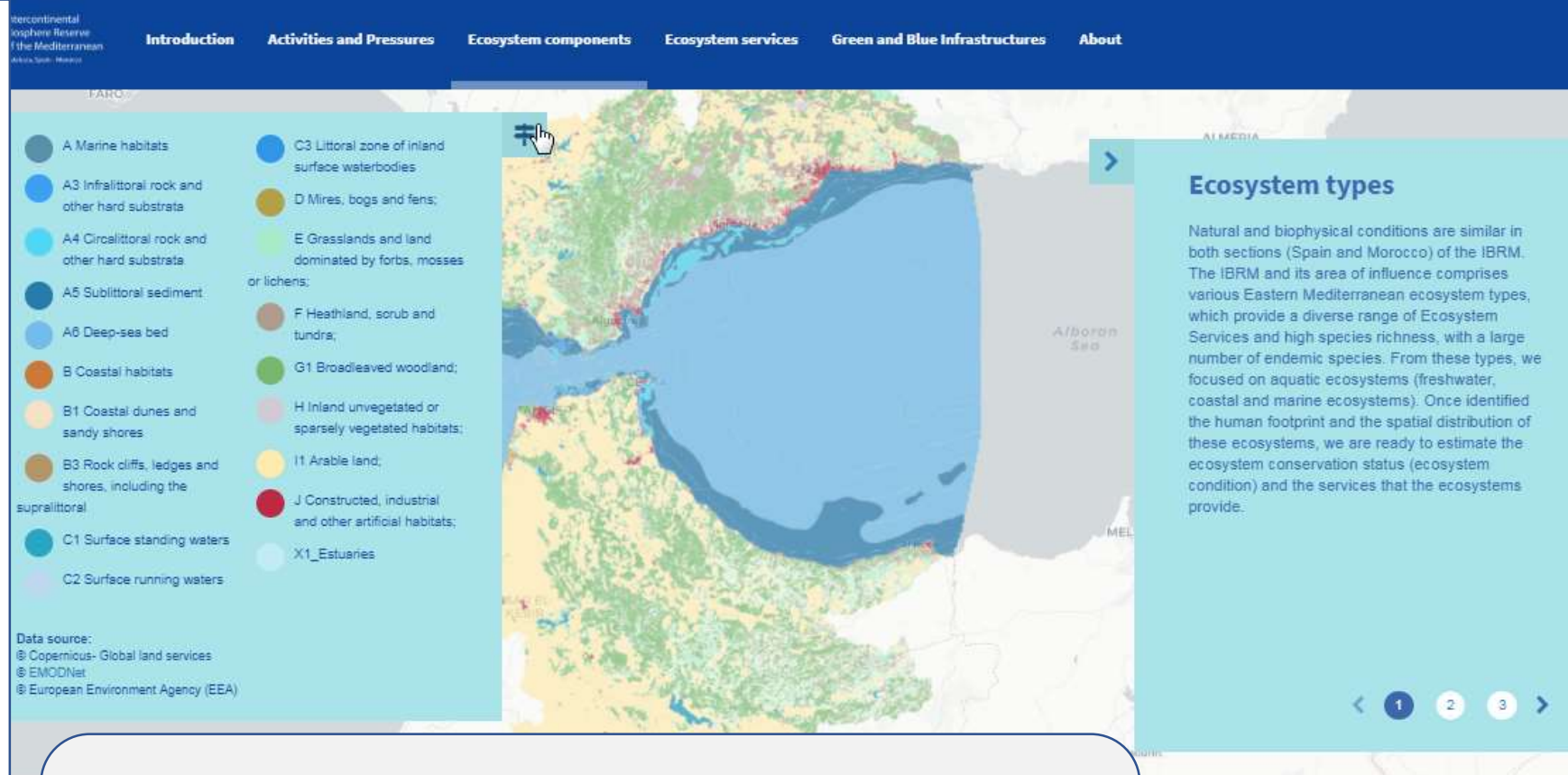
Visit the Case study storytelling tool  
[ibrm.aquacross.eu](http://ibrm.aquacross.eu)



### 3 - How the data has been published and visualized? Storytelling tool – [ibrm.aquacross.eu/](http://ibrm.aquacross.eu/)



#### Publication of the case study results



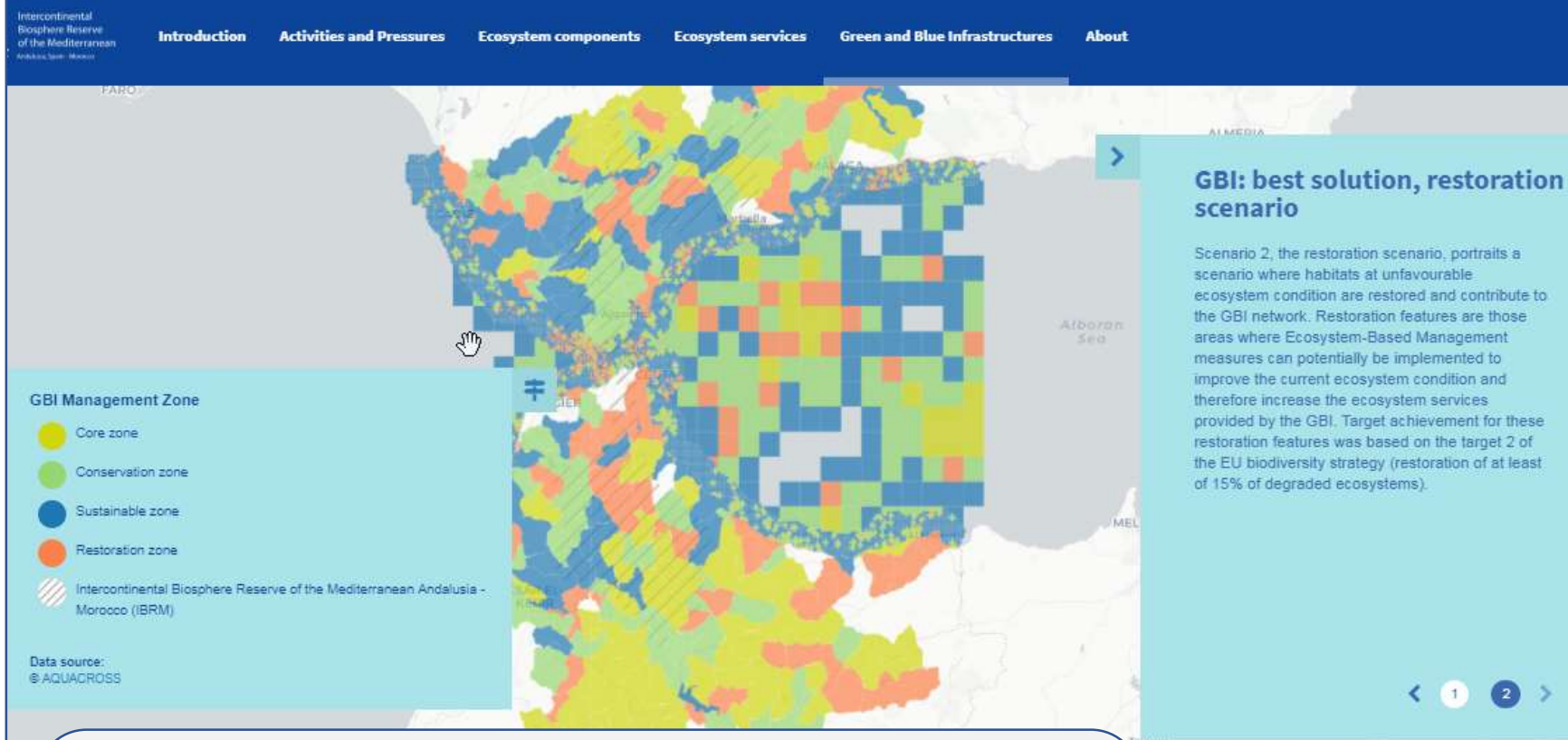
Visit the Case study storytelling tool  
[ibrm.aquacross.eu](http://ibrm.aquacross.eu)



### 3 - How the data has been published and visualized? Storytelling tool – [ibrm.aquacross.eu/](http://ibrm.aquacross.eu/)



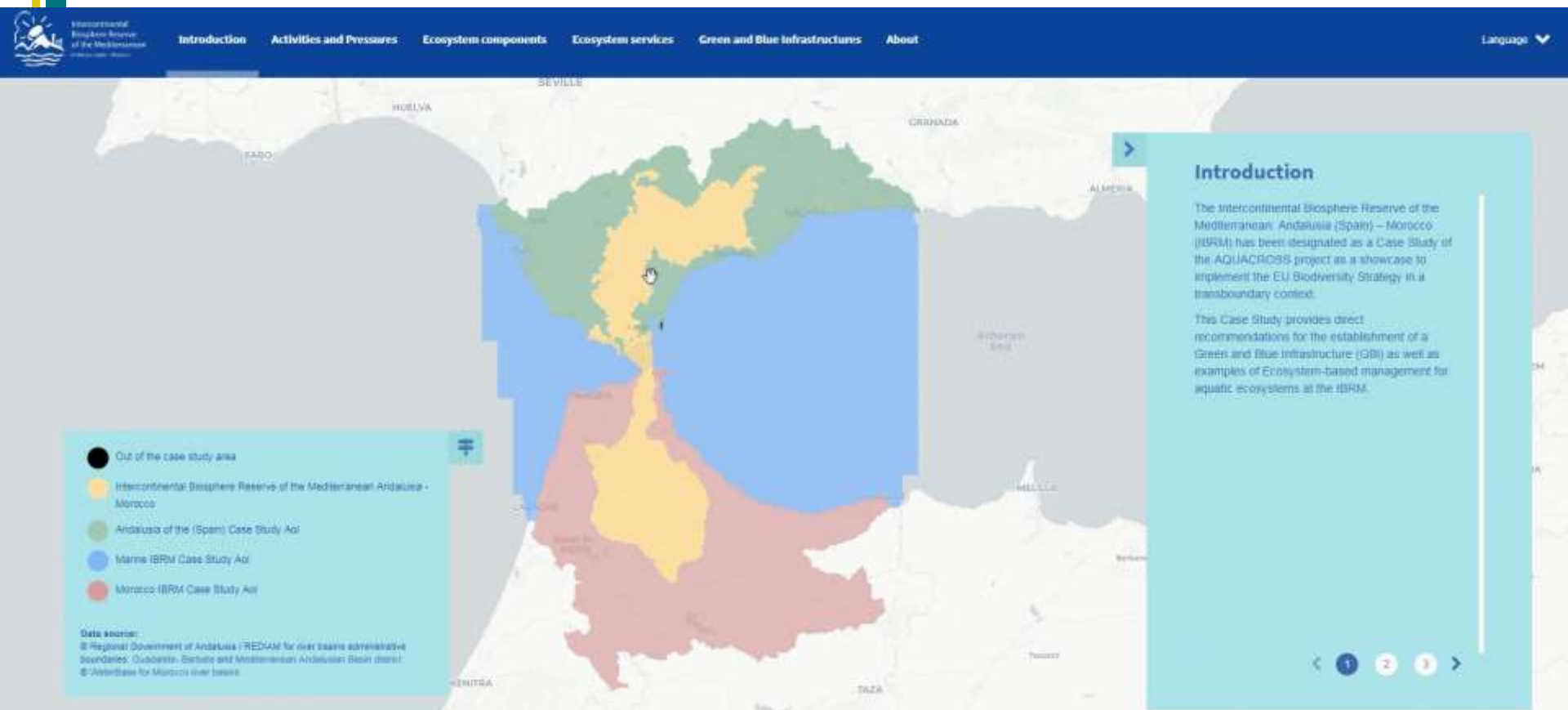
Publication of the case study results



Visit the Case study storytelling tool  
[ibrm.aquacross.eu](http://ibrm.aquacross.eu)



# 3 - How the data has been published and visualized? Storytelling tool – [ibrm.aquacross.eu/](http://ibrm.aquacross.eu/)







شُكْرًا

†.ΙΕΕΞΟ†

¡Muchas gracias!

Merci!

Thank you!

Спасибо

谢谢



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission



Sustainable  
Development  
Goals



<http://ioc.unesco.org>  
<http://www.aquacross.eu>



Royaume du Maroc



Ministère de l'Énergie, des Mines et du  
Développement Durable

-----  
Secrétariat d'Etat chargé  
du Développement Durable

Direction Régionale de l'Environnement  
Région Tanger Tétouan Al Hoceima

# The Regional Observatory of Environment and Sustainable Development of Tanger- Tetouan-Al Hoceima and AQUACROSS

**Mohammed Amrani**  
Head of Service of the Regional Observatory





## Missions and tasks of Regional Observatory of the Environment and Sustainable Development :

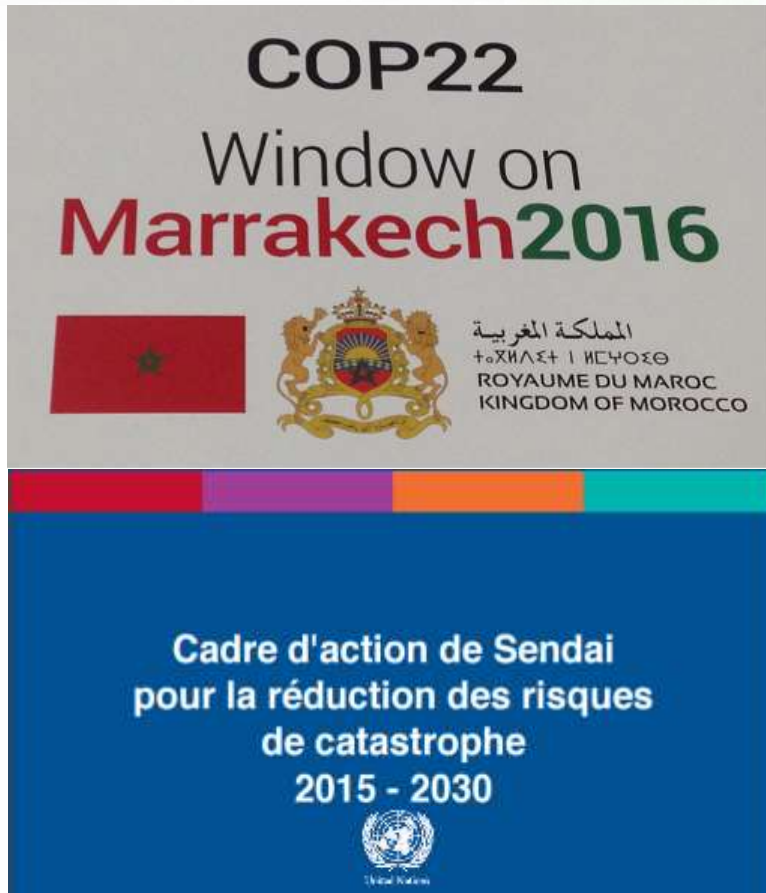
- Collection and analysis of information and data related to the environment and sustainable development from different partners and stakeholders in the region;
- Management of the Regional Information System for the Environment and Sustainable Development (SIREDD);
- Monitoring indicators of the state of the environment;
- Preparation of the report of the integrated assessment of the state of the environment at the regional level;
- Publication of environmental information concerning the region;
- Conducting thematic and field studies to ensure the availability of environmental information at the regional level;
- Enrichment of the national environment system in coordination with the National Observatory for the Environment and Sustainable Development
- Contribution to building the capacity of local stakeholders and partners in the field of climate change and biodiversity conservation.





# CONTEXTE :

## ENVIRONMENTAL DATA AND INFORMATION: DECISION-MAKING PROCESS IN THE STATE SECRETARIAT FOR SUSTAINABLE DEVELOPMENT



United Nations  
Framework Convention on  
Climate Change



La Convention-Cadre des Nations Unies sur les  
Changements Climatiques (CCNUCC)







A propos



Indicateurs



TBS



Ressources



Cartographie



Géocatalogue



Paramètres



Administration



CC

Système d'Information Régional de l'Environnement et du Développement Durable de la région Tanger Tétouan Al Hoceima



A propos



Indicateurs



TBS



Géocatalogue



Ressources



Cartographie



Paramètres



Administration



CC

- Module 1: « content Managment »
- Module 2: « Indicators »
- Module 3: « spatial dashboard »
- Module 4: « Geocatalogue »
- Module 5 : « Resources »
- Module 6 : « cartography »
- Module 7: « setting of system »
- Module 8 : « Administration »
- Module 9 : « Climate change »







Logo of the Ministry of the Environment and Sustainable Development of Morocco. The website is titled "Système d'Information Régional de l'Environnement et du Développement Durable de la région Tanger Tétouan Al Hoceima".

Navigation bar: Accueil, À propos, Publications, Liens, Services, Cartographie, Documents, etc.

**Description de l'image 1 qui représente la thématique "ccx" dans la région de Tanger Tétouan El Hoceima**

**ACCÉDER AUX SIREDDS DES AUTRES RÉGIONS**

Choisissez une région par liste déroulante ou par clic sur la carte.

Les régions de Maroc

**ACTUALITÉS**

Labels pour personnaliser votre flux de renseignements personnalisés. Mettre à jour le 10 septembre 2016.

**Actualités:**

- Revue de la région de Tanger**  
2.000 participants et un budget de 11,5 MDH pour le festival de la région de Tanger.
- La Fondation Mohammed VI pour la Protection de l'Environnement et l'Énergie**  
Le Prince Mohammed VI, Président de la Fondation Mohammed VI pour la Protection de l'Environnement a présidé, mardi à Paris, la cérémonie de...
- Préparation COP22**  
Participation de Moulay Rachid à la Conférence Climat: La COP22 à Marrakech: Quelles perspectives? Casablanca, 10...

**BIBLIOTHÈQUE**

**LA RÉGION**

**L'AGENDA**

**TOUTES LES ÉVÉNEMENTS**

Juillet 2016						
Di	Lu	Ma	We	Je	Vi	Di
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

**DOCUMENTS**

Documents, Publications, Certifications, etc.





# Menu of indicators



## Système d'Information Régional de l'Environnement et du Développement Durable de la région Tanger Tétouan Al Hoceima

Consultation des indicateurs

Analyse simple par indicateur







































































Analyse croisée

Analyse spatio-temporel

Indicateurs > Consultation des indicateurs

### Filtrer et rechercher par

Domaine	--Sélectionner un domaine --	Indicateur	--Sélectionner un indicateur --	Périodicité de MAJ	-- Sélectionnez la fréquence de collecte
Thème	--Sélectionner un thème --	Organisation	--Sélectionnez un partenaire --	Portée	-- Sélectionnez une portée --
Sous thème	--Sélectionner un sous thème --	Catégorie	-- Sélectionner une catégorie --	Priorité	-- Sélectionner une option --

Nouveau indicateur		Filtres		Exporter										Rechercher : <input type="text"/>	
Indicateur	Description	Domaine	Thème	Sous-thème	Unité	Priorité	Spatialisation	Confidentialité	Fichier joint	Détails	MAJ	Valeurs	Graphes		
	Age moyen du parc automobile	age moyen des véhicules immatriculées	ENVIRONNEMENT ECONOMIQUE	Transport	Transport routier	xx	2	par province	Non			 			
	Aide pour le renouvellement du parc automobile		POLITIQUES, PLANS et PROGRAMMES TRANSVERSES	Dépenses de protection de l'environnement	Dépenses de protection de l'environnement	xx	2		Non			 			
	Aménagement des Forêts Urbaines et Périurbaines		ENVIRONNEMENT NATUREL	BIODIVERSITE	FORET	xx	1	par province	Non			 			
	Apports des retenues de barrage		ENVIRONNEMENT NATUREL	Eau	Resources en Eau de Surface	xx	2		Non			 			
	Baisse piézométrique de la nappe phréatique		Changement climatique	Changement climatique	Extrêmes	m	Prioritaire	True	Non			 			
	Bilan des éléments nutritifs	différence existant entre la quantité d'éléments nutritifs fournie par la matière organique (après minéralisation) et les engrais et la quantité d'éléments nutritifs enlevée par la culture ou perdue				xx	2	par région	Non			 			
	Budget pour la protection de l'environnement en % PIB	budget alloué à la protection de l'environnement en pourcentage de PIB	POLITIQUES, PLANS et PROGRAMMES TRANSVERSES	Dépenses de protection de l'environnement	Dépenses de protection de l'environnement	xx	1		Non			 			
	Caractérisation des EU domestiques		ENVIRONNEMENT SOCIO-HUMAIN	ASSAINISSEMENT LIQUIDE	Rejets liquides domestiques	xx	2	aléatoire	Non			 			
	Centre de visites techniques (CVT)		ENVIRONNEMENT ECONOMIQUE	Transport	Transport routier	xx	2	par province	Non			 			
	Chiffre d'affaire global du secteur industriel		ENVIRONNEMENT ECONOMIQUE	Industrie	Production et performances économiques	xx	1	par province	Non			 			



Indicateurs > Analyse simple par indicateur

## Choix de l'indicateur

Domaine : ENVIRONNEMENT SOCIO-HU  
Thème : POPULATION  
Sous thème : Démographie  
Indicateur 1 : Population

## Choix du temps

Toutes les années Année Période  
De: 2000  
A: 2012

## Choix de la portée

Portée: Province  
Toutes les provinces Une province Plusieurs provinces

## Choix du type du graphe

Ligne Courbe Barre barres empilées  
Colonne Colonnes empilées

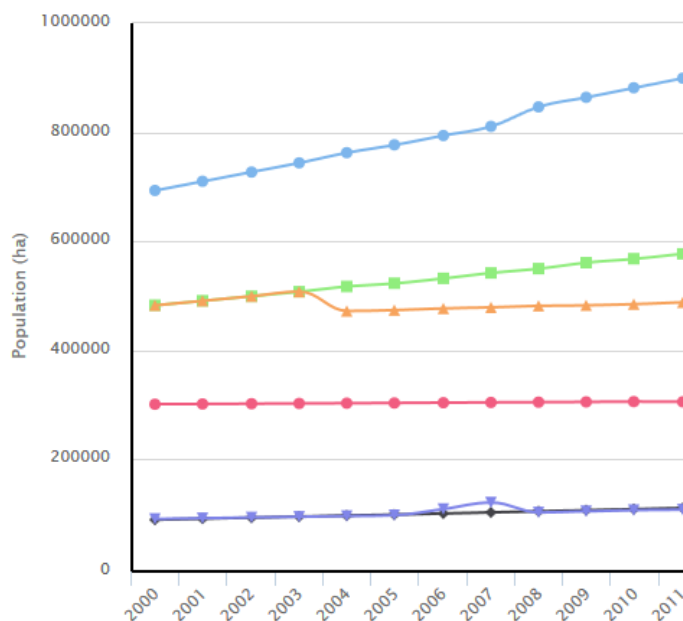
## Choix du type du graphe

Couleur du graphe: Couleur

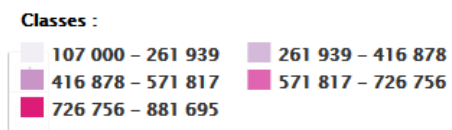
## Configuration du graphique



## L'état de l'indicateur : Population entre 2000 et 2012



## Population en 2012





# Menu of indicators

## temporary follow-up



Indicateurs

Indicateurs > Suivi temporel d'un indicateur

Consultation des indicateurs

Analyse simple par indicateur

Analyse croisée

Analyse spatio-temporelle

Population en 2000



Classes :

110 000 - 225 238  
225 238 - 340 475  
340 475 - 455 713  
455 713 - 570 951  
570 951 - 686 189  
686 189 - 801 426  
801 426 - 916 664  
916 664 - 1 031 902

Population en 2004



Classes :

110 000 - 225 238  
225 238 - 340 475  
340 475 - 455 713  
455 713 - 570 951  
570 951 - 686 189  
686 189 - 801 426  
801 426 - 916 664  
916 664 - 1 031 902

Population en 2008



Classes :

110 000 - 225 238  
225 238 - 340 475  
340 475 - 455 713  
455 713 - 570 951  
570 951 - 686 189  
686 189 - 801 426  
801 426 - 916 664  
916 664 - 1 031 902

Population en 2012



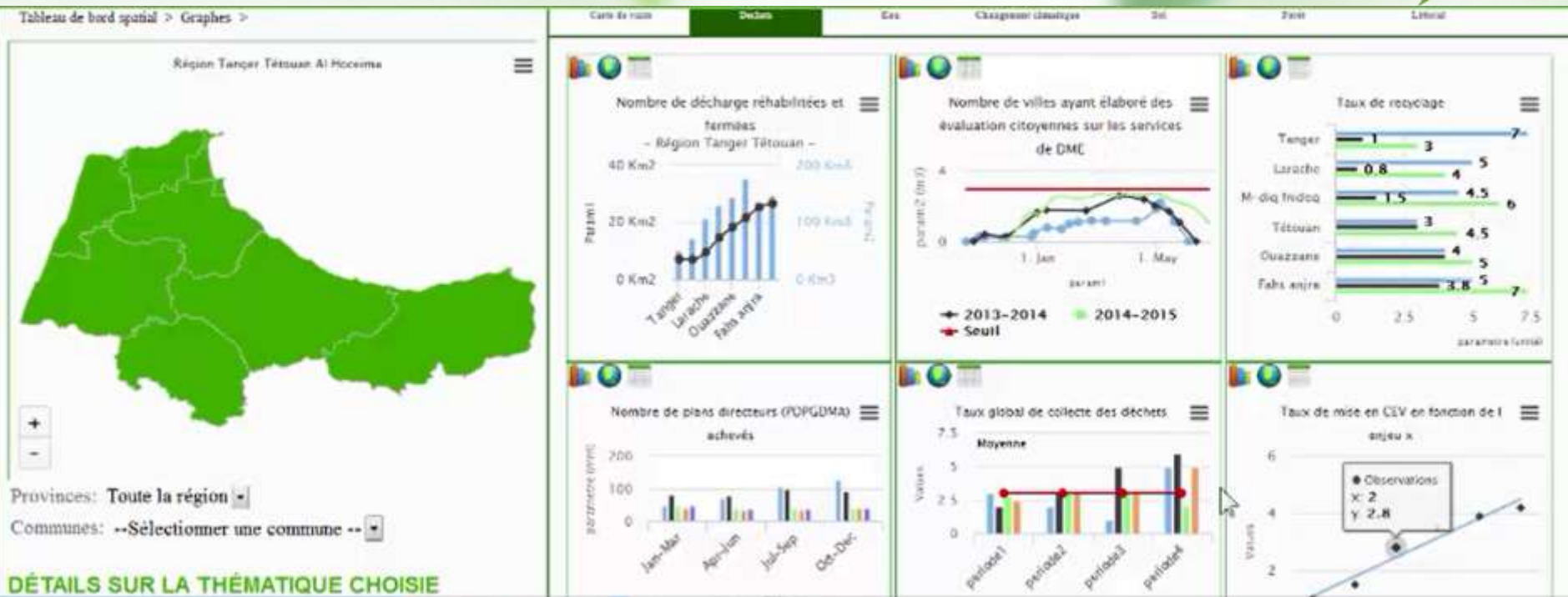
Classes :

110 000 - 225 238  
225 238 - 340 475  
340 475 - 455 713  
455 713 - 570 951  
570 951 - 686 189  
686 189 - 801 426  
801 426 - 916 664  
916 664 - 1 031 902





# Spatial dashboard

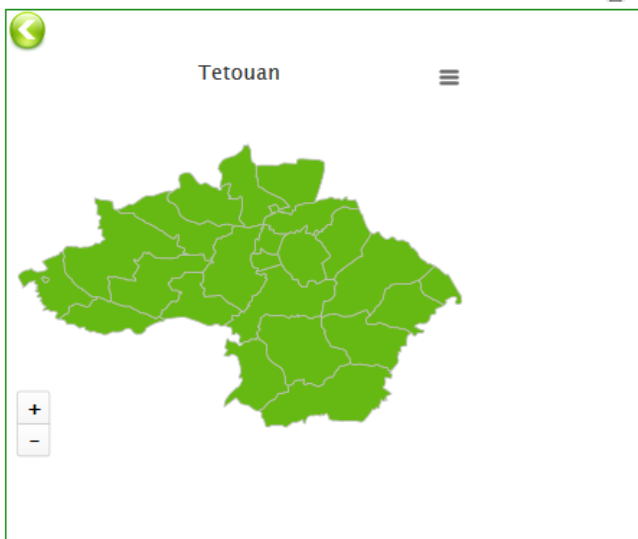




# Spatial dashboard – provincial scale

Système d'Information Régional de l'Environnement et du Développement Durable de la région Tanger Tétouan Al Hoceima

Tableau de bord spatial > Graphes >

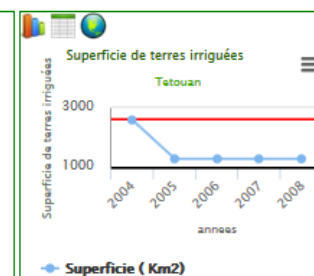
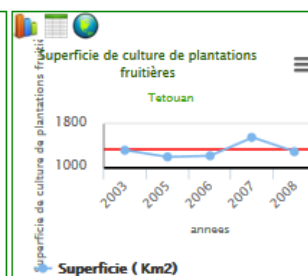
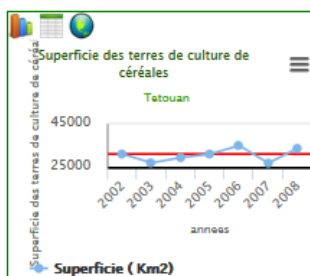


Provinces:

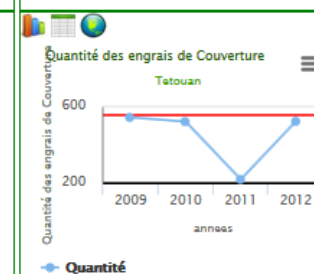
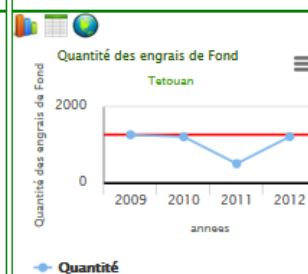
Communes:

DÉTAILS SUR LA THÉMATIQUE CHOISIE

Carte de visite Déchets Forêt Sol et agriculture Eau et assainissement Changement climatique Littoral



Pas de données



[ACCUEIL](#)

[CONDITIONS  
D'UTILISATION](#)

[CONTACT](#)

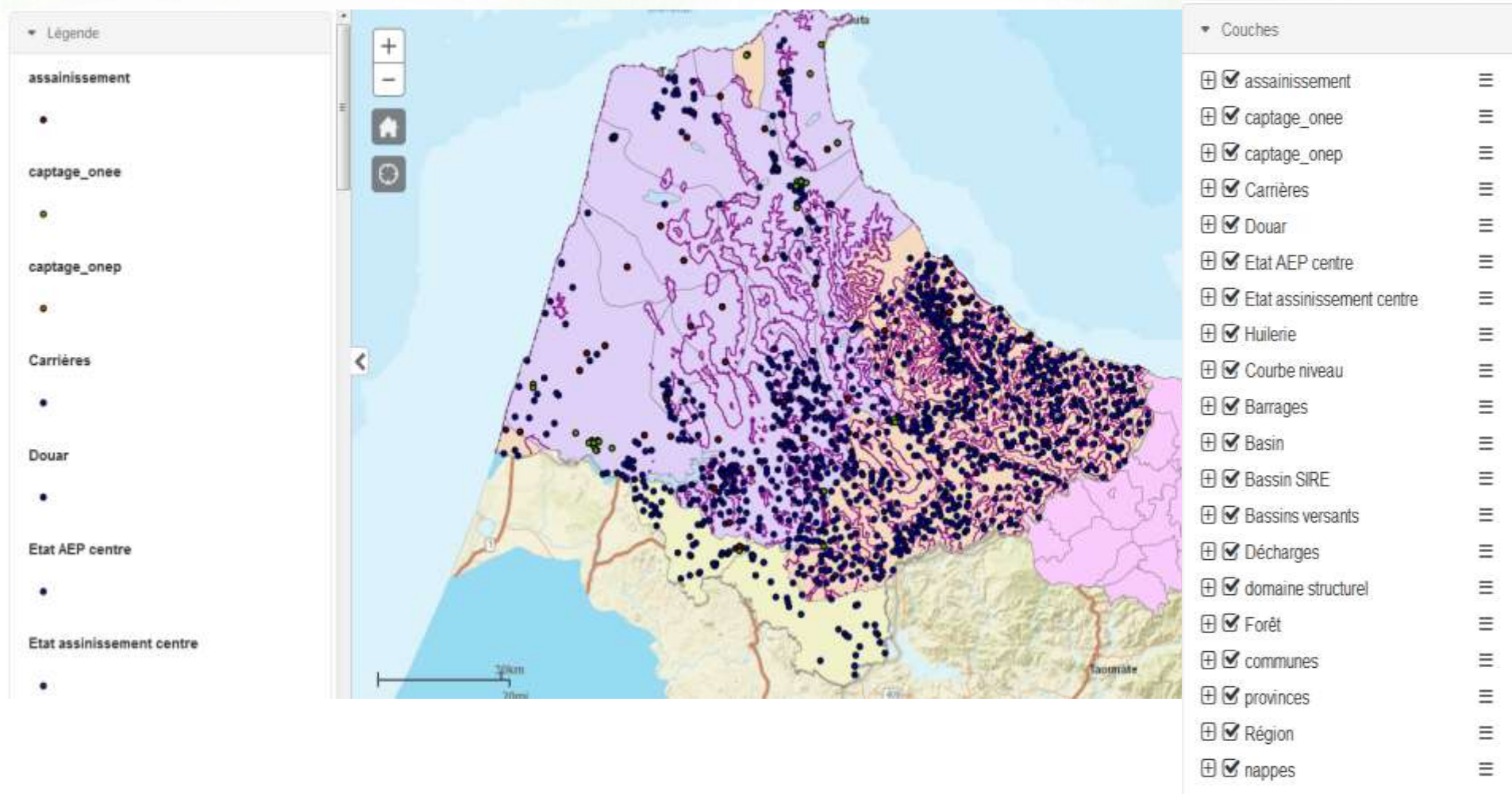
[RÉFÉRENTIELS](#)

[LIENS UTILS](#)

[GLOSSAIRE](#)



## Module « cartography »







State Secretariat for Sustainable Development  
Regional Direction of the Environment of the Tanger  
Tétouan Al Hoceima Region  
Regional Observatory of the Environnement and  
Sustainable Development



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission



<http://laboratorioirediam.cica.es/ibrm/index.html?lang=en>

Access of regional partners to the  
environmental platform and benefit from it in  
terms of territorial management of the RBIM



<http://81.192.11.91/Tanger-Tetouan-AlHoceima/CARTOGRAPHIE/sig>







شُكْرًا

†.ΙΕΕΞΟ†

¡Muchas gracias!

Merci!

Thank you!

Спасибо

谢谢



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission



Sustainable  
Development  
Goals



<http://ioc.unesco.org>  
<http://www.aquacross.eu>





**"Sustaining International Waters Cooperation"**



**Rediam** ● ● ●

Red de Información Ambiental de Andalucía





Rediam

# **The Environmental Information Network of Andalusia (Spain)**

Regional Ministry of Environment and Spatial Planning  
Government of Andalusia (Spain)  
Environmental Information Network of Andalusia (REDIAM)



*Andalusia, land  
of contrasts*









# Andalusian Environmental Information System-REDIAM

Social Environmental Awareness

Vast, diverse and complex territory

Threats to fragile ecosystems

Wide environmental regional responsibilities in management and planification of natural resources.

Need of the best available environmental information

1983



Nuevas tecnologías de la  
información para un mejor  
conocimiento y gestión  
del Medio Ambiente

Since the 80`s the Regional Ministry of Environment has worked on generating, compiling, standardizing and analyzing environmental information, using ICT (computing, GIS, Remote Sensing, web services, etc...)



# ¿What is REDIAM?



## Rediam



Information



Knowledge



...and what is it used for?



**Decision making**

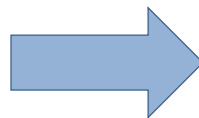
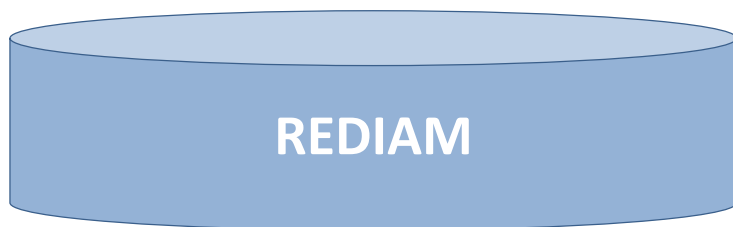
Management  
Planning

**Dissemination**

**Research**



# How the project is of added value to ANDALUCIA



Assessment of the  
Conservation Level  
methodology for Community  
Interest Sites (CIS)



Revision and adaptation of the  
methodology and allowed us to  
apply it to our region



REDIAM has adopted this  
methodology into its procedures and  
is expecting to extend it to the rest of  
the territory.



**Another important aspect of this collaboration is the INNOVATIVE PERSPECTIVE which has been added, along the line of the NEW TECHNOLOGIES and TOOLS which we employ for bringing the information and data to the public.**

The best example we have is the “storytelling” which was created for disseminating the project results concerning the project pilot area in the Biosphere Reserve, which the REDIAM has integrated in its dissemination platform to allow users and partners alike an easier access.

<http://lajunta.es/15nr8>



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## » Proyecto AQUACROSS

**AQUACROSS** es un proyecto enmarcado en el **Programa Horizonte 2020 de la Unión Europea** que tiene como objetivo apoyar los esfuerzos de la UE para proteger la biodiversidad acuática y garantizar la prestación de servicios de los ecosistemas acuáticos.

AQUACROSS busca avanzar en el conocimiento y la aplicación de la gestión basada en los ecosistemas, en particular los ecosistemas acuáticos, para cumplir con los objetivos de la Estrategia de Biodiversidad de la Unión Europea 2020.

Como parte del proyecto se ha desarrollado un **storytelling "Reserva de la Biosfera Intercontinental del Mediterráneo"**, con el objeto de difundir los principales resultados del Caso de Estudio 2 del Proyecto AQUACROSS: la Reserva de la Biosfera Intercontinental del Mediterráneo, Andalucía (España) - Marruecos (IBRM) y su Área de Influencia.

Los **storytelling** son aplicaciones que utilizan el poder y la flexibilidad de la cartografía narrativa para transmitir los conocimientos adquiridos a través del caso de estudio. La cartografía narrativa es una herramienta efectiva que permite convertir conceptos complejos en nociones fáciles de entender para el público en general. Además de esto, la aplicación se centra en los temas principales del caso de estudio; este enfoque garantizará una comprensión rápida de los resultados del proyecto por parte de los usuarios finales.

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As a last item to mention concerning our collaboration, we would like to add that the REDIAM will be monitoring new feedback from AQUACROSS in order to keep the information updated and available.

In conclusion, I would like to share that our experience as partners and stakeholders of AQUACROSS:

The Regional Ministry of the Environment considers positively this opportunity which we were granted and that it is by means of collaborations of this kind that we will be able to improve and enrich the knowledge we have and we can share regarding our andalusian natural heritage.





محمية المحيط الحيوي  
للربط القاري المتوسطي  
الأندلس - المغرب



Reserva de la Biosfera  
Intercontinental del  
Mediterráneo  
Andalucía. España - Marruecos



# Analysis of transboundary water ecosystems and Green / Blue Infrastructures: A bottom-up approach.

Intercontinental Biosphere Reserve of the Mediterranean – Andalucía - Morocco



**Rediam** ●●●

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