



Summer Sunset Over Wetlands
acrylic print by Matthew Gibson

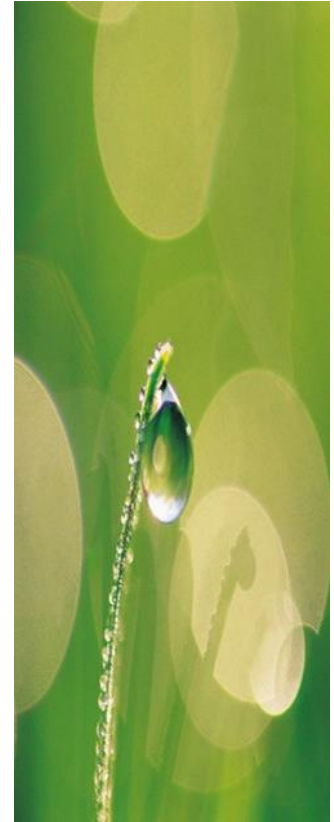
Launching a New Decade of Sustainable Development in the Mediterranean

Applying the nexus lens on wetlands & nature-based solutions in the Mediterranean: some elements on methodology and knowledge management

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Rabat, Morocco**



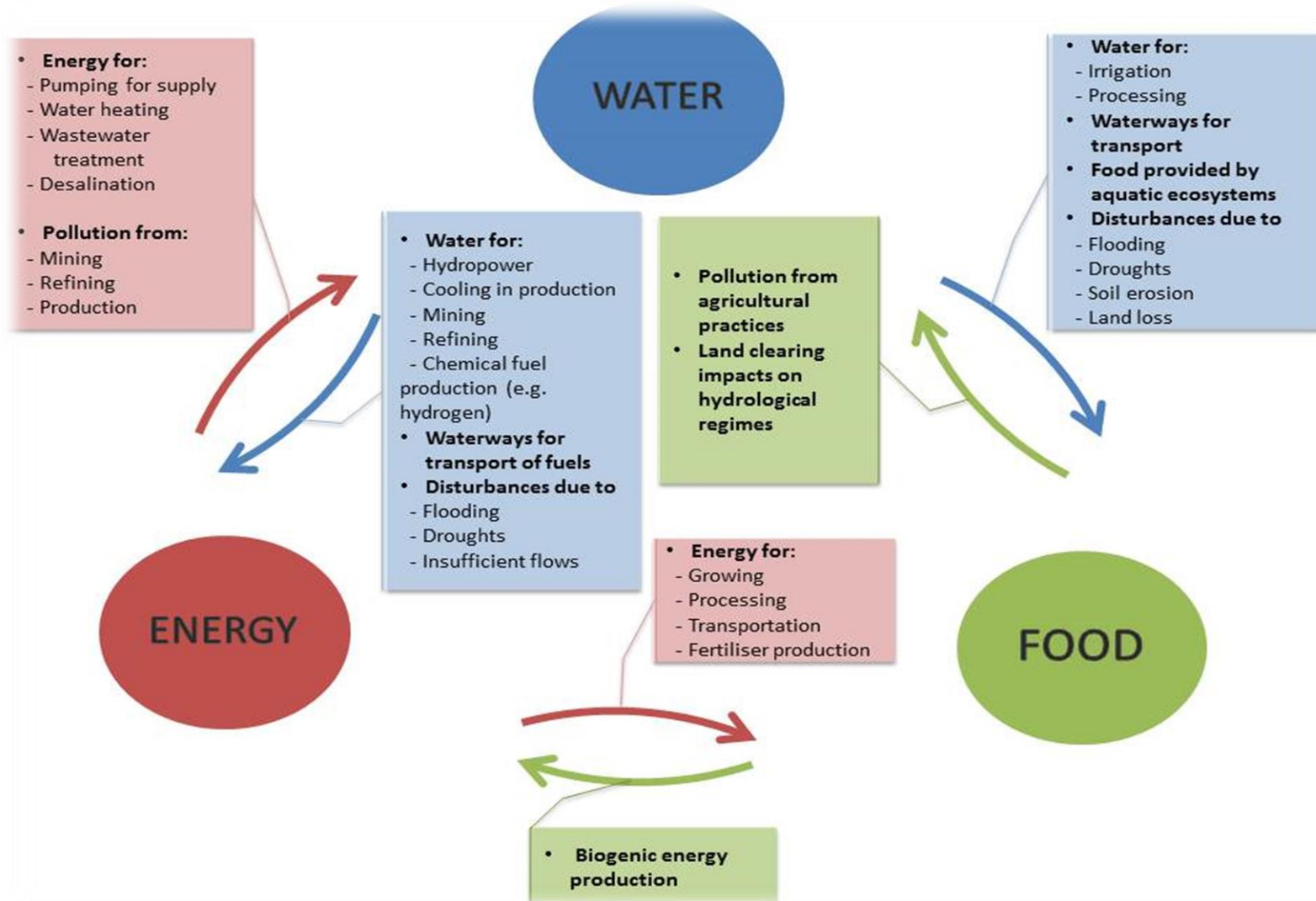
What is so special about
the Nexus & how does it
link with wetlands &
Nature-based-solutions?



“Nexus”

The concept of **nexus** is the epitome of **integration** and facilitates the proper understanding of inter-relationships of water, energy, food and ecosystems and the way in which policies and interventions in these sectors could be promoted in a coherent and coordinated way so that development is sustainable and biodiversity is protected.

“Nexus”



- The concept was introduced in 2011 linking primarily **Water to Energy** and soon after **Food**.

Interlinked facts & projections

Some Facts

- Agriculture accounts for 70% of global water withdrawal
- Food production and supply chain accounts for about 30% of total global energy consumption
- 75% of all industrial water withdrawals are used for energy production
- 90% of global power generation is water-intensive
- Deterioration of wetlands worldwide, in particular coastal wetlands, is reducing the capacity of ecosystems to purify water

Some Projections

- Global water demand will increase by 55% by 2050, mainly because of growing demands from manufacturing (400% increase)
- Global food production would need to increase by 50% by 2050
- Water withdrawals for energy production could increase by 20% by 2035

Biodiversity & Ecosystem loss

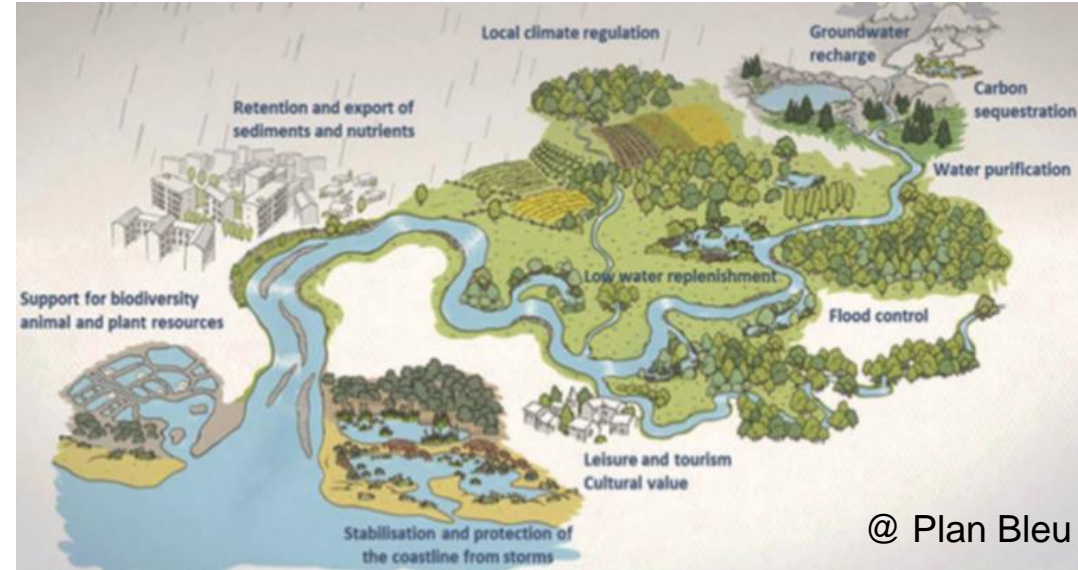
- Since 1972, the first UN Conference on the Environment, it is estimated that 60% of the mammals birds, fishes and reptiles have been lost.
- A considerable part of this loss is associated directly or indirectly with deterioration of ecosystems due:
 - Food production and distribution linked to intensive agriculture from agro-chemicals, from genetically modified and other commercial species,
 - Serious reduction of quantity and quality of water allocated to them,
 - Direct impact of pollution from solid and liquid waste.
- The Mediterranean has already lost up to 50% of its wetlands since the 1900s.
- All the above are further exacerbated by climate change.

Nexus facilitates building and promoting policies and interventions in a coherent and coordinated way, so development is sustainable and biodiversity is protected

Wetlands: some specifications on context

Wetlands

- refers to a *broad variety of water-based ecosystems*, and more than 50 definitions are used worldwide
- are at the *interface of land and water (including seas)* and allow important exchanges between terrestrial, freshwater and marine ecosystems



Ramsar Convention defines wetlands as ‘*areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres*’



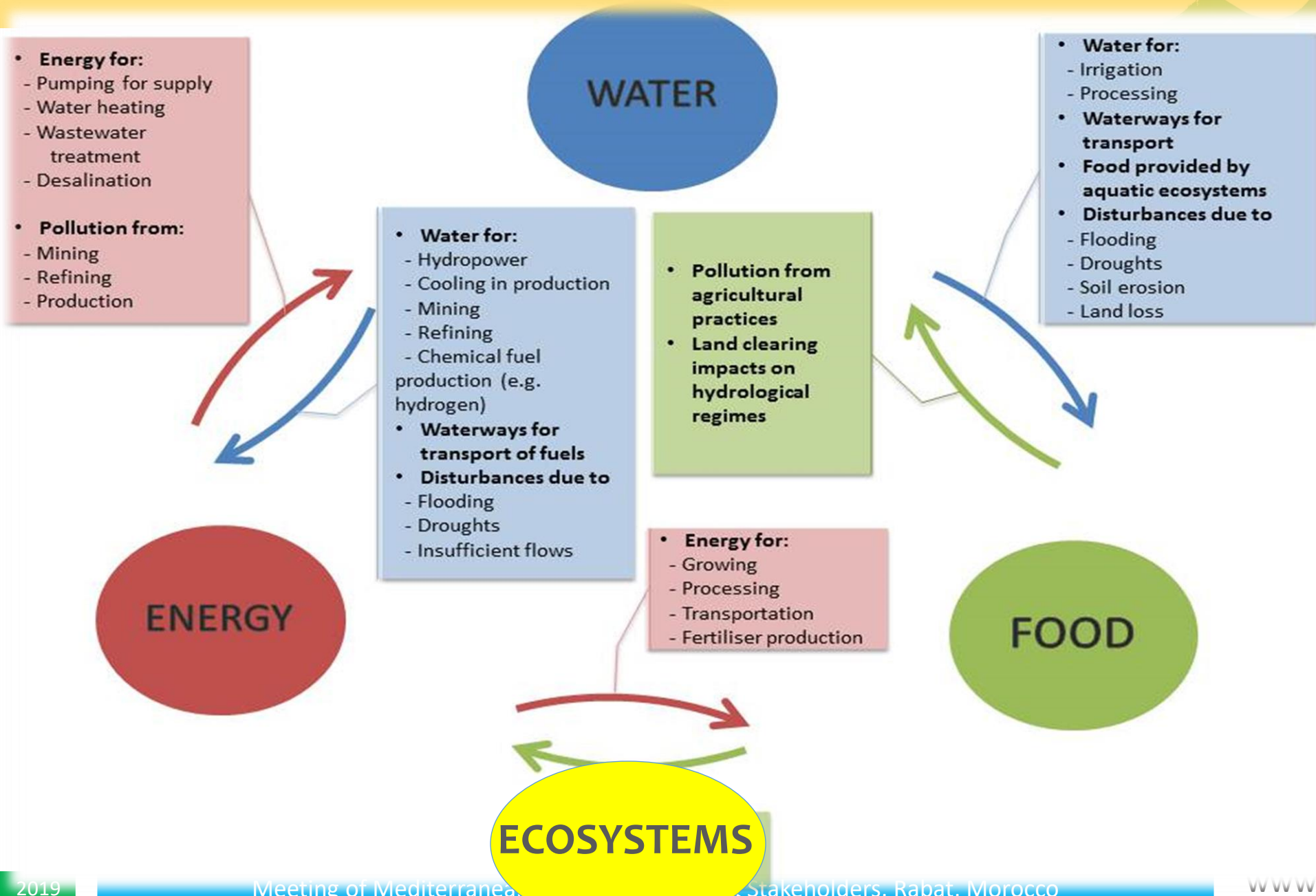
In the Mediterranean, 397 sites have been designated as Wetlands of International Importance covering more than 6.7 million hectares. Yet, not all are adequately managed.

Source: Tour du Valat / Mediterranean Wetlands Observatory, 2018

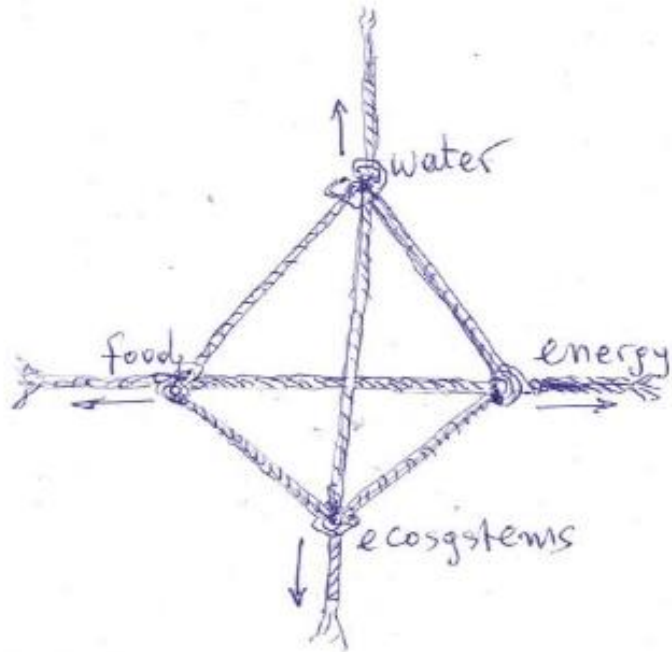
Wetlands were one of the most valuable ecosystems on Earth

Dr. Fernanda Adame Vivanco, Wetland Ecologist, Australian Rivers Institute

The Nexus: A world of inter-dependencies

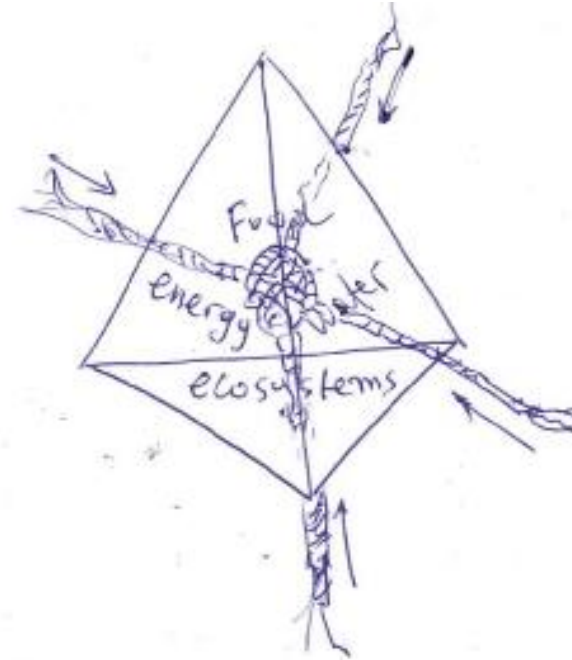


Visualisation of Nexus (By Prof. Michael Scoullos)



A system of Tension

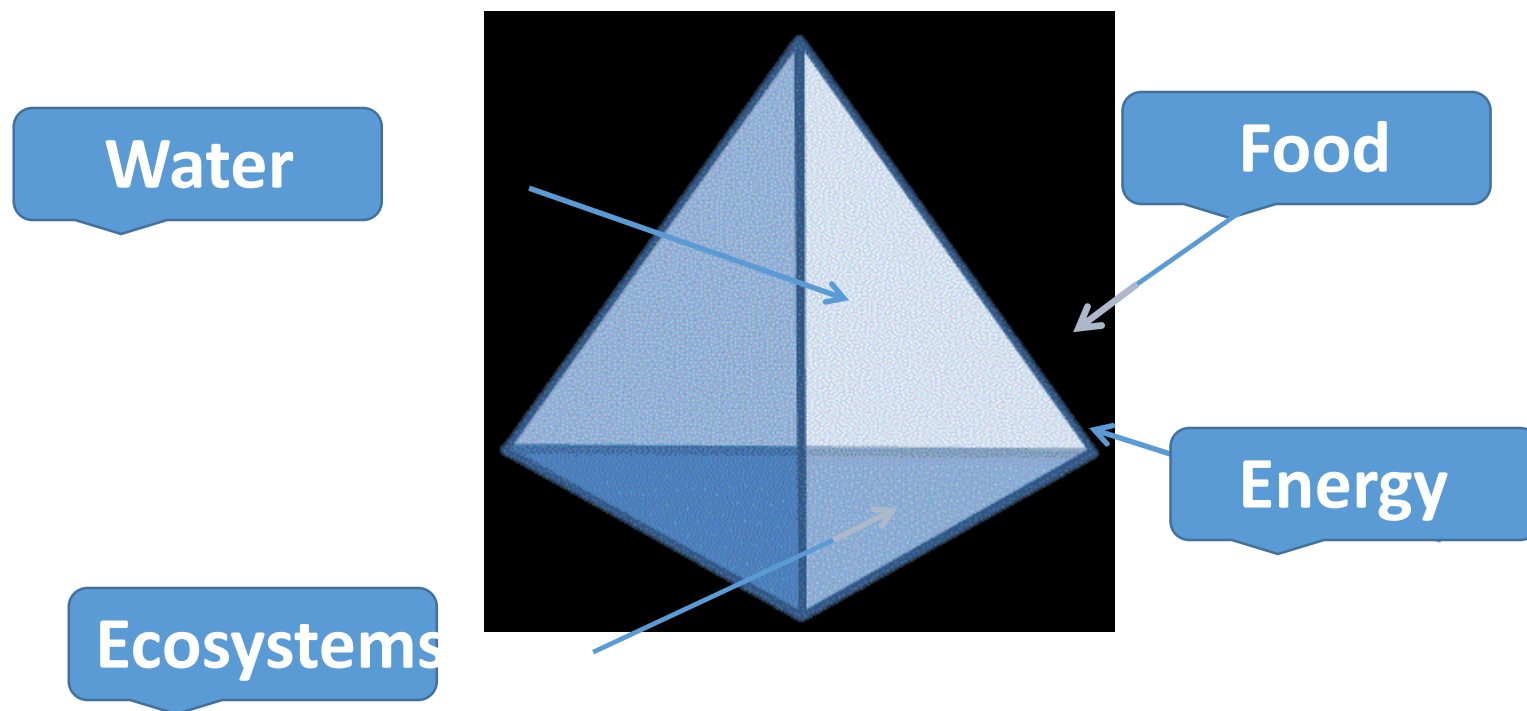
If one pulls too hard, the Nexus will be broken



A system of Convergence

Provides equitable « entry points » for the major sectors/components of development

Visualisation of Nexus (By Prof. Michael Scoullos)



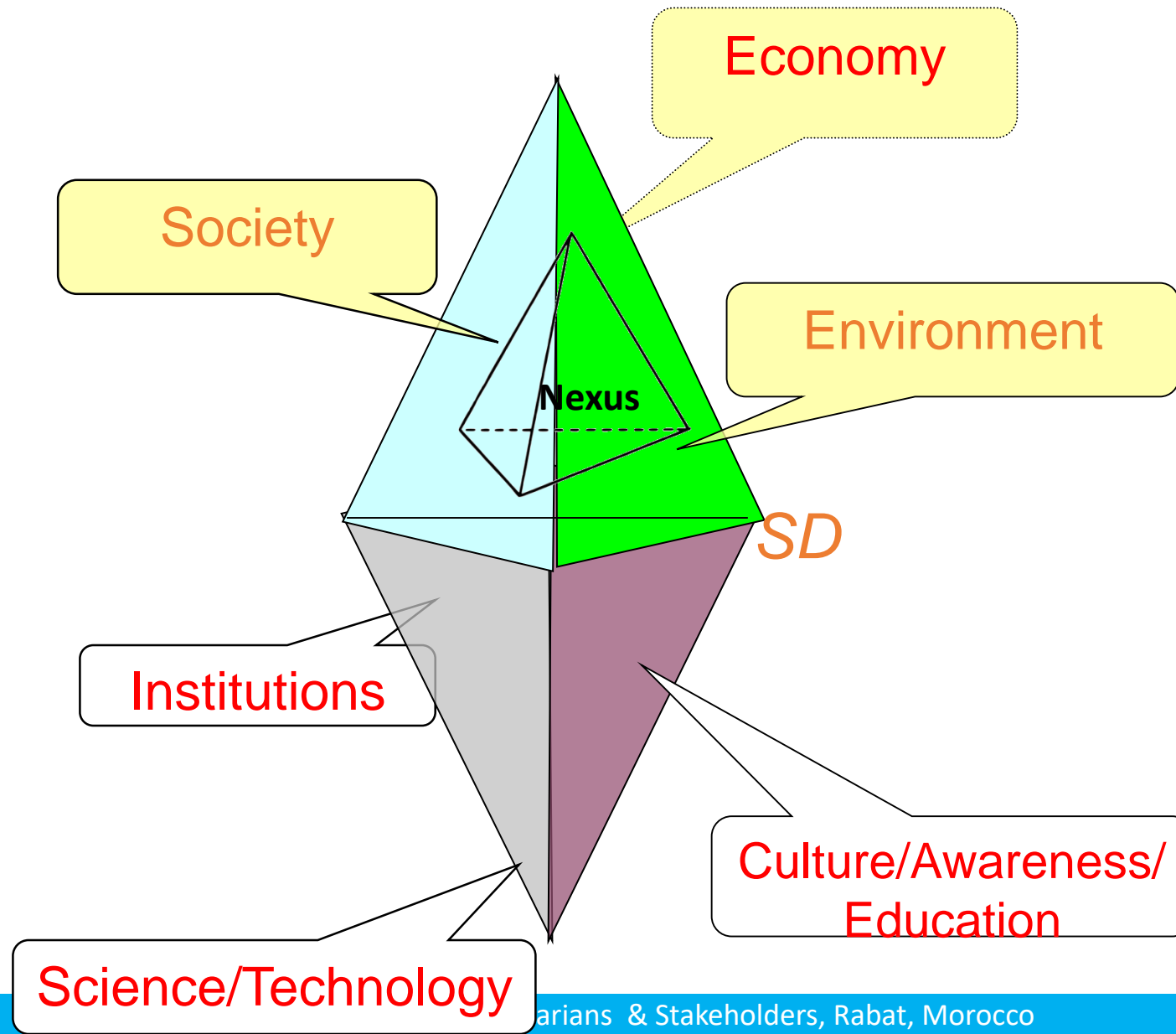
It provides the “**space**” within which policies and interventions should be closely coordinated and optimised in order to approach sustainable development and achieve the SDGs.

Specificities of the four facets/components of the Nexus

- For Sustainable Development, **all four components should be given equal weight** to contribute to shared policies. However, their “character” is different and their “elasticity” too.
- For instance: water resources, food and traditional energy production from fossil fuel have limited elasticity as their production is linked to a particular place but there is high elasticity in their use. For instance, an area which has low agricultural production may import food (importing simultaneously “virtual” water). Energy may be transferred through networks and water could be stored and transported within some limits.
- From the four, ecosystems are the least “elastic”. We cannot transfer or store them and the changes/degradation of ecosystems is the least “reversible”.

The nexus is within the Sustainable Development tetrahedron

For effectively addressing both **SD** and **nexus**, effective good **governance** is needed and proper use of the available tools.



Tools to be used in a coordinated way for enhancing “nexus” security

Socioeconomic/policy

Institutional Frameworks Regulations

e.g. Financial and other incentives (green taxes, levies, charges, etc), indication on products about their energy, water and material footprint, designation of protected areas and biosphere reserves.

Technological

Appropriate, clean technology, de-carbonization of energy and energy saving (building insulation, sun heaters), water saving systems, modern rainwater harvesting systems, material recycling, nature based solutions.

Cultural

Awareness raising and education (clean consumption and production, value of biodiversity and ecosystem services, intrinsic value of nature).

Solutions	Water	Energy	Agriculture	Ecosystems
Governance & international cooperation	<ul style="list-style-type: none"> • ICZM /IWRM • Improved management of land-based sources of pollution 	<ul style="list-style-type: none"> • Enhance mechanisms for the coordination of energy development with other sectoral plans • Climate change mitigation policies 	<ul style="list-style-type: none"> • Sound land use planning • Valorise local products 	<ul style="list-style-type: none"> • Ecosystems Based Approach • Conservation through setting up terrestrial and marine PA • Public awareness, education
Economic & Policy Instruments	<ul style="list-style-type: none"> • Environmental flows • Tarification 	<ul style="list-style-type: none"> • Incentives for renewable energy 	<ul style="list-style-type: none"> • Economic incentives for conservation farming 	<ul style="list-style-type: none"> • Ecosystems services valuation & payment
Infrastructure & Innovation	<ul style="list-style-type: none"> • Sustainable Infrastructure development • Water savings equipment 	<ul style="list-style-type: none"> • Sustainable Hydropower 	<ul style="list-style-type: none"> • Organic agriculture • Smart agriculture • innovative practices and techniques for sustainable soil and crop management 	<ul style="list-style-type: none"> • Green Infrastructure • Sustainable tourism practices

Nature Based Solutions (NbS)

Traditionally, "grey" or "hard" infrastructural solutions have dominated efforts to reduce and manage impacts from natural disasters and to manage water resources. However, internationally the focus is shifting towards nature-based solutions for water resource management, disaster risk reduction, and climate change adaptation.

Natural systems have long provided many of the services communities seek from grey infrastructure — protection from natural hazards and provision of key resources such as water and energy. Natural systems also provide additional benefits. For example, mangroves provide coastal protection, but can also support fisheries and food security, timber, non-timber forest products, tourism, and act as a significant carbon sink.

Nature-based solutions (NbS), or "nature-based infrastructure" is an approach that uses natural systems to provide critical services, such as wetlands for flood mitigation or mangroves to reduce the impact of waves, storm surge, and coastal erosion. These solutions can also synergise with grey infrastructure, forming so-called "hybrid" solution.

NbS are generally robust, flexible, cost-efficient, inclusive and long-term oriented solutions

In the Nexus context, nature-based solutions provided by Wetlands could include

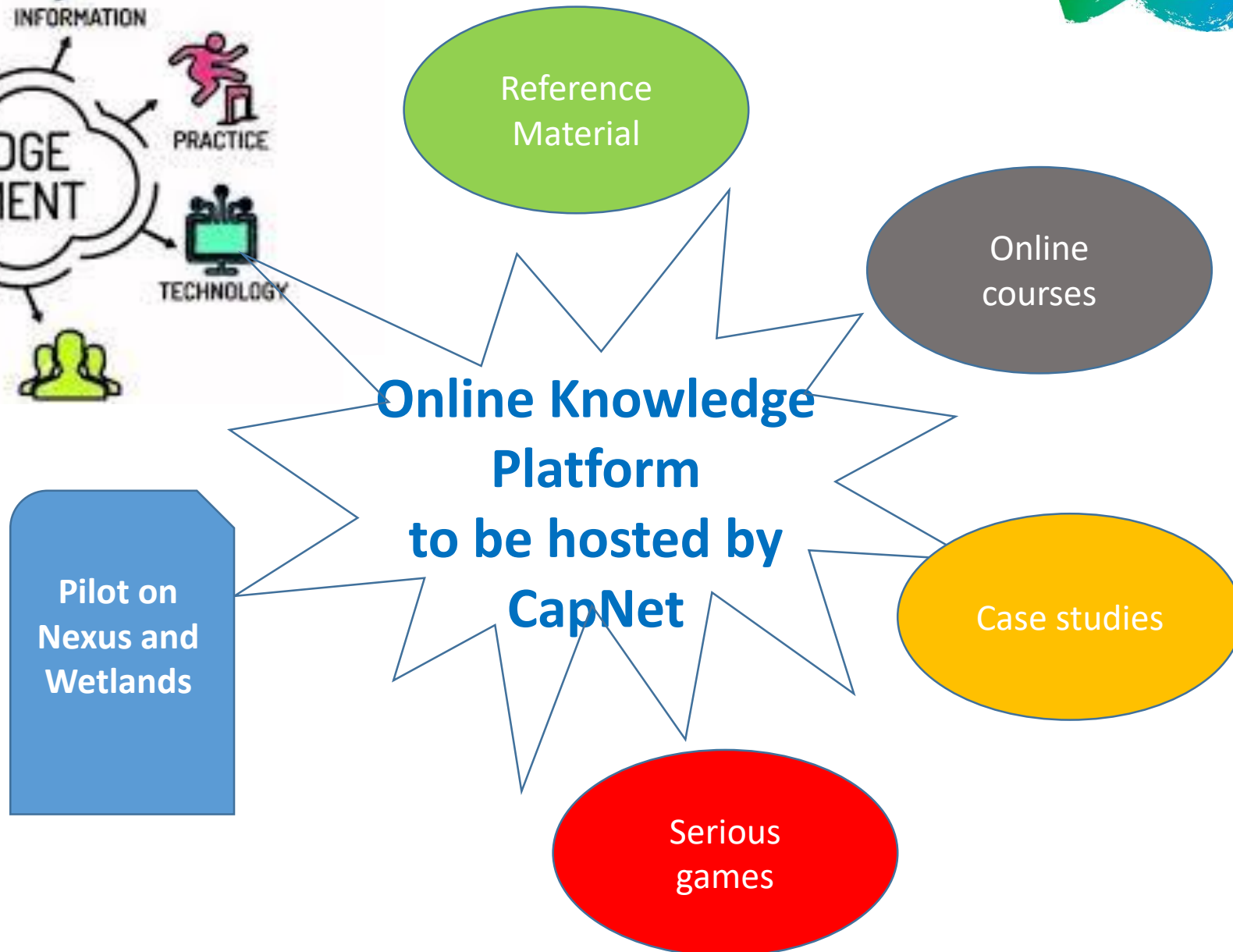
- **Water regulation/purification:** wetlands contribute to water quality through their natural ability to filter effluents and absorb pollutants. In particular, ‘constructed’ wetlands can simulate the hydrological processes of natural wetlands and function as biological wastewater treatment facilities
- **Water storage/recharge:** the ability of wetlands to store large amounts of water and release it slowly, plays a key role in the regulation of water quantity in periods of droughts and floods. This could also be relevant for hydropower facilities management up- and down-stream
- **Food provision:** wetlands are used as fish or shrimps ponds, salt pans or rice paddies, supporting the livelihoods of local communities
- **Disaster risk reduction:** wetlands can ‘slow down’ and absorb flood waters, reducing potential damage downstream and people. In drought periods, they may function as ‘retention basins’ instead
- **Aesthetic/cultural services:** wetland landscapes are often of great beauty and areas with wilderness, which attract visitors/tourists. Ecotourism activities can be a sustainable source of income for local communities

Capacity Building Platform on Water Management and Abstraction

- **Partners : WI, GWP-Med ,IUCN Med, IUCN ROWA, MedWet, Tour du Valat, WWF-NA**
- **MAVA Foundation support**

Aims to promote sustainable water use by bringing wetland needs and their contributions to society into dialogues around water allocation and management, through:

- Knowledge platform development with focus on IWRM and IRBM implementation mobilising Nexus
- Empowering CSOs to influence the policy, planning related to water investments and to engage with private sector
- Enabling water basin agencies and governmental bodies to fully integrate an ecosystems approach and WEF E Nexus in planning



مع خالص شكري
وامتناني

Merci pour votre
attention

Thank you
for your kind attention

Wetland Wanders, a Griffith University 2018 project supported by Advance Queensland that unites art, science and technology in an exhibition exploring the rich diversity of Queensland's wetlands