Food and Agriculture Organization of the United Nations

Managing salt-affected soils for sustainable future

Environmental Impact Assessment of projects on salt affected lands or under risk of salinization.

Prof. Dr. Jorge Batlle-Sales

2nd Meeting of the

International Network of Salt-Affected Soils

(INSAS)

International Network of Salt-Affected Soils

| **Hybrid** meeting
| Tashkent/Nukus, **Uzbekistan**
| **May 22-26**, 2023

GLOBAL SOIL PARTNERSHIP

What is the “Environmental Assessment”?

- It is the instrumental **administrative procedure** with respect to the approval or adoption of **plans and programs**, as well as with respect to the authorization and control of **projects** subject to responsible declaration or prior communication, through the which **analyzes the possible significant effects on the environment** of the plans, programs and projects.
- **Plans and programs** are the set of strategies, guidelines and proposals designed to satisfy social needs, not directly executable, but through their development through one or more projects.
- **Project** is any action that consists of the execution or exploitation of a work, a construction, or installation, as well as the dismantling or demolition or any intervention in the natural environment or in the landscape, including those destined to the exploitation or use of natural resources or from the soil and subsoil as well as from marine waters.
- Environmental assessment includes both **“strategic environmental assessment”** (for plans and programs) and **“environmental impact assessment”** (for projects).
- Environmental assessment is essential for the protection of the environment. Facilitates the incorporation of sustainability criteria in decision-making strategies, through the evaluation of plans and programs. And through the evaluation of projects, guarantees adequate **prevention of environmental impacts** that can be generated, while establishing effective **mechanisms of correction or compensation.**

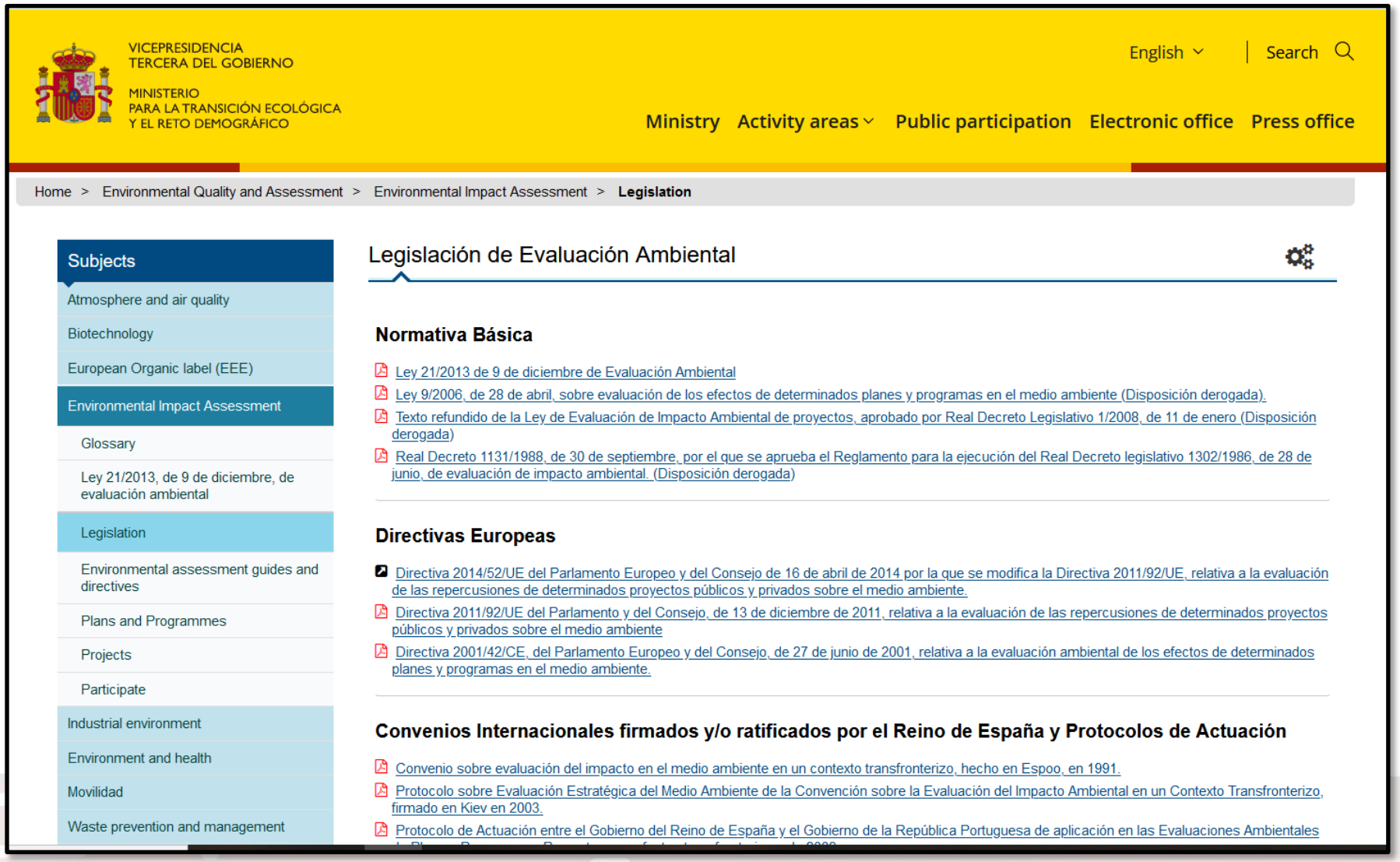
What is the “Environmental Impact Assessment”(EIA)? Steps.

- **Environmental Impact Assessment**
  - Document **prepared by the promoter** that contains the information necessary to assess the possible significant effects of the project on the environment and allows the appropriate decisions to be taken to prevent and minimize said effects.
- **Environmental Impact Statement**
  - Mandatory and determining report of the **Administration responsible of environment conservation (AREC)** with which the ordinary environmental impact assessment is concluded, which evaluates the integration of environmental aspects in the project and determines the conditions that must be established for the adequate protection of the environment and natural resources during the **execution and exploitation and**, where appropriate, **the dismantling or demolition of the project**.
- **Environmental Impact Report.**
  - Mandatory and determining report of the **Administration responsible of environment conservation (AREC)**.

“Environmental Impact Assessment”.

- **EIA** is essentially about optimizing resources through an allocation of all resources, to achieve a **balance between sustainable development and environment protection**. Environment resources embrace soils, water, air, forest, fauna, flora, minerals …
- **EIA methodologies**
  - Cost-benefit analysis (CBA), Cost-effectiveness analysis (CEA), Opportunity-Cost (OC), The Multiplier, Contingent valuation, other … are **methods to value unpriced benefit and costs**, derived from economic science.
  - **Ecological evaluations** seek to identify the importance of **conservation and the intrinsic value of nature**. This kind of evaluation can be applied to any natural asset (soils, fauna, flora, groundwater, wetlands, forests …).
- **Multi-disciplinary EIA**
  - Most projects involve multiple aspects to be evaluated. The costs, impacts and benefits need to be identified.
  - A widely used approach is the use of matrices, where in the rows heading appear the activities than can cause impact (positive or negative), and in the columns heading appear environmental quality variables. In a project, cross-checking of possible impacts with the environmental variables allows for identifying impacts and making a subjective categorization of their magnitudes.
  - Although this methodology presents many drawbacks (subjective evaluation of the magnitude of impact and acceptance of uncertainty, no consideration of cross-interactions, time horizon of effects is not revealed …) it is used in most EIA.

“Environmental Impact Assessment”. Legal Framework in Spain.



VICEPRESIDENCIA TERCERA DEL GOBIERNO

MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

English | Search

Ministry | Activity areas | Public participation | Electronic office | Press office

Home > Environmental Quality and Assessment > Environmental Impact Assessment > **Legislation**

Subjects

- Atmosphere and air quality
- Biotechnology
- European Organic label (EEE)
- Environmental Impact Assessment
  - Glossary
  - Ley 21/2013, de 9 de diciembre, de evaluación ambiental
  - Legislation
  - Environmental assessment guides and directives
  - Plans and Programmes
  - Projects
  - Participate
- Industrial environment
- Environment and health
- Movilidad
- Waste prevention and management

Legislación de Evaluación Ambiental

Normativa Básica

- Ley 21/2013 de 9 de diciembre de Evaluación Ambiental
- Ley 9/2006, de 28 de abril, sobre evaluación de los efectos de determinados planes y programas en el medio ambiente (Disposición derogada).
- Texto refundido de la Ley de Evaluación de Impacto Ambiental de proyectos, aprobado por Real Decreto Legislativo 1/2008, de 11 de enero (Disposición derogada)
- Real Decreto 1131/1988, de 30 de septiembre, por el que se aprueba el Reglamento para la ejecución del Real Decreto legislativo 1302/1986, de 28 de junio, de evaluación de impacto ambiental. (Disposición derogada)

Directivas Europeas

- Directiva 2014/52/UE del Parlamento Europeo y del Consejo de 16 de abril de 2014 por la que se modifica la Directiva 2011/92/UE, relativa a la evaluación de las repercusiones de determinados proyectos públicos y privados sobre el medio ambiente.
- Directiva 2011/92/UE del Parlamento y del Consejo, de 13 de diciembre de 2011, relativa a la evaluación de las repercusiones de determinados proyectos públicos y privados sobre el medio ambiente
- Directiva 2001/42/CE, del Parlamento Europeo y del Consejo, de 27 de junio de 2001, relativa a la evaluación ambiental de los efectos de determinados planes y programas en el medio ambiente.

Convenios Internacionales firmados y/o ratificados por el Reino de España y Protocolos de Actuación

- Convenio sobre evaluación del impacto en el medio ambiente en un contexto transfronterizo, hecho en Espoo, en 1991.
- Protocolo sobre Evaluación Estratégica del Medio Ambiente de la Convención sobre la Evaluación del Impacto Ambiental en un Contexto Transfronterizo, firmado en Kiev en 2003.
- Protocolo de Actuación entre el Gobierno del Reino de España y el Gobierno de la República Portuguesa de aplicación en las Evaluaciones Ambientales

Prof. Jorge Batlle-Sales

GLOBAL SOIL PARTNERSHIP

“Environmental Impact Assessment”. The actors.

- **The promoter**, that presents the EIA. Could be expected that tends to under-evaluate the impacts of the project. Many EIA present only the matrix of impacts without making deep studies (e.g. simulations, detailed studies …). Usually the cost of the EIA is around only 1% of the total budget of the project.
- **The Administration responsible of environment conservation (AREC).** Technicians of the Administration that should evaluate the EIA and alternatives. It is of paramount importance that they should have the scientific background to detect missing interactions and effects, complete and correct redaction of the EIA.
- **Other Ministries or Organisms** with competences in some aspects of the EIA for checking that all aspects of the project are environmentally sustainable.
- **Stakeholders.** The document of the EIA is made public by the Administration, and affected or interested organizations, as well as individuals, can make objections to the project as a whole or to certain parts. Their objections will be considered by promotor and published, together with the answers, alternatives or correction of the previous EIA.

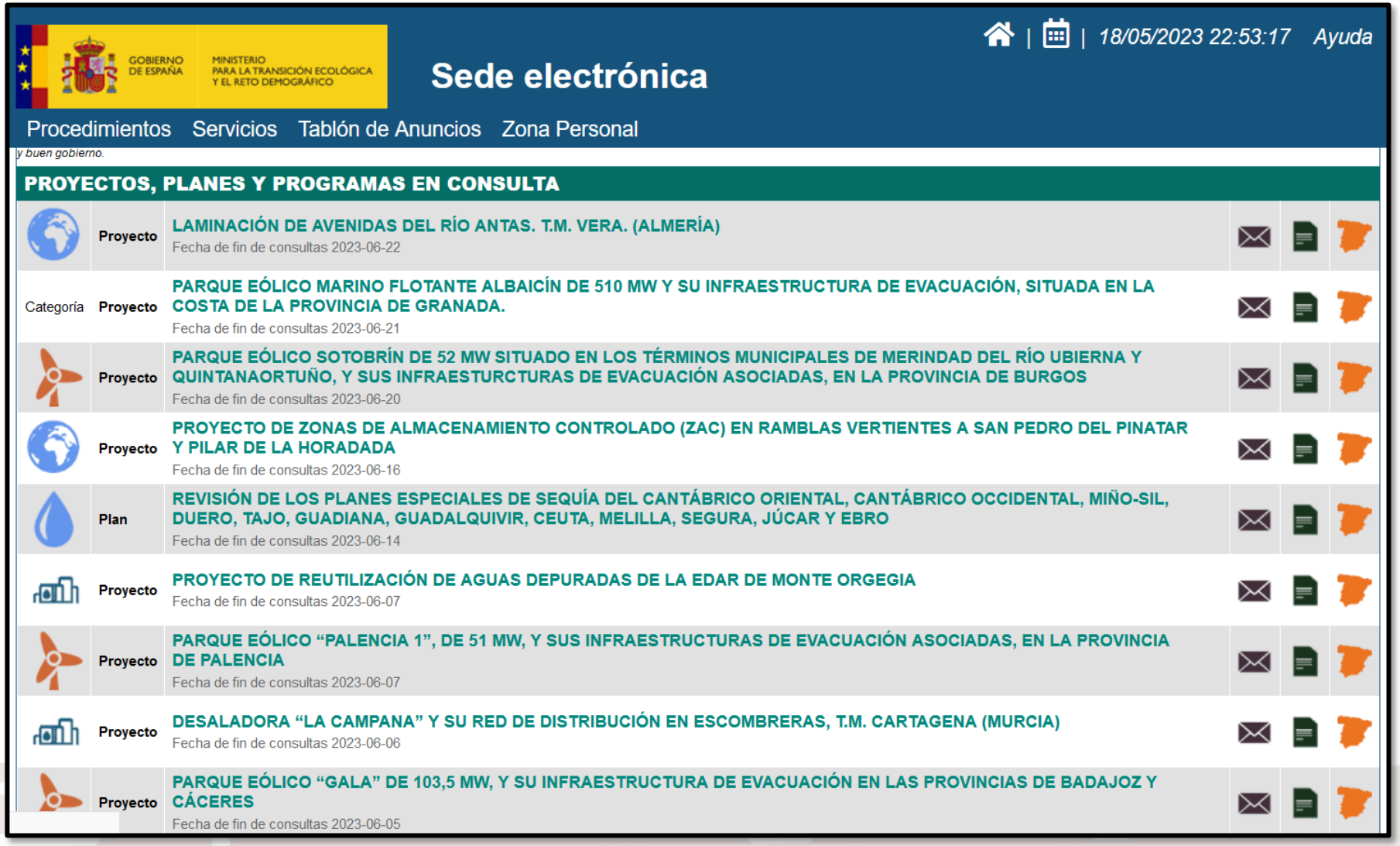
EIA document minimum content: “terms of reference”.

- **General description of the project** that includes information on its location, design, dimensions and other relevant characteristics of the project; and medium and long term forecasts on the use of land and other natural resources. Estimation of the types and amounts of waste generated and resulting material or energy emissions.
- **Description of the various reasonable alternatives** studied that are related with the project and its specific characteristics, including the zero alternative, or no carrying out the project, and a justification of the main reasons for the solution adopted, taking into account the effects of the project on the environment.
- **Identification, description, analysis and, if applicable, quantification of the possible effects** direct or indirect, secondary, cumulative and synergistic significant effects of the project **on the following factors: population, human health, flora, fauna, biodiversity, geodiversity, soil, subsoil, air, water, marine environment, climate, climate change, landscape, material goods, cultural heritage, and the interaction between all the factors mentioned**, during the phases of execution, exploitation and, where appropriate, during demolition or abandonment of the project.
- A specific section will be included for the evaluation of the repercussions of the project on **Red Natura 2000 spaces**. When the project may cause a **long-term hydromorphological** change In a body of surface water or a level disturbance in a body of groundwater that may prevent it from reaching good condition or potential, or that may pose a deterioration of its state or potential, a specific section will be included for the evaluation of its long-term repercussions on the quality elements that define the state or potential of the affected water masses.

EIA document minimum content: “terms of reference”. (Cont.).

- A specific section will be included that includes the **identification, description, analysis and, if applicable, quantification of the expected effects** on the former factors listed, derived from the **vulnerability of the project to risks of serious accidents or catastrophes**, on the risk of such accidents or catastrophes occurring, and on the probable significant adverse effects on the environment, in case of occurrence of the same. To carry out the studies mentioned in this section, the promoter will include the Relevant information obtained through risk assessments carried out on in accordance with the standards that apply to the project.
- **Measures to prevent, correct and, where appropriate, compensate** for the possible significant adverse effects on the environment and landscape.
- **Environmental surveillance program**.
- **Non-technical summary** of the environmental impact study and conclusions in terms easily understandable.

“Environmental Assessment” information, open to public.



GOBIERNO DE ESPAÑA
MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

Sede electrónica

18/05/2023 22:53:17 Ayuda

Procedimientos Servicios Tablón de Anuncios Zona Personal

y buen gobierno.

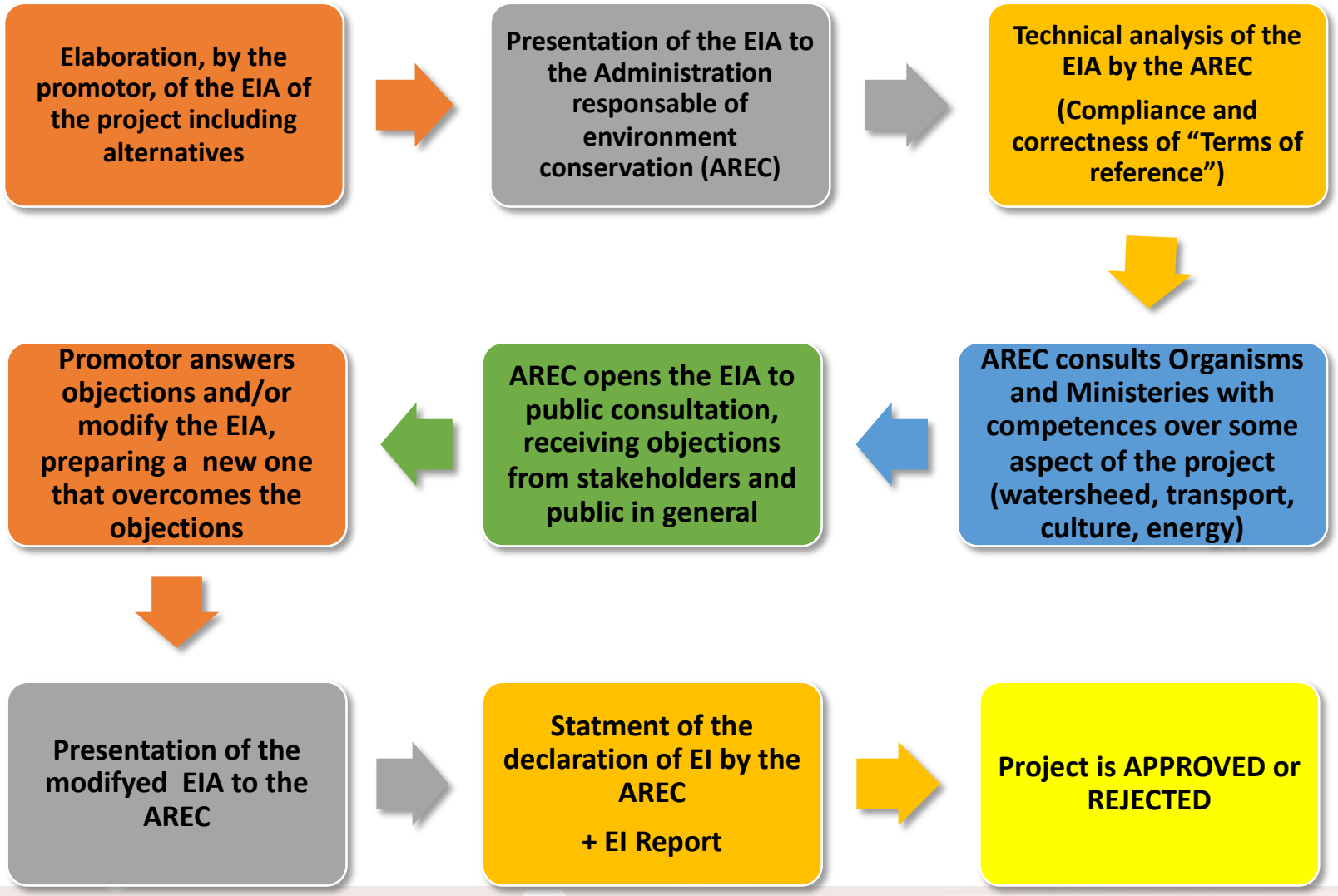
PROYECTOS, PLANES Y PROGRAMAS EN CONSULTA

	Proyecto	LAMINACIÓN DE AVENIDAS DEL RÍO ANTAS. T.M. VERA. (ALMERÍA) Fecha de fin de consultas 2023-06-22
Categoría	Proyecto	PARQUE EÓLICO MARINO FLOTANTE ALBAICÍN DE 510 MW Y SU INFRAESTRUCTURA DE EVACUACIÓN, SITUADA EN LA COSTA DE LA PROVINCIA DE GRANADA. Fecha de fin de consultas 2023-06-21
	Proyecto	PARQUE EÓLICO SOTOBRÍN DE 52 MW SITUADO EN LOS TÉRMINOS MUNICIPALES DE MERINDAD DEL RÍO UBIERNA Y QUINTANAORTUÑO, Y SUS INFRAESTURCTURAS DE EVACUACIÓN ASOCIADAS, EN LA PROVINCIA DE BURGOS Fecha de fin de consultas 2023-06-20
	Proyecto	PROYECTO DE ZONAS DE ALMACENAMIENTO CONTROLADO (ZAC) EN RAMBLAS VERTIENTES A SAN PEDRO DEL PINATAR Y PILAR DE LA HORADADA Fecha de fin de consultas 2023-06-16
	Plan	REVISIÓN DE LOS PLANES ESPECIALES DE SEQUÍA DEL CANTÁBRICO ORIENTAL, CANTÁBRICO OCCIDENTAL, MIÑO-SIL, DUERO, TAJO, GUADIANA, GUADALQUIVIR, CEUTA, MELILLA, SEGURA, JÚCAR Y EBRO Fecha de fin de consultas 2023-06-14
	Proyecto	PROYECTO DE REUTILIZACIÓN DE AGUAS DEPURADAS DE LA EDAR DE MONTE ORGEGIA Fecha de fin de consultas 2023-06-07
	Proyecto	PARQUE EÓLICO “PALENCIA 1”, DE 51 MW, Y SUS INFRAESTRUCTURAS DE EVACUACIÓN ASOCIADAS, EN LA PROVINCIA DE PALENCIA Fecha de fin de consultas 2023-06-07
	Proyecto	DESALADORA “LA CAMPANA” Y SU RED DE DISTRIBUCIÓN EN ESCOMBRERAS, T.M. CARTAGENA (MURCIA) Fecha de fin de consultas 2023-06-06
	Proyecto	PARQUE EÓLICO “GALA” DE 103,5 MW, Y SU INFRAESTRUCTURA DE EVACUACIÓN EN LAS PROVINCIAS DE BADAJOZ Y CÁCERES Fecha de fin de consultas 2023-06-05

Prof. Jorge Batlle-Sales

GLOBAL SOIL PARTNERSHIP

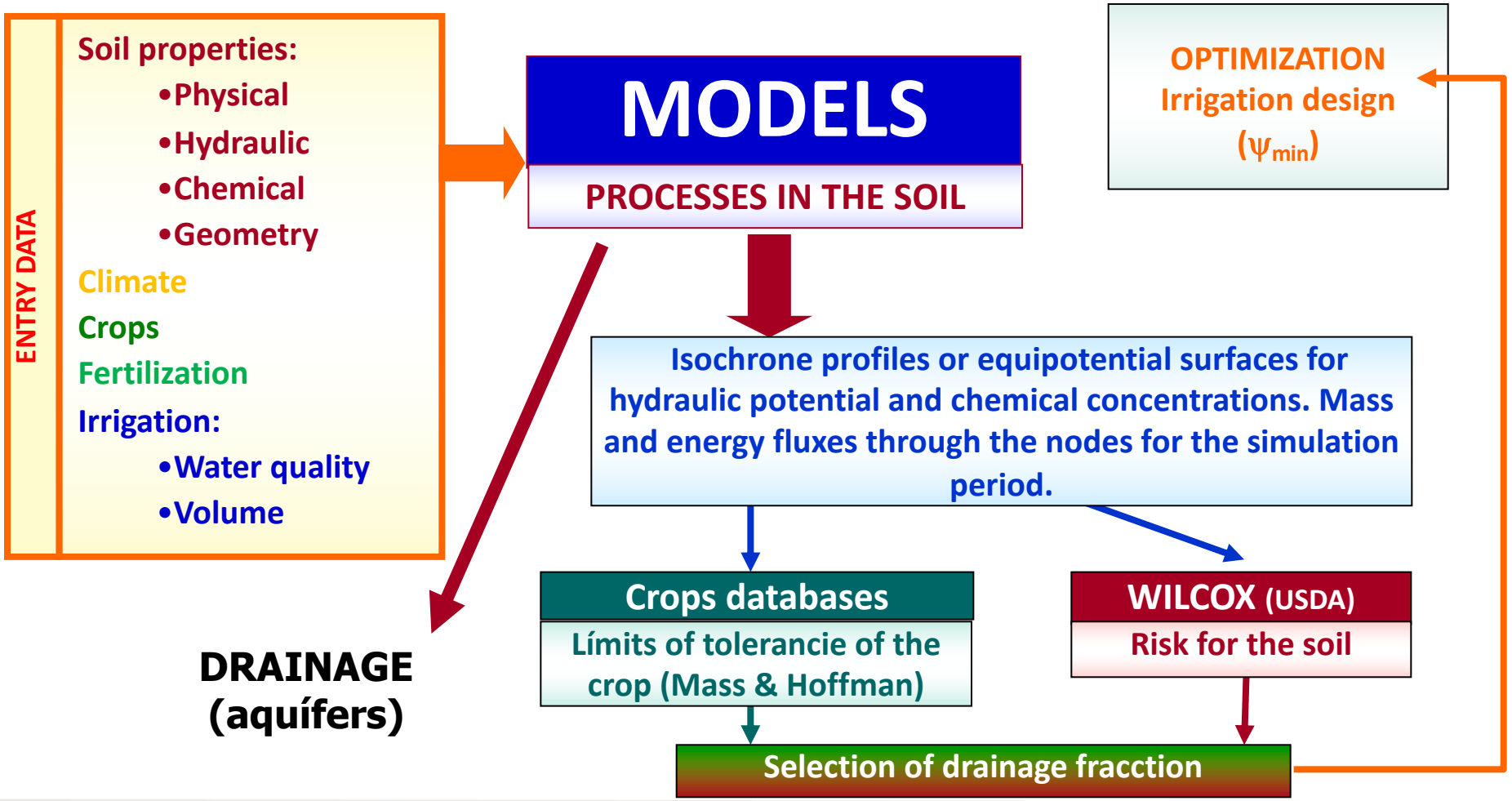
“Environmental Impact Assessment” simplified flowchart.

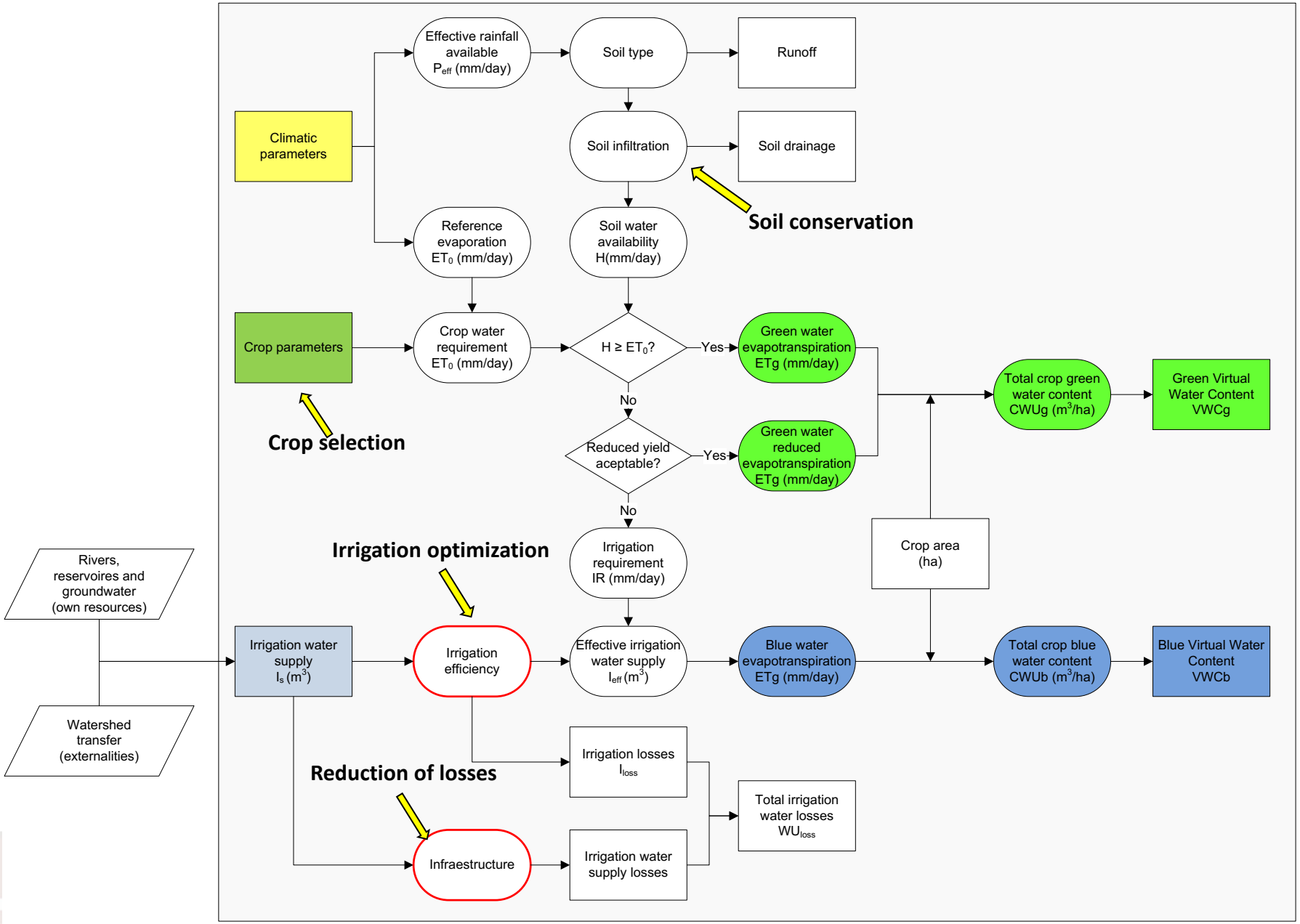


Salt-Affected lands

Prof. Jorge Batlle-Sales

Resumed procedure for irrigation optimization under risk of salinization





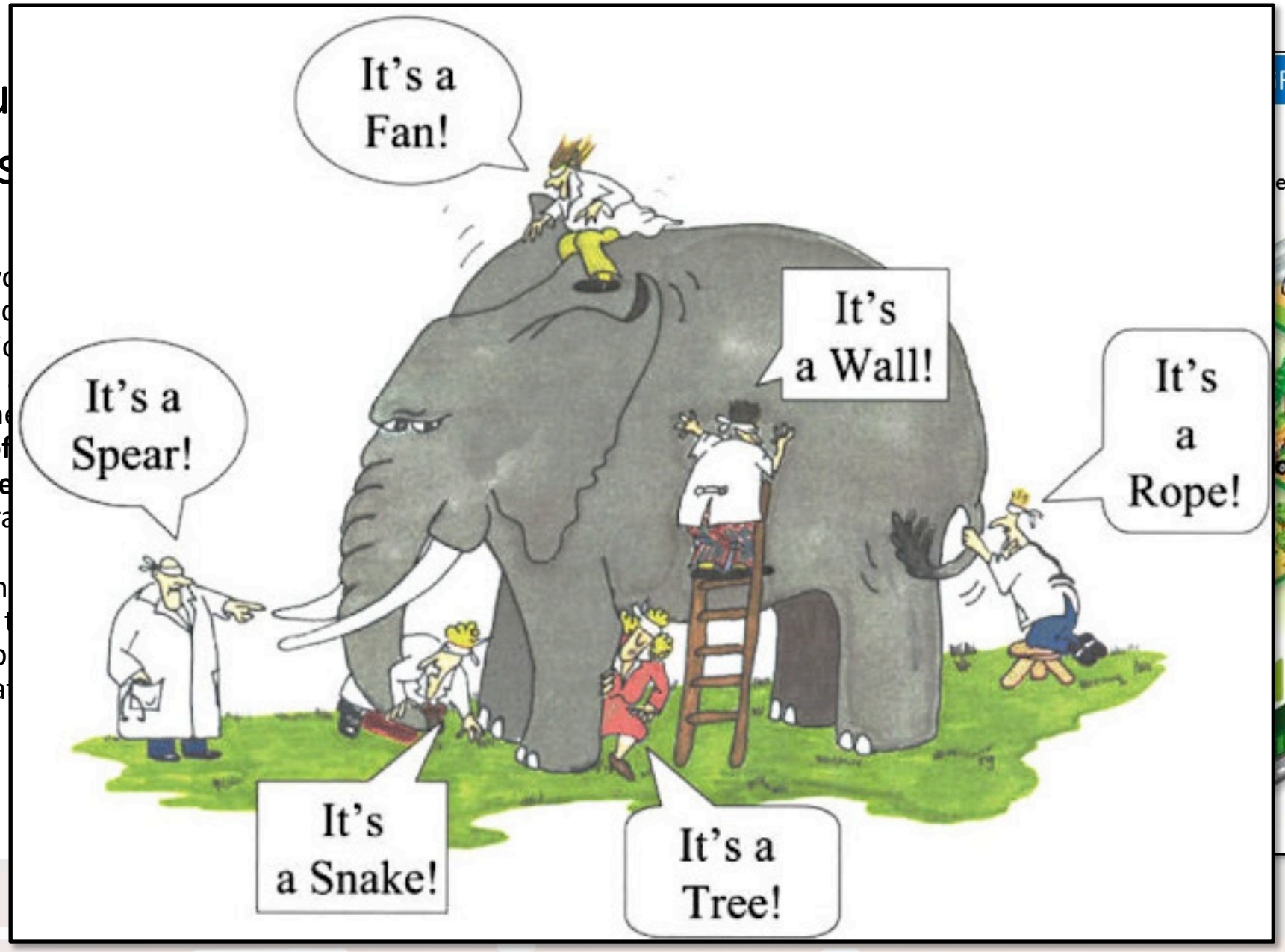
Prof. Jorge Batlle-Sales

GLOBAL SOIL PARTNERSHIP

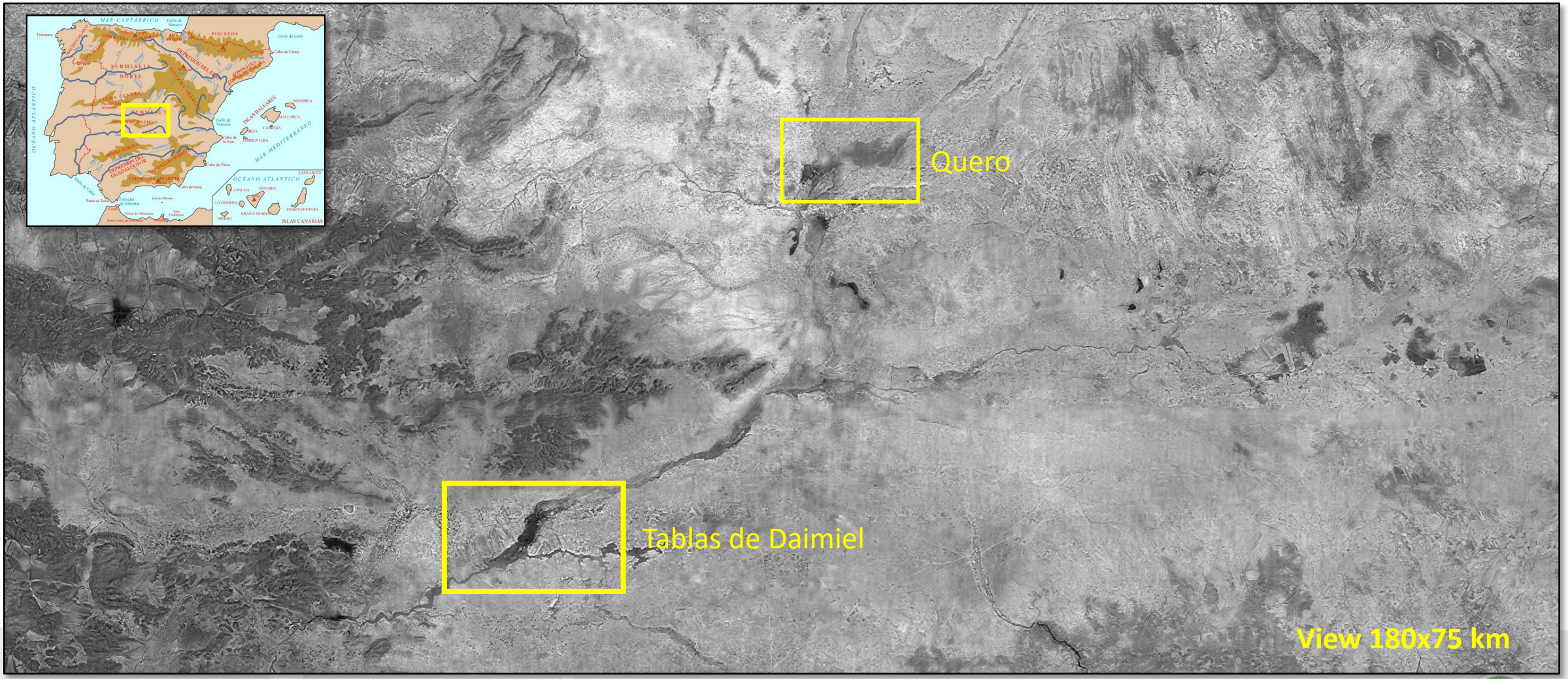
Food produ
A complex s

Food production invo
of work, supplies and
used in the productio
of supplies, workers
the production of the
In this way a part of
and negative) is exte
area under considera

In the **case of SAS** th
production is raised
additional water sup
establishment, irriga
other supplies.



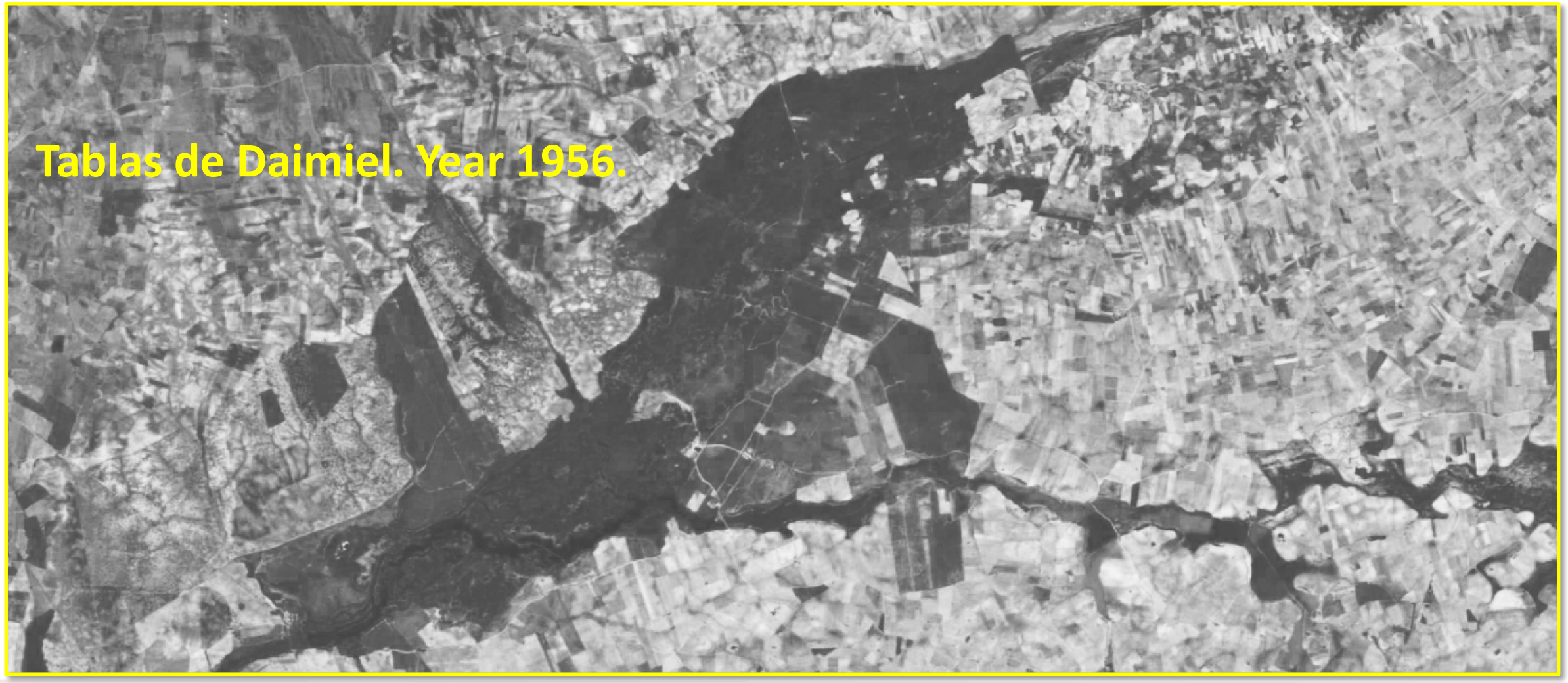
Región Central. Spain. Year 1956.



Prof. Jorge Batlle-Sales

Prof. Jorge Batlle-Sales

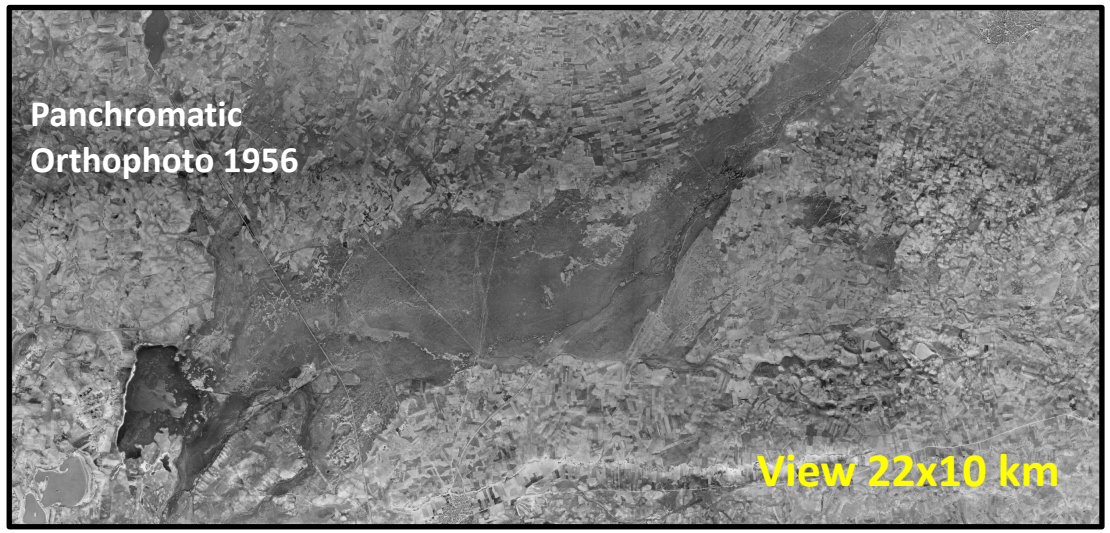
GLOBAL SOIL PARTNERSHIP

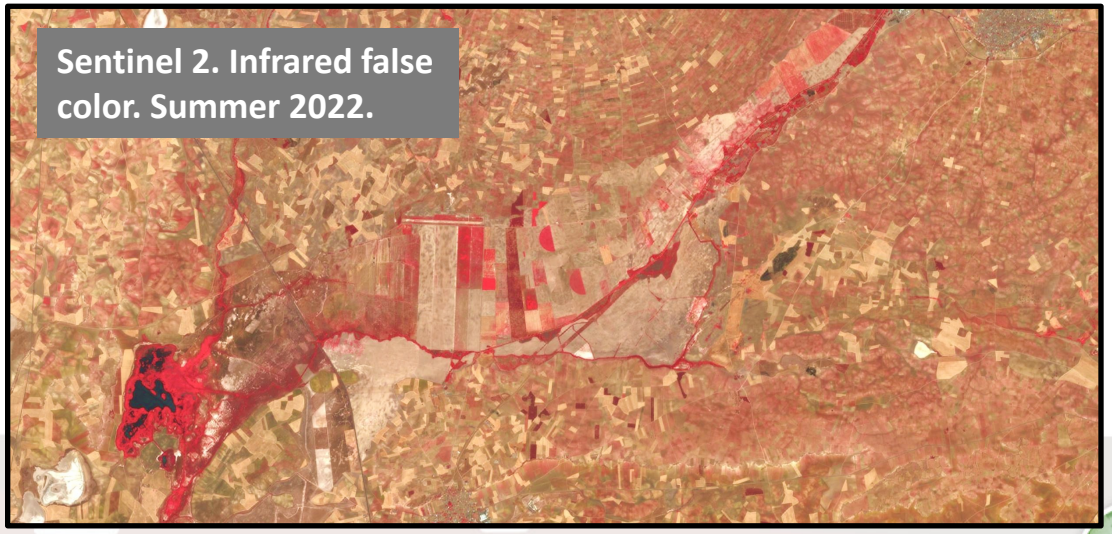


Prof. Jorge Batlle-Sales

GLOBAL SOIL PARTNERSHIP

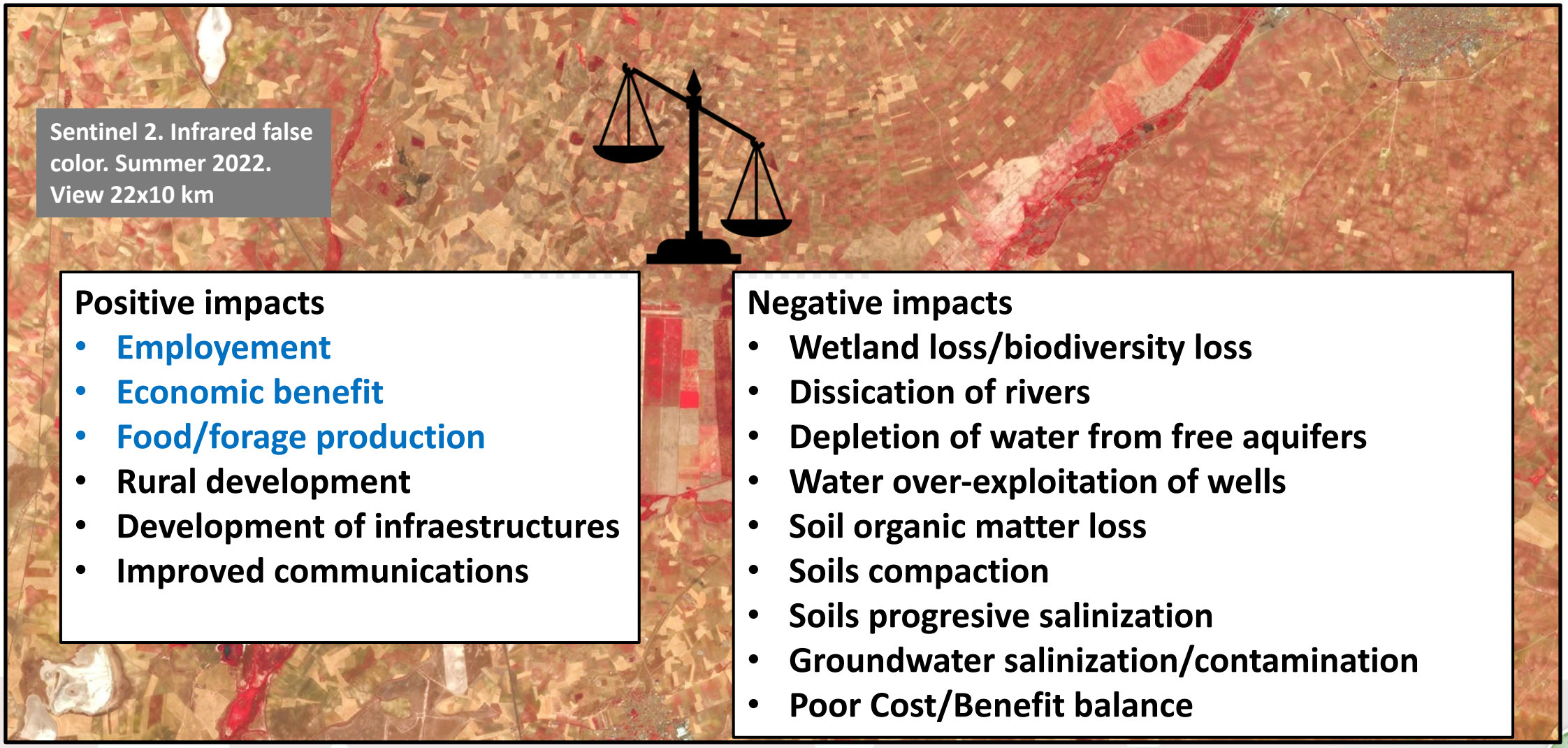
Temporal evolution of “Quero area”





Prof. Jorge Batlle-Sales

“Quero area”



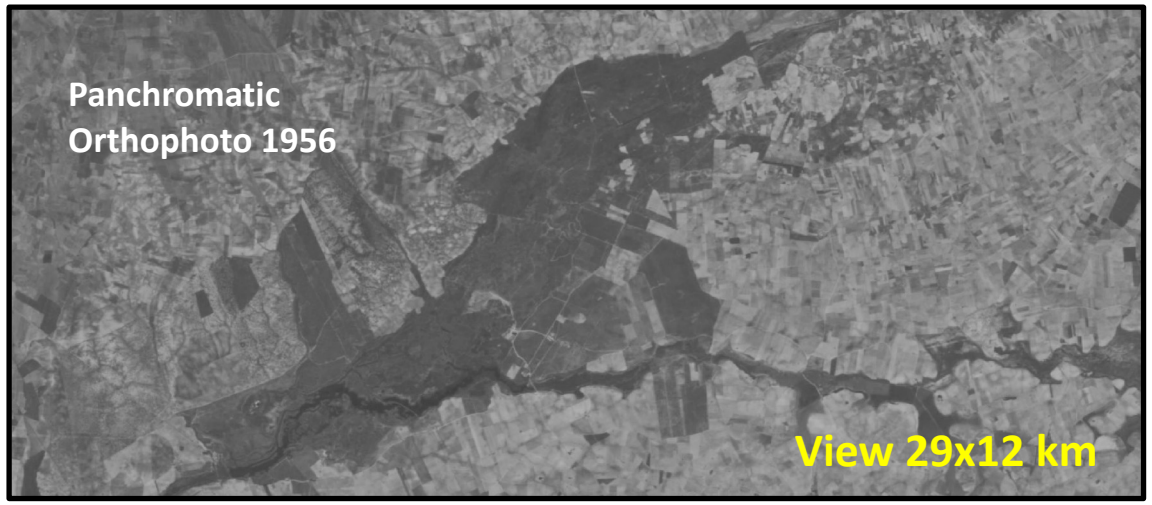
Positive impacts

- Employement
- Economic benefit
- Food/forage production
- Rural development
- Development of infraestructures
- Improved communications

Negative impacts

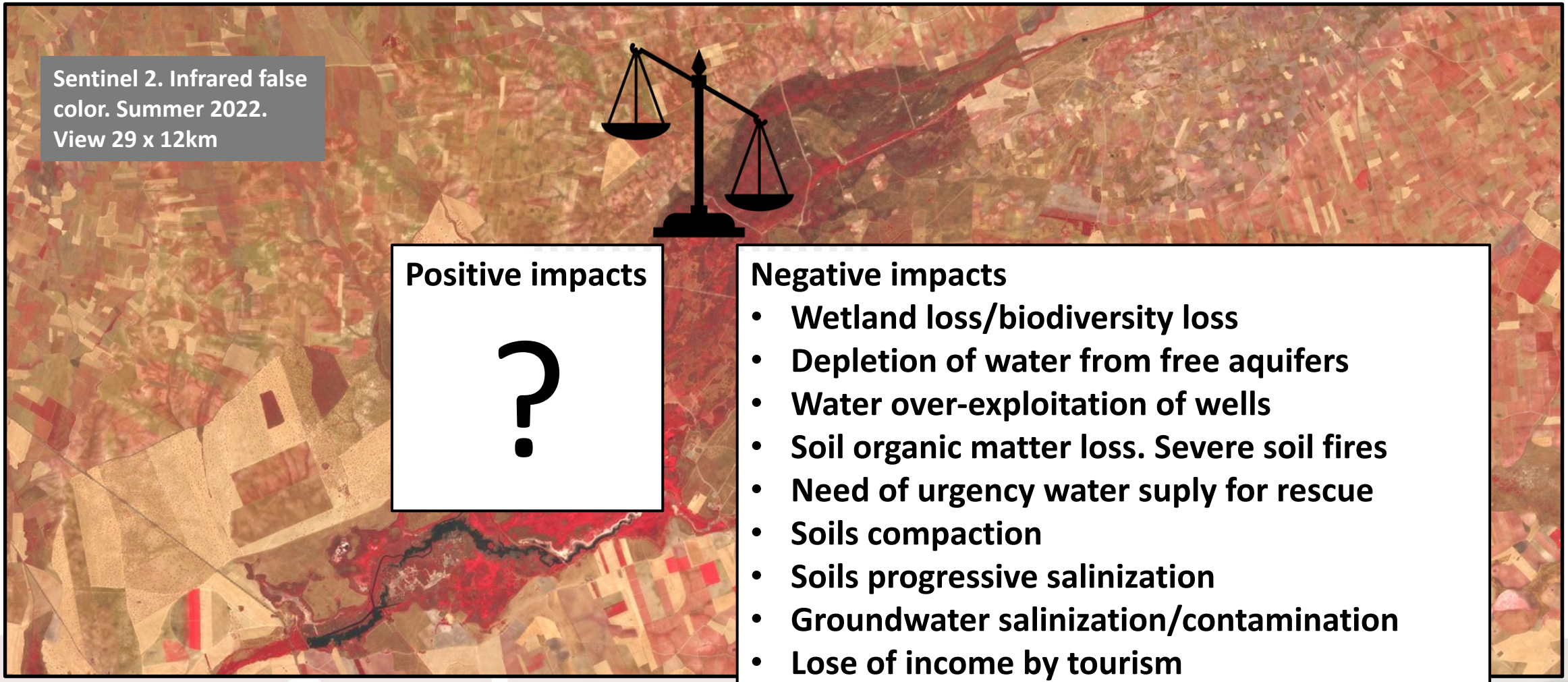
- Wetland loss/biodiversity loss
- Dissication of rivers
- Depletion of water from free aquifers
- Water over-exploitation of wells
- Soil organic matter loss
- Soils compaction
- Soils progresive salinization
- Groundwater salinization/contamination
- Poor Cost/Benefit balance

Temporal evolution of National Park “Tablas de Daimiel”



Prof. Jorge Batlle-Sales

Temporal evolution of National Park “Tablas de Daimiel”



Positive impacts

?

Negative impacts

- Wetland loss/biodiversity loss
- Depletion of water from free aquifers
- Water over-exploitation of wells
- Soil organic matter loss. Severe soil fires
- Need of urgency water suply for rescue
- Soils compaction
- Soils progressive salinization
- Groundwater salinization/contamination
- Lose of income by tourism

Prof. Jorge Batlle-Sales

Food and Agriculture Organization of the United Nations

What did we learn from this study case?
Could the EIA have avoided the actual situation?

Let's take care of our environment and manage SAS in a sustainable way

Jorge.Batlle@uv.es

GLOBAL SOIL PARTNERSHIP