Understanding transformations in rigid social-ecological governance

Power in networks of action situations, neo-institutional dialogues and pluralism

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https://elter-ri.eu/

Contents

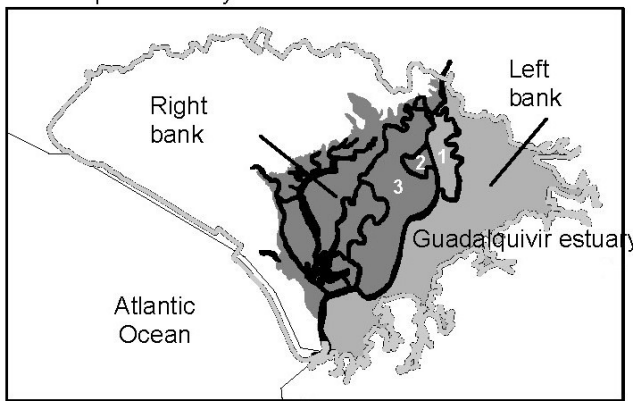
1. Introduction

- Broad context: the urgent need for change towards sustainability
- General question: how SES respond to different governance configurations, considering actors, institutions, and power, and historical legacies?
- Focus on SES traps: mutually reinforcing, strong feedback loops between social and ecological systems maintaining undesirable situations → *rigidity trap* <> *lock-in trap*
- Causal mechanisms: increasing focus on the role of historical, discursive, political and/or power phenomena
- Richer sources of transformative capacities

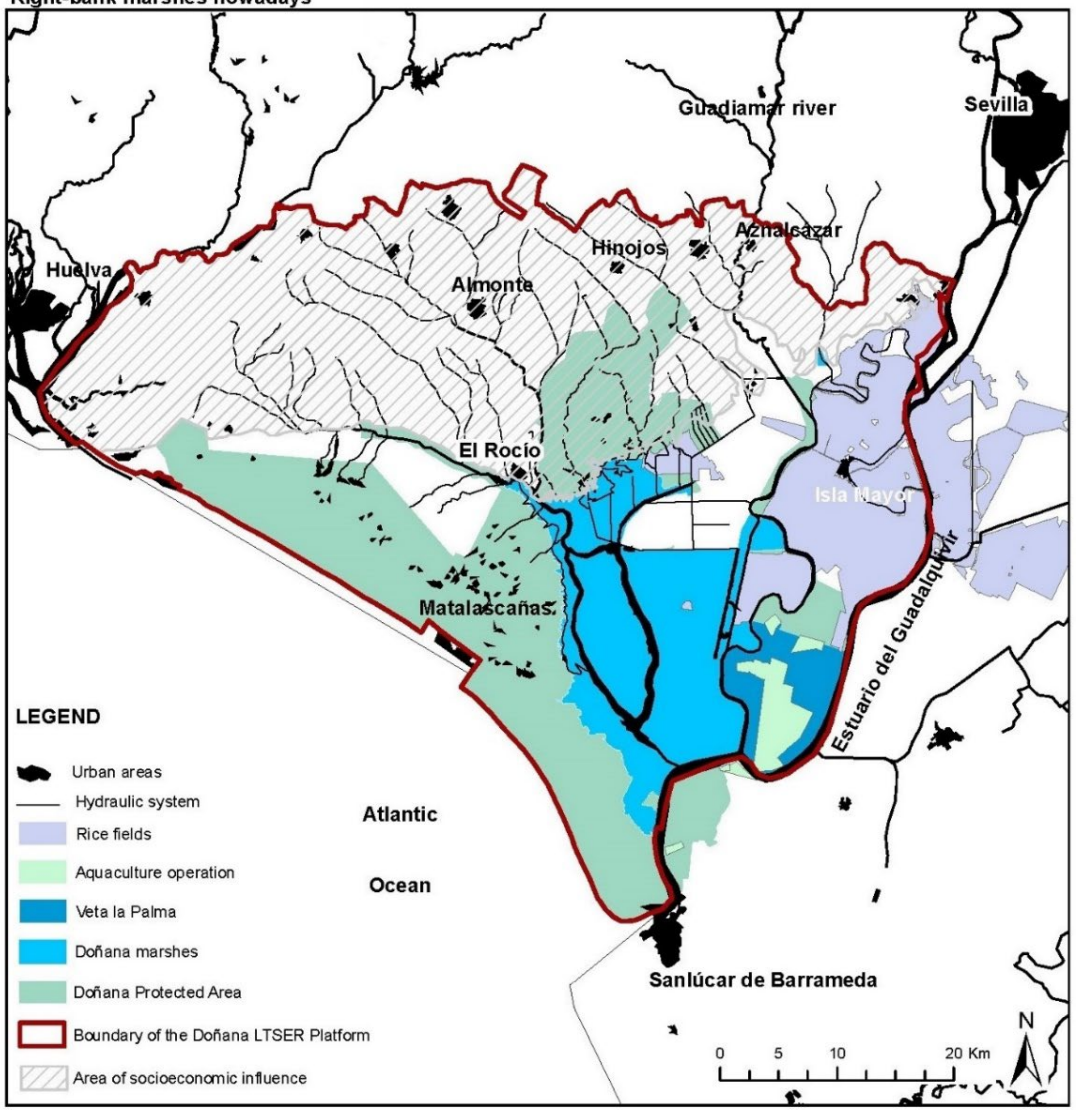
Holling et al. (2002), Carpenter and Brock (2008), Steneck et al. (2011), Enfors (2013), Boonstra (2016), Haider et al. (2018)

2. Methodological approach - Case study

Guadalquivir estuary and marshes circa 1900



Right-bank marshes nowadays



- One of largest coastal wetlands in Europe
- Historical intensification of agricultural, water use, tourism and urban, mining and fluvial development
- Reduced area and complexity
- Increase of environmental problems, conservation threats and socioeconomic conflicts
- Currently characterized by a rigidity trap

140,000 ha marshland → 27,000 ha marshland

Doñana case study iterative research

1st ITERATION – SYSTEM LEVEL — Méndez et al. (2012)

Tested proposition: presence of rigid institutional regime dominated by command-and control features

Unit of analysis: water resources management and wetland conservation institutional regimes

Exploration of causal historical pattern: adaptive cycle/SE traps, institutional path dependence

IAD guiding selection of relevant factors/relationships

2nd ITERATION – MESO LEVEL — Méndez et al. (2019)

Historical pattern refinement: delving into explanatory power of contextual/endogenous factors already identified

Unit of analysis: water resources management and wetland conservation institutional regimes

SE traps, generalized institutional path dependence

Politicized IAD guiding selection (and detection) of relevant factors/relationships

3rd ITERATION – MESO-MICRO TENSION — Méndez et al. (2022), preprint

Further refinement of explanatory mechanisms

Shift in unit of analysis: IMAP megaproject planning process

4th ITERATION – TOWARDS SYNTHESIS — Méndez et al. (2022)

First step towards synthesis and analytical generalization

Shift in unit of analysis: IMAP megaproject planning process

3rd ITERATION – MESO-MICRO TENSION

Aim: advance approach that integrates institutional and power analysis

Theoretical framework: Networks of Action Situations, Polycentric Power Typology, **discursive power (pIAD)**

2. NAS-power analytical task probing the historical profile and constructing a qualitative narrative:

2.1. game-theoretic logics to core FAS situation (micro level)

2.2. descriptive analysis to adjacent NAS (meso level)

2.3. analysis of power relationships over the whole FAS-NAS

4th ITERATION – TOWARDS SYNTHESIS

Aim: explain how **limited pluralism** emerged and was perpetuated, and how **latent pluralism** might play a role in change to sustainability

Theoretical framework: **broader neo-institutionalist approach**, discourse inertia

2. Thematic analysis to further characterise command-and-control traits at present using evidence from newspapers

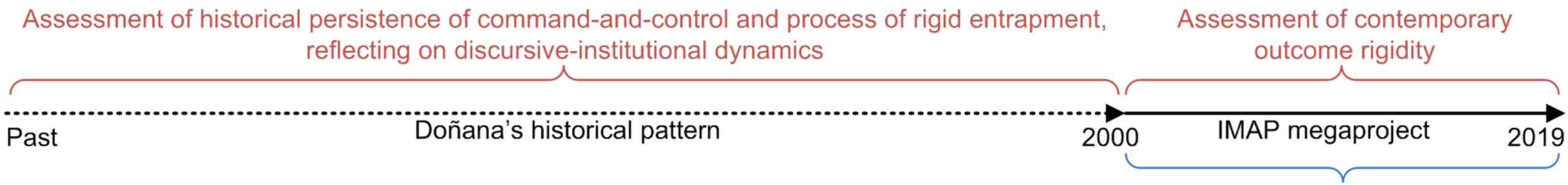
3. Reanalysis of Doñana's historical pattern

Shared aim

Further explanatory refinement of rigidity trap, and assessment of risk of lock-in trap and prospects of sustainability pathway

Methods

1. Historical profile of IMAP megaproject



Analytical focus

3rd research iteration

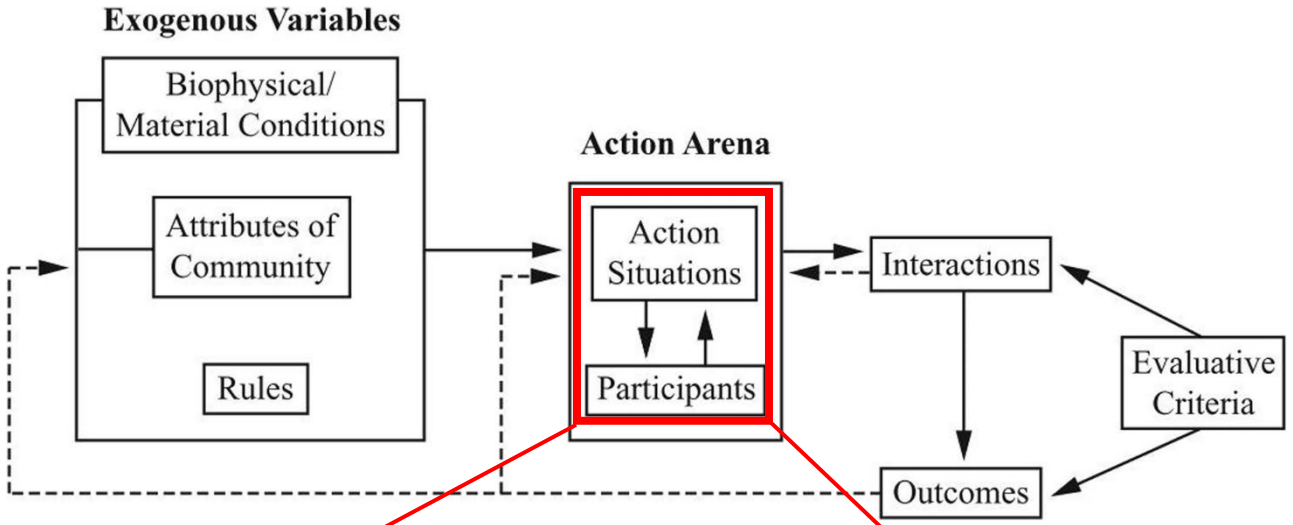
4th research iteration

3rd ITERATION

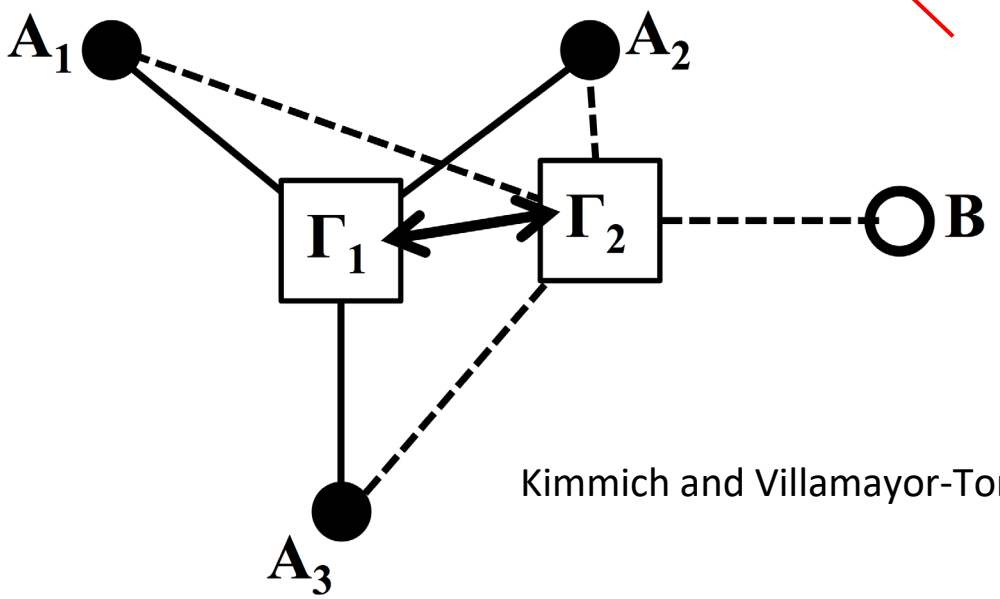
Networks of (adjacent) Action Situations (NAS) approach

- "Action situation" as an analytical component of (rational-choice) IAD → general level of strategic games played by participant actors

- Relational perspective → NAS: how and when situations/games affect each other → stretching explanatory power



IAD, Ostrom (2005)



Kimmich and Villamayor-Tomas (2017)

3rd ITERATION

Power typology

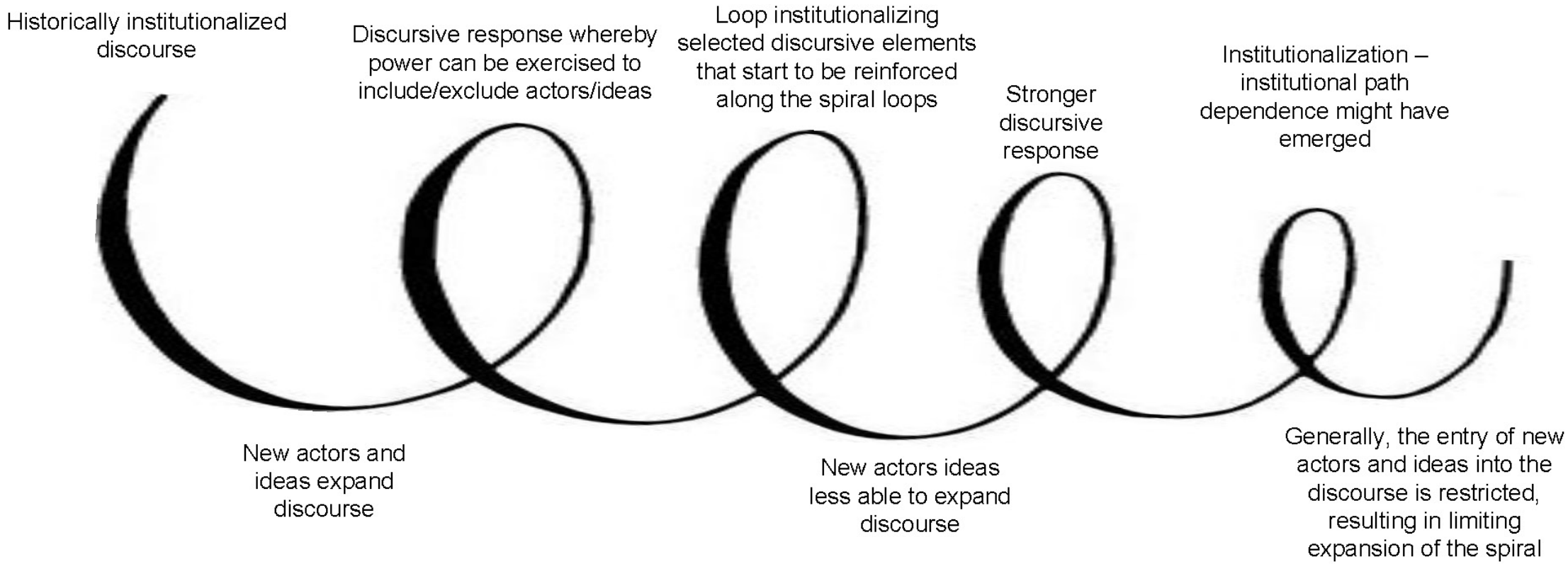
	Type of power	Description
Agency-laden	Power by design	Power written in rules and incentives
	Pragmatic power	Discretion associated in implementing rules
	Framing power	Actors construct frames to manipulate other actors and to subvert rules
Structure-laden	Discursive power	Discourses influence actors' perceptions and constitute their interests and preferences

Adapted from Morrison et al. (2017, 2019), Mudliar (2020) Clement (2010)

4th ITERATION

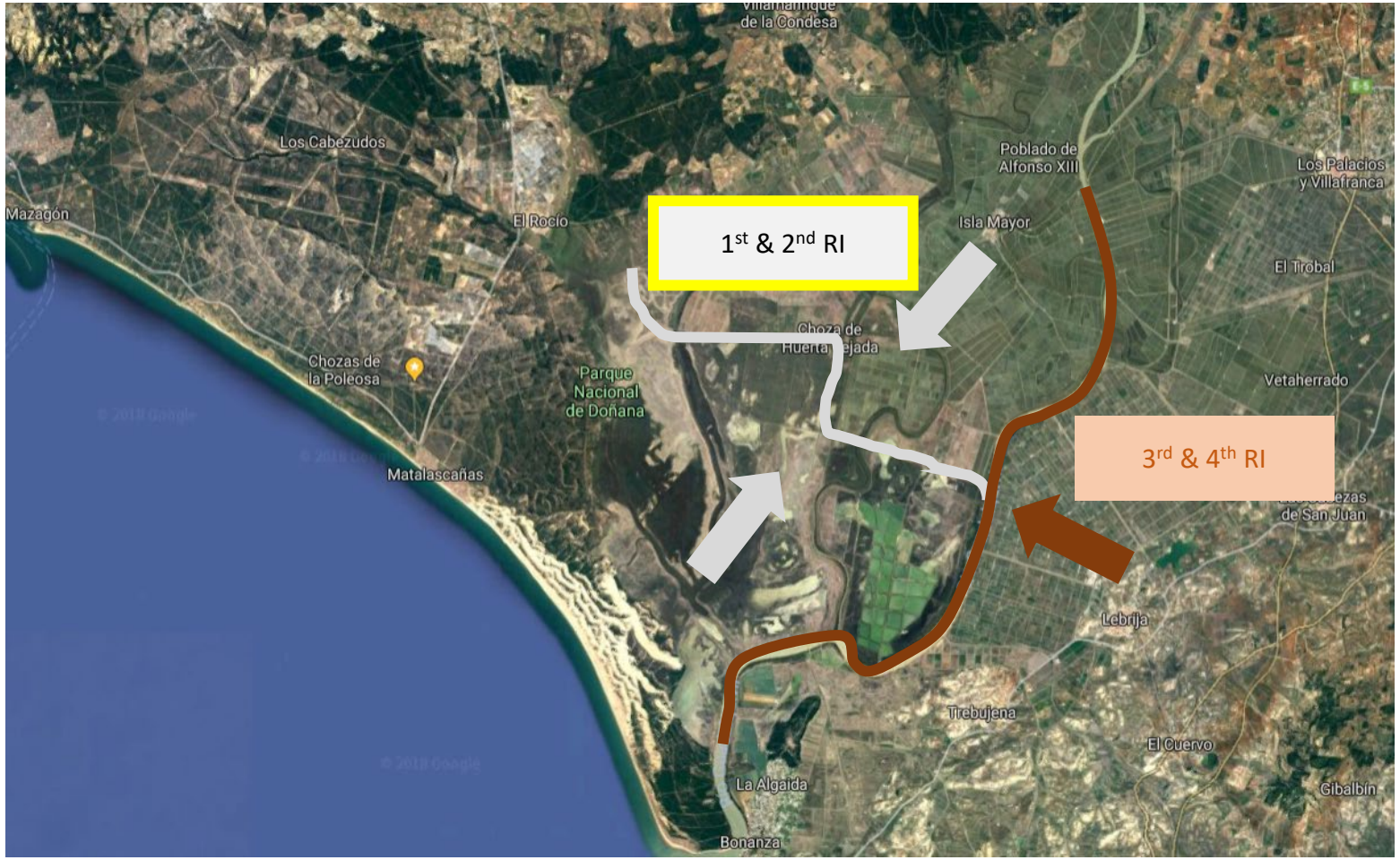
Discourse inertia – discursive-institutional spiral

Plasticity to combine insights and logics from different neo-institutionalist approaches



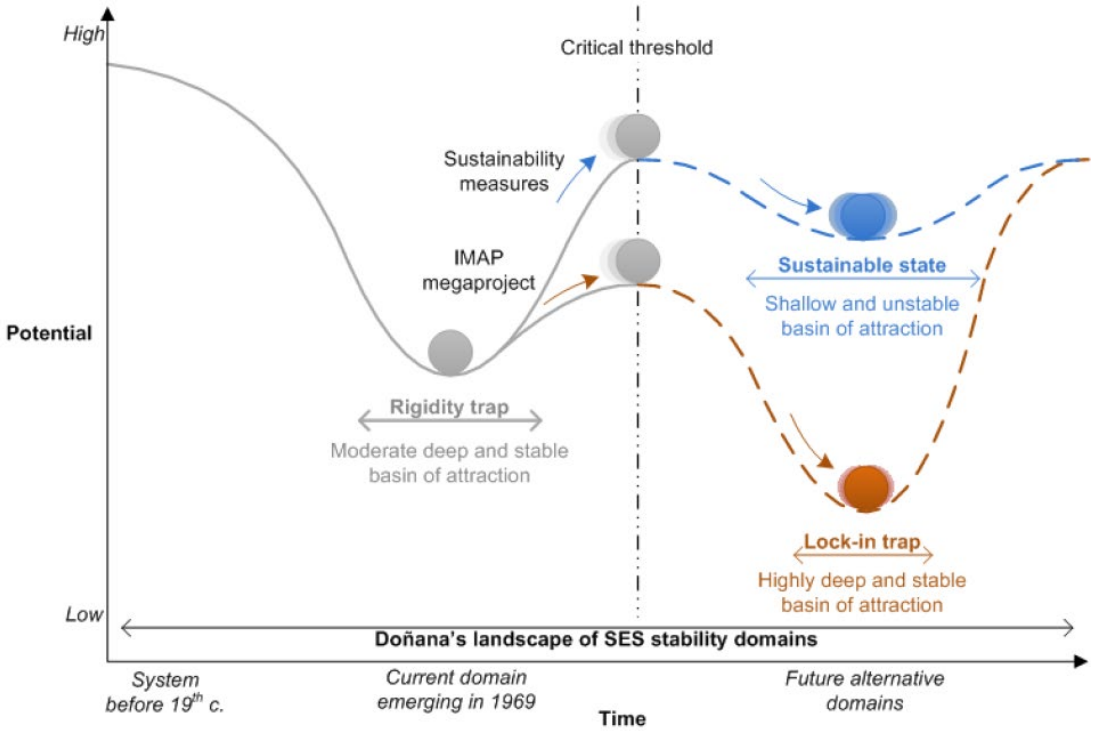
Williams (2019)

3. Key results from 1st & 2nd research iterations



1st research iteration

- Large hydraulic modifications (megaprojects) for economic development, based on irrigation agriculture (vs wetland conservation)
- Historical reliance on engineering/technical efficiency, command-and-control of nature variation and reduced complexity, massive public investments and economic/yield maximization perspectives
- Complex evolutionary process resulting in limited economic success, reduced pluralism, numerous environmental hazards and socioeconomic conflicts
- A process of natural capital destruction, this could have driven the Doñana region directly into a lock-in trap
- Instead, a rigidity trap with higher potential for change materialized due to the creation of the Doñana National Park in 1969



Rigidity trap:

- Pervasive command-and-control
- Diminished SE resilience to shocks
- Increased socioeconomic dependence on scarce water resources
- High degradation of key SES functions, but some degree of well-preserved natural capital
- Higher potential for change than lock-in trap
- Lack of demonstrated learning from management failures and environmental crises
- Strong path dependence

Key implication: IMAP megaproject appears as a disturbance posing a risk of a regime shift to lock-in trap, with less potential for change due to high sunk and trajectory-shifting costs

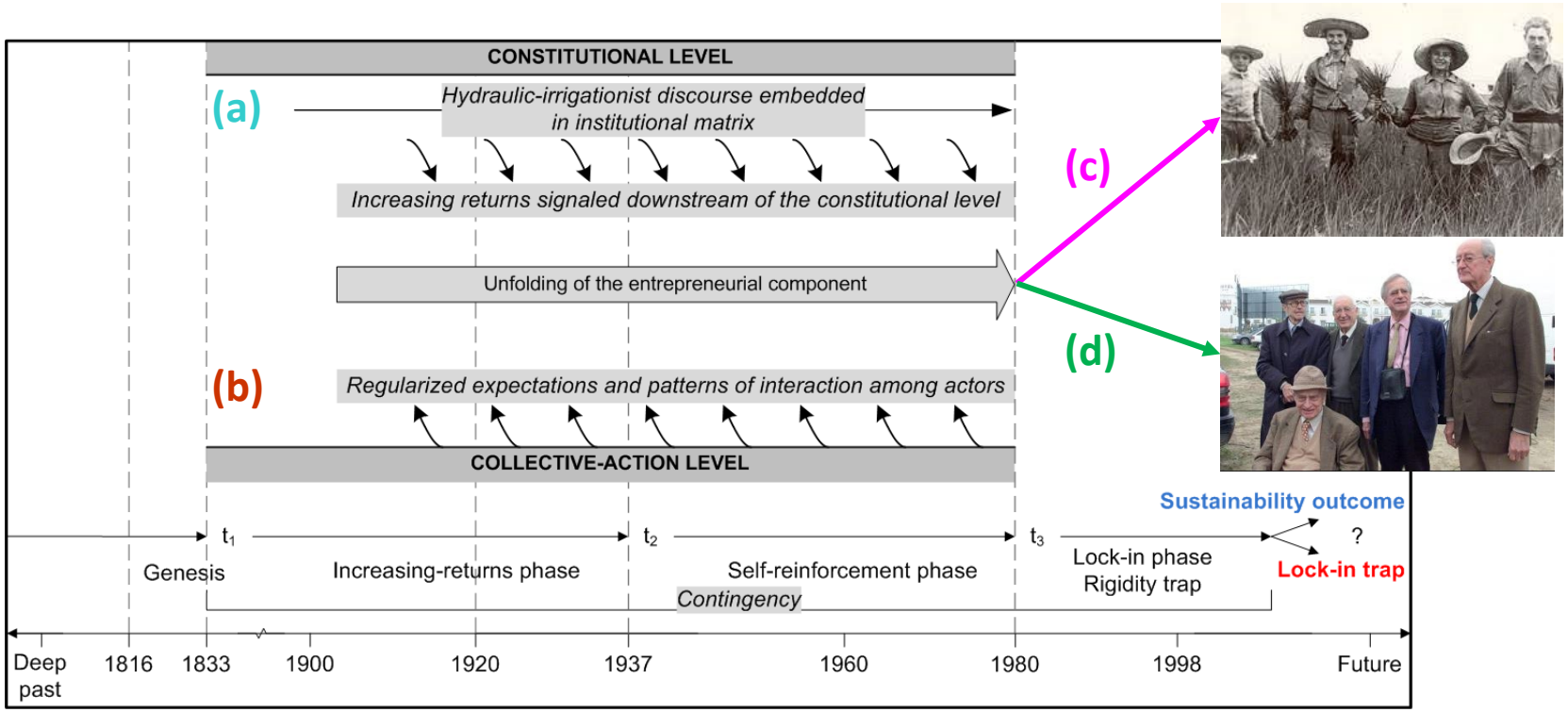
2nd research iteration

Identification of three key explanatory mechanisms, necessary and sufficient conditions

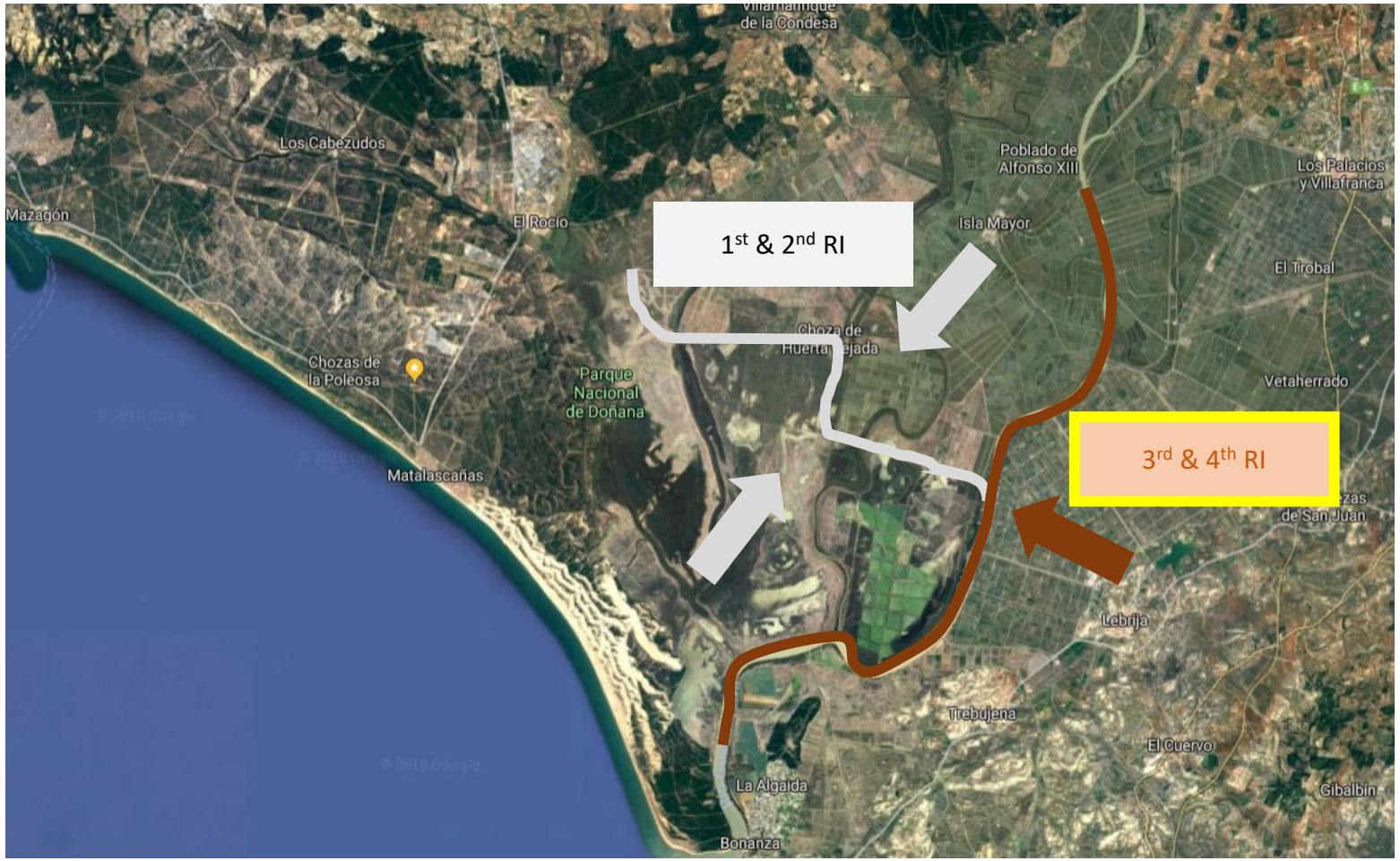
(a) Contextual political-discursive mechanism (hydraulic-irrigationism) mobilizing power top-down and signalling increasing returns to actors at lower levels

(b) Bottom-up operation of lower-level actors responding to increasing returns and ensnared in a self-reinforcing dynamic

Double action of two groups of cross-level entrepreneurial actors key for **(c) rice & irrigation agriculture** and **(d) a counteractive nature conservation movement**

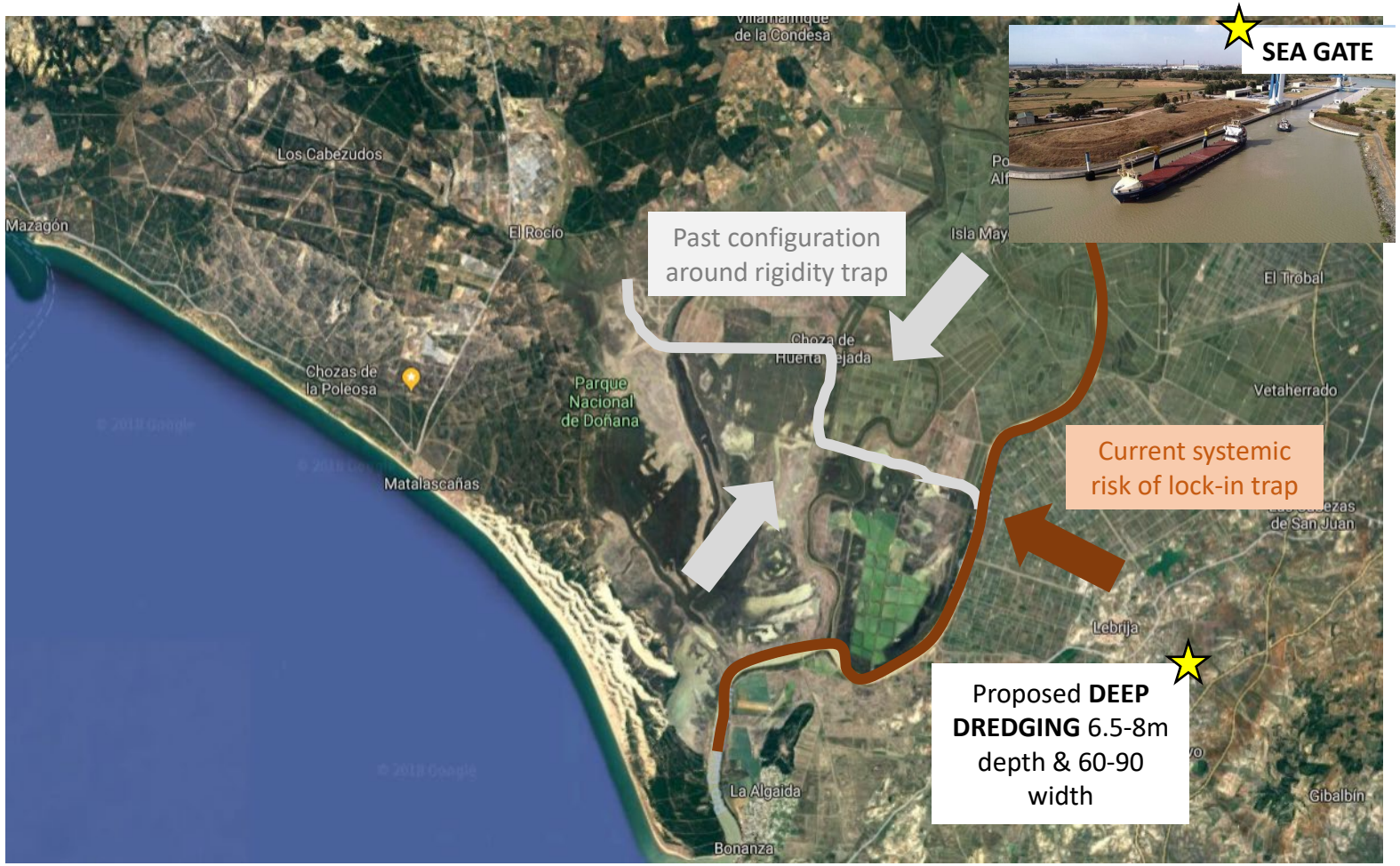


3. Key results from 3rd & 4th research iterations



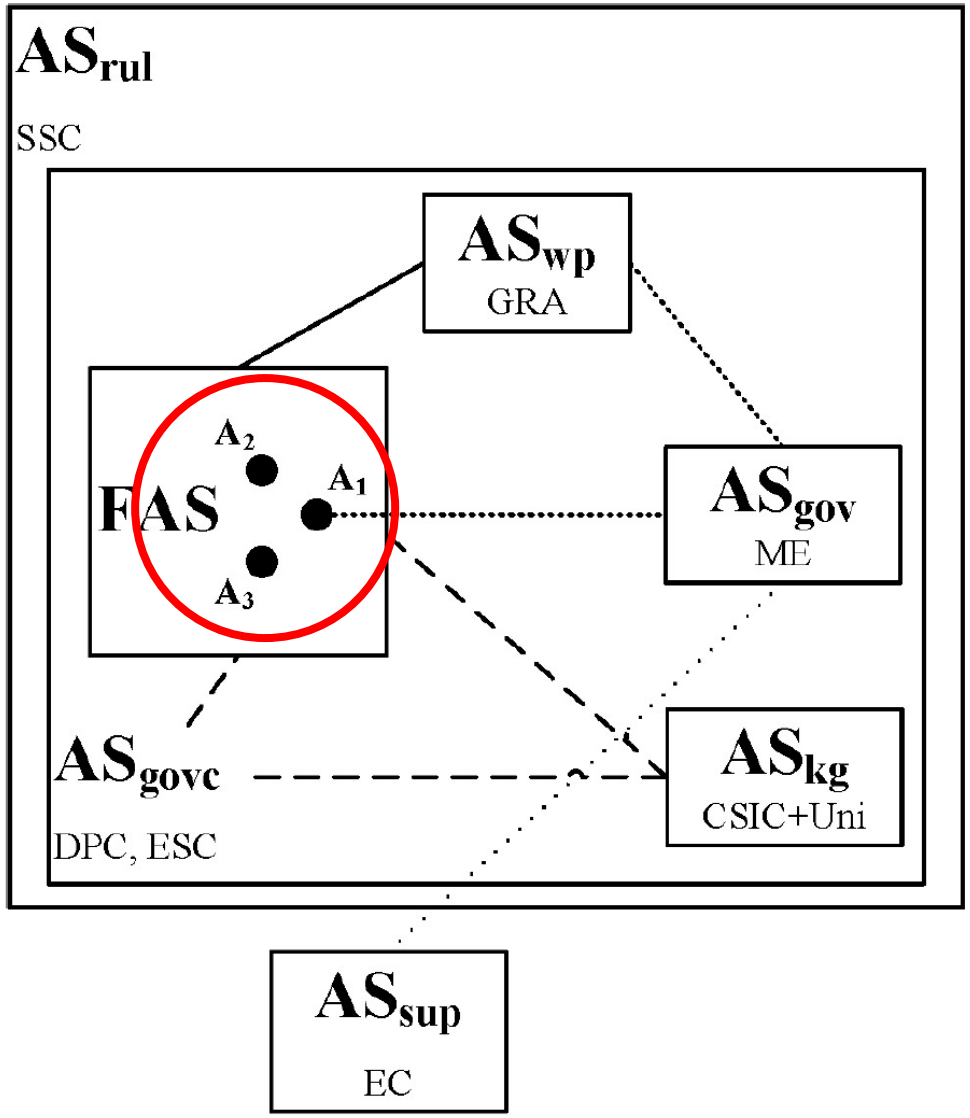
Recap: IMAP megaproject, disturbance posing systemic risk

- Unfounded assumptions of best socio-economic development
- **CSIC study (2010)**: (1) limited resilience to new human or natural forcings; (2) overall socioeconomic-conservation optimization not possible; (3) cumulative impacts could worsen socioeconomic prospects



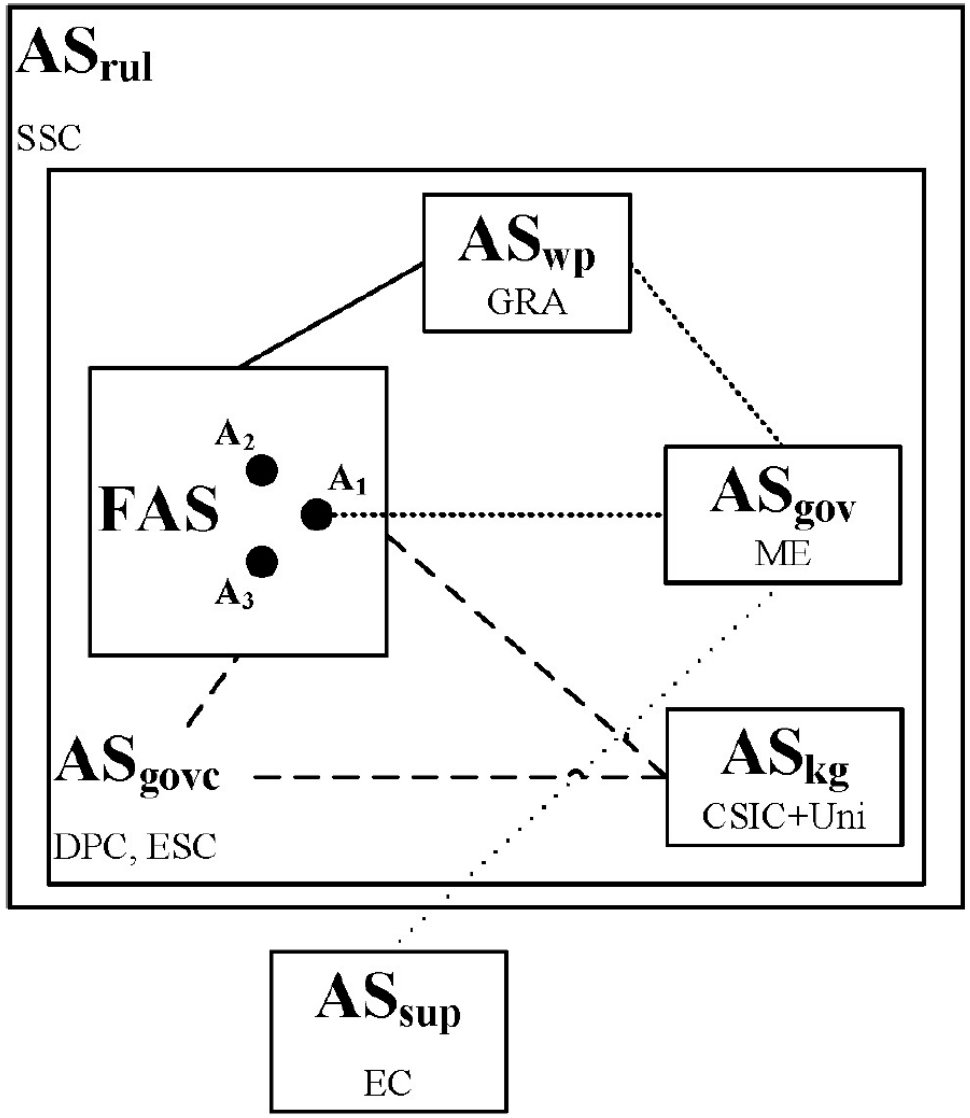
3 main actors in the FAS (micro level):

- **A1** - Port Authority: development, planning & management of port activities
- **A2** - Rice Growers: farmers organized in cooperatives
- **A3** - Nature Stewards: preserve healthy ecosystems (WWF, Doñana Participation Council, aquaculture operation)



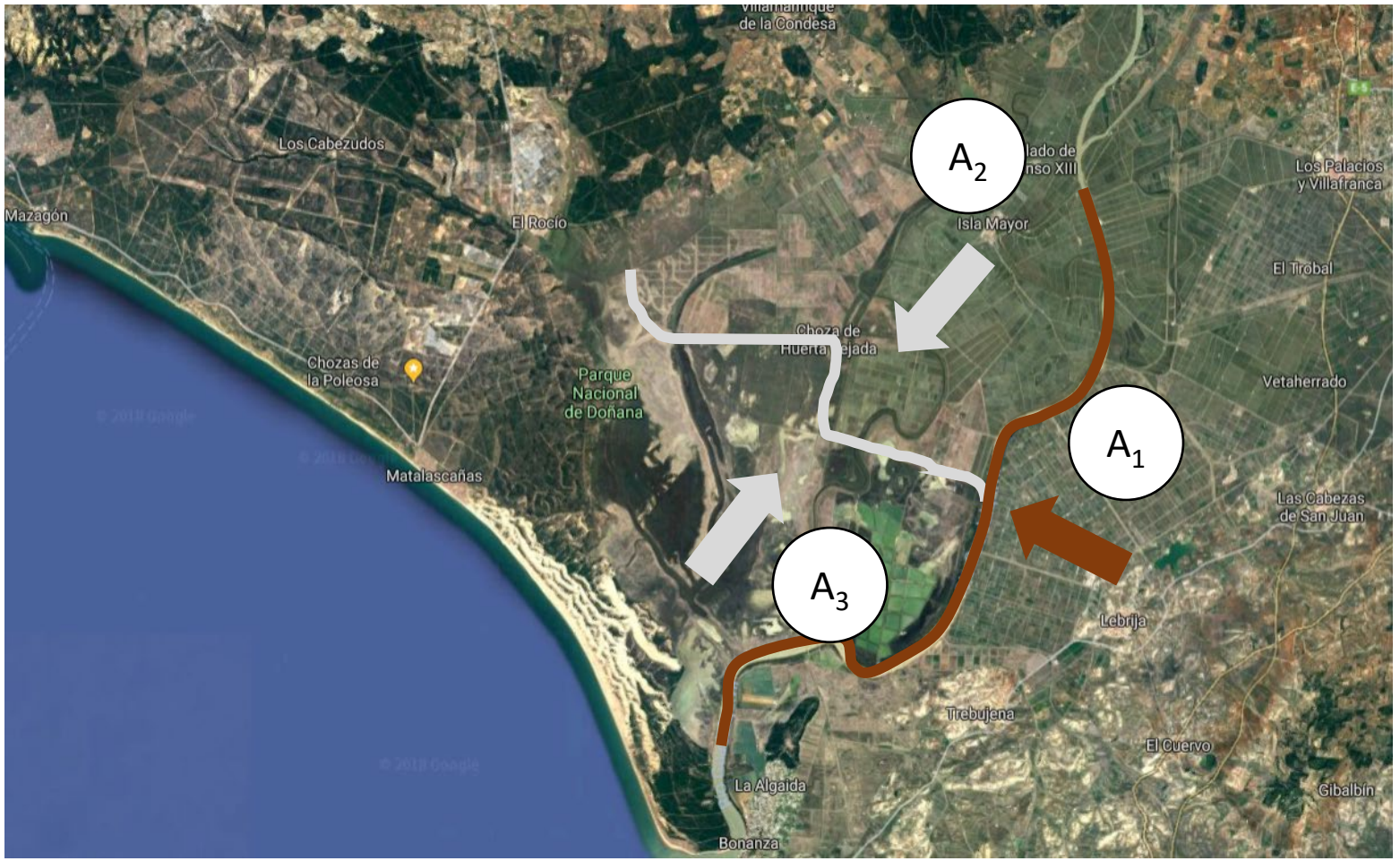
6 linked adjacent action situations (meso level):

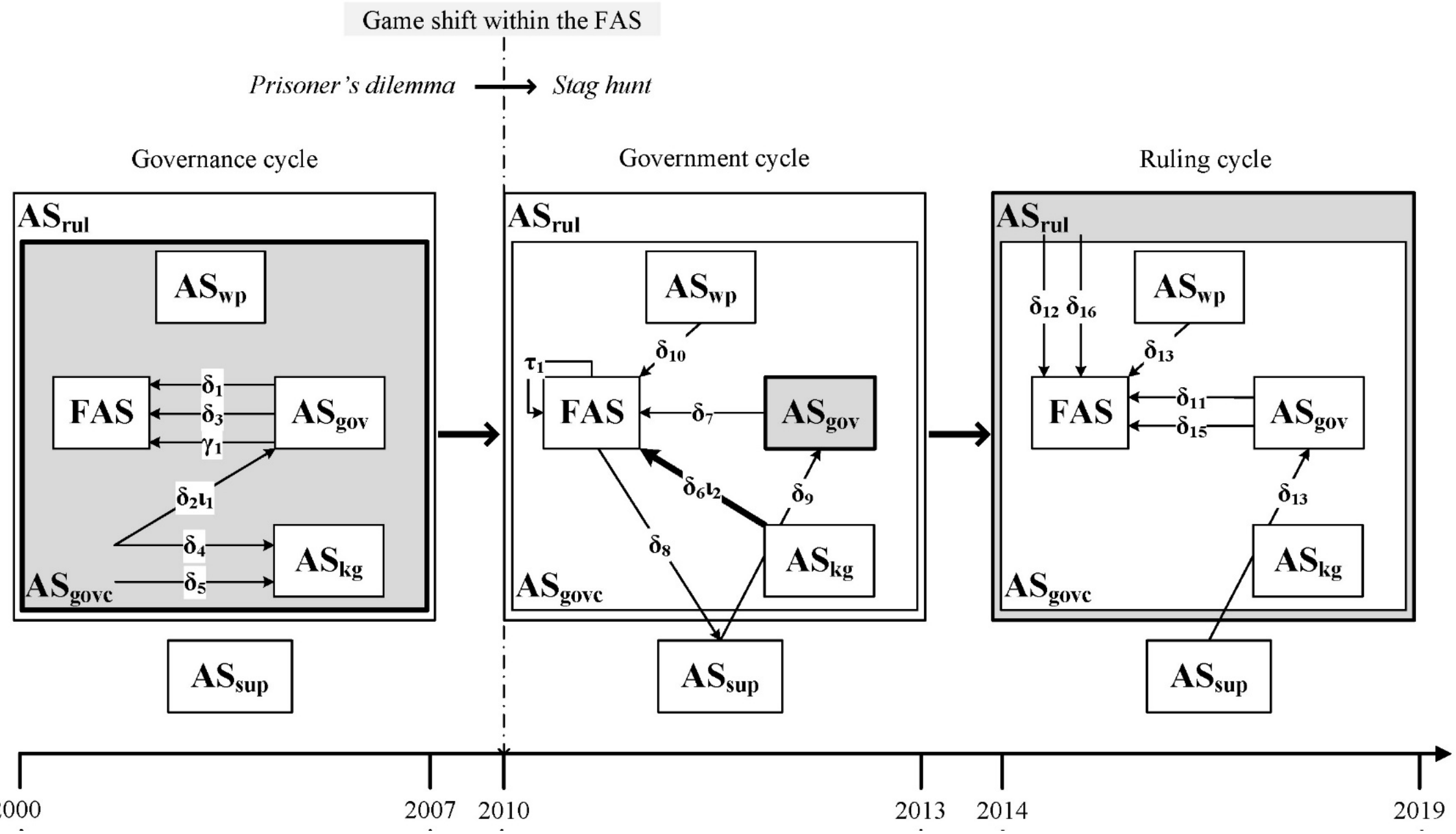
- Higher constitutional level:
  - Ruling (Spanish Supreme Court) – **AS_{rul}**
  - Supranational Government (European Commission, EU directives) – **AS_{sup}**
  - Government (Ministry of Environment) – **AS_{gov}**
- Collective-choice level:
  - Water Planning (Guadalquivir Water Authority) – **AS_{wp}**
  - Knowledge Generation (CSIC & Universities) – **AS_{kg}**
  - Governance (Doñana Participation Council & Estuary Scientific Commission) – **AS_{govc}**



Initial conditions (before 2000)

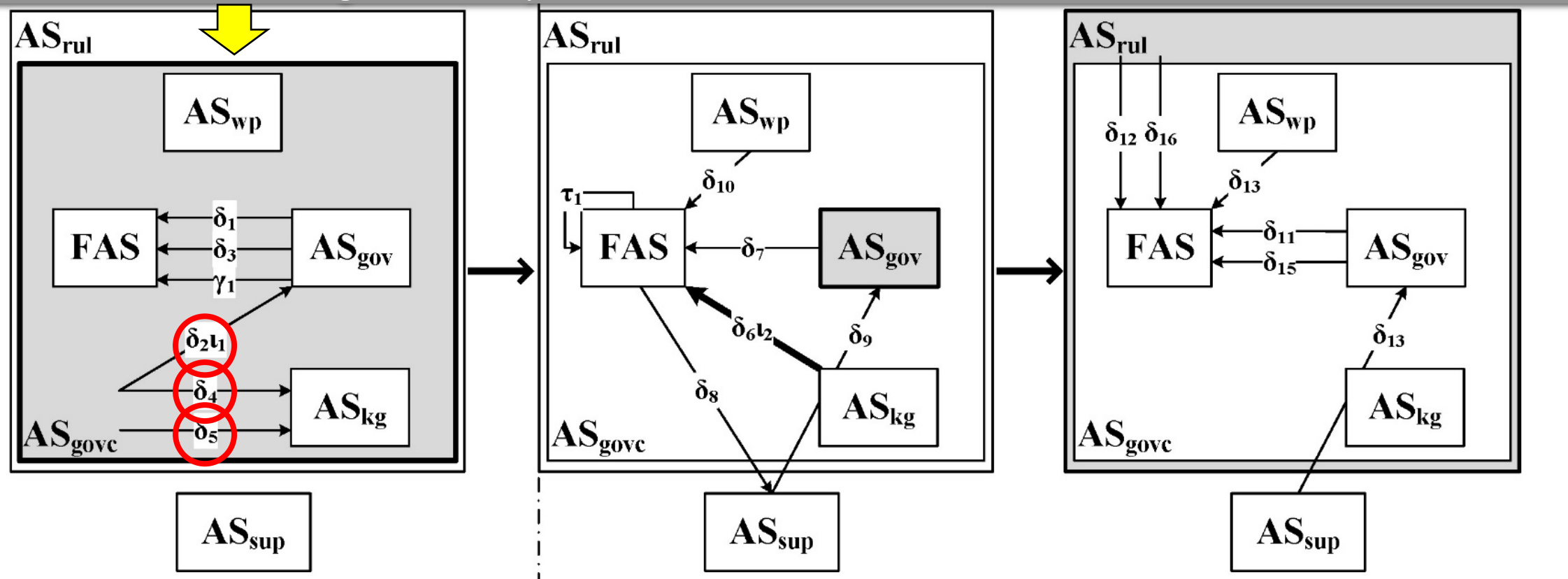
- The actors seem to have co-existed in a regularized pattern of expectations and strategic interactions ('grey equilibrium)
- Stabilized by infrastructure, governance and institutional mechanisms
- Regular shallow dredging measures since 1985




Game shift within the FAS
Prisoner's dilemma
Stag hunt
Governance cycle
Government cycle
Ruling cycle
ASrul
ASwp
FAS
ASgov
ASkg
ASgovc
ASsup
δ1
δ3
γ1
δ2ι1
δ4
δ5
τ1
δ10
δ7
δ6ι2
δ9
δ8
δ12
δ16
δ13
δ11
δ15
2000
2007
2010
2013
2014
2019

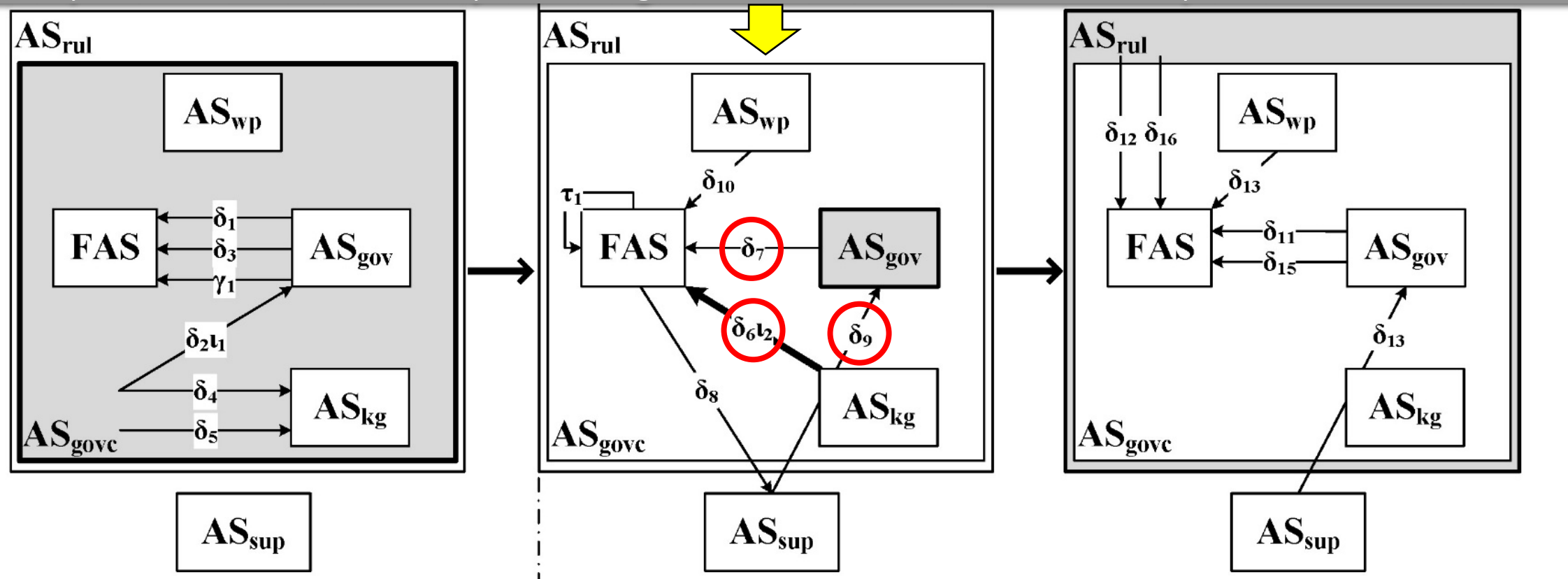
Governance cycle

- Triggered by Doñana Participation Council rejection of IMAP megaproject and creation of Estuary Scientific Commission
- Closes with commissioning of CSIC study



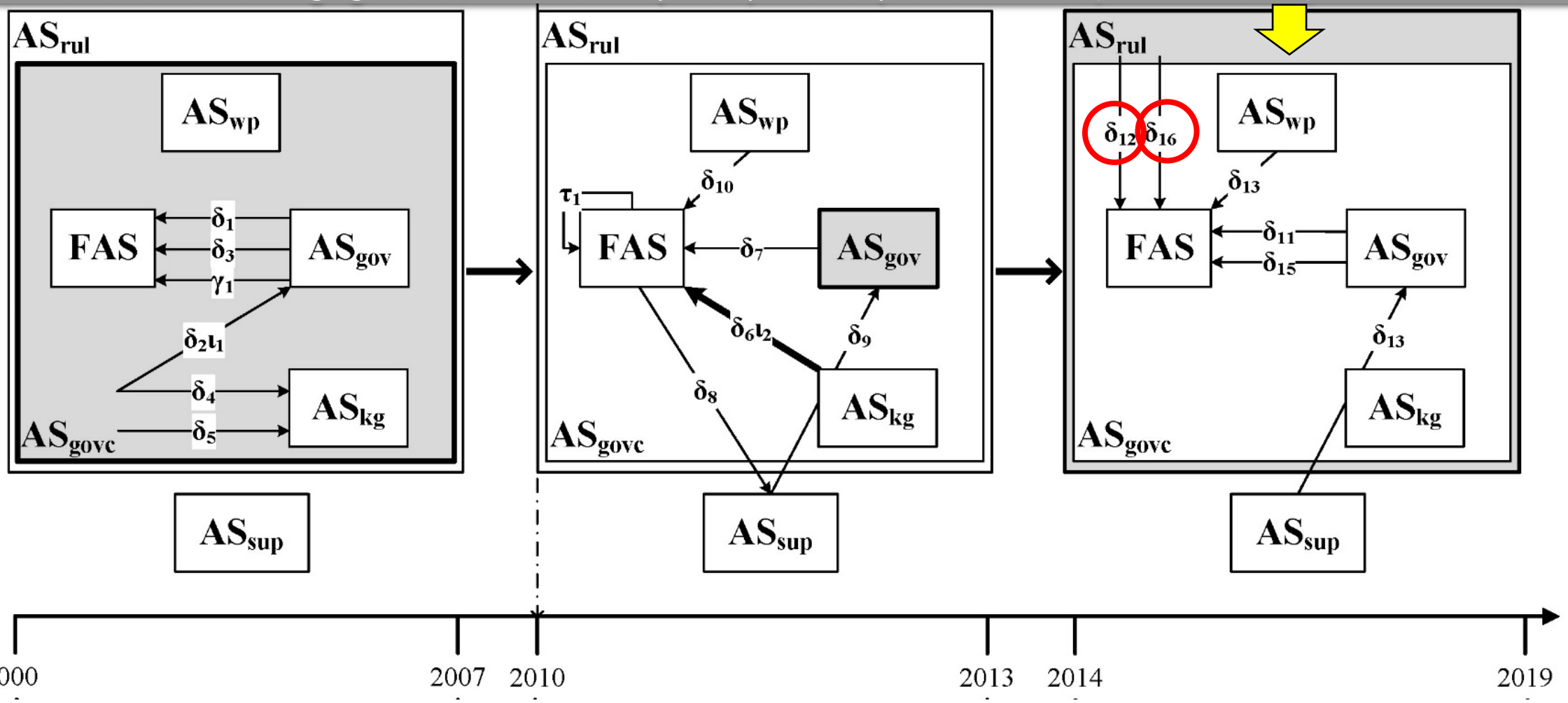
Government cycle

- Triggered by publication of CSIC study
- Sets up into motion national and supranational governmental reactions and formal complaints from Nature Stewards



Ruling cycle

- Triggered by inclusion of DDM in two subsequent Guadalquivir River Water Plans (2013 and 2016)
- Both entailed sentencing against such inclusion by the Spanish Supreme Court in (2015 and 2019)



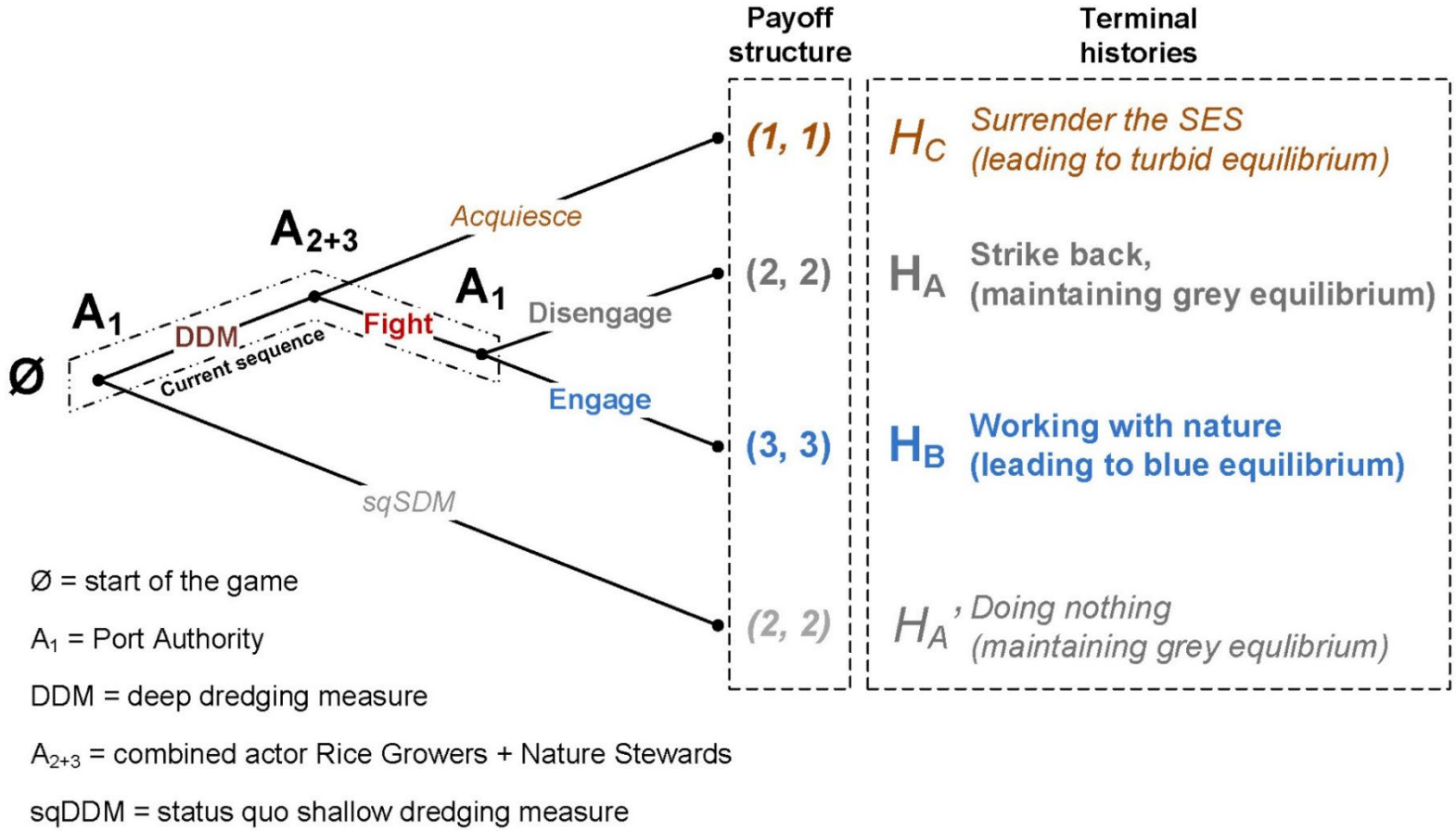
Prisoner's dilemma (2000-2010) – defection strategies

Port Authority (A_1) → choice to maximize economic targets

Rice Growers (A_2) → lobbying for alternative hydraulic megaproject

Nature Stewards (A_3) →control to isolate wetlands, aquaculture from estuary

Stag-hunt (assurance) game (2011-?) – coordination failure?



3rd ITERATION

Key insights

- Prisoner's dilemma reflects on propensity to fall back to regularized pattern of expectations and strategic interactions (unstable **'grey equilibrium'** [2,2])
- CSIC study as informational-institutional linkage **reducing uncertainty and changing underlying rules of the game**
- Stag-hunt game reflects on (1) propensity to **'grey equilibrium'** (imperfect information, payoffs from defection) but (2) an informed situation with potential to achieve higher **'blue equilibrium'**, although dominated by risk [3,3]
- 'Grey equilibrium' seemingly advantageous, but fragile stalemate → disturbance can trigger below-sub-optimal 'turbid equilibrium' [1,1] → tighter command-and-control, higher SES risks, asymmetric social dilemmas
- Game of conflict (prisoner's dilemma) seeming ***rational*** behaviour → Common interest game (stag hunt), persistence of Port Authority and tolerance of Water Authority appears as ***irrational*** (odd game outcome)
- A more nuanced explanation **requires entering power into the analysis**

The how and why of persistent and tolerant behaviour

- Power by design: both PA and RA backed by their respective national government mandates, executed despite general disproof of IMAP megaproject
- PA showed pragmatic power stemmed from misdirected power-by-design, through feigning ignorance of the megaproject's negative forecasted impacts
- RA clearly marked by a non-decision-making attitude, running counter to EU regulations
- PA also showed framing power in using questionable grounds to characterize the IMAP megaproject as a panacea for socioeconomic development, an attempt to disrupt formal rules such as EIA
- Why? In part, hegemonic hydraulic mission discourse operating from the political-economic context at national level (2nd RI), mobilizing discursive power top down and signaling increasing-returns

4th ITERATION

- Ubiquitous command-and-control traits in Doñana's water resources and wetland conservation governance
- Entrenched contest between economic-development and protection-for-conservation discourses, imbued with hydraulic mission ideas and ways of thinking
- Novel ideas and narratives can be rapidly cancelled out by dominant discourses
- Doñana's governance configuration prevents the further deterioration of water resources and ecosystems
- Presence of diverse paradigms and views proposed by various actors (e.g., protection-for-conservation model, ecological restoration, sustainable development, return to past natural equilibrium, renewables, working with nature)
- Wealth of "latent pluralism" stemming from, e.g., hydro-ecological restoration projects, participatory action research, ecosystem services, traditional ecological knowledge, collaborative adaptive management, social-ecological research)

- Meso-level mechanisms (increasing returns, discursive power) interweave with micro-level strategic interactions and agency-based forms of power
- Key power fronts recurrently counteract each other over time, unable to scape current stalemate (‘grey equilibrium’)
- Double-edged sword: actor coalitions can prevent lock-in (stabilize rigidity), but also block collective action to pursue a sustainable outcome
- Premature rationality assessments might result in ***not*** getting the incentive or rules right, triggering misaligned SES institutional fit or precluding transformative policies
- Understanding governance and politics of sustainability pathways is imperative, the wrong configuration might lead to inescapable states
- Higher (‘blue equilibria’) situations must be coordinated assuming risks for all actors involved
- NAS-power approach used well equipped to inform policy and institutional designs targeting richer causal mechanisms (meso- and micro-level) underlying behaviour and dilemmas

- Latent pluralism might be expanded and mainstreamed to escape undesirable SES traps by reflecting on state-of-the-art concepts currently operating on the ground
- Governance experimentation should be nurtured through the engagement of diverse actors and the protection of innovations set in motion by new networks emerging from these spaces
- First- and second-order learning accounting for power asymmetries, and mitigating actor expectations, are key ingredients that contribute to reorienting discourse and changing governance
- All this would make transformed discourses and governance configurations more likely to advance sustainability initiatives that are widely accepted by multiple actors

Thank you for your attention!
Questions?