ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Jeremy Gault, Andy Scollick, Val Cummins
Coastal & Marine Resources Centre, UCC

Reflections on Implementing the Systems Approach in an ICZM Rich, Data Poor Location (Cork Harbour)

The GOOD, the BAD and the OUTCOMES

SPICOSA CONFERENCE: Malta 9th November 2010

SPICOSA

SIXTH FRAMEWORK PROGRAMME

GOOD: SITE DESCCRIPTION

Ireland

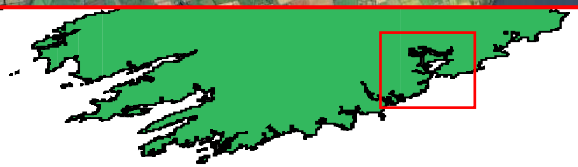
- Economic Growth
  - Now cancelled
- Increasing Pressure
- Population
- Wealth

Part of Europe

- Legal Framework
- Unique Identity

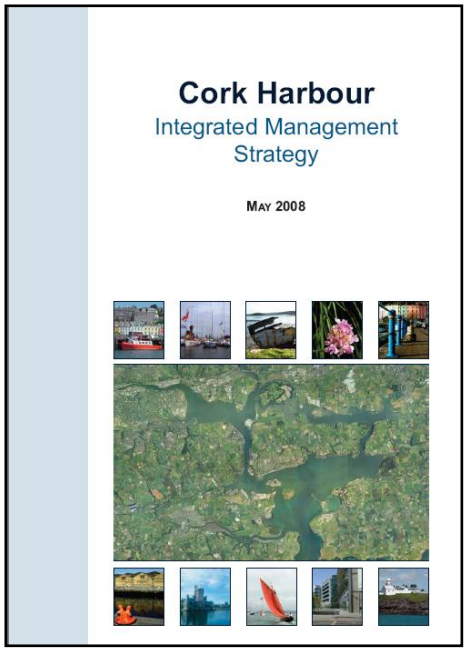
Cork Harbour

- Physical Setting
- Common Management Issues

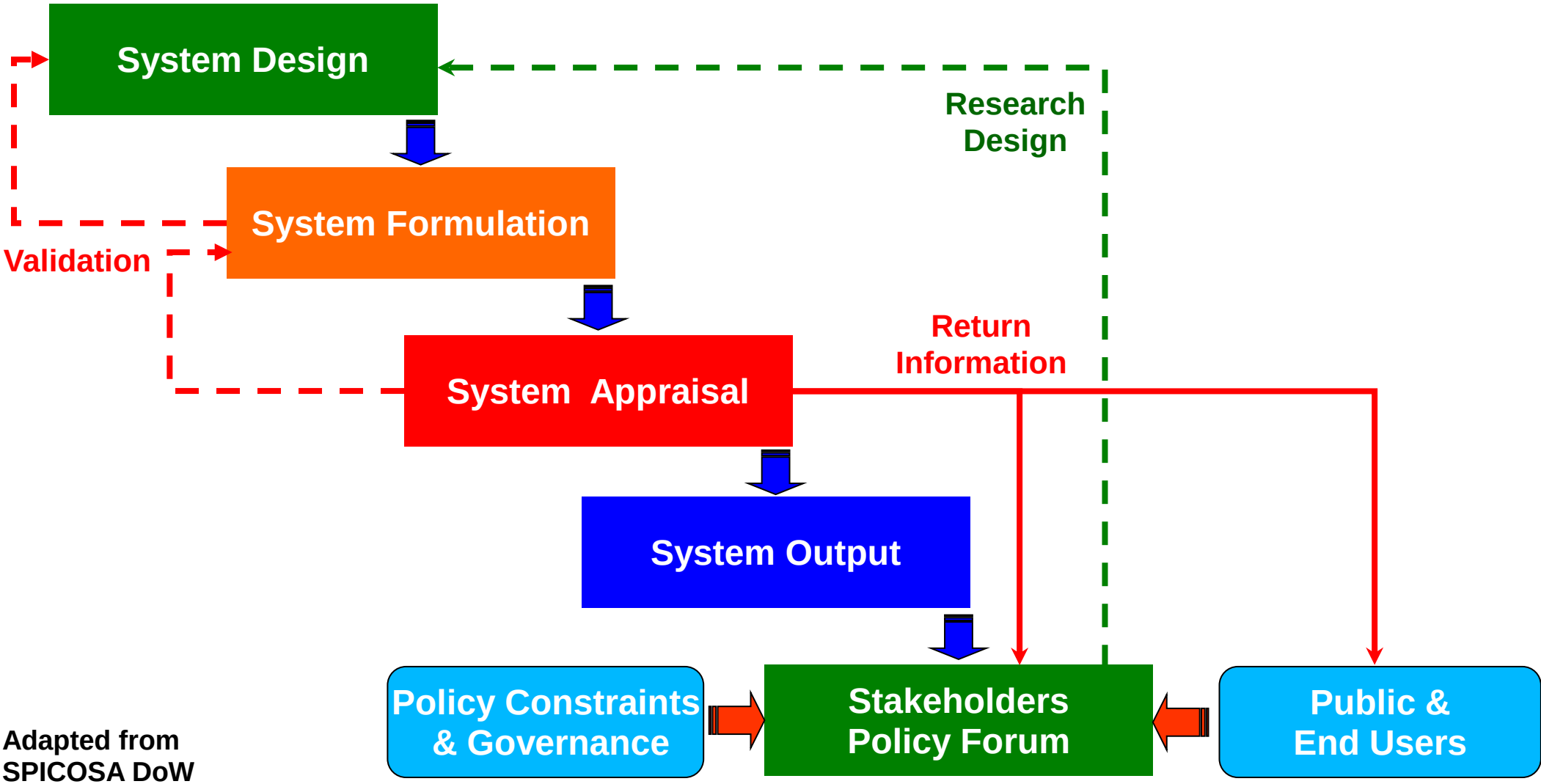


GOOD: EXISTING MANAGEMENT STRUCTURE

- Workshop 1 – Issue identification (June 06)
- Workshop 2 – Issues and Actors (October 06)
- Strategic Advisory Group (Feb 07 – Mar 08)
- Production of the Strategy Document (April 08)
- Launched by Micheál Martin, Minister for Foreign Affairs (May 08)
- Includes actions of direct relevance to SSA modelling *e.g.* data provision & warehousing

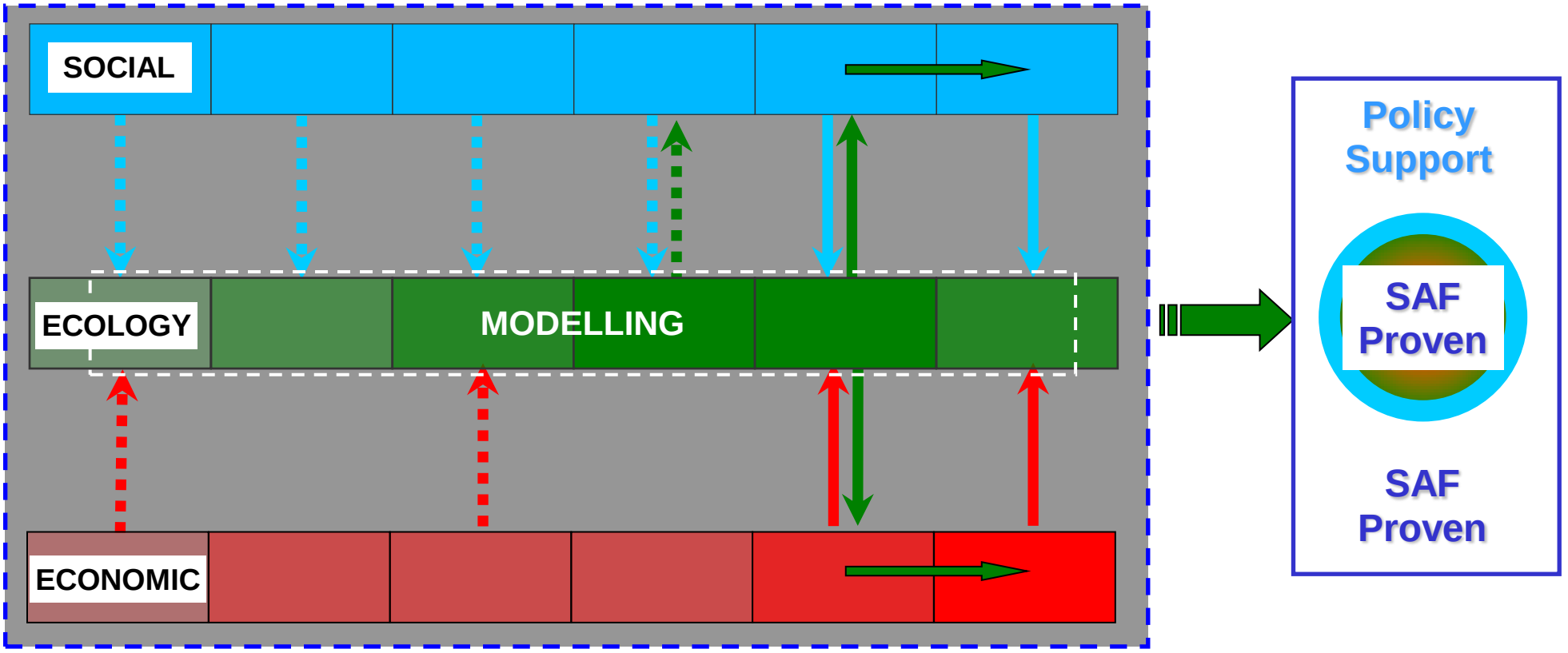


GOOD: SYSTEM APPROACH



Adapted from SPICOSA DoW

GOOD: IDEALISED MODELLING PROCESS



Aim – Improved Management of Cork Harbour

GOOD: SYSTEM DESIGN – Initial Issue description

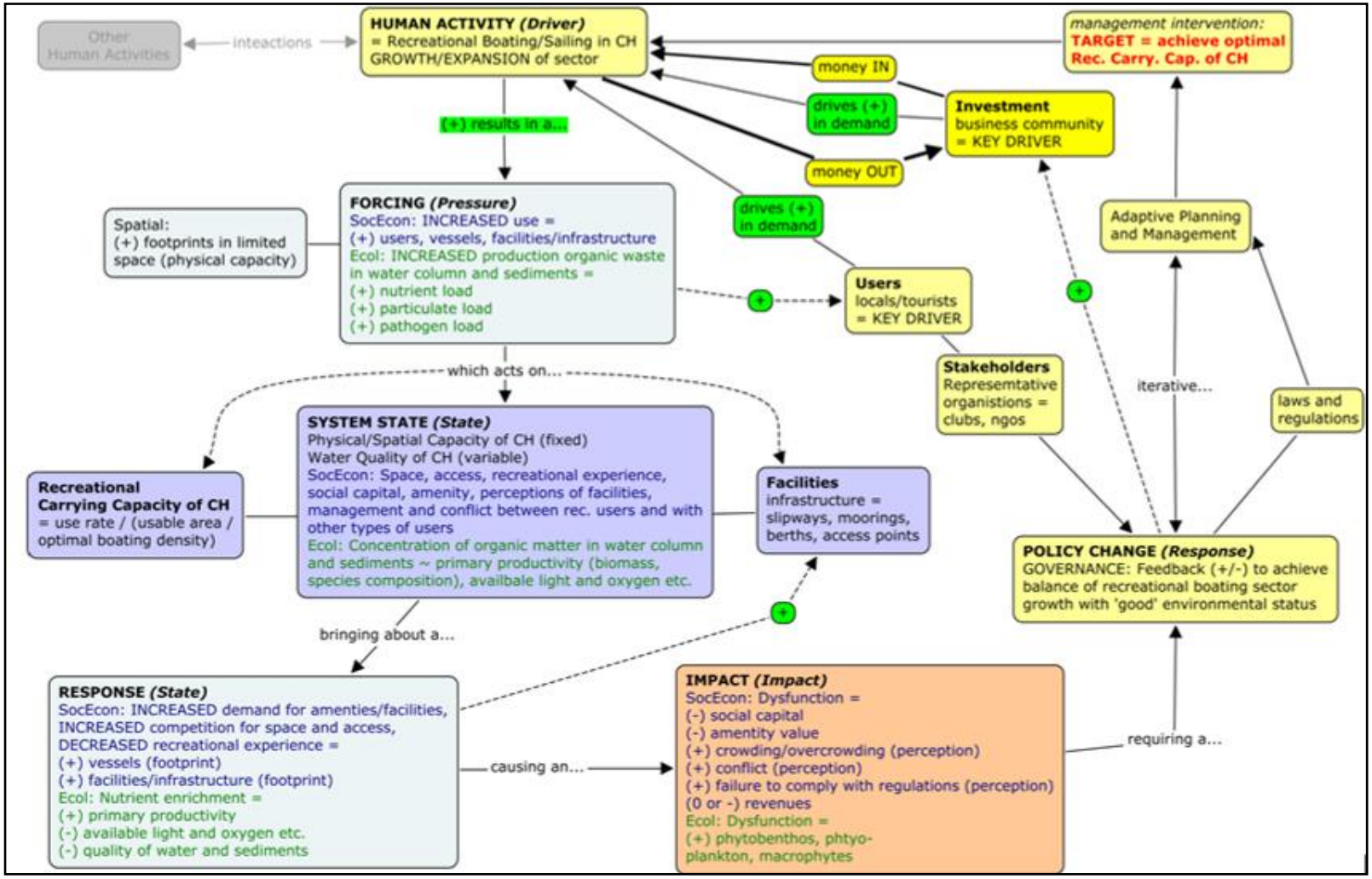
- Demand from local stakeholders interests to produce a planning policy to support sustainable **marina development** to facilitate an increase in the number of recreational boat users.
- This increase is limited by a (hypothetical) maximum (ecological / social / economic) capacity for recreational boating as:
  - if this is exceeded there is a potential effect on the ecological system as a result of the introduction of additional organic waste discharge (amenity degradation or exceed water quality legal levels-WFD)
  - if the boat numbers reach a level that negatively impacts on other users then there is a risk of conflict over the physical resource
  - there may be resistance from local populations to the type and size of any proposed development (*any proposed development?*)
  - Economic Demand / Economic Benefit

GOOD: SYSTEM DESIGN - Scenarios

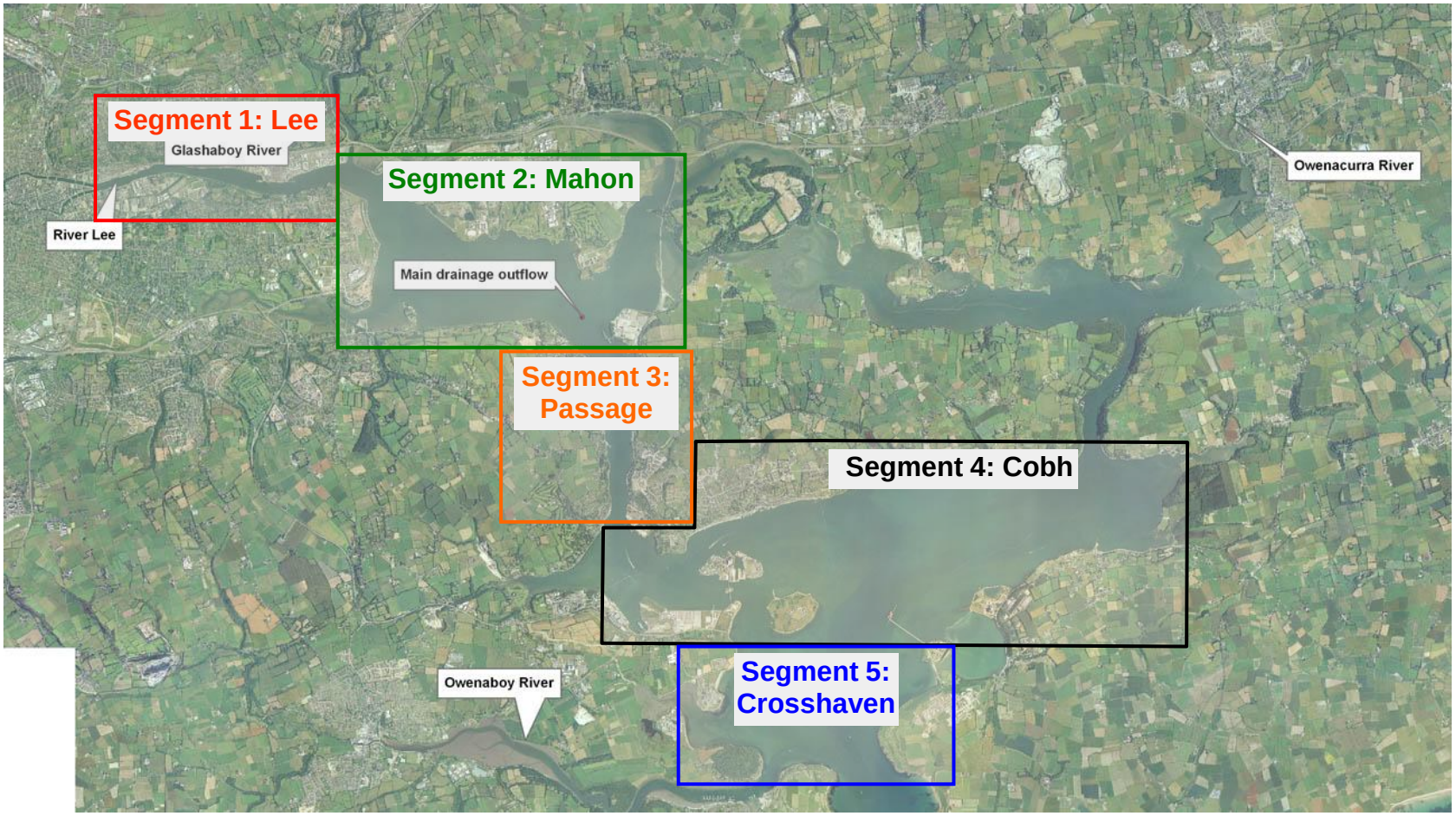
In terms of Cork Harbour policy-management scenarios, following consultation with decision-maker stakeholders, scenarios have been revised and limited to the following:

- Option A: Do nothing/business as usual; allow feedback loops to establish a 'balanced' outcome.
- Option B: Allow increase in recreational boating use; compensate for increased waste input by limiting or reducing other sectoral activities inputting wastes to water body.
- Option C: Allow increase in recreational boating use; prevent any increase in waste input by developing (enforcing) marina waste reception facilities or other such mitigation mechanism.
- Option D: Combination of B & C, allowing for inevitability that not all wastes from increased numbers of boats will be received at marina waste reception facilities.

GOOD: SYSTEM DESIGN - Revised conceptual model

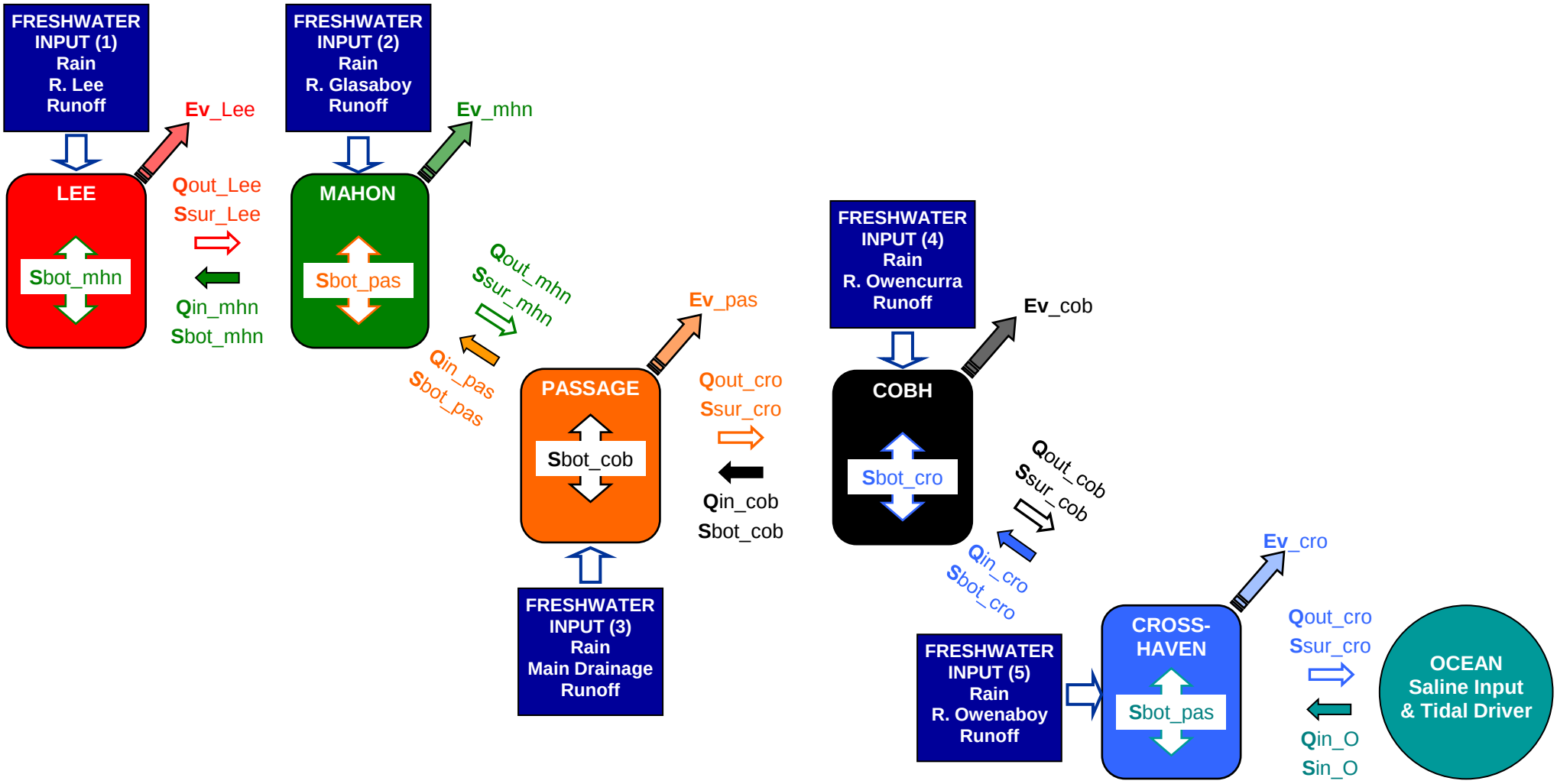


GOOD: INITIAL SYSTEM FORMULATION – Ecological Model Sectors



Ocean / Tidal Component

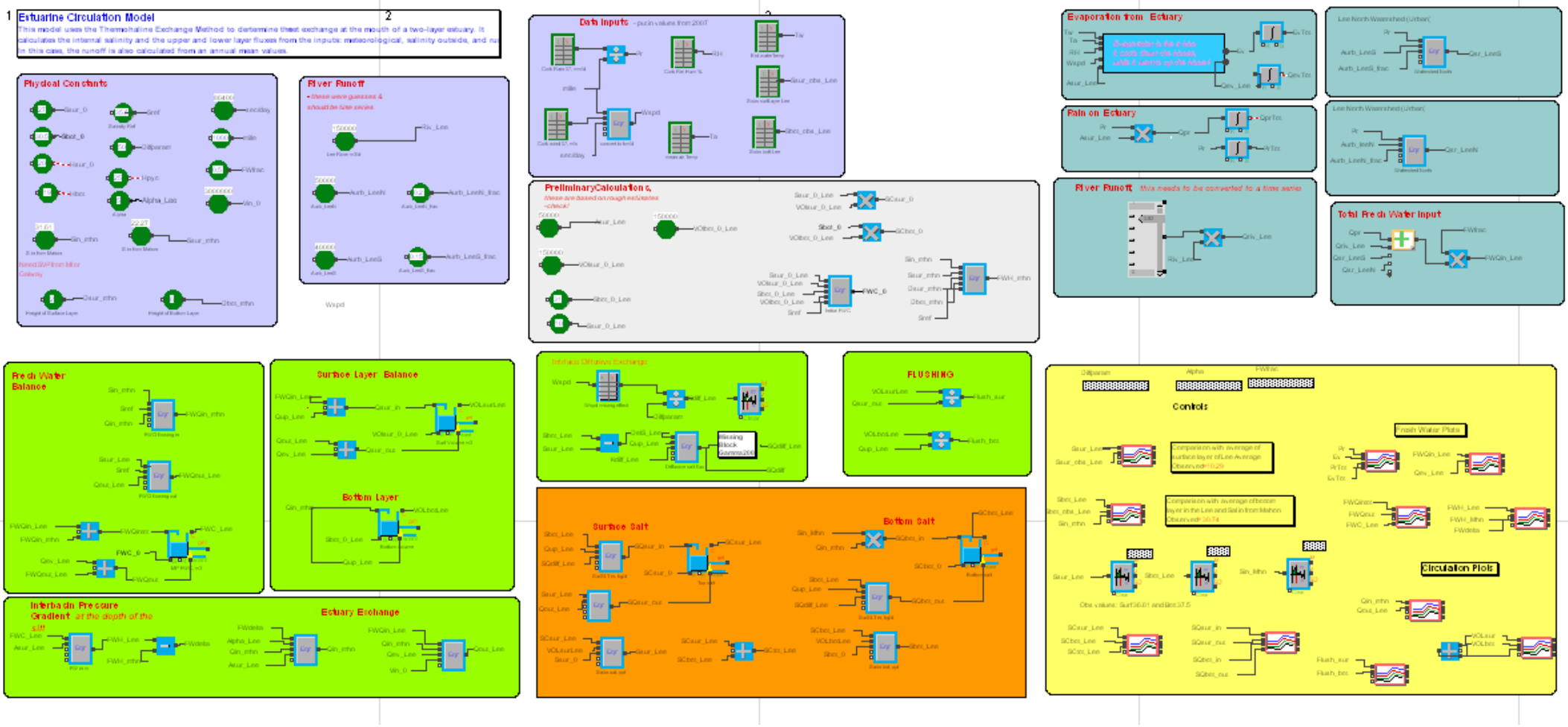
GOOD: INITIAL SYSTEM FORMULATION – Flushing Model



SPICOSA

SIXTH FRAMEWORK PROGRAMME

GOOD: SYSTEM FORMULATION - Modelling



SPICOSA

SIXTH FRAMEWORK PROGRAMME

FROM GOOD to BAD

ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

SPICOSA CONFERENCE: Malta 9th November 2010

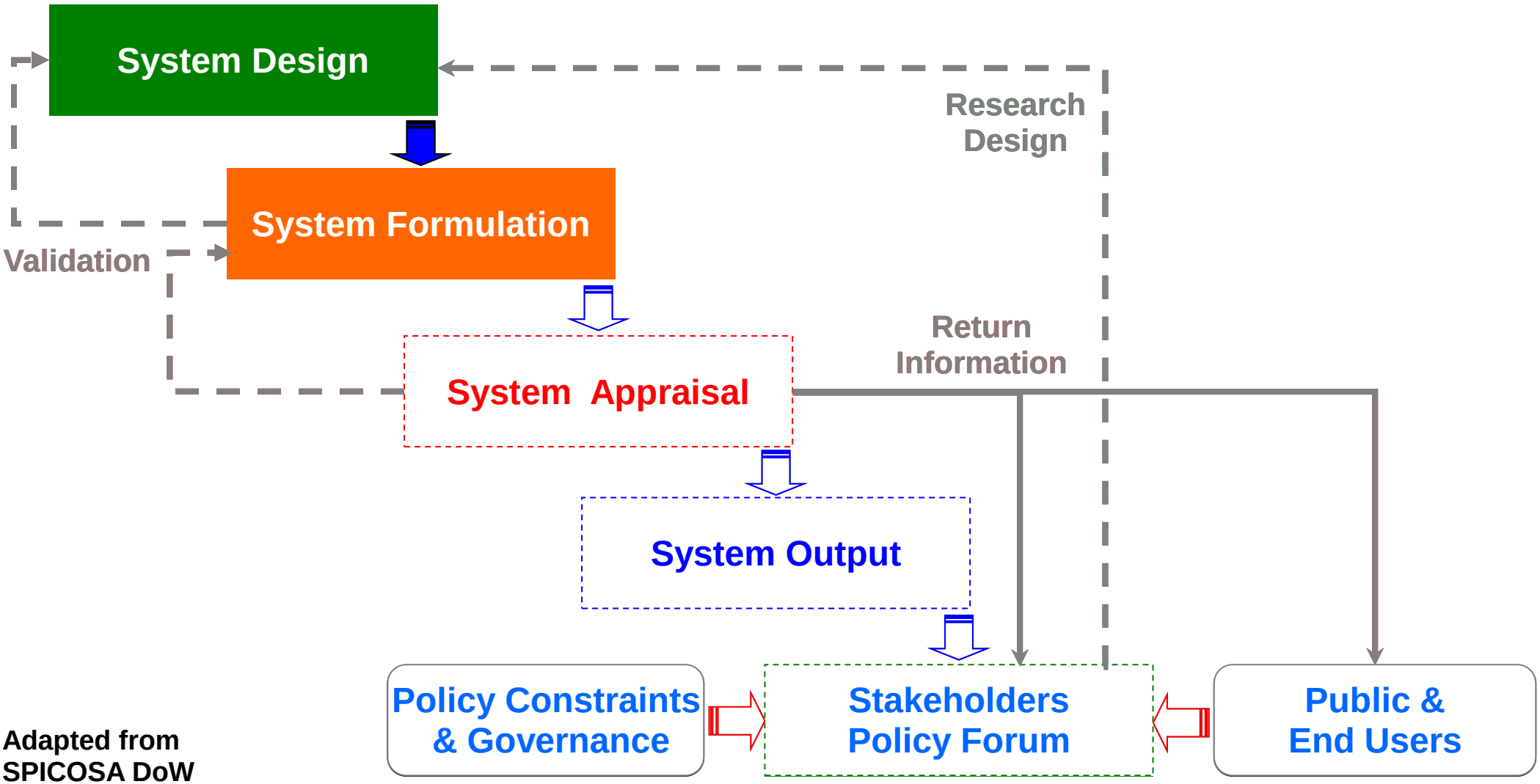
Reflections from Cork Harbour

CMRC

BAD: SYSTEM FORMULATION

- In Cork Harbour there was good fundamental physical data and this data did gave an insight into tides and flow rates, essential ancillary data such as stratification depths were unavailable
- Despite having good spatial coverage, the ecological time – series data required to accurately replicate the Harbour system wasn't available
- Coupled with this there was limited information regarding the public perception of marinas and the economic benefits of marina development – although studies commissioned as part of the project went some way to addressing the economic and social considerations
- Any model developed would be based on specific assumptions but as with all models the quality of the data in dictated the quality of the output generated
- Consequently there is a question of the integrity of the model and therefore the SAF process stalled

BAD: SYSTEM FORMULATION



Adapted from SPICOSA DoW

OUTCOMES: Local / National Considerations

- Given the existing high level of stakeholder involvement in Cork Harbour it was envisaged that the application of the SAF to support site selection for marina development would be a straightforward process
- What the attempted application of the SAF has revealed is that there is not enough data readily available to support qualified policy decisions
- For current planning and licensing purposes, ecological conditions are satisfied by site specific surveys which are commissioned as part of the environmental impact assessment for any new development
- Need to review why society accepts that policy decisions can be made with limited supporting data
- A lack of data shouldn't be a reason not to attempt to apply the SAF approach - SAF can be used to highlight key data gaps / need for policy in support of data collection

OUTCOMES: Local / National Considerations

- Having an existing Stakeholder Forum influenced how we engaged with them under Spicosa
- There is no perceived drive from society to conduct routine monitoring to collect background data in support of proactive management
- Society is prepared for policy decisions to be made in locations where the actual ecological background is unclear
- Persuade society to accept that science is essential but that it should drive debate and not just come up with an "answer"
  - *People accept that the weather forecast for last weekend was wrong but want scientists to indicate exactly what the temperature will be in 2050?*
- External forces, economic downturn mean that the potential to improve this lack of data supported decision making is limited in the short to medium term

OUTCOMES: Possible Reasons for Constraints

- Limitations of the legislative frameworks - Water Framework Directive – Nationally, Government agencies would argue that they are collecting data but there are differences in the approaches adopted
- Data collection is seen to be a national responsibility – European Funding does not appear to support generation of new data
- The SAF can form a vital tool as part of an ICZM process but as for ICZM it requires a strategic vision with respect to initiatives to support its key principles (for example, working with natural processes)
- Need to appreciate that physical systems are reasonably predictable, human behaviour not so – *the tide rarely goes out and then decides to stay out?*
- Any change would require political buy-in to secure capital and recurring budget costs - need society to force ecological monitoring onto the political agenda and for that to happen the scientific community have to provide a coherent argument of the benefits (society/economy/ecology)

OUTCOMES: REAL-WORLD APPLICATION OF THE SAF

System Design

System Formulation

System Appraisal

System Output

Policy Constraints & Governance

Stakeholders Policy Forum

Public & End Users

Research Design

Validation

Return Information

Adapted from SPICOSA DoW

OUTCOMES - MODELLING PROCESS – Aspirational?

SPICOS-OPIA