

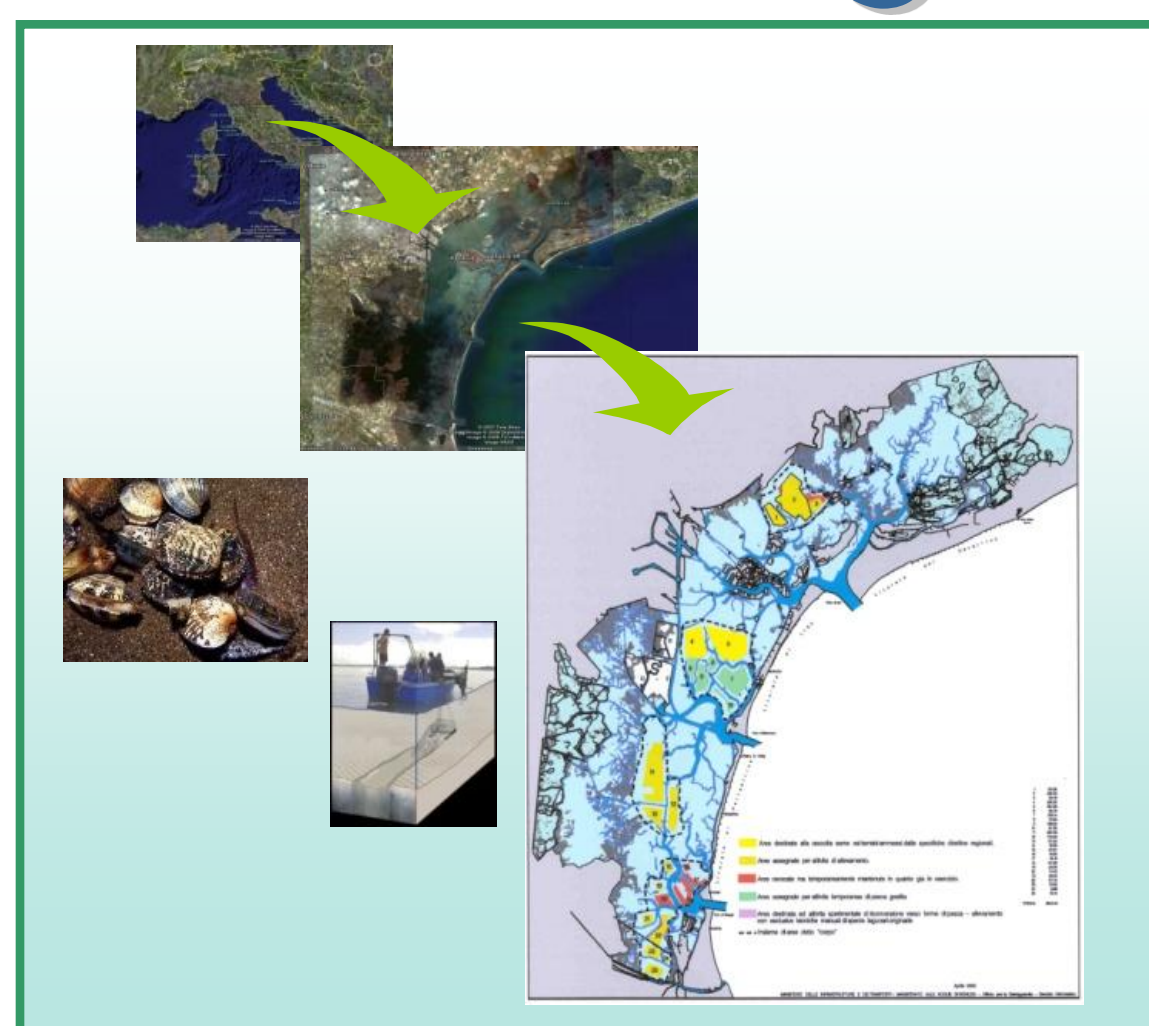
SPICOSA is an EU Integrated Project in the framework of the VI FP that will strengthen research throughout the European Region and produce products useful to society. The **project's goal** is to create a self-evolving, operational framework for delivering prognostic assessments of policy options for the sustainable management of coastal zones.

SPICOSA will test and improve the SAF in 18 Study Site Applications (SSAs) all over Europe. In order that the SAF become an operable tool for both Science and Policy, demonstrating its applicability to Integrated Coastal Zone Management over a wide variety of coasts that differ in geomorphology, environmental conditions, culture and human activities.

The methodological product is called **Systems Approach Framework(SAF)**, that will develop a balance among **Ecological, Social and Economic (ESE)** sectors of Coastal System, expanding the conventional application of the System Approach to the larger CZ System. By employing the integrated ESE model, SPICOSA will increase the potential for quick evaluation of policy changes.



Venice Lagoon Sustainable management of the clam *Tapes philippinarum*



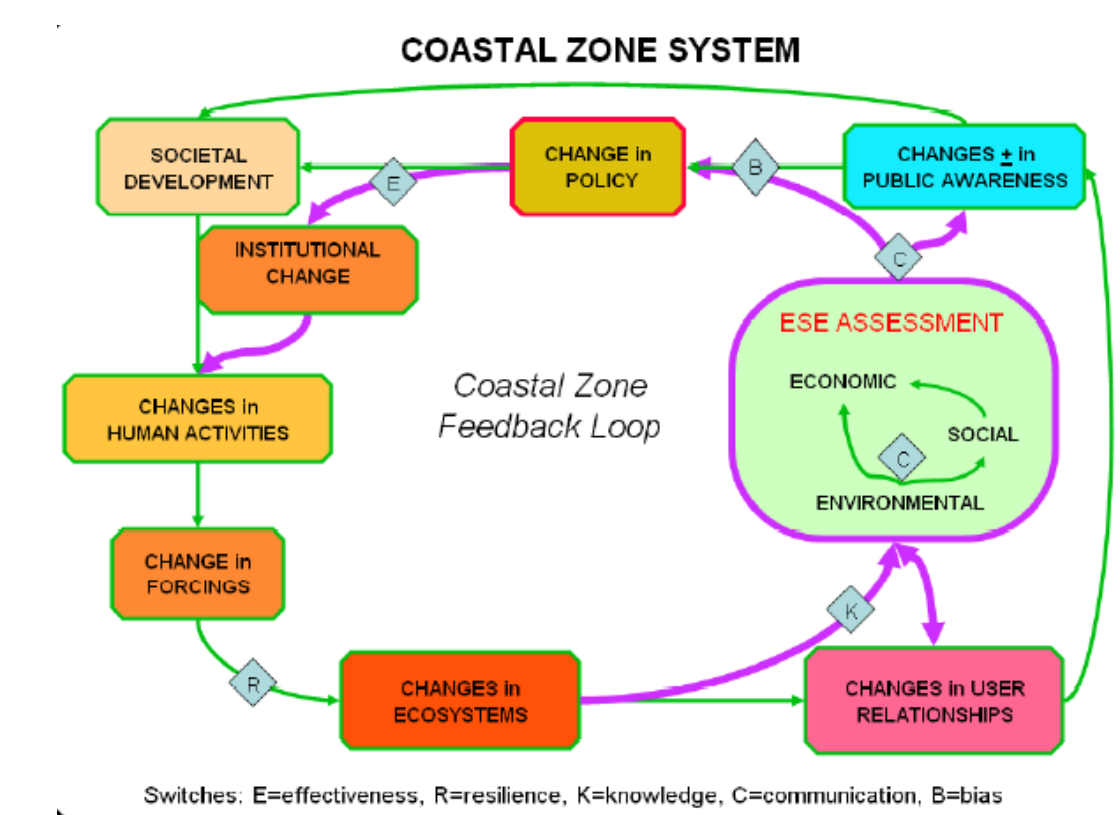
issue

Acquaculture of *Tapes philippinarum*

goal

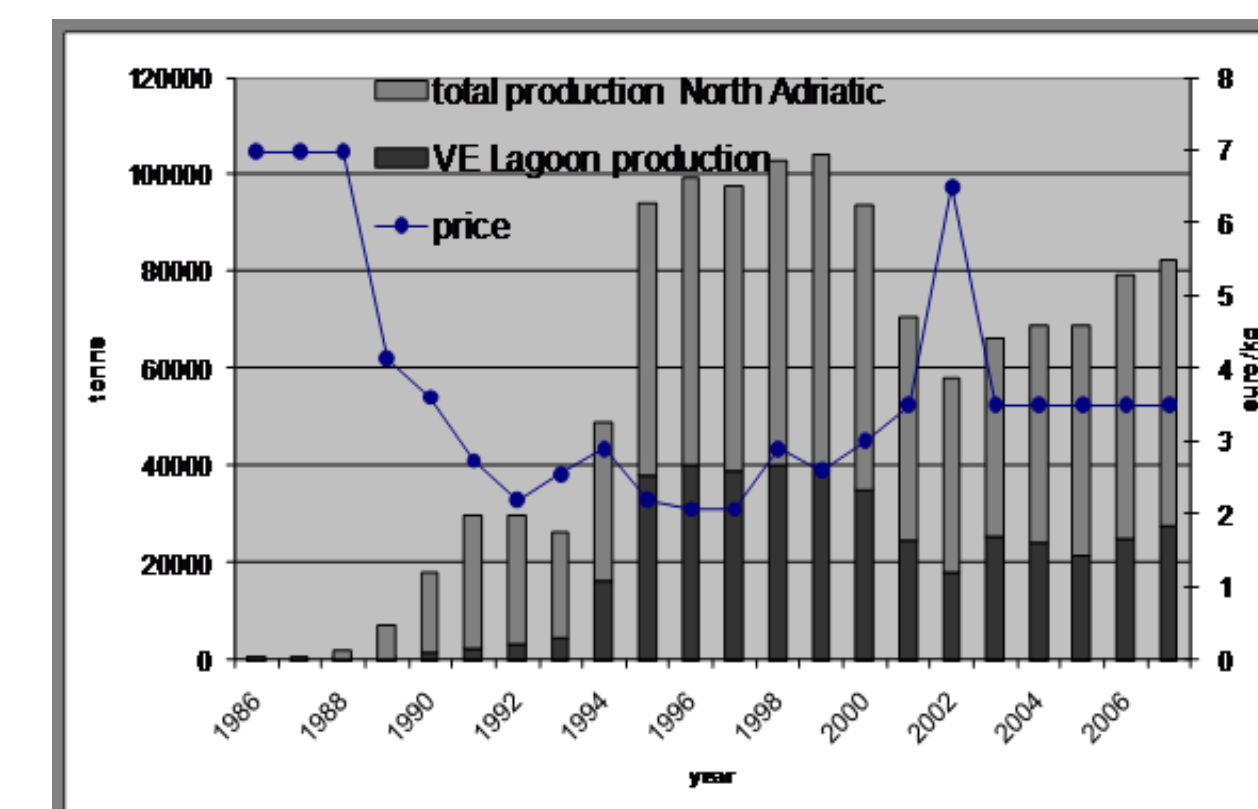
Sustainable use of Lagoon Ecosystem and *Tapes philippinarum* stock exploring the sensitivity of the system to:

- Changes in biological parameters (density, mortality rate)
- Changes in economic parameters (external costs, fishing strategies)
- Size and location of the areas under concession
- Changing Climate Scenarios



History

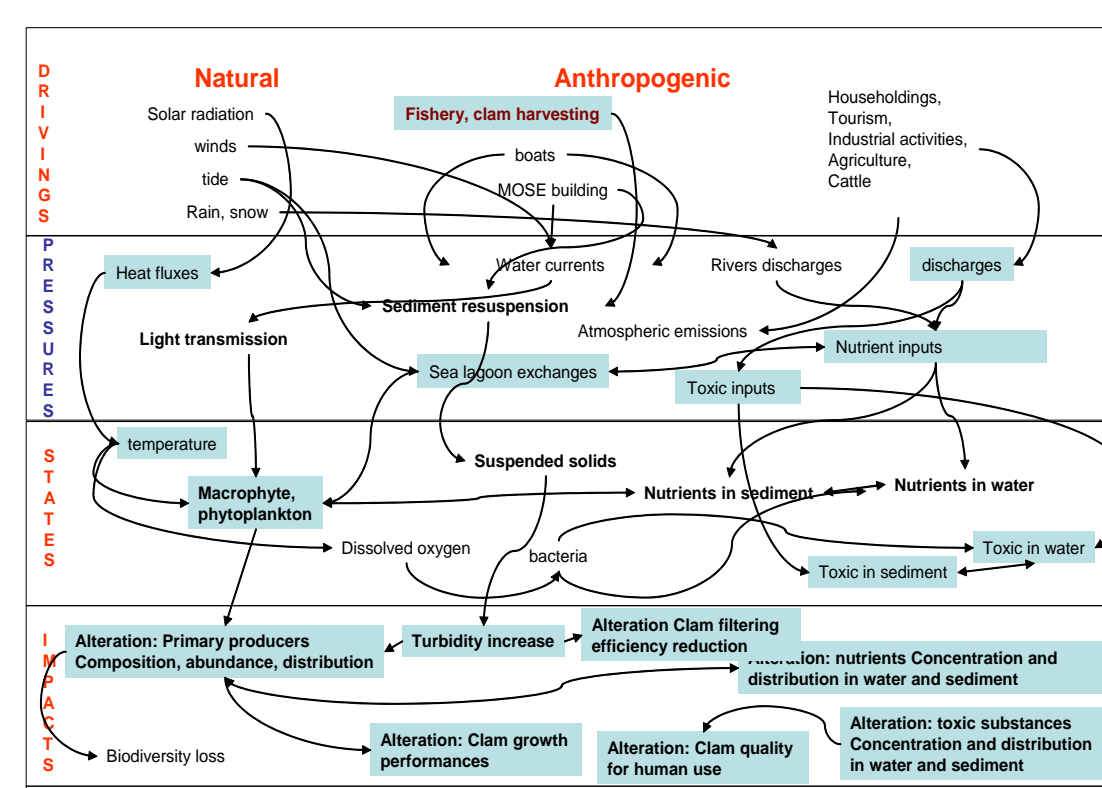
- 1983: *Tapes philippinarum* introduction
- 1983-1990 clam colonisation
- From1990: fishermen started to fish in open access regime/ social tensions/poor quality
- 1999: catches decline
- 2001: allocation of aquaculture concessions
- 2005: extension of aquaculture concessions
- Negative impacts: sediment resuspension, benthic habitat alteration
- Economic Relevance: 60% of national production
- Number of fishermen: around 1000;
- estimated gross annual production: 180 Million Euro



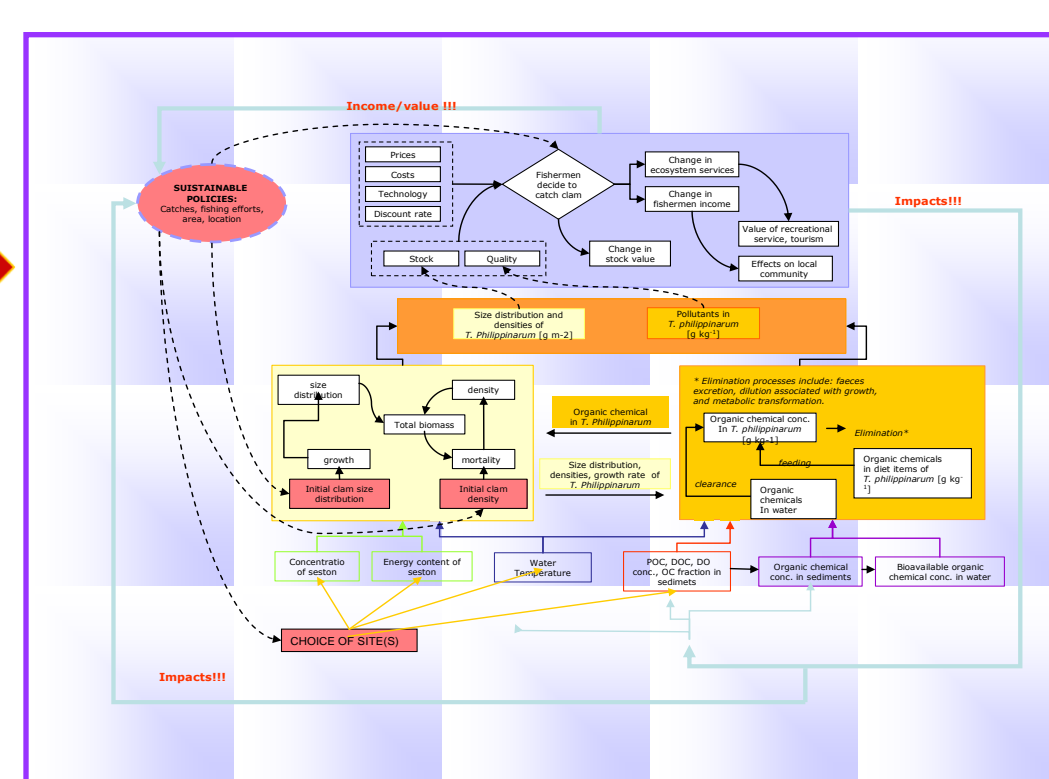
Systems Approach Framework(SAF)

1. DESIGN STEP
Ecological
Social
Economic

DPSIR-Drive, Pressure, State, impact, Response



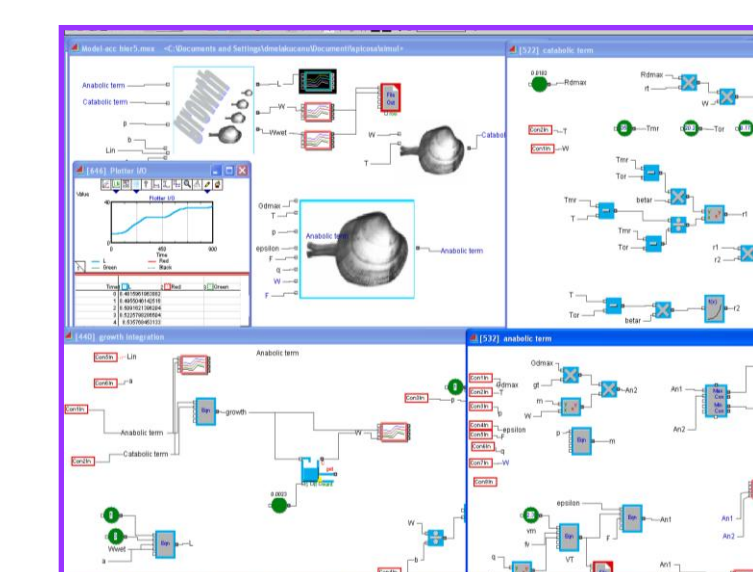
Conceptual model



2. FORMULATION STEP
Ecological
Social
Economic

integrated model developed using Extend software, able to simulate and assess:

- PRODUCTION
 - QUALITY
 - FISH MARKET
- under different scenarios

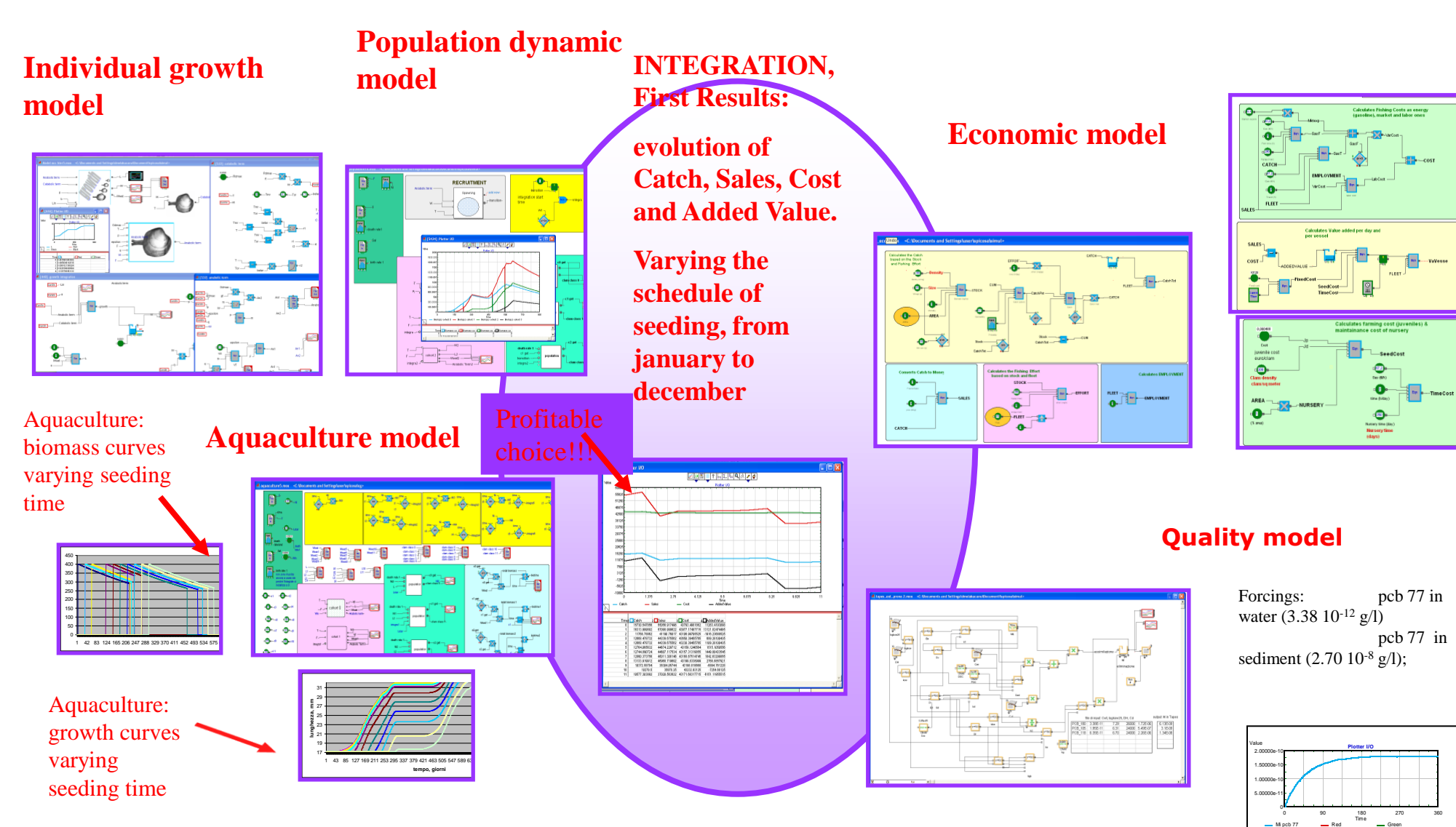


Modelling tools:

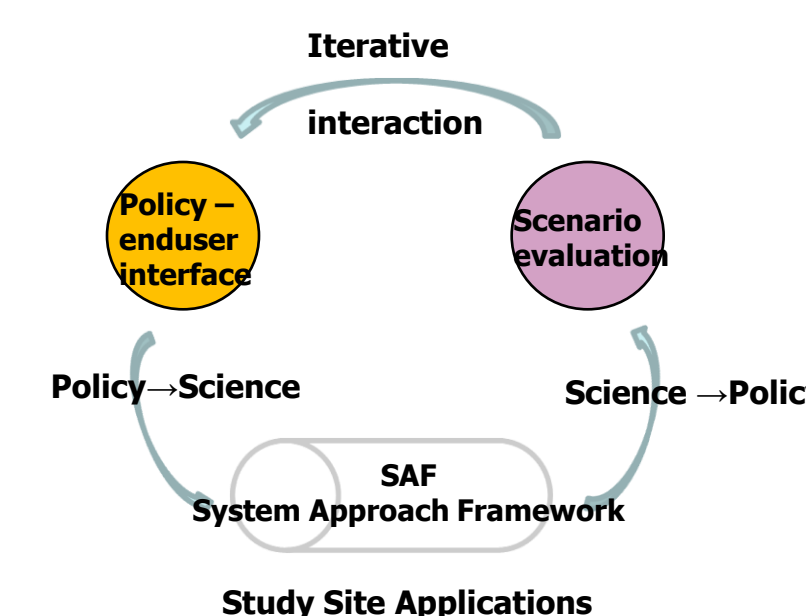
- Tapes philippinarum bioenergetic and bioeconomic model
- 0D and 2D application coupling with TDM (biogeochemical model)
- Computes variable costs such as seeding costs, monitoring costs, gasoline costs, labour costs)
- Computes average revenue and yearly revenue for each fishing unit (boat)

3. APPRAISAL STEP
Ecological
Social
Economic

Extend Model Structure



4. OUTPUT STEP
Ecological
Social
Economic



Appraisal Integrated Coastal Zone Management options is seen as a dynamic and iterative process → stakeholders' views and positioning can evolve over time

Need to consider:

1. Who should be involved? Individuals, groups, or organizations that are affected, involved or interested in the issue
2. When should stakeholders be involved? Not all SHs need to be involved during all the project, with varying levels of interest, can take part in different steps of the SAF process
3. How should stakeholders be involved? Forum, bilateral meetings, consultation, questionnaires, leaflets

Conclusions

- Bioeconomic model of *Tapes philippinarum* and Sensitivity analysis to changes in price and mortality rate suggests that higher level of uncertainty induce fishermen to increase pressure on resource, decreasing the harvesting size, increasing pressure on environment and impacts.
- The integration of stakeholder knowledge, data and model, enable us to estimate ranges of sustainable clam production and fleet consistency.
- Modelling results show high sensitivity to management strategies such as harvesting management and marketing (i.e. 'labelling' and 'certification').
- Stakeholder interactions show that there is a general concern regarding environmental and clam quality and safety.