System Approach Framework for an integrated management of the Guadiana Estuary
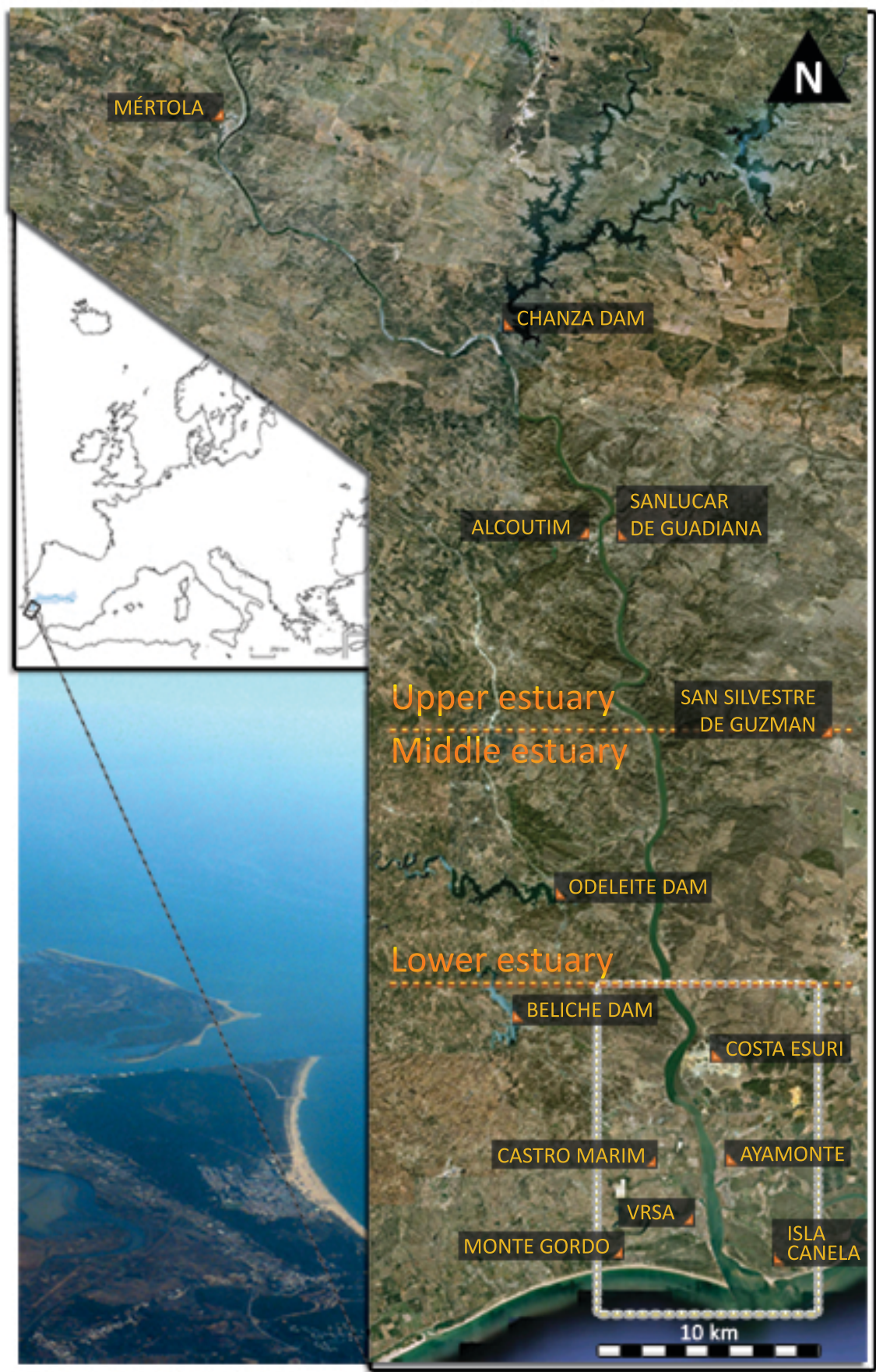
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SPICOSA

SIXTH FRAMEWORK PROGRAMME

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The Guadiana Estuary
SSA 11

▷ One of the 18 Study Site Applications of the SPICOSA project

▷ Transboundary estuary protected by several environment/nature conservation laws, enforced through a system of complementary/conflicting institutional responsibilities

▷ River regulation and urban development create multiple impacts on the environmental quality

▷ Recreation (among others) is an important economic activity dependent on ecosystem health/quality

Step 1 - Identifying a Policy Issue

Stakeholder mapping: 32 government, public, private and NGO entities
Stakeholders asked to identify and rank policy issues

Estuarine water quality controlled by urban wastewater discharge and dam-modulated river flow identified as top policy issue

## STEP 2 - Formulating the integrated system

Guadiana Estuary Feedback Loop
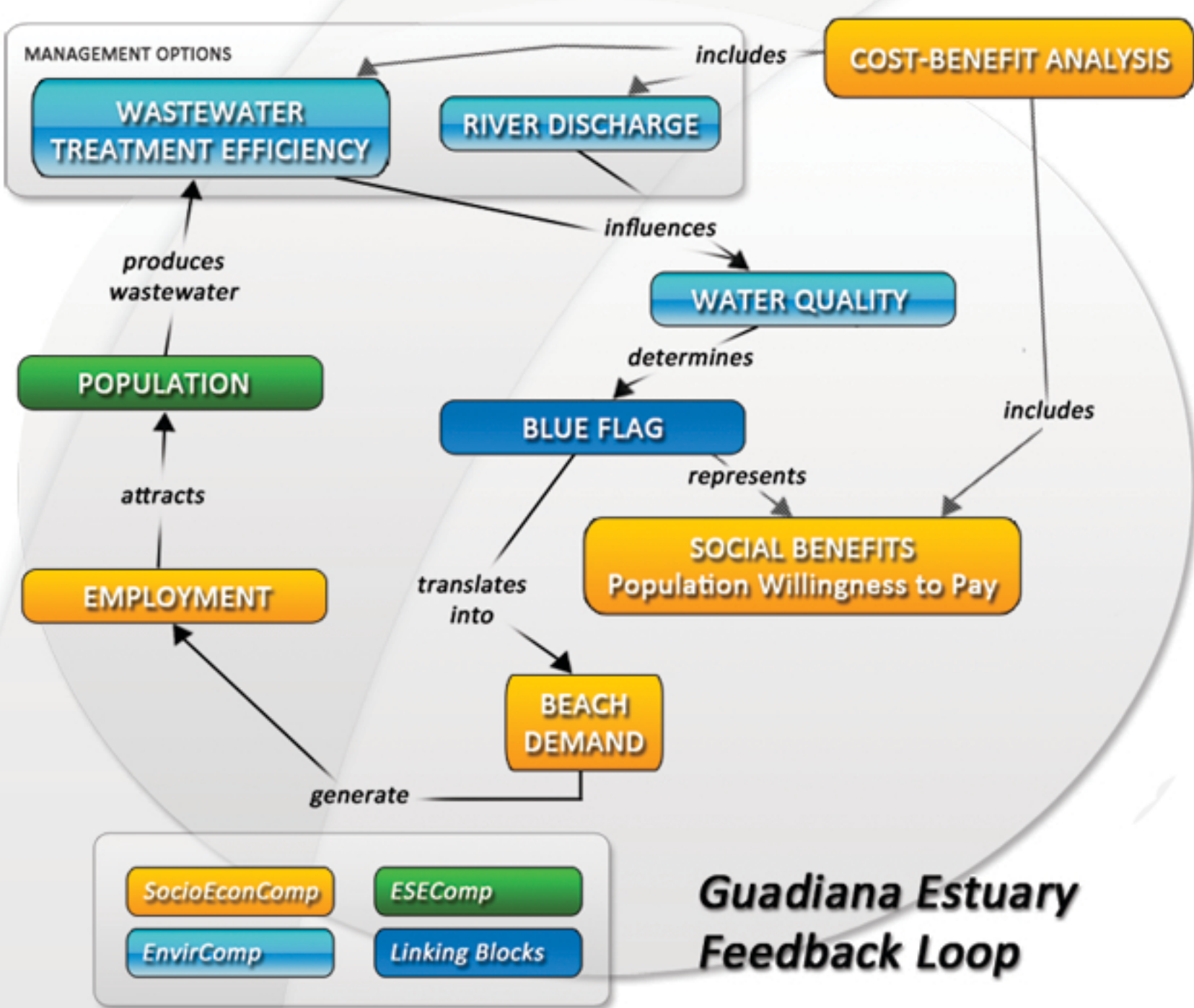
Management options (scenarios)

▷ 3 levels of wastewater treatment efficiency: High, Fair, Poor

▷ 4 river discharge regimes: Observed, Double observed, Half observed, Drought

STEP 4 - Outputting the system

▷ Delivery of GUADID 2.0 – a multimedia Output Package Application containing information on SPICOSA, SAF and a simplified, interactive version of GUADEX

▷ Bilateral meetings with commissions of 10 stakeholders to gather feedback

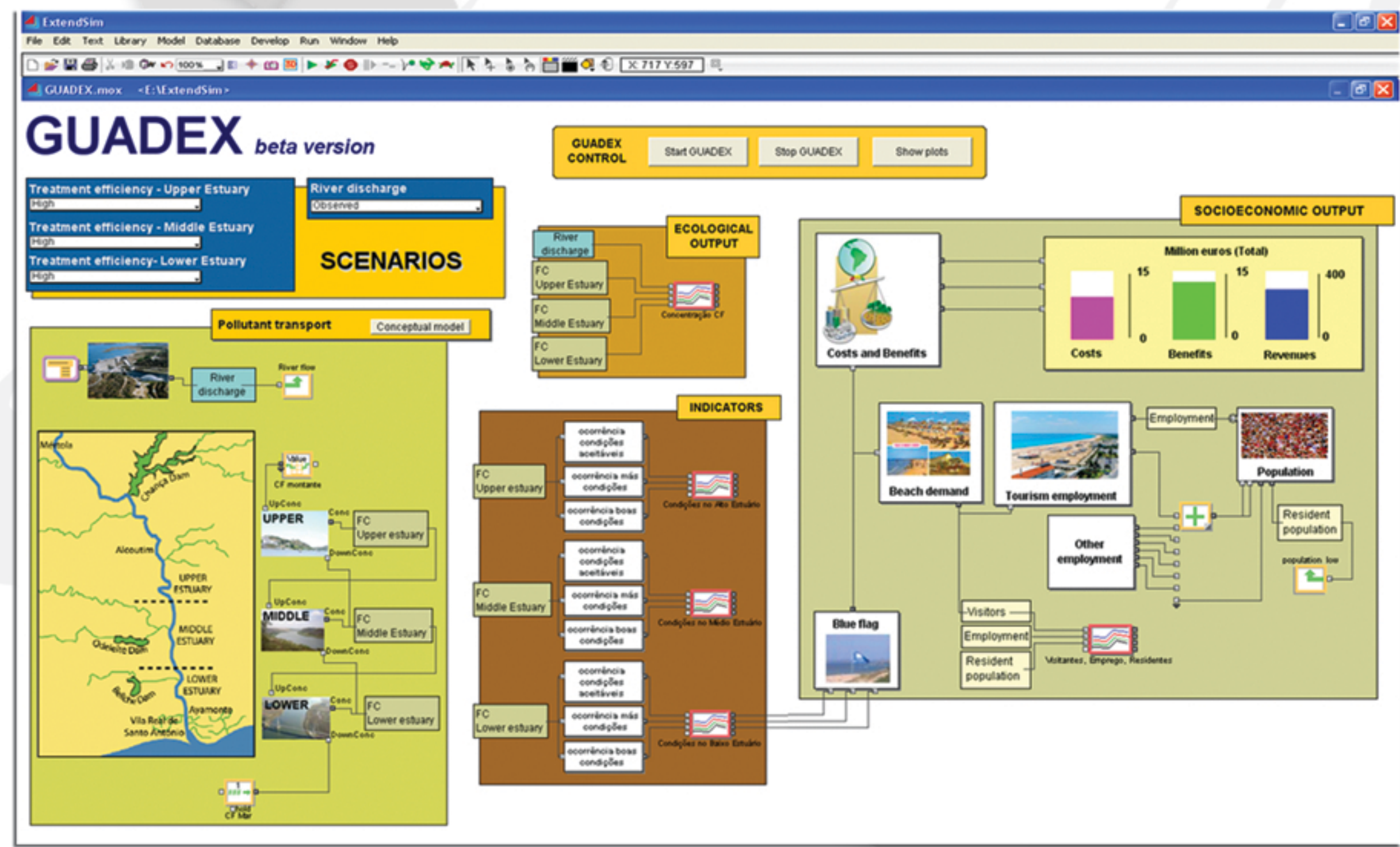▷ Guadiana Forum – public event for launching of GUADID v.2 and promoting a multilateral debate of management policies
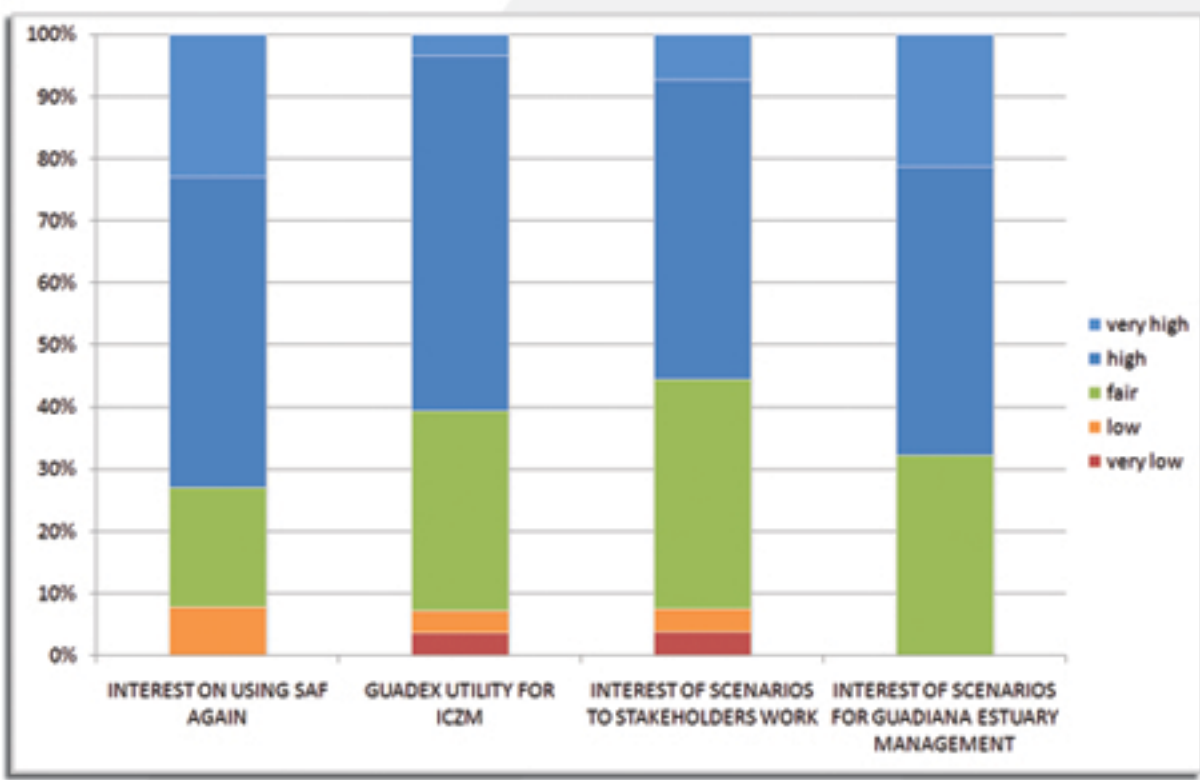
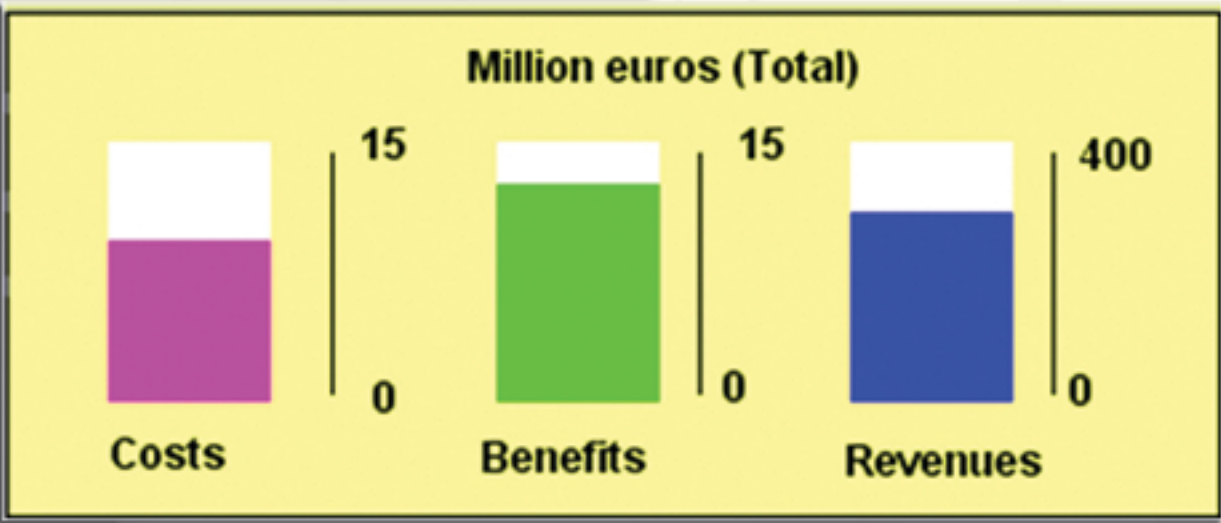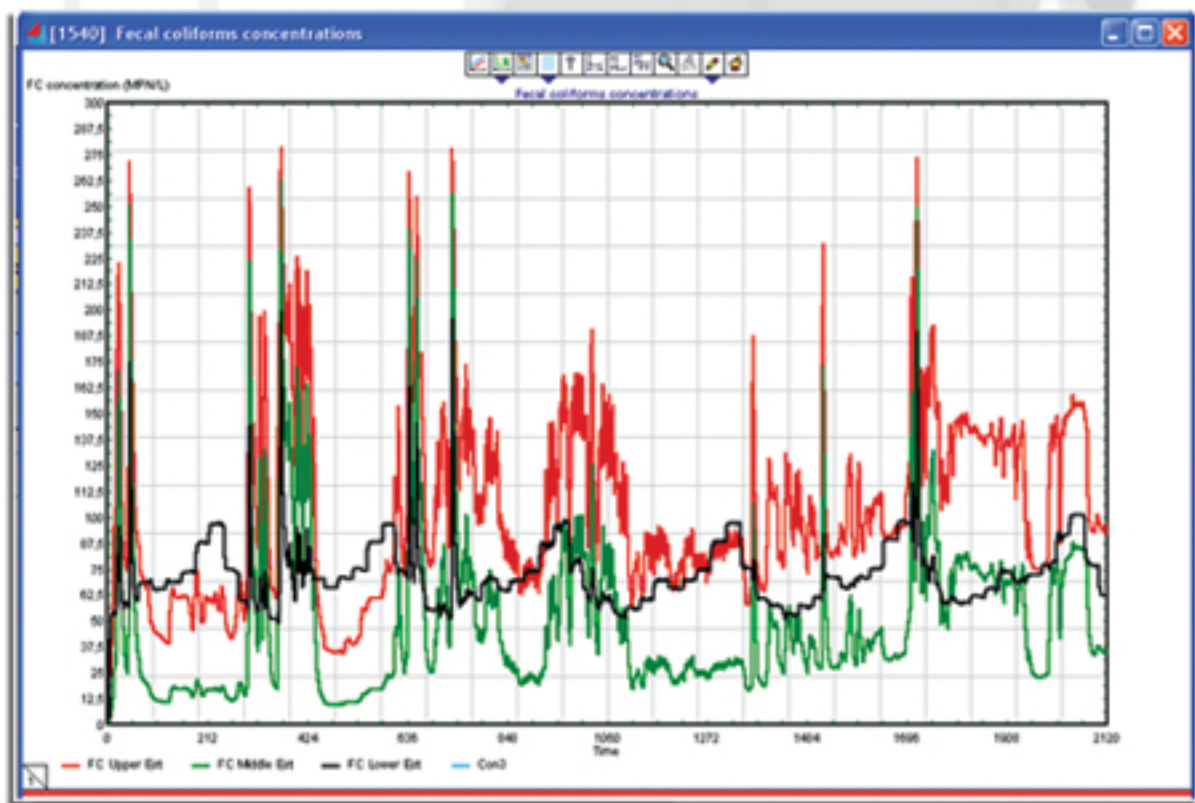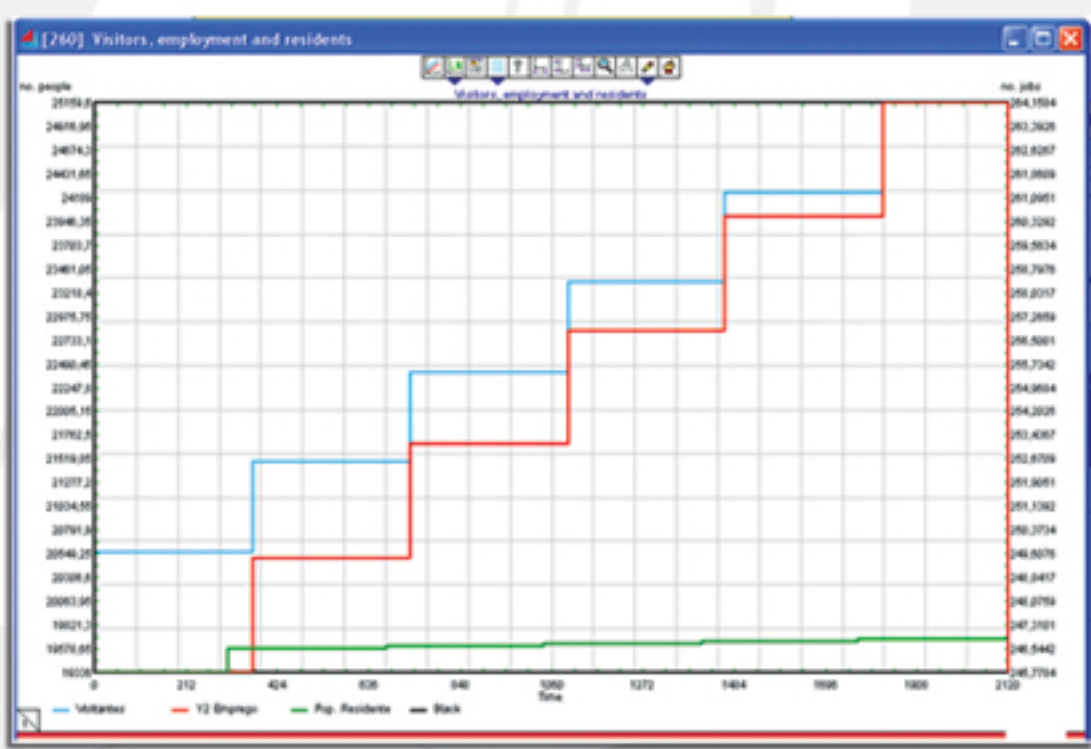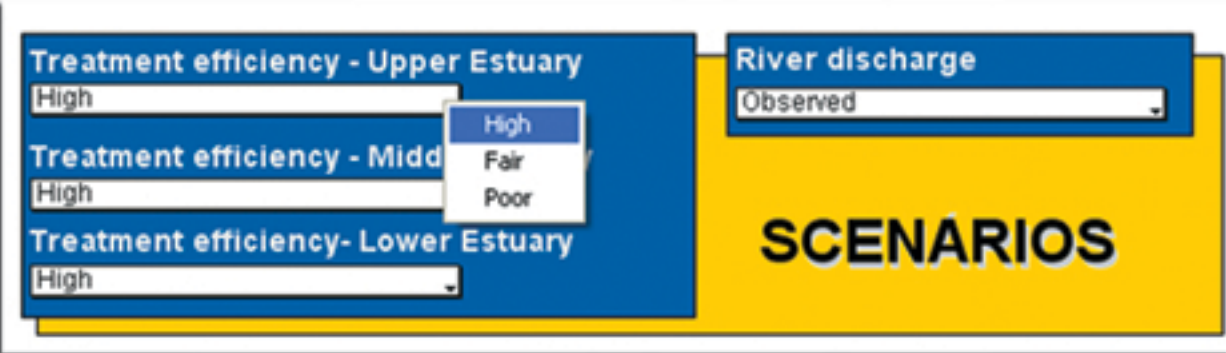Stakeholder feedback on SAF application in the Guadiana Estuary

Guadiana Forum

STEP 3- Appraising the system

GUADEX simulation model integrating environmental and socioeconomic components. Users can build their own scenarios by choosing different management options using the "Scenarios" box. Runs on an ExtendSim® platform.

Snapshots of GUADEX. User interface for defining scenarios (top left). Environmental output: fecal coliforms concentration in three estuarine sectors (top right). Socioeconomic output: tourists, tourism employment and resident population as a response to Blue Flag Award (bottom left), and Costs, Social benefits and Revenues resulting from a high efficiency wastewater treatment scenario (bottom right).

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