

Workshop 6 – Shoreline management

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Introductory statements *(for full-text articles see Proceedings)*

1. Morphological evolution and management proposals in the Authie Estuary, northern France (*Dobroniak*)

A good example of an estuary that poses a number of severe management problems, notably estuarine shoreline protection, and that calls into question the very survival of the estuary itself. The Regional Authority has been aware of these problems and undertook a study on estuary restoration, trying to define the best long-term strategy. The awareness of the socio-economic and the environmental values of the intertidal zone gave rise to recommendations for an integrated management of the Authie, especially the interaction between the environment and the shellfish farming ecosystems.

2. Restoration of intertidal habitats by the managed realignment of coastal defences, UK (*Garbutt*)

Through examples from the UK, a new perspective on estuarine policy was presented. The past coastal defence position is now moved using very different criteria that leaves new free space for the estuary. The new intertidal zone will be naturally covered by water and sediments first and by saltmarsh plants and organisms afterwards.

3. How may beach nourishment affect the sandy beach ecosystem? The case of Belgian beaches (*Speybroeck et al.*)

Awareness about the implications on beach ecosystems resulting from artificial nourishment was highlighted. Nourishment of beaches is mainly used as a measure for coastal protection but in some cases nourishment can also be applied to restore the natural value of the beaches. Nevertheless, a serious (short term) ecological impact must be expected. After a study of the Belgian beach ecosystem conducted by a consortium of experts, a first evaluation of the ecological impact of beach nourishment was made. However, specific studies are needed to help with management guidelines about preferable nourishment sediment characteristics, timing and methodology of the sand deposition.

4. Sustainable estuary management for the 21st century (*Morris*)

Since more than 200 years many British estuaries have been channelled and filled with infrastructures, many of those being so old now that coastal managers are seriously considering if it is worthy or not to restore them. It was argued that there is a need for a change in the management of the estuary shape, the flood defence design and the maintenance of other coastal structures that influence the morphological evolution. This needs a radical departure from popular thinking that existing structures should be maintained *in situ*, though incompatible with climate change and sea level rise. For sustainability at long-term, solutions need to be radical, and require a degree of foresight and bravery as decisions may have to be made in the face of serious local opposition. To make such decisions more socially and economically viable, solutions must not focus solely on nature conservation outcomes, but must seek to deliver the most morphologically sustainable form from the mouth of the estuary to the tidal limits and beyond.

Major questions/provocative statements

1. *Coastal flooding of wetlands* in a *sea-level rise scenario*: conventional defence approaches or conservative and (re)naturalizing solutions?
2. *Restoration of intertidal habitats* from agricultural land: towards the opposite alternative of the old reclamation (poldering) approach? Which are the socio-economic impacts?
3. *Estuaries' survival* in face of continued sea level rise: are there any good solutions? Which are the less harmful alternatives? How can a sustainable development, considering all the involved parts, be achieved? How will be the future of estuarine cities?
4. *Coastal dunes facing sea level rise* and increased storminess: which options should be considered in the EU ICZM, concerning the conservation of this so important but fragile natural patrimony?
5. *Beach nourishment* on an ecological perspective: what will be worst for biological communities? (1) the loss of sand resulting from a negative sedimentary balance and the establishment of new natural (re)equilibrium, (2) the implantation of defence structures downdrift (e.g. groins) to promote the building of wedge beaches, or (3) the renourishment with imported sands from elsewhere?

Discussion/answers to questions

From the general discussion, the following main conclusions can be made.

Conclusions

Climatic changes and their consequences such as sea level rise are inevitable. During the last years, dramatic changes have been occurring worldwide, most of them with heavy social and economical impacts. The case of New Orleans, USA, last year, was given as an example of the human vulnerability when confronted with natural disasters.

The engineering solutions against coastal erosion and for sea defence that were long believed as the right ones, must be re-evaluated as they are very costly and inadequate to contain natural disasters in the future. The case of the Delta project in the Netherlands, was cited as an example of a very costly and unmanageable solution. Fixed set back lines are not sustainable and are very expensive.

To acquire coastal areas for gaining coastal resilience is expensive at short-term, but no more so than engineering defence structures that in addition to their costs, need periodic maintenance and have many negative impacts. The case of the 'Conservatoire du Littoral' in France was given as a good example.

Scale is very important in the approach of the coastal issues. Short, medium and long (temporal and spatial) scales of an issue are very different. Large and international estuaries cannot be considered in the same way as local small harbours. The economical perspective of large, international harbours, are the concern of several countries (or the whole EU), so the role of big companies as stakeholders at an international level should be accounted for in an economic perspective.

The time for change has arrived. There is a need to replace old concepts about hard engineering to soft, sustainability engineering, based on conservation practises. The perception of a natural global change scenario and the improved understanding about coastal processes, imply a trend to ecosystem approaches and wise application of knowledge to more sustainable coastal approaches. However, social impacts on local communities must be considered. So, a correct long term cost-benefits analysis is fundamental. Disaster funding are also very important economic skills for local communities, obliged to change life styles.

Despite its impact, artificial nourishment to fight against coastal erosion and loss of beaches, should be preferred to engineering defence structures which are much more harmful.

It is fundamental that all the involved coastal actors from different countries arrive to imaginative solutions so that societies can pick them up and include them in their plans, projects and management issues. There is not a single good solution. Compromises on a case-by-case basis and with the involvement of local communities are needed. It is important to have an international policy but also to take into account local issues. Coastal zones are not the same everywhere. The involvement of communities and the quality of the local policy are of the highest importance.

It is time to change and to move to conservation approaches. No more defence structures, no more abuses, and no more repeated mistakes. We need to learn from natural coastal dynamics, while it is still time!

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