Marebasse project. Expert evaluation of Prof. Dr. Michael Collins. School of Ocean and Earth Science, University of Southampton, Southampton Oceanography Centre.

Thank you for the invitation to attend the SUMANOS workshop and to comment upon the Marebasse project results.

- By norm of background, it may be important to emphasise my own area of **expertise in sediment dynamics**, i.e. the behaviour of mud, sand and gravel, in response to wave and current activities;
- Approach the subject area from the perspective of **a civil engineer** is perhaps a more pragmatic approach than that of a pure scientist;
- Should add also that I was involved in the establishment of the European Network **EUMARSAND**, to which Marebasse was linked;
- Finally, perhaps importantly, I act presently as a **consultant to an independent dredging company** in Wales working together with BMPA (British Marine Aggregate Producers Association) on a regional study of sediment dynamics in the Severn Estuary, which lies between England and Wales. **Interestingly, many of the problems posed by Marebasse are posed similarly in the UK studies**.

The Marebasse project itself
Strategic Research Network: Management, Research and Budgeting of Aggregates in Shelf Seas related to end-users

Objective
Evaluation of sedimentary systems and the development of new evaluation technologies within the view of a sustainable management of the Belgian exclusive economic zone

Important to emphasise, as stated in the Chapter / Report that
'The Marebasse research is relevant also to support the management related to the installation of windmill farms, seabed constructions, cables and pipelines, the designation of marine nature reserves, and generally to any spatial planning initiative'
An important point is the relevance of spatial planning within a Belgian and European context and the related competing use of the sea and seabed.

The project is of **INTERNATIONAL standing** and interestingly; the problems posed are similar to those faced throughout Europe.

The main work packages were:
- broad-scale characterisation of the Belgian Continental Shelf
- The set-up of environmental assessment tools and strategies
- environmental impact assessment
- research integration and dissemination and exploitation of results

Marebasse, in my opinion, meets all of the objectives – at least to a certain level

In terms of the output, the participants in the Marebasse project are to be congratulated on the production of a series of **broad-scale thematic maps**. But also, the **maintenance of the very exhaustive, and complicated fieldwork programme** – for both the regional and site-specific research should be acknowledged.

In terms of the maps:

- bathymetric digital terrain model;
- detailed bedform map;
- very detailed grain-size distribution

are clearly invaluable to end-users.

- Problems of sediment transport modelling are described, which is fundamental to studies of their nature.

Case studies

In relation **to sustainable management of sand and gravel resources – the Kwinte Bank** (socio-economically important, 78 % of sand extraction) was

- Very important to understand sedimentary processes, in terms of exploitation sustainability; and
- **Marebasse has provided a series of guidelines/criteria**, i.e. selecting most appropriate locations for extraction – from a resource perspective and to minimise environmental effects.

In the second case study, the Sierra Ventana site
Extensive set of research questions have been identified

A surprising perspective is to see dumping and dredging in a similar area and this likely needs to be addressed more carefully?

Recommendations for future research

Confirm/Reinforce some from my own perspective

- Understanding of sediment transport remains a problem
- Importance of quantifying sediment transport under waves and could indeed extend to storms

Important observation made:

- The need to establish a research strategy which will enable the differentiation between **natural** (**cf. end-users**) and anthropogenically – induced sediment dynamics (also cf. Severn Estuary as a UK example);

- The emphasis that good, long-term (to examine temporal variation), data sets are required is a problem for us all.

Strengths of Marebasse

- Use of state-of-the-art instrumentation, in improving knowledge;
- Integration of data sets, **mainly geological, but also biological** (cf. benthic communities);
- Spatial variability of the seabed;
- Dissemination of results;
- Interaction end-users (limitations explained earlier).

Weaknesses

- Lack of continuous datasets, hampering answers to management questions;
- Identified – additional efforts should be made to develop multidisciplinary research

FINAL COMMENT – The main challenge will remain to provide recommendations on a sustainable exploitation of seabed resources.