EMSAGG

The bi-annual bulletin of the European Marine Sand And Gravel Group

CIRIA

Issue 16, May 2008

Report on the 21st EMSAGG members' meeting

The 21st EMSAGG members' meeting was held in Brussels, Belgium on 17 April 2008 at the Federal Public Service Economy Safety offices. Many thanks to Patrick Schotte for hosting the meeting. The day saw a busy agenda discussing industry news, the bulletin and the forthcoming EMSAGG conference on 12-13 February 2009 in Rome. Further information on the conference is included in this bulletin.

EMSAGG would like to welcome Robert Gatliff, British Geological Survey to the member's board. Robert is the head of the marine geoscience team, based in Edinburgh, UK.

Following the survey in bulletin 14, this edition of the EMSAGG bulletin has been produced in a PDF format available to download from **www.ciria.org/emsagg**

The 2009 EMSAGG Conference
A wave of opportunities for the marine aggregates industry

The third EMSAGG conference will take place at the Frentani Conference Centre near the central station (Termini) in Rome, Italy on 12-13 February 2009. The conference builds on the success of the two previous conferences organised and delivered by EMSAGG.

The conference will provide delegates with the opportunity to gain an understanding of the latest issues and technologies for marine sand and gravel extraction in Europe. Delegates will be able to network with industry peers and get the latest news on policy, planning and research.

Day 1 is an exciting programme with presentations delivered by leading figures from all over Europe. The themes for the day include:

- new legislation
- technical issues in the industry
- challenge of climate change
- security of marine aggregate supply
- good practice/case studies.

In this issue

Day 2 will offer delegates the opportunity to join a sightseeing tour of Rome. This will be arranged by a local agency in Rome.

The 2009 EMSAGG conference is hosted and supported by Arenaria Srl who joined EMSAGG in 2007. Arenaria Srl is part of Officine Maccaferri and was established in December 2005. Arenaria Srl is the first Italian company to have permission to extract submarine deposits from the Adriatic Sea. Focusing its activities on integrated coastal zone management, the company aims to supply marine sand for both large-scale nutrition projects and coastal maintenance operations.

Officine Maccaferri was established in 1879 and has since researched, designed and developed solutions to solve problems in the construction market. Officine Maccaferri specialises in soil stabilisation, slope reinforcement, erosion control, infrastructure development and construction works.

Call for presentations

EMSAGG welcomes the submission of abstracts from colleagues interested in presenting at the conference. The abstracts should reflect the listed themes (opposite, Day 1)and be about 200 words. From the submitted abstracts, the conference steering group will select a number of entries and then notify the authors to provide a full paper. The template is available at:
www.ciria.org/emsagg/conference09.htm

Key dates

- submission of abstract by authors, Friday June 27 2008
- notification of acceptance, Monday 7 July 2008
- submission of full paper, Friday 5 September 2008.

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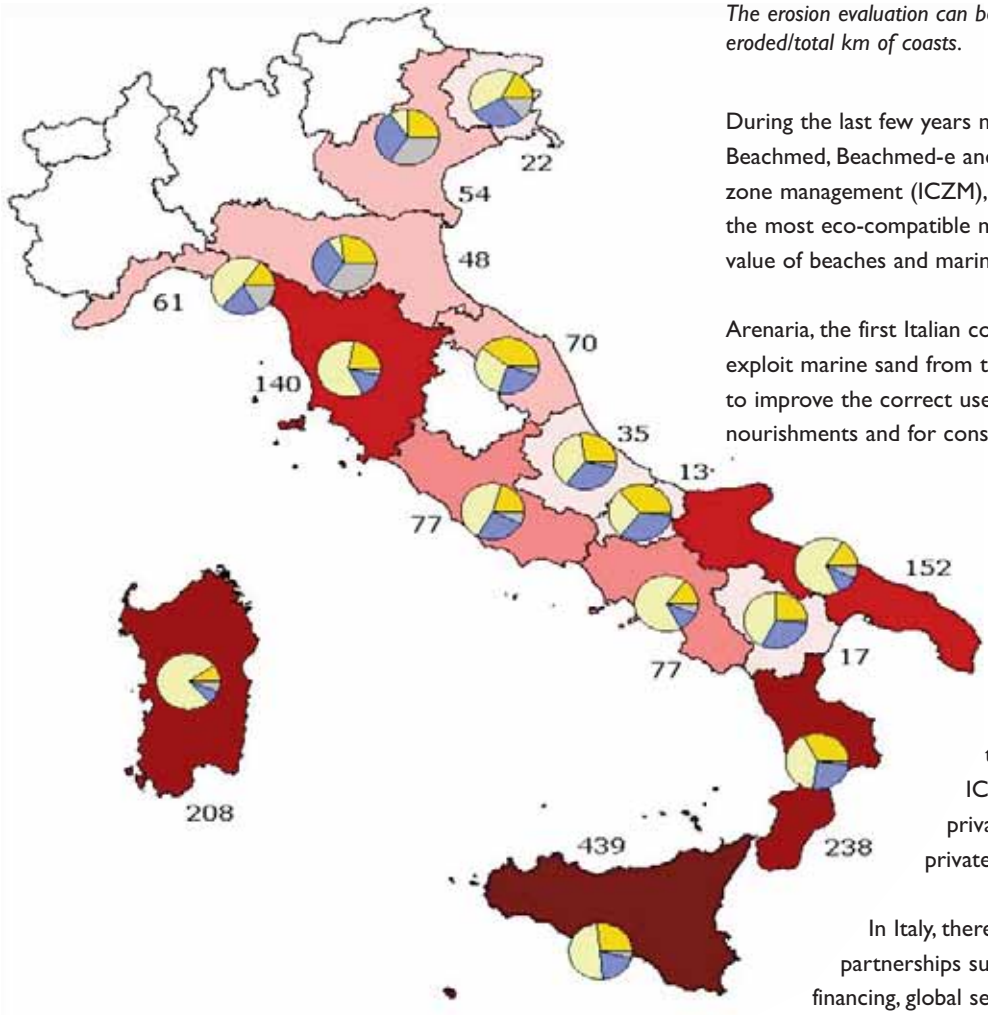
We look forward to receiving your abstracts. Should you have any questions about the above, require related information or to submit your abstract please contact Charles Perkin on **+44 (0) 20 7549 3300** or via email **charles.perkin@ciria.org**

Information on the conference is available from: **www.ciria.org/emsagg/conference09.htm**

Dredging Italian sand: the opportunity for public-private partnerships in Italy

2400 km (more than 30 per cent) of Italian coasts are eroding, as shown in the following image.



(courtesy of the Agency for Environmental Protection (APAT) and Technical Services of the Italian Environmental Ministry)

The erosion evaluation can be represented using a colour scale, coasts eroded/total km of coasts.

During the last few years many European programmes (Eurosion, Beachmed, Beachmed-e and others) have promoted integrated coastal zone management (ICZM), which provides the use of marine sand as the most eco-compatible material to reduce erosion and increase the value of beaches and marine environment.

Arenaria, the first Italian company with a ministerial concession to exploit marine sand from the bottom of the Adriatic Sea, is working to improve the correct use of marine aggregates, for beach nourishments and for construction applications.

Fight against erosion

Arenaria, with other private companies, organises meetings and conferences with national, regional and local authorities (along the Adriatic coastline) to investigate best practice in terms of ICZM. An example of ICZM could be public-private partnerships: a contract between a private company and a public authority.

In Italy, there are many approaches to public-private partnerships such as competitive dialogue, project financing, global services and urban transformation companies, but nothing exists at present for coastal maintenance or for marine works.

For Italy's population and the tourist industry, the social benefits are measured in the square metres of beaches created by nourishment works but also in the total increase of the gross domestic product. €1 invested on a nourishment work gives a total return (GDP) of more than €100 after only five years, as confirmed in an economic study by the Italian Observatory on coastal erosion.

Aggregates from the sea for the construction world

Italy has a great treasure in its landscapes and in its different natural surroundings: the social development of the country, with the subsequent environmental changes, has to be controlled and managed taking into account new natural resources and ways of using them.

Arenaria is offering an alternative way to manage aggregates, with a lower impact on the environment. Italy totals 302 000 km2 of land and has more than 6000 authorised quarries on land with 75 per cent of these dedicated to the extraction of sand and gravel. The quarries are sometimes abandoned without restoration works, scarring the coutryside and resulting in adverse impacts on the environment.

At present using marine sand is difficult because of its chloride content. Traditionally in Italy, washing technologies and result controls have not been used and as the Italian standard for concrete and mortar are somewhat restrictive in terms of chloride content the use of marine aggregates has not being given consideration.

Looking ahead, Arenaria hopes that the Italian public administration will change its methods to evaluate the aggregate demand (based on statistical data) that the public administration will improve the restoration control of old quarries, and that the public administration will give authorisation for mining and extraction zones and not for single quarries. Arenaria also hopes the Italian public administration will consider the use of marine aggregates for concrete, mortar and asphalts.

There is still much work to do. Arenaria continues to research other methods in Europe (including UK, Denmark, The Netherlands and Belgium) to learn about best practice in terms of processing aggregates and also to share the knowledge on how to extract new natural resources in the best possible way. This inforomation exchange will not just apply to Arenaria, but also other Italian companies (concrete and asphalt suppliers) as well as public administrations.

Arenaria Srl
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Cost standards 2005 update announcement

CIRIA's publication *Cost standards for dredging equipment 2005 (*C655) is currently being updated. The new up-to-date guide will build on the success of the 2005 publication, which sold more than 660 copies worldwide, making it vital for all those involved in the dredging industry. As the 2005 edition, the new publication will describe the characteristics of the various common types of dredging equipment. It will examine the philosophy behind the internationally accepted costing conventions prevalent in the industry. On the basis of more than 40 years of data, it will give information allowing the non-direct costs relating to dredging equipment, the amortisation, maintenance and repair, to be estimated, allowing these to be incorporated into a detailed estimate of a dredgers running cost. For further information on the project, please contact Kristina Gamst at **kristina.gamst@ciria.org**

A suction dredger for winning sand at depth (courtesy Nick Bray)

IMAGIN scenario modeller

IMAGIN scenario modeller is a project looking at marine aggregate resources in the Irish Sea. IMAGIN is a joint Ireland-Wales project supported by the EU through the InterReg initiative. The lead partner is the Coastal and Marine Resources Centre, University College Cork, Ireland.

To date, the project has created and collated a considerable amount of information on the various parameters which influence aggregate extraction: from the existence of a potential resource through to the environmental, economic and political factors governing any decisions on whether extraction could or should take place.

While all information generated or referenced by the project is readily available through the IMAGIN GIS interface, current information only provides geographical context, or context specifically made available through the geographical context. The aim of the scenario modelling tool is to make information more accessible, particularly information that will be of use to planners.

Designed to simulate aggregate dredging operations

The IMAGIN scenario modeller is designed to simulate aggregate dredging operations. From input values of operational parameters describing ports, dredgers, the environment (eg tides, weather) and the deposit to be exploited it calculates operational costs, logistics and constraints. It is intended to allow planners to test hypotheses on potential resources providing input for decisions that could result in sterilisation of resources. These requirements demand accurate prediction of the cost and efficiency of different operational scenarios and the Ireland-Wales partnership is looking at its potential as a tool to aid both the initial set-up of the dredging operation and the continuing process of extracting the aggregate.

The costing and logistics of dredging operations are highly operation-specific but always represent an interaction between ports, dredgers, the environment and the deposit to be exploited. The underlying design of the IMAGIN model is to provide a cyber platform of linked tables simulating this interaction, and then introduce logistics and parameter values for the operation being evaluated. The IMAGIN model can become a powerful and comprehensive system that is tailored to calculate detailed values for specific operations.

The model functionality and related lists of parameters illustrates some of the possibilities of the model. These include:

- deposit
- port and dredger data
- operations data and model application
- calculation of optimum load
- cost benefit analysis
- variance report.

For each operation, some of these options can be amended, others may be added and some suppressed as the platform is reconfigured to address the needs of the operation modelled. Note that it is not just the value of parameters listed that can be amended but how they are applied, and that new functionality can be added. The platform provides a framework for the model with each sector amended to fit the logistics of the dredging operation.

Parameter	Notes
Sailing Time	Dependant on tide tables
Outward Voyage Time	
Arrival Time	
Dredging Time	
Dredge Buffer	How long the dredging can overrun without impacting on favourable return tide
Inward Voyage Time	
Latest Docking Time	The time at which the tide turns to be unfavourable
Scheduled end	
Sailing Buffer	How long unloading can overrun without impacting on the next sailing time
	Unused dredging buffer can be added to the sailing buffer

Example of screen print-out: calculate operations schedule

The model is particularly useful when recalculating several interacting variables that change the scope of an operation. Examples include both initial set-up, through the choice of equipment and available infrastructure, and stochastic variables, such as geological variability, which affects maintenance downtime through the different wear characteristics induced by different aggregate grades.

The Ireland-Wales Partnership is in the process of building realistic operation scenarios to demonstrate the modelling potential and would be interested in speaking to operators, planners and other interested parties.

Further details of the IMAGIN project

Please contact Gerry Sutton, Coastal and Marine Resources Centre, University College Cork, Ireland on **(+353) 21 4703113** or **gerry.sutton@ucc.ie** for more details of the IMAGIN project in general.

The scenario modelling is being undertaken by Geoscience Wales Limited. Please contact Barrie Wells, **(+44) 1492 583025** or **barrie.wells@conwyvalley.com** for questions, to provide feedback or for more information.

Alternatively, please visit Geoscience Wales Limited's website: **www.geoscience-wales.co.uk** and click on the news item "New GWL product - dredging operations modeller" on the right hand side.

GEO-SEAS: a European initiative

The Cost 638 initiative – MAGGNET has submitted a proposal for European funding under the InterReg programme. The project has 28 co-operating members and the bid is for around €6m.

The speed and ease with which users can identify, locate, access, exchange and use oceanographic and marine data and information are vital for the success of community marine research projects, for effective support of marine economic activities and sustainable marine environmental management. Under the heading of oceanographic and marine data there is a wide range of types of measurements and variables. Geological and geophysical data are an important category, comprising analytical data and derived data products from seabed sediment samples, boreholes, borehole samples, geophysical surveys (seismic, gravity, magnetic) of the seabed and sub-seabed, cone penetration tests, and sidescan sonar surveys.

In Europe a major share of geological and geophysical observations for the oceans and seas is collected and analysed by national geological surveys and research institutions, performing field surveys and undertaking research cruises. In addition, substantial volumes of data are collected by industry, government departments, academia and environmental organisations, either directly or by sub-contractors.

These additional data are often deposited with the geological surveys and research institutes. The national geological surveys have extensively sampled and surveyed the seabed and sub-seabed of the European seas in recent decades. Research institutes complement this with samples, cores and seismic data, both from the European seas and the world oceans. The research and analysis results are published in scientific literature and as maps showing the geology of the seabed and sub-seabed. Nowadays many data and data products are managed by the national geological surveys and research institutes as digital records in local databases. Increasingly these are available via the organisation's website, mostly by means of catalogues, and in some cases by online data access facilities. In addition the surveys also manage physical repositories for cores and samples that can be used for further analysis and tests.

Despite well established co-operation between national geological surveys and research institutes around the European seas, inter alia within the EuroGeoSurveys association, it is currently not possible to merge separate national databases because of different nomenclatures, reference levels, formats, scales and co-ordinate systems. This not only hinders direct use of data in an integrated way, but can stop further development and provision of trans-boundary and multi-disciplinary products and services, such as regional maps, digital terrain models and integrated environmental assessments.

The Geo-Seas partnership has taken a strategic decision to adopt the SeaDataNet interoperability principles, architecture and components wherever possible. This approach will allow the Geo-Seas upgrading to gain instant traction and momentum while avoiding wasteful duplicative effort. It is envisaged that the SeaDataNet infrastructure will provide a core platform that will be adaptively tuned to cater for the specific requirements of the geological and geophysical domain. A range of additional activities for developing and providing new geological and geophysical products and services will also be undertaken in order to fulfil the diverse needs of end-user communities.

The overall objective of the Geo-Seas project is to effect a major and significant improvement in the overview and access to marine geological and geophysical data and data products from national geological surveys and research institutes in Europe by upgrading their present infrastructure.

The specific objectives of the Geo-Seas project are to:

- expand the SeaDataNet infrastructure by including the network of national geological surveys and selected geological research institutes, and their geological and geophysical data holdings
- create up-to-date catalogues, indexes and access through the internet to the distributed marine geological and geophysical databases, managed by national geological surveys and research institutes in Europe
- harmonise quality standards, transport formats, access and exchange data for various user communities, including research, government and industry
- develop and to provide new dedicated geological and geophysical data products and services
- formulate, determine and facilitate arrangements for use of these data and data products
- formulate, determine and facilitate arrangements for consolidation and long-term exploitation of the Geo-Seas infrastructure
- promote the infrastructure and its services to users and to encourage adoption of protocols, standards and tools by other marine geological and geophysical institutes and companies.

For more information about this project please contact Nick Bean **nick.bean@ciria.org**

CIRIA update

Update of CIRIA Beach management manual

CIRIA is in the process of fundraising to update another well respected publication the 1996 CIRIA *Beach management manual* (R153). An Environment Agency scoping study was completed in 2007 identifying a number of changes and additions to be made to the existing manual to increase its uptake and use. These included targeting beach managers who are increasingly non-engineers more involved with the amenity aspects of a beach rather than coastal defence. To support this project and for further information please contact Nick Bean at **nick.bean@ciria.org**

Jaywick, Clacton-on-sea (courtesy Royal Haskoning)

Get in touch

Want to see something discussed in the next bulletin? Are you interested in providing an article?
Email EMSAGG **emsagg@ciria.org** or contact Kristina Gamst on **+44 (0)20 7549 3300**

CIRIA Manual on the use of concrete in maritime engineering

CIRIA is currently developing a new manual on the use of concrete in maritime engineering. The manual will address an identified gap in structured guidance documents available with regard to the use of concrete in maritime structures. It will focus on marine concrete, including coastal defences, port structures and breakwaters, which are areas where use of concrete has to be adapted due to high degradation and abrasion environments. The timelines of this manual arise from the above identified gap, combined with a recognition of sea level rise and foreshore erosion. Also, the need to consider the option for maintenance of existing hard defence structures around strategically important urban areas is of growing importance. If you would like know more about this project, please contact Nick Bean at: **nick.bean@ciria.org**

Concrete wall, Jersey (courtesy HR Wallingford)