

Ireland's Offshore Aggregate Resource

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Coastal & Marine Resources Centre **CMRC** Developing our Assets, IGI Dublin Castle Nov 15th 2008 **GSI**

Outline of presentation:

- Context
 - Extraction: Why?-issues-pros/cons
 - Drivers: Supply-demand-production
 - Checks: Some perceived risks
- Present and Future in Ireland-IMAGIN and INFOMAR projects
 - Field and desk studies
 - Resource and environmental databases
 - Evolution of regulatory framework (IMAGIN)

Why Consider Marine Aggregates ?

- Essentially same uses as terrestrial- but some subtle differences in technical properties
 - More rounded grains "softer"- better workability
 - Can reduce cement requirement ?
- Reduces demand on terrestrial aggregate resources
- Enables supply where terrestrial sources lacking or constrained
- Reduces competitive pressure on land area for:-
 - Agriculture
 - Environment
 - Hydrology
 - Housing or other development
- Reduction in road transport
 - Potential for landing close to point of end use
- Coastal defence-reclamation (Sea Level Rise-Storminess)
 - Clear advantages- economics, technical, environmental, aesthetic



MA exploitation-the downside

- Negative environmental impacts
 - Seabed and associated biota
 - Fisheries
 - Coastlines
 - Conflicts with other users
 - Sustainability ???
- Production costs ? – quite variable
 - Highly dependant on interplay of macro/micro economic factors-
 - Additional processing-washing de-wooding
 - Few appropriate/holistic cost-benefit analysis-models (Symonds 2002, Moreton Bay Study)

Summary of factors driving potential for development of MA's in Ireland

- Sustained unprecedented demand-
- Exhaustion or loss of financial viability for existing sources of supply
 - Increasing haulage distances
 - Prohibitive cost of development land
- Supply **potential** under pressure – enforcement of 1999 planning regulations re quarry licensing
- Alleviation or mitigation of environmental pollution factors- traffic, congestion, noise, dust, **exhaust CO₂**
- Direct access by sea to main markets/population centres- consistent with National Spatial Plan

Challenges to development of MA's in Ireland

- No national policy on development of marine aggregates
 - Shyness on advocacy "should we or not"- politically sensitive question
 - Experience to date/precedent : unclear or inconsistent licensing procedures- duration, steps, responsibilities, experience, expertise
 - Uncertainty re EIA content, monitoring
 - Few structures for interdepartmental co-ordination
- Requirement to quantify risk to environment and other marine users but scarcity or lack of background/baseline environmental data:
 - Physical (hydrographic, geological context and resource potential)
 - Environmental (benthos, **inshore fisheries**)
- Little strategic planning for economic minerals national and local government levels
- High entry costs-exploration/licensing , EIA, infrastructure (plant, landing and storage facilities) and royalties/port-handling costs ????

INVESTMENT REMAINS THWARTED IN AN UNCERTAIN CLIMATE

Overview of the IMAGIN project

Outline:

- Evolution
- Outline and overarching objective
- Description of tangible outputs
- Progress to date
- Benefits



Background and evolution

- Research and sector analysis showed:
 - strong potential for development of resource driven by unprecedented demand/limited supply
 - development constrained through knowledge and policy gaps
- Good fit with INTERREG III.A ERDF call
- Proposal-development phase of 2yrs-MI,DCMNR,GSI
- Selected for funding 17th Nov 04-(1.1€m)
 - Overall Cost €1.1m
 - Ireland 707k / Wales 300k
 - Industry 15%, European Regional Devt Fund 66%,Partners and Government Agencies 19%
- Officially started on 4th February 05 runs to Feb 07-
- Possible Extension to Feb 08. Decision pending.

Irish Sea Marine Aggregates Initiative - IMAGIN



The overall aim of the IMAGIN project:

To facilitate the evolution of a strategic framework within which development and exploitation of marine aggregate resources from the Irish Sea may be sustainably managed with minimum risk of impact on marine and coastal environments, ecosystems and other marine users.

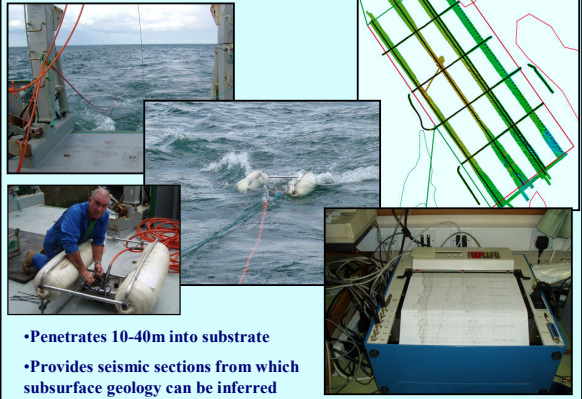
IMAGIN Approach to Seabed Mapping

STEPWISE from low to high resolution:

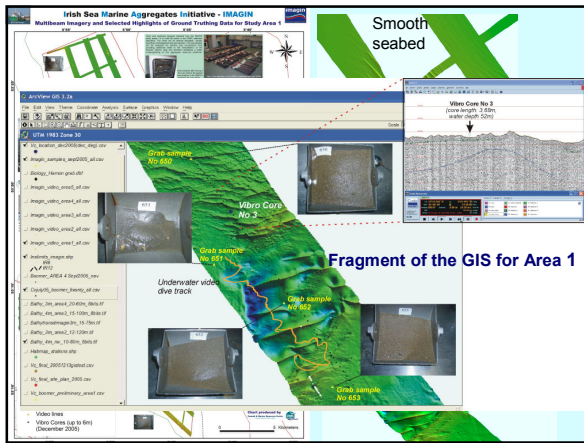
- Multibeam mapping
- 100 kHz side-scan sonar mapping
- Boomer/Pinger seismic profiler mapping
- Seabed truthing
 - with underwater video system
 - with grab samples (200 samples)
 - with vibro core samples (36 cores)
- GIS data integration and seabed type interpretation

- understanding of **environmental setting**
- **broadscale assessment of resource potential**

Collection of Boomer seismic data

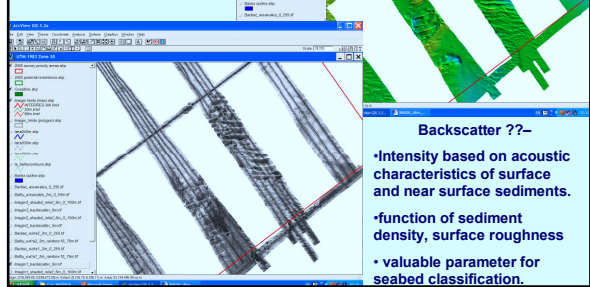


- Penetrates 10-40m into substrate
- Provides seismic sections from which subsurface geology can be inferred



GIS Screen grabs showing multibeam imagery

- sun-illuminated bathymetry / shaded relief
- backscatter



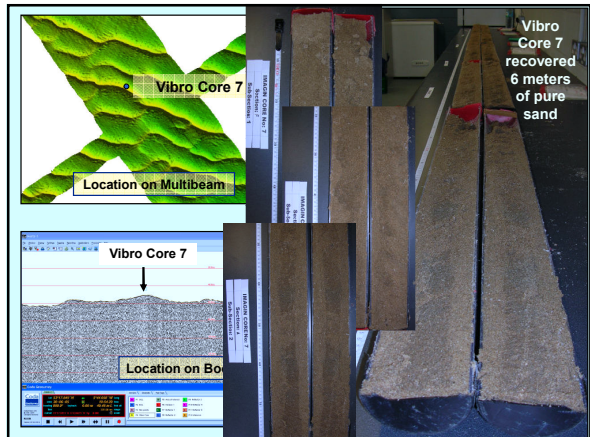
- Intensity based on acoustic characteristics of surface and near surface sediments.
- function of sediment density, surface roughness
- valuable parameter for seabed classification.

IMAGIN Vibro Core operations onboard ILV Grainnuaille (Dec 2005)

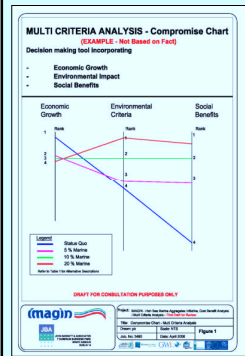


Vibro core sediment samples collected from the IMAGIN study Areas 1-4 (in total 36 cores = 128m of sediment recovered).

- Core processing:
 - split longitudinally, visually described, photographed
 - sub-sampled at regular intervals analysed for PSA
 - PSA records then used to inform analysis of boomer seismic profiles.....
 - assessment of aggregate resource potential



CBA-Project Requirements



- Develop a series of alternative models.....
- Derive appropriate assessment criteria and scoring method in order to evaluate the different alternatives.
- The scenarios also specifically took into account the following:
 - Environmental costs and impacts from land and marine aggregate supply options....
 - The potential displacement cost of marine aggregate extraction from Irish Sea locations on the existing Fisheries sector
- The results of the scenarios to be illustrated in an appropriate and standardised format

Main benefits of the IMAGIN project

- Enabled a large body of focused work to be undertaken
 - Efficiently, economically and in a relatively short time
 - Increase understanding of distribution and quality of resources
 - Participants benefit from prior knowledge
- Allowed balanced view on future potential based on regional cost/benefit analysis
 - clarify/highlight current and future supply/demand issues
- Complementary to ongoing initiatives e.g. INFOMAR, MSP, REA, Habitat mapping
- Begin to close knowledge gap
- Catalyse, underpin and assist policy development processes-

benefits ctd.....

The DCMNR.....

“look forward to reviewing the output of the IMAGIN project, as a key input in the development of Irish policy for this resource area. In this context we anticipate that the process of actual policy development is likely to be completed within a period of 2 years after the closure date of the IMAGIN project in February, 2007”

- Baseline information upon which future planning applications/EIA'S can be founded
- Considers Area based policy guides development in accordance with precautionary principle towards most favourable areas in terms of sustainability
- Fosters partnership approach-builds trust, cooperation and optimises transparency

Irish Sea Marine Aggregates Initiative - IMAGIN

FINAL WORKSHOPS:

IRELAND: 29 NOV-ARKLOW

WALES: 5 DEC-LLANDUDNO

To find out more about the activities of IMAGIN please consult the project website www.imagin-eu.org or directly contact:

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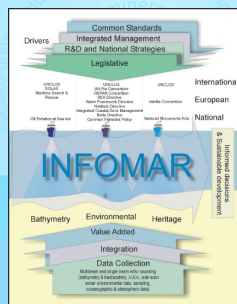
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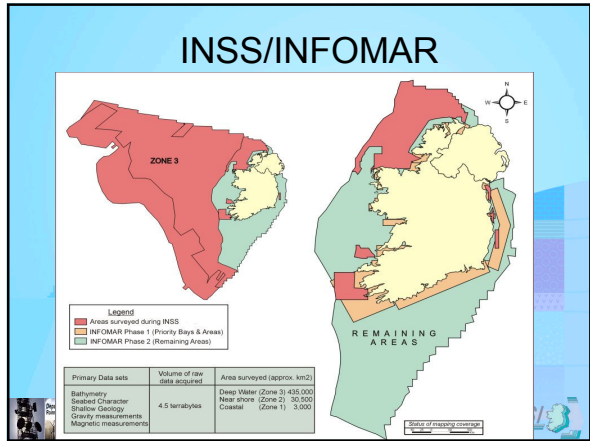
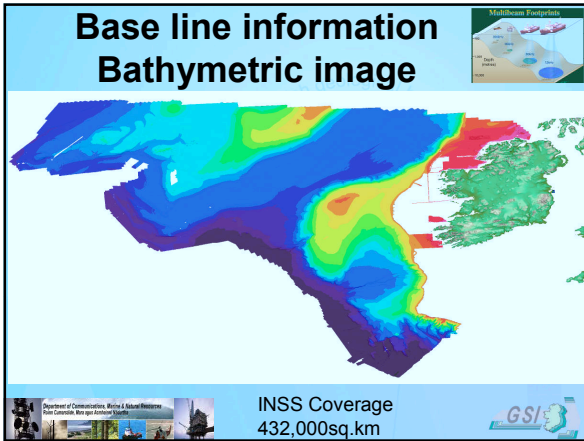
Integrated mapping FOR the sustainable development of Ireland's Marine Resource

A successor to The Irish National Seabed Survey



History and the Future

- INSS 1999 - 2005, c.€34m.
- GSI Project Manager, MI strategic partner
- INFOMAR Phase 1 2006 – 2016, c.€4m p.a.
- GSI/MI Joint Venture
- INtegrated mapping FO for the sustainable development of Ireland's MArine Resources



INFOMAR Programme

- Complete Seabed Mapping (125,363 sq. km)
- Enhanced Data Acquisition
- Data Delivery Systems
- Research & Private Sector Inputs for New Products
- Full GSI & MI JV
- 20 year programme, €84m

GSI

