

SPAIN

Amendments to the country paper following DG MARE's comments.

Blue Growth sea basin study (Atlantic Arc)

Please note that this provides an overview of comments addressed

1. from DG-MARE on papers on France, Portugal and Spain (6/08/2013) (1st round), as well as
2. further comments from DG MARE to ES paper (uploaded 8/08/2013) (2nd round). Please note that reactions to the 08/08/2013 comments are put in *italics*.

A. Country overview

1. "3 tenths": Please see change
2. Population decrease:
 - > addressed and described more precisely in Spain. Additional information: the tight pressure of the labour market has forced the exodus of emigrants, return of immigrants as a major change in population demography. The ageing of the Spanish population is a trend since the mid 1970-s, when birth rate began to fall. (CSIC- Article: Ageing and FGCSIC strategic line).
3. *"Traditionally, stemming from an agrarian economy specialised in olive oil and wine production, the industry has developed since 1960 in diverse sectors"*
 - > During the 40s, after the Spanish Civil War, the country continued to be an agrarian economy. After the trade accords of 1953 with the USA, the framework change with an intensification of imports and a subsequent abandon of the autarchy policy, accompanied by an increase in the number of foreign investment, tourism, and industry development.
<http://www.unizar.es/eueez/cahe/miranda.pdf>

→ added Charts and tables.

Source. Boletín mensual del Banco de España, Abril 2013. INE, 2013.

→ Added a paragraph on the general overview of the Spanish Maritime economy. Information regarding sectorial analysis has been inserted in this part of the report.

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B. Coastal regions

1. The coastline figures are interesting and should be retained but should be treated with caution. What scale is it? Wikipedia has got quite a good article as to why there are no true coastline figures:

-> Data has been taken from the Ports of Spain Authority's Website, that uses the World Resources Institute data (50km Interval scale.).

-> Please see change with data from INE, and comment on foot note.

Mediterranean coastal region: 3,457 Km; Atlantic Coastal region: 4,419 km.

-> Please see changes on Country Fiche.

2. Definition of Coastal Region from Eurostat:

An EU coastal region is a statistical region of the European Union (EU), at NUTS level 3, defined according to one of the following criteria:

- The region has a sea border;
- The region has more than half of its population within 50 km from the sea, that is based on the GEOSTAT 2006 population grid. Previous to the availability of this grid, all coastal regions were defined as a NUTS level 3 region with a sea border;
- Hamburg.
- German region, not meeting either of the two previous criteria, but still included because of its strong maritime influence

Source:

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Coastal_region
Nonetheless figures have been changed using the information provided from Landscan.

3. Brief picture of the maritime economy per región could be included. I think descriptions as the ones given by the Project Mariplan (page 50 onwards) could be useful: --> Please see added text in coastal regions in the country paper.

4. Coastline figure issue:

"On the other side, according to the 2012 Annual Report of the Ministry of Agriculture, Food and Environment, "la longitud de los bienes de dominio público marítimo-terrestre de la costa española es de unos 10,250 kilómetros". This difference could be attributed to the fact that the Spanish coastline has been measured according to the procedure described by the Spanish Coastal law to determinate the coast borderline and delivers cartography drawing the mentioned line at scale 1:1000.

http://www.magrama.gob.es/es/ministerio/servicios/publicaciones/10-II-F-Costas_y_medio_marino_tcm7-286714.pdf - page 639

"1st picture shows all regional subdivisions in Spain. It would be useful to highlight the Atlantic/Mediterranean ones, that is, those on the scope of the study. On the other side, measurements of jurisdictional zones are given."

"2nd picture shows the so-called ports of national interest. I think it would fit better under the maritime transport section."

C. Overview of relevant maritime economic activities in a Member State

D. Sentence rephrased Table 1

- ➔ Minor modifications to the table layout to increase readability.

E. Overview of maritime economic activities in a MS at NUTS 0 level

- ➔ Title rephrased in "Review of maritime economic activities in Spain"

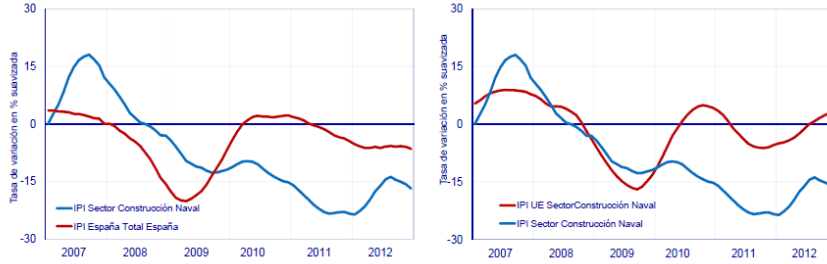
F. Shipbuilding

1. Breakdown of GVA and employment by type of ship: No data available.

Figures and growth rates should be presented, as well as trends and challenges.

-> of orders and production, some information on number of companies added).

Evolución reciente del Índice de Producción Industrial (IPI)
(tasa de variación anual suavizada)



Fuente: INE (IPI, Índice de Producción Industrial); EUROSTAT; MINETUR
Ámbito sectorial: RAMI 14.2, CNAE-2009 grupo 30.1 (Construcción naval)

2. Earthquake and natural disasters response ships:
-> Please see change.

3. Shipbuilding jobs in the public sector: The high number of public jobs in the shipbuilding sector is due to the characteristic of the major shipbuilding enterprise, NAVANTIA, publicly owned and with around 5.000 employees in 2009. NAVANTIA is specialised in military shipbuilding, and is since 2005 the only public enterprise as a result of the privatisation process in 2005 of several shipbuilding state-companies.
(www.navantia.es)



Informe Gerencia GSN
Tabla 2. Gráfico 1: Plantillas totales del sector

	1975	1992	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Astilleros públicos (Construcción civil)															
Plantilla Propia*	25.298	8.301	5.968	3.796	3.817	3.787	3.705	3.551	492	787	624	611	508	507	505
Plantilla Total	36.097	8.301	5.986	3.796	3.817	3.787	3.705	3.551	492	787	624	611	508	507	505
Astilleros Privados															
Plantilla Propia	12.113	5.004	3.839	2.870	2.642	2.445	2.156	1.868	2.598 ⁽¹⁾	2.526	2.432	2.304	2.164	1.960	1.774
Plantilla Total	15.481	5.226	3.839	2.870	2.642	2.445	2.156	1.868	2.598	2.526	2.432	2.304	2.164	1.960	1.774
Otras actividades															
Plantilla Propia	6.420	2.474	1.885	1.541	1.524	1.509	1.488	1.438	793	398	---	---	---	---	---
Plantilla Total	6.431	2.474	1.885	1.541	1.524	1.509	1.488	1.438	793	398	---	---	---	---	---
TOTAL SECTOR															
Plantilla Propia	37.411	13.305	9.807	6.668	6.459	6.232	5.861	5.419	492	3.313	3.056	2.915	2.672	2.467	2.401
Plantilla Total	51.578	13.527	9.825	6.668	6.459	6.232	5.861	5.419	3.090	3.313	3.056	2.915	2.672	2.467	2.401

(1) Recoge la privatización de un astillero. (2) Recoge una nueva privatización. (3) Recoge la privatización de tres astilleros. A partir de 2005 estimación de la GSN sobre datos de Navantia. La plantilla total de Navantia al 31 de diciembre de 2008 era de 5.536 trabajadores y a 31/12/2009 de 5.511 trabajadores.

“NAVANTIA is investing on diversification to other markets (off-shore for example). Some research on that should be done as well.”

→ Please see changes on country paper and information on military vessels added

4. “also main companies should be mentioned, e.g. the public company Navantia. The sector encompasses currently a total of 307 companies¹. Main companies are Navantia Astilleros Gondán, Astilleros Armón and Navales Paulino Freiro.

→ Please see changes on Country fiche.

¹ MINETUR, Mayo 2013. <http://www.minetur.gob.es/es-ES/IndicadoresyEstadisticas/Presentaciones%20sectoriales/Construcci%C3%B3n%20naval.pdf>

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5. Percentage/number of stable and unstable jobs in the sector:
 - > No data available.
 - > Although high instability in the sector. No official sources estimate that the return of tax lease would mean the loss of around 80,000 jobs.
6. Representative industry: Although the naval sector represents less than 0,1% of GDP in the national economy, the sector is emblematic due to the long tradition and its positive spill over in the whole of the industry sector, in terms of its export capacity, competitiveness, and technology development.
7. 2nd paragraph on the restructuring of the sector for over last years is important to understand..."

➔ -> *Within the European Naval framework, initiated in the 1970s total convergence with competitiveness principles and horizontal norms applicable to other industrial sectors is pursued, limiting the scope of State Economic Aids to the Shipbuilding sector. At this regard the "Gerencia del Sector de la Construcción Naval" created in 1984 is commissioned to the steady and coordinated reconversion of the Spanish Shipbuilding industry and the elaboration of the assessment reports on the concession of State Aids in accordance to the European Naval Framework. Please see changes on Country Fiche.*

G. Construction of water projects

Share of NACE code related to maritime activities:

-> No data is available regarding the share of maritime water project construction.

"The promoters in Spain for works harbour infrastructures, dredging, etc are the following..."

- Statistics Ministerio de Fomento: does not provide any information on Maritime water project construction. Information from regional ports is also limited. - Puertos del Estado Annual Report 2011- Investment expenditure of Works, type of Works, etc. (Pág 115). Information regarding employment is not available.

➔ see information included in country fiche

- Regional breakdown (table 3) has been modified CEPYC, Centro de Estudios de Puertos y Costas del CEDEX- Does not provide information regarding maritime projects although it includes the following activities: Design of seawall for the pipe rack and new berthing line Works, Maritime building procedures, and new structure typologies.

(http://www.cedex.es/CEDEX/LANG_CASTELLANO/ORGANISMO/CENTYLAB/CEPYC/LINEAS/)

H. Deep sea and short sea shipping

No data is available for a breakdown of deep sea and short sea shipping.

As an example of the evolution of short sea shipping we have the creation of new short sea routes such as Barcelona-Génova, Barcelona-Civittavechia, Barcelona -Roma or Valencia-Livorno and Barcelona - Tunisia, Algeria and Tanger, Bilbao- Brujas, Bilbao- Portsmouth and Santander- Plymouth. See also http://www.globalports.eu/pdf_upload/GM2%20andy_0.pdf

Information added with regard to Motorways of the Sea Programme:

- The Maritime Motorway linking Gijón to Nantes-St. Nazaire, was inaugurated in September 2010 in the frame of the Programme Marco Polo. In 2013, investment will be put in place to extend the Atlantic Maritime Motorway to Vigo City, in Galicia.

-Algeciras Port Hub, considered by the UNCTAD as the Mediterranean Port Hub due to its reliable and sustainable hinterland connections, but also its capacity and openness to Mediterranean countries by sea.

- On the other hand, the port hub of Las Palmas, at the centre of the Main Maritime routes merging Europe, Africa and South America has enormous potentials in terms of Maritime transport. The Project Las Palmas Bunkering Hub, taking the example of Panama Channel Bunkering, aims to become the petrol station in the Atlantic merging the 3 continents.²

- The Puerto Seco de Madrid is a Maritime Intermodal Terminal relating Madrid's Logistic Centre with the main Ports of Spain (Algeciras, Bilbao, Barcelona y Valencia).

→ Please see changes on Country Fiche.

I. Passenger ferries

1. Growth of passengers: No data available.
2. Routes:

Algeciras -Ceuta ; Algeciras - Tanger ; Alger - Alicante ; Alicante – Oran; Almeria - Ahazaouet ; Almeria - Melilla ; Almeria - Nador ; Barcelona - Alcudia ;Barcelona Ciutadella ; Barcelona – Civitavecchia ; Barcelona -Génova ; Barcelona - Ibiza ; Barcelona - Livorno ; Barcelona - Mahon ; Barcelona - Palma ; Barcelona -San Antonio ;Barcelona -Tanger ; Ibiza -Denia ; Ibiza - Formentera ; Ibiza - Palma ; Ibiza - Valencia; Las Palmas de Gran Canaria – Arrecife; Las Palmas de Gran Canaria - Cadiz ; Las Palmas de Gran Canaria - Sta Cruz de la Palma; Las Palmas de Gran Canaria - Sta Cruz de Tenerife ; Mahon - Valencia ; Malaga-Melilla

3. GVA: € 353.00 m
4. Employment: 5,582

J. Catching fish for human and animal consumption

1. "Agro industry": Please see change.
2. Gender information: deleted.
3. No data available for fish caught for fish feed.
4. Characterisation by region. (Mediterranean vs Atlantic) → information included
5. Information added on trade and markets data in the fish processing (canning) industry. → information included

"Fishing / shellfish processing industries (canning industries) have not been mentioned. They are important for the Spanish maritime economy, Some info can be found in here:

<http://www.anfacos.es>

² Memoria Anual Puerto de Las Palmas 2011.
<http://www.proyectogesport.com/descargas/bunkering.pdf>

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Canning industry: Information regarding trade figures, number of enterprises, etc (Datos Mercado conservas 2011- Anfac.es + informe datos sector conserva 2010) The Spanish Canning industry is acquiring increased relevance, leader in the EU market and third in the international market, thus meeting an increase from 1996 to 2006 of 42% in gross terms and 81% in terms of income. Tuna and anchovies are the main products.³The Canning Industry is mainly concentrated in Galicia, where are established 58 out of the 144 spanish canning companies. Only the 5 main companies have a turnover of € 75M.

→ Please see changes on Country Fiche.

K. Aquaculture

1. Shellfish: 75% of the total aquaculture production (dominated by the Mussel production).
No growth rates found in the data
2. Finfish: around 25% of the total aquaculture production. No growth rates found in the data.
3. *Characterisation by region (Mediterranean vs Atlantic). → information included*
4. *Trade and markets data. → information included in fishery section. The data is not disaggregated by fishing and aquaculture*

L. Blue biotechnology

1. Name of local companies: Please refer to the following paragraph where a series of companies (Bioalgal Marine, CEAMSA, BioFuel Systems y Seaweed Canarias) are cited. These companies have already developed a series of projects mostly in the pharmaceutical sector and have attracted foreign investment for their research activities. (Ministry of Economy and Competitiveness).
2. Biotechnology with algae: Information from the Ministry of Economy and Competitiveness. More concretely the firm BIOMAR has launched an innovative research project in the area of bioenergy: the project consists on the evaluation of 4,000 strains of microalgae based on their potential for biodiesel production. Biomar then selected several candidates to start their industrial development
3. *"The INE (Instituto Nacional de Estadística) provides socio-economic figures on blue biotechnology from 2004 onwards..."*
 - *-> Centro Nacional de Biotecnología- CSIC- No information on Blue Biotechnology Projects.*
 - *Instituto de Investigaciones Marinas- CSIC- Cited in the document as the Institute of Marine Research.*
 - *Information available at the INE does not provide socio-economic figures on blue biotechnology.*

M. Agriculture in saline soils

1. *"I don't think figures obtained are representative of the maritime economy..."*
-> Agriculture in saline soils: No data is available as to realise an assessment of the activity evolution.

³ Plan estratégico de la Industria Conservera Gallega 2007-2013, Centro Tecnológico del Mar-CETMAR, Octubre 2006.

2. Anything on algae and rice, e.g. in the Delta del Ebro:

http://www20.gencat.cat/portal/site/parcsnaturals/menuitem.1942a21487b35eb0e6789a10b0c0e1a0/?vgnextoid=4861728d53b32210VqnVCM1000008d0c1e0aRCRD&vgnnextchan nel=4861728d53b32210VqnVCM1000008d0c1e0aRCRD&vgnnextfmt=default&newLang=es _ES

Special attention should be given to the Delta del Ebro, where around 65% of its soils are used for rice cropping. Nonetheless, given the saline characteristic of its soil, irrigation techniques are performed to introduce floods of fresh water during the period of maximum plant growth.

+ PLAN INTEGRAL DE PROTECCIÓN DEL DELTA DEL EBRO (Documento base- Julio de 2006)

-> Please see text added in the description of the maritime economic activity

N. Offshore oil and gas

1. GVA: € 16 m
2. Employment: No data available (neither at level of Spanish Petroleum association or Ministries (Environment, Economics etc.). Instead, the number of enterprises has been provided.

O. Offshore wind

1. Structure: Please see changes.
2. "Maritime – terrestrial public domain": public domain sea-land. Please see change.
3. Information regarding minimum guaranteed price: The Royal decree Law 1/2012 regulates the sector from 2013 onwards and does not provide any information regarding the price on marine energy. Before the Royal Decree the price was set at 173.5 marina euros which was more than double the minimum guaranteed price on onshore wind energy. Please see change.

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P. Ocean Renewable energy

Ibermar project: Wave technology through the use of buoys. For more information please refer

to: http://www.medioambientecantabria.es/documentos_contenidos/22822_3.Parte1.pdf

1. BIMEP project: Wave technology through the use of wave energy converters. For more information please refer to: <http://www.fp7-marinet.eu/EVE-biscay-marine-energy-platform-bimep.html>

"There are a number of devices under development in the world at different stages..." This could be shortened and simplified. We think you want to say that with current technology, the generation costs are too high and need to be reduced.

->

Q. Carbon capture and storage

1. "The project mentioned is located in Castilla – Leon, an in-land Spanish region...."
➔ Indeed, that is correct. CIUDEN: The project is still in a developing stage. For more information please refer to:
<http://www.ciuden.es/index.php/es/comunicacion/noticia/es/29-comunicacion/noticias-tecnologias/711-ciuden-comienza-la-construccion-de-los-pozos-de-observacion-e-inyeccion-de-co2-de-su-planta-de-desarrollo-tecnologico-en-hontomin-prueba>
2. "As far as I know, there are no concrete plans to develop carbon capture and storage in short terms..."
[No projects of carbon capture and storage in the maritime areas.](#)

R. Aggregates mining

1. No data is available.

"It should be explained that marine aggregates mining (sand and gravel extraction) with economical purposes is forbidden by the Spanish Coastal Law..."
added to the country paper: *The Spanish Coastal Law, article 90, specifically forbids the extraction of arid aggregates, considered a serious misconduct and punished with a fine of 20 euros per square metre. (Ley 2/2013, de 29 de mayo, de protección y uso sostenible del litoral y de modificación de la Ley 22/1988, de 28 de julio, de Costas.)*

S. Securing fresh water supply

1. Desalination added to Securing fresh water supply (in analogy to other country papers)
2. Desalination water supply: the current water policy does not support the construction of new water desalination infrastructure. Nonetheless no official data source has been found.

T. Coastal tourism

1. "Coastal regions" definition: Spanish region with sea borders: in total 31 provinces (including islands and autonomous cities).
2. Trips made across the globe annually motivated by other tourist segment: revised data is 50%.

U. Yachting and marinas

1. Rate of increase of berths: in 2011: 130.555 in comparison with 2003: 92.694. This means mean an increase of 41%? For more information please refer to:
http://www.feapdt.es/wp-content/uploads/2010/11/art138_2.pdf
2. "Many of the problems associated with marinas come from..." This statement is quite biased and does not describe the economy linked to marinas.
-> The information was taken from the following Yachting Businessmen Association website, www.fondear.org, therefore it will be deleted from the report.

V. Cruise tourism

Cruise tourism created 26. 389 new jobs at sea and land. Please see change and reference added.

W. Coastal protection

1. "Figures on what has been spent on coastal protection in 2012 at..."Investment in coastal protection: Law 2/2012, 29th of June, presents the General State Budget for 2012. Under Chapter 6. Investments, the State assigned to the Program 456d. Acting on the Coast the sum of € 78,716,680 to be managed by the Department of Sustainability of the Coast and the Sea,⁴.. Investment realised for the recuperation of coastal littoral after the Prestige disaster is around: € 1,000 m. For more information please refer to: <http://www.miliarium.com/bibliografia/monografias/MareasNegras/Costes.asp>

2. "2nd paragraph would fit better under maritime monitoring and surveillance"
-> moved to section of maritime monitoring and surveillance

X. Maritime monitoring and surveillance

1. Space sector related to maritime surveillance: No data available.
2. Proportion of Spanish vessels exported: No data available.
3. Additional information regarding organisms responsible for Maritime monitoring and surveillance has been included

"Spanish coastal border protection is commissioned to the marine Army Forces and the Spanish Guardia Civil. Not entirely true. The Guardia Civil is responsible for..."

-> added a paragraph on these marine stakeholders in charge of maritime monitoring and surveillance.

Table 3- overview of employment and GVA per maritime economic activity per region in Spain

Layout will be adjusted and unified in the draft final country papers

Y. Listing and ranking the largest marine and maritime economic activities

Indicate how you get a mean score from GVA and employment. The methodology description will be part of the central methodology Annex, compiled for all country papers.

Z. Ranking order for the 7 fastest growing marine and maritime economic activities over the past 3 years

⁴ MAGRAMA, 2013. Memoria de Actividades del MAGRAMA durante 2012.

AA. Ranking order of the 7 most promising marine and maritime economic activities

Deleted underscores and replaced by bold and italics

BB. Table 6 future potential of economic activities

The methodology description will be part of the central methodology Annex, compiled for all country papers.

CC. Assess the innovation score of the maritime economic activities/sectors

Will be compiled by central data team and as agreed with DG MARE. As far as numbers are concerned.

Assessment of innovation reports

Reports included in the list don't appear to be the most representative ones to assess the innovation potential of maritime economy. No relevant information on innovation has been found. An intensive search on publications and info on the different institutions and projects suggested has been realised. (see attached at the end of the document and so far only available in Spanish language)

Following institutions (non-exhaustive list) might provide a better overview of innovation in maritime activities in Spain: Cluster Marítimo Español, e.g, proyecto 20 leguas de innovación marina; Regional Clusters (Canarias, País Vasco, etc); Fundación Española para la Ciencia y Tecnología (FECYT); Centro de innovación del transporte (CENIT); Centro Tecnológico Leitat; Centro Tecnológico do Mar; Asociación Centro Tecnológico Naval y del Mar; Instituto Español de Oceanografía; Banco de Algas Español; Centro Tecnológico Ciencias Marinas (CETECIMA); Instituto de Investigaciones Marinas de Vigo – CSIC; Centro Mediterráneo de Investigaciones Marinas y Ambientales (CMIMA) – CSIC; Instituto de Investigaciones Marinas de Andalucía – CSIC; Plataforma Tecnológica Marítima Española.

DD. Detailed description of the sources and the methodology on maritime economic activities

The layout of the Annexes will be addressed in the final country papers, as well as in the final methodology Annex accompanying these.

EE. Compound Annual Growth Rates (CAGR) of the maritime economic activities

Scan of sources for identifying national innovation indicators

Chapter 3.2. Assessment of innovation reports

Cluster Marítimo Español; Proyecto 20 leguas de innovación marina: informe no disponible.

Regional Clusters: Canarias , País Vasco.

Fundación Española para la Ciencia y la Tecnología (FECYT),

-Memoria de actividades 2011:

<http://icono.fecyt.es/informesypublicaciones/Documents/Memoria%20Actv.%202011/cap3.pdf>

CIEMAT

Entre las actividades realizadas por el CIEMAT durante el año 2011 dentro del ámbito tecnológico-científico, agrupadas en las distintas áreas en las que se desarrollan, destacan:

- En energías renovables se pusieron en marcha proyectos de predicción de recursos eólicos en el entorno marino, de sistemas eólicos aislados para desalación de agua de mar y de desarrollo de herramientas de diseño para parques eólicos marinos, y un sistema de telegestión de minigeneración eólica distribuida. También se trabajó en el di-seño, la construcción y el ensayo de un absorbedor para la obtención de energía eléctrica a partir de las olas. Se ha investigado y desarrollado para Centrales Solares de Torres comerciales y se iniciaron tareas encaminadas a desarrollar e implementar aplicaciones informáticas para la mejora de la difusión en el campo de la radiación solar y su modelización. Se han desarrollado mecanismos de sostenibilidad para el uso de la biomasa y tecnologías avanzadas para la optimización energética en una estación de depuración de aguas residuales. De igual modo, se ha trabajado en la producción comercial de electricidad centralizada o de pequeños equipos con biomasa de cultivos energéticos y en la reducción de los niveles de emisiones de partículas utilizando pelets de calidad. En el campo del ahorro energético, surgió una iniciativa para la preparación y estudio de laminas delgadas microporosas para la conversión electroquímica de energía en pilas de combustible. Se ha impulsado el uso de materiales anódicos eficientes para Pilas de Combustible de Óxidos Sólidos de Temperatura Intermedia (IT-SOFC) alimentados con biogás.

En el ámbito de las **radiaciones ionizantes**, se puso en marcha un proyecto para la evaluación de impacto radiológico de las centrales térmicas de carbón españolas y la participación en la Red europea de excelencia en radioecología.

En 2011 se han abierto tres nuevas líneas de trabajo en el CIEMAT relativas a Generación eléctrica a partir de energías marinas, Evaluación de la Seguridad y Análisis de Riesgos de la Planta de Desarrollo Tecnológico (PDT) en Hontomín y Desarrollo de Instrumentación Científica e Industrial en colaboración con entidades externas.

IEO

Las actividades de I+D+I que lleva a cabo el IEO se estructuran en tres áreas fundamentales: Pesquerías, Acuicultura y Medio Marino y Protección Ambiental.

- Dentro del Área de Pesquerías el objetivo fundamental del IEO es el conocimiento de las pesquerías de interés para las flotas españolas en las distintas zonas marítimas así como la evaluación periódica del estado de los recursos pesqueros. Así mismo, el IEO asesora a la Administración pesquera en sus medidas de gestión.
- El Área de Acuicultura tiene como objetivos fundamentales la mejora de las técnicas de cultivo de especies ya en explotación y la investigación sobre la viabilidad del cultivo de nuevas especies, todo ello con la finalidad de transferir a una industria de acuicultura en expansión los resultados obtenidos.
- Los objetivos del Área de Medio Marino y Protección Ambiental se centran en el conocimiento de los procesos oceanográficos desde un análisis multidisciplinar (físico, químico, biológico y geológico), y en el

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estudio de la influencia de la variabilidad de los mismos en la producción biológica y los recursos marinos. Así mismo, mantiene un programa de seguimiento de la contaminación marina de cuyos resultados se informa a los organismos nacionales e internacionales pertinentes. Por último, la línea de investigación sobre microalgas marinas tiene como objetivo el estudio de la identificación taxonómica, el conocimiento de los ciclos de vida y perfil de toxinas de las microalgas (causantes de intoxicaciones por consumo de bivalvos tales como el mejillón y otros) y la dinámica de poblaciones de las microalgas tóxicas.

[CEDEX](#)

Listado de proyectos de ingeniería Civil y Arquitectura, entre los cuales se enmarcan trabajos en puertos.

Durante 2011 han finalizado los siguientes proyectos de investigación:

“Boya pendular para la generación de energía”. La empresa Tecnalia está desarrollando el diseño de un sistema de aprovechamiento del oleaje basado en una boya prismática orientada perpendicularmente a las crestas de las olas. El objetivo de los ensayos que se han desarrollado en el CEHIPAR es obtener información esencial sobre el comportamiento dinámico de la estructura, su interacción con el medio marino (cargas, movimientos...) y del captador de energía sometido a diferentes estados de excitación representativos de los estados reales durante su vida operativa.

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ENCYT- Prospectiva 2020 (2008):

http://icono.fecyt.es/informesypublicaciones/Documents/ENCYT_prospectiva.pdf

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[Centro de Innovación del Transporte \(CENIT\)](#)

No he encontrado información.

[Centro tecnológico LEITAT](#)

No he encontrado información.

[Centro Tecnológico do Mar \(CETMAR\),](#)

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Marine Tourism in the Atlantic Arc: potential demand analysis

Plan estratégico de la industria conservera de Galicia

<http://www.cetmar.org/DOCUMENTACION/dyp/Plan%20Estratexico%20Conserva.pdf>

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Plan estratégico del sector de los productos del mar congelado de Galicia Visión 2013

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<http://www.cetmar.org/DOCUMENTACION/dyp/Plan%20Estratexico%20Conxelado.pdf>

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Boletín Vigilancia Tecnológica – Acuicultura 2011.

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http://www.cetmar.org/DOCUMENTACION/dyp/vt_acuicultura_14.pdf

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Asociación Centro Tecnológico Naval y del Mar

Asociación europea----no sé si es muy útil para este capítulo, ya que la información que se puede encontrar es a nivel europeo.

Instituto Español de Oceanografía

Banco de Algas Español

Informe Científico del Banco Español de Algas.:

<http://www.marinebiotechnology.org/images/stories/docs/informecien.pdf>

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Centro Tecnológico de Ciencias Marinas

No he encontrado información, publicaciones.

Instituto de Investigaciones Marinas de Vigo-CSIC

Memoria 2011: <http://iim.csic.es/Documentos/memoria2001.pdf>

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Instituto de Investigaciones Marinas de Andalucía

<http://www.icman.csic.es/>

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Plataforma Tecnológica Marítima Española

No he encontrado información/publicación pertinente para este apartado