

NON PAPER

Subject **The size, nature and dynamics of the blue economy**

1. OBJECTIVE

DG MARE has begun a process for estimating the size, nature and dynamics of the blue economy in EU Member States. The aim is to allow comparison on a similar basis between different activities, different countries and, where possible, different sea basins in order to inform policies aiming to promote growth and jobs. The process will involve specialists from Member States and the relevant industries.

2. PROGRESS SO FAR

Initial estimates for the size and dynamics of the blue economy are presented in an annex to this document for the EU as a whole and from DG-MARE's maritime forum for each EU country¹. The analysis covers

- (1) primary sectors – those where the activity is primarily maritime – shipbuilding, shipping, tourism, offshore oil and gas, offshore renewable energy, fisheries, aquaculture;
- (2) indirect employment – jobs in industries providing goods and services to the primary sectors;
- (3) coastal tourism;

The method used is encapsulated in an application of the SAS software suite. Thus it can deliver revised results quickly as new updates of data become available or as new sources of information allow a refinement of the underlying assumptions.

2.1. Primary sectors

Statistics such as turnover, average wages, added value and employment are taken directly from Eurostat databases except for

- (1) fisheries and aquaculture – where data are obtained from the Data Collection Framework
- (2) offshore wind energy where data are obtained from the European Wind Energy Association

¹ <https://webgate.ec.europa.eu/maritimeforum/en/node/3762>

The initial estimates assume that all oil and gas activity is offshore. The International Association of Oil and Gas Producers suggest that 80% of production is offshore and that a given production offshore creates more jobs than onshore. They are currently looking at information provided by their members to determine whether they can provide a country-by-country analysis of the split between offshore and onshore.

Eurostat structural business statistics also cover neighbouring countries such as Norway and Turkey so it is possible to compare their blue economies using the same method.

2.2. Indirect employment

Data are available on the amount that each primary activity spends on goods and services. Supply and use tables indicate what particular goods and services are bought. Ratios of turnover to persons employed for these activities then allow the indirect jobs to be estimated using the following formula.

$$J_i = \sum_{j=1}^{j=n} \frac{p_i \alpha_i^j}{t^j}$$

$$i \in P, j \in S, j \notin P$$

where:

- J_i is the number of secondary jobs generated by primary activity i
- p_i is the sum of purchases of primary activity i from Eurostat structural business statistics
- t^j is the turnover per person employed of secondary activity j from Eurostat structural business statistics
- α_i^j is the proportion of total supplies to primary activity i provided by secondary activity j (from supply and use tables)
- P is the set of primary activities
- S is the set of secondary activities. To avoid double counting, purchases from primary sectors are excluded.
- n is the number of secondary activities

The current estimate assumes that the indirect activity takes place in the same country as the primary activity. Provided that the turnover to persons employed ratios are similar, and provided that most indirect activity is within the EU, this will not have a large impact at an EU level. However, this can distort the distribution of activity between countries. Improving these estimates will be one of the objectives of the proposed process for estimating the size of the blue economy.

The supply and use tables were taken partly from Eurostat and partly from the UK statistical office. Other national tables allowing a greater level of detail than those of Eurostat are available and will be examined in a following step.

2.3. Coastal Tourism

Coastal tourism is defined as tourism where at least one night is spent in a municipality with a coastline or with 50% of its territory within 10km of the sea. At present there is insufficient data to estimate activity for day trips. Coastal tourism is the largest activity in the blue economy in terms of jobs.

The size of the activity is based on analyses of tourist spending on:

- (1) accommodation
 - The number of nights spent in coastal regions are determined from surveys of tourism destinations. The turnover and employment are calculated assuming that averages for similar types of accommodation (hotels, campsites etc) are the same for coastal as for non-coastal accommodation in a given country
- (2) transport, food and beverage services and "other"
 - turnover is estimated from surveys of tourist spending and employment from turnover to employed ratios. The turnover to employment ratio for retail activities is used to estimate employment generated by spending on "other"

Separate analyses are made for residents (tourists who reside in the same country) and non-residents (those who come from another EU country). Travel for business is excluded for now although normally tourism statistics do include it.

The transport statistics assume turnover to employment ratios of the destination country. Employment is attributed to the destination country.

Work is ongoing, together with Eurostat, to improve these numbers through:

- (1) better estimates of nights spent in non-paid accommodation. This is particularly significant for residents, currently this is estimated by comparing the difference in income of accommodation establishments and the declared average spending per night of tourists. Better information can be deduced from surveys.
- (2) Better estimates of spending by non-residents. Currently EU-averages are used but numbers are available to attribute the spending to tourists from a particular country;
- (3) Attribution of spending on transport between departure and arrival country.
- (4) In the longer term, when data availability improves, estimates of spending by same-day visitors could be added to the analysis (preliminary data from tourism satellite accounts show that same-day visits account for half of domestic tourism expenditure and one tenth of inbound tourism expenditure).

Numbers will be presented both including and not including business travel.

3. CHARACTERISTICS OF WORKFORCE

The age and sex distribution of those employed in the blue economy is determined from Eurostat's Labour Force Survey. This also includes information on parameters such as educational attainment.

4. OTHER INDICATORS

Eurostat are preparing an update of their 2013 "Statistics in Focus" publication on "economic ebb and flow in maritime sectors"² This will be made available in the third quarter of 2015.

5. NEXT STEP

This analysis is a first step and the figures should not be taken as definitive. DG-MARE will

- (1) send these figures to industry associations for checking and comments
- (2) issue an invitation to Member States for a meeting in autumn 2015 to begin a process for improving our understanding of the size, nature and dynamics of the blue economy. It will be accompanied by an update of the estimate presented here

Annex

Initial Estimate of size of blue economy for European Union

² <http://ec.europa.eu/eurostat/documents/3433488/5585712/KS-SF-13-005-EN.PDF/c1327a39-9222-4157-b4f5-248bc20d9b7c?version=1.0>

ANNEX

INITIAL ESTIMATE OF SIZE OF BLUE ECONOMY FOR EUROPEAN UNION

The numbers below are averages from 2009 till the latest date where data are available (2012 in most cases) together with the average growth rate since 2008. The exception is the renewable energy sector where the rate of growth is so high that presenting past averages would be misleading. Here data from 2014 was used.

			Number persons employed		Turnover (€millions)		averagewages	
crude petroleum and gas extraction	Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E) [sbs_na_ind_r2] updated 8 May 2015 extracted 14 May 2015	Extraction of crude petroleum and natural gas	77,000	-0.4%	160,000	0.3%	55,000	6.4%
		Support activities for petroleum and natural gas extraction	49,000	5.8%	15,000	4.7%	51,000	3.5%
		Indirect	460,000					
	supply and use tables		580,000					
fishing and aquaculture	Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E) [sbs_na_ind_r2] updated 8 May 2015 extracted 14 May 2015 Data Collection Framework: data from JRC	Processing and preserving of fish, crustaceans and molluscs	110,000	-0.1%	26,000	9.1%	19,000	8.2%
		Freshwater aquaculture	6,600		540		17,000	
		Marine aquaculture (finfish)	3,700		710		25,000	
		Marine aquaculture (shellfish)	30,000		870		6,000	
		Marine fishing	140,000		6,800		13,000	
		Indirect	93,000					
	supply and use tables		380,000					
other	Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E) [sbs_na_ind_r2] updated 8 May 2015 extracted 14 May 2015	Extraction of salt	9,200	0.5%	1,800	2.6%	30,000	1.5%
renewables	European Wind Energy Association	wind - total	77,000	31.1%	.	.	.	.
shipbuilding	Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E)	Building of ships and boats	190,000	-5.7%	35,000	-3.5%	29,000	6.7%
		Dismantling of wrecks	15,000	-8.9%	4,300	-	18,000	-
						13.9%		3.6%

			Number persons employed		Turnover (€millions)		averagewages	
	[sbs_na_ind_r2] updated 8 May 2015 extracted 14 May 2015 supply and use tables	Repair and maintenance of ships and boats	85,000	-6.6%	8,100	-8.8%	20,000	0.9%
		Indirect shipbuilding	130,000					
		Indirect repair	28,000					
			440,000					
shipping	Annual detailed enterprise statistics for construction (NACE Rev. 2, F) [sbs_na_con_r2] updated 5 May 2015 extracted 14 May 2015	Construction of water projects	99,000	.	14,000	-6.0%	.	.
	Annual detailed enterprise statistics for services (NACE Rev. 2 H-N and S95) [sbs_na_1a_se_r2] updated 12 May 2015 extracted 14 May 2015 supply and use tables	Cargo handling	260,000	-3.9%	26,000	0.5%	25,000	1.6%
		Service activities incidental to water transportation	110,000	-1.5%	19,000	1.9%	37,000	1.9%
		Water transport	210,000	-2.4%	110,000	-1.6%	36,000	2.2%
		indirect	390,000					
			1,100,000					
tourism	Eurostat tourism survey and abs residents	Camping grounds, recreational vehicle parks and trailer parks	44,000	2.3%	4,600	2.3%	.	.
		Holiday and other short-stay accommodation	69,000	1.7%	4,000	1.3%	.	.
		Hotels and similar accommodation	330,000	0.2%	23,000	1.3%	.	.
		Passenger air transport	1,900	-3.2%	610	-0.9%	.	.
		Passenger rail transport, interurban	9,500	-3.8%	1,100	2.0%	.	.
		Restaurants and mobile food service activities	180,000	3.2%	8,000	3.2%	.	.
		Retail sale of automotive fuel in specialised stores	11,000	-1.5%	4,800	0.3%	.	.
		Retail trade, except of motor vehicles and motorcycles	37,000	-0.1%	5,100	1.0%	.	.
	Eurostat tourism survey and sbs non- residents	Camping grounds, recreational vehicle parks and trailer parks	11,000	2.3%	1,100	2.3%	.	.
		Holiday and other short-stay accommodation	54,000	1.7%	2,800	1.3%	.	.
		Hotels and similar accommodation	360,000	0.2%	23,000	1.3%	.	.
		Passenger air transport	140,000	-3.2%	44,000	-0.9%	.	.
		Passenger rail transport, interurban	22,000	-3.8%	2,300	2.0%	.	.
		Restaurants and mobile food service activities	420,000	3.2%	15,000	3.2%	.	.

		Number persons employed		Turnover (€millions)		averagewages
	Retail sale of automotive fuel in specialised stores	27,000	-1.5%	11,000	0.3%	.
	Retail trade, except of motor vehicles and motorcycles	240,000	-0.1%	29,000	1.0%	.
supply and use tables	Indirect	410,000				
		2,400,000				

INDIRECT EMPLOYMENT

		Extraction Of Crude Petroleum And Natural Gas	Fishing and aquaculture	Processing and preserving of fish, crustaceans, molluscs, fruit and vegetables	Building of ships and boats	Repair and maintenance of ships and boats	Water transport
All	1,538,082	456,601	34,846	93,126	126,016	27,544	393,002
Products of agriculture, hunting and related services	.	.	.	.	.	.	.
Products of forestry, logging and related services	.	.	.	.	.	.	.
Fish and other fishing products; aquaculture products; support services to fishing	.	.	.	.	.	.	.
Mining and quarrying	610	.	559	.	.	.	51
Coal and lignite	18	0	0	18	0	0	0
Crude Petroleum And Natural Gas & Metal Ores	.	.	.	.	.	.	.
Other mining and quarrying products	418	0	0	0	0	0	0
Mining support services	83,431	83,431	0	0	0	0	0
Food, beverages and tobacco products	8,357	.	2,933	.	.	.	5,424
Processed and preserved fish, crustaceans, molluscs, fruit and vegetables	37,438	319	30	14,412	95	0	66
Vegetable and animal oils and fats	991	19	0	627	0	0	7
Dairy products	3,050	168	0	467	60	0	11
Grain mill products, starches and starch products	1,678	0	4	781	0	0	0
Bakery and farinaceous products	27,303	523	0	53	0	0	57
Other food products	13,027	526	19	4,248	0	0	53
Prepared animal feeds	383	0	250	0	0	0	0
Alcoholic beverages	65,710	0	0	0	0	0	1
Soft drinks	1,815	0	0	0	0	0	3
Tobacco products	0	0	0	0	0	0	0
Textiles, wearing apparel, leather and related products	7,751	0	3,673	0	0	0	2,429
Wearing apparel	1,945	1,173	14	0	0	0	0
Leather and related products	1,897	0	3	0	0	0	0
Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials	12,355	652	911	0	7,972	1,293	310
Paper and paper products	8,861	0	323	5,496	191	82	1,105
Printing and recording services	1,130	0	129	39	207	0	455
Coke and refined petroleum products	6,026	522	780	104	98	38	3,415
Chemicals and chemical products	1,577	.	888	.	.	.	689
Petrochemicals - 20.14/16/17/60	2,243	805	5	33	422	199	2
Dyestuffs, agro-chemicals - 20.12/20	92	0	0	63	0	0	0
Paints, varnishes and similar coatings, printing ink and mastics	2,743	0	0	0	1,689	760	0

	Extraction Of Crude Petroleum And Natural Gas	Fishing and aquaculture	Processing and preserving of fish, crustaceans, molluscs, fruit and vegetables	Building of ships and boats	Repair and maintenance of ships and boats	Water transport	
Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	1,889	0	0	149	0	0	6
Other chemical products	205	0	0	155	0	0	0
Basic pharmaceutical products and pharmaceutical preparations	527	0	144	12	0	0	12
Rubber and plastic products	21,146	70	651	6,755	9,670	1,198	2,250
Other non-metallic mineral products	716	.	245	.	.	.	471
Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9	5,064	90	0	1,422	2,218	619	7
Manufacture of cement, lime, plaster and articles of concrete, cement and plaster	210	210	0	0	0	0	0
Basic metals	5,530	2,243	96	12	2,697	443	38
Other basic metals and casting	2,453	451	0	404	991	597	10
Fabricated metal products, except machinery and equipment	60,933	29,518	1,844	3,218	19,536	2,321	4,232
Weapons and ammunition	178	178	0	0	0	0	0
Computer, electronic and optical products	10,428	471	362	63	6,248	1,001	932
Electrical equipment	9,165	2,869	312	20	4,157	788	987
Machinery and equipment n.e.c.	27,128	4,781	1,011	510	17,083	1,791	1,700
Motor vehicles, trailers and semi-trailers	1,245	0	64	74	228	181	314
Other transport equipment	5,258	0	645	0	0	0	4,580
Ships and boats	.	.	.	.	.	.	.
Air and spacecraft and related machinery	935	906	0	0	0	0	0
Furniture and other manufactured goods	3,287	0	370	45	227	201	1,468
Other manufactured goods	13,007	536	76	565	7,417	1,868	73
Repair and installation services of machinery and equipment	50,973	12,996	3,770	951	12,364	3,510	16,994
Repair and maintenance of ships and boats	.	.	.	.	.	.	.
Repair and maintenance of aircraft and spacecraft	4,339	4,339	0	0	0	0	0
Electricity, gas, steam and air conditioning	379	.	239	.	.	.	140
Electricity, transmission and distribution	4,132	585	82	484	1,697	249	28
Gas; distribution of gaseous fuels through mains; steam and air conditioning supply	1,287	519	2	266	301	86	0
Natural water; water treatment and supply services	1,623	196	169	643	272	142	54
Sewerage services; sewage sludge; waste collection, treatment and disposal services; materials recovery services; remediation services and other waste management services	2,536	323	200	190	160	0	1,091

		Extraction Of Crude Petroleum And Natural Gas	Fishing and aquaculture	Processing and preserving of fish, crustaceans, molluscs, fruit and vegetables	Building of ships and boats	Repair and maintenance of ships and boats	Water transport
Waste collection, treatment and disposal services; materials recovery services	3,440	608	70	504	334	0	84
Remediation services and other waste management services	0	0	0	0	0	0	0
Constructions and construction works	76,706	47,618	1,517	0	4,328	1,135	4,788
Wholesale and retail trade and repair services of motor vehicles and motorcycles	4,717	1,374	190	121	0	79	540
Wholesale trade services, except of motor vehicles and motorcycles	2,390	0	34	0	0	0	2,357
Retail trade services, except of motor vehicles and motorcycles	.	.	.	.	.	.	.
Land transport services and transport services via pipelines	30,586	926	1,164	8,571	603	196	8,300
Rail transport services	7,653	7,139	69	0	170	141	10
Water transport services	.	.	.	.	.	.	.
Air transport services	4,552	2,842	38	12	72	52	520
Warehousing and support services for transportation	191,621	784	2,140	212	495	112	186,063
Postal and courier services	51,198	18,388	492	1,839	972	0	4,085
Accommodation and food services	.	.	.	.	.	.	.
Accommodation services	.	.	.	.	.	.	.
Food and beverage serving services	.	.	.	.	.	.	.
Publishing services	1,841	0	55	151	78	71	995
Motion picture, video and television programme production services, sound recording and music publishing; programming and broadcasting services	2,309	0	41	0	0	0	460
Telecommunications services	5,809	406	184	105	87	25	1,627
Computer programming, consultancy and related services; Information services	59,118	16,111	137	1,054	3,705	1,158	8,117
Information services	5,385	0	0	204	560	190	136
Financial services, except insurance and pension funding	.	.	.	.	.	.	.
Insurance, reinsurance and pension funding services, except compulsory social security	.	.	.	.	.	.	.
Services auxiliary to financial services and insurance services	.	.	.	.	.	.	.
Real estate services, excluding on a fee or contract basis and imputed rent	6,272	681	0	120	297	131	835
Real estate activities on a fee or contract basis	0	0	0	0	0	0	0
Imputed rents of owner-occupied dwellings	.	.	.	.	.	.	.
Real estate services excluding imputed rents	.	.	.	.	.	.	.

		Extraction Of Crude Petroleum And Natural Gas	Fishing and aquaculture	Processing and preserving of fish, crustaceans, molluscs, fruit and vegetables	Building of ships and boats	Repair and maintenance of ships and boats	Water transport
Legal and accounting services; services of head offices; management consultancy services	25,464	.	2,702	.	.	.	22,762
Legal services	87,899	76,325	31	0	625	272	1,459
Accounting, bookkeeping and auditing services; tax consulting services	29,987	13,877	50	554	1,597	322	603
Services of head offices; management consulting services	8,588	146	0	227	339	145	409
Architectural and engineering services; technical testing and analysis services	47,487	21,948	362	6,495	1,981	1,398	4,576
Scientific research and development services	13,043	7,022	2	4,047	911	224	224
Advertising and market research services	21,850	4,668	100	3,286	929	255	1,755
Other professional, scientific and technical services and veterinary services	15,635	2,995	362	853	756	540	3,652
Veterinary services	119	0	0	0	0	0	0
Rental and leasing services	27,252	8,582	311	567	1,614	657	14,962
Employment services	185,936	72,165	1,109	18,600	7,522	1,918	42,301
Travel agency, tour operator and other reservation services and related services	10,944	0	26	91	0	0	4,216
Security and investigation services; services to buildings and landscape; office administrative, office support and other business support services	31,910	0	2,073	0	0	0	26,128
Services to buildings and landscape	26,390	0	78	0	772	636	576
Office administrative, office support and other business support services	23,806	2,084	62	3,236	1,269	522	179
Public administration and defence services; compulsory social security services	.	.	.	.	.	.	.
Public administration and defence services; compulsory social security services	.	.	.	.	.	.	.
Education services	.	.	.	.	.	.	.
Education services	.	.	.	.	.	.	.
Human health services	.	.	.	.	.	.	.
Residential care services; social work services without accommodation	.	.	.	.	.	.	.
Creative, arts, entertainment, library, archive, museum, other cultural services; gambling and betting services	.	.	.	.	.	.	.
Libraries, archives, museums and other cultural services	.	.	.	.	.	.	.
Gambling and betting services	.	.	.	.	.	.	.
Sporting services and amusement and recreation services	.	.	.	.	.	.	.

	Extraction Of Crude Petroleum And Natural Gas	Fishing and aquaculture	Processing and preserving of fish, crustaceans, molluscs, fruit and vegetables	Building of ships and boats	Repair and maintenance of ships and boats	Water transport
Services furnished by membership organisations
Repair services of computers and personal and household goods	2,751	493	648	0	0	814
Other personal services
Services of households as employers; undifferentiated goods and services produced by households for own use
Services of households as employers of domestic personnel
Services provided by extraterritorial organisations and bodies

AGE AND SEX BREAKDOWN

