



European
Commission



Ocean Literacy

Best practices and user stories

Manuscript completed in April 2018

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ISBN 978-92-79-81353-5
doi:10.2771/824276

EUROPEAN COMMISSION

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Directorate A — Maritime Policy and Blue Economy
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The authors would like to thank

The Members of the Informal Expert Group on Skills and Career Development in the Blue Economy, namely Aimilia Papachristou, Angela Schultz-Zehden, Angelandrov Alma Elena, Avan Antia, Blagovest Belev, Boyko Doychinov, Christina Kontaxi, Claire Caralp, Claudia Vella-Casagrande, David Appletion, Elise Wattrelot, Fidel Echevvaria, Francisco Caparros Alcaraz, François Arbellot-Repaire, Halvor Mortensen, Iain Shepherd, Ian Jenkinson, Jaap Gebraad, Jan Boyesen, John Bostock, Lucía Fraga Lago, Margaret Eleftheriou, Mascha Stroobant, Michael Ekow Manuel, Michael John, Paolo Gualeni, Pauhla McGrance, Pail Gérard, Pawel Szymanski, Phil Monbet, Pierre Erwes, Rui Azevedo, Sarai Blanc, Stefano Spennati, Thomas Rasmussen, Tim Deprez, Vincent Lequenne, Tine Viveka Westerberg, Willi Wittig, and Zacharias Siokourous.

The expert group

The best practices collected in this document come from members of the Informal Expert Group on Skills and Careers Development in the Blue Economy, set up by the Directorate-General for Maritime Affairs and Fisheries (DG MARE) in 2016. The task of the Expert Group is to advise the Commission on matters pertaining to education, training, and skills and career development within the blue economy. As key stakeholders in the sector, their input for closing the skills gap in the Blue Economy in Europe is vital. The document is structured on an Expert Group member basis and readers should feel free to contact relevant experts for further information about these best practices.

Disclaimer

All experts have provided consent for their contact information to be made public. For further information about the best practices in this document please contact the relevant expert.

All views expressed are those of the authors and not necessarily reflect the views of the European Commission

Foreword

Human life on earth depends on the ocean - and yet we often overlook its vital role. We should be making its protection our priority. Yet, our actions often compound the problems faced by the ocean: - acidification, overfishing and plastic pollution, to name but a few.



Appreciating our dependence should strengthen our will to protect ocean resources. It is through ocean literacy that people can appreciate the magnitude of the service oceans provide to us, and the seriousness of man-made impacts. And it is through ocean literacy that public opinion can shift in favour of protecting the oceans' natural capital, its spectacular biodiversity and its role in regulating our planet;

The Commission shares this educational goal with IOC-UNESCO, which is launching an International Platform on Ocean Literacy. The platform will provide a one-stop-shop for good practices of ocean literacy.

The European chapter will be based on the collection of best practices before you. Read on to see how far Europe has come, not only in environmental thinking, but also in promoting ocean awareness.

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In the field of Ocean Literacy, *Fórum Oceano - the Maritime Cluster of Portugal*, is in charge of the promotion of a working group (local authorities, associations, schools, universities, public administrative bodies) called "**Jovens ao Mar**" with the aim to the exchange experiences and good practices amongst its members. There are interesting experiences developed with the support of Fórum Oceano, such as the '**Sea Itinerant University**', a cooperation project held under the responsibility of Porto University, Oviedo University and Naval School of Portugal and 'Centro de Mar' led by the municipality of Viana do Castelo with the participation of its schools and local nautical clubs.

Another interesting project is "**Semana Tanto Mar**", promoted by the Polytechnic Institute of Leiria, with the support of the Local Authority of Peniche, Forum do Estudante and a number of local schools. In the course of one week, students are invited to develop insight of the sea and to have contact with sea activities, research projects, employment and training programmes.

Besides these initiatives there are other important programs held at national level in the educational sector, such as "**KIT do Mar**" or "**Blue School**", led by Central Administration bodies in partnership with schools and civil society organisations, under the responsibility of the Ministry of the Sea.

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Amongst other promotion activities, SEA Europe is preparing the **European Maritime Technology Days** in October 2018 together with the social partners industriAll Europe. The event aims to promote the sector as strategic and innovation driven, providing highly skilled jobs and exciting career opportunities. Dedicated events will be organised at local level all over Europe: school visits, seminars, open days, cultural events, etc. SEA Europe will coordinate the events will organise the kick-off Conferences in Brussels on the 9th of October.

SEA Europe also promotes best practices of its members at national level. Forum Okretowe, SEA Europe's Polish member organises the **Academy of Maritime Industries**, which includes monthly meetings of senior managers and University Students. The aim of these meetings is to share views on career possibilities, new technologies and other relevant topics. This initiative has resulted very useful to attract young students to the sector, but also to provide the senior managers with fresh views and expectations from future workers. In order to promote the sector amongst young students, Forum Okretowe has created the **Young Forum Okretowe** and uses a Facebook to promote events, news and competitions: awards for best Thesis at University level, painting, photo, and video film competitions. The association is also organising seminars and school visits for secondary school pupils.

ROV Maker Competition is an event arranged by the Copenhagen School of Design and Technology in close cooperation with vocational training schools. SEA Europe's member, Danish Maritime joined the schools in their efforts to utilizing submarine drones and attracting students when it comes to choosing a future within the maritime industry. The scope of the competition is to make students compete assembling a Remotely Operated Vehicle (submarine drone) from an assembling kit made by the schools. Afterwards, the students are to compete in an underwater obstacle course to obtain the best run during the time available.

The submarine drones can be used for inspecting ships under water while in port and for executing service work, e.g. removing fouling on hulls and propellers which has great impact on the fuel consumption of the ships when crossing the oceans. The submarine drones can also be used when working at offshore wind turbines, drilling platforms and similar work under water, e.g. at bridges, docks, dams etc. The ROV Maker Competition is carried out with support from the project "The Maritime Craftsman of the Future" (EU Social Fund project) and the Danish Maritime Fund.

The next ROV Maker Competition will be held in spring 2018 and again in the autumn 2018. The actual purpose of the competition is to strengthen the cooperation between vocational training schools and the Copenhagen School of Design and Technology and to inform students of the existing possibilities to work as skilled craftsman within the maritime industry.

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'**Navegam amb la Balear**' is a maritime educational program developed by Consell de Mallorca, which is a local administration. 'La Balear' is an ancient Latin sailboat declared of cultural interest by Historical Heritage of Mallorca. The vessel was built in 1924 for fishing purposes; it is mainly propelled by the wind and fits a crew of 29 people. In 2000, La Balear was restored through employment programs financed by European Social Fund and SOIB.

The reason for restoration was twofold. On the one hand it helped to qualify young unemployed people using dual training schemes in seafarer employment, and at the same time also prepared the boat for new uses such as a school vessel addressed to primary and secondary pupils to raise Mediterranean Sea literacy.

Last two years, there have been 65 sailing trips under the educational program Navegam amb la Balear and have involved 54 primary schools, 4 secondary schools and 4 education centers for people with special needs. This translates into more than 2250 pupils who have been sailing and learning contents related to construction of boats, evolution of ports, marine activities and how to promote sailing sustainability in the Mediterranean Sea.

Last but not least, La Balear has also developed a summer complementary program of cultural, sports and representation activities in nautical fairs, Mediterranean maritime encounters and sporting events of the calendar of classical Latin sailboat regattas.

Find out more at:

http://www.conselldemallorca.net/?id_section=11685

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The ECSA supports a number of programmes across Europe that promote ocean literacy.

The Cyprus Shipowners' Association's **'Adopt a Ship' programme** involves assigning a particular vessel to elementary schools' classrooms and establish direct e-mail communication between the pupils and the crew of the vessel. The aim is to inform the pupils about life on board ships, cargoes carried by these ships, trading patterns and geography.

The German Shipowners' Association's **'We Show You Sea' school summer holiday** enables school pupils to spend time on board a ship and gain a first-hand insight into work and life on board. Internships are offered on tugs, ferries or large container ships.

The UK Merchant Navy Training Board has a **'Careers at Sea' brand** which promotes seagoing careers to young people and their families. It has a network of 'Careers at Sea' Ambassadors who visit schools and youth groups in their local area. They advise about life at sea, training programmes, entry requirements, typical salaries, lifestyle and career openings for seafarers ashore in the UK's maritime cluster.

These initiatives help raise the image of shipping and highlight the important contribution it has to global trade and the global economy. They also offer a unique insight into careers in the Blue Economy sector.

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The university set up CEIMAR (Campus of Excellence of the Sea), a cluster of research institutions with the three main axis dealing with a) teaching and talent attraction, b) research and development, with emphasis on applied science closed to the production structures, and c) divulgation, marine literacy and communication to the society.

Concerning Ocean Literacy, CEIMAR is committed to the **dissemination of marine knowledge to society**. These dissemination activities have been very well received by the public, including school children, university students and associations (e.g. fishers' guilds, diving clubs, and neighbourhood associations). One example of these dissemination events is the **Researcher's Night** and two editions of the '**Marine Science Fair**', which brought together over 5000 people and was attended by all of the CEIMAR institutions. CEIMAR also participated in the Tall Ship Race Cádiz, with an enormous turnout of the public and a great impact in the press.

CEIMAR is committed to **creating laboratories** and facilities aimed at scientific dissemination. Already existing ones include the Marine Research Laboratory (LABIMAR) in Cadiz, the Aula del Mar in Granada, the La Esperanza Saltworks in Cadiz, and the Strait of Gibraltar Environmental Observatory (OMEG) in Malaga. These centres have enabled raising awareness of the value of scientific dissemination, through public outreach conferences, workshops, social awareness programs and school visits. These laboratories are platforms for citizen science and volunteering, as both are benchmark centres of the *Observers of the Sea* project for the Atlantic Ocean and the Andalusian Mediterranean Sea coasts.

Find out more at:

<http://www.campusdelmar.com/en/2016/02/01/labimar-2/>

<https://www.facebook.com/pg/labimar.campusdelmar>

<http://www.campusdelmar.com/en/ucci-en/>

<http://www.campusdelmar.com/en/summer-science-campus>

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Sea Change is a Horizon 2020 project funded under the Societal Challenges Programme that ran for three years from 2015. It aimed to empower European citizens (as 'Ocean Literate' citizens) to take direct and sustainable action towards healthy seas and ocean, healthy communities and ultimately - a healthy planet. In order to bring 'ocean literacy' into the curriculum in schools, the project developed a 5-week [MOOC](#) (Massive Open Online Course) in collaboration with UNESCO to train teachers in ocean literacy. It recently ran 3 online workshops (Oct-Nov 2017).

On the issue of ocean plastics, the project has achieved a rare degree of success in its aim to change the behaviour of European citizens. Examples had highlighted the use of plastic drinking straws (there is already a petition to ban plastic straws in the UK, backed by the BBC, and some members of Parliament); changing from plastic to reusable cutlery and plates, with the UK Environment Secretary, Mr Michael Gove, already publicizing his use of paper cups for his morning coffee. Schools and young people have been another focus of Sea Change. In collaboration with the European Marine Science Educators Association (EMSEA) more materials and campaigns for educational purposes were created and disseminated. The 3rd Conference of EMSEA showcased many different efforts and productions.

Worthy of mention is **The Kingdom of Photophilous Algae**: a tale created by 2nd grade pupils in a primary school in Crete. This production (a live presentation, in which all pupils took part) shows what can be done at the individual level, with knowledgeable and enthusiastic players.

The teacher's aims were: (1) to gain knowledge and experience of marine biodiversity; to know how to identify algal species and indicators of pollution; to gain knowledge of appropriate scientific terms; to make contact with marine scientists and understand aspects of their work; (2) to work in groups undertaking assigned roles (co-operation skills); to expand linguistic and expressive abilities (communication skills); to create an authentic story using accurate scientific terms, to handle computers in the classroom; (3) to learn ways of protecting the environment, to bring the school into contact with both the local and the scientific communities.

The pupils undertook supervised fieldwork, collecting biological samples and analysing them in the HCMR scientific laboratories. Furthermore, after having collected scientific material in groups, they worked with activities worksheets and finally created, wrote and digitized their authentic story.

Find out more at:

[Ocean EDGE Directory](#)

[MOOC](#)

http://seaofskills.eu/wp-content/uploads/2016/07/EMSEA-Conference_handbook.pdf

<http://www.seachangeproject.eu/seachange-about-2/results>

<http://www.seachangeproject.eu/seachange-media-4/leaflets>

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STC Group, a worldwide operating educational and research institution for the shipping, logistics, transport and process industries, is organising in cooperation with the industry a number of initiatives regarding ocean literacy.

Zeebenen gezocht (*Searching for Sea-legs*) engages youngsters from 10 years up, as well as parents and lecturers in the maritime field and introduces them to various aspects of seafaring, such as parts of ships, careers in the sector, and more.

The **Young Maritime Representatives** pilot program promotes enthusiastic maritime youth ambassadors who approach young people and tell them about their experiences in their careers in the maritime economy.

STC Group also co-organises the **World Port Days** held in Rotterdam every year, which opens and introduces the activities of the port to the wider public through various engaging activities.

There is also a dedicated **YouTube channel** about education and training for the Blue Economy.

Find out more at:

<http://www.zeebenengezocht.nl/>

<https://www.maritiemland.nl/human-capital/projecten/young-maritime-representatives/>

<http://wereldhavendagen.nl/en/>

<https://www.youtube.com/channel/UCcqLNVRUzXABIoHawxOL9Qw>

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CETMAR has extensive experience in the dissemination of science to the public and many of their projects have an impact on ocean literacy. Since 2003, they have organised science spreading activities addressed to the education community. This includes teacher **workshops and school contests for primary and secondary students** in the field of marine sciences. Young children are also targeted through puppet show tours highlighting the importance of marine environment preservation.

CETMAR also organises activities addressing the wider public. The '**Dive into Science**' is an experiment show where citizens can put themselves in marine researchers' shoes. The organisation also offers placements for university students, as well as young apprentices, who might not have a previous connection with ocean issues.

The foundation also has significant involvement in the fight against marine litter. As part of COLUMBUS knowledge harnessing activities, funded by Horizon 2020, we compiled and reviewed EU research projects and associated outputs dealing with raising public awareness, and improving knowledge base on the topic of marine litter management. These materials will be exploited in the CleanAtlantic project, 'Tackling marine litter in the Atlantic Area', co-funded by the Interreg Atlantic Area Program. It will deliver a picture of the current situation of marine litter data availability, improve monitoring, data management, mapping and mitigation capabilities and it will develop protocols, tools and indicators.

When it comes to ocean literacy, **CleanAtlantic** will deliver a set of awareness raising packages that will explain in layman's terms the environmental impact of marine litter and the best practices to reduce marine litter inputs from target sectors. Dissemination events and pilot awareness actions will be organised addressing different local contexts and sectors (e.g. policy makers, local authorities, fishers, coastguards, scholars) in partners regions. The selected target sector will learn the problem of marine litter and how they can contribute to reduce litter impacts on the coastal environment.

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The Marint Kunskapcenter (SEA-U Marine Science Centre) in Malmö, Sweden is a non-governmental association working mainly with ocean literacy and marine development. The NGO has been tasked by the City of Malmö to help improve marine education and marine development in the city.

Today, the Center has 3500-4000 learners in various ocean literacy and marine educational programs and has around 20000 visitors per year. This will be expanded this spring when the Center takes on the role of Naturum Öresund (a visitor center for the sea region 'The Sound') under the auspices of the Swedish Environmental Protection Agency. This will potentially increase visitor numbers to 75000. It will be the first urban visitor center in Sweden, and the first with a focus on the Sound's important shallow areas with seaweed.

The Center has its origins in a **summer marine education program for school children** started in Malmö in 1999. Activities included snorkelling, discovering shallow marine areas and netting in waders. What started as a one year project has now been continuing for twelve years. Programs range from those suitable for four-year olds up to University students.

Programs include:

1	Meet the crab and the seaweed	Age 4-9
6	Become a marine biologist for one day on our research vessel	Age 14-25
7	Future innovation for a sustainable city	Age 13-19
8	Meet the SDG 14, Life Below Water	Age 13-25

In 2009, Malmö City decided to build a **new 700m² marine educational centre** to meet the demand for ocean literacy from educators, students and the public. The new centre was inaugurated on 11 October 2017 by Sweden's Crown Princess Victoria, the State Minister of Environment, the Mayor of the City of Malmö, The Governor of Skåne Region, the President of the World Maritime University and the Head of the Culture Department of the City of Malmö.

The Centre's partners include Lund University, Malmö University, Gothenburg University, Copenhagen University, the Swedish Agriculture University, as well as the World Maritime University. The Centre participates in international networks related to Ocean Literacy under the UN SDG 14 and often presents lectures at international conferences.

This Centre can be a model for the European response to the challenge of early and life-long learning related to ocean literacy. Building a strong network and exchange of programs will help the European attainment of the SDG 2030. By inspiring children early, they will be better informed to make wise choices in life, selecting study options through higher education and to be engaged in lifelong learning.

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The Marine Institute established the **Explorers Education Programme™** in 2006, with the aim to build on Ireland's marine and maritime heritage by increasing awareness of the value, opportunities and social benefits of our ocean wealth and identity in primary schools. Our Goals include:

Educate primary school children, teachers and educators in Ireland, enabling them to understand the oceans influence on us and our influence on the ocean, through outreach and centre activities in Ireland.

Coordinate professional development training and workshops for teachers and trainee teachers, to develop their marine literacy skills and promote the use of marine content in line with the national curriculum.

Develop education materials and resources based on the Irish primary school curriculum to support teachers teaching marine in primary schools which are made freely available on

Promote ocean literacy and marine outreach activities with local communities, educators and influencers through events and media, so as to create dialogue and engagement about our ocean.

The Explorers Education Programme recently expanded in 2016-2017 and we are now reaching over 15,000 children in primary schools around Ireland annually. The programme in schools is currently contracted to outreach centres in Sligo, Donegal, Mayo, Galway, Clare, Kerry, Cork, Waterford, Wicklow and Dublin where the centres have dedicated educators working with teachers in primary schools.

The Marine Institute also works with the Explorers Education centres where a pre and post evaluation of the programme is completed annually measuring and gathering qualitative and quantitative data about the delivery of the programme, as well as information about the classes marine ocean literacy and engagement in the programme.

The Explorers Education Programme™ is supported by the Marine Institute and is funded under the Marine Research Programme by the Irish Government.

Find out more at:

www.explorers.ie.

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Young people are the backbone of maritime development in Europe as future citizens, future workers, future entrepreneurs, future teachers and members of communities. Creating a maritime culture amongst the youth will facilitate innovation and growth, whilst also focusing on the sustainable use of the seas. The following three good practices showcase the ocean literacy effort.

The **Classes de mer** were invented 53 years ago by the Centre Nautique de Moulin Mer in 1964 in Finistère (West Bretagne, France). The program allows youth to attend one or two-week long camps at a seaside facility. During the camp, pupils discover the maritime environment, sea economy and culture, and practice water sports. Classe de mer brings educational benefits for pupils through an educational approach that brings the fundamental school activities closer to nature and reality. It is also a school of citizenship and living together. Today there are 14 centres that receive 12 000 pupils each year in more than 450 classes.

The **Centro do Mar** project is currently developed by the CIM Alto Minho and the City of Viana do Castelo in North Portugal. The objective is to develop maritime activities (fishing, aquaculture, renewable energy, marine leisure, tourism, ship building and repair, training, etc.) and to create the best conditions for water sports practice. Decision-makers have understood the importance of ocean literacy in ensuring that the project succeeds. Therefore, teachers and policy-makers have decided to integrate water sports in the school curriculum for children aged 10 to 15 years. They have created a strong partnership between schools, water sports clubs, maritime culture entities and the city councils. Every year 11 schools, 86 classes and more than 1800 pupils are involved in the Centro do Mar project.

Atlantic Youth is a project (2017-2020) under Erasmus Plus *Cooperation for Innovation and Exchange of Good Practices – Strategic Partnerships for School Education*. The objective is to develop inclusive maritime and nautical education at school with a strong contribution to the educational projects, accessibility for all pupils and affordability. The project targets secondary schools and classes (aged 11-15), including pupils with physical difficulties, socialising problems and school dropouts. Five locations partake in the initiative: Ayamonte in Spain, Minho-Lima in Portugal, the Landerneau-Daoulas District in France, Cornwall County in the UK and Clare County in Ireland. The project will develop maritime and nautical innovative sessions within the curriculum, three transnational educational events (for one week at a time, gathering one class from each country – the first European Classe de mer), and will also produce pedagogic tools and guides.

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The Maritime Institute of Eastern Mediterranean in Cyprus is pro-active in achieving ocean literacy amongst Cypriots, especially the younger generations. The **'Sea Peoples' Resurgence' project** is a novel initiative under development, to be fully deployed in 2018, initially targeting children aged between 5-15 years old.

The objective of the program is to bring children closer to the sea and help them understand individual and collective responsibilities towards the ocean and the seas, and our dependence on them. It also aims to build a civic relationship with the ocean.

The project uses the geography, the history, the art, the music, the culture, the archaeology and the myths of the region, as well as the promotion of trans-disciplinary activities for this end. Some planned activities are the organisation of summer schools, boot camps for children in cooperation with sea scouts and nautical clubs; visiting ships; building of small floating structures; interacting with marine scientists and engineers, old seafarers and fishers, divers and archaeologists. The publishing of a series of comics and video games utilising the sea peoples' story and linking it with modern issue is also under planning.

The initiative already enjoys local and public support and aspires to evolve into a movement that will help the younger generations come closer to the sea.

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Every year DLTM offers work-based learning traineeships for Secondary School students; it also partakes in the European Researchers' Night, an event that attracts more than 1 million citizens and 18000 researchers. The event showcases what researchers do for society in interactive and engaging ways. DLTM is working on two projects of citizen science in collaboration with enterprises, schools (Unified School District 2 ISA 2 "2 Giugno") and R&D centres (INGV and CNR-ISMAR): **SEACleaner and Blue Paths**. Both pilot projects are aimed to improve the quality of traditional curricula and to fill some important issues i.e. the urgent need of long-term data series for solving environment related problems.

More info:

DLTM is also part of **Ocean Literacy Italia**, the new national working group led by IOC UNESCO. OLI main objective is to show the importance of a blue community made of specialists that are able to create a dialogue between scientists, civil society, decision makers and private sector. The organisation of the 2017 edition of the World Oceans day (8th June 2017) by OLI saw the participation of 7 research centres, 2 natural museums, 5 cultural and scientific associations, 7 sports associations and recreational diving centres, 2 science centres, 2 private companies and 2 universities. 8 Italian cities have been involved, namely Venice, La Spezia, Ferrara, Molfetta, Bologna, Gela, Napoli and Trieste, touching all the Italian seas but also some inland cities.

Find out more at:

<http://www.ingentaconnect.com/content/mts/mts/2015/00000049/00000004/art00014>

<http://ieeexplore.ieee.org/document/7271666/?reload=true>

<https://www.youtube.com/watch?v=9GUqFffXtA4>

<https://www.unworldoceansday.org/spotlight-article/italian-network-ocean-literacy>

<http://www.oceanliteracyitalia.it>

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Confcommercio Imprese per l'Italia, the Italian General Confederation of enterprises, professions and self-employment, counts today more than 700 000 enterprises, making it the largest employers' organisation in Italy. Confcommercio represents five areas: commerce, tourism, services, transport and professions.

In the transport sector, thanks to the agreements with the *Italian Ministry of Education* and with the *Region of Lombardy*, the organisation is organizing work-related learning activities (Alternanza Scuola-Lavoro) for high schools students, to better learn and understand the transport sector. For the students of the Master course organized by *Scuola Superiore del Commercio, del Turismo e dei Servizi of Milan* and Confcommercio with the *Universita' Cattolica del Sacro Cuore*, Conftrasporto has been hosting, since 2016 in Brussels, **lessons to study and learn the European policies of the sea transport sector** (Only in 2016 Conftrasporto hosted more than 100 high school and university students). The transport sector is also working to enhance the knowledge of the sea transport sector in the ITS Foundations (a post-secondary level of Education - higher technical training).

Tirrenia Group, one of the largest company in the sector, member of Confcommercio, since many years, organizes, through an agreement with the Ministry of Education, a work experience for students from Sardegna (**ForMare Project**); only in 2017 more than 1000 students took part to this programme, which was also presented to the European Commissioner Violeta Bulc, during her visit on a Tirrenia Ship in June 2017. Fedepiloti, the organisation of the maritime pilots, has created certifications regarding long life learning (according to IMO Resolution A960). These independently financed courses, aim to recognize qualifications in order to allow them to work in all Member States.

Confcommercio announced at the Our Ocean Conference of Malta 2017 that it will allocate 50.000 Euro in 2018 to the "**DUE-Project Divers united for the environment**" in partnership with the University of Bologna, the Professional association of Divers Instructors, SCUBAPRO and ANSA. This project provides a monitoring of biodiversity in the Mediterranean Sea, based on the observations of recreational divers. This project, thanks to Confcommercio, will be expanded and will target all tourists, which will detect the evolution of the marine biodiversity by observing and filling in simple questionnaires, analysed then by the University of Bologna. DUE project allows to improve the knowledge of a possible shift in Mediterranean Sea biodiversity driven by human activities and climate change and at the same time to raise awareness on the ocean's health.



Publications Office

ISBN 978-92-79-81353-5
doi:10.2771/824276