



## March 2013 Report: Activity: Ballast Water Opportunity (resubmission)

Internal Filing Number 

Periodic Report number 

<b>Name of project:</b>	Ballast Water Opportunity (resubmission) (extension)
<b>Project acronym:</b>	Ballast Water Opportunity (resubmission)
<b>ID journal number</b>	35-2-50-08

### Summary on Progress

The project has now completed 4 years. As in previous periods the project keeps attracting international attention.

As a network, the project is still expanding. More and more companies find their way to the project. Mainly developers of ballast water treatment systems, but also developers of detection technology. Further, also the stakeholders both from outside and inside the North Sea Region are making contact with the project. At this moment this list exceeds 166 organization that have directly contacted the project network to obtain information, participate in conferences and discussion.

IMO WMU has extended the North Sea Alien Species database (NorSAS) which is available at <http://www.norsas.eu> portal with 32 new species profiles. Species information is now available for about 140 species and WMU continues to include more species in the coming months. CytoBuoy resumed its tasks on 1 June 2012, after receiving the ERDF they were entitled to. In this report, they reported their activities performed between 1 March 2012 (1 June 2012) and 28 February 2013.

GoConsult together with Allegra Cangelosi of Great Ships Initiative (GSI) organised a workshop on detection of organisms <10µm. The workshop was hosted by GSI in Duluth, USA (September 19 and 20, 2012).

BSH organised the last necessary workshops for discussion of the manuals on certification for BWT equipment, North Sea Compliance control guideline, the Paper on Ship borne BW and BWT risks and risk assessment approaches and the Paper on Port site BW and BWT Risks and Risk assessment. BSH is expecting to finish the documents before the end of 2013.

Project partners are involved in Task Groups and working groups of OSPAR and HELCOM and supply them with valuable information on topics such as:

Ballast water exemptions, Ballast water exchange areas and the Maritime Baltic Sea Action Plan.

A major budget change and request for extension have been submitted in change #5.

## 1. Beneficiary and project information

### Beneficiary information

<b>Extended deadline for submission of report</b>
14/06/2013
<b>Required submission date</b>
13/05/2013
<b>Final Report is expected to be delivered</b>
31/03/2014

### Lead Beneficiary information

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<b>Project number</b>	35-2-50-08	<b>Priority</b>	2 - Promoting the Sustainable Management of our Environment
<b>Project website</b>	www.northseaballast.eu	<b>ERDF</b>	5.698.719

### Information on Beneficiaries

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4	<b>CaTO Marine Ecosystems</b>	Private	dr. C. ten Hallers-Tjabbes Cato cato@catomarine.eu +31 6 2009 0752, +31	Oosterweg 1 9995VJ, Kantens	THE NETHERLANDS NL112 Delfzijl en omgeving
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### Sub-Beneficiaries

#	Organisation / Homepage	Legal Status	Contact Person / Email / Telephone, Fax	Address / Post Code, City	Country / Region
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### Certification by Lead Beneficiary

Name	 Koninklijk Nederlands Instituut voor Zeeonderzoek	Herman Ridderinkhof
Position	Royal Netherlands Institute for Sea Research	Director
Signature	P.O. Box 59 1790 AB Den Burg, Texel	
Date	The Netherlands	10/6'13

### 2. Time period (6 months)

This Activity report covers the time period from	01/09/2012	To	28/02/2013
Extended implementation period		To	

### 3. Changes and other project issues

#### 3.1 Changes process

Have any of the changes below been made during the reporting period	Yes
Have the changes been processed using the above listed process	Yes
Change of contact details	Yes
Changes of activities in the work packages	No
Change of partnership	No



Change of project timeline (new project timeline)	Yes
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### 3.2 Other project issues

Incompletion of a work package	No
Addition of an Indicator	No
Publicity	Yes
Activities outside the Eligible Area	Yes
<b>Comments</b> <p>During the 7<sup>th</sup> reporting period the steering group asked JTS for an extension of the project with 6 months. This extension may also increase the impact of the project as there will be more time to disseminate the reports, train people and the convention can come in force before the project has ended. For this extension, no extra money will be needed.</p> <p>In the steering group meeting of May 24, 2012 this extension of 6 months was approved by the steering group.</p> <p>In Changes #5 the request has been submitted. This change contains a major budget change for NIOZ and BSH. Both evaluated the contribution of their sub-partners. As a result, some sub-partners decided not to claim any funds or stop their activities. Other (sub-)partners where prepared to perform extra tasks. These (sub-)partners got extra budget for these extra tasks.</p> <p>Activities outside the eligible area: Activities outside the eligible area were solely due to participation in conferences/workshops outside the eligible area (see section 4c).</p> <p>On February 29, 2012 CytoBuoy postponed all activities for this project until "cure" by the "Management Authority and JTS" with regards to proper payment of funding and related communication. After payment of the ERDF in May 2012 they resumed their activities from June 1st. In this report they reported about their activities from June 2012 to 28 February 2013.</p>	

## 4. Work packages/activities

<b>4a. Work packages and activities</b> <p>See enclosure 1.</p> <p>For the status of the deliverables of the work packages per December 2012. See enclosure 2.</p>
<b>4b. Activities outside the eligible area (that were listed in Q2.4 of the approved application form)</b> <p>The following activities were listed in the approved application, however they were carried out outside the eligible area.</p> <p>GoConsult together with Allegra Cangelosi of GSI organised a workshop on detection of organisms &lt;10µm. The workshop was hosted by Great Ships Initiative (GSI), Duluth, USA ( September 19 and 20, 2012).</p> <p>People from NIOZ, CaTO Eco Marine systems, GoConsult, WMU and Imares attended the Global Test Net &amp; ICBWM Conference, Singapore, 10-18 November 2012.</p> <p>People from BSH attended the following meetings and conferences:  <b>1. Seminar at Conference week "Emergence into a new Era, to be on the Move and Future Breakdown" at the Leuphana University Lüneburg, Germany 26.02.2013</b></p> <p>The Leuphana University Lüneburg organise a student's conference week every year. This year the conference week was under the motto: "Emergence into a new Era, to be on the Move and Future Breakdown". Within that frame "Science in responsibility" was one main topic. Stefan Kacan from the BSH and Stefanie Wieck from the UBA discussed problems related with ballast water and its treatment with the students in the workshop named: "Ballast Water – a risk for world's oceans one way or another". Students with different scientific backgrounds were sensitised to this complex issue.</p>
<b>4c. Activities or travels outside the eligible area (that were not listed in Q2.4 of the approved application form)</b> <p>NIOZ representatives attended following conferences outside the eligible area:</p> <ul style="list-style-type: none"> <li>- Louis Peperzak attended the GSI workshop on organisms &lt; 10 µm including bacteria in Duluth, MN, USA from Sept. 19-21, 2012 where he gave two presentations.</li> <li>- Jan Boon attended the 7th ACI Ballast Water Management Summit, Singapore from Sept. 19-20, 2012 where he gave a presentation.</li> <li>- Louis Peperzak attended the Ballast Water Management Technology Conference North America ("Navigate ballast water management regulations and equip your fleet for compliance in US waters") in Miami, Florida, USA from October 15-17, 2012.</li> <li>- Jan Boon and Louis Peperzak attended the GloBal Testnet Meeting in Singapore from November 11-12, 2012 as members of the TestNet.</li> <li>- Jan Boon and Louis Peperzak attended the International Conference on Ballast Water Management in Singapore ("Operational experiences of ballast water treatment systems", organized by DHI, GloBallast, IMarEST, MPA Singapore and others) from November 14-16, 2012.</li> <li>- Louis Peperzak, as panel member, attended the 8th Ballast Water Management Technology Conference in London, UK ("A complete guide to selecting the right treatment system, managing retrofit installations and ensuring regulatory compliance") from December 10-12, 2012.</li> </ul> <p>GoConsult undertook some sea voyages outside the eligible area, to do research. These activities are provided as in-kind contribution to the project for which no EU funding was used.</p>

## 5. Completion of a work package

Completed Work Packages	
<b>a) State what work package has been completed and its starting and completion date</b>	<b>WP4 Detection for monitoring and compliance control</b>
<b>Start Date:</b>	<b>Completion Date:</b>
<b>b) Does this completion of a work package correspond with the application form? If no please read the guidance for this question above.</b>	Yes
<b>c) What have been the main outcomes and results of the completed work package?</b> ZebraBioscience has finished its tasks for the project (WP4) and submitted their final activity and financial report to the lead partner (NIOZ). This was reported in the 7th report (September 2012). WP4 continues, since other partners in this WP are still working on their tasks.	

## 6. Transnational approach

How has the project ensured transnationality in its approach during the reporting period?
<p>The work in the project is transnational by nature. It affects the maritime industry and policies that are transnational by itself. All initiatives involve participants from different levels of government, scientists and industry. All countries within the North Sea Region (NSR) and many countries outside this region are involved.</p> <p>Through working groups in WP2 and the joint collaboration in WP3, 4 and 5 (science, industry and government), transnationality is achieved by the contributing participation. In WP 6 dissemination is reaching out in the international field.</p> <p>The transnational approach is best illustrated by the international collaboration that has been initiated in a number of expert workshops on ballast water treatment technology, certification and detection. On one hand the project contributes to the IMO GloBallast test forum in workshops and conferences to exchange best practices and come to a common approach. On the other hand the BWO project organizes and co-organizes a number of dedicated and hands-on workshops to harmonize and standardize certification strategies and technologies.</p> <p>Only through this improved transnational, horizontal and vertical approach that is initiated and made possible by the Ballast Water Opportunity project (including the extension) it is possible to achieve a transnational approach to resolve differences and achieve harmonization.</p> <p><b>Examples of a transnational approach by the partners of the NSBWO project are:</b></p> <p>NIOZ paid special attention to the developments in the USA, since the US Coast Guard issued its own 'New Rule' in 2012. This affects all ships entering US waters from outside the EEZ, and therefore also affects ships from the Interreg Region.</p> <p>BSH reported the outcome of working groups to International Organizations, such as IMO, HELCOM and OSPAR, the EMSA is engaged in workshops. The project interacts on a structural and a personal level with other organisations. By involving key figures in the world of ballast water decision making on multiple levels (e.g. workshops, discussions), the project receives input and is shaping output on the international level.</p> <p>GoConsult together with Allegra Cangelosi of Great Ships Initiative (GSI) organised a workshop on detection of organisms &lt;10µm. The workshop was hosted by GSI in Duluth, USA (September 19 and 20, 2012).</p> <p><b>Other initiatives to contribute to the transnational impact of the project:</b></p> <p>The NIOZ pilot test bed remains a crucial link in the development and testing of BWT systems and tools for Compliance Enforcement and Monitoring. As such, there are many bilateral contacts within and outside of the BWO project with national authorities and manufactures. Examples are:</p> <ul style="list-style-type: none"> <li>- being a source of technical and scientific information for policy, the shipping world, and BWTS manufacturers in the North Sea region;</li> <li>- developing organism detection instruments by EU SME's;</li> <li>- exchanging knowledge with other test facilities in the region (DHI, NIVA) but also on an intercontinental scale;</li> <li>- exchanging knowledge and practical cooperation with other NSBWO work packages and with other parties in workshops and conferences;</li> <li>- advancing scientific developments in cooperation with universities and SME's in Europe and the NS region.</li> </ul> <p>WMU is worked with DHI-Denmark to develop a hydrological agent based model to study the dispersal potential of various invasive species which are already introduced in the North Sea region. A report has been prepared and is circulating for comments of other project partners.</p> <p>WMU has given a lecture at Malmö Högskola to students following the course "Transport and Sustainability".</p> <p>University of Newcastle has more than 10 years of track record in ballast water research and is contributing to several national, EU and international projects. Several consultancies for design, implementation and monitoring of ballast water convention have been performed nationally. Several undergraduate and postgraduate students of the School of Marine Science and Technology have conducted their final projects on ballast water related issues at Newcastle University.</p> <p>GoConsult: During this reporting period S. Gollasch attended several meetings and gave presentations on the project, on ballast water sampling for compliance control, on health risks of aquatic invasive species and on organism detection tools.</p> <p>Imares presented the results of low temperature testing to the ballast water community at Lloyd's Informa BWM Tech 8 London (Dec 10-11, 2012) and to the scientific community at the Arctic Frontiers conference (Tromsø, Norway, Jan 22-25, 2013).</p> <p>On request of Siemens Water Technologies, Imares evaluated the ecotoxicity of neutralized discharge water produced during shipboard testing.</p> <p>Sub-partner ProSea: The IMO model course marine environmental awareness is applicable worldwide, so transnational by definition. ProSea has also developed an educational package, including the educational awareness materials about the issue of invasive species by ballast</p>

water for worldwide use.

Ovizio is working with NIOZ, Universite libre de Bruxelles and the Vrije Universiteit Brussel to develop and test the DHM and D3HM technology (oLine).

Sub-partner Maurits Prinssen from the Port of Rotterdam continues the discussion on ballast water through social media, namely on LinkedIn: [http://www.linkedin.com/groupItem?view=&gid=2268363&type=member&item=77680001&qid=d7363255-700c-4700-a29d-62a9675709c7&trk=group\\_items\\_see\\_more-0-b-ttl](http://www.linkedin.com/groupItem?view=&gid=2268363&type=member&item=77680001&qid=d7363255-700c-4700-a29d-62a9675709c7&trk=group_items_see_more-0-b-ttl)

CaTO, GoConsult, NIOZ and BSH are keeping contact and attend meetings and workshops with different international organizations as GloBallast, Global TestNet, GTFM, Ballast Water expert group, EMSA, ICES, IMO, MEPC and BLG. They are also facilitating the project web site that is visited by interested parties within and outside the NSR. The number of registrations to this website are increasing and are made by academia, maritime industries, government, NGO's, education & training bodies and developers of technologies. Also many request by students and manufacturers of BWTS are made.

CaTO Participated in international meetings and conferences (SMM-GMEC, Hamburg, 03-05/9/2012; IMO-MEPC 64, London, 8/09-06/10/2012; Global Test Net & ICBWM Conference, Singapore 10/11-18/12/2012; Live Project Group Meeting, Hamburg, 16-18/12/2012; IMarEST Ballast Water Expert group & IMO-BLG 17, London, 30/01-10/02/2013) and liaised with ship-owner representatives within and outside the North Sea region to discuss issues of transparency and adequate transfer of information.

Brockmann Consult participates and contributes to the discussions and meetings of the OSPAR/HELCOM Joint Task Group on Ballast Water Exemptions Scientific Group which defines the procedure for risk assessment including sampling, analysis, definition of target species and the translation of a risk assessment algorithm into an online database and tool.

The Dutch Ministry for infrastructure initiated the North Sea Exchange and Exemptions ad hoc Working Group. The group relied on advice from the Project and co-operated closely with major actors from the Project (i.e. GoConsult). Solutions of the group with regard to exchange areas were put forward to OSPAR EIHA for adoption, where they are still pending, but likely to form the basis for a future agreement of OSPAR states regarding BW exchange areas.

The results for exemptions have a crucial influence on the discussion at HELCOM Maritime and the HELCOM Maritime correspondence group on ballast water.

## 7. Transnationality

### 7a) How have the project partners ensured horizontal and vertical participation?

Horizontal and vertical collaboration is essential in this project. The complex implementations of the IMO Ballast Water Convention can only be achieved through good transnational, horizontal and vertical collaboration. A description of the current transnational, horizontal and vertical collaboration has been given in section 6.

#### Generalistic approaches:

Again a number of new contacts have been established and the involvement of project partners increased. A list with the transnational partnerships is enclosed (enclosure 3).

The Interreg North Sea Ballast Water Opportunity project has incorporated a number of SME's in different roles, such as coordinating a work package (2), taking responsibility for specific activities (5) and demonstrating technology as sponsors for the public good (>1). A report on SME's in Interreg projects is enclosed (enclosure 4).

#### Examples of specific collaborations:

NIOZ and BSH are regularly in contact with the Dutch and German governments. Some parts of these Governments are sub-partners in this project.

An example is: NIOZ is in regular contact with the Dutch Ministry of Infrastructure and the Environment (I&M) on new developments in the field, and with the Inspectorate for the Human Environment and Transport (ILT) of the same Ministry as well as with the BSH, Germany as national authorities responsible for the acceptance of the results of land-based tests. The Ministry I&M also leads the Dutch Ballast Water Expert Group as a platform to exchange new knowledge, viewpoints and policy developments of which Jan Boon and Louis Peperzak are members of. NIOZ is also in contact with the US Coast Guard.

BSH is a federal agency. They continued their close collaboration with other (sister) agencies in Germany and the NSR, both as sub partners in the project as outside. Thus, also their needs are taken into account in this project.

NIOZ took a foreign PhD student on-board to refine some of its testing methods. In this reporting period, Ishraga Taha from the University of Vienna, Austria, joined the team to establish if *Vibrio* spp. can be used as a proxy for *V. cholera* under the ETV and IMO protocols.

Partner IMarEST continued to implement the expertise of the NSBWO network and embarks on organising joint events, such the 2nd BWT conference, May 2013. This conference is being held under the auspices of the IMarEST Ballast Water Expert Group (BWEG). CaTO is member of the IMarEST BW Expert Group and is frequently highlighting the character and progress of the NSBWO project.

DHI is cooperating with WMU and Danish Nature Agency. The cooperation has been primarily between DHI as R&D and Consultancy company, WMU as research institution, and the Danish Nature Agency as a central authority.

Brockmann Consult: continued to discuss the risk index model that uses different data sources retrieved from different disciplines with stakeholders from environmental, administrative and industry sectors within and outside of the project.

The partnership between WMU and the GloBallast programme of the IMO has been further reinforced by the development of a Guidance document on the risks associated with ballast water management (to be inserted into the GloBallast Monographs Series). WMU continues their partnership with the GloBallast Project in IMO.

Ovizio maintained close links to university research and development (Universite libre de Bruxelles and the Vrije Universiteit Brussel) on aspects of the instrument technology (digital holography), but also on research into viability determinations and sample analysis. They also established contacts with government representative Mr. Benoit Adam from the Belgium Government (Attaché Maritime Transport) to collect feedback on suitability and the commercial opportunities of such a ballast water monitoring device.

Cytobuoy continued its collaboration with the Dutch Ministry of Infrastructure and the Environment, Rijkswaterstaat with the intention to develop the analysis method and related data processing as a standard method for surface water monitoring in the Netherlands. Cytobuoy is

cooperating on specific issues with Thomas Rutten Projects and started to collaborate with Flexible Optical B.V.

**7b) Are there any difficulties in the partnership?**

**If a partner wishes to withdraw or change responsibility within/from the partnership please refer to question 4 in the Changes Explanation form**

**Full beneficiaries:**

For the 8<sup>th</sup> reporting round all beneficiaries, except DHI are reporting their activities. Imares, Brockmann Consult, WMU and Cathelco did report their activities, but not their finances. Cathelco will report their finances when all their activities have finished.

ZebraBioscience submitted a final activity report in the 7<sup>th</sup> (September 2012) report, because they finished all their tasks for the NSBWO project. The final financial report will be submitted in the 9<sup>th</sup> (September 2013) report.

Sub partner University of Bergen, resubmitted it's financial claim that was already submitted with th 5th report. The claim now has been controlled, signed and stamped by a designated FLC.

WP6 is having difficulties producing Newsletters and other publication materials, because of the slow response of partners and sub partners. Also not all partners are informing WP6 about their results and status of the deliverables. This information is important for WP6 to anticipate on possibilities and content for workshops, presentation and meetings. This issue is addressed in all the monthly tele-conferences.

**Effectuated changes in beneficiaries:**

Because of the designation of FLC's for Norwegian sub-partners, University of Bergen and The Norwegian Maritime Directorate, sub-partners of BSH, will be transferred to NIOZ. This change is submitted with the 5<sup>th</sup> change.

**Partnership as a whole:**

The sub-partner structure has been discussed and has been changed. A lot of sub-partners decided not to claim money. The released budget is used for partners and sub-partners who took over some of the work or whom increased their tasks. The changes are submitted to JTS in change #5.

## 8. Knowledge transfer and links

**8a) Which European /national or other policies has the project contributed towards during the reporting period?**

**Global:**

The project's contribution to the discussion at IMO level is ongoing. When relevant publications are published they will be enclosed to these reports.

**Contribution to the establishment of the IMO BWM convention:**

CaTO continued to initiate and attend project activities. They also contributed to IMO policies, to regional EU policies, to national policies and top international projects on issues such as detection strategies for port state control, the availability of sufficient BWM capacity for maintaining the phasing schedule of the BWM Convention and transparency in the BWMS certification and notification processes. These provide an important input for the BWM guidelines.

NIOZ has contributed to the implementation of IMO's BWMC through:

- technical and scientific advice to Dutch administration/inspection and those of other EU countries
- technical advice to class
- participation in (inter)national committees, networks and conferences

Louis Peperzak is an active member of the ICES/IOC/IMO Working Group on Ballast Water and Other Ship Vectors. He also became a member of the ICES Working Group on Phytoplankton and Microbial Ecology.

Jan Boon continues his work as steering committee member for the GloBal TestNet.

Dick Brus from the Dutch Ministry of Infrastructure and Environment is a member of the ballast water review group of the IMO Marine Environment Protection Committee (MEPC).

In 2012, the Dutch Ministry of Infrastructure & Environment has lead or contributed to the following activities:

- Mr Dick Brus was chairman of the North Sea Ballast Water Exemptions and Exchange Areas Consultation Group.
- Writing proposals to designate routes and areas for North Sea Ballast Water exemptions and exchange areas to OSPAR and participating in OSPAR meetings.
- Participation in the combined HELCOM-OSPAR Ballast water Exemptions group.
- Development of guidelines and circulars on Ballast water in IMO.
- Public relations, presentations, articles, meetings etc. on developments on the Ballast water issue for stakeholders in the Netherlands and other North Sea countries.
- Preparing proposals to IMO on ballast water regulation implementation for special types of ships from North Sea Countries, such as hoppers and heavy lift crane vessels.
- Coordination for the preparation of a draft IMO proposal on the use of drinking water as ballast water.
- Application to the IMO for basic and type approval for two ballast water treatment systems.

Sub-partner KVNIR (Royal Association of Netherlands Shipowners) has also attended relevant meetings directed at the implementation of the IMO BWMC:

- 17th IMO BLG-subcommittee meeting, 4-8 February 2013, London where the KVNIR formed part of the Netherlands delegation to IMO with an advisory status. The KVNIR participated in the IMO BLG(17) Review Group meeting, focusing on additional guidelines for implementation of the BWM Convention.
- Joint HELCOM OSPAR Task Group on Ballast Water Convention Exemptions, 28 February – 1 March 2013, BSH Hamburg, where the KVNIR participated on behalf of the European Community Shipowners' Associations (ECSA) which has an observer status at HELCOM and OSPAR. The focus of the Task Group is to develop guidelines on granting exemptions from the Ballast Water Management Convention and consider any other future steps required for finalizing and implementing the guidelines.



**Europe:**

Through contacts with EMSA and through contacts with the involved national administrations and working groups for the marine framework directive (invasive species, eutrophication, that are chaired by project partners) the project is continuing to contribute to Europe. When invasive species are successfully reduced in ballast water, the project will contribute to Natura 2000.

Imares: The project activities of Imares are directly related to the IMO Ballast Water Management Convention but also contribute to the EU-biocide directive and REACH. A clear understanding of species sensitivity and the difference between mortality and viability may also help flag state authorities in the approval process of ballast water management systems.

NIOZ, BSH, GoConsult, CaTO and other partners are in contact with HELCOM – Maritime Baltic Sea Action Plan, OSPAR ballast water activities, MEPC, GESAMP and ICES.

GoConsult: GoConsult continued involvement in the EU-funded VECTORS project. This will ensure mutual knowledge transfer between BWO and VECTORS. Items of interest are ballast water management related risk assessment and alien species occurrences.

Brockmann Consult: monitoring of alien species for the MSFD has been discussed within the framework of the sampling strategies for the risk assessments (Aliens-2 project).

WMU: The scientific information and technical expertise derived from the NSBWO project contribute to education programmes at the international, European and national levels.

Cytobuoy is still contributing as external expert and advisor in the Dymaphy project that has been granted in the 5th call of the Interreg Programme Deux Mères.

They are also participating in the EU FP7 project UV-MON (An Integrated and Modular Bio-Monitoring Ballast Water Treatment System based on Advanced UV Plasma Technology Delivering Maximum Performance and Lowest System Lifetime Cost; FP7-SME-2011-1).

**North Sea Region:**

Through BSH and the Dutch Ministry of Infrastructure and Environment, the project is continuing to contribute to the development of regional (NSR) strategies and policies.

**8b) Does the project make any links to any current and former programmes and projects during the reporting period? If yes, please present how these links are implemented in your project.**

NIOZ: The inquiry into the feasibility of a trilateral (NL, D, DK) EU project, called Neobiota, continued.

CaTO is still involved in a student-supervising trajet that explores what we can learn about species survival in BWM conditions and survival in sediment in the large-scale land-locked saline ecosystem 'KP Zijl'.

Newcastle University: There is a direct contact with some of the members of CNSS (Clean North Sea Shipping) INTERREG Project to gain the knowledge and the type of scientific approach employed in that project.

Newcastle University has made a good contact with Smithsonian Environmental Research Centre (SERC) in USA who is working over Ballast Water issues.

Other project Newcastle University is involved in are: Martab (EU funded project), BaWaPla (EU funded project), Control of the Spread of Non-Indigenous Species through Ballast Water (Funded by MCA), Orkney Islands Council Marine Services Ballast Water Management Policy (Funded by Orkney Island Council).

GoConsult is partner in the FP7 Project VECTORS. This involvement will ensure mutual benefit between BWO and VECTORS. VECTORS will address e.g. ballast water management and related risk assessment.

Brockmann Consult continued the close cooperation with the ESA. They also cooperated in the Marcoast-2 project in which Niche modelling is tested for the application within Ballast water.

Ovizio has contacts with the HoloFlow Project (Brussels-based project) where technology development in holography is taking place but also efforts have been made on the determination of live/dead discrimination for planktonic organisms and ballast water monitoring. This cooperation had an impact on Ovizio's design considerations for a ballast water monitoring device.

**8c) Have other contacts have been made during the reporting period?****Imares:**

Imares statistically evaluated results from shipboard tests provided by GoConsult, in order to derive Gross Non-Compliance thresholds for Compliance Monitoring and Enforcement. The report was presented to BLG in February 2013 by Brian Elliott of EMSA.

They continued discussions with BWWG on relevance of algae bioassays for the evaluation of chlorine-based BWMS. Results of low temperature testing (partnership with Evonik Industries) and implication for use of current ballast water treatment technologies were discussed with Dr. Sarah Bailey, representative of the Department of Fisheries and Oceans, Canada.

**NIOZ:**

NIOZ took a foreign PhD student on-board to refine some of its testing methods. In this reporting period, Ishraga Taha from the University of Vienna, Austria, joined the team to establish if *Vibrio* spp. can be used as a proxy for *V. cholera* under the ETV and IMO protocols.

WMU visited IMO GloBallast to strengthen the existing partnership, facilitate interactions and exchange of information regarding the progress of North Sea Ballast Water Opportunity project.

Brockmann Consult cooperates with SEAnalytics in Gothenburg for Niche modeling (in conjunction with ESA Marcoast-2 project).

Newcastle University continued their contact with the CNSS (Clean North Sea Shipping) INTERREG Project during the present reporting period to gain the knowledge and the type of scientific approach employed in that project.

BSH: Stefan Kacan visited the Bangsaen Institute of Marine Sciences in Chonburi (Thailand) in January 2013. With the scientists the challenges related with the BWMC were discussed and the NSBWO project was introduced. The scientists are interested in a closer cooperation with European stakeholders.

Cathelco continued their contact with Jon Stewart of the International Maritime Technology Consultants, Inc., Fort Lauderdale, USA.

Ovizio continued their contacts with Universite libre de Bruxelles and the Vrije Universiteit Brussel.

Cytobuoy continued their contacts with Laboratoire d'Océanographie Microbienne (LOMIC), Université Pierre et Marie Curie.

## 9. Innovation

### How has your project contributed to promoting innovation within the North Sea Region during the reporting period?

#### R&D innovation:

NIOZ: The use of the knowledge exchange centre and pilot test bed at NIOZ provide a strong impulse on innovation and development of new treatment technologies.

A number of new test techniques were investigated, e.g. the FDA-CMFDA method for 10-50 µm organisms was successfully established. In addition, the rapid ATP analysis method was further developed, a compliance testing technique.

Sub-partner Groningen Seaport is trying to realise, together with several its pilot project in building and operating a ballast water treatment barge. Since 2013 Groningen Seaports has incorporated ballast water as topic into its long-term planning.

ZebraBioscience: The development of biomagnetic enrichment methods for human pathogens from sea water, in combination with Real Time DNA is new. The goal is to provide robust detection tools for the detection of low amounts of many human pathogens, such as bacteria and viruses, in sea/ballast water. The implications of a new bacterial ATP detection technology which could be used on-board ships is new, but has to be further evaluated in field tests. This new technique could be useful for monitoring bacterial killing efficiency after ballast water treatment.

WMU is continuing with the development of the website for invasive species in the North Sea.

Newcastle University proved that MALDI-TOF Biotyping (MTB) is a useful tool for the discrimination of isolates of PAL species, using the 16S rRNA gene sequences and MADLI-TOF MS of bacteria is a quick and reliable microbiological tool, complementary to other current techniques that are used for phylogenetic studies of microorganisms.

DHI: The developed methodology on how to combine hydrodynamic modeling, ABM and statistical post-processing techniques for addressing risk assessment of ballast water release and the threat from invasive species is a new innovative approach.

Imares: The marine mesocosms are a novel development. Currently Imares is the only institute worldwide, exploiting these. The main challenge is adaptation of the substance based procedure to a effluent based procedure.

Due to continuing global warming, maritime activities in the Arctic increase rapidly. The consequences for the treatment of ballast water are, however, still unknown. The work done in cooperation with Evonik Industries is the first study into the toxic effects of rapidly degrading biocides at low temperatures. This is not only relevant for future Arctic maritime activities, but also for shipping in temperate areas (Interreg region) during winter. Until now all testing takes place during the productive summer months.

Brockmann Consult: The combination of remote sensing and other spatial information of the North Sea were combined to a risk index model for ballast water exchange. Algorithms for the retrieval of water quality products (such as chlorophyll concentration, suspended matter concentration and turbidity) from remote sensing are established. Using this information for the topic of ballast water exchange is an innovative approach.

Cathelco: The tests of the Cathelco BWTS involved a new in-line UVT-sensor. This is the first time that the UV transmittance is measured directly in-line in a BWTS. The signal from the sensor is used to calculate the UV dose of the BWTS in relation to the water quality. This feature is of high relevance, especially in freshwater environments.

Ovizio: The new D3HM technology is nearly independent from the type of sample vessel used to assay the ballast water sample: many commercial formats are compatible.

It is also possible to monitor samples directly in the original sample 'container/vessel'. Different types of transparent plastics are compatible with the new D3HM technology, avoiding the issues caused by light polarization through components in the plastics and as encountered in light interference technologies (such as classic DHM technology).

Samples can be identified in the oLine through an identification system: a unique 'RFID' tag (Radio-Frequency Identification Tag) in the sample container could be detected with the oLine device and reported in the OsOne software (feasibility has been demonstrated).

The new D3HM technology can also be combined with (auto)fluorescence detection.

Cytobuoy: The result of its activities will constitute a combination of measuring technology and data analysis software that will be valuable in the monitoring of ballast water and surface water for invasive species. This will provide new possibilities for monitoring by authorities and the scientific community as well as trigger new technology development by other technology manufacturers.

#### Innovation of policies:

GoConsult: Further work at sea and the attendance of the IMO and ICES meetings improved the knowledge on how to take representative samples of ballast water on board and also on the selection criteria of ballast water sample processing methods. The future involvement in shipboard tests of ballast water treatment systems will enable detailed experiments to proof the suitability of organism detection technologies and sample processing approaches on board.

CaTO: Probed further on the potential of the concept for the NSBWO seminar to carry this concept further afield to other maritime fairs in the North Sea Region and possibly outside, the latter in co-operation with Europort maritime fairs outside Rotterdam.

Continued to build upon the initiative to linking transparency to confidence and trust in BWM and developed a proposal to develop an overarching strategy for safeguarding transparency to be pursued by governments, private parties and the international maritime sector. The North Sea region with its tradition and obligations on public information is well placed to play a guiding role.

## 10. Publicity

### 10a) What kind of communication and publicity activities have been carried out?

An excel file is included in which the different publications during the 7<sup>th</sup> reporting period are listed (Enclosure 5). The type of publications listed in this file are:

<ul style="list-style-type: none"> <li>- Conferences and workshops (presented and attended);</li> <li>- Presentations at international meetings (scientifically and policy);</li> <li>- Press releases and publications in magazines.</li> </ul>
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**10b) Have any particular activities obtained particular attention for the project or Programme?**

**10ci) If you fulfil the following conditions as beneficiary, you should during the implementation of the operation, put up a billboard at the site of each operation.**

**(a) the total public contribution to the operation exceeds EUR 500 000;** Yes

**(b) the operation consists in the financing of infrastructure or of construction operations.** Yes

**If you have answered both questions with yes, please provide details about the infrastructure or construction and the billboard:**

During the construction of the pilot test bed no details for a billboard were available. Due to the short construction time, placing a billboard at the construction site was also not relevant (building period was 1 week).

During the Open Day at NIOZ (May 13, 2011) a permanent explanatory plaque to indicate the Interreg ERDF contribution tot the NSBWO project was revealed. Evidence was submitted with the 5th (September 2011) report.

**10cii) If you fulfil the following conditions as beneficiary you should put up a permanent explanatory plaque that is visible and of significant size no later than six months after completion of an operation:**

**(a) the total public contribution to the operation exceeds EUR 500 000;** Yes

**(b) the operation consists in the purchase of a physical object or in the financing of infrastructure or of construction operations.** Yes

**If you have answered both questions with yes, please provide details about the purchase of a physical object, financing of infrastructure or construction operations and the explanatory plaque**

During the Open Day at NIOZ (May 13, 2011) a permanent explanatory plaque to indicate the Interreg ERDF contribution tot the NSBWO project was revealed. Evidence was submitted with the 5th (September 2011) report.

**10ciii) All information and publicity measures aimed at beneficiaries, potential beneficiaries and the public should include the following (for small promotional objects points (b) and (c) do not apply):**

**(a) the emblem of the European Union, in accordance with the appropriate graphic standards, and reference to the European Union** Yes

**(b) reference for the ERDF: 'European Regional Development Fund'** Yes

**(c) The statement investing in the future by working together for a sustainable and competitive future**

Yes

**(d) as stated in the guidance, the North Sea Region programme logo and related references should be used** Yes

**Please provide details of the information and publicity measures**

During the Open Day at NIOZ (May 13, 2011) a permanent explanatory plaque to indicate the Interreg ERDF contribution tot the NSBWO project was revealed. Evidence was submitted with the 5th (September 2011) report.

## 14. Communications

**Plaque to identify the source of funding**

No

## 11. Indicators

## Indicators

## Indicators

## 14.2i Compulsory Indicators - each of the indicators must be established for the project

Output/ Result/ Impact	Priority/Programme Indicator description	Description	Unit	Baseline	Project target	Source of information	Reported previously	Reached in total	Reached this period
<b>Raising awareness / dissemination</b>									
Output	transnational dissemination outputs	exhibitions	number	0	1	Appendix 3 WP 5	3	3	0
Output		own events	number	0	5	Appendix 3 WP 2&5	17	23	6
Output		published material	number	36	120	Appendix 3, WP 2,3,4, this includes public and scientific papers, press communications and targetted information	34	50	16
Output		websites	number	1	2	Appendix 3 WP 5	2	2	0
Output		TV and radio ap- pearances	number	0	0		5	6	1
Result	individuals reached by (priority) specific awareness raising activities	exhibitions	number female	0	0	appendix 3, WP5	0	0	0
Result		other	number male	75	1,150	Reached by Priority 1,2,3	0	1,686,000	1,686,000
Result		other	number female	34	575	Reached by Priority 1,2,3	0	497,500	497,500
Result	organisations in target groups reached by (priority) specific awareness raising activities	exhibitions	number	103	395	This includes all from priorities 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.3 as described in appendix 3 WP 2, 4 and 5, which include shipping companies, ports, technology providers, coastal ecosystems, transport and reduced negative impact on living resources, bio-invasios, urban, rural and costal communities, port authorities	203	241	38
<b>Strengthening transnational co-operation</b>									
Result	Organisations within and outside the official core partnership involved in the project (i.e. as contributor to activity or output)	activity	number	15	50	Paragraph 8, partners and sub-partners	388	197	-191
Result	individuals within and outside the official core partnership involved in the project (i.e. as contributor to activity or output)	activity	number	100	1,000	Appendix 3, WP 2-5	120	308	188
Output	project administration outputs (I): transnational partner management meetings		number	12	15	Appendix 3, WP 1-2	33	46	13
<b>Territorial coverage</b>									

## 14.2ii Generic Indicators - indicators must be chosen which are relevant for the project

Output/ Result/ Impact	Priority/Programme Indicator description	Description	Unit	Baseline	Project target	Source of information	Reported previously	Reached in total	Reached this period
<b>Core activities</b>									
Output	developed:	transnational training	number	2	5	Appendix 3 WP 3-5	0	4	4
Result	individuals in different social and age groups undertaken transnational training	female 18-24	number	0	0		1	1	0
Result		male 25-54	number	10	30		0	0	0

Result		female 25-54	number	5	20		0	0	0
Result		male 55+	number	0	3		0	0	0
Result		female 55+	number	0	1		0	0	0
Result	individuals in different social and age groups undertaken staff exchange	female 18-24	number	0	0		0	1	1
Output			number	0	1	Appendix 3 WP 3 and 5	0	0	0
Result	complementary financing secured (financing additional to approved project budget)		Euro	5,400,000	12,400,000	see par. 2.4-5 and budget, part is specified in project budget by BWT developers €645,000 secured, €645,000 searched for, such matchings subsidy €500,000. Private and Public RTD Triggered	16,418,000	25,418,000	9,000,000
Output		transnational demonstration projects	number	9	17	Appendix 3 WP 3 and budget; this includes: feasibility monitoring, validation BWMS, Compliance Control and enforcement best practises, BWM implementation knowledge transfer database, NIOZ BWM technology and WMU Emerging Issues and strategies	18	24	6
Raising awareness / dissemination									
Impact	individuals within and outside the NSR with greater awareness of project outputs	male	number	200	2,000		594	1,394	800
Impact		female	number	100	1,000		116	716	600
Impact	organisations within and outside the NSR with greater awareness of project outputs		number	28	200		166	171	5
Strengthening transnational co-operation									
Output	project administration outputs (II): shared IT systems		number	2	4	Sgared web based administration and 1 to 3 information databases for dissemination of wp 2, 3, 4	2	3	1

#### 14.2 iii. Priority indicators - chose at least 1 output and 1 result indicator

Output/ Result/ Impact	Priority/Programme Indicator description	Description	Unit	Baseline	Project target	Source of information	Reported previously	Reached in total	Reached this period
Priority 2 promoting the sustainable management of our environment									
Output	contingency plans	new	number	1	2		0	0	0
Output		improved	number	0	1		0	0	0
Output	common databases	new	number	2	2		1	2	1
Output	new transnational model approaches		number	4	9	This includes priority 1, adding 2 to baseline, 4 to target, ind. on tools for transnational technology transfers adopted for RTD exchange	2	2	0
Output	transnational network	new	number	8	27	incl. implementation, of BWMC. this incl all new ad improved transnational networks, alliances, collaborations, etc	17	24	7
Result	land area subject to	transnational management tools	ha	60,000,000	60,000,000	the target is over 60.000.000 tech tranf of BWM and Bio-invasions, tech tranf on BWMS, future ship borne invasions.	0	0	0
Result	sea area subject to	transnational management tools	ha	500	2,000	ports	0	0	0
Result	Coastline subject	transnational	km	30,696	35,696		0	0	0



Result	to	management tools							
	new technologies / pilots to reduce pollution and manage risks transnationally and implemented	number	6	14	incl. BWM monitoring, BWM treatment systems, early warning and mitigation	5	6	1	
<b>Environmental Indicators</b>									
Output/ Result/ Impact	Priority/ Programme Indicator description	Description	Unit	Baseline	Project target	Source of information	Reported previously	Reached in total	Reached this period
<b>Environmental issues</b>									
	Biodiversity, flora and fauna	Natura 2000 areas affected	number	0	0	All known maritime areas and all new areas during and after the project period	0	0	0

## 12. Enclosures

Enclosures		
Format e.g. book, CD, DVD etc	Description	No. of pages/photographs
Pdf	5f_Shipping World Feb2013 Ballast Guardian of the Sea	2
Pdf	5e_Shipbuilding Industry 2012 Ballast squeeze	3
Pdf	5d_Shipbuilding Industry 2012 Saltwater Standoff	5
Pdf	5c_Workshop Report Organisms Below 10 Micron in Minimum Dimension	25
Pdf	5b_Flow cytometry microscopy and DNA	9
Pdf	5a_BWO Newsletters	9
Excel	5_List of publications and presentations for 8th reporting round	N/A
Pdf	4_Report on SME's in Interreg	11
Excel	3_Transnational partnership overview	N/A
Excel	2_Overview status on deliverables December 2012	N/A
Word	1h_Picture of open harbour day at NIOZ	2
Pdf	1_g The Ballast Water Times No3	10
Pdf	1f_BWO On board test BallasCAM Hach-PAM Walz-Water-PAM	15
Pdf	1e_Technical report March 2013	19
Pdf	1d_Minutes NSBWO Workshop Eco toxicity testing	17
Pdf	1c_BLG 17-INF 16 information on project...	37
Pdf	1a_Minutes NSBWO WP leader meeting BSH 121217	9
Word	1_Table 4a WPAactivities of Activity report March 2013	21

## Finalise

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