



September 2012 Report: Activity: Ballast Water Opportunity (resubmission)

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

Summary on Progress

The project has now completed 3,5 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 .

NIOZ, Cato Marine Ecosystems and BSH jointly organized the annual meeting which took place at the BSH in Hamburg, Germany, on May 24 and 25.

The NSBWO steering group met on the 24th of May (at the AM 2012) to discuss the progress as well as the future course of the project. During this meeting the extension of the NSBWO project for half a year was discussed (see enclosure 1a).

ZebraBioscience has finished its tasks for the project (WP4) and submitted their final activity and financial report to the lead partner (NIOZ). WP4 continues, since other partners in this WP are still working on their tasks.

IMO WMU has launched the first phase of the North Sea Alien Species database (NorSAS) which is available at <http://www.norsas.eu> portal. Species information is available for about 100 species and WMU continues to include more species in the coming months.

Connectivity probability maps for the North Sea region have been developed by DHI-Denmark.

From 18 to 20 June 2012, Imares organized and hosted a workshop on ecotoxicity testing of ballast water (G9 guidelines).

DHI finalized and reported a final draft version of the conceptual approach for the creation of a Ballast water vulnerability map for the North Sea using a combination of hydrodynamic and agent based modelling.

NIOZ and BSH reorganised their sub-partners and the allocated budgets. A lot of sub-partners decided not to claim. Budgets of these sub-partners came available for other sub-partners and partners that have an increased contribution to the project. It was also decided that all the remaining sub-partners from Norway will become sub-partners of NIOZ. As a result University of Bergen and the Norwegian Maritime Directorate will become sub-partner of NIOZ. The total budget change, sub-partner changes and other changes will be submitted in change #5.

1. Beneficiary and project information

Beneficiary information

Extended deadline for submission of report	
Required submission date	14/11/2012
Final Report is expected to be delivered	31/03/2014

Lead Beneficiary information

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

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Certification by Lead Beneficiary

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2. Time period (6 months)

This Activity report covers the time period from	01/03/2012	To	31/08/2012
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	No
Change of contact details	No
Changes of activities in the work packages	No
Change of partnership	No
Change of project timeline (new project timeline)	Yes

3.2 Other project issues

Incompletion of a work package	No
Addition of an Indicator	No
Publicity	Yes
Activities outside the Eligible Area	Yes

Comments

During the 7th 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. In the steering group meeting of May 24, 2012 this extension of 6 months was approved by the steering group (enclosure 1a).

Changes #5 will be 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 were prepared to perform extra tasks. These (sub-)partners got extra budget for these extra tasks.

The delivery of two major deliverables are still seriously delayed, these are the manual for certification of ballast water treatment equipment (D2.1), and the guidelines for compliance control (D2.7). These were envisioned as a collaborative product from the project partners to be delivered to IMO. Due to the attention the project received and the improved level of discussion in the international arena, an improved transnational horizontal and vertical collaboration is required to achieve these deliverables. However, these guidelines will be of a higher level than otherwise could have been achieved and have a better impact that could have been expected – from north sea to worldwide. The last workshop for this deliverables will be held in February 2013. It is expected that the manual and the guidelines will be ready in the summer of 2013.

Two addenda are added:

One containing all the changes in the project. The new (5th) changes will be uploaded in the online system.
One containing remarks for JTS.

4. Work packages/activities

4a. Work packages and activities
See enclosure 2.

4b. Activities outside the eligible area (that were listed in Q2.4 of the approved application form)
The following activities were listed in the approved application, however they were carried out outside the eligible area. People from BSH attended the following meetings and conferences: 1. Meeting of ICES WGBOSV and WGITMO at EMSA (Lisbon, Portugal 12.-16.03.2012) Stefan Kacan from BSH attended the ICES WGBOSV and WGITMO meetings at the EMSA in Lisbon. The information provided is useful for the risk assessment regarding BW-treatment exemptions. The NSBWO was presented and the meeting was an excellent opportunity for networking . 2. Inorganic DBP formation in drinking water, seminar (Mühlheim, Germany 08.05.2012) Stefan Kacan from BSH attended a seminar in formation of inorganic DBPs at drinking water disinfection. Current status in analytics and legal aspects in Germany and in the EU of the DBP formation at water disinfection were discussed. The information provided is useful for risk assessment of ballast water treated with active substances. The NSBWO was presented as well the meeting was an excellent opportunity for networking. Brockmann Consult presented itself and the project on the European Maritime Days in Gothenburg (21.-22.05.2012). They also gave a presentation of the Ballast Water risk Index.

4c. Activities or travels outside the eligible area (that were not listed in Q2.4 of the approved application form)
NIOZ representatives attended following conferences outside the eligible area: - Peter Paul Stehouwer gave a presentation at BD Nordic FACS User Meeting, Copenhagen, DK, 19-20 April, 2012. This was an invited talk, hence the costs for participation were covered by the meeting's organizers. - Louis Peperzak attended the meeting of the ICES/IOC/IMO Working Group on Ballast Water and Other Ship Vectors in Lisbon, Portugal on 12 -14 March, 2012. WMU researchers prepared papers, to be presented at the following events: - International Conference & Exhibition on Ballast Water Management 2012 (ICBWM 2012), Singapore, 14-16 November 2012. Title of the

paper submitted: *Ballast waters and shipboard ballast water treatment: an integrated approach to the assessment of risks*. Authors: Raphaël Baumler & Anne Bouyssou.

- International Conference on Aquatic Invasive Species 2013 (ICAIS 2013), Canada, 21-25 April 2013. Title of the paper submitted: *A review of the occupational safety and health risks associated with shipboard ballast water treatment systems*. Authors: Raphaël Baumler & Anne Bouyssou.

Goconsult: A potential client was visited in Singapore and the BWO project was mentioned with flyers and the Ballast Water Times. The GESAMP Stock Taking Workshop (Korea) was attended which was held to improve the evaluation of ballast water treatment systems which use active substances to treat the water. GoConsult presented developments and achievements in BWO.

GoConsult also 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.

5. Completion of a work package

Completed Work Packages	
a) State what work package has been completed and its starting and completion date	
Start Date:	Completion Date: 31/08/2012
b) Does this completion of a work package correspond with the application form? If no please read the guidance for this question above.	Yes
c) What have been the main outcomes and results of the completed work package?	
<p>ZebraBioscience has finished its tasks for the project (WP4) and submitted their final activity and financial report to the lead partner (NIOZ). WP4 continues, since other partners in this WP are still working on their tasks. What have been the main outcomes and results of the completed work of ZebraBioscience? It became possible to use magnetic nanobeads combined with methods for capturing total DNA or RNA from water samples to enrich specific DNA of many different human pathogens (E. coli, Enterococci, Salmonella, Legionella or Vibrio cholera) in the range of 50-100 cfu per liter can be enriched from harvested ballast water and detected by using magnetic nanoparticles. Real time DNA PCR were optimized and evaluated. The studied DNA methods and tests qualify for the sensitive detection and semi-quantification of different species of E.coli, Enterococci, Salmonella, Legionella and V.cholera among others in ballast water from ships or harbours. Both methods, DNA enrichment and Real time PCR, can be easily performed by skilled lab personnel in a lab at a harbour to inspect different ballast water samples taken from incoming ships. The turnaround time from start to finish and sending the results by e-mail is around 4 hours. DNA Reference lines for quantification of specific human pathogens were obtained and the reagents were tested using Real Time DNA PCR for specificity, sensitivity and quantification. The quantification was performed in the range of 10 up to 106 DNA copies, and the results of specific reference lines were sufficient for the quantification different bacteria concentrations in spiked ballast water samples. The implications of a new bacterial ATP detection technology has been further evaluated in collaboration with the NIOZ. The results from the project demonstrated that this new technique could be very useful for monitoring bacterial killing efficiency after BW treatment. Monitoring of human pathogens have led to more detailed discussions with other companies, SKW Biosystems, Siemens Diagnostics, Kalsbeek, which are involved in specific detection of pathogenic bacteria for humans. Siemens Diagnostics has a dedicated instrument for extraction and detection of target DNA and has shown interest in different diagnostic Real Time PCR tests of Zebra. As a result of the involvement of Zebra in the BWO project, Zebra was asked to collaborate on the detection of different human and animal micro-organisms by the university of Utrecht (Microbiology Department) in the Netherlands. Zebra is actively involved in the medical and environmental microbiology study groups.</p>	

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-organize a number of dedicated and hands-on workshops to harmonize and standardize certification strategies and technologies.</p> <p>NIOZ, together with BSH (WP2) and Cato Marine Ecosystems (WP6), organized the NSBWO Annual Meeting at the BSH, Hamburg, 24 and 25 May, 2012. The meeting was well attended with approximately 65 participants and included, besides partners and sub-partners of the NSBWO project and other European participants, also U.S. representatives from the Great Ships Initiative, International Maritime Technology Consultants and the U.S. Coast Guard who shared their views and experiences, and learnt more about the European approach to ballast water management and the developments in the NSBWO project (see enclosure 2 and 4).</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>Examples of a transnational approach by the partners of the NSBWO project are:</p> <p>IMARES organized and hosted a workshop on ecotoxicity testing of ballast water (G9 guidelines; 18 to 20 June 2012). The workshop was attended by 18 participants from three European test facilities (NIVA, NIOZ and IMARES), two North American test facility (MERC, Golden Bear) and a test facility from Korea (Kordi/NeoEnBiz). Further participants were GESAMP, German Authorities, Dutch Authorities, Korean Authorities, Lloyd's Register Netherlands and Evonik Industries AG.</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>The meeting of the ICES/IOC/IMO Working Group on Ballast Water and Other Ship Vectors, held from 12-14th March, 2012 at the European Maritime Safety Agency (EMSA) was attended by Louis Peperzak. Louis Peperzak also became a member of the ICES Working Group on Phytoplankton and Microbial Ecology.</p> <p>BSH attended a meeting of ICES WGBOSV and WGITMO at EMSA Lisbon, Portugal. The information provided was very useful for the risk assessment regarding BW-treatment exemptions.</p> <p>Other initiatives to contribute to the transnational impact of the project:</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.

WMU is working 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. The work has progressed well and a report is being prepared.

WMU has expanded its education and training related to Ballast Water Management issues. As a result lectures on Ballast Water Management issues and the problems with Invasive species are delivered in the Masters Program of WMU.

A Professional Development Course on Ballast Water Management was conducted on the 4th & 5th June 2012 involving about 20 participants from 11 countries.

The IMO model course marine environmental awareness is applicable worldwide, so transnational by definition.

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 under graduate and post graduate students of the School of Marine Science and Technology have conducted their final projects on ballast water related issues at Newcastle University.

GoConsult: During the last 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.

Imares, together with Evonik Industries AG is currently investigating the efficacy of active substances at extremely low temperatures and residual toxicity after neutralization of an active substance.

Sub-partner ProSea has developed an educational package, including the educational awareness materials about the issue of invasive species by ballast water for worldwide use.

Ovizio is working with NIOZ, Universite libre de Bruxelles and the Vrije Universiteit Brussel to develop and test the DHM 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

Sub-partner Wadden Sea Society also maintained contact with organizations outside the official core partnership, e.g. Hans Ulrich Roesner from WWF Germany.

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 (London, Ballast Water Treatment Technology Conference, London, 24-25 April 2012; WMTC, Saint-Petersburg, 31 May 2012; Interreg Annual Meeting 2012 2012, 18 June 2012) and liaised with North Sea ports and international ports representatives, in organizing and holding the ports workshop at AM12.

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).

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.

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.

BSH has made contact with met Dr. Gunnar Gerds of the Alfred Wegener Institute for Polar and Marine Research (Germany). He is, an expert in Microbiology. An improvement of the current practice in investigating Bacteria in connection with BWMS- certification was discussed. A small project with Dr. Gunnar Gerds is in planning.

Imares joined the annual expert-meeting on ballast water issues hosted by the Dutch Authorities (April 11th 2012; Dutch Ministry IL&T).

During this reporting period, Louis Peperzak gave three presentations - to the Dutch Expert Group on Ballast Water, Lloyd's Register and the BSH - explaining the concentrations of organisms in NIOZ test water and of other relevant variables. A document on the evaluation of G8 tests has been drafted for ILT. This draft has also been presented to and discussed with the Dutch IMO delegate in preparation for MEPC 64.

ZebraBioscience strengthened their partnerships and contacts with SKW Biosystems, BD Diagnostics, Kalsbeek, University of Utrecht and Pathofinder which are involved in the specific detection of pathogenic bacteria.

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: discussed 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.

WMU has given presentations at events such as the Almedalen Week (July 2012), Forum Gotland (June 2012) and at Masters course in Systems Ecology, University of Stockholm.

WMU continues their partnership with the GloBallast Project in IMO.

Ovizio has tried to maintain 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. Above this, they established contacts with government representatives 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.

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 7th reporting round most beneficiaries are reporting their activities. CaTO Marine Ecosystems did report their activities, but not their finances. Cathelco only reports their activities, as they did not yet finish their work at NIOZ. They will only report finances when all their activities have finished. ZebraBioscience submitted a final activity report, because they finished all their tasks for the NSBWO project. The final financial report will be submitted in the 8th (March 2013) report.

Due to circumstances, Cytobuoy did not report, although they had to submit their yearly financial claim. We emphasized that they have to report in the March 2013 report.

Problems arose for ZebraBioscience because they are not able to evaluate their developed tools at NIOZ.

In May 2011 arrangements were made with the NIOZ to set up a pilot test at their harbour facility with several different Ballast Water Systems for disinfection in operation. The pilot test for the collection and detection of target bacteria in a real time procedure would take place in June/July, but was postponed by the NIOZ because of safety reasons at their harbour location. A second pilot study was arranged for August/September 2011 to test several ballast water samples taken by the NIOZ from ships in the harbours of the Netherlands. Both evaluation studies were postponed. Until now, the studies have not been performed. Both essential pilot studies will be planned at a later stage during the project

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 will be submitted with the 5th 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 will be 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.

Louis Peperzak is an active member of the ICES/IOC/IMO Working Group on Ballast Water and Other Ship Vectors and e.g. attended its meeting at EMSA in Lisbon, Portugal on 12 -14 March, 2012. 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. NIOZ wrote one of the annexes that will be added to the Memorandum of Understanding by the GloBal Test Net. These annexes will be discussed at the next GloBal TestNet meeting in Singapore on 13 November 2012. This testNet is an important organ to harmonize testing of Ballast water equipment.

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).

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 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.

DHI and Brockmann: The activities are aimed at the generation of a Ballast Water Vulnerability Map to be applied by authorities as a management component to support planning and the risk assessment in relation to the release of ballast water, environmental approval of shipping companies activities, protection of marine protected areas.

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

ProSea: During the revision of the STCW Code from the IMO, the EU submitted a proposal to include marine environmental awareness as a new requirement for all seafarers. The human involvement of prevention of pollution was included and the Dutch government took the initiative to develop the IMO model course.

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.

ProSea prepared the MTC Policy Paper "Maritime Transport and Future Policies - Perspectives from the North Sea Region" which covered amongst other things ballast water management (enclosure 1m). The report is a compilation of results generated by the North Sea Region Programme project Maritime Transport Cluster in 2011/12. It comprises an analysis of all transport related projects within this programme, maritime transport research and the results of a consultation with the maritime industry in the North Sea Region. 28 copies of this report were sent out to all relevant NSBWO (sub-) partners as information.

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.

ZebraBioscience is partner in a Dutch project called "Brainlabs". This project is responsible for the development of different assays for the monitoring of human biomarkers.

NIOZ: The inquiry into the feasibility of a trilateral (NL, D, DK) EU project, called Neobiota, continued. The workshop "Neobiota Wadden Sea" was held to investigate the development for a strategy and conservation actions to reduce the impact of alien invasive species in the Wadden Sea. Jan Boon (NIOZ) attended this meeting in Wilhelmshaven, Germany on 29 August, 2012. Ellen Kuipers from the Wadden Sea Society had attended the earlier Neobiota workshop in Groningen, The Netherlands on 28 November, 2011.

CaTO monitored follow-up inventories in large-scale land-locked saline ecosystem 'KP Zijl'. CaTO now is also involved in a student-supervising traject 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'.

WMU is involved in the development of the project 'Harmonization of the Ship's Ballast Water management: Aliens species control and marine life protection in the Mediterranean sea (ALIFE)'. A new project on ballast water and invasive species. WMU is doing this together with a consortium of institutions in the Mediterranean. This project has been submitted to EU Mediterranean Regional Program.

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.

DHI is continuing linking the NSBWO project with an internal R&D project that is focusing on the development of generic modeling tools combining ABM, classical water quality modeling and hydrodynamic modeling.

Brockmann Consult continued the close cooperation with the ESA on the ballast water topic. The BWO project supported the efforts to start a follow up project by organizing an ESA user consultation meeting.

BSH: A Korean delegation of experts on the field in BWMS certification visited the BSH in June 2012. Experiences were exchanged and a closer cooperation and a harmonisation in BWMS certification is envisaged.

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. Results from these studies, ascertained that there is still no universal indicator available for the determination of live and dead organisms in the $\geq 50 \mu\text{m}$ size range (Zetsche and Meysman 2012, see enclosures).

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

NIOZ:

- Marcel van der Linden, project controller for the NSBWO project at NIOZ, attended the Interreg meeting in Bremerhaven from June 18-20 to learn more from and exchange information with other Interreg projects.

- Visiting PhD student Leonardo Romero Martinez from the University of Cádiz, Spain presented his ballast water research during his internship in the ballast water research group of the NIOZ, 18 June, 2012: 'Ballast Water Research at the University of Cádiz, Spain' and hence enabled a view at ballast water research done in Spain.

- Sub-partner Groningen Seaports is working (enthusiastically) together with others (ship-builder, scientists, waste collector etc.) to start up a pilot project in which a shore (or port) based ballast water treatment system will be built and operated. Several meetings concerning this pilot project have taken place.

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.

DHI: established a dialog with University of Gothenburg and the fishery research institute at Danish Technical University (DTU-AQUA) aiming at putting together a research application, "Resolving the human footprint on marine protected areas in the western Baltic Sea" for the BONUS program (to be effectuated in October 2012), exploiting the methodology developed during the BWO project in a different context related to management of marine protected areas of the Baltic Sea. Connectivity analyses in this context are essential for understanding the efficiency and ability of MPAs to secure protection of biodiversity, sustainability of specific populations of marine organisms and ecosystem functioning. The BONUS program is partly financed by the EU and is supporting scientific research in the Baltic region.

GoConsult: S. Gollasch continued its contact with Kent Peterson of Fluid Imaging Technologies who developed the BallastCAM, a flow camera specifically for ballast water applications.

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 has made contact with met Dr. Gunnar Gerds of the Alfred Wegener Institute for Polar and Marine Research (Germany). He is, an expert in Microbiology. An improvement of the current practice in investigating Bacteria in connection with BWMS- certification was discussed. A small project with Dr. Gunnar Gerds is in planning.

Cathelco had contact with Jon Stewart of the International Maritime Technology Consultants, Inc., Fort Lauderdale, USA. He was contacted to provide some input regarding the US Ballast Water regulations. Further cooperation with the International Maritime Technology Consultants, Inc regarding this topic is planned.

Ovizio continued their contacts with Universite libre de Bruxelles and the Vrije Universiteit Brussel. They also made contact with the Belgian Port Authority (through Mr Benoit Adam, attaché maritime transport, federal public service mobility and transport), demonstrating the DHM technology to them and enabling further discussions on what kind of instrument will be most suitable/needed once the convention has been implemented.

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.

Cees van Slooten (NIOZ) examined the FDA (Food and Drug Administration) method for compliance testing.

Sub-partner Groningen Seaports is working together with others (ship-builder, scientists, waste collector etc.) to start up a pilot project in which a shore (or port) based ballast water treatment system will be built and operated. This would provide an innovative approach to the policies and operations in Ballast water management.

ZebraBioscience: The development of biomagnetic enrichment methods for human pathogens from sea water, in combination with Real Time DNA is new to the project. 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 carried out tests that revealed the limitations to the automated assessment of samples using MALDI-TOF MS. A correlation coefficient values (CCV) of the mass spectral raw data and their variation was developed and used to allow the rapid and efficient identification of bacteria in ballast water.

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 thread 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 on a commercial basis. The main challenge is adaptation of the substance based procedure to a effluent based procedure.

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.

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

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.

The BSH-internal instruction for BWMS approval has been finalised. At the moment the BSH quality assurance is checking the document. The approved document is going to be generalised for the North Sea Region and is translated into English. We expect the finalisation of the document at the end of the year 2012.

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 7th reporting period are listed (Enclosure 2).
The type of publications listed in this file are:

- Conferences and workshops (presented and attended);
- Presentations at international meetings (scientifically and policy);
- Press releases and publications in magazines.

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 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 (the building period was 1 week).

However, during the Open Day at NIOZ (May 13, 2011) a permanent explanatory plaque to indicate the Interreg ERDF contribution to 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 to 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

A permanent explanatory plaque has been installed at the pilot test bed during the open day for "Europa om de hoek" (Europe is just around the corner) at NIOZ on May 13th. Evidence was submitted with the 5th (September 2011) report.

14. Communications

Plaque to identify the source of funding

No

11. Indicators

Indicators
This reporting period we do not report on indicators. We will report on indicators in the March 2013 report.

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
Raising awareness / dissemination									
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	17	0
Output		published material	number	36	120	Appendix 3, WP 2,3,4, this includes public and scientific papers, press communications and targeted information	34	34	0
Output		websites	number	1	2	Appendix 3 WP 5	2	2	0
Output		TV and radio appearances	number	0	0		5	5	0
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	0	0
Result		other	number female	34	575	Reached by Priority 1,2,3	0	0	0
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-invasions, urban, rural and coastal communities, port authorities	203	203	0
Strengthening transnational co-operation									
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	388	0
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	120	0
Output	project administration outputs (I): transnational partner management meetings		number	12	15	Appendix 3, WP 1-2	33	33	0
Territorial coverage									
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
Core activities									
Output	developed:	transnational training	number	2	5	Appendix 3 WP 3-5	0	0	0
Result	individuals in different social and age groups undertaken	female 18-24	number	0	0		1	1	0

transnational training									
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
Output	initiatives that provide or help find investment resources	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	16,418,000	0
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	18	0
Raising awareness / dissemination									
Impact	individuals within and outside the NSR with greater awareness of project outputs	male	number	200	2,000		594	594	0
Impact		female	number	100	1,000		116	116	0
Impact	organisations within and outside the NSR with greater awareness of project outputs		number	28	200		166	166	0
Strengthening transnational co-operation									
Output	project administration outputs (II): shared IT systems	number	2	4	Shared web based administration and 1 to 3 information databases for dissemination of wp 2, 3, 4		2	2	0

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	1	0
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	17	0
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 to	transnational management tools	km	30,696	35,696		0	0	0

Result	new technologies /pilots to reduce pollution and manage risks transferred transnationally and implemented	number	6	14	incl. BWM monitoring, BWM treatment systems, early warning and mitigation	5	5	0	
Environmental Indicators									
Output/ Result/ Impact	Priority/Programme Indicator description	Description	Unit	Baseline	Project target	Source of information	Reported previously	Reached in total	Reached this period
Environmental issues									
	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	4_Annual meeting documents (invitation, agenda, participants)	
Excel	3_Transnational partnership overview	
Excel	2_List of publications and presentations	
PDF	1n_Evaluation G8	
Pdf	1m_MTC policy paper	
Pdf	1l_NSBWO posters	
Pdf	1k_The ballast water times 2012-02	
Pdf	1j_General NWBSO flyer	
Pdf	1i_2012-01 Newsletter	
Word	1h_BWO detection techn. Ovizio	
Word	1g_BallstCAMreport Aug2012	
Pdf	1f_Technical report Monitoring bacteria...	
Pdf	1e_One-stop-flyer	
Pdf	1d_CatheIco Ballast Water Treatment	
Pdf	1c_G9 Criteria and flow chart	
Pdf	1b_G9 certification proces	
Word	1a Minutes NSBWO SG meeting	
Word	1_Table 4a	

Finalise

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