



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

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Periodic Report number

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 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.

On 8 and 9 November 2011, the NSBWO project, led by NIOZ and Cato Marine Ecosystems, organized the conference 'Ballast Water Management - Threat or Treat?' during the maritime exhibition 'Europort 2011' in Rotterdam. 190 individual visitors attended this two day conference and the response in the questionnaire that was distributed was very positive.

At the conference, the first issue of the 'Ballast Water Times' appeared with contributions from the great majority of NSBWO partners and their sub-partners to further raise the awareness of stakeholders. This issue has also been distributed at other meetings afterwards (over 1250 copies).

1. Beneficiary and project information

Beneficiary information

Extended deadline for submission of report	
Required submission date	14/05/2012
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	http://projects.nioz.nl/northseaballast/	ERDF	5.698.719

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Certification by Lead Beneficiary

Name	H. Ridderinkhof
Position	Director
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Date	P.O. Box 59 1790 AB Den Burg, Texel The Netherlands

2. Time period (6 months)

This Activity report covers the time period from	01/09/2011	To	29/02/2012
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	
<p>Changes #4 are pending. The project has several changes that will be filed through the online system when possible. A major mid project budget change will be submitted.</p> <p>During this reporting period, the workload and budgets amongst (sub)partners of NIOZ underwent some changes due to the fact that IMaREST diminishes its activities in the project. IMaREST declared in a letter that the organization will refrain from any payment claims for the remainder of the project, but can still be drawn on for expertise. The activities foreseen will be taken over by Cato Marine Ecosystems as leader of WP 6, NIOZ and NIOZ sub-partners ProSea and Wadden Sea Society (Waddenvereniging).</p> <p>A budget change for the NIOZ sub-partners will be filed in the 5th changes.</p> <p>BSH is still discussing the sub partner changes. It is already known that the budget will be changed, because some sub partners will not submit a payment claim and other sub partners already overspend the budget, because they did more work than initially envisioned. In May 2012 another meeting with the sub partners is planned in which the changes will be discussed.</p> <p>A budget shift to facilitate the continuation of the work by BfR that is doing a great job on risk assessment has been submitted in the 4th changes.</p> <p>In December 2012 E. Brutel, project manager of the NSBWO project, left NIOZ. J. Boon took over his tasks.</p> <p>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. As illustrated in section 6 and 7 and enclosure 1b. 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.</p> <p>At the end of the previous reporting period the project leader dr. M. Veldhuis left NIOZ. As a result a number of activities planned for autumn 2011 have not taken place. Especially content development activities that required coordination as discussion on detection technology, modeling, detection workshops, certification of test beds have seriously been delayed. This delay may require extension of the project with 6 months.</p> <p>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.</p> <p>Two addenda are added. One containing the changes. The changes will be uploaded when the system allows new changes. One containing delays and remarks from JTS.</p>	

4. Work packages/activities

4a. Work packages and activities
See enclosure 1.
4b. Activities outside the eligible area (that were listed in Q2.4 of the approved application form)
<p>People from BSH attended a practical workshop regarding the taxonomical classification of non indigenous species in the North Sea and in the western Baltic Sea at the Leibniz Institute for Baltic Sea Research, Rostock-Warnemünde, Germany. The aim of this workshop was to get familiar with these organisms. Knowledge about these organisms is one of the bases for creating a risk assessment regarding the species transfer by ships ballast water. This workshop was a direct continuation of the workshop held at IFM-GEOMAR in Kiel in June 2011.</p> <p>The following activities were listed in the approved application, however they were carried out outside the eligible area:</p> <p>The BfR, sub partner of BSH, organised the conference "Emerging Risks from Ballast Water Treatment" in Berlin from 19.10. to 21.10.2011. This conference focussed on the formation of Disinfection By Products (DBP) by ballast water treatment systems and discussed strategies for improved human health and environmental risk assessment. A publication of the conference proceeding in progress.</p> <p>The BfR also invited several experts from the fields Toxicology and Marine Chemistry to discuss the upcoming challenges and opportunities when the BWMC is coming into force. As a result closer cooperation between different departments of BSH, BfR and UBA with these experts and their projects is intended also beyond the completion of the NSBWO project (Berlin, Germany, 15-02-2012).</p>
4c. Activities or travels outside the eligible area (that were not listed in Q2.4 of the approved application form)
<p>People from NIOZ, GoConsult, BSH, CaTO and Imares attended the GloBallast and Republic of Turkey Global R&D Forum and Exhibition on Ballast Water Management in Istanbul, Turkey. I. van der Star (NIOZ), S. Gollasch (GoConsult) and A. Sneekes (Imares) gave a presentation.</p> <p>People from NIOZ, GoConsult, BSH and CaTO attended the Conference 'Emerging risks from ballast water treatment', 19-21 October 2011, BfR Berlin (Germany). Frank Fuhr and Cees van Slooten (NIOZ) and S. Gollasch (GoConsult) gave (poster) presentations.</p> <p>Frank Fuhr of NIOZ attended and gave a presentation at the 'Erma First Forum' in Piraeus, Greece.</p> <p>CaTO: A presentation on the project was given at the "Marine Technology Summit" in Busan, Korea (23-25 September 2011).</p>

NIOZ and BSH co-organized and participated in the 'Phytoplankton workshop' for test facilities, at Moss Landing Marine Laboratories, March 28 to April 1, 2011. Due to some confusion on the eligibility of the payment claims for this event the costs were not included in the 5th payment claim of NIOZ and Imares. NIOZ is claiming the costs in this (6th report May 2012) report. The next payment claim of Imares will be submitted in the 7th report (September 2012).

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.

5. Completion of a work package

Completed Work Packages

6. Transnational approach

How has the project ensured transnationality in its approach during the reporting period?

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.

Through working groups in WP2 and the joint collaboration in WP3, 4 and 5 (science, industry and government), transnationality is achieved through the contributing participation. In WP 6 dissemination is clearly reaching out in the international field as we involved various international players from around the globe in the Europort 2011 workshop.

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.

BfR Workshop on risk assessment: This workshop dealt with the possible toxic effects on humans and the environment of ballast water treatment; especially of systems using active substances to kill organisms.

NIOZ, IMARES, DHI and NIVA all attended a meeting of the GloBall TestNet in Istanbul. This group represents all major test-centres of the world. Goal of this meeting was to write a memorandum of Understanding for the methods to be applied in G8 and G9 land-based tests and to agree on a minimum level of openness and transparency. J. Boon of NIOZ became a member of the steering committee for Europe.

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.

Examples of this approach by the partners of the NSBWO project are:

NIOZ, together with CaTO Marine Ecosystems, organised the symposium "Ballast Water Management – Threat or Treat?" at the Europort 2011 conference in Rotterdam. Various presentations by NIOZ and several sub partners were given on activities pursued within the NSBWO project and the importance of a transnational approach to ballast water management became clear once more. This conference was visited by national delegates, representatives of port and shipping authorities, international experts, NGO's and other stakeholders and had an impact far beyond a purely Dutch approach. In total 190 persons (35 women, 155 men) attended the symposium (Enclosure 3 and 1k).

Scientific outcome of the flow-cam tests performed by the Newcastle University can be used in harmonization for implementation, monitoring and enforcement of the ballast water convention in the North Sea region as well as other EU countries. It can be used by regulators at IMO level to modify guidelines associated with ballast water management convention and it will be equally important to port state control officers.

Imares participates in a Technical Advisory Group regarding the development of ballast water performance standards for California, on request of the California State Lands Commission. The TAG discussed issues during this reporting period.

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.

Next to this several other initiatives contribute to the transnational impact of the project.

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. During this period the NSBWO project has received more attention on an international scale. Ballast water treatment system constructors/vendors from Israel and Germany have shown interest by visiting the test beds at NIOZ. Overall, companies and individuals working on ballast water issues get in contact with NIOZ to receive information and advice on BWT systems.

NIOZ: Jan Boon and Louis Peperzak met with representatives of Lloyd's Register who will witness two G8 tests on behalf of the Dutch authorities (ILT) and the English Coast Guard Agency.

ProSea has developed the educational package, including the educational awareness materials about the issue of invasive species by ballast water for worldwide use for the IMO model course marine environmental awareness. This model is applicable worldwide, so transnational by definition.

Port of Rotterdam started a discussion on ballast water 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

As a result of the involvement in the project WMU has expanded its education and training in the area of ballast water management largely. WMU is now giving lectures to students about ballast water management in the International Master Program during both the First Semester (Foundation Studies) and the Second Semester (Maritime Administration and Environmental Protection).

WMU has also developed a Professional Development Course in Port State Control of the Ballast Water Management Convention. The

curriculum for this course was developed together with the GloBallast Project in IMO. The course is now included in WMU's regular course plan. The present group of Masters students at WMU are 105 coming from 67 countries.

GoConsult: As 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.

GoConsult, in cooperation with Prof. (emeritus) Erkki Leppäkoski and Prof. Matej David, is currently involved in a HELCOM ballast water management related risk assessment programme.

Evonik conducted tests for their BWMS at NIOZ and Imares. In this respect they also attended several meetings on ballast water treatment and ballast water management in Europe, including the BWO conference at Europort Rotterdam.

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.

Cytobuoy: Continued the contacts with the partners from the Interreg Deux Mères group called Dymaphy (Towards the development of a DYNamic observation system of MARine water quality based on PHYtoplankton analysis by flow cytometry), and participated in the Dymaphy meeting in Middelburg, The Netherlands, December 2011.

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.

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 4).

Next to these generalistic approaches, specific collaborations were encouraged. Examples are:

NIOZ together with CaTO Marine Ecosystems organized the conference 'Ballast Water Management - Threat or Treat?' during the maritime exhibition 'Europort 2011' in Rotterdam. This conference was visited by national delegates, representatives of port and shipping authorities, international experts, NGO's and other stakeholders and had an impact far beyond a purely Dutch approach. In total 190 persons (35 women, 155 men) attended the symposium.

Of the speakers invited for the NSBW-Europort 2011 Conference, eight were partner or sub partner to the project.

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

Imares continued the project with Evonik Degussa GmbH (Germany) to assess the effect of neutralization on residual toxicity of Peraclean Ocean. Evonik gently agreed with the use of Peraclean Ocean as test substance in the mesocosm study. Imares performed ecotoxicity tests on water treated with the Cold Harbour inert gas BWMS and the ErmaFirst BWTS in order to re-assess toxicity to algae after chlorine neutralization (requested by GESAMP) in close collaboration with the named companies.

Evonik tested their BWTS in collaboration with NIOZ and Imares and Dr. U. Noack Laboratories (Niedersachsen, Germany). They also work with Boll & Kirch Filterbau (equipment manufacturer, Germany). BSH will become actively involved when the test work is done.

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. They also had discussions over this with governmental stakeholders about the applicability of the risk index model. This, in very close cooperation with BSH and their contacts to national and international organizations connected to the 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.

Cytobuoy continued collaboration with NIOZ and GoConsult in WP4, as well as continued cooperation with the Dutch water management department of Rijkswaterstaat (Dr. Machteld Rijkeboer and Dr. Arnold Veen). They also started coöperation with Thomas Rutten from Thomas Rutten Projects.

University of Newcastle has more than 10 years of track record in ballast water research and has contributed to several national and 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 final projects on ballast water related issues at Newcastle University – School of Marine Science and Technology. Univ. of Newcastle is proceeding the work and the projects on ballast water research and ballast water issues.

WMU strengthened their partnership with the GloBallast Project in IMO.

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:

Lead beneficiary: The resignation of M. Veldhuis and later one of the project managers E. Brutel from NIOZ has its impact on the project. As a result a number of initiatives have been seriously delayed. However, with the appointed management of L. Peperzak en Jan Boon at NIOZ to replace these two, the project is getting back on track.

For the 6th reporting round almost all beneficiaries are reporting their activities. Imares and Brockman Consult did report their activities, but

not their finances. Cathelco does not report, as they only recently initiated their work. ZebraBioscience does not report either, because they did not conduct any activities in the reporting period. Ovizio is not reporting, they did not submit a report. CytoBuoy is not submitting a payment claim. They will only submit a payment claim after receiving the funding that was deducted unjustified. As of February 29 they postponed all activities until the funding is received.

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. Due to personnel problems, Dr. Marcel Veldhuis and Etienne Brutel leaving the NIOZ, ZebraBioscience was unable to collaborate with NIOZ on the above mentioned evaluation studies before the winter period started by the end of October 2011. No studies can be performed during wintertime.

The problems with IMarEST are solved. In the 5th report we reported that IMarEST resigned for their activities and will not make any payment claims. IMarEST wishes to remain in contact with the project to draw upon its resources for expertise and to support the dissemination of information and activities through its network on case by case basis. Therefore they wish to remain a partner in the project. The budget of IMarEST is reallocated to NIOZ, CaTO Marine Ecosystems, ProSea and the Wadden Sea Society as are the activities.

Effectuated changes in beneficiaries:

None.

Partnership as a whole:

The sub partner structure will be discussed in the next annual meeting (24-25 May 2012). At the annual meeting we sit down and discuss the sub partners new position in line with the changes due to the strict national implementation of the FLC regime.

A number of partners were outraged over the unexpected rejection of their overhead in the 3th payment. On top of this they did not get paid in the fourth payment. This is especially painful as two of the affected partners are small sized SME's that cannot be expected to continue to make investments without proper payments as they have only limited resources. As a result we have drafted a letter to the JTS explaining our position in this.

One of the SME's stopped working on its task (CytoBuoy) for the project until it receives the money.

8. Knowledge transfer and links

8a) Which European /national or other policies has the project contributed towards during the reporting period?
<p>Global:</p> <p>The project its contribution to the discussion at IMO level is continuing. Various papers are in preparation to be submitted. As these become public they will be enclosed in the report.</p> <p>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.</p> <p>J.Boon of NIOZ became a member of the steering committee of the Global TestNet; the group of BWTS test centres.</p> <p>Louis Peperzak of NIOZ became a national delegate to the ICES/IOC/IMO Working Group on Ballast Water Other Ship Vectors.</p> <p>ProSea has developed the educational package, including the educational awareness materials about the issue of invasive species by ballast water for worldwide use for the IMO model course marine environmental awareness.</p> <p>WMU is contributing to the spreading of knowledge by the inclusion of information about invasive species, the role of shipping in the transfer of alien species, the role of the Ballast Water Management Convention, and the obligations of different parties under the convention in their Masters Programme. WMU's Masters programme consist of 105 students coming from 67 countries.</p> <p>Europe:</p> <p>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. The project also contributes to the EU-biocide directive and REACH. When invasive species are successfully reduced in ballast water, the project will contribute to Natura 2000 too.</p> <p>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.</p> <p>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.</p> <p>North Sea Region:</p> <p>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.</p> <p>ProSea conducted five marine environmental awareness courses for maritime academies, harbour personnel and shipping companies in the North Sea area. In addition to raising general environmental awareness, these courses raised awareness about the environmental impact of the introduction of invasive species by ballast water and about solutions for the introduction of invasive species, including the results of the Ballast Water Opportunity project. The courses have been attended by 120 participants.</p>

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 participates in MARES (Doctoral programme on Marine Ecosystem Health and Conservation), a EU Erasmus Mundus Joint Doctorates project which can be of benefit to the NSBWO project and in which BWO topics can be introduced.

CaTO monitored follow-up inventories in large-scale land-locked saline ecosystem 'KP Zijl' and joined them in a television interview to draw public attention to ballast water issues and the project. CaTO now is also involved in a student-supervising project 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 a new project on ballast water and invasive species together with a consortium of institutions in the Mediterranean. This project has been submitted to EU Mediterranean Regional Program. At the moment the consortium is still waiting for a decision.

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. Some facilities and experiment of BaWaPla – EU funded project were used in performing the chlorine-based tests.

IMARES gives advice to Dutch Authorities on the validity of a test dossier regarding a request for type approval.

GoConsult is partner in the newly launched 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 held a presentation regarding the BWM and the German Approval process in a video conference with several US state environmental agencies.

BSH: The German National Contact Point for the INTERREG IV B North Sea program released a brochure that introduces the program and the region. The NSBWO is shortly is described (Enclosure 5).

Cytobuoy: The Interreg Deux Mères proposal called Dymaphy, to which CytoBuoy b.v. is contributing as external expert and advisor has been granted in the 5th call of the Interreg Programme Deux Mères and is operational.

Cytobuoy participates in the project UV-MON. Full title: An Integrated and Modular Bio-Monitoring Ballast Water Treatment System based on Advanced UV Plasma Technology Delivering Maximum Performance and Lowest System Lifetime Cost. The project is approved in the programme: Research for Benefit of SMEs (FP7-SME-2011-1).

Coordinator: Paul Luen (CEO), Martek Marine Ltd. For this project, Cytobuoy attended two meetings in Oslo, Sweden and Rotherham, United Kingdom.

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

NIOZ: Some ship owners contacted NIOZ directly. This period an Israeli and German Ballast Water Treatment system manufacturer/vendor have sought contact and visited the test bed.

NIOZ: Louis Peperzak acted as a member of the forum discussion panel at the 7th Ballast water management technology conference held in London, UK on 7 and 8 December 2011.

DHI: established a dialog with University of Gothenburg aiming at putting together a research application for the BONUS program. In this the methodology developed during the BWO project will be utilised to the management of marine protected areas (MPAs) 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.

GoConsult: S. Gollasch met with Kent Peterson of Fluid Imaging Technologies who developed a flow camera specifically for ballast water applications. Further, contact with Nick Welschmeyer and Jim Harbridge (Hach Company) was made to plan a test for their ballast water sample processing tool. This equipment will also be tested at NIOZ during the land-based tests in P7.

University of Newcastle made contact with members of the CNSS (Clean North Sea Shipping) Interreg Project to gain knowledge about the scientific approach employed in that project.

CaTO made several contacts with those involved in BWM in Korea (Leo Karistios, Lloyd's Register, South Korea; Martin Linder, Martin, Manager Optimarin AS, Asia; Dr. Kuo-Tung Chang, Department of Marine Environmental Engineering, National Kaohsiung Marine University, Taiwan) and established contact with representatives involved in BWM of Turkish Government (Murat Korçak, General Directorate for Maritime Transport, Republic Turkey) and Istanbul University (Nilufer Oral, Faculty of Law).

Cytobuoy is continuing its contacts with Prof. Linda Medlin, Université Pierre et Marie Curie, Paris. They are working on a new proposal "Toxscreen" in the Marie Curie Industry-Academia Partnerships and Pathways (IAPP) Call: FP7-PEOPLE-2012-IAPP.

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.

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 start was made for applying ATP analysis as a detection tool for assessing the total viable biomass in ballast water.

BSH and Brockmann Consult are collaborating in a project that uses satellite images for the evaluation of ballast water exchange areas. Results will be reported to IMO.

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 FlowCAM.

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: Marine stagnant mesocosms facilitate assessment of the effects of active substances at community level, thereby bridging the gap between laboratory and field. They are not only suitable for ballast water treatment systems, but also in a broader sense when environmental risks of substances have to be assessed. Currently IMARES is the only institute worldwide, exploiting mesocosms on a commercial basis. The main challenge is adaptation of the substance based procedure to a effluent-based procedure.

Evonik: Development of in-line sensors for the detection of H_2O_2 in the presence of sulfite with a measurement range of 0,05 – 750 mmol/l in cooperation with ProMinent. Detection of H_2O_2 at such low concentrations in the presence of sulfite can be instrumental for the neutralization of ballast water which had been treated with H_2O_2 .

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. However, 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.

Cytobuoy: All activities are new and innovative. The result of our activities will constitute a combination of measuring technology and data analysis software that will (hopefully) be very 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 our colleague technology manufacturers.

Some of the developments generated in this project may prove useful in a subsequent stage for our regular CytoSense developments and end up in laboratories and research ships of our customers in the North Sea.

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.

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 6 th reporting period are listed (Enclosure 2). The type of publications listed in this file are:	
<ul style="list-style-type: none"> - 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?	
The NIOZ, together with CaTO Marine Ecosystems, organised the symposium "Ballast Water Management – Threat or Treat?" at the Europort 2011 conference in Rotterdam. This conference was visited by national delegates, representatives of port and shipping authorities, international experts, NGO's and other stakeholders and had an impact far beyond a purely Dutch approach. In total 190 persons attended the symposium.	
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 none would have been relevant (1 week).	
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 plaque to indicate the Interreg ERDF contribution was revealed. Evidence was submitted with the 5 th (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	

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
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	11	17	6
Output		published material	number	36	120	Appendix 3, WP 2,3,4, this includes public and scientific papers, press communications and targetted information	25	34	9
Output		websites	number	1	2	Appendix 3 WP 5	2	2	0
Output		TV and radio appearances	number	0	0		3	5	2
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	exhibitions	number	103	395	This includes all from	143	203	60

reached by
(priority) specific
awareness raising
activities

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

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	119	388	269
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	21	33	12

Territorial coverage

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

Output/Result/Impact	Priority/Programme 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 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
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 developors €645,000 secured, €645,000 searched for, duch matchings subsidy €500,000. Private and Public RTD Triggered	3,000,000	16,418,000	13,418,000
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	3	18	15
Raising awareness / dissemination									
Impact	individuals within and outside the NSR with greater awareness of project outputs	male	number	200	2,000		219	594	375
Impact		female	number	100	1,000		41	116	75
Impact	organisations		number	28	200		23	166	143

within and outside the NSR with greater awareness of project outputs									
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	5	17	12
Result	land area subject to	transnational management tools	ha	60,000,000	60,000,000	the target is over 60,000,000 tech transf of BWM and Bio-invasions, tech transf 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	3	5	2
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
Encl. 1a	MEPC 63 Information	12
Encl. 1b	MEPC 63 List of participants	2
Encl. 1c	Comparison PAM instruments	7
Encl. 1d	BLG 16 Report of the working group	37
Encl. 1e	Poster NIOZ Berlin	1
Encl. 1f	Publication Liebich et al	8
Encl. 1g	BWO Technical outline and Requirements	87
Encl. 1h	Action Plan WP6	2
Encl. 1i	Newsletter 03 and 04	13
Encl. 1j	The Ballast Water Times 2011-1	8
Encl. 1k	Brief report Europort 2011 Workshop	6

Encl. 1	Table 4a WPAactivities	20
Encl. 2	List of publications	excel
Encl. 3	NSBWO Europort Conference	10
Encl. 4	Overview transnational partnership	excel
Encl. 5	Page from brochure NCP	1

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