ANY OTHER BUSINESS

A Case Study in Communicating Science: TBT and Global Decision Processes

Submitted by the World Conservation Union (IUCN)

SUMMARY

Executive summary: The attached document describes the European Union-LIFE project “Action to demonstrate the harmful impact of TBT, Effective Communication Strategies between Policy makers and Scientists in support of Policy Development (HIC-TBT)”.

Action to be taken: Paragraph 4.

Related documents: None

Introduction

1 The attached document describes the EU-LIFE project “Action to demonstrate the harmful impact of TBT, Effective Communication Strategies between Policy makers and Scientists in support of Policy Development (HIC-TBT)”, a case study where scientists engaged in direct communication with actors in decision processes.

2 The participating scientists in Spain and Italy, Portugal, the United Kingdom, and the Netherlands informed policy makers. In particular, in south Europe public meetings, with participation of regional and national policy makers, and press messages met with considerable interest. Whilst the findings were brought forward beyond the scientific community, perception of the problems caused by TBT shifted towards recognition.

3 The concept of HIC-TBT has potential to be applicable outside the project case study and the project region.

Action by the Scientific Group

4 The Scientific Group will be invited to take note of this document and to comment on it, as appropriate.
ANNEX

Layman’s Report

Action to demonstrate the harmful impact of TBT, Effective communication strategies between policy makers and scientists in support of policy development (HIC-TBT)

THE NETHERLANDS  Netherlands Institute for Sea Research (NIOZ)
THE NETHERLANDS  CaTO Marine Ecosystems research and Management Studies
THE NETHERLANDS  Free University (VU) - Institute for Environmental Studies
SPAIN  University of Huelva - Análisis Medioambiental
ITALY  ENEA C.R. Casaccia - Dipartimento Ambiente
PORTUGAL  University of Porto - Dept. of Zoology & Anthropology
          (LIFE98ENV/NL//000199)
HIC-TBT, a project where scientists take up their societal role and meet with policy makers, with the aim to safeguard the marine environment and set an example for other environmental issues and application of the precautionary approach in general

**Harmful Impact Communicated - TBT**

*or: What can scientists contribute to EU environmental policy planning?*

<table>
<thead>
<tr>
<th>The concept</th>
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<tr>
<td>A case study by scientists who engage in societal processes to assist in the development of preventive environmental policies by communicating directly with actors in decision processes and to the general public.</td>
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In demonstrating the adverse impact of TBT from anti-fouling paints the scientists have shown that direct and flexible communication based on mutual understanding between scientists and policy makers stimulates the development, implementation and enforcement of environmental policies. The now widely-adopted precautionary principle inspired the scientists to explore the potential of that frame for communicating underlying scientific reasons for recognition of environmental threats and thus help raising environmental awareness, whilst as scientists understanding the processes that are relevant in decision making.

**Introduction**

In this project scientists actively sought to communicate their research findings and the concern those findings raised to policy makers responsible for our marine environment and to the world outside the scientific community. The project intended to assist in the development of preventive environmental policies by demonstrating the adverse impact of TBT and by showing that: "Direct and flexible communication based on mutual understanding between scientists and policy makers stimulates the development, implementation and enforcement of environmental policies". The marine environmental impact of TBT from anti-fouling paints has been taken as a model case in which the project participants explored the potential of communicating their scientific reasons for concern. The project aimed to serve as a practical case study for communication between science and policy, an issue that has been more often approached in a more theoretic sense.

**Background and rationale**

**WHY DID WE DO IT?**

We firmly believe that scientists have a clear social responsibility to explain their work to the public and we are convinced the (marine) environment would benefit from scientists and policy makers finding a way to talk to each other. In our teaching we try and make students aware of the role of science in society, and in our case, to promote understanding of what life is like under the sea. The sea is a bit different from a land environment. Whilst on shore environmental concerns are often quite visible and may even surface in 'people's backyards', in the sea nobody is that
close to the problem. The seabed is very different to the land surface; down there is an often
turbid and dark environment.

As a forerunner to this project, North Sea research at NIOZ, followed by similar work in South
East Asia has influenced policies concerning the use of TBT. With the support of scientists and
politicians from that region, North Sea States took our concerns to the international bodies
responsible for the world's oceans, the Marine Environment Protection Committee of the
International Maritime Organisation (IMO-MEPC) - which is a division of the UN. It was
sufficient to find wider support for banning TBT (and other organotins) as antifouling biocide
from all ships. The process to phase out TBT world-wide within ten years is now well on its way,
with full support of the EU. The policy process has stimulated massive efforts to develop
effective alternatives of less harmful antifouling technologies.

A global ban can only be properly made effective when regionally implemented and that needs
support from both policy makers and the public and users in the region. Debate of the issues is
necessary, and there is a need for the participants in the debate to be properly informed.
In the late 1990s, in the EU, support for stricter regulation of TBT was present in Northern
Europe and legislation had been set in place to ban TBT from use on small craft of less than 25 m
in length in all EU countries. In southern Europe the problem of TBT was less obviously present
on the environmental agenda.

By communicating with the world of decision makers and users, the case study explored the
potential that a precautionary approach offers to scientists to contribute to policy planning and to
pass on their message on the environment they work with. The case study is inspired by
understanding that the now widely-adopted precautionary principle sets a frame for scientists to
communicate underlying reasons for recognition of environmental threats, as they know them
from their scientific expertise. This being an alternative to absolute proof in numbers, as can so
seldom be given when evaluating the state of the environment. By such approach scientists can
help in raising environmental awareness.

Experience with a forerunner, the partial ban on TBT from small vessels by the EU and other
countries, has shown that implementation of such measures is not automatic. Several studies
show continuing (illegal) use of TBT on small vessels, thus underpinning the need of support for
effective implementation of international regulations from national/regional policy makers and
the public.

**Precaution**

The precautionary principle, as applied to environmental protection is set out
as one of the objectives of the United Nations Conference on Environment
and Development (UNCED) and has since been incorporated in an IMO
resolution. UNCED agenda 21, section 17.22 lays down that States, in
accordance with the provisions of the United Nations Law of the Sea on the
protection and preservation of the marine environment, commit themselves
to “apply preventative, precautionary and anticipatory approaches so as to
avoid degradation of the marine environment as well as to reduce the risk of
long-term or irreversible effects upon it”.

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The strategy

WHAT DID WE DO?

Inspired by the earlier results, co-operation in an EU framework was sought for investigating the impact of TBT in the open sea. The (Netherlands) initiators of the project set out to share their expertise with colleagues in southern Europe, stimulating them to seek co-operation with regional and national policy makers and pass on their findings to users and to the public and the press. Throughout the project communication has played a pivotal role, which was also reflected in the character of meetings and other activities. Mutual understanding of each other’s position, perception and ‘Map of the World’ between scientists and policy makers has been a guiding principle. We developed and performed a scientific programme and opened up channels for communication to the world outside our scientific community, in the latter we were guided by experts in the relevant decision processes.

The assessment and communication of the results aimed at support for development of environmental policy planning as based on increased recognition of problems associated with TBT antifouling in Spain, Italy and Portugal and recognition of continuing problems of TBT in the North Sea. A second objective was the development of a basis for assessment of the effectiveness of environmental policy measures, once set in place.

MEETING THE CHALLENGES OF THE APPROACH

Challenges of the project were the new skills required from our Spanish and Italian participants. Not only had they to meet a new scientific skill of the biological assessment of the impact of TBT, additional to their chemical expertise. More challenging than that was to embark on active communication with policy makers, users and the public, on their own initiative. Thanks to the support we had raised for developing this specific skill, the initial confusion was soon replaced by confidence, in particular in our Spanish partner, who developed new and original initiatives early on. The interested participation of international policy makers, and policy-legal scientists from the network-steering group throughout the project has been an invaluable stimulus to the communication process.

The process

HOW WE DID DO IT AND WHAT DID WE ACHIEVE?

A network of policymakers and experts in international law and policy issues has stood by us from the onset of the project. Their guidance has not only been instrumental in lubricating mutual communication; it also set the stage for direct input for the project into the global policy channel of MEPC.

Scientific partners from three EU states (Spain, Italy and the Netherlands) participated, with additional contributions by scientists from two other EU states (Portugal and the UK). The scientists demonstrated the impact of TBT in the seas offshore their countries by reporting specific sensitive biological effects, by measuring burdens of TBT in animals and in the sediments of the sea bed and by relating these findings to shipping density, shipping routes and other input sources of TBT.
The Demonstration Programme

For a proper assessment of the impact of TBT we used shipping densities as a measure for the input of TBT. Shipping densities have been estimated in terms of three levels, relating to the number of ships per day passing within fifteen nautical miles of a sampling station in the North Sea and the Bay of Cadiz, or within 10 nautical miles of a sampling station in the Tyrrhenian Sea where tidal streams have a much smaller effect on dispersing water laterally. The three levels are defined below.

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
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<tbody>
<tr>
<td>High Level</td>
<td>More than 10 ships per day</td>
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<tr>
<td>Intermediate</td>
<td>Between 5 and 10 ships per day</td>
</tr>
<tr>
<td>Low level</td>
<td>Less than 5 ships per day</td>
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The biological and chemical demonstration programme of the offshore impact of TBT was performed for the first time in The Atlantic Ocean off the western Iberian Peninsula and revisiting the North Sea by sea-going research cruises and, in the Mediterranean Sea, by scuba diving sampling trips in Sicily. In the different marine environments imposex (the most striking effect of TBT, masculinisation of female snails at very low concentrations of TBT), was present in all areas investigated, whilst TBT levels in snails were elevated. Off Western Iberia and in the open North Sea the rate of imposex and the levels of TBT were clearly correlated with shipping density. In Sicily the omnipresent imposex could not directly be related to shipping density only, as several additional input sources were present in the sampling areas.

The assessment and communication aimed to increase recognition of the problem associated with TBT antifouling in Spain, Italy and Portugal; to recognise continuing problems of TBT in the North Sea and to support the development of environmental policy planning. It also aimed to develop a basis for assessment of the effectiveness of environmental policy measures.

The Communication Programme

The results were communicated to the public and to policy makers, who have been invited to participate in discussions in project consortia, and in public communication meetings. From the outset, the project network has supported the scientists in the communication process. Network and project members met in joint meetings, where some time was also reserved for informal exchange of ideas. The mutual communication has been inspiring throughout the project and enhanced understanding of specifics of the policy processes encountered.

At the outset the stage was set in The Netherlands with full participation of network members (Amsterdam and Texel, February 1999). As part of the two Progress Meetings in Italy (Palermo, November 1999) and in Spain (Huelva, June 2000 – a regional, border-crossing Spanish-Portuguese meeting), project results, background of the project and policy consequences were presented to a regional wider audience. Speakers represented the scientific and policy decision community; interested organisations, users, authorities and NGO’s joined in the discussions. The press releases disseminated from each meeting were met with considerable interest. A press conference in Spain, prior to the meeting, resulted in wide radio and TV coverage of the meeting itself.

Additional to the scheduled project meetings, two additional seminars for a wider audience were organised in the UK (Southampton Institute, November 1999) and in Sweden (World Maritime
University, Malmö, September 2000). Papers were presented by project members, an IMO-related policy maker and by representatives from the shipping community and from the (alternative) paint industry. The stand-alone seminars at Southampton and Malmö were organised as a contribution to informing the debate concerning the control of TBT in ship antifouling paints. This desire only emerged during the project and has been facilitated by the generosity of the co-organising institutes and speakers.

All partners made a regional project web site, cross-linked to the general project web site at the co-ordinator, which held all project reports and press messages (www.nioz.nl/projects/tbt). A brochure on TBT from the Netherlands has been translated into Spanish and Italian and added to the web sites. To raise environmental awareness in Spain, a questionnaire about the use of TBT and knowledge about the associated environmental problems and existing regulations, has been circulated.

Enquiries about the use of TBT in the partner countries revealed limited knowledge and lack of understanding of environmental problems and regulations. The low response to local inquiries among fishermen, other users and authorities in Spain inspired our partner to develop the questionnaire. A first mailing to 200 target addresses met with an extremely high return of 40%, of which 20% indicated that they were aware of TBT, associated environmental problems and existing regulations. Most users appear not to be aware of the composition of the antifouling paints used. The outcome of the questionnaire is consistent with the earlier reported lack of understanding of environmental problems associated with TBT, in Spain as well as in Italy.

Results, Conclusions
And Potential of the Case Study for a Wider Context

WHAT DID WE LEARN?
WHAT CAN WE DO WITH IT?

When the findings were brought forward beyond the scientific community, perception of the problems caused by TBT shifted towards recognition. Regional policy makers acted accordingly and direct links between the scientists and policy makers have been established. The recognition also resulted in joint policy contributions of the research findings to the IMO-MEPC, by The Netherlands, Spain, Portugal and Italy (1999: MEPC 44/INF.11; 2000: MEPC 46/INF.2). The active participation of the three southern European countries in the international policy process is also reflected by the advisory groups on antifouling and the problems of TBT, as established by the governments of Spain, Portugal and Italy, where project scientists participate in a senior advisory role. The project has resulted in a wide coverage by the press in international, national, regional and specialised journals as well as on radio and TV.

The Southampton and Malmö seminars were highly successful in achieving their aim of presenting the viewpoints of the main players in the TBT debate and encouraging informed discussion of the issues in the context of the precautionary approach. The seminar attendees were of high quality and adequate numbers. Future seminars of this kind could have a role as further contributions to the TBT debate, or for informing and encouraging debate on other issues of environmental concern in the context of the precautionary approach.

The project has shown how alertness to recognise an adverse environmental impact can be increased. It also demonstrated how understanding the relevant policy process, helps effective transfer of knowledge from scientists to policy makers and how direct communication
between science and policy can play a role in development of policies. Last but not least it set
an example of how assessment in the marine environment can play a role in the dynamics of
development, implementation and enforcement of EU policies.

The approach of the project is original and has not been explored before in such an EU
framework. Initiating and maintaining flexible communication on a specific actual
environmental issue between the scientists working on the issue and relevant policy makers,
has good potential for communication and can be complementary to institutional
communication between science and policy.

Experience with the two extra seminars suggests the need for specific funding, which was not
foreseen within the project budget. It is expected that higher numbers could be generated if future
seminars are properly funded. It is recommended that similar seminars should be organised in
the future to inform the participants and to encourage discussion of other matters of
environmental concern.

The external frame for the project,

Following GLOBAL DECISIONS,
and following REGIONAL LEGISLATION,
for effective IMPLEMENTATION
we need HUMAN SUPPORT
so enforcement only needs to be sought in extreme cases,

has been met.

The HIC-TBT scheme as a general scheme for other environmental issues

Since this has been a case study, we are seeking to use the knowledge gained in this project
beyond the scope of the case study for precautionary environmental issues and beyond the
geographical area of the project. Benefits for geographical areas beyond the EU have been
demonstrated within the project.

The scheme as adopted in the HIC-TBT project has general value, as can be seen below and
might serve as a policy scheme for other environmental issues. Essential to our approach is
recognition of the potential that the generally adopted ‘Precautionary Approach’ offers for
scientists to take up their societal role to inform policy makers and the public of their
environmental concerns.

The project strategy and process: HIC-TBT Steps

1. Set the Goal
2. Identify who is interested
3. Identify Funding sources
4. Involve policy makers from the beginning
5. Set the frame and process requirements for science
Collect and collate existing research on the environmental problem under consideration. Note
where there are gaps in the knowledge needed to assess the extent of the problem and to point the
way to solutions. *In the HIC-TBT Project: agreement on remainder of project in Inception Meeting*

6. **Develop communication steps**

7. **Conduct original research**
Conduct original research, where needed to supplement existing research, to provide a firm basis for identifying and quantifying the environmental problem in scientific terms. Also, where needed, conduct research to inform the debate for formulating practical solutions to the identified problem. *In HIC-TBT: The demonstration programme, and by inviting experts on TBT alternatives to participate in project discussion platforms.*

8. **Organize meetings that involve policy and public**
Convene meetings amongst all interested parties including, but not limited to, scientists, commercial operators, manufacturers of substances which contribute to the identified problem, manufacturers of safer alternatives, environmental agencies, people affected by the problem, and policy makers. *In the HIC-TBT project: Public Meetings Progress Meetings and Special seminars.*

Convene meetings amongst scientists, experts and policy-makers to identify where effective legislation might be introduced. Then draft submissions to the identified bodies providing information on which future regulations may be based, bearing in mind the precautionary principle. *In the HIC-TBT project: Formal meetings (Inception & Progress Meetings) with policy-makers and informal contact maintained throughout the project period.*

9. **Allow for developing extra seminars**
Ensure that the research effort, the meetings and the dissemination of information take place in representative parts of the European community, but coordinated so that results contribute to an effective overall programme. *For all the above steps full involvement by all the HIC-TBT project partners, with additional input to the Project from Scandinavia and the UK.*

10. **Develop press contacts, disseminate press messages and public information.**
Disseminate information to all forms of media so that the general public is made aware of the environmental problems and the implications of possible solutions. *In HIC-TBT: Press releases, interviews, speaking at project and other meetings within and outside the EU, websites, brochure, questionnaire.*

11. **Reconsider the goal**
12. **Disseminate science and policy papers**
13. **Explore generalisation of the concept, the strategy and the process**
*In HIC-TBT a wider geographical context has been employed within the project in the Extra Seminars, in and IMO and London Convention context and in contacts with Latin America.*

*For a wider environmental context the frame can be further explored for existing environmental issues and potential for the future when new challenges emerge and in response EU policies need to be defined. As the HIC-TBT project has shown, the precautionary approach offers a framework for more timely recognition of environmental impact. The HIC-TBT project connected to decision processes, understanding that the acceptance, restriction, or rejection of a product,*
results from a subtle societal process of weighing technical and economical performance against environmental consequences and constraints. In such process both sides of the policy balance should be well documented.

**HIC-TBT has shown that increasing public awareness of a potential environmental problem and can tip the balance over to the environmental side.**

**Benefits for the environment**

Environmental benefits are many. The approach is new, boundary crossing and the case study sets an example in new ways for effective communication.

Direct links between regional/national scientists and policy makers on antifouling, and established advisory channels render the project a successful case study for communication on other environmental issues, and in other areas of the world,

Dissemination to the public has been more effective in Spain than in any other of the partner countries, who all did well; dissemination to the international specialised press and to all national MEPC related policy makers and to the scientific community has also been effective.

Relevance to the EU Legislative framework is high; the EU follows the IMO; two joint EU documents have been submitted to IMO-MEPC; policy and public recognition of the relevance of the issue in all three southern EU states has leapt forward.

**Piecemeal environmental benefits:**
- Direct link between scientific experts and responsible policy makers;
- Southern EU countries active in setting policies for banning TBT and less harmful antifouling, with involvement of the scientific experts;
- Public awareness of problems of TBT;
- Experience by all partners in employing public channels (press, policy makers) to communicate environmental concerns based on scientific expertise;
- First example of cooperation between southern and northern EU countries for marine environmental issues;
- Stimulus for gaining expertise with less harmful alternative antifouling;
- A possible scheme to serve in environmental policy planning.

**HIC-TBT and the Future**

The HIC-TBT Project has been successful in coordinating research, and involving policy-makers and other interested parties, to promote a greater understanding of the problems associated with TBT-based antifouling paints in representative coastal regions in Europe. The experience gained suggests a general strategy and framework, which could be applied to the study of other environmental issues in a European context and beyond. The results of the project are highly

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relevant for EU policy planning. The project has adequately recognised that environmental policy planning is a subtle balance between understanding the environmental problems, awareness among users, public and policy-makers, and the interest in developing and employing less harmful environmental practices. Acting according the HIC-TBT concept can support environmental planning within the framework of a precautionary approach.

First steps towards a future goal of the project to carry the concept beyond the EU region have materialised during the project and have shown EU countries have valuable environmental strategies to transfer. It is recommended to translate the benefits of the project also for other environmental issues within the framework of precaution.

The project model: identify an environmental problem and invest in communication to policy and public as outlined in the step by step process, has potential to be developed as a scheme for the role of science in environmental planning for the EU and other policy bodies for the environment.
Figure: Impact of TBT (imposex) as demonstrated in the different project areas; higher levels in areas with dense shipping