Assessing impacts of TBT on multiple coastal uses

An overview

The Energy and Resources Institute

Western Regional Centre, Goa

Structure of the presentation

- Project background
- Project partners
- Project tasks
- Graphical representation of the project
- Objectives of the project
- Implications of the AFS Convention for the marine environment, particularly for developing countries

AFS Convention: a background

- Efficacy and performance v/s environmental impacts and toxicity
- Deliberations for a long period
- AFS Convention adopted on 5 October 2001
- Signature of 25 nations whose combined flagged fleet equals 25 % of the world fleet necessary
- With Panama signing the Convention on 17th Sept 2007, the Convention is already ratified by 26 nations representing 38.13 % world fleet.
- It will enter into force on 17 September 2008

Pictures Source: Alzieu, 2006

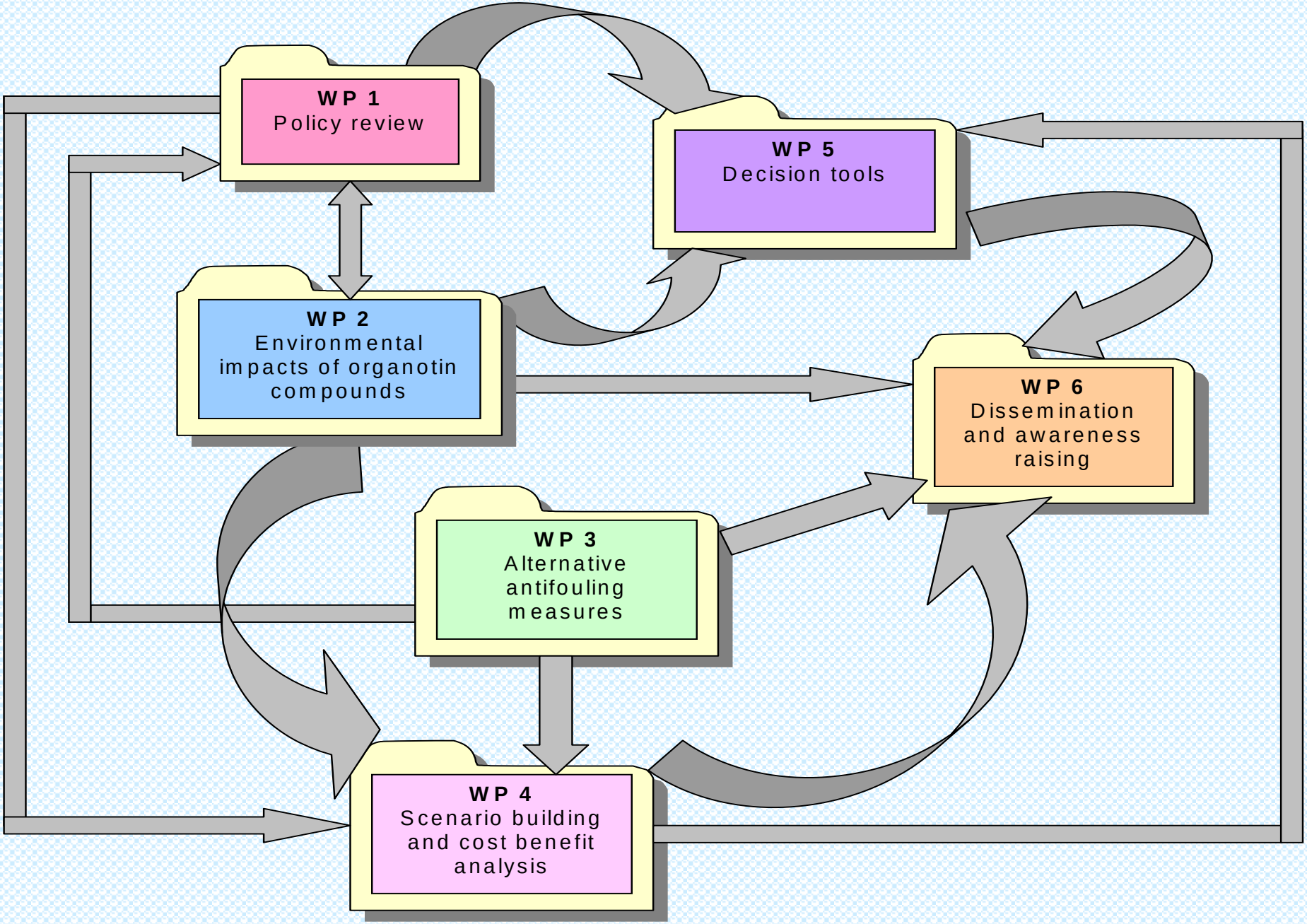
Project Partners

- ENTE PER LE NUOVE TECNOLOGIE, L'ENERGIA E L'AMBIENTE (ENEA) (FINANCIAL COORDINATOR)
- THE ENERGY AND RESOURCES INSTITUTE (TERI) (SCIENTIFIC COORDINATOR)
- NATIONAL INSTITUTE OF OCEANOGRAPHY (NIO)
- NATIONAL INSTITUTE OF OCEAN TECHNOLOGY (NIOT)
- GÖTEBORGS UNIVERSITET (UGOT)
- RADBOUD UNIVERSITEIT (RU)
- NATIONAL SHIP DESIGN AND RESEARCH CENTRE (NSDRC)

Project activities

- Review of policies in the context of TBT
- Environmental distribution of TBT in India and Europe
- The implications of TBT pollution and its ban
- Costs and benefits of TBT-based antifoulants and other alternatives
- Suggest alternative antifouling strategies
- Develop tools for monitoring and managing environmental impacts of organotin compounds
- Recommendations for biomonitoring to regulate TBT impacts that exist in coastal environments
- Raise awareness

Diagrammatic representation of the project

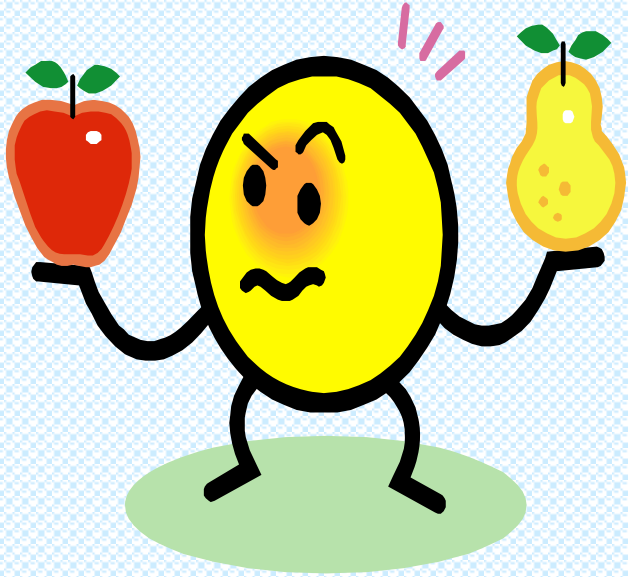


Objectives of the project

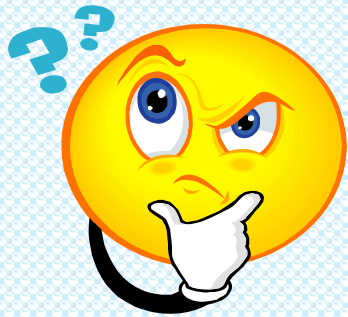
1. Assess **current policy concerns** and developments
2. Assess the **impacts of organotin based and other existing antifouling paints**
3. Investigate **alternative antifouling strategies**
4. Analyse **costs and benefits** of using and not using organotin compounds
5. Generate **decision tools** for better coastal health
6. Create **awareness** and build capacity

Work-Packages

WP1. Assess **current policy concerns** and developments



- Review current national, EU and international policies
- Analyse gaps in policies
- Suggest better policies/management strategies



Partners: *TERI and UGOT*

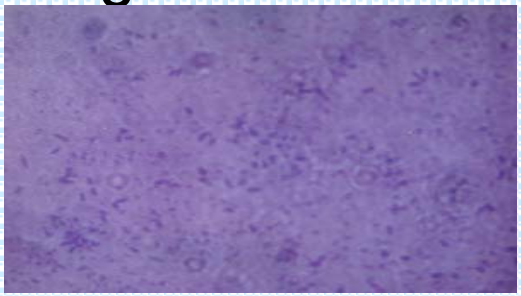
WP2. Assess the **impacts of organotin based and other existing antifouling paints on coastal environment** such as water, sediment, mangrove ecosystem, fish and other biota.

- Environmental distribution of TBT in European and Indian coastal waters and sediments
- Evaluate effect of TBT on the biochemical composition of micro-organisms
- Assess impact of TBT on breeding and feeding grounds of fish
- Assess impact of TBT on marine animals including fish
- Assess environmental impacts of other existing antifouling paints through literature review, questionnaire surveys and interviews of key informants

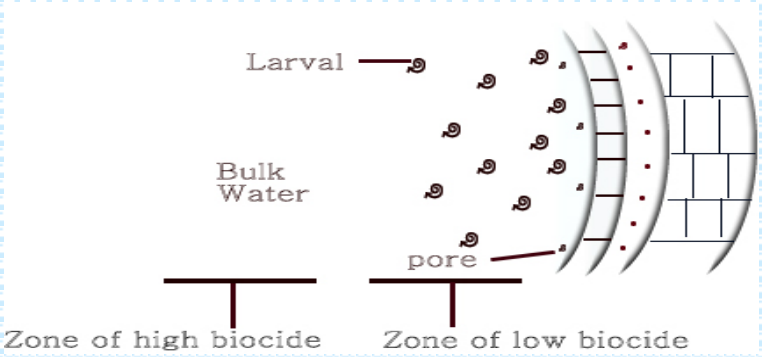
Partners: *ENEA, NIO, TERI*

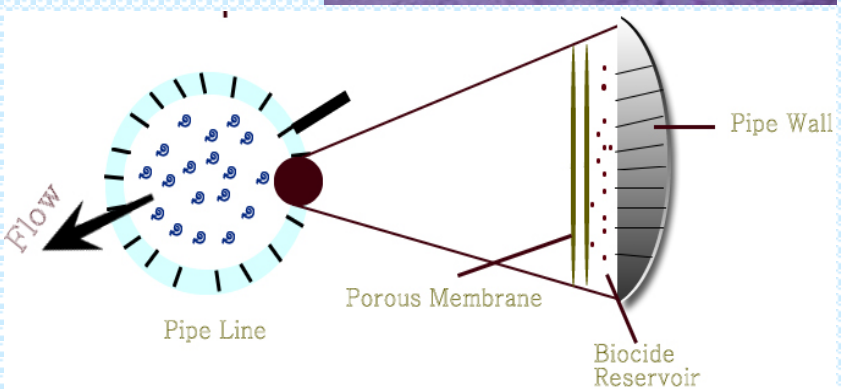
WP3. Investigate **alternative antifouling strategies**

- Inventory of existing alternative antifouling paints
- Investigate other novel antifouling measures
- Isolation of micro-organisms for biodegradation of TBT



Partners: *TERI with QC, NSDRC, RU, NIOT*



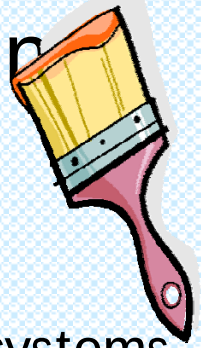


WP4. Analyse costs and benefits of using and not using organotin compounds

- Assess the environmental and economic implications of the IMO led policy changes to ban TBT
- Arrive at the costs and benefits of using organotin compounds and alternatives
- Build scenarios

Partners: *TERI, NSDRC*

WP5. Generate **decision tools** for better coastal health in the context of organotin based antifouling paints.



- Establish a baseline data of the level of organotin in coastal ecosystems (waters, sediments, mangroves and animals) in order to monitor trends in concentration of TBT in coastal environments
- Develop indicators of coastal health such as fatty acid biomarkers and sentinel organisms
- Produce quality control tools for validation of analytical data
- Individuate safer fishing areas in the context of organotin compounds
- Develop a waste disposal strategy for TBT
- Recommendations to regulate TBT impacts and help implementation of legislation

Partners: *TERI, ENEA, NIO, NIOT, UGOT, RU, NSDRC*

WP6. Create awareness and build capacity

- Awareness raising campaigns amongst fishers and aquaculture farmers documenting impacts of TBT on marine organisms and implications to human health
- Dissemination of information on safer fishing areas to the fishers and aquaculture farmers and on alternatives to organotin compounds to shipping and cruise tourism industry
- Sensitising national governments on the issue
- Strengthening institutional capacity through better policy suggestions
- Help capacity building of research institutions by appropriate transfer of technical knowledge

Partners: *TERI, NIOT, NSDRC, NIO, ENEA*

List of deliverables

Where are we?

WP 1

DELIVERABLE NO*	DELIVERABLE TITLE	LEAD PARTICIPANT	DELIVERY DATE**	DONE ?
D 1	**A document on review of existing policies**	**TERI**	**10**	√
D 1.1	Report on policies in India	TERI	7	√
D 1.2	State of art report on policies in European Countries	UGOT	7	√
D 1.3	International best practice approaches	UGOT	9	√
D 1.4	Gap analysis	TERI	10	√
D 1.5	Report on policy review	TERI	44	√

Note:

* - Deliverable numbers in order of delivery dates: D1 – Dn

** - Month in which the deliverables will be available. Month 0 marking the start of the project, and all delivery dates being relative to this start date.

WP 2

DELIVERABLE NO	DELIVERABLE TITLE	LEAD PARTICIPANT	DELIVERY DATE	DONE ?
D 2	**Environmental impacts of using TBT and other alternatives on fishing, aquaculture and coastal environments of Europe and India**	**ENEA & NIO**	**40**	√
D 2.1	A report on environmental distribution of TBT in European and Indian coastal waters, sediments, fish and other biota	ENEA, TERI & NIO	40	√
D 2.2	Report on environmental impacts of TBT on biochemical composition of microorganisms	NIO	40	√
D 2.3	State of art report on contribution of major harbours in terms of public exposure to TBT	RU	32	
D 2.4	Historic data on alien species invasion	RU	34	
D 2.5	State of the art information on the impact of TBT on mangrove ecosystems	RU	36	
D 2.6	Identification of safer zone for fishing	RU	38	

WP 3

DELIVERABLE NO	DELIVERABLE TITLE	LEAD PARTICIPANT	DELIVERY DATE	DONE ?
D 3	**A document providing knowledge on alternative antifouling paints**	**TERI**	**18, 30**	√
D 4	**Alternative antifouling strategies**			
D 4.1	A working model of ceramic-based diffusible antifouling delivery for protection of moving surfaces against biofouling	RU	36	√
D 4.2	Micro-organisms for detoxification of TBT	NIOT	38	√

WP 4

DELIVERABLE NO	DELIVERABLE TITLE	LEAD PARTICIPANT	DELIVERY DATE	DONE ?
D 5	Scenarios on: environmental impacts of using TBT based organotin compounds and other existing alternatives	TERI & NSDRC	32	√
D 6	Costs and benefits of organotin based antifouling compounds and alternatives	TERI	38	√

WP 5

DELIVERABLE NO	DELIVERABLE TITLE	LEAD PARTICIPANT	DELIVERY DATE	DONE ?
D 7 D 7.1 D 7.1 D 7.2	**Indicators of marine and coastal health** A report on indicators Fatty acid biomarkers Sentinel organisms and others	 TERI NIO RU	**38**	 √ √ √
D 8	Quality control programme	ENEA, TERI with QC	40	√
D 9	Waste disposal strategy for TBT	NIOT	41	
D 10	A simple biomonitoring system to assess coastal health	ENEA, TERI, NIO	42	
D 11	Recommendations/ management strategies to help policy formulation	TERI	44	√

WP 6

DELIVERABLE NO	DELIVERABLE TITLE	LEAD PARTICIPANT	DELIVERY DATE	DONE ?
D 12	Dissemination activities through workshops (4), newsletters (3), booklet (1), website etc	TERI with NIOT & NSDRC	25 - 48	√