

Assessing impacts of TBT on multiple coastal uses

An overview

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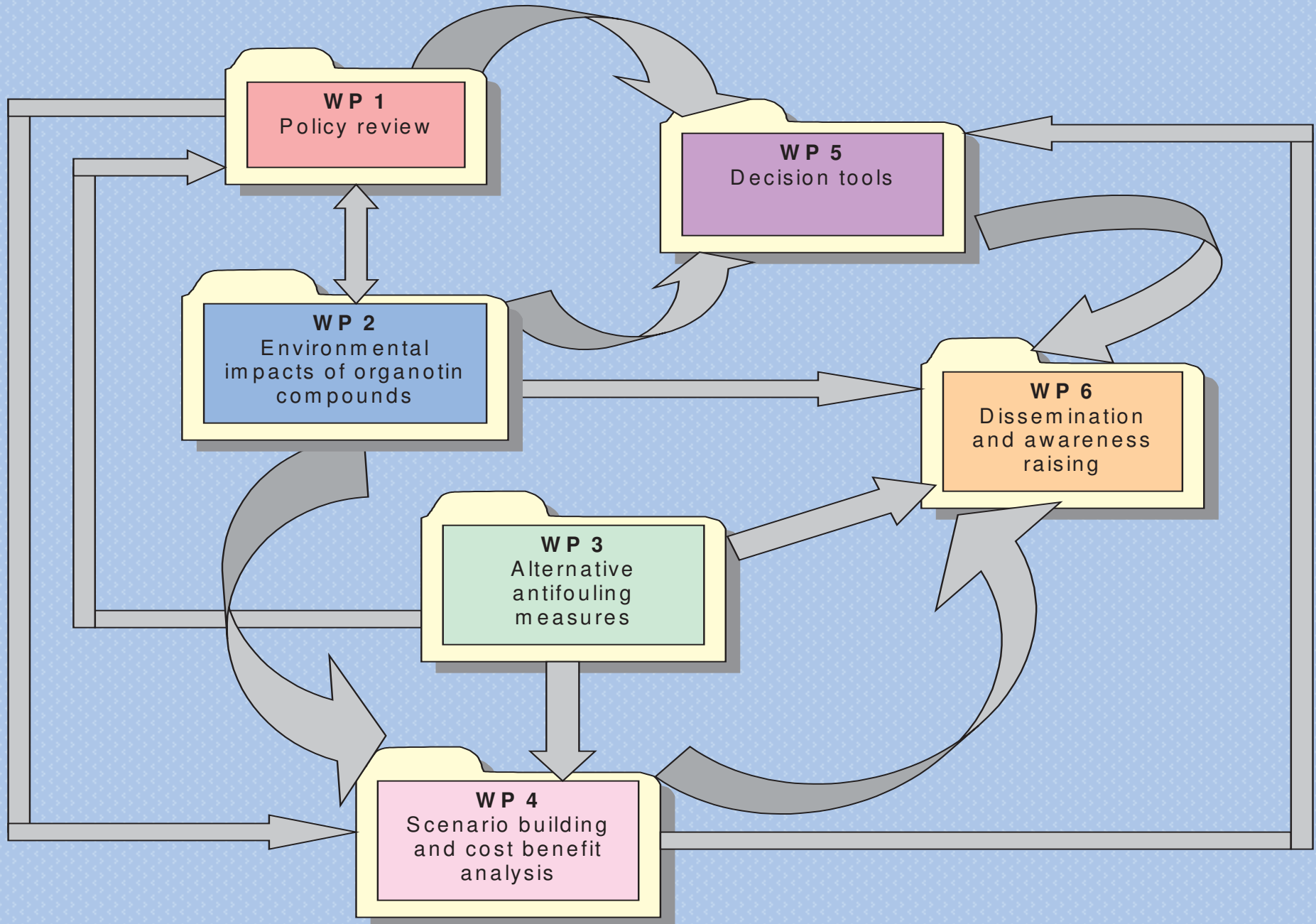
The Energy and Resources Institute

Western Regional Centre, Goa

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
- Develop a biomonitoring system to regulate TBT impacts that exist in coastal environments
- Raise awareness towards this

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
- A simple biomonitoring system 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
- Establish e-mail forum involving relevant stakeholders to discuss the divide on TBT issue
- 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*

Deliverables and milestones

D1 A document on review of existing policies M- 10

D1.1 Report on policies in India M- 7

D1.2 State of art report on policies in European Countries M- 7

D1.3 International best practice approaches M- 9

D1.4 Gap analysis M-10

D1.5 Report on policy review M- 44

D2 Environmental impacts of using TBT and other alternatives on fishing, aquaculture and coastal environments M - 40

D2.1A report on environmental distribution of TBT in European and Indian coastal waters, sediments, fish and other biota M - 40

D 2.2 Report on environmental impacts of TBT on biochemical composition of micro-organisms M - 40

D2.3 State of art report on contribution of major harbours in terms of public exposure to TBT M - 32

D 2.4 Historic data on alien species invasion M - 34

D 2.5 State of the art information on the impact of TBT on mangrove ecosystems M - 36

D 2.6 Identification of safer zone for fishing M - 38

D3. A document providing knowledge on alternative antifouling paints M-18, 30

D4 Alternative antifouling strategies

D4.1 A working model of ceramic-based diffusible antifouling delivery for protection of moving surfaces against biofouling M-36

D4.2 Micro-organisms for detoxification of TBT M-38

D5 Scenarios on: environmental impacts of using TBT based organotin compounds and other existing as well as more efficient alternatives likely to be developed in future

Three scenarios - M- 32

Scenario 1 : If the ban does not exist i.e. with the organotin based antifouling compounds

Scenario 2 : With the ban and using presently available tin free antifouling compounds

Scenario 3 : Assuming that more efficient antifouling measures would be available

D6. Cost-benefit analysis of organotin based antifouling compounds and alternatives M-38

D7 Indicators of marine and coastal health M-38

D7.1 A report on indicators

D7.2 Fatty acid biomarkers

D7.3 Sentinel organisms and others

D8 Quality control programme M- 40

D9 Waste disposal strategy for TBT M- 41

D10 A simple bio-monitoring system to assess coastal health M- 42

D11 Recommendations/ management strategies to help policy formulation M- 44

D12 Dissemination activities through workshops (4), newsletters (3), booklet (1), website etc. M-25- 48

Feedback between the work-packages

