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Black Sea Hotspots

Black Sea CROSS BORDER COOPERATION

Integrated hotspots management and saving the living Black Sea ecosystem - HOT BLACK SEA
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Hot Spots Methodology (version 2): general overview and modifications

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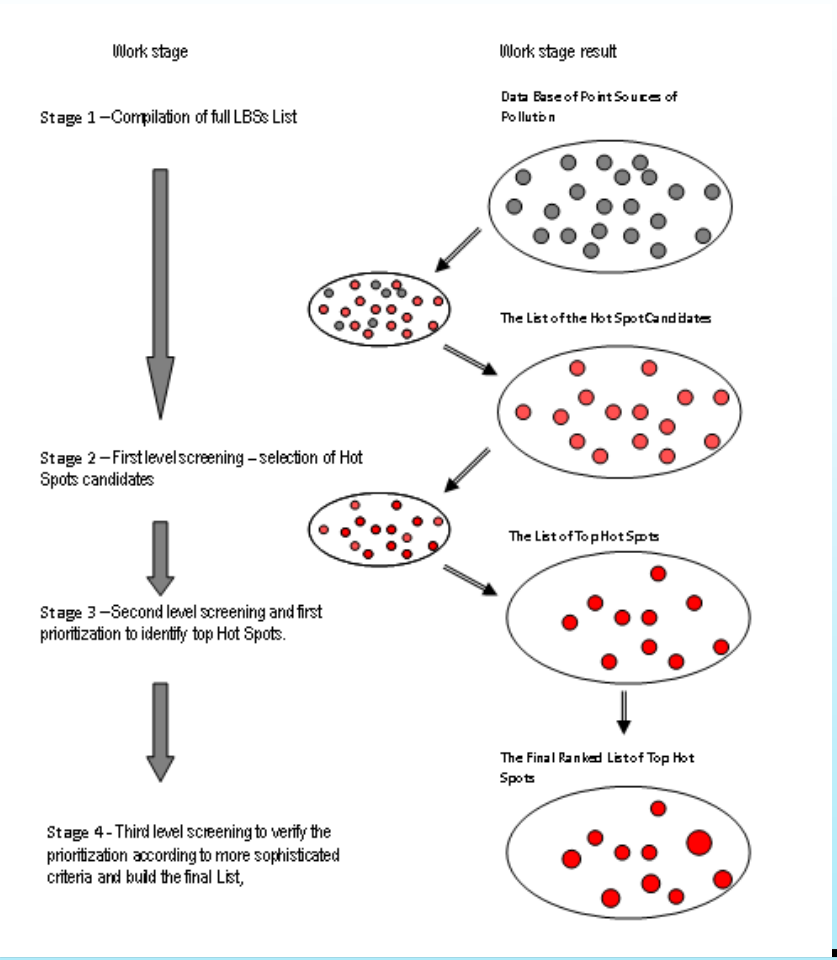
Second Workshop – Hot Spots Methodology
22 - 25 June 2015
Odessa, Ukraine

General Information

- **Is developed in the framework** of GA1 “Harmonization of Hot Spots policies“ and GA2 “Identification, evaluation and prioritisation of hot spots“
- **Responsible**: ICPE-CA, Burgas Municipality, TUBITAK, OSENU
- **Partners involved**: all partners
- Is assigned for **identification, assessment and ranking of Hot Spots**, located within the Black Sea catchment area and having impact on the state of the Black Sea
- For the purposes of this Methodology, the **Hot Spot** is considered to mean **Point sources** on the coast of the Sea, which potentially **affect** human health, ecosystems, biodiversity, sustainability or economy in a significant manner. They are the **main points, where high levels of pollution loads** originating from domestic or industrial sources are being **discharged.** Also **urban surface run-off** from the territory of a city/town/settlement is considered as a Hot Spot no matter through how many discharge collectors it enters the Black Sea or connected river/lake.

Distinctive features of Hot Spots Methodology

- the Methodology allows to identify and rank Hot Spots located on the territory of **the Black Sea catchment area**;
- when ranking it is used **uniform criteria** chosen for all of the Black Sea countries;
- the list of criteria contains **environmental, socio-economic, and integrative indices**;
- the HS Methodology includes **an expertise score**, but also **mathematical methods** for estimating the effect of Hot Spots on the environment of the Black Sea;
- to support the use of this methodology it was developed a database on Hot Spots, which contains meta data and data on discharges (concentrations and/or loads), as well as information on and maps of ecological status of areas, which are under the pressure of HSs.



General Algorithm of the Hot Spots Methodology

The Hot Spots Methodology includes the following **stages of work:**

1. Compilation of full LBSs List (as full as possible).
2. First level screening – selection of Hot Spots candidates.
3. Second level screening and first prioritization to identify top Hot Spots.
4. Third level screening to verify the prioritization according to more sophisticated criteria and build the final HSs List.

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The first stage – Identification of point source of pollution and selection of the Hot Spot candidates

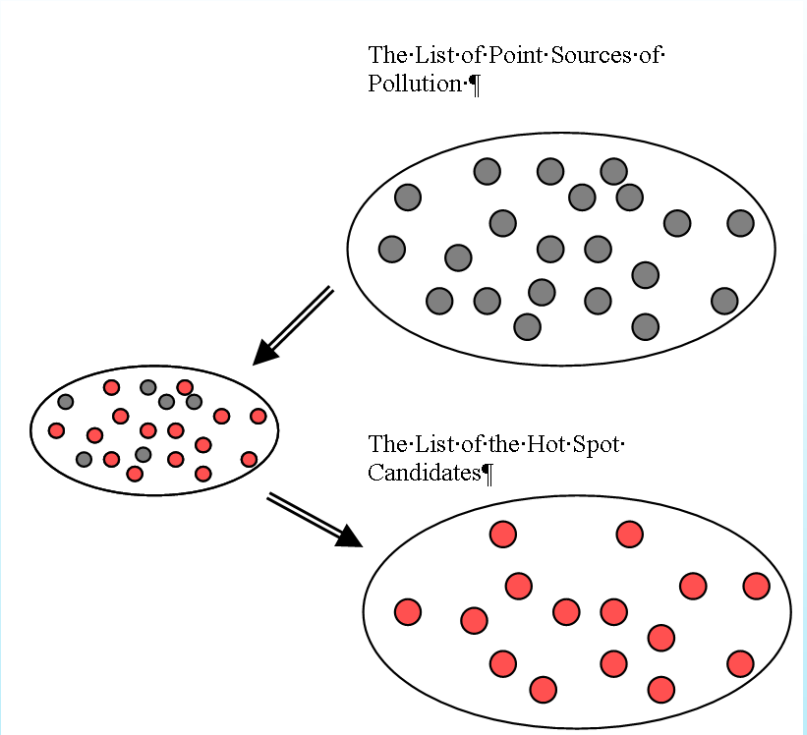
- It is supposed to elaborate **the most complete list of point sources of pollution within the territory of the catchment area**. To do this, it is advisable to use all available sources of information: programmes of protection and monitoring of river basins, regional and national statistical databases and others.
- Each Black Sea country has its own databases and environmental programmes including point sources of pollution within the territory of the catchment area, which were compiled for various research purposes.
- For the purposes of Hot Black Sea project it was compiled a database of Hot Spots (see website http://www.bs-hotspots.eu/), which has included the major point sources of pollution within the territory of the catchment area of the Black Sea. Since it is difficult enough to assess the impact of the Hot Spot located at large distance (over 200 km) from the Black Sea
- **The List of point sources of pollution is compiled**

The second stage – First level screening – selection of Hot Spots candidates

Hot Spot Candidate selection: at least one of the key conditions is observed:

- Discharge volume is more than 1000 m3 / day;
- Absence of sewage treatment plants;
- Discharge volume in terms of BOD5 > 50 t/year
- Total concentration of trace metals > 1 mg/dm3
- Total nitrogen –20 t/year
- Total phosphorus – 6 t/year
- The sum of inorganic forms of nitrogen (ammonia nitrogen + nitrate nitrogen + nitrite nitrogen) –15 t/year
- Phosphates (PO4), 5 t/year.

- Oil products > 0,2 t/year.
- Urban surface run-off from urban areas (city/town/settlement) with population more than 300.000 in the event when sewage treatment plants are absent. Urban surface run-off from one urban area is considered as candidate 1 to be a Hot Spot regardless of the number of tail drains



The List of Hot Spot Candidates is compiled

The third stage – Second level screening and first prioritization to identify top Hot Spots

The following environmental and social indicators are used.

- **Wastewater discharge volume**.
- **Distance to the Black Sea or the shortest distance on the aquatic area** (for lakes, lagoons etc.): proximity to the Black Sea.
- **Population in town/village**.
- **The type of wastewater treatment**.
- **Characteristics of flow and mixing in the aqueous environment**.
- **The degree of environmental hazard**.
- **Environmental tension at the location of the Hot Spot candidate**.

Hot Spot Candidates are evaluated

Table 1 – Preliminary Hot Spot description

Name of Hot Spot candidate	Location (town, region, country)	Waste water discharge volume	Distance to the Black Sea or the shortest distance on the aquatic area	Population in town/village, where the point source of pollution is located	Type of waste water treatment used	Characteristics of flow and mixing in the aquatic environment	Degree of environmental hazard (according to existing assessments)	Environmental tension on site of the Hot Spot candidate	Final preliminary rank of the Hot Spot candidate
Weight factor		1	0.8	0.8	1	0.8	1	0.8	
1	2	3	4	5	6	7	8	9	10
...									

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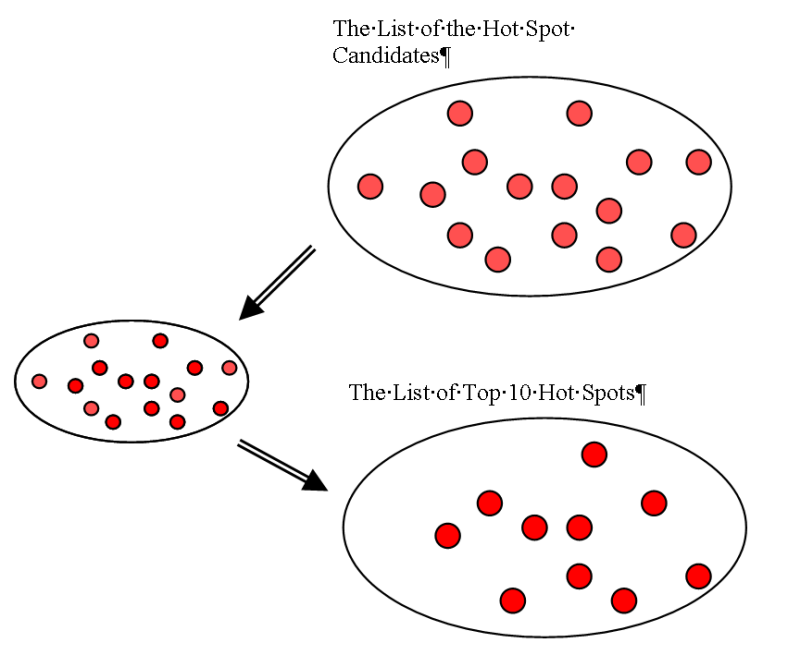
The fourth stage – Third level screening to verify the prioritization according to more sophisticated criteria and build the final List

Integrated criteria are used for assessment and prioritization of Hot Spots



The following **integrated criteria** are used:

- **The degree of overall impact on water quality.**
- **The degree of local impact on water quality.**
- **Recreation and protected areas**
- **Level of potential impact on aquatic life, including biota contamination**
- **Investment attractiveness of the region (province)**
- **Regional development perspectives**

Table 2 – Summary table of Hot Spots

Name	Type	The degree of overall impact on water quality	The degree of local impact on water quality	Recreation and protected areas	Level of potential impact on aquatic life, including biota contamination	Investment attractiveness of the region	Regional development perspectives	Weighted total	Category
Weight factor		1.0	0.8	0.8	0.8	from 0.5 to 1	from 0.5 to 1		
1	2	3	4	5	6	7	8	9	10
...									

The final List of HSs is compiled, which would be eligible to speak about priorities in investments and their schedule (short-, mid-, and long-term) and selection of top priority HSs.

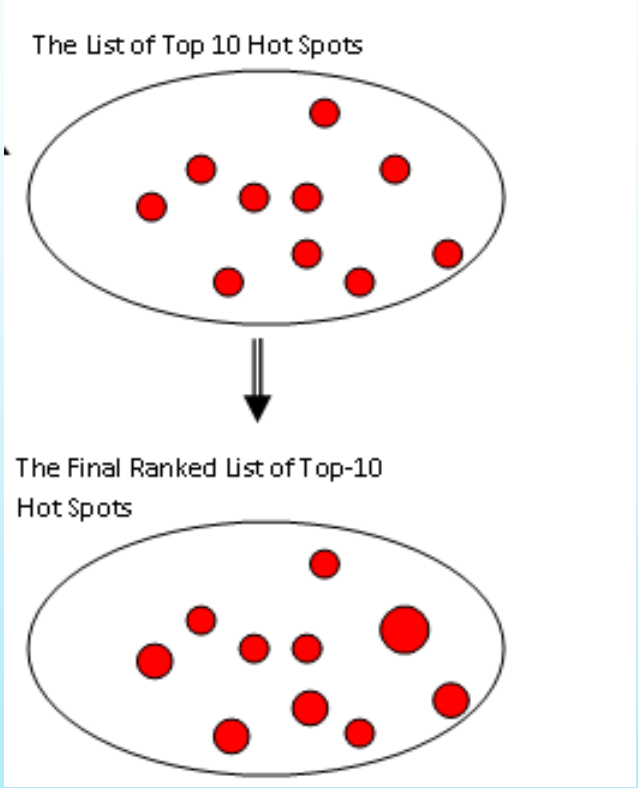
Depending on the amount of final weight of the pollution source, 3 categories of HSs are distinguished:

The Hot Spot of the first rank is an entity that requires the most attention and prompt actions from decision makers.

The Hot Spot of the second rank is an entity that requires attention from the decision makers and problem-solving in the short term (3 to 5 years).

The Hot Spot of the third rank is an entity that requires constant attention on the part of decision makers and problem-solving in the medium term (5 to 10 years).

The candidate Hot Spots, outside of the List of top HSs, obviously may later be addressed in the long-term run (over 10 years).



The Hot Spots Methodology: version 2

Key modifications:

- Urban surface run-off is considered as a potential Hot Spot;
- Discharges from irrigation systems are considered as a potential Hot Spot;
- Formula are modified and new mathematical tools are used;
- Additional socio-economic criterion is introduced;
- List of integrated criteria is modified.

The Hot Spots Methodology

- is developed for **specific purposes and specific region**;
- is **scientifically** well grounded;
- takes into account **overall anthropogenic loading**;
- includes **all significant factors**;
- **does not require too much data**;
- **is easy in use**;
- concept and approaches from BSC Methodology, HELCOM Methodology, the Arctic Seas Methodology etc. were taken into account;
- will be as a module in HSs Database;
- the results of using this Methodology can be applied by environmental authorities of the Black Sea countries, the Black Sea Commission, research and other organizations/institutions in the selection and substantiation of environmental projects and for reporting on the most significant point sources of pollution in order to inform public and other regional actors.

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Thank you for your attention!

HOT BLACK SEA project web-site:
http://www.bs-hotspots.eu/