Methodology and proposal for newly developed H2020 Industrial Emissions Indicators

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19 September 2017

1. Background

The UfM Ministerial meeting on Environment and Climate Change, held in Athens on 13 May 2014, emphasized for the 2nd phase the need for all partner countries "to address data needs by applying the principles of Shared Environment Information Systems (SEIS) in line with the commitments under the ECAP Decisions of the Barcelona Convention; also contributing to its regional integrated monitoring." UfM Ministers gave the H2020 Steering Group the mandate to develop and adopt a work programme for the second phase in line with the on-going ECAP/MFSD work, NAPs update and MSSD review.

2. Objective

The objective of this document is to build-up on the H2020 industrial emissions indicator (IND 6) identified in the phase I of the ENI SEIS project, for the purpose of elaborating a set of indicators for monitoring impacts of industrial emissions on the Mediterranean marine environment. The indicators are expected to be:

- Complementary to other existing indicators (H2020, IMAP, NAP, Regional Seas, MSSD, SCP, SDG, SCP, etc.)
- Can be linked to investment projects; hence informing the H2020 work programme where funding should go.
- Provide a link to key environmental issues identified in the updated list of hotspots (2015).

During the discussions at the "1st ENI SEIS II South Support Mechanism Regional workshop on indicators" that took place on 17-18 May in Copenhagen, the participants agreed to modify the existing H2020 industrial emission indicator (IND 6) "release of toxic substances and nutrients from industrial sectors" into two individual indicators on nutrients and toxic substances. They also noted the need to introduce an indicator related to contaminated sites under pollution hotspots.

3. Approach for developing industrial emissions indicators

The suggested methodology for identification of industrial emissions indicators can be divided into three phases:

- Phase 1: Surveying existing indicators from Regional Seas Programme (RS), IMAP, NAP, MSSD and SDG, SCP, and determine where synergies exist for H2020 to use as complementary indicators instead of developing similar indicators.
- Phase 2: Assessing NAP implementation by reviewing countries' common operational targets and priority investment measures, and evaluate ability to meet their commitments. Assessing change in state of hotspots from 2002 to 2015, and assessing efficiency of institutional and legal frameworks of countries.

- Phase 3: Linking the results of the survey of existing indicators to the results of the assessment of NAP implementation; status of hotspots; and institutional and legal frameworks in order to identify relevant H2020 industrial emissions indicators.

4. Outputs of the methodology for developing the industrial emissions indicators

A. Phase 1: Survey of existing indicators

A close examination of the "existing indicators" from RS, H2020, IMAP, NAP, MSSD and SDG yielded the categorization of these indicators into state/ impact and pressures/ response indicators. These are tabulated below:

State/ impacts indicators related to industrial emissions	
Trends for selected priority chemicals including POPs and heavy metals	Regional seas
Concentration of status of selected pollutant contamination in biota and sediments and temporal trends	Regional seas
Number of pollution hotspots	Regional seas
Actual levels of contaminants that have been detected and number of contaminants which have exceeded maximum regulatory levels in commonly consumed seafood	IMAP
Concentration of key harmful contaminants in the relevant matrix (biota, sediment, seawater)	NAP
Occurrence, origin (where possible), and extent of acute pollution events (e.g. slicks from oil, oil products and hazardous substances) and their impact on biota affected by this pollution	IMAP
Share of contaminated sites with toxic, persistent and liable to accumulate substances in the coastal area which have been closed/remediated including spills from industrial accidents	NAP
Trends for selected priority chemicals including POPs and heavy metals	Regional seas
Concentration of status of selected pollutant contamination in biota and sediments and temporal trends	Regional seas

Pressure/ response indicators related to industrial emissions	
Waste generated and treated by type of waste and treatment type	MSSD
The amount of hazardous wastes environmentally soundly managed or exported by Y categories and by disposal/recovery operation (D-disposal, R- recovery, as well as treated in waste to energy facilities)	NAP
Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment	NAP
Hazardous wastes generated per capita and proportion of hazardous wastes treated, by type of treatment	SDG
Release of toxic substances and nutrients from industrial sectors	H2020
Number of substances covered by national standards (ELV), for point source discharges into water or air	NAP

Based on the foregoing, it is concluded that:

- The H2020/NAP set of indicators provide information on pressure reduction and prevention, and on response measures.
- The MSSD as well as the SDG indicators provide also information on pressure reduction and response.
- The Regional Seas (RS) and IMAP indicators provide information on the state of the marine environment and impacts of land based sources of pollution.

Therefore, there is a good set of indicators addressing marine pollution state under the MAP system. The H2020 can use them as complementary instead of developing similar state or impact indicators of its own. In addition, the new H2020 indicators should focus on pressure reduction and pollution prevention at source, as well as on response.

B. Phase 2: Assessing the progress of H2020 through NAP implementation and hotspots status

This second phase is intended to assess progress made in implementation of the H2020 programme through NAP implementation particularly in relation to:

a) Operational targets, including ability of countries to meet deadlines set by SAP-MED/ legally binding requirements.
b) Priority investment measures, including ability to meet deadlines set by SAP-MED/ legally binding requirements.
c) Extent to which project fiches in NAPs address emissions from industrial facilities/ activities.
d) Change in status of pollution hotspots from 2002 to 2015, and key environmental emissions issues.
e) Capacities of the current institutional and legal structures in the countries.

Regarding the operational targets, and based on the "Synopsis of updated NAPs: Hotspots, sensitive areas, targets, measures, indicators and investment portfolios," UNEP(DEPI)/MED WG.426/3, common operational targets identified by at least 7 countries are as follows:

- Reduce by XX% of BOD discharged to water bodies [2018 to 2021]
    - Almost two third of the countries would meet the regional plan deadline for achieving its stated target.
- Reduce discharge of hazardous substances from industrial plants (apply BAT/BEP) by XX% or dispose in a safe manner [2020 to 2025].
    - All countries would meet SAP-MED deadline requirements.

Regarding priority investment measures, common measures identified by at least 7 countries are as follows:

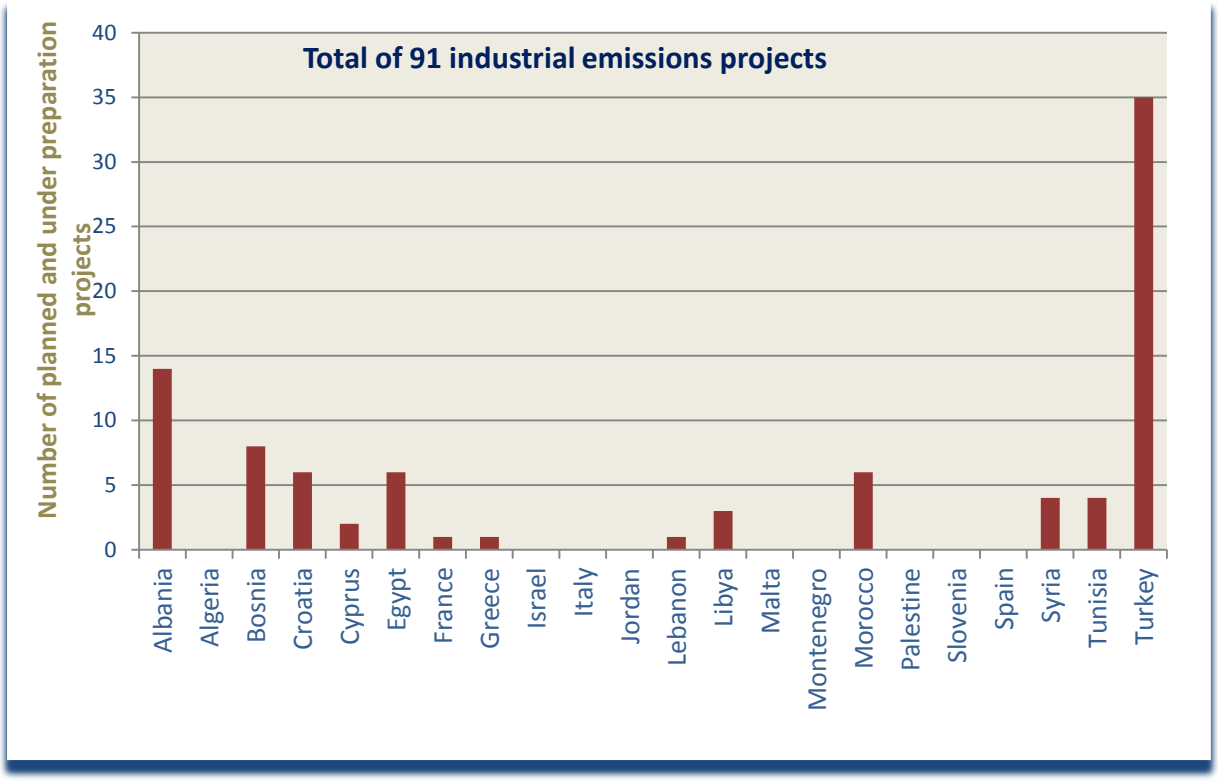
- Build/ expand/ upgrade IWWTP
- Build/ expand/ upgrade hazardous waste landfill facility
- Remediate contaminated industrial sites

Project fiches prepared to address the stated operational targets and the priority measures are in total 52 as per the attached table

Concerning status of pollution hotspots, in 2002, the Mediterranean had 120 pollution hotspots in 18 countries. In response to this situation, the H2020 response pipeline indicated 86 investment projects, out of which 51 were financed and 35 are not (H2020 pipeline).

In 2015, the number of hotspots decreased to 28. High risk areas were 40. Principal environmental issues in the updated hotspots (2015) of industrial nature are BOD and nutrients for southern countries; phosphogypsum and hazardous wastes in Tunisia; highly toxic chemicals in Israel, heavy metals, POPs and PAHs in the Balkans. In response, the UfM pollution reduction projects' regional selection tool database registered 91 industrial emissions project as shown below:

Common priority investment measures	Common operational targets	Albania	Algeria	Bosnia and Herzegovina	Egypt	Montenegro	Israel	Jordan	Lebanon	Morocco	Palestine	Tunisia
Reduce by XX% of BOD discharged to water bodies [2018 to 2021]	Build/ expand/ upgrade municipal wastewater treatment plants	2	4	4	4			1	4	1		
Reduce discharge of hazardous substances from industrial plants (apply BAT/BEP) by XX% or dispose in a safe manner [2020 to 2025]	Build/ expand/ upgrade IWWTP		2		3	1	3					4
	Build/ expand/ upgrade hazardous waste landfill facility	1			2		1			1	1	
	Remediate contaminated industrial sites	1	4		1	2			2			3
Total number of investment measures	**52**	**4**	**10**	**4**	**10**	**3**	**4**	**1**	**6**	**2**	**1**	**7**



Regarding capacities of the current institutional and legal structures in the countries, the "Mid-term evaluation of SAP/NAP implementation," UNEP(DEPI)/MED WG.393/Inf.3, indicates that over 85% of national laws support monitoring, permitting, inspection and application of sanctions; however, supporting institutional structures for enforcement of permitting and compliance are only found in 57% to 71% of the countries. Also, 71% of southern Mediterranean countries fulfil requirements of monitoring activities to a large extent, compared 19% to some extent, (10% with no evidence).

Therefore, the current status of implementation of the NAPs provides solid ground for developing relevant indicators for the H2020, which account for operational targets and provide direction in the implementation of investment projects.

C. Phase 3: Formulating the industrial emissions indicators

Survey of existing indicators and results of assessment led to formulation of industrial emissions indicators which:

1) Distinguish between nutrients and hazardous substances;
2) Address all types of discharges to the marine environment in the three media (industrial solid waste, aqueous effluents and air emissions);
3) Characterized as "pressure/ response" indicators;
4) Complement "state/ impact" indicators of the MAP system;
5) Focus on preventive measures prior to occurrence of pollution;
6) Address contaminated industrial sites requiring mitigation;
7) Address key operational targets and priority investment measures included in the NAPs;
8) Contribute to the development of countries' capacities to perform data collection and handling; and
9) Help informing about H2020 progress and in framing the post 2020 horizon (investment is part of it, but more strategically all paths toward transition).

Hence the following H2020 industrial indicators are obtained:

No.	Details of indicators	D	P	S	I	R
IND 6-1	BOD amounts discharged to sea from point sources (industrial facilities) and diffuse sources (agriculture and horticulture).		✔			
IND 6-2	Toxic substances amounts discharged to sea from industrial facilities (point sources).		✔			
IND 6-3	Number of industrial plants generating hazardous substances which are upgraded (BAT/BEP) and/or decommissioned in an environmentally sound management.					✔
IND 6-4	The amount of hazardous wastes environmentally soundly managed or exported by categories and by disposal/recovery operation, as well as treated in waste to energy facilities.					✔
IND 6-5	Share of contaminated sites in the coastal area with toxic, persistent and liable to accumulate substances which have been closed/ remediated including spills from industrial accidents.					✔
IND 6-6	Share of enforced Emission Limit Values (ELV) to those adopted in national legislation for priority substances impacting the Mediterranean marine environment.					✔

The indicators consist of six core indicators as follows:

- Two indicators address discharge of nutrients and toxic substances (pressure indicators).
- One indicator addresses management aspects of industrial hazardous waste (response indicator).
- Two indicators address actions taken to remediate contaminated sites and upgrading/decommissioning industrial facilities (i.e. mitigation and prevention) – (response indicators).
- One indicator deals with the legal and institutional contexts related to ELV adoption in national legislation and enforcement on the ground.

The indicators reflect the Mediterranean context and are fully substantiated by assessment of SAP-MED/NAP implementation. They also reflect the status of the hotspots. It should be noted that assessment of findings indicate there may be a need for capacity building on the country level to collect data and carry forward the monitoring programme

Finally, it should be noted that requests raised by participants in the May 2017 Workshop in Copenhagen regarding the drafting of the industrial emissions indictors have been addressed. Specifically, nutrients and toxic chemicals have been segregated into various distinct indicators. Indicators reflecting status of hotspots have been introduced, and an indicator dedicated to number of adopted ELVs by the countries has been proposed.