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Monitoring and Assessment**

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**Shared Environmental Information System in support
of environmental assessments, reviews and outlooks, and
Environment-related high-level conferences in the period 2015–2017**

Data and information of the Shared Environmental Information System in the pan-European region

Note by the Secretariat

Background

1. The United Nations Economic Commission for Europe (ECE) Committee on Environmental Policy (CEP) at its twentieth session (Geneva, 28–31 October 2014) adopted targets and performance indicators for measuring the progress in establishing and operating the Shared Environmental Information System (SEIS). It further mandated the Working Group on Environmental Monitoring and Assessment (Working Group) to review the progress in the establishment of SEIS, based on the adopted targets and performance indicators, with a view to preparing an evaluation report on progress made by the pan-European countries in establishing SEIS for the Batumi Environment for Europe (EfE) Ministerial Conference in 2016. An initial assessment report should be presented to the CEP at its twenty-first session (Geneva, 27–30 October 2015).

2. While the CEP adopted the targets and performance indicators, it took no definite decision regarding the specific data and information that should constitute the pan-European SEIS. At the same time, since the data and information define the specific content of SEIS, which is provided by the various institutions and shared through the necessary infrastructure, it is impossible to measure any progress on SEIS establishment without a clear agreement on its content.

3. The Working Group should therefore agree on the data and information to constitute the pan-European SEIS. While doing so, the Working Group should consider that the pan-European SEIS should serve multiple policy purposes, i.e. ensure flows of those data and information that are collected nationally to: (a) calculate relevant environmental indicators that can be used to underpin the regular environmental and thematic assessment processes relevant for the region, (b) evaluate the compliance with the multilateral environmental agreements (MEAs) and its protocols, or (c) understand progress towards internationally agreed targets and goals related to the environment.

4. This note provides an overview of data collected under the various MEAs and/or used to calculate relevant environmental indicators that are presented in regular environmental assessments as these indicators help understand the impact of policy actions usually evaluated in those assessments.

Data and information

5. There are numerous data collected to better understand the relation of human activities to the state of the environment, i.e. which are the driving forces that may exert particular pressures on the environment, which may cause changes to the state of ecosystems that, in turn, can have impacts on the welfare and well-being of humans and require necessary responses.

6. Implementing SEIS should enable the sharing of these data between existing national and international networks as well as with the public, so that they could be used for policymaking and awareness-raising.

7. At the same time, for SEIS to work effectively, the data shared within it need to follow agreed, common format requirements. To this end, the relevant specific data for international flows including their production methodology and the necessary information accompanying the data need to be agreed upon.

8. Table 1, contained in the Annex, lists a number of selected data that can be considered crucial to understand the relation of human activities to the state of the environment and be comparable across the pan-European region, and so could be considered to be part of the pan-European SEIS.

9. These data correspond to the data required for the calculation of the environmental indicators contained in the ECE Online Guidelines for the Application of Environmental Indicators (Indicator Guidelines). These indicators, at the same time, correspond to environmental indicators used by other organizations, including such as the European Environment Agency (EEA) or the Organization for Economic Cooperation and Development when preparing various assessment reports.

10. The data are listed, following the Indicator Guidelines, per thematic areas such as: air pollution and ozone depletion, climate change, water, biodiversity, land and soil, agriculture, energy, transport and waste. The data are also grouped per specific indicators within those areas.

11. The data are further linked to MEAs or other initiatives under which they are reported.

12. Furthermore, those data and indicators belonging to the core set of environmental indicators under the ECE Joint Task Force on Environmental Indicators (JTF) are also marked. The core set is being reviewed in terms of the data production and on-line sharing by the JTF as part of supporting the efforts of the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia in establishing SEIS.

13. The data that are used in the recent assessments (e.g. European environment – state and outlook 2015, issued by EEA in March 2015,) or assessments under preparations (e.g. United Nations Environment Programme's sixth Global Environment Outlook (GEO-6)) are also marked.

14. At the same time, the list of data, indicators and thematic areas can be expanded beyond those specified in Table 1. The already mentioned EEA report evaluates thematic areas like

e.g. noise, resource efficiency, green economy or urban systems, none of which are included in Table 1. These areas may require additional data, e.g. under the resource efficiency area the indicator of material productivity is calculated that requires the data on the consumption of raw materials.

15. Information on metadata accompanying the data is important for understanding whether or not the data follow the agreed, common format requirements. To this end, the data should go along with information specifying the production methodology and source. Assessments of the data and trends should be also provided.

Issues for consideration

16. The following issues are proposed for consideration by the Working Group:

(a) Which are the areas and the specific data that should constitute the pan-European SEIS to underpin the production of the regular environmental assessments, to facilitate reporting on compliance to MEAs and to measure progress on internationally agreed targets and goals related to the environment?

(b) Which areas (partially or fully) and their relevant data should be prioritized for implementation in 2015 under the pan-European SEIS when taking into account the assessments under preparation for the environment-related high-level conferences?

(c) Which should be the milestones for SEIS establishment until 2020, with each milestone specifying the areas and their data for implementation by a precise deadline before 2020?

Annex

Table 1: Data considered crucial to understand the relation of human activities to the state of the environment.

Thematic area	Environmental Indicator	No.	Data flows	MEAs/ protocols	Other common reporting	JTF core set (No.)	EEA/ SOER*	GEO**
				Used in regular international assessments or collected regularly				
Air pollution and ozone depletion	Emissions of pollutants into the atmospheric air	1	Emissions of sulphur expressed in sulphur dioxide (total, stationary and mobile sources)	CLRTAP		A1	APE 001	Environmental state and trends for air
		2	Emissions of nitrogen oxides expressed in nitrogen dioxide (total, stationary and mobile sources)				APE 002	
		3	Emissions of non-methane volatile organic compounds (NMVOCs) (total, stationary and mobile sources)				APE 004	
		4	Emissions of ammonia (total, stationary and mobile sources)				APE 003	
		5	Emissions of carbon monoxide (total, stationary and mobile sources)					
		6	Emissions of lead (total, stationary and mobile sources)				APE 005	
		7	Emissions of cadmium (total, stationary and mobile sources)					
		8	Emissions of mercury (total, stationary and mobile sources)					
		9	Emissions of polycyclic aromatic hydrocarbon (PAH) (total, stationary and mobile sources)					
		10	Emissions of polychlorinated biphenyl (PCB) (total, stationary and mobile sources)					
		11	Emissions of polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran (PCDD/F) (total, stationary and mobile sources)					
		12	Emissions of total suspended particles (TSP) (total, stationary and mobile sources)					
		13	Emissions of PM_{10} (total, stationary and mobile sources)					
		14	Emissions of $PM_{2.5}$ (total, stationary and mobile sources)					
	Ambient air quality	15	Annual average concentration of sulphur dioxide			A2	CSI 004	
		16	Annual average concentration of nitrogen dioxide					
		17	Annual average concentration of ground-level ozone					
		18	Annual average concentration of PM					
	Consumption of ozone-depleting substances	19	Total ozone depleting potential (ODP) of chlorofluorocarbons (CFCs)	MP		A3	CLIM 006	
		20	Total ODP of Halons					
		21	Total ODP of other fully halogenated CFCs					
		22	Total ODP of carbon tetrachloride					

		23	Total ODP of 1,1,1-trichloroethane				
		24	Total ODP of hydrochlorofluorocarbons (HCFCs)				
		25	Total ODP of methyl bromide				
Climate change	Air temperature	26	Average annual deviation from the long-term average temperature	UNFCCC			CSI 012/ CLIM 001	Climate change as cross-cutting theme
	Atmospheric precipitation	27	Annual deviation from the long-term average precipitation				CLIM 003	
	Greenhouse gas emissions	28	Aggregated GHG emissions including emissions/removals from LULUCF			B3	CSI 010/ CLIM 050	
		29	Aggregated GHG emissions by energy, industrial processes, solvent and other product use, agriculture, land use and forestry, waste					
Water	Renewable freshwater resources	30	Renewable freshwater resources	UNEP/ UNSD		C1		Environmental state and trends for water
	Freshwater abstraction	31	Total freshwater abstraction			C2		
		32	Freshwater abstraction by water supply industry, households, agriculture forestry and fishing, manufacturing, electric industry, other economic activities					
		33	Water exploitation index					
	Total water use	34	Total freshwater available			C3		
		35	Total freshwater use					
		36	Losses of water during transport					
		37	Freshwater use by households, agriculture forestry and fishing of which irrigation, manufacturing, electric industry, other economic activities					
	Population connected to water supply industry	38	Population connected and not-connected to water supply industry	UNEP/ UNSD				
		39	Volume of water supplied by water supply industry					
	Reuse of freshwater	40	Total reuse of freshwater					
	Drinking water quality	41	Population using self-water supply (untreated surface water or groundwater)					
	BOD$_5$ and concentration of ammonium in rivers	42	Mean concentration of BOD in major rivers			C10	CSI 019/ WAT002/ SEBI 016	
		43	Mean concentration of ammonium in major rivers					
	Nutrients in freshwater	44	Mean concentration of phosphates in major rivers			C11	CSI 020/ WAT 003/ SEBI 016	
		45	Mean concentration of nitrates in major rivers					
		46	Mean concentration of total phosphorus in major lakes					
		47	Mean concentration of nitrates in major lakes					

Theme	Sub-theme	№	Indicator					
		48	Mean concentration of nitrates in groundwater					
	Nutrients in costal sea water	49	Mean concentration of phosphates in costal sea water				CSI 021/ MAR 005	
		50	Mean concentration of nitrates in costal sea water					
	Concentrations of pollutants in coastal seawater and sediments (except nutrients)	51	Mean concentration of ammonium nitrogen in seawater					
		52	Mean concentration of dissolved oxygen in seawater					
		53	Mean concentration of oil hydrocarbons in seawater					
		54	Mean concentration of heavy metals in seawater					
		55	Mean concentration of chlorinated pesticides in sediments					
		56	Mean concentration of oil hydrocarbons in sediments					
		57	Mean concentration of heavy metals in sediments					
	Population connected to wastewater treatment	58	Population connected to a wastewater collecting system (with and without treatment facilities)		UNEP/ UNSD			
	Wastewater treatment facilities	59	Wastewater treated in urban wastewater treatment plants (primary, secondary, tertiary)					
		60	Wastewater treated in independent treatment facilities					
		61	Wastewater treated in other treatment plants (primary, secondary, tertiary)					
	Polluted (not-treated) wastewaters	62	Wastewater discharged					
		63	Non-treated/not adequately treated wastewater					
		64	Number of incidents of infectious diseases potentially related to water	PWH				
		65	Number of outbreaks for a number of infectious diseases potentially related to water					
Biodiversity	Protected areas	66	Total areas under protection (IUCN-categories)	CBD	IUCN	D1	CSI 008/ SEBI 007	Environmental state and trends for biota
	Forests and other wooded land	67	Total forest area (forest and other wooded land)		FRA			
		68	Natural forest					
		69	Planted forest					
		70	Forest area designated for production					
		71	Forest area designated for protection of soil, water and ecosystem services					
		72	Forest area protected and designated for the conservation of biodiversity					
	Threatened and protected species	73	Number of species protected — mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae		IUCN	D4		
		74	Number of species threatened — mammals, birds, fishes, reptiles, amphibians, invertebrates, vascular plants, mosses, lichens, fungi, algae					

	Trends in the number and distribution of selected species	75	Number of selected species — Keystone species — characteristic species for country		LPI		SEBI 001	
		76	Number of selected species — Flagship species — characteristic species for country					
		77	Number of selected species — Endemic species — characteristic species for country					
		78	Number of selected species — Other species — characteristic species for country					
Land and soil	Land uptake	79	Total land uptake				CSI 014/ LSI 001	Environmental state and trends for land
		80	Land uptake by mining and quarrying, construction, manufacturing, technical infrastructure, transport and storage infrastructure, residential including recreational, landfills waste dumps tailing pits					
	Area affected by soil erosion	81	Total area affected by water erosion				CLIM 028	
		82	Area by degree of water erosion (extreme, strong, moderate, light, no effect)					
		83	Total area affected by wind erosion					
		84	Area by degree of wind erosion (extreme, strong, moderate, light, no effect)					
		85	Number of soil contaminated sites by size and degree of contamination	PPRTR				
Agriculture	Fertilizer consumption	86	Agricultural area		FAO-STAT	F2		
		87	Total consumption of mineral fertilizers					
		88	Area treated with mineral fertilizers					
		89	Consumption of organic fertilizers					
		90	Area treated with organic fertilizers					
	Pesticide consumption	91	Total consumption of pesticides					
		92	Area treated with pesticides					
Energy	Final energy consumption	93	Total final energy consumption		IEA/ Energy balances			Energy as cross-cutting theme
		94	Final energy consumption by category (industry, transport, households, commercial and public services, agriculture forestry and fishery, non-specified, non-energy use)					
	Total primary energy supply	95	Total primary energy supply (production, export, import, bins, stock changes)				CSI 029/ ENER 026	
		96	Total primary energy supply by source (coal, crude oil, oil products, natural gas, nuclear energy, hydropower, geothermal and solar energy, biofuels and waste, electricity, and heat)					
	Energy intensity	97	Energy intensity (final energy consumption/ total primary energy supply)				CSI 028/ ENER 017	
	Renewable	98	Total renewable energy supply				CSI 030/	

	energy supply	99	Renewable energy supply by hydropower, biomass, biofuels, wind, solar, geothermal, other				ENER 029	
Transport	Passenger transport demand	100	Total passenger transport demand			H1	CSI 035/ TERM 012	
		101	Passenger transport demand by mode (road, railway, inland waterways, maritime, domestic aviation, underground)					
	Freight transport demand	102	Total freight transport demand					
		103	Freight transport demand per mode (road, railway, inland waterways, maritime, domestic aviation)					
Waste	Waste generation	104	Total waste generation		UNEP/ UNSD	I1	CSI 016/ 041 and WST 001/004	Chemicals and waste as cross-cutting theme
		105	Waste generation by source (agriculture forestry and fishery; mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; construction; other economic activities; households)					
	Management of hazardous waste	106	Hazardous waste generated	BC				
		107	Hazardous waste imported					
		108	Hazardous waste exported					
		109	Total hazardous waste treated or disposed					
		110	Hazardous waste treated or disposed of which recycling, incineration, landfilling, other disposal					
		111	Stock of hazardous waste					
	Final waste disposal	112	Total municipal waste managed		UNEP/ UNSD			
		113	Municipal waste managed through reuse and recycling, composting, incineration (with and without energy recovery) landfilling on controlled/non-controlled site, other disposal					
		114	Total industrial waste managed					
		115	Industrial waste managed through recycling, composting, incineration (with and without energy recovery) landfilling on controlled/non-controlled site, other disposal					
	Waste reuse and recycling	116	Total waste reused and recycled					

CLRTAP – Convention on Long-range Transboundary Air pollution; *MP* – Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer); *UNFCCC* - United Nations Framework Convention on Climate Change; *PWH* – Protocol on Water and Health; *CBD* – United Nations Convention on Biological Diversity; *FRA* – Global Forest Resource Assessment; *IUCN* - International Union for Conservation of Nature; *LPI* – Living Planet Index by the World Wide Fund for Nature (*WWF*) and UNEPs World Conservation Centre; *PPRTR* – Protocol on Pollutant Release and Transfer Registers; *IEA* – International Energy Agency; *UNECE* – United Nations Economic Commission for Europe, Common Questionnaire on Transport Statistics; *UNEP* – United Nations Environmental Programme, *UNSD* – United Nations Statistics Division, Questionnaire on Environmental Statistics; *BC* – Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Their Disposal;

* Shown are indicator codes out of the EEA sets of indicators that have been used for the report "The European environment — state and outlook 2015 (SOER 2015)".

** For the GEO purpose analysis is done drawing from national datasets, the regional assessments and global datasets for the indicated environmental media.