

INDICATORS FOR THE KIEV ASSESSMENT

Chapter		Analysis	Indicator	Data sets required for indicator
Socio-Economic Issues				
A	Energy sector	Environmental impacts of the energy sector	Energy-related emissions of CO ₂ , SO ₂ and NO _x	Annual emissions of SO ₂ , NO _x , NH ₃ and NMVOCs in total, by sector and energy related.
				Annual emissions of individual greenhouse gases (CO ₂ , CH ₄ , N ₂ O, HFC, PFC and SF ₆) and weighted to GWP, total, by sector and energy-related.
			Nuclear waste generation	Quantity of waste generated by the energy sector
		Energy consumption	Total primary energy supply versus GDP	GDP at market prices (constant prices)
				Total primary energy supply by fuel type
			Total primary energy supply by fuel	Total primary energy supply by fuel type
		Energy efficiency	Power plant efficiency	Fuel inputs for thermal electricity generation
				Thermal electricity generation
		Renewables	Percentage of energy supply from renewable sources	Total primary energy supply by fuel type
B	Industry sector	Industry and the environment	Index of industrial production	Index of industrial production
			Emissions of major air pollutants by industry	Annual emissions of SO ₂ , NO _x , NH ₃ and NMVOCs in total, by sector and energy related.
				Annual emissions of individual greenhouse gases (CO ₂ , CH ₄ , N ₂ O, HFC, PFC and SF ₆) and weighted to GWP, total, by sector and energy related.
C	Agriculture	In what direction is European agriculture developing? And its relations with the environment?	Consumption of pesticides	Total consumption of pesticides
				Agricultural land area
			Fertilizer consumption	Total consumption of fertilizers
				Agricultural land area
			Number of livestock	Number of cattle, pigs, sheep, goats and chickens
				Total number of agricultural holdings
D	Forestry	Effects of transition on the forestry sector	Total felling as a % of annual increment	Felling of trees
				Total annual increment
E	Fisheries	Over-fishing	Fishing effort: tonnage of the fishing fleet (by main target stock?)	Fish catches by species and area
				Fishing fleet in tons by vessel type and by country
			Spawning stock and catches	Total fish catches by regional sea area
				Total spawning stock
F	Transport	Is the environmental performance of the transport sector improving?	Emissions by the transport sector	Annual emissions of SO ₂ , NO _x , NH ₃ and NMVOCs in total, by sector and energy-related.
				Annual emissions of individual greenhouse gases (CO ₂ , CH ₄ , N ₂ O, HFC, PFC and SF ₆) and weighted to GWP, total, by sector and energy related.

		Are we getting better at managing transport demand and improving the modal split?	Passenger transport by mode	Annual passenger transport by car, bus and coach, rail, water and air.
			Freight transport by mode	Annual freight transport by road, rail, water and air.
		Are spatial and transport planning becoming better coordinated so as to match transport demand to the needs of access?	Number of passenger cars	Total number of passenger cars by country
		Are we moving towards a better-balanced intermodal transport system?	Investment in infrastructure	Annual investment in transport infrastructure
		Are we moving towards a fairer and more efficient pricing system which ensures that external costs are recovered?	Transport fuel prices	Price of road transport fuel – leaded petrol, unleaded petrol and diesel
		How rapidly are improved technologies being implemented?	Uptake of cleaner fuels	Transport fuel consumption – total, leaded, unleaded petrol and diesel
			Share of cars with catalytic converters	Number of petrol cars fitted with a catalytic converter
				Total number of petrol cars
			Energy efficiency	Total final energy consumption by sector
G	Tourism	Impact of tourism	Arrivals of visitors at borders by type of entrance in country	Arrivals at borders by type of entrance

Chapter	Analysis	Indicator	Data sets required for indicator
Environmental Issues			
3	Climate change	Signs of climate change	European average temperature 1860-2000 (+ projected 2100)
			Annual average European temperature 1860-2000
			Projected annual average temperature (2100)
		European precipitation 1860-2000 (North-South/Summer-Winter)	Annual European temperature 1860-2000
		Sea level rise – past trend and projected to 2100	Annual sea level rise (+ projected to 2100)
		Sea ice and glaciers	Distribution of the growth and melt of sea ice
		Regional indicators for signs of climate change (ecosystems)	
		Regional indicators for impacts of climate change	
		Progress in the implementation of the Kyoto targets and mechanisms	Annual emissions of individual greenhouse gases (CO ₂ , CH ₄ , N ₂ O, HFC, PFC and SF ₆) and weighted to GWP, by sector
			2010 and 2020 projections for emissions of greenhouse gases (CO ₂ , CH ₄ , N ₂ O) by sector.
4	Strato-spheric ozone depletion	Progress in the implementation of the Montreal Protocol	Production of key ozone depletion substances
			Consumption of key ozone depleting substances
			To be built on indicators from the UNEP assessment available in 2002.
5	Air pollution	Progress in the implementation of the protocols to the UNECE Convention on Long-range Transboundary Air Pollution: Reduction of air pollutant emissions	Emissions of SO ₂ , NO _x , NH ₃ and NMVOCs in total, by sector, 1990-2010-2020, compared with 2010 targets.
			Annual emissions of SO ₂ , NO _x , NH ₃ and NMVOCs in total, by sector.
			Annual emissions of PM10 in total, by sector.
			2010 and 2020 projections for emissions for SO ₂ , NO _x , NH ₃ , PM10 and NMVOC by sector.
		Cost ranges of abatement measures	Description of possible indicators
		Outcome indicators of “what if” ancillary benefits study	Description of possible indicators
6	Chemicals	Urban air quality	Exceedances/reductions in urban air quality (1990-2010-2020)
		Population exposed to an exceedance of SO ₂ , PM, NO _x and O ₃ (1990-2010-2020)	Production and import of hazardous chemicals
6	Chemicals	“Chemicalization” of society	Production and import of hazardous chemicals

7	Waste generation and management	Decrease in the direct material input (DMI) of economies	DMI in European countries	DMI by country
			Total waste generation	Total waste generation
				Waste generated from energy production
				Mining waste
				Construction and demolition waste
				(waste from electric and electronic equipment)
		Waste generation	Municipal waste generation vs. household expenditure	Municipal waste generation
				Household expenditure by country
			Industrial waste generation vs. industrial production	Waste from manufacturing industries
				gross value added by sector, constant prices
			Overview of total waste managed/total waste recovered-recycled	Recycling of waste as a % of total disposal by waste type
			Eastern Europe: Disposal facilities and their capacities	Number and capacity of disposal facilities by country
		Hazardous waste management	Generation of hazardous waste	Hazardous waste production; shipment of hazardous waste
		Progress in the establishment of waste management plans	Progress in the establishment of waste management plans	Fiscal and economic instruments
				Status of waste management plans
8	Water stress	Trends in water stress on a regional basis	Exploitation index/consumption index of water quantity	Total water abstraction by region
				Final water consumption by region
				Long term average renewable freshwater resources
			N, P and organic matter in rivers	Annual concentrations of N, P and organic matter in rivers by catchment size
			N and P in lakes	Annual concentrations of N and P in lakes by catchment size
			Overall river water quality index: biological and physico-chemical classification of river lengths	River water quality by country
			Pesticides in groundwater and surface waters	Annual average concentrations of pesticides in groundwater
				Annual average concentrations of pesticides in surface water
			Nitrate in groundwater	Annual average nitrate concentrations in groundwater
			Radionuclides in groundwater	To be built on indicators from the AMAP 2002 nuclear assessment
			Urban waste-water treatment capacity	Capacity of urban waste-water treatment plants
			Drinking water quality	Number of samples failing European drinking water quality standards
		Link between eutrophication and land and sea	Nutrient inputs to sea	Annual average N and P loadings to sea
			Nutrient concentrations in sea and coastal waters	Annual average concentrations of N and P in marine and coastal waters
		Hot spots in marine water quality	Bathing water quality	Annual average quality of bathing waters

			Input and concentrations of hazardous substances in marine waters	Annual average loadings of hazardous substances to marine and coastal waters
				Annual average concentrations of hazardous substances to marine and coastal waters
			Oil pollution from maritime transport and offshore activities	Regular marine oil spills
		Progress in the implementation of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes	Implementation of programmes of measures for shared waters	Number of programmes for the protection of shared waters and the state of implementation of the programmes.
			Implementation of monitoring requirements for shared waters	Number of programmes for the protection of shared waters and the state of implementation of the programmes.
9	Soil degradation	Soil erosion problems	Estimate of soil loss per year from agricultural land	Volume of soil lost annually from agricultural land
		Salinization in the southern Russian Federation and the Central Asian States	Area of land affected by salinization	Area and severity of salinization in the Russian Federation and Central Asian States
			Table: Restoration projects undertaken/planned	Number and type of soil restoration projects in place and proposed
		Aral Sea follow-up problems	Change in the water balance in Central Asian States	Water balance in Central Asian States
			Area with problems due to wind erosion and salt deposition	Land area with problems due to wind erosion and salt deposition
			Table: Wind erosion prevention projects	Number and type of wind erosion prevention projects in the area of the Aral sea
		Contaminated sites	Estimated number of potentially contaminated sites	Number of contaminated sites or area of contaminated land by country
			Clean-up projects/costs	Number and cost of clean-up operations of contaminated sites in Europe
10	Technological and natural hazards	Technological hazards	Number of industrial accidents	Number of industrial accidents by country
			Number of nuclear incidents	To be built on indicators from the AMAP 2002 nuclear assessment
			Tanker oil spills	Number of spills and volume of oil spilled by tankers in European seas
		Radionuclides	Radioactive waste	To be built on indicators from AMAP
			Distribution of nuclear power stations, fuel processing plants, nuclear weapons, dumping sites	To be built on indicators from AMAP
			(Arctic) examples of doses to population	To be built on indicators from AMAP
		Natural extreme events	Number of natural disasters, excluding earthquakes and volcanic activity	Number of natural disasters, excluding earthquakes and volcanic activity
11	Bio-diversity	State and protection of 'high-quality' habitats	Protected areas (IUCN categories)	Area of protected land by IUCN category
		Safeguarding 'ordinary' nature	Number of habitats and species protected under EU Directives/Bern Conventions with a better/worse status, or semi-natural grasslands as percentage of agricultural areas.	

12	Progress in managing the environment and sustainable development	Integration of environmental considerations in other policies	Table: Progress in policy integration	
		Price signals (economic integration)	Environmentally unfavourable subsidies	
		Environmental impact assessment (management integration)	Appliance of EIA/SEA in Europe	
		Urban planning (institutional integration/management integration)	To be defined	
		Coastal zone management (spatial planning/institutional integration)	Qualitative indicator on pressures on coastal zones	
			Progress in integrated coastal zone management	