

Indicator name Organic pollution emissions (biochemical oxygen demand by the industrial sector)	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Industry shares of BOD emissions - EL SALVADOR</p> </div> <div style="text-align: center;"> <p>Industry shares of BOD emissions - BELGIUM</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>Industry shares of BOD emissions - CHINA</p> </div> <div style="text-align: center;"> <p>Industry shares of BOD emissions - SOUTH AFRICA</p> </div> </div> <div style="text-align: center; margin-top: 10px;"> <ul style="list-style-type: none"> <li style="margin-right: 10px;">■ Primary metals <li style="margin-right: 10px;">■ Stone, ceramics and glass <li style="margin-right: 10px;">■ Paper and pulp <li style="margin-right: 10px;">■ Textiles <li style="margin-right: 10px;">■ Chemicals <li style="margin-right: 10px;">■ Wood <li style="margin-right: 10px;">■ Food and beverages <li style="margin-right: 10px;">■ Other </div>	
Prepared by	UNIDO
Example	WWDR2, Chapter 8, Figure 8.4 See annexed table
Rationale	Most industrial sectors discharge effluents, containing a load of organic pollutants which can be measured via BOD, thus showing the extent to which the water quality has been compromised. Some sectors pollute more than others.
Position in DPSIR chain	Impact
Definition of indicator	Proportion of organic water pollution, by industrial sector
Underlying definitions and concepts	Organic water pollution (mg/L): concentration of organic contaminants measured as Biological Oxygen Demand in milligrams per litre Organic loading (kg BOD/year): BOD concentration multiplied by total annual discharge
Specification of determinants needed	Organic loading/labour ratios: R_o (kg BOD/worker/year) in each sector Employment (E) in terms of number of workers in each industrial sector
Computation	Sectoral organic loading = $R_o \times E$ calculated for each industrial sector, divided by the total organic loading from all n industrial sectors. Thus: $100 \{ [(R_o \times E)_i / (R_o \times E)_1 + (R_o \times E)_2 + \dots + (R_o \times E)_n] \}$
Unit(s) of expression	Percentage
Data sources, availability and quality	World Bank : World Development Indicators Global data on employment in each industrial sector in each country is readily available, and is frequently updated.
Scale of application	National and sectoral
Geographical coverage	Global

Interpretation	By assuming a constant pollution/labour ratio for each sector (Hettige et al., 1997) in terms of kg BOD discharged/worker, it is possible to calculate the value of BOD loading in each sector, in every country. However, this only holds if the underlying hypothesis is correct, namely that the pollution/labour ratio remains constant for a given industrial sector, regardless of the level of technological development. This is assumed to be the case, as plant-level studies have shown that the pollution per unit of output, and employment per unit of output, decrease at almost exactly the same rate as income increases. ¹
Linkage(s) to other indicators	Global employment data per industrial sector
Alternative methods and definitions	If data were available regarding total annual discharges from industry, as well as the BOD concentrations of these discharges, the values of the indicator could be calculated based upon the actual values. However, as this data is not available for most industries in most countries, it is necessary to calculate the indicator indirectly, based upon an assumed sectoral pollution to labour ratio, as well as the employment data which is currently available for every industrial sector in every country.
Related indicator sets	World Bank : World Development Indicators European Pollutant Emissions Register
Sources of further information	World Bank : World Development Indicators European Pollutant Emissions Register
Other institutions involved	UNEP, World Bank

¹ Hemamala Hettige, Muthukumara Mani, and David Wheeler. 1997. Industrial pollution in economic development: Kuznets revisited. Development Research Group, World Bank, Washington, DC http://econ.worldbank.org/external/default/main?pagePK=64165259&piPK=64165421&theSitePK=469372&menuPK=64216926&entityID=000009265_3980312102605. (Accessed 02 March 2009)

Hettige et al. in their comparative study of 13 countries find a 'striking regularity in cross-country environmental performance. Plant-level results suggest that pollution and labor intensities with respect to output decline continuously, and at almost exactly the same rate, as income increases. Thus, sectoral pollution/labor ratios remain approximately constant during the development process. This finding provides useful leverage for the analysis of pollution trends across countries and over time.'