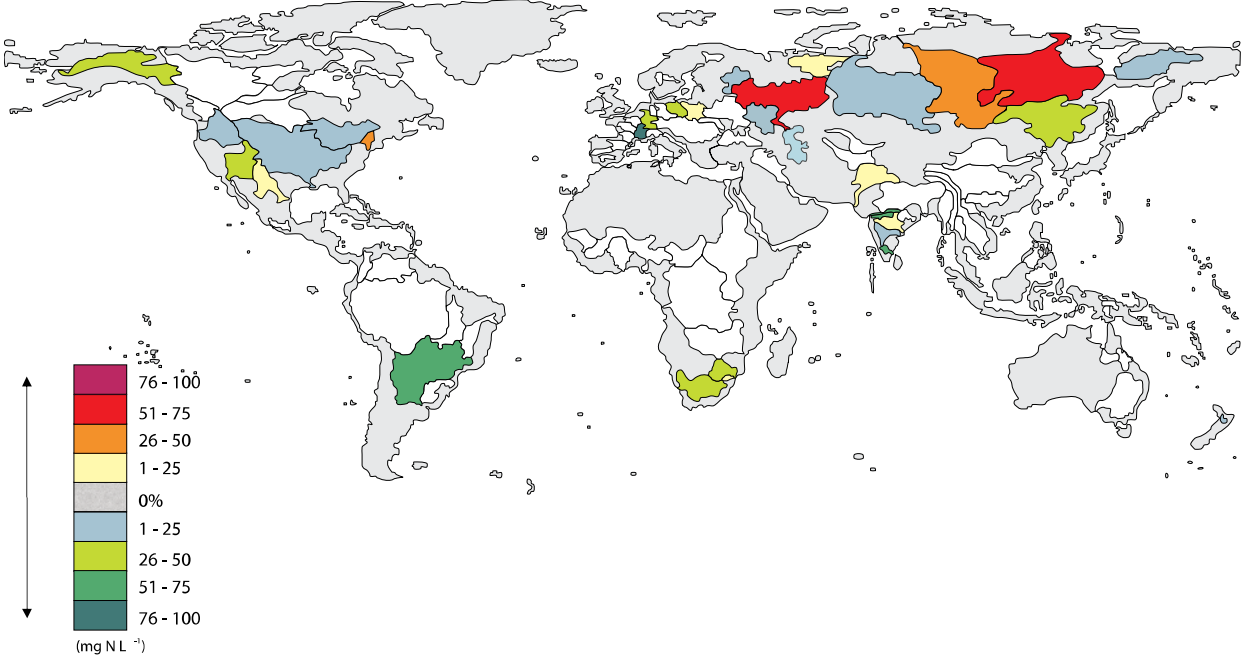


Indicator name	Dissolved nitrogen (nitrates + nitrogen dioxide)
<p style="text-align: center;">Percent change of NO₃ + NO₂-N in selected watersheds 1990-99 and 2000-07</p>  <p>Legend (mg NL⁻¹):</p> <ul style="list-style-type: none"> 76 - 100 51 - 75 26 - 50 1 - 25 0% 1 - 25 26 - 50 51 - 75 76 - 100 	
Prepared by	UNEP
Example	See updated map WWDR2, Chapter 5, Map 5.2
Rationale	Increases in the concentration of dissolved inorganic nitrogen are indicative of potential for the development of eutrophic conditions.
Position in DPSIR chain	State
Definition of indicator	The sum of concentrations of dissolved inorganic nitrogen, specifically nitrate and nitrite in water.
Underlying definitions and concepts	Dissolved inorganic nitrogen (N) in natural waters is principally the compound nitrate (NO ₃). This indicator includes nitrite (NO ₂). Nitrite is a trace component that is measured as part of the analytical procedure of measuring nitrogen. Nitrite concentrations are considered minor in most natural freshwater systems. Nitrate is a primary nutrient in rivers and lakes and in conjunction with phosphate compounds influences the growth of plants and algae in a system.
Specification of determinants needed	Level of dissolved inorganic nitrogen (NO ₃ + NO ₂ -N)
Computation	Mean or median concentration expressed as percentage change over time
Units of measurements	Milligrams oxidized N per litre [Nitrate (NO ₃) plus Nitrite (NO ₂) as N in mg/L]
Data sources, availability and quality	Data is available from the UNEP GEMS/Water Programme. Dissolved nitrogen data is received regularly from the monitoring programmes of participating countries. Data is site specific and is statistically evaluated to be indicative of watershed and regional conditions. Data quality is assessed by UNEP GEMS/Water.
Scale of application	Continental and regional scale.

Geographical coverage	Global by region.
Interpretation	Increases in the concentration of dissolved inorganic nitrogen indicate that waters may be under trophic stress and are indicative of an increased potential for eutrophication. Eutrophic waters are characterized by high populations of algae and/or, prolific growth of macrophytes that may inhibit water flow and potentially lower oxygen concentrations, which would be detrimental to a wide range of aquatic life. High concentrations of nitrate may exceed WHO guidelines for drinking water (10 mg oxidized nitrogen/L). Principal sources of nitrogen are wastewaters from cities, runoff from agricultural land on which fertilizers have been used, and atmospheric deposition in both wet and dry form.
Linkage with other indicators	Linkage to indicators of human population related to cities, agricultural practices and industrial impacts on water based ecosystems.
Related indicator sets	BOD in urban environments Agricultural practices Urban population Wastewater treatment
Sources of further information	GEMS/Water, 1992. "Water Quality Assessments". A guide to the use of biota, sediments and water in environmental monitoring. See also http://www.gemstat.org/ (Accessed 02 March 2009) See also GEM Water Quality Outlook, March 2007 http://www.gemswater.org/
Other institutions involved	UNEP GEMS/Water, UNEP/DEWA/GRID, WRI