WATER USE INTENSITY BY ECONOMIC ACTIVITY		
Freshwater	**Water Quantity**	**Core indicator**

1. INDICATOR

(a) Name: Water use intensity by economic activity

(b) Brief Definition: Cubic metres of water used per unit of value added (in US $) by economic activity.

(c) Unit of Measurement: m^3/ US $

(d) Placement in the CSD Indicator Set: Freshwater/Water Quantity

2. POLICY RELEVANCE

(a) Purpose: This indicator measures the intensity of water use in terms of volumes of water per unit of value added. It is an indicator of pressure of the economy on the water resources and therefore an indicator of sustainable development. It is an important indicator for policies of water allocation among different sectors of the economy since in water-scarce regions, where there is competition for water among various users, water is likely to be allocated to the less intensive use.

(b) Relevance to Sustainable/Unsustainable Development (theme/sub-theme): When this indicator is monitored over time, it shows whether the country manages its water resources to improve economic performance while simultaneously reducing the impact on the environment, that is, to decouple pattern of water use from economic growth. Water conservation policies aiming at improving water intensity (through, for example, recycling and better water-saving technologies) ultimately reduce pressure on the environment.

If the indicator is compiled for the whole economy without the breakdown by economic activity, it should be redefined as water abstraction divided by Gross Domestic Product (GDP). A decrease in the value of this indicator may indicate: (a) improvements in technological efficiency; (b) structural changes in the economy with water allocated to less intense activities; (c) increase reuse of water in the economy; and (d) use of alternative sources (e.g. desalinated water).

Water use intensity is defined in a similar way as the indicators on material and energy intensity. It could also be expressed as 'water use productivity' (the inverse of water intensity) (see points 3(c)).

(c) International Conventions and Agreements: None

(d) International Targets/Recommended Standards: None

(e) Linkages to Other Indicators: This indicator is linked to Annual Abstraction of Ground and Surface Water as Percent of Renewable Water. While the indicator of

annual abstraction measures pressure on the water resources, the water intensity indicator measures the 'water requirements' of an economic activity (cubic metres of water per unit of value added generated) thus the pressure of the economy on the water resources. Together these two indicators form the basis for water allocation policies: in water-scarce countries, water is likely to be allocated to the less water intensive activity. This indicator can also be linked to social indicators, such as employment by economic activity, to evaluate the social impact of different allocation policies.

3. METHODOLOGICAL DESCRIPTION

(a) Underlying Definitions and Concepts: Water used by an economic activity consists of the sum of (i) water directly abstracted from the environment either permanently or temporarily for own use and (ii) water received from other industries including reused water. Value added (gross) by economic activity is defined as in the National Accounts as the value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an economic activity. The industrial classification follows the International Standard Industrial Classification of all Economic Activities Rev.4 (ISIC) (UN, 2006a) used in the National Accounts. The following breakdown of the economic activities is recommended as minimum: Agriculture, Forestry and Fishing (ISIC 01-03), Mining, Manufacturing and Electricity (ISIC 5-35) and Service industries (ISIC 37-99). Note that the activity that abstracts water for distribution – Water collection, treatment and supply, ISIC 36 – is excluded from the indicator as (i) the water abstracted and distributed to other activities is included in the use of the other activities and (ii) only a small part of the water abstracted by ISIC 36 is for its own uses. The indicator is computed at national level and its temporal scale is the calendar year.

(b) Measurement Methods: Value added is generally obtained from standard national accounts. Water abstracted for own use by an economic activity may be difficult to estimate especially for Agriculture. Water received from other economic units is often metered.

(c) Limitations of the Indicator: Since the indicator is computed at national level and for a year-long, it may hide spatial and temporal variability in water use. The industry breakdown distinguishes only three groups of industries to broadly distinguish Agriculture from Manufacturing and Service industries. A more detailed breakdown may be useful to compare productivity within these groups. For example, for countries which rely heavily to seasonal tourism, which often coincides with periods of high water scarcity, it may be particularly useful to identify explicitly the most relevant economic activities for tourism (such as, Accommodation and Food service activities).

(d) Status of the Methodology: This indicator can be derived from the standard hybrid tables of the System of Environmental-Economic Accounting for Water (UN, 2006b).

(e) Alternative Definitions/Indicators: In countries in which economic activities receive negligible amount of water from other units, the indicator could be calculated

dividing the volumes of water directly abstracted by an economic activity for own use by value added. As mentioned in point 2(b), the inverse of water use intensity is 'water use productivity' which measures the value added generated by one unit of water used. Water productivity gives an indication of the intrinsic value being placed on water. It has low values when water is used for low value purposes, which is generally the case when water is abundant and/or undervalued. High values of the indicators are associated with water recycling and improved technology which reduce the amount of water used and therefore abstracted.

4. ASSESSMENT OF DATA

(a) Data Needed to Compile the Indicator: Direct water abstraction, water received from other economic units and value added (gross) by economic activity.

(b) National and International Data Availability and Sources: Economic data on value added by economic activity are generally available in countries. At the international level information on value added is part of the official national accounts statistics collected by UNSD and can be found in the UNSD publications *National Accounts Statistics: Main Aggregates and Detailed Tables* and *National Accounts Statistics: Analysis of Main Aggregates.* Data on water use by economic activities are collected at international level by two Questionnaires on water: the UNSD/UNEP Questionnaire which covers non-OECD countries and the Joint OECD/Eurostat Questionnaire which covers OECD countries.

(c) Data References:
Economic information is available at
http://unstats.un.org/unsd/snaama/Introduction.asp
Water use information is available at http://unstats.un.org/unsd/ENVIRONMENT

5. AGENCIES INVOLVED IN THE DEVELOPMENT OF THE INDICATOR

(a) Lead Agency: United Nations Statistics Division. The contact point is the Chief of Environment Statistics Section, UNSD; fax no. 1 (212) 963 1374.

(b) Other Organizations: Not available.

6. REFERENCES

(a) Readings:

United Nations (2006a). International Standard Industrial Classification of all Economic Activities, ST/ESA/STAT/SER.M/4/Rev.4.

United Nations (2006b). System of Environmental-Economic Accounting for Water, (Published draft
http://unstats.un.org/unsd/envaccounting/ceea/PImeetings/Handbook_Voorburg.pdf).

United Nations (2005). *National Accounts Statistics: Analysis of Main Aggregates, 2004.* ST/ESA/STAT/Ser.X/35. Sales No. E.06.XVII.8.

United Nations (2006). *National Accounts Statistics: Analysis of Main Aggregates, 2003-2004.* ST/ESA/STAT/Ser.X/34. Sales No. E.06.XVII.5.

United Nations (2008). International Recommendations for Water Statistics (forthcoming)

(b) Internet site:

http://unstats.un.org/unsd/environment
http://unstats.un.org/unsd/nationalaccount/nadefault.htm