

Indicator name		Knowledge Index (KI)
Prepared by	World Bank Institute	
Example	WWDR2, Chapter 13, Map 13.2	
Challenge area	Enhancing Knowledge and Capacity	
Rationale / aspect of the challenge area	The application of knowledge is now recognized to be one of the key sources of growth in the global economy. The Knowledge Index benchmarks one country's position compared to others in the global knowledge economy. A country's position in the knowledge economy in general would in all likelihood have some insights through a general correlation to a country's knowledge base in water.	
Position in DPSIR chain	State	
Definition of indicator	The Knowledge Index is the average of the rankings of the performance of a country or region in three areas of the so-called Knowledge Economy, namely, education, innovation and information and communications technology.	
Underlying definitions and concepts	<p><i>Adult literacy</i>: the ability of people age 15 and above to understand, read and write a short, simple statement on their everyday life.</p> <p><i>Secondary enrolment</i>: students enrolled at the secondary level of education</p> <p><i>Tertiary enrolment</i>: students enrolled in at the tertiary level of education, i.e., college, university or technical school.</p> <p><i>Researchers in R&D</i>: people engaged in research and development</p> <p>Patent applications: patent applications granted by the United States Patent and Trademark Office (USPTO)</p> <p><i>Scientific and technical journal articles</i>: articles published in journals on physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences</p> <p><i>Telephones</i>: telephone mainlines and mobile phones.</p> <p><i>Computers</i>: personal computers, i.e., self-contained computers designed to be used by a single individual.</p> <p><i>Internet users</i>: people with access to the worldwide network.</p>	
Specification of determinants needed	<p>Variables Used in the Basic Scorecards to illustrate Knowledge Index:</p> <p>Adult literacy rate: : Percentage of people ages 15 and above who can, with understanding, read and write a short, simple statement on their everyday life.</p> <p>Secondary enrolment: Number of students enrolled in a level of education who are of official school age for that level, as a percentage of the population of official school age for that level.</p> <p>Tertiary enrolment: Number of students enrolled in a level of education, regardless of age, as a percentage of the population of official school age for that level.</p> <p>Researchers in R&D, per million population: The total number of researchers engaged in R&D, as reported in the selected R&D indicators section of the UNESCO yearbook weighted by million population.</p> <p>Patent applications granted by the USPTO, per million population: This is the number of patent applications granted by the USPTO to a particular country per million people.</p> <p>Scientific and technical journal articles, per million population: Number of scientific and engineering articles published in physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences weighted by million population.</p> <p>Telephones per 1,000 persons: This is a number obtained by obtaining a composite sum of telephone mainlines and mobile phones per 1000 people.</p> <p>Computers per 1,000 persons: Personal computers are self-contained computers designed to be used by a single individual, per 1,000 people.</p> <p>Internet users per 10,000 persons: Internet users are people with access to the worldwide network.</p>	
Computation	<p>The variables of the Knowledge Assessment Methodology (KAM) are normalized ^{al} on a scale of zero to 10 as follows:</p> <ol style="list-style-type: none"> 1. The raw data (u) is collected from literature. 2. Ranks are allocated to countries based on the absolute values. The rank equals 1 for a country that performs the best on a particular variable. At 	

	<p>similar performances, the same rank applies.</p> <p>3. The number of countries with worse rank (N_w) is calculated for each variable.</p> <p>4. Scores are normalized for every country on every variable in relation to the total number of countries in the sample (N_c) applying the following formula:</p> $\text{Normalized (u)} = 10(N_w/N_c)$ <p>5. The formula allocates a normalized score from 0-10 for countries on all variables. Ten (10) is the score for the top performers and 0 is the worst. The top 10% of performers gets a normalized score between 9 and 10, the second best 10% gets allocated normalized scores between 8 and 9 and so on.</p> <p>^{a/} Basically this means organizing your data in such a way that removes redundancy</p>
Units of measurements	None, as this is an index.
Data sources, availability and quality	Data sources are included in the list of “Variables and Clusters” of the KAM user guide. The indicators used have been developed by leading international organizations such as UNDP, UNESCO, ITU and others. Deficiencies lie within the Index itself, since it is a general assessment and does not consider the knowledge base specific to water-related activities.
Scale of application	International. The Index allows for cross-country comparison and comparison of the same country’s performance over time.
Interpretation	The Knowledge Index is best suited to provide a preliminary knowledge economy assessment of a country. It might be adjusted to specifically address specific water development needs, though data are relatively sparse and unavailable.
Linkage with other indicators	The Index is comprised of 9 indicators that serve as proxy for education, innovation and information and communication technology pillars of the knowledge economy. If detailed analysis is needed, these pillars can be represented by the total of 48 qualitative and structural variables. The KAM also has more than 30 variables related to economic and institutional regime, governance, gender, overall performance of the economy and human development.
Alternative methods and definitions	There are several pre-set modes that allow comparison of a particular country with all countries in the sample, with countries in a particular region or with a particular level of income and human development. “Create your own scorecard” option makes possible customized cross-country comparison on the indicators hand-picked by the users out of the set of more than 80 variables.
Related indicator sets	World Telecommunications Development Report (ITU), Global Education Digest (UNESCO), Survey of Science and Technology Statistics (UNESCO), Patent Counts By Country/State And Year (USPTO).
Source	WBI Knowledge Assessment Methodology (KAM) Home Page. www.worldbank.org/kam/ WBI Knowledge for Development Program Home Page www.worldbank.org/wbi/knowledgefordevelopment/