Land Use and Land Cover

[View map of dominant land cover pattern](http://webarchive.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/Dominant_2000.html)

Six geographic datasets were used for the compilation of an inventory of seven major land cover/land use categories at 5’ resolution. The datasets used are:

1. GLC2000 land cover database at 30 arc-sec ([https://ec.europa.eu/jrc/en/scientific-tool/global-land-cover](http://www-gvm.jrc.it/glc2000)), using regional and global legends;
2. an IFPRI global land cover categorization providing 17 land cover classes at 30 arc-sec. (IFPRI, 2002), based on a reinterpretation of the Global Land Cover Characteristics Database (GLCC ver. 2.0), EROS Data Centre (EDC, 2000);
3. FAO’s Global Forest Resources Assessment 2000 (FAO, 2001) at 30 arc-sec. resolution;
4. digital Global Map of Irrigated Areas (GMIA) version 4.0 of (FAO/University of Frankfurt) at 5’ by 5’ latitude/longitude resolution, providing by grid-cell the percentage land area equipped with irrigation infrastructure;
5. IUCN-WCMC protected areas inventory at 30-arc-seconds (<http://www.unep-wcmc.org/wdpa/index.htm>), and
6. a spatial population density inventory (30-arc seconds) for year 2000 developed by FAO-SDRN, based on spatial data of LANDSCAN 2003, with calibration to UN 2000 population figures.

An iterative calculation procedure has been implemented to estimate land cover class weights, consistent with aggregate FAO land statistics and spatial land cover patterns obtained from (the above mentioned) remotely sensed data, allowing the quantification of major land use/land cover shares in individual 5’ by 5’ latitude/longitude grid cells. The estimated class weights define for each land cover class the presence of respectively cultivated land and forest. Starting values of class weights used in the iterative procedure were obtained by cross-country regression of statistical data of cultivated and forest land against land cover class distributions obtained from GIS, aggregated to national level. The percentage of urban/built-up land in a grid-cell was estimated based on presence of respective land cover classes as well as regression equations relating built-up land with number of people and population density. Remaining areas were allocated to:

1. grassland and other vegetated areas (excluding cultivated land and forest);
2. barren or very sparsely vegetated areas, and
3. water bodies

according to indicated land cover classes. Barren or very sparsely vegetated areas (class (ii) above) were delineated from (i) using the respective land cover information in GLC 2000 and a minimum bio-productivity threshold.  
The resulting seven land use land cover categories shares are:

1. Rain-fed cultivated land;
2. Irrigated cultivated land;
3. Forest;
4. Pastures and other vegetated land;
5. Barren and very sparsely vegetated land;
6. Water; and
7. Urban land and land required for housing and infrastructure.

Data Citation:  
Fischer, G., F. Nachtergaele, S. Prieler, H.T. van Velthuizen, L. Verelst, D. Wiberg, 2008. *Global Agro-ecological Zones Assessment for Agriculture (GAEZ 2008)*. IIASA, Laxenburg, Austria and FAO, Rome, Italy.