

## **ANNEX 5.**

# **MAPS AS PRESENTATIONAL TOOLS IN MONITORING THE HUMAN RIGHT TO ADEQUATE FOOD**

### **A SHORT BRIEF ON MAPPING TECHNIQUES**

Examples of maps that have relevance to the realization of the right to adequate food are presented and briefly discussed below. It is not intended to attempt to make the reader an expert on geographic information systems (GIS). Readers who would like to know more of the technical details of geo-referenced databases and mapping techniques may want to consult a website provided by FAO.

The link to the website is included below in the list of reference sources. It is intended here that the reader becomes aware of this presentational tool, and can enlist the collaboration of GIS experts in divulging important messages that result from spatial analysis and that are represented in these maps. User-friendly computer software is readily available to construct digital maps. A few selected mapping software systems, together with a brief technical description, is provided at the end of this annex.

Briefly, a GIS map database is a digital database that consists of two components: (a) a spatial component with precise geographic coordinates (linked to pixels, grid cells, points, lines or polygons), and (b) tabular data on specific attributes, expressed numerically or textually, i.e. indicators, and linked to the spatial component. For example, food insecurity and vulnerability information generated through vulnerability analysis (chapter 5) can be used to construct a digital database. The GIS map image is generated by categorising the attribute data in a small number of classes, and projecting the spatial component onto a two-dimensional space that can be displayed on a computer screen or printed on hard paper, i.e. included in reports or other documents.

Maps that present different indicators for the same geographic area, can be super-imposed on each other, so-called map layering, to assess spatial correlations. Tables and/or charts can be generated from the GIS map database, as needed, to provide more detailed and complementary information.

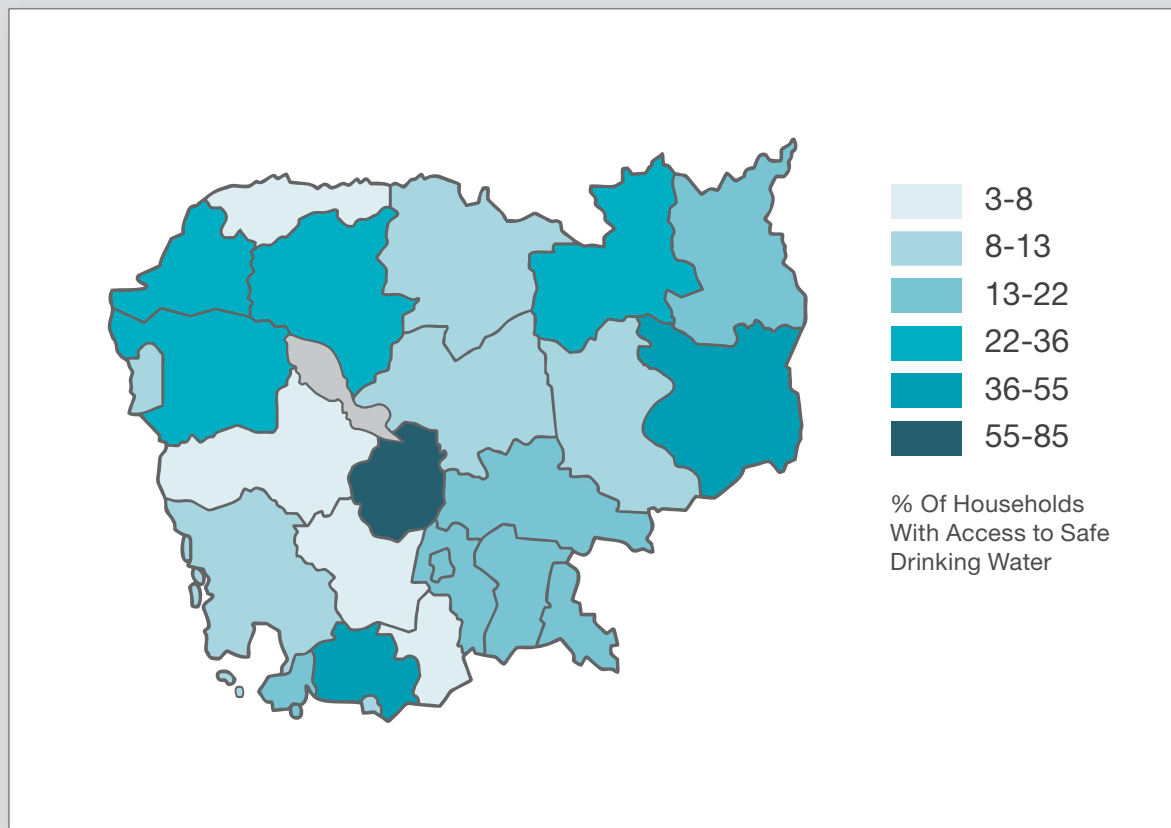
The main constraints to the production of maps lie in the need for geo-referenced data bases from which maps are constructed. On the one hand, poverty mapping techniques allow the integration of datasets that cover different types of data (income levels, health and nutrition status, environmental conditions, community-based infrastructure, etc.) from different sources. However, even if certain data exists in such databases, and access can be obtained, the geo-reference system of identifying locations may be identical in different databases, thus requiring the application of a conversion procedure.

A second constraint may be the analytical and statistical capacity needed to apply poverty mapping techniques. As explained in Davis (2003), a number of statistical techniques can be and are applied that require a certain level of statistical and GIS capacity. Increasingly, adequate GIS capacity is becoming available in a number of countries. This capacity should be mobilised and GIS specialists should be invited to participate in rights-based monitoring of the right to adequate food.

## **A FEW MAP ILLUSTRATIONS**

Below a few maps are presented with a brief description to demonstrate how maps can express different dimensions with respect to inequalities of access to services or sources of income, or to how well programmes that are meant to reach the poor are targeted among vulnerable groups.

Maps can also be structured to depict changes over time in a specific indicator, making it particularly useful as a monitoring tool.

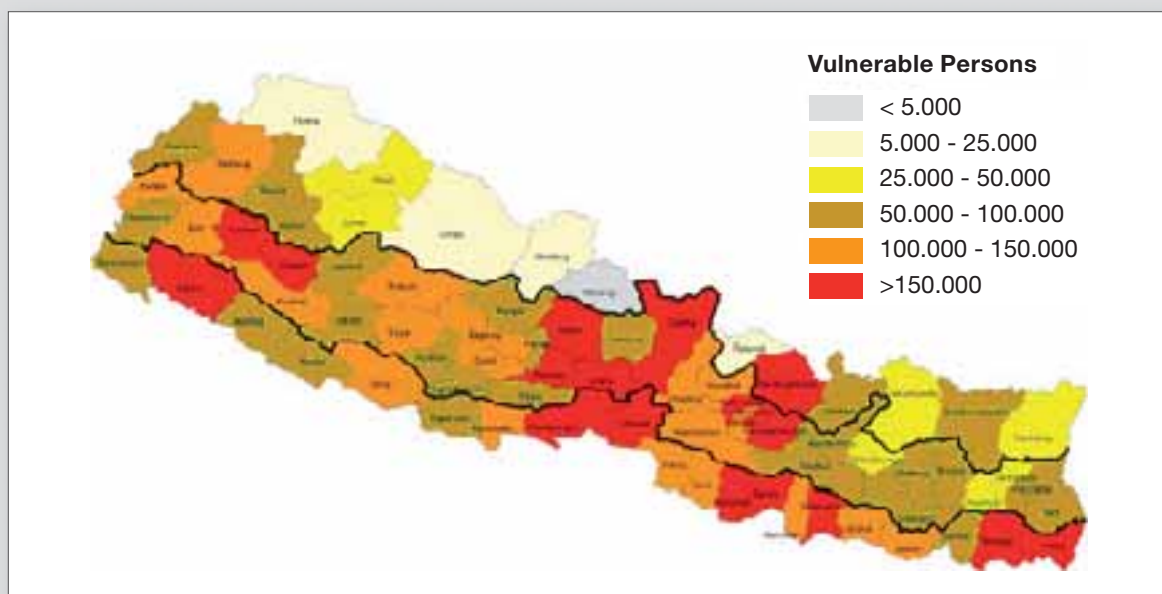
**Map 1: Cambodia: % of Households with Access to Safe Drinking Water**

Source: GISTDA/FAO/ESCAP. *Development and Applications of a Multi-purpose Environmental and Natural Resources Information Base for Food Security and Sustainable Development -ASIACOVER*

**Map 1. CAMBODIA: Access to Safe Drinking Water**

This map demonstrates that the percent of households that have access to safe drinking water varies considerably among different parts of Cambodia, from 3-8% to over 85%. Not only is the right to safe water violated for many households, but in certain areas it is more likely to be violated than in others. A human rights approach advocates concentration of public investment in safe water systems in areas with the lowest percent of households currently served. These areas are easily identified in the map.

## Map 2: Nepal: Number of Vulnerable People by District (2002)

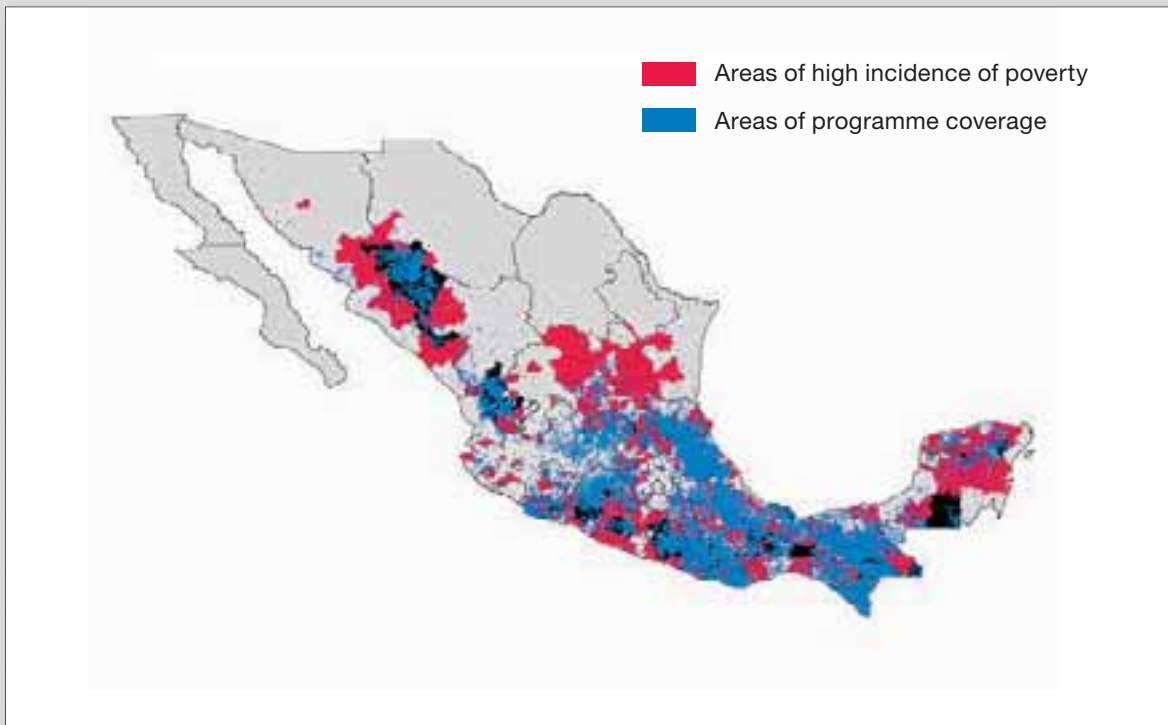


Source: FAO. Asia FIVIMS Project, 2004

### Map 2. NEPAL: Vulnerable Groups by District

The number of vulnerable people is indicated by district, and of course there are substantial differences in numbers. To be useful for district-level targeting of measures to reduce vulnerability, the number of vulnerable people should be expressed as a percent of total population by district, to provide an indication of relative vulnerability. An additional dimension that could be incorporated, is the depth of vulnerability, for example, those who are permanently vulnerable and those who are seasonably vulnerable. This will give additional guidance of what measures are required on a permanent versus a seasonal basis to address vulnerability problems.

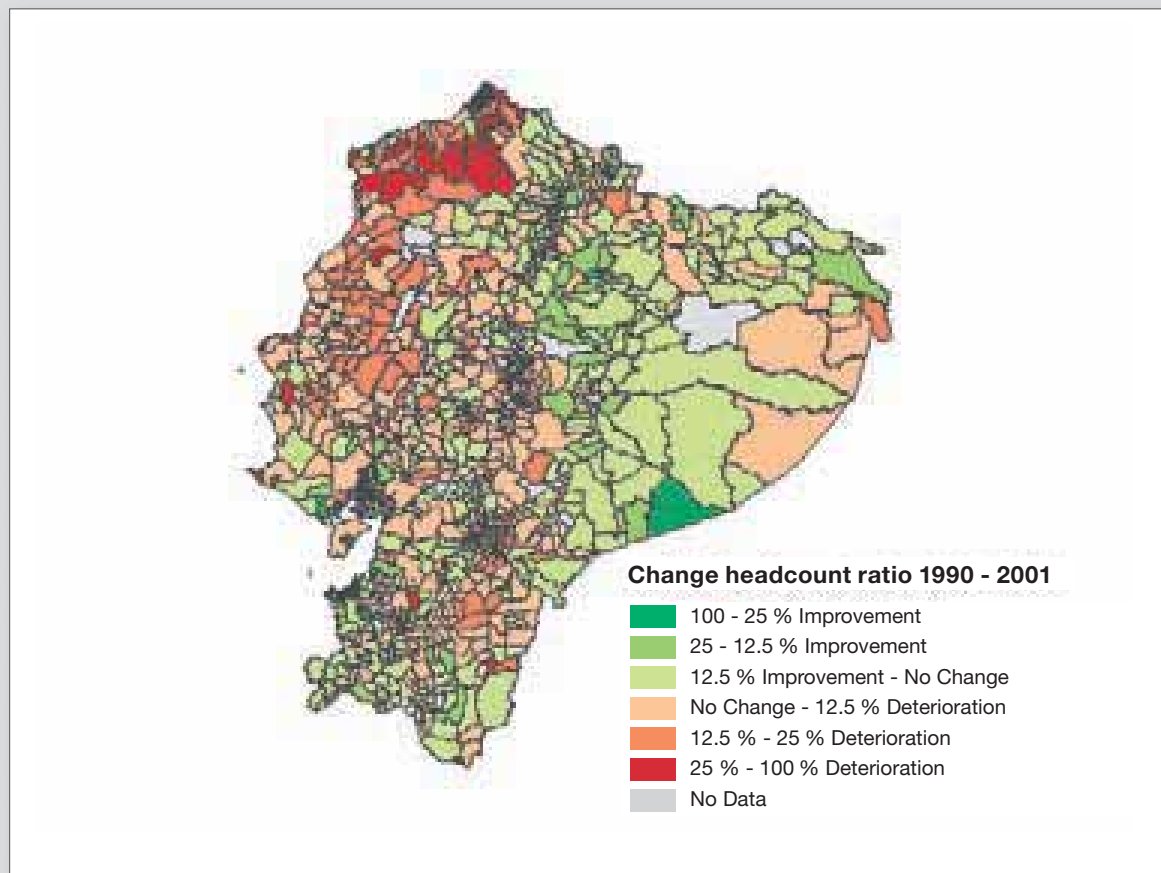
### Map 3: Mexico: Geographical Incidence of Poverty and INDESOL Priority Regions



Source: FAO/UNEP/GRID-Arendal. Poverty Mapping Project, 2004

#### Map 3. MEXICO: Targeting on the Poor of a Social Safety Net Programme

This is a two-layered map. The first layer identifies rural areas with a high incidence of poverty (red areas). These are the priority areas for an integrated services programme called INDESOL. The second layer identifies the rural localities where the programme actually provides services (blue areas). If targeting by this programme were perfect, the two layers should fully cover the same localities: a 100 percent match. The map shows that, although a high percent (83%) of priority localities are serviced by the INDESOL Programme, there are high priority localities that are not covered by the programme (usually referred to as exclusion error or undercoverage) while there are also localities that receive programme services that are not high priority localities (inclusion error or leakage). There is therefore room for targeting by the programme to be improved, because there are localities that are entitled to receive services that are excluded.

**Map 4: Ecuador: Change in Poverty Incidence-1990 & 2001**

Source: FAO/UNEP/GRID-Arendal. Poverty Mapping Project, 2004

**Map 4. ECUADOR: Changes in the Incidence of Poverty**

This map shows in which municipalities the incidence of poverty increased and decreased, respectively, between 2001 and 1990, and by how much percentage-wise. The map thus integrates a time and space dimension. The indicator used is the poverty headcount. According to the map, the municipalities where the incidence of poverty increased substantially are largely located in the North-west of the country. Few areas show substantial poverty reduction, but in many the incidence of poverty remained more or less unchanged. A revision of the country's poverty reduction strategies and policies is called for, to re-allocate poverty reduction resources, and to examine whether government strategies and interventions are adapted to effectively deal with local diversity in the reasons why people are poor.

## SELECTED MAPPING SOFTWARE

### Dynamic Atlas

This is an information management and publishing set of tools that enable the integration of spatial (map), tabular (spreadsheet), and unstructured (document) data and metadata. The software permits the organisation and publishing of information in a way that makes it easy for anyone to access and use. Dynamic Atlas consists of three components:

- Dynamic Maps: viewer for display and query of data.
- Dynamic Knowledgebase: tool to organise datasets.
- Dynamic Web Maps Server: to publish dynamic maps on the Internet.

Dynamic Maps creates and publishes thematic and indicator maps. Dynamic Maps integrates with Microsoft's PowerPoint for easy publishing of the maps, and with Excel for more advanced data analysis and the creation of charts and graphs. Dynamic Atlas is being developed by Spatial Knowledge Engineering Inc.<sup>56</sup> in partnership with FAO.

### KIDS (Key Indicator Data System)

KIDS is an interactive, data collection and visualisation information system initially designed to identify the needy and vulnerable and the causes of their vulnerability, enhance policy design, improve targeting of programmes and other measures, and to monitor progress in achieving food security and poverty reduction goals.

KIDS allows users to collect, store and display and visualise data, maps, raster images, meta-data, reports and links to other data sources. It provides basic spatial and temporal analytical capabilities. Its clipboard function lets users generate maps, tables and graphs and transfer them to their reports and/or presentations. KIDS supports almost all map and data import/export functions and can be linked directly with external data sources as well as providing basic import/export functions. KIDS is fully Internet-enabled but may also operate stand-alone or in a local area network. It is Java based and portable across operating, database and web servers platforms. KIDS source code is available in Open-Source for further development and customisation.

KIDS runs on many different computer platforms (including: Windows, MacOS and Linux) and web server environments (including: IIS, Apache, Tomcat). It may also operate in other database and web server environments. Accessed through a web

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<sup>56</sup> Web address: [www.skeinc.com](http://www.skeinc.com), Contact information: Dr. John Latham (SDRN/ FAO) [John.Latham@fao.org](mailto:John.Latham@fao.org).

browser. No plug-in is required. The system can run on a remote server computer (accessed through Internet or local area network) or directly on the users computer.

The following sites are all based on the KIDS system<sup>57</sup>:

<http://www.asiafivims.net/default.html> <http://www.fao.org/ag/aga/glipha/index.jsp>

<http://www.fao.org/landandwater/agll/agromaps/interactive/index.jsp>

<http://www.fao.org/gtos/tems/>

<http://www.fao.org/ag/agl/agll/nrdb/index.jsp>

<http://www.fao.org/fi/figis/index.jsp>

<http://apps3.fao.org/wiews/>

#### REFERENCE SOURCES:

- ❖ Davis, B. (2003) *Choosing a Method for Poverty Mapping.*, FAO, Rome
- ❖ FAO (continuing) Website intended to promote networking and information exchange on poverty mapping and related issues : <http://www.povertymap.net>
- ❖ GIS (continuing) may be found by accessing the following link:  
<http://www.fao.org/sd/eidirect/gis/Elgis000.htm>
- ❖ Henninger, N. and Snel, M. (2002) *Where are the Poor? Experiences with the Development and Use of Poverty Maps.* Washington DC, World Resources Institute. (<http://population.wri.org>).

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<sup>57</sup> Contact Information: [kids@fao.org](mailto:kids@fao.org) (Information Systems Service, AFIS, FAO)