User's Manual for Building the CBMS Database and Poverty Mapping

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Prepared by the
CBMS Network Coordinating Team
Angelo King Institute for Economic and Business Studies

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I. Introduction

This tutorial contains illustrated steps in preparing the CBMS-NRDB for mapping CBMS indicators. Data encoded using the CSPro-based encoding system was processed using the CBMS StatSim originally developed by the CBMS Network Coordinating Team. The Statsim generates data with specified format ready for import into the CBMS Database.

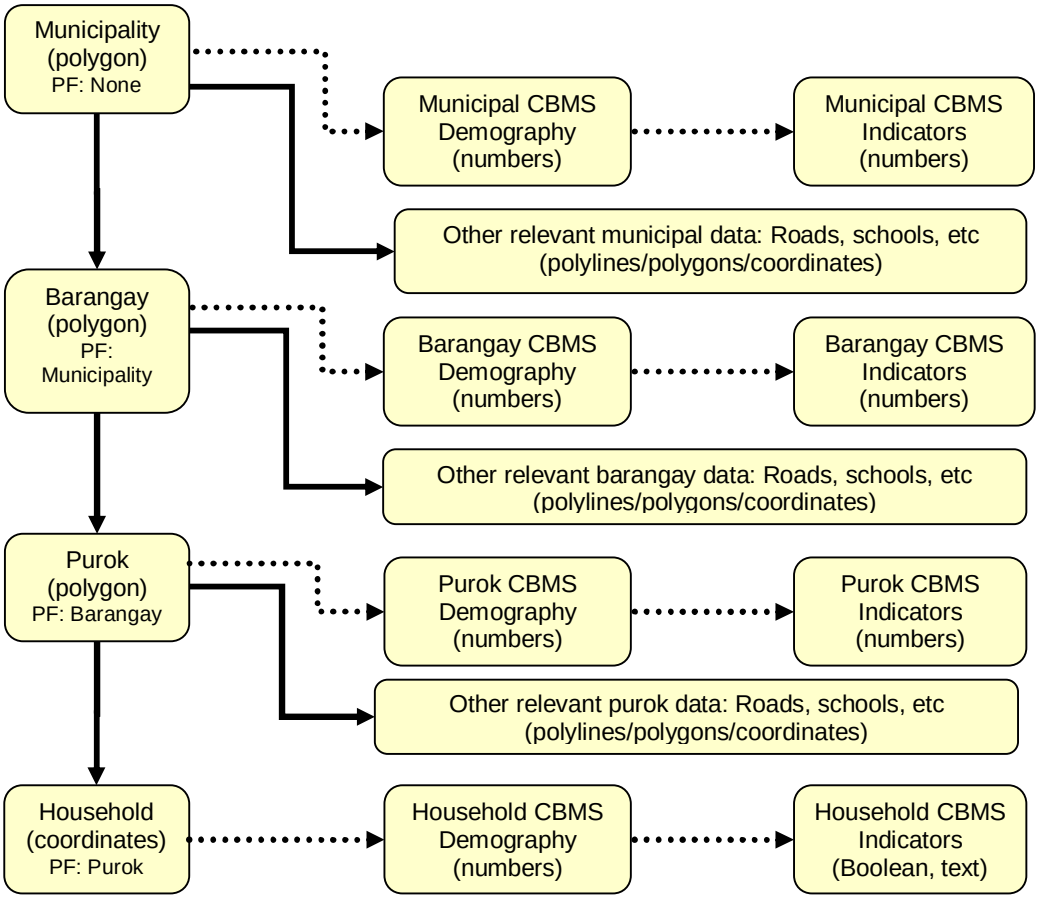
A. Poverty Mapping

What is Poverty Mapping?

Poverty mapping is the spatial representation and analysis of wellbeing and poverty indicators. As part of the CBMS Database, LGUs are able to prepare poverty maps using CBMS data that can show data not just across provinces, municipalities and villages but they are also able to show location of poor households.

B. Data Structure for a Municipal CBMS Database

The data structure of the CBMS-NRDB was customized for the needs of the LGUs implementing CBMS. This structure is hierarchical so relationship of features should be carefully considered.



Hierarchy

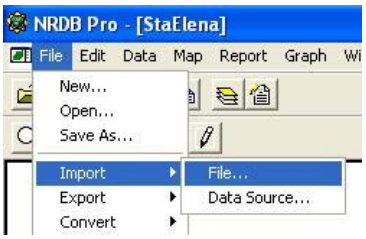
- - - - - - - - One-to-one

Many-to-one

II. Modifying the Data Dictionary to accommodate CBMS data

The CBMS-NRDB data dictionary provided to the municipalities during the training on digitizing needs to be updated to accommodate the data that will be imported into the database. Additional features associated with the different geopolitical levels should be added to house the CBMS data generated by the CBMS Indicator Simulator.

To update the Data Dictionary, From the file menu, select Import, **Import**, **File...**

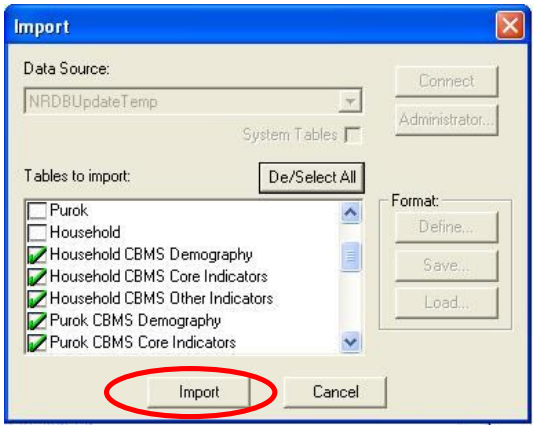


The *Open* dialog is displayed. Select the *MDB file* "NRDBUpdateTemp.mdb" in the folder C:\CBMSDatabase\System\Specs and click on **Open**.

The *Import* dialog will be displayed. Check the box adjacent to the following Features to be updated:

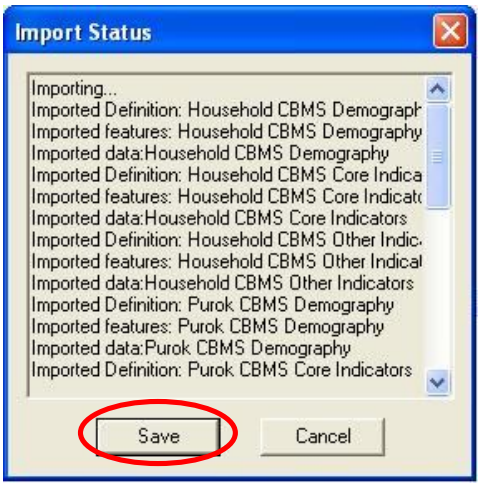
- Household CBMS Demography
- Household CBMS Core Indicators
- Household CBMS Other Indicators
- Purok CBMS Demography
- Purok CBMS Core Indicators
- Purok CBMS Other Indicators
- Barangay CBMS Demography
- Barangay CBMS Core Indicators
- Barangay CBMS Other Indicators
- Municipal CBMS Demography
- Municipal CBMS Core Indicators
- Municipal CBMS Other Indicators
- Provincial CBMS Demography
- Provincial CBMS Core Indicators
- Provincial CBMS Other Indicators

Click the button **Import** to continue.



A window indicating the projection will appear. Click **OK** to continue to start importing the Features.

Click Save to save the imported Features. The CBMS-NRDB is now ready to hold the CBMS data.



Please note that updating the data dictionary should only be done once.

III. Importing CBMS data from CBMS StatSim

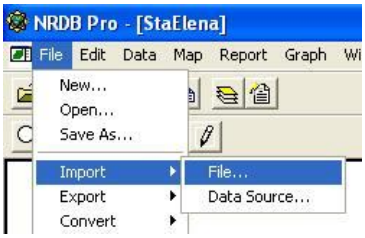
The **CBMS StatSim** generates tables ready for import into the CBMS database. The tables contain CBMS data that has been processed and consolidated at all available geopolitical levels. It is outputted with as a MS Access file with specific format compatible with the specifications of the CBMS-NRDB. The files (*.nri) are located in the folder C:\CBMSDatabase\System\Specs.

The MS Access file that contains the indicators is located in C:\CBMSDatabase\System\Output with file name '**Ind_NRDB.mdb**'. This file contains the tables 'hh_coreind', 'purok_coreind', 'brgy_coreind', 'mun_coreind', 'prov_coreind', and 'regn_coreind' that contain the CBMS core indicators (plus other supplemental indicators) for each geopolitical level.

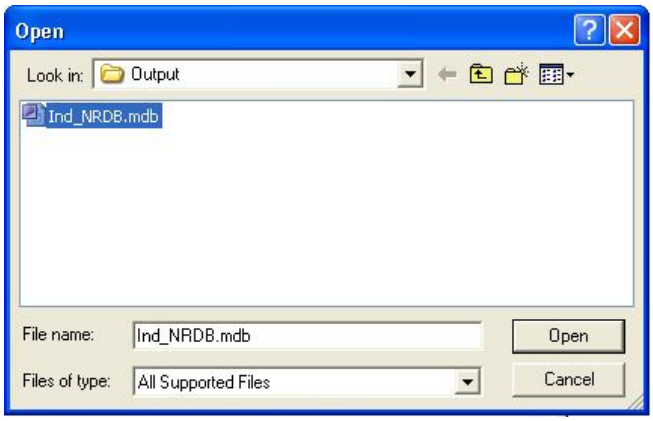
Here are the steps in importing CBMS data:

A. Using NRDB import Format

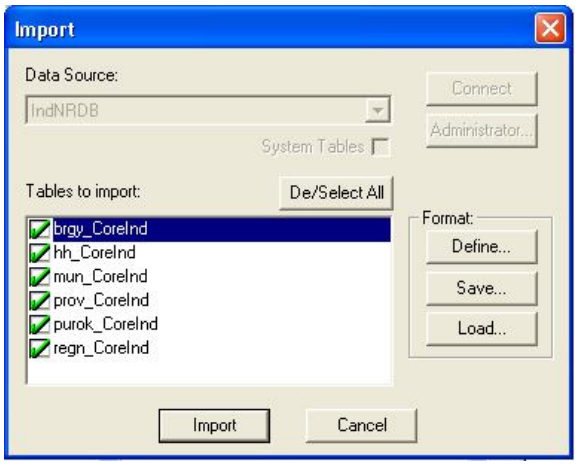
1. From the **File** menu, select **Import**, **File...**



2. The *Open* dialog will be displayed. Select the *MS Access file* "Ind_NRDB.mdb" in the folder C:\CBMSDatabase\System\Output and click on **Open**.

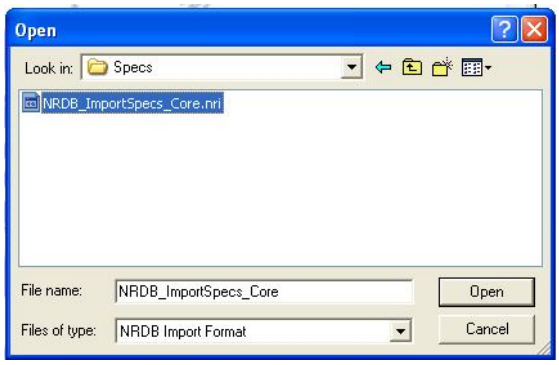


3. The *Import* dialog will be displayed. It would show all the tables contained in the file. The dialog will initially check all the tables to prepare for importing.

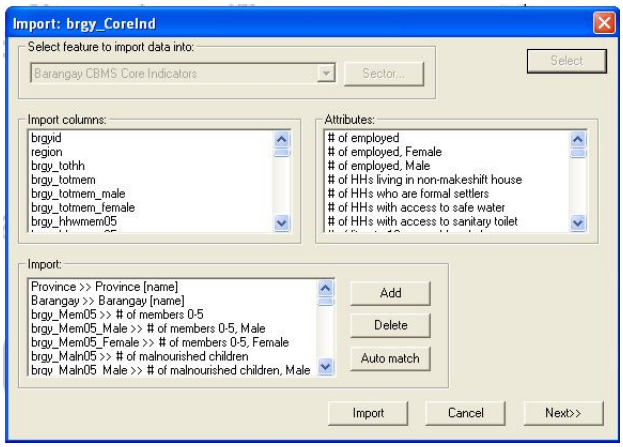


Tables with common appendage “CoreInd” are generated by the Simulator ready for import into the CBMS-NRDB. This contains the data processed and outputted at the different geopolitical levels (household, purok, barangay, municipal and provincial).

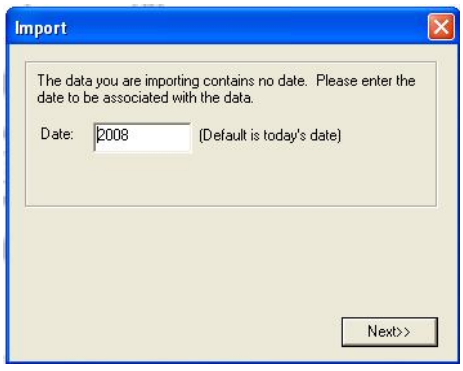
4. Click the **Load** button and browse the folder C:\CBMSDatabase\System\Specs and select the file NRDB_ImportSpecs_Core.nri. Click **Open** button. The nri file is the NRDB import format that saves the matching of the Import Columns and Attributes added in the last window.



When the user highlights a specific table and click the button **Define**, the import columns and attributes that were matched would be displayed. To go back to the previous table, click **Next**.



5. A window will appear asking for the date. When all the names have been matched, the Import window below will appear asking for the user to encode the date. Default date is the current date. Click the button Next to start the importing data.



6. After all the data has been imported, the Import Status window will appear. Click on the button **Save** to save the imported file.

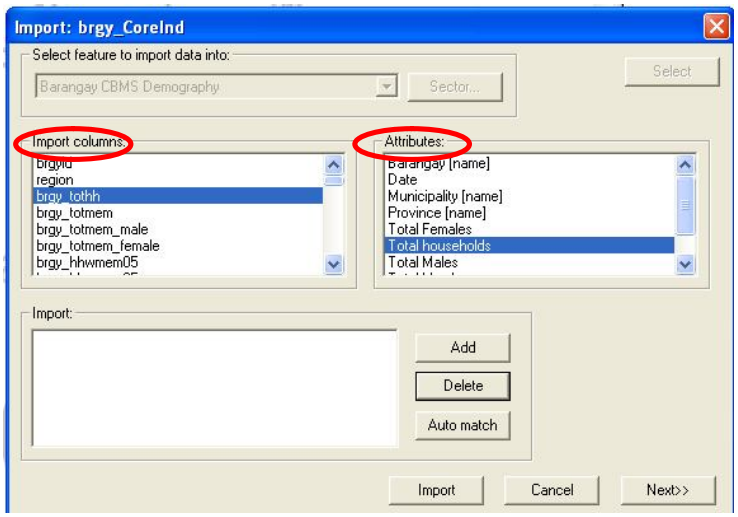
After importing the data, you are now ready to use the data for maps, reports and graphs.

B. Importing data not included in the NRDB import format

1. Repeat steps in III.A.1 to 3.

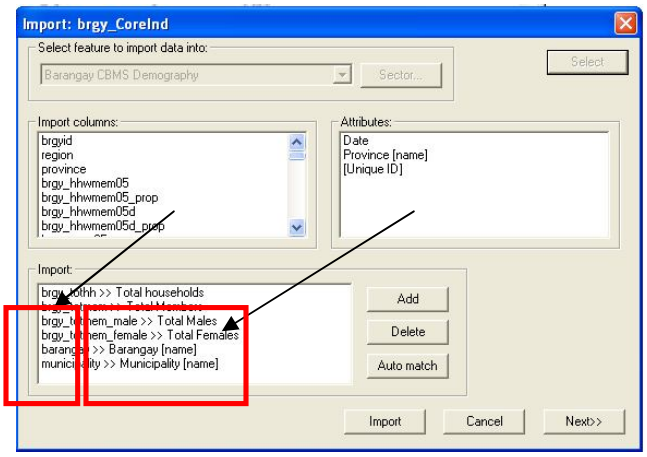
2. Select a specific table to be imported (example, import demographic data from the Brgy_CoreInd table), then click the button **Define**. The *Select feature* dialog will be displayed. Click the pull-down list and select the Feature where the table must be imported, in this case, "Barangay CBMS Demography". Click the button **Select**.

The Other half of the Import window will appear.



3. The *Import Columns* contains the names of the headings (variable name) found in the table from the MS Access file. The *Attributes* contains the attributes belonging to *Barangay CBMS Demography* as defined in the data dictionary of the database.

4. Highlight the matching variables in the *Import Columns* and *Attributes.* For example, the variable *brgy_tothh* is matched with the *Total Households* in the Attributes box. Click the button **Add** to add the matched import column and attribute items to the *Import* box.



The following variables correspond:

Import Columns	Attributes
brgy_tothh	Total household
brgy_totmem	Total Members
brgy_totmem_male	Total Males
brgy_totmem_female	Total Females
barangay	Barangay [name]
Municipality	Municipality [name]

5. Click the button next and select the next table (example: Purok_CoreInd) and click Purok CBMS Demography to import data into. Repeat steps 1-4 with the following specifications:

Import Columns	Attributes
PurokName	Purok [name]
Barangay	Barangay [name]
Municipality	Municipalities [name]
Purok_TotHH	Total Households
Purok_TotMem	Total Members
Purok_TotMem_Male	Total Males
Purok_ TotMem_Female	Total Females

Do the same for the other tables such as:

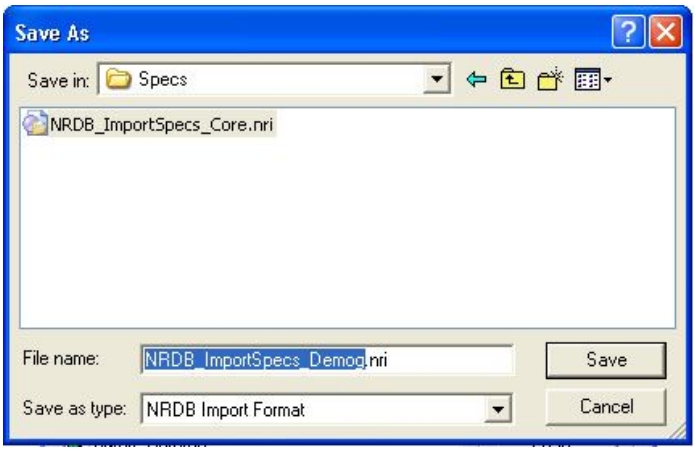
hh_CoreInd – import data into Household CBMS Demography

Import Columns	Attributes
Barangay	Barangay [name]
Municipality	Municipalities [name]
Brgy_TotHH	Total Households
Brgy _TotMem	Total Members
Brgy _TotMale	Total Males
Brgy _TotFemale	Total Females

mun_CoreInd – import data into Municipal CBMS Demography

Import Columns	Attributes
Province	Province [name]
Municipality	Municipalities [name]
Mun_TotHH	Total Households
Mun _TotMem	Total Members
Mun _TotMale	Total Males
Mun _TotFemale	Total Females

6. After all the needed variables have been correctly matched, the user has the option to save the import specifications as NRDB Import Format (*.nri). To do this, click the button **Next>>** in the Import window and another Import window will appear. Click the button **Save**. Save as NRDB_ImportSpecs_Demog.nri in the folder C:\CBMSDatabase\System\Specs.



Note: NRDB Import Specifications support multiple feature-table specification; hence a demography import specification can handle matching of columns for household, purok, etc.

To call the import format in future activities, click on Load to get the import format.

7. Click the button **Import** to start the import process. If all the names of the household, purok, barangay and municipality matches, the user will be prompted to enter the date. Otherwise, a window "Select Feature Name" will open.

For each feature name (e.g. purok, household) found file being imported that does not match one already defined in the database the *Select Feature Name* dialog box is displayed.

The options are:

Create – create a new name. The **Add Name** will prompt you to type the name of the selected feature. The default name of the feature is the name that you used and save that polygon while digitizing.

Create All– automatically create names for all, using the default names, do not prompt.

Select - if the spelling is different then the *CBMS-NRDB* will display the closest match. Click on the *Select* button to accept the match or select one from the list.

Skip – Do not import this feature.

8. Follow steps III.A.5 to 6

Below is a summary table for the tables in the Access file to be imported, features where data will be placed and file import format that should be used:

table to be imported	***Feature to hold data***
hh_coreind	Household CBMS Demography*
	Household CBMS Core Indicators**
	Household CBMS Other Indicators*
purok_coreind	Purok CBMS Demography*
	Purok CBMS Core Indicators**
	Purok CBMS Other Indicators*
brgy_coreind	Barangay CBMS Demography*
	Barangay CBMS Core Indicators**
	Barangay CBMS Other Indicators*
mun_coreind	Municipal CBMS Demography*
	Municipal CBMS Core Indicators**
	Municipal CBMS Other Indicators*

*Import format is NOT provided
**Import format is NRDB_ImportSpecs_Core.nri

IV. Poverty Mapping and CBMS Data Results

A. Adding layers for the CBMS core indicators

1. Click on Map layers and click the button Add.

2. At the barangay level, select the following:

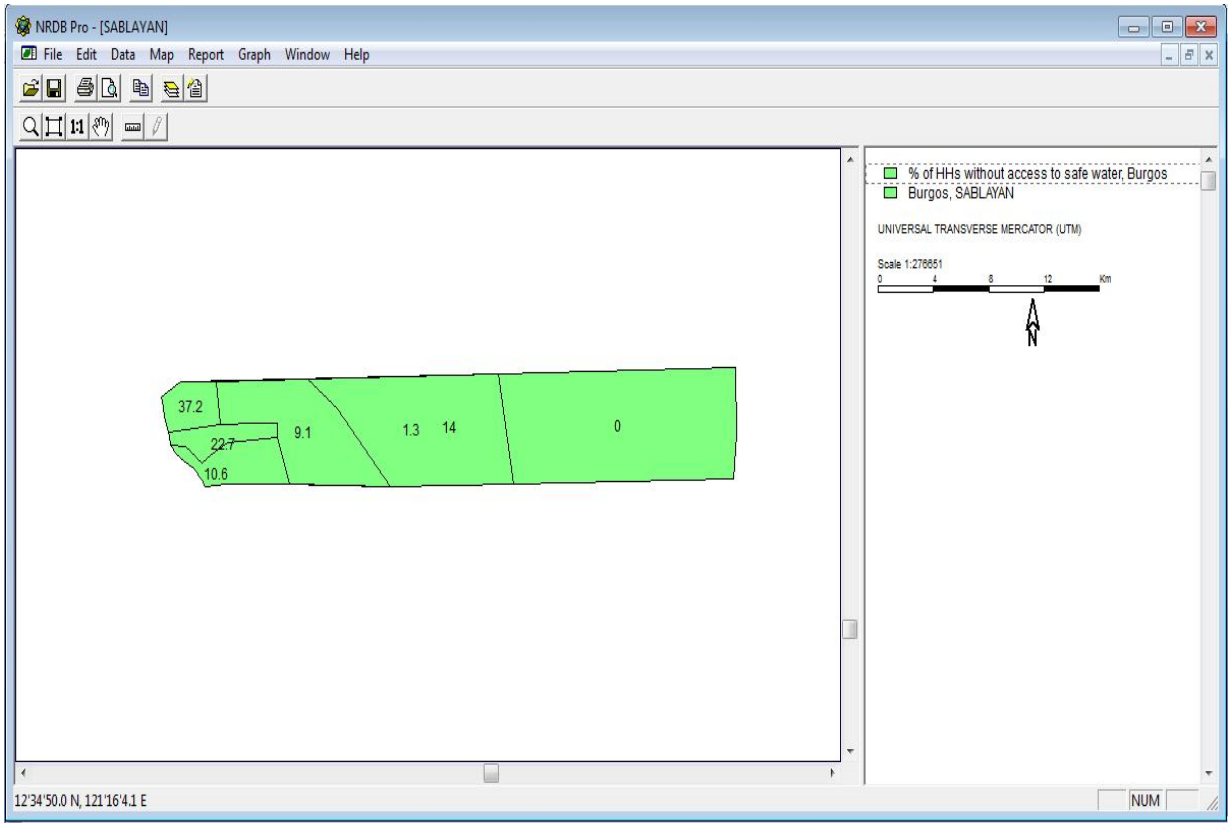
   - Under *Feature*, select **Barangay CBMS Core Indicators.**
   - Under *Name*, select the name of your barangay (ex. **Brgy. Burgos**).
   - Under *Display*, select **Barangay boundaries (polylines/polygons)**.
   - Under *Label*, select **% of HHs without access to safe water.**

   Click OK then Click Close to close the map layer window. The map will be displayed.

3. At the purok-level, select the following:

   - Under *Feature*, select **Purok CBMS Core Indicators.**
   - Under *Name*, select the purok names of your barangay.
   - Under *Display*, select **Purok boundaries (polylines/polygons)**.
   - Under *Label*, select **% of HHs without access to safe water.**

   Click OK then Click Close to close the map layer window. The map will be displayed.



4. At the household-level, select the following:

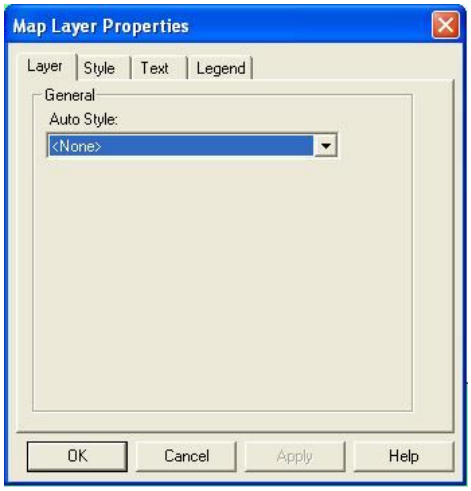
   - Under *Feature*, select **Household CBMS Core Indicators.**
   - Under *Name*, select the id of all households in all puroks in the barangay.
   - Under *Display*, select **Household location (coordinates)**.
   - Under *Label*, select **HHs without access to safe water.**

   Click OK then Click Close to close the map layer window. The map will be displayed.

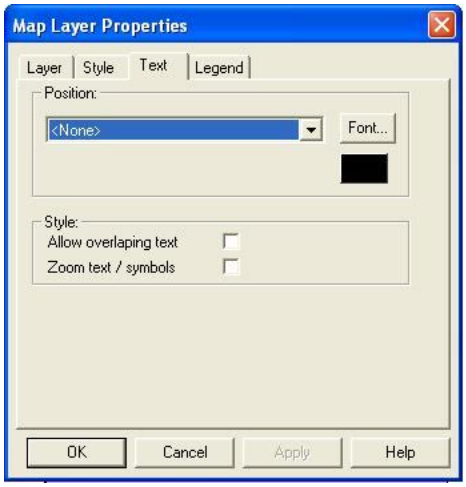
B. Map Layer Properties

The Map Layer Properties has four tabs:

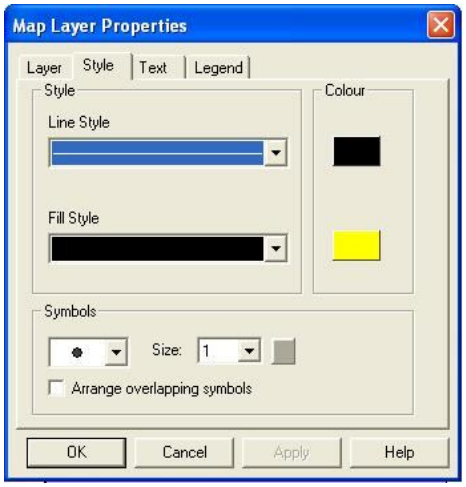
Layer: For data with TYPE Number, use Color Range while for TYPE Boolean and Text data, use Separate Colour. A space is provided so that the default description can be revised.



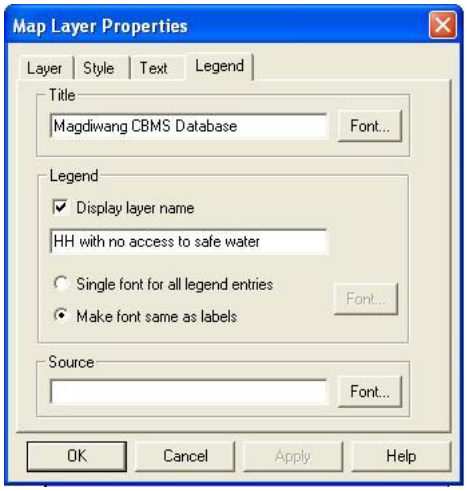
Text: Select "None" from the pulldown list so that the labels will not appear in the map.



Style: Modify the Line and Fill Styles for polygons and symbols for coordinates (dots).



Legend: Use Title "<Municipality> CBMS" for all maps.



C. Color Range

As the objective in CBMS poverty mapping is to show the problematic areas as compared to adjacent provinces, municipalities, villages or subvillages, the standard CBMS poverty maps are divided into 4 ranges. To determine the ranges in mapping the CBMS Core Indicators:

1. Know the regional/provincial/municipal/barangay data

2. Sort the data from lowest to highest

3. To determine the cut-offs, the formula below is used:

1st Range:	A: 0	B: (Brgy data-min/2)+min
2nd Range:	C: B	D: Brgy data
3rd Range:	E: Brgy data	F: (max-Brgy data/2)+Brgy data
4th Range:	G: F	H: 100

a. Minimum for first range is always zero (0) while the maximum for the fourth range is always 100.

b. Brgy data is the barangay data for the specific indicator. This could be regional, provincial or municipal data depending on the geopolitical level that you will map.

c. Min and Max refer to the lowest and highest data

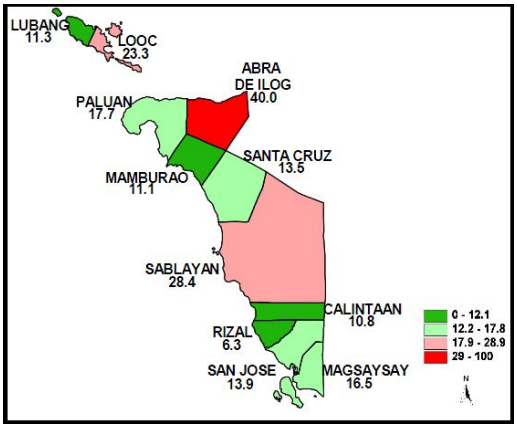
D. Color Scheme

1. Regional, and provincial maps use a green and red color scheme.

Green-colored areas represent data that are above the regional/provincial/ municipal average. *Light Green* is used in mapping data just above the regional/provincial/ municipal average data while a darker shade of *Green* is used for data that is significantly above the regional/provincial/ municipal average data. On the other hand, *Pink* and *Red* are used for data that are below and significantly below the average.

Below is an example of this scheme on mapping the Proportion of households without access to safe water for Province of Occidental Mindoro. The provincial average for this indicator is 17.8%.

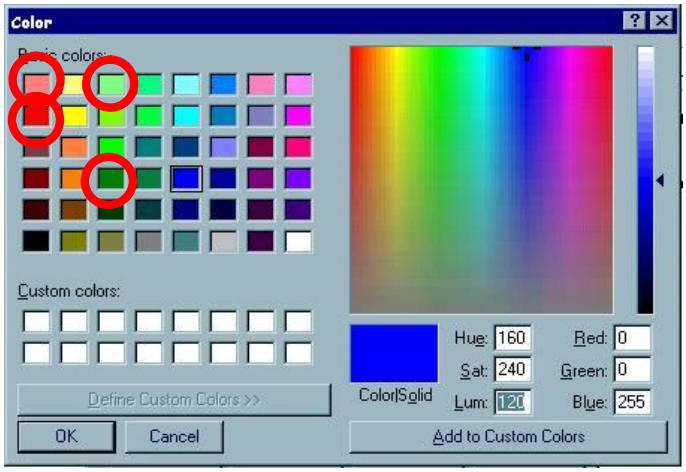
Map 1. Proportion of households without access to safe water, by municipality, 2009-2011



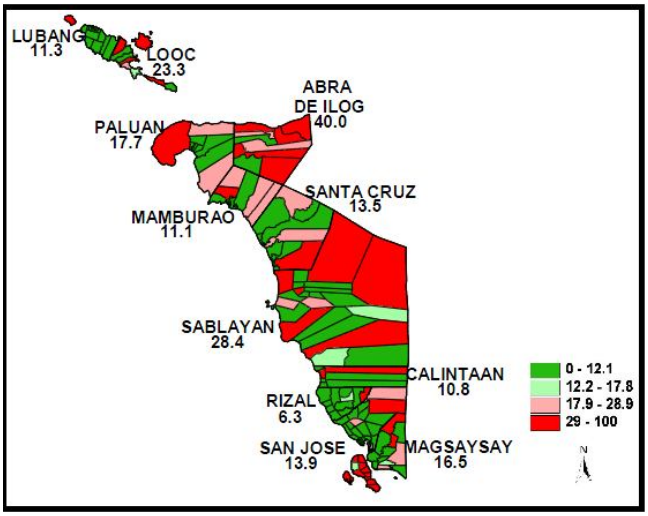
Source: CBMS Census, 2009-2011

For this example, the provincial average is used to distinguish between shades of green or red. In this example, the ranges used are

	0 - 12.1	Significantly below average
	12.2 - 17.8	Below average
	17.9 - 28.9	Above average
	29.0 - 100	Significantly above average



Map 2. Proportion of households without access to safe water, by barangay, 2009-2011

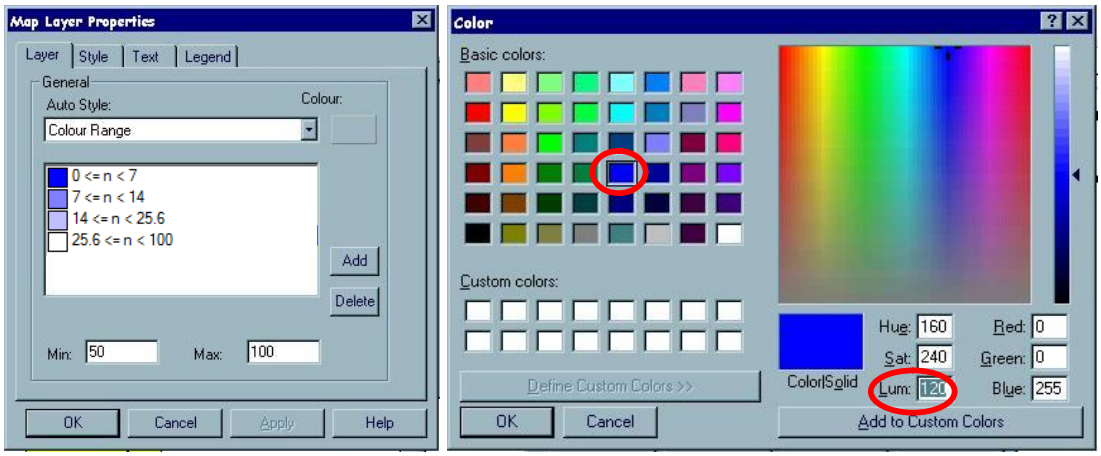


Source: CBMS Census, 2009-2011

The same color scheme is used at the municipal and barangay levels using available data.

2. Purok level

At the purok level, a different color scheme is used. “Shades of blue” color scheme is used in mapping purok-level indicators. Four shades of blue are used to differentiate data at the purok-levels. ***The darker the shade of blue, the better the performance of the purok.***



To specify the color scheme:

a. Select the Layer tab, click on the drop-down menu and select Colour Range.

b. Follow the steps discussed earlier in determining the ranges.

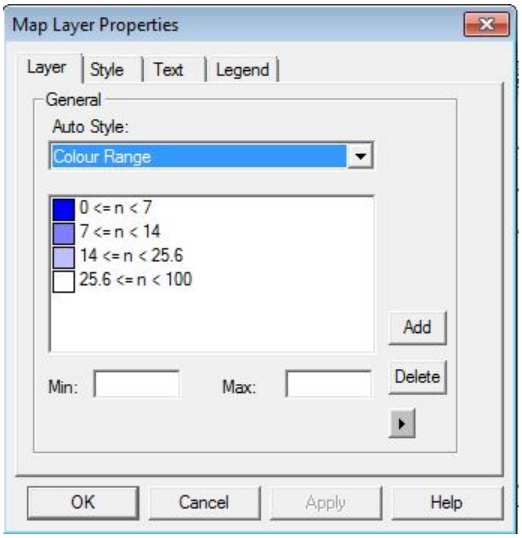
c. To add a range, put the minimum value in the box beside Min: and the maximum value in the box beside Max: and click Add for every range.

d. Select the Layer tab, click on the drop-down menu and select Colour Range. You can now set your colour ranges. *(Note: the following ranges may only apply in the case of Brgy. Burgos, Sablayan, Occidental Mindoro).*

e. Next, double-click on each of the boxes adjacent to the ranges to apply our color scheme

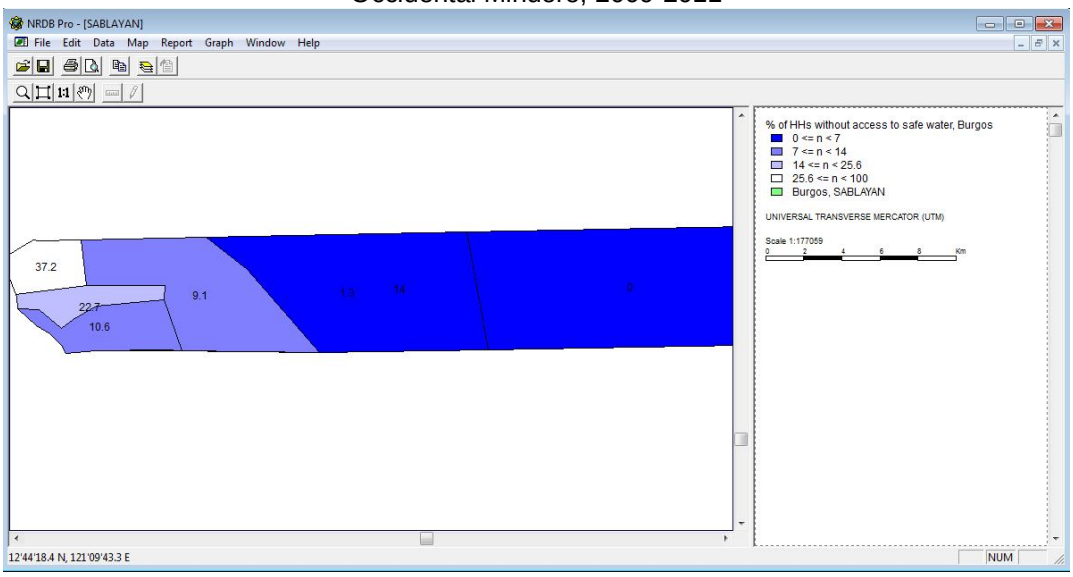
Hue: 160
Saturation: 240

- 1st Range – Lumens: 120
- 2nd Range – Lumens: 180
- 3rd Range – Lumens: 210
- 4th Range – Lumens: 240



f. The following map will be displayed

Map 3. Proportion of households without access to safe water, by purok, Brgy. Burgos, Sablayan, Occidental Mindoro, 2009-2011



Source: CBMS Census, 2009-2011

3. Household-level

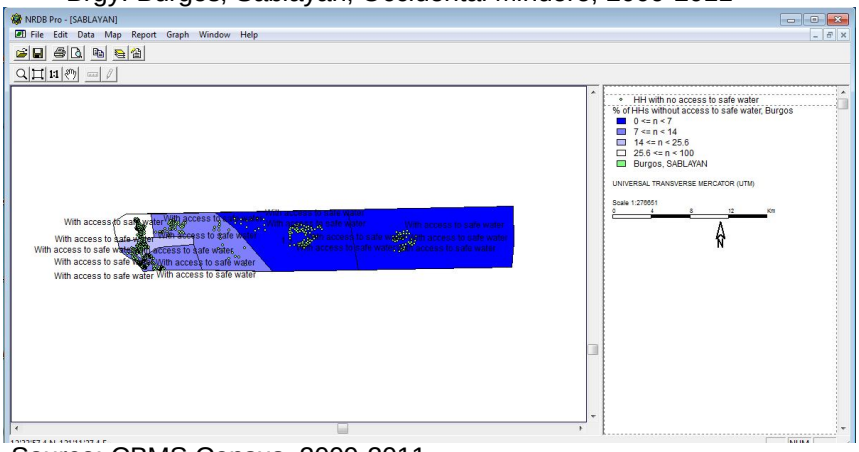
Household dots or coordinates use the green and red color scheme. Green represents positive response for a particular indicator while red denotes the negative. An example of an indicator is shown below.

To map the CBMS core indicators at the household-level, here are the steps:

a. Add another layer, with the following specifications:
   i. Under *Feature,* select **Household CBMS Core Indicators.**
   ii. Under *Name,* select only the **Household IDs** in the barangay currently being used.
   iii. Under *Display*, select **Household Location (coordinates).**
   iv. Under *Label*, select **HH with no access to safe water**.

b. Click **OK**. The following map will now be displayed

Map 4. Proportion and location of households without access to safe water, by purok, Brgy. Burgos, Sablayan, Occidental Mindoro, 2009-2011



Source: CBMS Census, 2009-2011

c. Double-click on the map layer “HH with no access to safe water and the map layer properties will now be displayed.

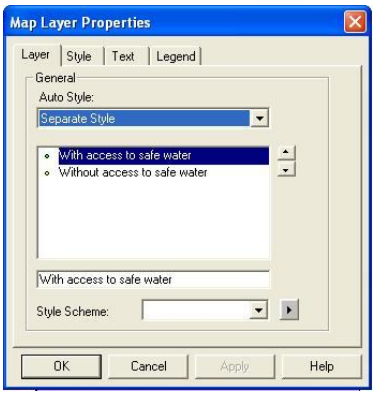
d. Go to the **Text** tab, click on the drop down menu and select **None**. Click **OK**.

e. In order to show which households have access to safe water and which ones have no access, we will adopt another color scheme.

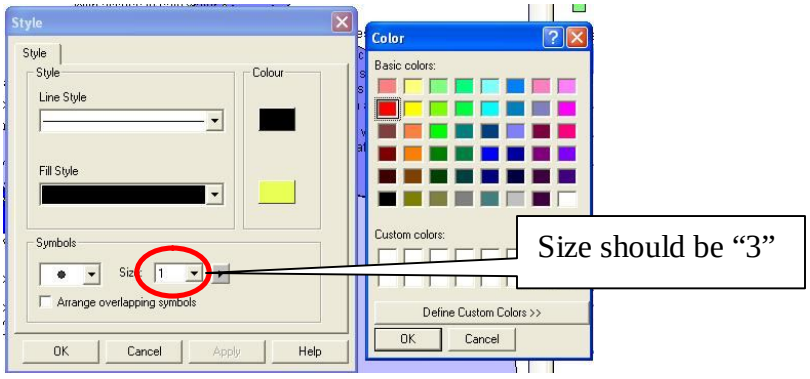
- **Green Dots** ● will represent households **with** access to safe water while
- **Red Dots** ● will represent households **without** access to safe water.

f. The properties of the map layer will now be displayed. Select the **Layer** tab and then select **Separate Style.**

g. Next, double click on the dot adjacent to the text: **With access to safe water**. Under Fill Style, select the **green** color. Click **OK**. The following map will now be displayed.



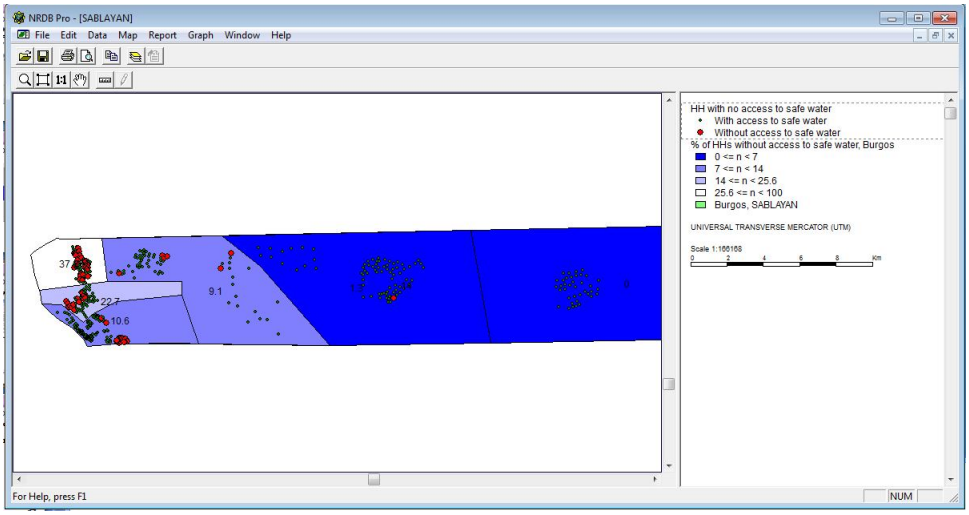
h. Double click on the dot adjacent to the text: **Without access to safe water**. Under Fill Style, select the **red** color. To emphasize the location of the households, increase the size of the household dots to 3.



i. In the Text tab, choose <None> to remove the labels in the map then click **OK** and click **Close**.

j. To show the name of the purok, add another layer “Purok”. In the style tab, choose <None> in the Fill Style. Click **OK** and click **Close.** Here is the prepared poverty map on proportion of households without access to safe water supply in Brgy. Burgos, Sablayan.

Map 5. Proportion and location of households without access to safe water, by purok, Brgy. Burgos, Sablayan, Occidental Mindoro, 2009-2011



Source: CBMS Census, 2009-2011

The map layouts can be saved to avoid repetition of specifications in the properties of the map layers. Save the layout as *.nrm file by clicking File, Save As… After closing the program, the layout can be opened again using the saved nrm file.

V. Copying the output map to other programs

From the menu bar, click Edit, Copy… to copy the map view. Go to the desired program (i.e. powerpoint file or word document) and right-click, paste… to paste the map. To copy the map layer, highlight that area and click Edit, Copy… and paste it to the desired file.

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THE CBMS NETWORK COORDINATING TEAM

DR. CELIA M. REYES
CBMS Network Leader

ANNE BERNADETTE E. MANDAP
JASMINDA A. QUILITIS
MARSMATH A. BARIS, JR
ALELLIE B. SOBREVIÑAS
JEREMY L. DE JESUS
ERICA PAULA S. SIOSON
NOVEE LOR C. LEYSO
STEFFIE JOI I. CALUBAYAN
Research Staff

Inquiries regarding this CBMS work may be sent to:

CBMS Network Coordinating Team
Angelo King Institute for Economic and Business Studies
10th Floor Angelo King International Center
Estrada Corner Arellano Avenue, Malate, Manila, Philippines 1004
Tel. No.: (632) 5262067; (632)524-8888 loc 274
Fax No.: (632) 5262067
E-mail: cbms@benilde.edu.ph
cbms.net@gmail.com
Website: www.pep-net.org