

# HEALTH GIS IN CORE GROUP NEPAL

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## ABSTRACT:

The paper describes about the implementation of GIS/RS as one of the monitoring, decision-making and Documentation making Tool. CORE implemented GIS as a spatial decision making tool from late 2003 and continuing in 3rd year. With a limited resource in terms of manpower, cost and other resources also it is able to manage Health GIS by providing training to various partners' organization, providing help and support in technical part. With the GPS coupled with GIS, various Analysis of Health Service Adequacy and accessibility mapping were performed. Linking the tabular database with spatial data and classifying according to needs has attracted the Health Professionals and well conveyed information through such visual means; other wise tabular data would have hidden only in table format. Hence, CORE partners are strongly motivated in applying it. Various organizations has welcomed CORE group to expand this technology in Health as well as other sectors in broad. Over all the paper gives a scenario of how Health GIS has been effective in CORE Group and in its implementing districts.

**KEY WORDS:** CORE Group, CARE Nepal, GIS/RS, Health GIS

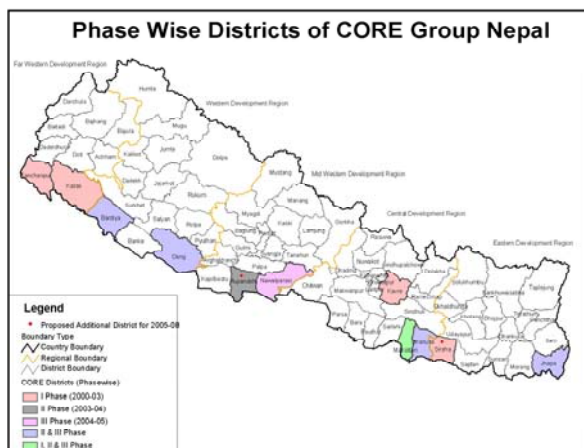
## Introduction

The Child Survival Collaborations and Resources (CORE) Group, Inc., is a network of more than 35 non-government U.S. organizations that operate globally. The CORE Group Nepal was a consortium of five organizations ADRA (Adventist Development and Relief Agency International), CARE International In Nepal; PLAN Nepal; SCUS (Save The Children US); and World Vision Nepal from 2000-2003 but from 2004 ADRA has left the consortium and only SCUS and CARE are the implementing organizations where as rest are only supporting ones.

From 2000 The CORE Group Nepal began its program in Nepal with the objective to promote Child Health and help in Polio Eradication Initiatives. From 2000 five PVO's have been working in different districts of Nepal in fulfilling the CORE Objectives in addition to their other regular program. The CORE working districts and dates are shown in Map No.1.

Eradication Programme but also in other Child health programs like CBIMC I (Community Based Integrated Management of Childhood Illness), S/NID (Supplementary/ National Immunization Day), various immunization programs, collaborating with various governmental/Non-Governmental Organizations and counterpart to achieve the objectives. In late 2003 with the support from CORE Headquarter and Regional Office as well as ESRI the Leader in GIS Software Technology provided six copies of ArcView Software to CORE PVO's, then after CORE Group Nepal began its new initiative in introducing Geographic Information System and Global Positioning System as a monitoring, Supervision, Data Analysis, as well as decision making tool, collectively named as Health GIS. The main aim of introducing the Health GIS was to develop the Spatial data of the CORE working districts and regular updating, train PVO's staff, related stakeholders, government counterpart staff, in using GIS as one of the analyzing tools and help to strengthen the HMIS (Health Management Information) System.

Various organizations in Nepal have already been applying GIS in various fields like Natural Resource Management, Watershed Management, Urban Planning, Mapping but only few in Health Sectors. In such situation CORE began its initiative in implementing and using Health GIS as one of the analyzing tool. In the absence of huge resource, manpower, latest software,



Map No.1. Phase Wise Districts of CORE Group Nepal

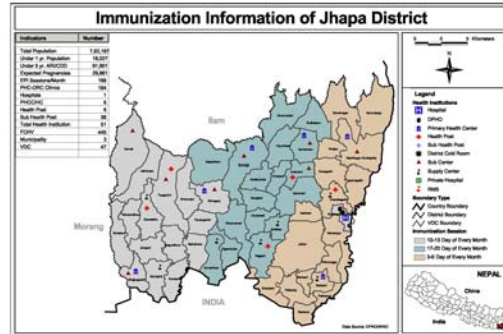
with only ArcView GIS software we are able to continue Health GIS in our third year. During these years we have successfully developed various spatial data like District/VDC/Municipalities boundary of CORE district. We are also in the process of developing detail database from topographic 1:25000 base maps, with the help of GPS, collecting Health facilities (Hospitals, HP, SHP, ORC Clinic, Polio Booth, FCHV's, TBA's house etc) location, settlements and many more to do. Within these years we also trained various PVO's staff, government staff, D(P)HO staff, a six days training in theoretical as well as practical knowledge using ArcView GIS software in the first year and a 3 days refresher training for the same group with few additional staff in the second year. Cross visit to CORE India in sharing and networking in the use and application of GIS was also performed. Not only in Nepal but in India too its use has taken a key role.

As CORE is not implementing GIS in large scale, as its main purpose is not to develop GIS data and manpower but its use in decision-making, monitoring tool, information dissemination through visual maps is the main purpose. Before GIS was implemented from 2000- 2003, PVO's were only disseminating information and data through text reports, tables, charts but after implementing it, they have been actively using GIS in joining huge attribute data as well as analyzing various spatial relations and producing achievements in colourful visual maps.

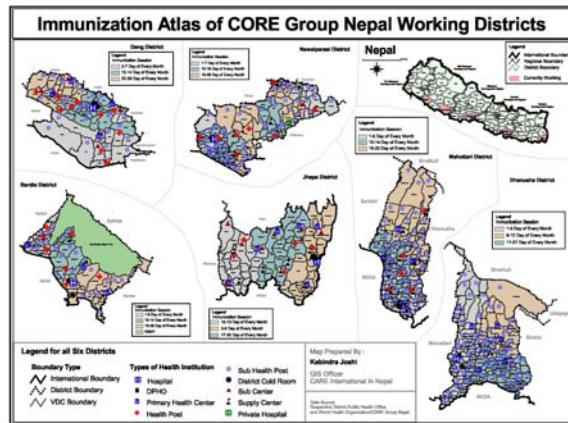
**Immunization Atlas**

Recently CORE Group Nepal in collaboration with WHO Nepal and Child Health Division prepared an immunization atlas for 75 districts of Nepal using GIS technology. The purpose of this atlas was to provide detail information on the immunization activities. As show in Map No. 2 & 3 "Immunization atlas of Jhapa district" it shows in which date immunization session runs in which vdc's, various health institutions have also shown so that health professionals working in immunization sector will have the details just looking at a single piece of map. A single map is printed in a single paper but its worth and its importance otherwise if the details has to be obtained from tabular database then more than 5 pages would have to be read out. Hence organizations have been attracted towards GIS technology for such works and detail analysis part.

Immunization atlas of one of the districts of CORE Group Working districts is as shown in below Map No.2 & 3



Map No.2.Immunization Atlas of Jhapa District



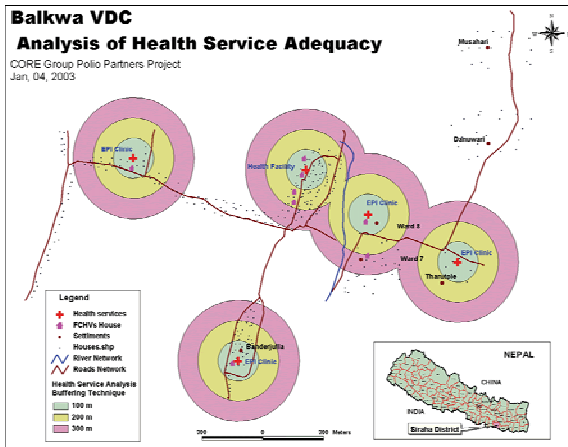
Map No.3.Immunization Atlas of CORE Group Working Districts District

**GIS coupled with GPS can be used to mapping health services and its assessment**

The public and NGO health workers often develop and work on social map for micro planning of routine health service delivery and national immunization campaigns. The maps drawn are a sketch on paper and do not show the relative position of population and health service centre on scale. GIS and Global Positioning System (GPS) can be used to develop social and health service maps, which is geographically scaled and positioned. The handheld GPS can draw paths and measure geographic positions (longitude and latitude) of points. The figure shown below is health service map of Balkawa VDC of Siraha district developed by The Save the Children US/CORE. The map gives scientific data on roads, locations of health services and workers and relationship with population and health service centres.

For so much information, it was one-day work for a skilled person on a motorbike with the help of local health worker and it takes additional half-day work in computer to develop the GIS map.

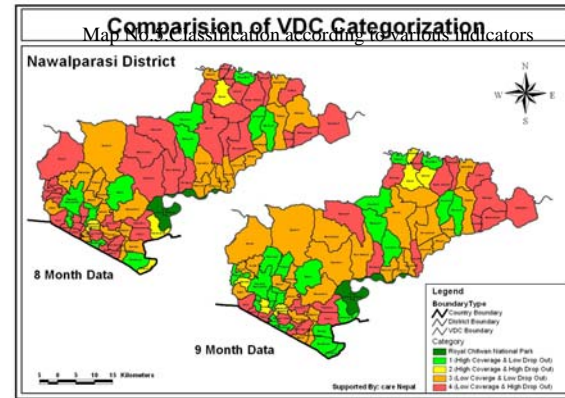
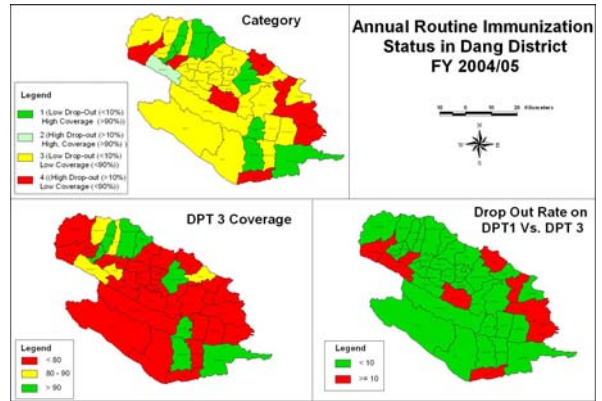
GIS is powerful to see how the available health service centre is related with the population it is required to serve. An example of Balkawa is shown in Map 4. Supposing each health clinic serves population contained in xx radial distance, GIS permits analysis of if some population is inadequately served. Rings (buffers) can be made to examine this relationship. Three rings are drawn one for each health clinic. It is visible that population living northeast is relatively far from any available health clinics. There is also not a designated health volunteer for this population.



Map No.4. Classification according to various indicators

### Use of GIS in Coverage Analysis

Through GIS huge database can be linked/joined and be classified according to the user needs, easily identify the strongest and the weakest pockets without studying data table or reports. Thus GIS has given some relief to decision makers and PVO staff in analyzing their data by visual means. Also they are able to produce maps of different period according to the respective time data and analyze trend, find out the changes based on single and multi criteria/indicators whether the better pockets has been changed to worse or vice versa or remained the same as shown in Map No.5 & 6.



Map No.6. Classification of vdc's according to DPT

As the work of GIS is not only to classify data on various indicator and produce colourful maps but also helps in solving various problems related to location analysis, where and How far is the Health Post from the current position or from a certain point, finding the shortest route between two location during emergency, finding the various facilities around from a point, prepare 3D modelling to view a real Scenario of the area and find out the problems, solution to improve the health status. Such problem solving facility in GIS has attracted not only people of disciplines like Geographers, Foresters, Planners, but its use and advantages has attracted people of various disciplines in social, cultural and religious sectors too.

### Capacity Development

The objective of CORE is to strengthen and promote the technical expertise to PVO staff and its counter part organization. In these two years we have provided GIS training to staff from organizations like HMIS Section, WHO Staff, our own PVO staff. From them the use of this technology has been initiated and used in reporting, monitoring and evaluation purpose.

### Some Activities in Field Level

#### Is GIS worth investment?

Yes, the benefits outweigh the initial cost of venturing GIS in organization. The computer system that the

organizations have for every day use is sufficient to work for normal GIS application. The training on GIS can be easily achieved and due to the cost of hardware is drastically going down in global market, it has become easier for organizations to buy computers and its peripherals. The only thing is for the price of software and its one time investment and should think about preparing the quality and professional maps for analysis, better result that eventually in long run reduces the cost of preparing maps manually.

### **Problems & Constraints:**

Since updating part is very important in spatial data management, it is not easy and fast as updating of attribute data. Updating can be easily done through the help of Satellite image geo-referenced to the world coordinate system but to obtain as well as purchasing of satellite data is costly. Secondly, though the price of hardware has gone down but the price of software is going pretty high. Still from various discipline its use and advantage has not been taken positively due to its cost in maintaining the database and regular update of software.

### **Summary and conclusion**

GIS and maps are valuable in program management, analysis and for result oriented outputs. It provides excellent means of analyzing epidemiological data, revealing trends, dependencies and inter-relationships that would otherwise remain hidden in data shown only in tabular format. GIS is not a decision making tool, it's a tool to help program managers make decision. We do not work for GIS, GIS works for us. Program managers, supervisors can easily use it and start using as soon as possible for early outputs through GIS Technology.

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