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# Increasing accessibility of NFMA data for decision-makers and other users

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# National Forest Monitoring and Assessment

1. Primarily centralized focus and for strategic planning
2. Partly data can be used also elsewhere, but needs some further work
3. NFMAs are many times mixed with management inventories, which bring large expectations for forest data users
4. Added value products could be developed with specific partners
5. Data dissemination normally not well done





# Stakeholders and beneficiaries

## 1. Direct and immediate stakeholder of data (CORE FRA)

- Public sector Policy and decision makers; at the local, regional, as well as national level
- Foresters in regional level; The biometric models and methodological finding can be used in preparing operational management plans.
- The international community; and international commitments require reliable environmental reporting practice;
- Public audience; Basic statistics and maps are needed for public use;

## 2. Utilising indirectly the products and can utilised part of results (OPTIONAL FRA)

- Forest-dependent villagers, indigenous communities, community forest user groups;
- Foresters in local management level;
- Cross-sectoral users;
- NGOs, Community Based Organizations(CBOs) and grass roots organizations;
- Universities, research and training institutes;
- Private sector companies; Donor organizations



# Planning of NFMA procedures and activities

1. Needs analysis, province/central level
2. Improved data collection for lower level data
3. Standardization process is first step to institutionalize new procedures. Links to other datasets
4. Detailed technical planning and implementation strategy
5. Forest Sector IT Portal, data dissemination
6. Training at all levels

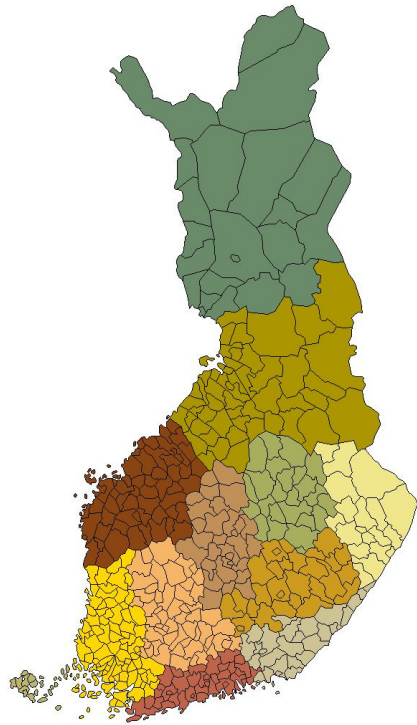


## Issues in pipe-line

- Reporting area per country: region, province, district ??
  - characteristics of forest, size of area
- Needed variables related natural resources:  
CORE/OPTIONAL variables
- Links to other data collections activities: population census, agricultural statistics
- Change detection and up-dating procedure



## Study of Tomppo – importance of design



- Field data based NFI statistics needed for forestry centers: sustainable level of harvesting, control of forest status
- Plots used with satellite images: Estimates for municipalities and timber procurement maps
- Annual cost for field work now 1 milj. €
- Using proposed FAO design 4 milj. €



# Standard IT system - development steps

## Determined System Requirements

Describe approaches to requirements determination, participate a Joint Application Design sessions and use prototyping during requirements determination

## Structuring System Process Requirements

Draw data flow diagrams, prepare use cases and use case.

## Structuring System Data Requirements

Prepare conceptual data model - draw an entity-relationship (E-R) diagram or a class diagrams

## Designing Databases

Transform an entity-relationship (E-R) or class diagram into an equivalent set of well-structured (normalized) relations

## Designing Forms and Reports

Process of designing forms and reports and the deliverables for their creation, the design of forms and reports for Internet-based system

## Designing Interfaces and Dialogues

Design graphical user interfaces and dialogues for Internet-based system

## Designing Distributed and Internet System

Alternative designs for distributed systems and their trade-offs, standards



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# Need to link organisations and standardization

## 1. Data sharing agreement

- A data sharing protocol is a formal agreement between organisations that are sharing personal data;
- It explains why data is being shared and sets out the principles and commitments of organisations.

## 2. Forestry administration information exchange strategy and format

- XML standard explains content of data
- When government processes involve interchange of data, these transactions are common data definitions which can be defined as XML schemas;
- The definition of “Forestry Administration XML Schemas” would define common language between different IT-systems.



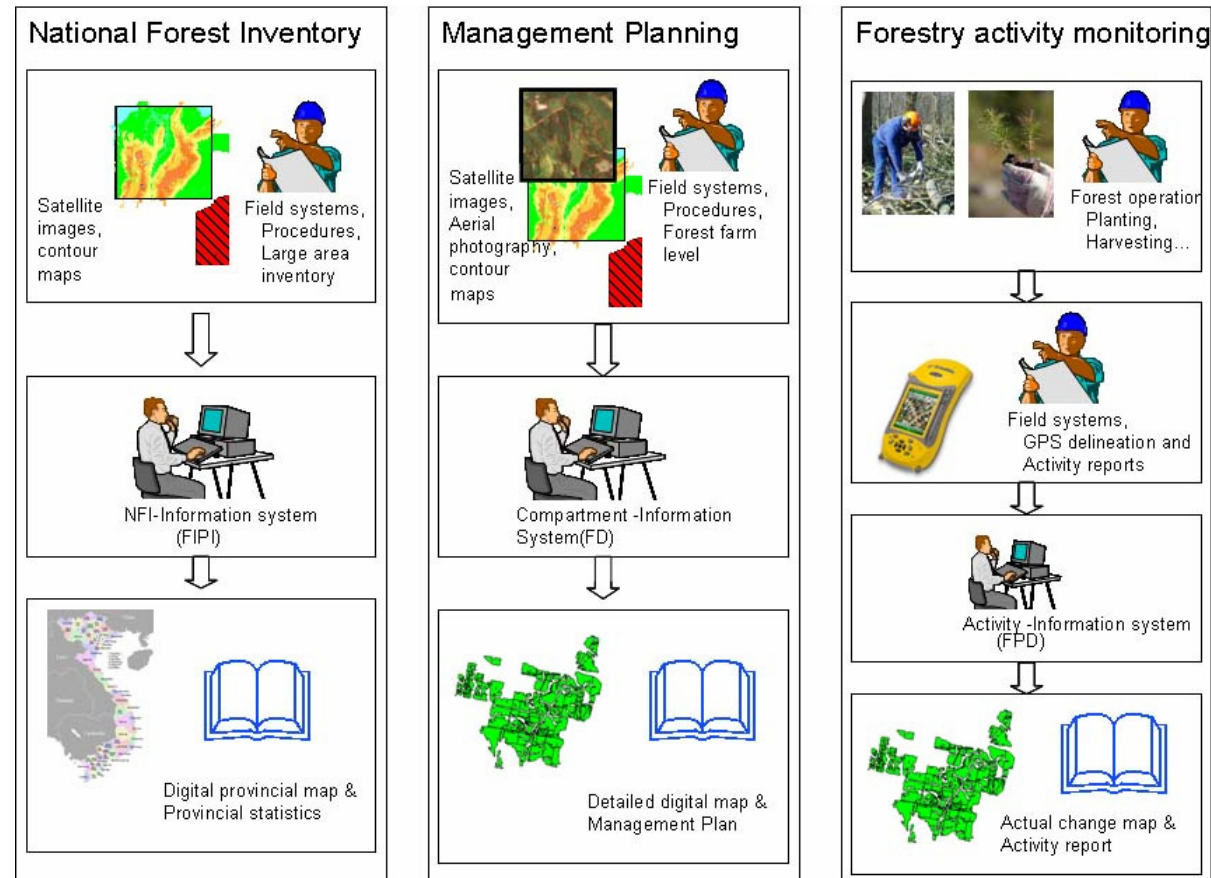


# Need for Forest GIS Data Dissemination Campaigns

1. Defining End-User Data needs and Partnerships for Data Delivery
2. Development of inventory deliverables and End-User training
3. Database, Map Server and Reporting system development



# Case 1 – Vietnam

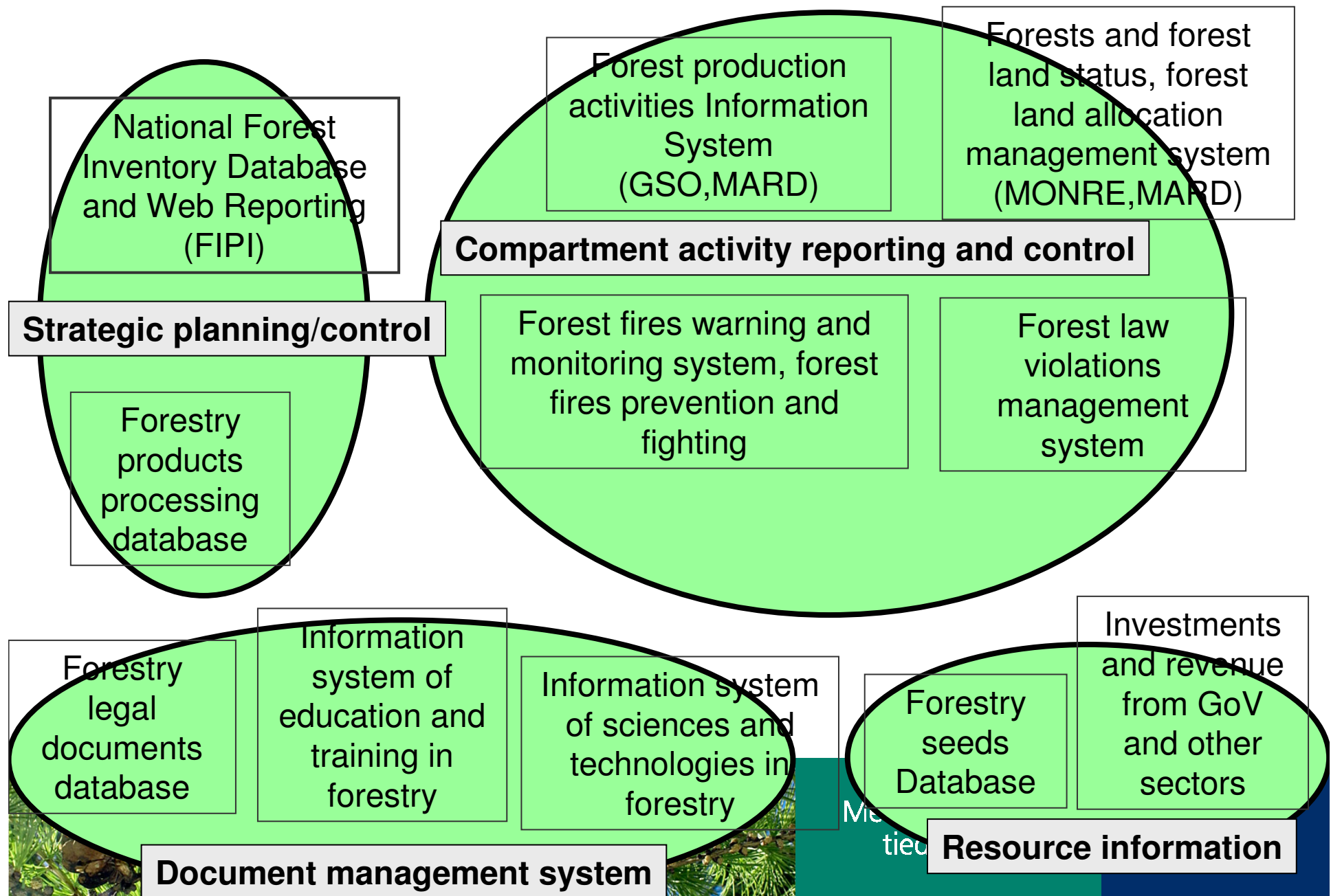


## Links to many data collection activities

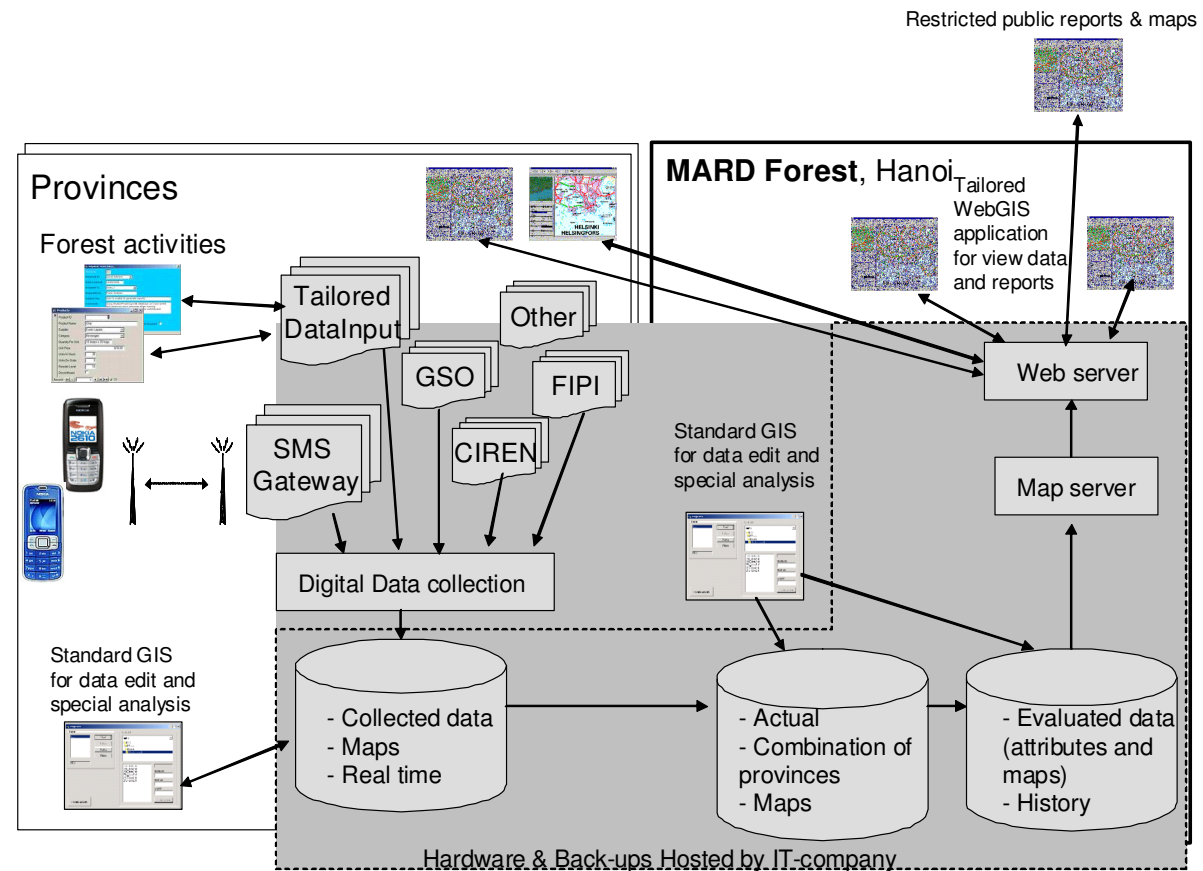
- Population census complete – no need for other socio-economic surveys
- National mapping agency is strong unit with good remote sensing data acquisition capacity
- NFI already produce provincial data
- NFI not enough for activity monitoring and detailed monitoring REDD







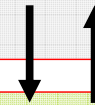
# Concept national reporting system design



## Case 2 – Nepal

- National forest inventory
  - Strategic forest cover mapping
  - NFI, stocking, biomass and carbon
  - NTFP and TOF

Priority,  
Co-operation between  
Departments



- Forest management planning in communities
  - Delineation of forest areas and their characteristic
  - Priorities for management: planting and harvesting
  - Encroachment status
- Activity monitoring of DFO
  - Planted area
  - Harvested area

Input data,  
With community focus  
Input for NTFP&TOF



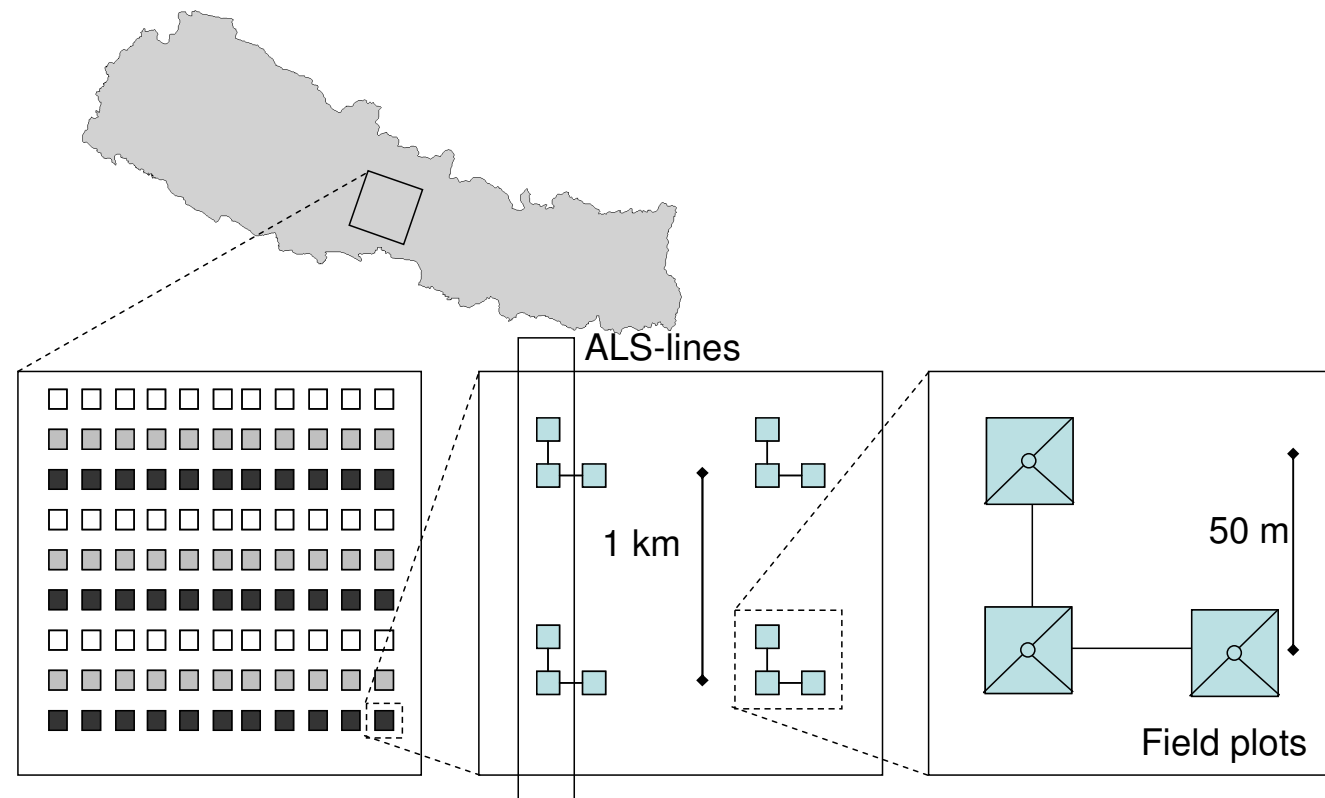


## Links to many data collection activities

- Population census and agricultural census based on sampling and socioeconomic data – no need for other socio-economic surveys
- Village level operative activities are based on full enumeration
- National mapping agency is weak unit and need support. Private sector needs to be involved.
- One NFI already done, but many needs related to NFI:
  - Wood Resources, Herbs,
- REDD methodology needs to be developed



# Systematic field plots/year in previous inventory, 12 km x 12 km x 3



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# Tokola T. & Shrestha S. M. 1999. Comparison of cluster-sampling techniques for forest inventory in southern Nepal. *Forest Ecology and Management* 116(1-3):219-231.

Cluster type	No. of plots/cluster	Spacing (m)	Systematic sample		Random sample		Days
			Bias (m <sup>3</sup> /ha)	Sampling error (m <sup>3</sup> /ha)	Bias (m <sup>3</sup> /ha)	Sampling error (m <sup>3</sup> /ha)	
Point	1		-2.8	7.8	-1.3	8.8	209
Line	2	50	-0.9	7.3	-2.0	9.5	105
Line	3	150	-2.0	8.0	-6.3	10.8	70
Line	4	550	-2.0	8.3	-11.1	11.7	53
Triangle	3	275 <sup>a</sup>	-2.9	6.8	-7.6	10.2	70
L-shape	5	400	-0.9	10.2	-9.6	12.9	42
Square	4	400	-1.2	8.0	-7.9	12.4	53
Square	8	325	-1.7	10.5	-13.6	16.0	27

Optimal spacing between plots.

The sampling ratio is 0.02%.

<sup>a</sup>Distance from the cluster center.



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# Evaluation of Finnish support – 2002

- FRIS project had been able to complete National Forest Inventory.
- To strengthen the Forest Research and Survey become an autonomous organization, was not achieved.
- Some of the personnel during the project implementation changed their place of work
- The capacity building of among local experts and officers has not been adequate to carry out similar activities in the long run.
- The data collection activity was mainly based on aerial photographs and centrally organized field work.
- It is very difficult to organize statistically sound field campaigns all over the country where field conditions are extremely difficult and standard image processing techniques are not applicable.
- A lot of effort was paid to develop methodologies for multiresource forest inventory techniques
- The information produced during the project is used only in strategic planning at macro level
- Results of development were published as local project papers.
- The dissemination was mainly based on written reports and a lot of collected information was not published.
- Digital database and maps were not delivered in the any form.



# Improving dissemination: Defining End-User Data needs and Partnerships for Data Delivery

- User needs analysis with questionnaires and interviews.
- Preparation of authorized data delivery systems
- Preliminary design defines the purpose and elements of the sectoral and cross-sectoral GIS products.
- Regarding the designing of data delivery of GIS, The expertise of statistical department and Nepal Info will be used to specify data content of system.
- The roles of partners for compiling further detailed information using FRA can be defined and agreed. The roles of NGOs, private sectors, indigenous communities and other potential users will be defined.



## Improving dissemination: Development of inventory deliverables and End-User training

- to provide means to make this information accessible both to DFRS and to DFRS 's information "users"
- to prepare technically Forest Resource Nepal INFO-CD and to train users at least to the forest policy makers to use information
- to prepare sample version Water Supply Master Plan based on FRA information.
- To finalize agreements with third party partners (eg. mapping companies) to utilize FRA data





# DevInfo used in statistical reporting and poverty mapping



- DevInfo is a powerful database system which generates tables, graphs and maps for reports and presentations.
- DevInfo has been developed in cooperation with the UN system and has been adapted from UNICEF ChildInfo technology.
- The database maintains indicators by time periods and geographic areas to monitor commitments to sustained human development.



# Improving dissemination: Database, Map Server and Reporting system development

- Planning and design of the Internet Map Server Service and GIS Data Delivery System
- Installation of System
- Implementation of the Internet Map Server Service
- Implementation of GIS data delivery service
- Design maintenance strategy
- Training on Internet Map Server Service
- Document system and provide material to the development of Internet Map Server Service



# Thank you !



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