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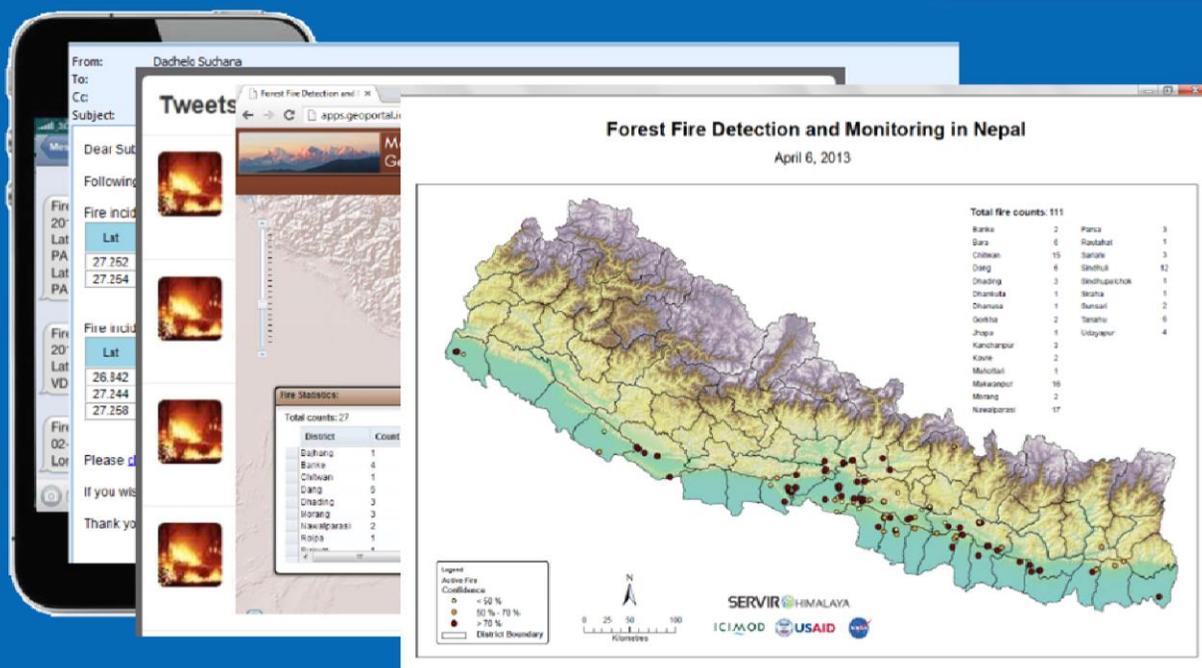
SERVIR PROGRAM DEMAND ACTIVITY

SERVIR - HIMALAYA FOREST FIRE TOOL CASE STUDY- INCEPTION REPORT

Forest Fire Information Dissemination

ICIMOD

FOR MOUNTAINS AND PEOPLE



SMS Email Tweet Web Application PDF Fire Map

MARCH 2014

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SERVIR PROGRAM DEMAND ACTIVITY

SERVIR – HIMALAYA FOREST FIRE TOOL – *INCEPTION REPORT*

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INCEPTION REPORT

INTRODUCTION

The SERVIR Program aims to improve environmental management and resilience to climate change through efforts that build the capacities of government institutions and other key stakeholders to incorporate geospatial technologies into their planning and decision-making. This includes sharing, integrating and mapping information from different sources that include satellite imagery, geospatial data and mapping applications from a multitude of continuous and on-going monitoring and assessment activities.

The SERVIR-Himalaya hub in Kathmandu, Nepal, hosted by the International Center for Integrated Mountain Development (ICIMOD) developed a forest fire detection and monitoring system for Nepal and Bhutan as part of a SERVIR science application, first piloted during the fire season of 2012. The close relationship ICIMOD has formed with the Nepal Department of Forests makes this tool a particularly interesting case study since there is a ready and interested stakeholder working with ICIMOD on the end products.

To learn more about the process involved in developing an application and the outreach to users involved, DAI in partnership with ICIMOD seeks to research and develop a case study focused on the Forest Fire Detection, Alert and Monitoring science application. The goal is to determine how ICIMOD developed the process for the design, implementation, and outreach of a discrete product, tool or service and what lessons could be learned for engaging new users, increasing linkages, and promoting successes and impacts.

The main research questions for the case study are the following:

Who	a) Who defined the need, was involved in the conceptualization, design, development, operationalization, and funding. b) Who are the current and potential users and beneficiaries
What	Products, tools, services have been produced or derived from the original application.
When	What was accomplished when, and what is the timeline for any future activities
Where	Geographical footprint and any planned or potential expansion, spatial scale
Why	Who drove the development and why? What are the benefits and what impacts are hoped for or achieved? Why are people using the product and what were they using before?
How	How was the application in all its forms implemented (methods, partners)

BACKGROUND

Nepal and Bhutan's forest fire detection and monitoring system uses real-time satellite data to detect and monitor forest fires (sending alerts to registered users by e-mail or mobile device), research fire patterns, and assess damage in burnt areas. The system was first launched in March 2012 as a pilot in a few of Nepal's forest districts by the International Centre for Integrated Mountain Development (ICIMOD), under the SERVIR-Himalaya program. After a successful test phase, ICIMOD rolled out the system in late April 2012 in close collaboration with the Department of Forest (DoF), under the Ministry of Forest and Soil Conservation, in all of Nepal's 75 districts, as part of national climate change adaptation and mitigation efforts.

The system was designed in response to a request by the DoF for ICIMOD to develop a reliable and timely fire detection and monitoring system in order to improve forest fire management in Nepal. ICIMOD designed the system with a long term vision for DoF to own and manage the information dissemination independently. ICIMOD's role was to develop the system, demonstrate its viability during the pilot phase, and then carry out the necessary capacity building within DoF who would scale the system themselves. As such, DoF now manages the distribution and dissemination of the fire alerts via email and SMS to their district officials and other community forest officers. ICIMOD's Mountain Geoportal also hosts a web-based mapping component, which the DoF disseminate and display at their district offices.

According to a recent interview with the DoF, the system now sends forest fire alerts via SMS and email to 200 subscribers, who include district forest officials and local members of the Federation of Community Forest Users' Group Nepal. The SMS subscribers also include officials from Department of National Park and Wildlife Conservation (DNPWC), Nepal Army, World Wildlife Fund (WWF) - Nepal, National Emergency Operation Centre (NEOC) of Nepal, Reducing Emissions from Deforestation and Forest Degradation (REDD) Network, and Asia Network for Sustainable Agriculture and Bioresources (ANSAB). Further, some 180 email subscribers receive email notification on fires throughout the country twice per day. For Bhutan, the system has mostly been used for email alerts, though recently an SMS system has been put into place.

ICIMOD's role is largely automated, as the system downloads the data and runs algorithms to process and report on locations of active fires based on district maps to geo-locate the position of fires on the ground. With the addition of a new MODIS receiving station on the ICIMOD campus in January 2013, the data are obtained much faster than during the initial pilot phase of the tool. After a successful run of the forest fire detection and monitoring system of Nepal through the 2012 fire season, a survey was conducted in both English and Nepali to receive feedback from the users regarding the quality and usability of the system. Most of the respondents found the information provided in the alerts sufficient. There were suggestions for keeping the distribution list up to date as people shift positions and adding community forest names (information that needs to be collected and mapped before it can be included in the system).

APPROACH AND METHODOLOGY

The Forest Fire Case Study will be conducted in four phases. These include:

- a. Background data collection and planning;
- b. Preparation of data collection and interviews;
- c. Information analyses and supplementary research; and
- d. Assessment reporting

The anticipated assessment timeline, with the phases color-coded, can be found in Appendix A.

In addition to the assessment support personnel, the team is comprised of **6** specialists responsible for the case study design and methodology, translation and interpretation, data collection and analyses, and report writing. The individual professionals that make up the team are listed in Appendix C.

BACKGROUND DATA COLLECTION AND PLANNING

This preliminary phase has helped to define the conceptual framework and overall approach, including a list of potential organizations, entities, and types of individuals to interview (Table 1).

Information obtained from these discussions and background research also contributed to the interview structure that will be used in the field trip phase.

PREPARATION OF DATA COLLECTION AND INTERVIEWS

A field trip is planned for Nepal to visit some of the most fire prone districts. For Bhutan, a visit is planned mainly at the organizational level to investigate how stakeholders are using the forest fire products and measures, and what they plan to do to operationalize the tool in a similar way as Nepal.

The first step of data collection is selecting the organizations and individuals to visit. The selection will be made from the following groups of people:

Table 1: Potential Interviewees

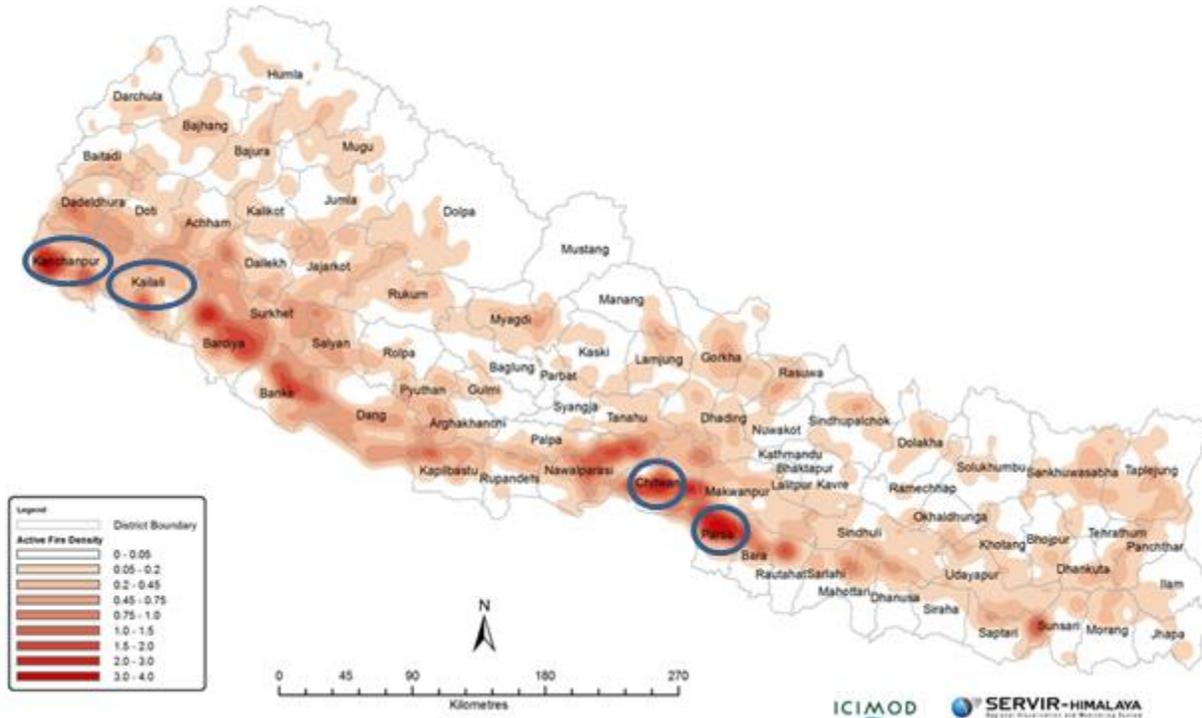
Product phase	Organization	Purpose
Product initiation, design	DoF, ICIMOD, NASA, USAID	To understand the role of various organizations in defining the needs and requirements of information.
Product development	ICIMOD, NASA	To understand the contribution of different organizations in the developing the methodology, providing the data, developing the application, and maintaining the operation.
Product dissemination	ICIMOD, DoF	To understand the roles of both ICIMOD and DoF to identify potential users, maintain user information, and obtaining and soliciting feedback.
Product users	DoF, community forest users, FECOFUN, Fire brigades, DNPWC	To understand how information and products generated from the system are used for forest fire management among different user groups.

The methods of data collection include individual, semi-structured interviews and focus group discussions. Field trips will be conducted in the districts where incidence of fire was high during the previous season.

FIELD AREA SELECTION

Most of the fire incidence occur in the Tarai and mid elevation geographical regions of Nepal. Most fires reported are concentrated in the central and the west region and less in the eastern region of Nepal.

Figure 1: Map of Nepal showing one year fire incidence



The locations in Nepal identified for this case study will be selected based on the following criteria:

- Fire alarm system has sent SMS to this area
- High incidence of fire has occurred
- Accessible by field transport
- DoF has interest in the area (i.e. active firefighting effort has taken place in the area)

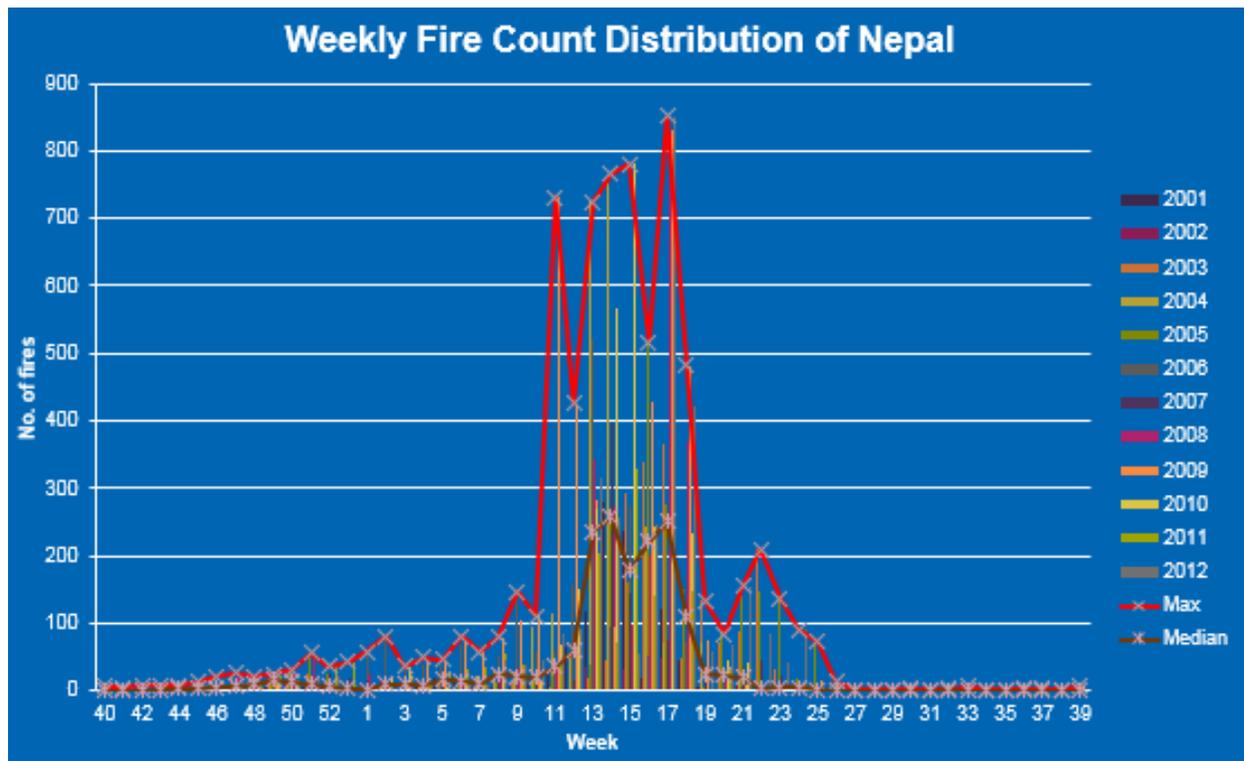
Based on the above criteria we are proposing the following districts for field data collection:

Central region: Parsa, Chitwan

West region: Kailai, Kanchanpur

The field trip will be conducted during the peak fire season. Major fire incidence occurs during April/May in Nepal. The field trip is planned during April 21- May 5. Additionally, we intend to make a visit to Thimphu, Bhutan in May to discuss the forest fire system with ministry officials.

Figure 2: Weekly fire incidence data showing a peak between weeks 11-19 of the year.



Field trip preparation, including interview protocol and methodological approach was completed at the Demand Workshop 24-28 March in Bethesda, Maryland.

INFORMATION ANALYSIS AND SUPPLEMENTARY RESEARCH

Qualitative data analysis techniques will be used as the basis for the case study. Responses from individuals will be synthesized to understand the answer to the key research questions and how those are perceived by each group, and identify if any general concerns exist. The collected interview notes will be coded and classified based on the research questions. ICIMOD will provide a first draft of how the information will be analyzed, and any other suggested supplementary research.

ASSESSMENT REPORTING AND DELIVERABLES

The case study report will be developed based on analysis and feedback from user consultations and field trips. The report will have the following major sections:

- Background of the application (address how the tool was initiated, designed)
- Technical details of the application
- Dissemination strategy and achievement (statistics on SMS alert, email alerts)
- Use of the tool at various levels of operation
 - Organizations receiving the alert and how they perceive it
 - Use of the tool by national level managers

- Use by local level managers
 - Use at community level
- Feedback on the product (design, dissemination) for further enhancement
- Users reflection on the sustainability of the tool (adoption, funding ...)
- Cost of the tool
 - Development
 - Operation (ICIMOD, respective organization)
 - Scaling out to other regions
- Conclusions

In addition to the Case Study report, there will be presentations for USAID and NASA, ICIMOD, and the Department of Forest on the results. Consideration will also be given as to what ICIMOD, and the ministries in Bhutan and Nepal would find useful and actionable coming out of this study.

ATTACHMENTS

- Case Study Planning Timeline
- Tentative Field Visit Schedule
- Case Study Team
- Conceptual Framework

APPENDIX A: PLANNING TIMELINE

Time period	March				April				May			June/July		
	2-8	9-15	16-22	23-29	30-5	6-12	13-19	20-26	27-3	4-10	11-17			
Activity Item														
Conceptual framework, approach, methodology design	[Purple bar]													
Field site selection	[Purple bar]													
Background data collection	[Purple bar]													
Inception report	[Purple bar]				★									
DoF Ministry visits and initial data collection	★													
ICIMOD initial data gathering	[Purple bar]													
Interview protocol development			[Purple bar]											
Interview scheduling					[Purple bar]				[Purple bar]					
Field visits in Nepal	[Grey bar]													
DAI Team travel to ICIMOD & planning								[Blue bar]						
In-briefing with USAID/Nepal								★						
Inbriefing with ICIMOD officials and DoF Officials								★						
Field visit and data collection in Kathmandu area								[Blue bar]						
Travel and data collection in Parsa and Chitwan									[Blue bar]					
Travel and data collection in Thimphu, Bhutan										[Blue bar]				
Information compilation & team discussions									[Blue bar]		[Blue bar]			
DAI Team Travel home											★			
Travel and data collection in Kailai and Kancharpur											[Blue bar]			
Desk research & field visit follow-on (translation ??)											[Orange bar]			
Draft report write-up												[Red bar]		
USAID comments received, final report preparation & delivery													[Red bar]	★
Webinar on case study findings to ICIMOD and USG														★

APPENDIX B: TENTATIVE FIELD VISIT SCHEDULE

Tentative Field Visit Detail, April/May 2014						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
21 DAI Depart for Nepal	22	23 Arrive Nepal	24 USAID In-briefing Meeting ICIMOD Senior staff In-briefing	25 DoF In-briefing Field visit to local Kathmandu area field office	26	27 Depart in the afternoon for Parsa and Chitwan region
28 Interviews and Focus groups 	29 Interviews and Focus groups Return to Kathmandu (PM)	30 Depart for Bhutan	1 Meetings with Ministry officials and SMS subscribers 	2 Meetings	3 Depart for Kathmandu	4 DAI Return home
5 Possible field visits to Western Region (Kailai & Kanchanpur)	6	7	8	9	10	11
12 Possible field visits to Western Region (Kailai & Kanchanpur)	13	14	15	16	17	18

APPENDIX C: CASE STUDY TEAM

Name	Team Function	Affiliation
Carmen Tedesco	Data collection, analysis and writing	Demand Team/DAI
Mir Matin	Data collection, analysis and writing	Demand Team/ICIMOD
Shannon Sarbo	Analysis and writing support	Demand Team/DAI
Dr. Murthy	Design and Methods	ICIMOD
Him Lal Shrestha	Relationship support, translation/interpretation, and field support	ICIMOD
TBD	Dept. of Forest representative	Nepal Department of Forests

APPENDIX D: CASE STUDY CONCEPTUAL FRAMEWORK

I. History/Background

The main idea of these questions is to find:

- **If the product was initiated by the end users**
 - **If end users were involved in the design of the tool and dissemination approach?**
 - **If the users made any commitment to uptake the final products for their standard operational procedure?**
- a) How did the application/tool idea originate? What problem or challenge does the project address?
 - b) When did the Hub take on this task? Did the idea (or initial efforts) predate SERVIR?
 - c) Why did the Hub decide to develop the project, e.g., how does it contribute to broader institutional goals, objectives, etc.?
 - d) Who are the intended users and beneficiaries of the products generated?
 - e) Who funded it?
 - f) What organizations or partnerships are involved, including NGOs, research institutes, donors, etc.? (What are the roles of NASA Coordination Office, and others?)
 - g) Who does training/capacity building? What activities have been held?
 - h) How did the project leverage SERVIR? How did it leverage other projects?
 - i) What workshops/activities/meetings have been held? Country specific and regional?

II. Methods

The main idea behind this theme is to understand if the method is perceived as accurate? If the method is scalable? If any further enhancement is required or expected by the user?

- a) What procedures are being employed by the Hub and what methodological documents (if any) are being accessed/developed for this? (e.g. SMS guides, training manuals, etc.)
- b) What is the role of users in the project at various stages? (e.g., scoping, data acquisition, methodology development, “requirements” setting, etc.) What approaches (e.g., workshops, exchanges, meetings, etc.) have been used to engage users? (similar to I(g) above, but specific to user-analyst interactions)

III. Current Users

- a) Who has access?
- b) Who is using it?
- c) In what department or unit do these users work, and under which Ministries or agencies?
- d) How are they using it? What for? What impacts are resulting from use of the products? (again, maybe too early, in which case, desired impacts)
- e) Have any user profiles been developed?
- f) Are there any potential users if current users have not been identified?

IV. Product(s) Description

- a) What are the “products” of this project?
- b) What are the services coming out of this?
- c) What are the “tools”?
- d) What is the data/product format? (map? raw data? SMS, WMS, etc.)

e) Does the product need any modification(s)?

V. Distribution

- a) How is the product being distributed?
- b) How is usage of the tool or its distribution being tracked?
- c) Is the distribution active or passive?
- d) What data will be provided to each country and in what format? Will this include imagery, maps, statistics, reports, metadata? What is the process/media of delivery?
- e) How might other organizations utilize the SERVIR data in each country? Discuss a process of involvement and/or dissemination.
- f) Other data applications?

VI. Opportunities

- a) What opportunities and constraints are envisioned for the future of the project/product?
 - i) Expanding upon existing
 - ii) Developing new
- b) Identify new users? New ministries to make the data available based on identified applications.

VII. Status

- a) What is the timeline?
- b) Where are they right now? (Status by country of mapping completion and data delivery, SMS, training, etc.)
- c) What's next? End date?
- d) Staffing changes/challenges?

VIII. Future Activities

- a) What plans are in place for sustaining/expanding the product itself or its use?
- b) Any new plans on the horizon? (i.e. discussions about new geographic focus, additional tools or functions, other services, etc.)
- c) What additional capacity building and technical assistance will ICIMOD conduct in the future and under what time frame? Web support, software dissemination, etc.

IX. Recommendations

Note: Most of this section will come out of the data gathered, so there are not specific questions to be asked.