Evaluation Report of the Initiative

Institutional Preparedness and Response in Times of Bushfire Crisis

in Nomination for United Nations Public Service Awards 2021

by

Mae Phrik Subdistrict Administrative Organisation

Mae Suai District, Chiang Rai Province

Thailand

Preface

Mae Phrik Subdistrict Administrative Organisation (SAO) has recognised the importance of preparedness in response to wildfire crisis for the improvement in the service efficiency, by enhancing collaboration between networkparties and the public in developing the initiative'Fire Mae Phrik Model'.Developed with the Ministry of Public Health and Chiang Mai University, this dashboard technology, promptly accessible by all,accommodates four operating systems, which are (1) the MIS Hotspot, (2) theForest GIS, (3) the Wildfire Watch Network and (4) the wildfire suppression system.

The management of wildfire crisis is divided into three stages – the pre-hazard stage, the hazard stage and the post-hazard stage. The Dashboard, employing big data and open data, has led to the preparedness in response to wildfire. In the last four years (2017 to 2020), there has been a continuous decrease in wildfire incidents and deforestation; as a result,the forests regain vitality, biodiversity and food security. The people have become equipped with the skills in taking incident actions and protecting the forests from disasters, leading to sustainable forest product and income generation, as outlined by the Sustainable Development Goals 2021.

Mae Phrik SAO

Mae Suai District, Chiang Rai Province

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1. Executive Summary

Wildfire is an issue of nationalconcern that the government has prioritised, and policies have been implemented to prevent and resolve it due to the direct impacts on health and the environment thatconsequently affect the country's economy and tourism as a whole.Statistics from 2013 to 2018 show that the northern region had the highest incidents of wildfire suppression and burnt areas in the country.

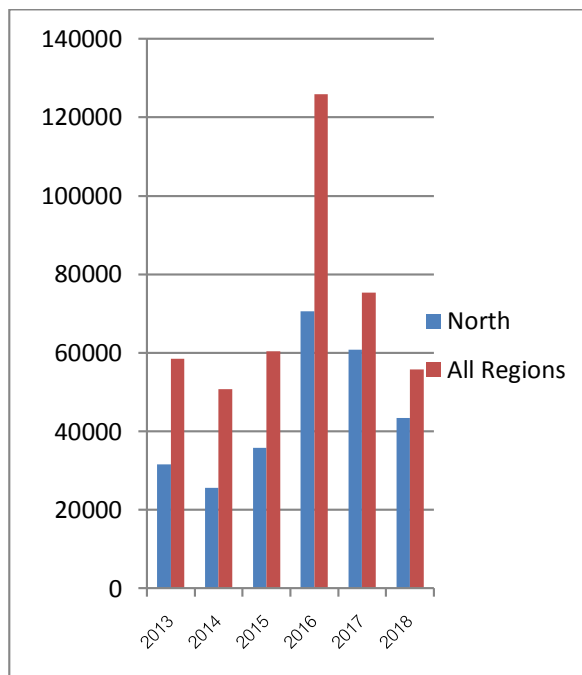Figure 1: Incidents of wildfire suppression   Figure 2:Burnt areas
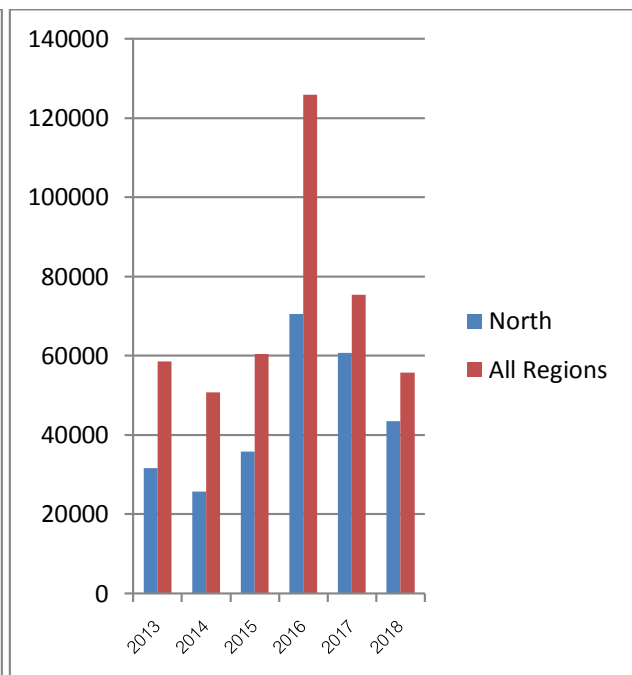
Source: Forest Fire Control Office, Department of National Parks, Wildlife and Plant Conservation

Subdistrict Council and Subdistrict Administrative Organisation Act B.E. 2537 and its amendment specify that SAOs are responsible for the prevention and mitigation of disasters, in line with Disaster Prevention and Mitigation Act B.E. 2550, in order to build public trustand improve the institutional efficiency in responding to wildfire crisis in the way that best serves the public's needs and technology use.

With the responsibility and the national policies in mind, Mae Phrik SAO strives to improve the service and the access to the dashboard technology that drives the core operating systems –

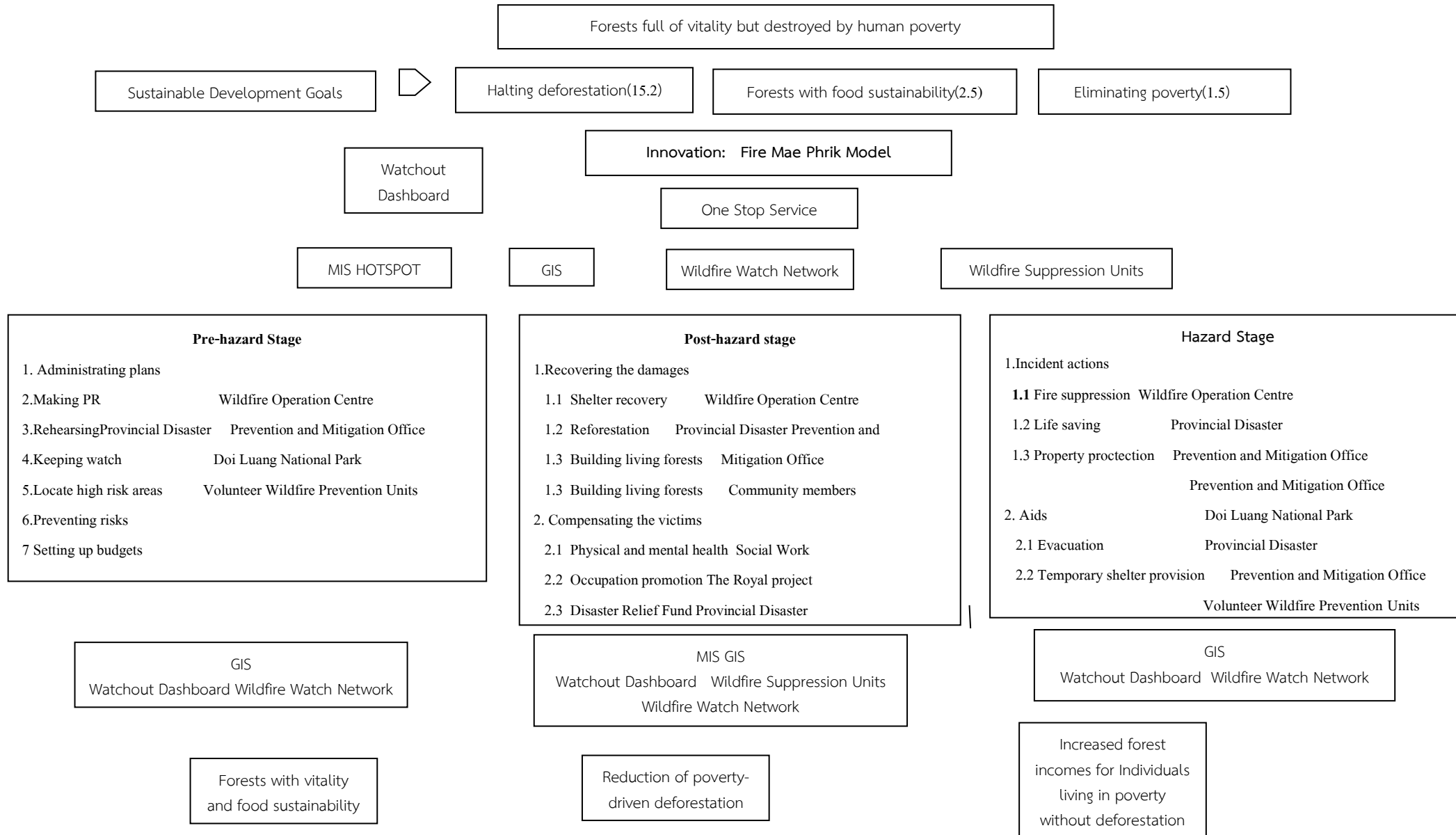MIS Hotspot, GIS, Wildfire Watch Network and the Wildfire Suppression Units, in response to wildfire crisis. This initiative, 'Institutional Preparedness in Response to Wildfire Crisis', was awarded the prize in 'Outstanding Local Administrative Organisations' by the Office of the Decentralization to the Local Government Organization Committee and theNational Institute of Development Administration (NIDA) in 2019.Aligned with the Sustainable Development Goals 2021, its objectives are as follows:

(1)   to encourage engagement from all community members in increasing forest areas, haltingdeforestation and to grant access to the Forest Geographic Information System (FGIS) and local wisdom-based forest conservation and revitalisation (SDG 15.2),

(2)   to promote forest areas as the source of food sustainability for the community, combat poverty, utilise the zoning management system, grant equal access to forest areas for all and ensure sustainable forest incomes (SDG 2.5), and

(3)   to prepare all community members for the occurrence of wildfire by employing the technology 'Watchout Dashboard' for notification and identification of risk areas, the MIS and the GIS that are responsive, allowing for swift and effective control of wildfire crisis (SDG 1.5).

2. Presentation

Mae Phrik SAO, in collaboration with related organisations and the locals, has administered the "Fire Mae Phrik Model" that accommodates four operating systems through the use of dashboard technology, accessible via smartphones. Users can promptly upload the photos and coordinates of the wildfire to the SAO's Wildfire Operation Centre, enabling quick response by the networks and immediate fire suppression, as shown in the diagram below.

Forests full of vitality but destroyed by human poverty

Sustainable Development Goals ▷ Halting deforestation(15.2) | Forests with food sustainability(2.5) | Eliminating poverty(1.5)

Innovation: Fire Mae Phrik Model

Watchout Dashboard

One Stop Service

MIS HOTSPOT | GIS | Wildfire Watch Network | Wildfire Suppression Units

Pre-hazard Stage

1. Administrating plans
2. Making PR   Wildfire Operation Centre
3. RehearsingProvincial Disaster   Prevention and Mitigation Office
4. Keeping watch   Doi Luang National Park
5. Locate high risk areas   Volunteer Wildfire Prevention Units
6. Preventing risks
7. Setting up budgets

Post-hazard stage

1. Recovering the damages
   1.1 Shelter recovery   Wildfire Operation Centre
   1.2 Reforestation   Provincial Disaster Prevention and
   1.3 Building living forests   Mitigation Office
   1.3 Building living forests   Community members
2. Compensating the victims
   2.1 Physical and mental health Social Work
   2.2 Occupation promotion The Royal project
   2.3 Disaster Relief Fund Provincial Disaster

Hazard Stage

1. Incident actions
   1.1 Fire suppression Wildfire Operation Centre
   1.2 Life saving   Provincial Disaster
   1.3 Property proctection   Prevention and Mitigation Office
                Prevention and Mitigation Office
2. Aids   Doi Luang National Park
   2.1 Evacuation   Provincial Disaster
   2.2 Temporary shelter provision   Prevention and Mitigation Office
              Volunteer Wildfire Prevention Units

GIS
Watchout Dashboard Wildfire Watch Network

MIS GIS
Watchout Dashboard Wildfire Suppression Units
Wildfire Watch Network

GIS
Watchout Dashboard Wildfire Watch Network

Forests with vitality and food sustainability

Reduction of poverty-driven deforestation

Increased forest incomes for Individuals living in poverty without deforestation

แจ้งเหตุ เพื่อจัดการ/ป้องกัน

ไฟป่า - ฝุ่นควัน

ศูนย์อำนวยการป้องกันและบรรเทาสาธารณภัย

ศูนย์ปฏิบัติการไฟป่าตำบลแม่พริก

Application

ผ่อดีดี

Fire Maeprik Model
Dashboard Technology

PODD

app จะเลือกระบุตำแหน่ง
ที่เกิดเหตุไฟป่า ไฟไหม้(GPS)

จุดไฟป่า
(MIS:Hotspot)

1
เข้า appication

2
กดหมวดสิ่งแวดล้อม
เลือก:ไฟป่า

3
ระบุตำแหน่งเกิดเหตุ

3.1 สามารถใช้พิกัดจริง
ขณะผู้รายงานอยู่ในจุดเกิดเหตุ

3.2 เลือกพิกัดพื้นที่เกิดเหตุ
กรณีผู้รายงานไม่อยู่ในที่เกิดเหตุ

4
กรอกรายละเอียดให้ครบทั้ง
7 ขั้นตอน

ขั้นตอนการรายงาน

ถ่ายรูปไฟป่า/ไฟไหม้

เลือกประเภทพื้นที่

ระดับความรุนแรง

5
ระบบจะส่งรายงานไปยัง
หน่วยงานพื้นที่เกิดเหตุ
(one stop service)

6
หน่วยงานจะลงพื้นที่ระงับเหตุ
แก้ไขปัญหาทันที

ติดต่อ : ศูนย์ปฏิบัติการแก้ไขปัญหาหมอกควันและไฟป่า องค์การบริหารส่วนตำบลแม่พริก โทร.053-786368

ผ่อดีดี	Watchout
แจ้งเหตุ เพื่อจัดการ/ป้องกันไฟป่า - ฝุ่นควัน	Notification for management and prevention of wildfire and haze
ศูนย์อำนวยการป้องกันและบรรเทาสาธารณภัย	Disaster Prevention and Mitigation Centre
ศูนย์ปฏิบัติการไฟป่าตำบลแม่พริก	Wildfire Operation Centre, Mae Phrik
1. เข้า application	1. Open the app.
2. กดหมวดสิ่งแวดล้อม เลือก: ไฟป่า	2. Select 'Environment' and then 'Wildfire'.
3. ระบุตำแหน่งเกิดเหตุ	3.Indicate the location of the incident.
App จะเลือกระบุตำแหน่งที่เกิดเหตุไฟป่า ไฟไหม้ (GPS)	The app pinpoints the location of the fire incident using GPS.
3.1 สามารถใช้พิกัดจริงขณะผู้รายงานอยู่ในจุดเกิดเหตุ	3.1 It detects the coordinates when the user in reporting directly from the scene.
3.2 เลือกพิกัดเกิดเหตุในขณะที่ผู้รายงานไม่อยู่ในที่เกิดเหตุ	3.2 Users input the coordinates in case of reporting away from the scene.
4. กรอกรายละเอียดให้ครบทั้ง 7 ขั้นตอน	4. Fill in all the 7 steps.
ขั้นตอนการรายงาน	Reporting process
ถ่ายรูปไฟป่า/ ไฟไหม้	Take photos of the (wild)fire.
เลือกระเภทพื้นที่	Select the type of area.
ระดับความรุนแรง	Indicate the degree of severity.
5. ระบบจะส่งรายงานไปยังหน่วยงานพื้นที่เกิดเหตุ (One stop service)	5.The system reports the information to the local operating unit (one stop service).
6. หน่วยงานจะลงพื้นที่ระงับเหตุ แก้ไขปัญหาทันที	6.The responsible unit gets in action and promptly resolve the situation.
ติดต่อ : ศูนย์ปฏิบัติการแก้ไขปัญหาหมอกควันและไฟป่า องค์การบริหารส่วนตำบลแม่พริก โทร. 053-786268	Contact: Haze and Wildfire Operation Centre, Mae Phrik SAO Tel. 053-786268

3. Preparation in Response to Wildfire Crisis

The Wildfire Operation Centre by Mae Phrik SAO has been established for four years, from 2017 to 2020. It has drawncollaboration from all parties in administering incident action plans, providing training to volunteer firefighters andrehearsingthe risk prevention plan, which allows the trainees to have the knowledge and skills required for efficient wildfire suppression.

Four operating systems, namelytheMIS Hotspot, the GIS, the Wildfire Watch Network and the Wildfire Suppression Operation System,are developed and accommodated by the smartphone-accessible dashboard technologyto enhance the preparedness in accessing the locations of wildfire.

The wildfire management is divided into three stages.

(1) Pre-hazard Stage

The Wildfire Operation Centre by the Disaster Prevention and Mitigation Centre collaborate with network parties in administering the wildfire incident action plans, informing the community and conducting rehearsals for volunteer firefighters. It is also responsible for coordinating with the Wildfire Watch Network in keeping watch and identifying risk areas to prevent the risks. The SAO has established an annual budget of 200,000 for continuous wildfire management every year.

(2)Hazard Stage

Once an incident of wildfire is reported via the Dashboard, the Operation Centre notifies the village leaders and members, using the same technology. Then the warning is spread via the speaker tower. The key steps are

2 . 1 executing incident actions including fire protection and life and property saving, as rehearsed, and

2 .2 providing aidsduring the crisis, evacuating the victims to the safe areas, as well as providing temporary shelters and necessaries.

(3) Post-hazard Stage

Once the fire is suppressed, the Operation Centre, the volunteers and the community members perform damage assessment which is comprised of the following key steps:

3 . 1 damage recovery by fixing damaged premises, undertaking reforestation, building check dams and performing the ritual-based forest ordination, and

3 . 2 victim compensation through the assistance ofrelated parties, namely physical and mental support by social workers, occupational development by community development officers, and financial support from the Disaster Prevention and Mitigation Office, Chiang Rai. Moreover, the victims may request assistanceusing the webboard on the SAO's website and the information will be forwarded to the Operation Centre immediately. The adoption of the Dashboard allows for swift and effective public service provision, with the indicators being the success of technological access responsive to wildfire crisis.

The success of this wildfire management model has resulted in the decrease of hotspot occurrence (Aqua/Terra) in Mae Phrik area during the last four years, as shown in the table below.

Year	Wildfire Occurrence (time)
2017	12
2018	7
2019	0
2020	0

4. Evaluation Scope

The evaluation of this initiative aims to assess the organisation's transparency and efficiencyin preparing for wildfire crisis.

5. Evaluation Method

The CIPP model was employed in the evaluation based on interviews with the officers and the local people involved in the wildfire management process. The aspects of evaluation include

(1) contextual evaluation on preparedness and engagement,

（2）evaluation of administrative inputs i.e. personnel preparedness, budget effectiveness,technology incorporation, andcollaboration management,

(3) evaluation of collaboration-enhancing process, and

(4) evaluation of the product from the implementation.

The indicators used in the evaluation include the followings.

(1) The relevance with local problems caused by wildfire and forest invasion

(2)The civic engagement when crises emerge, as they progress and after they end

（3）The product and outcomes, which is turning forests into the community's source of food and incomes

(4)The ability to share knowledge to the network parties and local communities

(5) The sustainability of use and the separation of tasks based on the community's needs.

The initiative's evaluation results from National Institute of Development Administration (NIDA) show that the Dashboard technology could accommodate operating systems such as the MIS and GIS and consequently, enhance community engagement in the preparation for local wildfire incidents. The locals played a crucial role from administering the incident action plans to informing about the areas at risk of wildfire. Ultimately, this has contributed to collaborative forest management, redundancy reduction, budget saving, desirable behavioural changes, community engagement in forest conservation and revitalisation,

increased food security, decreased famine and successful achievement of Sustainable Development Goals. Further details can be found in the certification document issued by NIDA.

In 2018, Mae Phrik SAO was evaluated on its institutional preparedness for efficient public service and the results are as follows.

Aspect	Full Scores	Received Scores	Percentages
Administration	140	138	98.60
Human Resource Management and Council Affairs	215	185	86.10
Financial and Fiscal Management	240	199	82.90
Public Service	310	281	90.70
Good Governance	65	63	96.90
Totals	**970**	**866**	**89.28**

Reference: Results of the Local Performance Assessment (2018) by the Office of the Decentralization to

the Local Government Organization, Chiang Rai, dated August 21, 2018.

6. Findings and Suggestions

(1) Due to the steep nature of the hillslopes, locals had difficulty accessing certain areas; as a consequence, the SAO has administered a solution by creating firebreaks along the ridges and streams to prevent the spread of the fire. Moreover, large water containers are set to be installed in high risk areas.

（2）In case of spread to residential areas, the SAO has planned to install large water containers between households to allow for prompt suppression, as well as providing necessary equipment for each village.

（3）Occupational promotion plan and training on New Theory farming will be provided in order to increase forest resources that would serve as the sustainable source of food and incomes for the community.

（4）Wildfire crisis preparedness and Dashboard use can be promoted by employing the notions of social capitals development and nonformal education, resulting in knowledge transfer and sustainable local development.