

# Community-Based Disaster Risk Reduction through Farmer Field School in Padang Pariaman, West Sumatra - Indonesia

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Building Disaster and Climate Change Resilience in Padang Pariaman Farmer Communities, West Sumatra (Bumi Ceria), FIELD-Indonesia Foundation

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Abstract-Farmers concern that their farming land will be destroyed when disaster happen again. Therefore, they are eager to know and do proper anticipation to reduce disaster risk by conducting Farmer Field School (FFS). This activity is designed to open opportunity for farmers to have direct interaction with realities and invent the knowledge and its principles. Education pattern of field school is not only learning by doing but also as a process so that the learning participants that are adult govern discovery learning which is dynamic and applicable in managing their farming land and in daily life. This is important since they live in an era that full of change.

Basically, FFS is an adult education which is develop in Indonesia since at the beginning 1990. Everyone is teachers and everyone is student, environment and basic knowledge of the participants are the main books of the FFS implementation. FFS is a simple method while facilitator and the farmers working together to face their own problem and resolve it. FFS process will create farmers who has resilience and able to deal with current dynamic and the future challenge.

The community of 10 nagaris in Padang Pariaman district such as Kasang, Katapiang, Ulakan, Koto Baru, Batu Kalang, Lurah Ampalu, Sikucur, Kudu Gantiang, Guguk and Pakandang from April to June 2011 held participatory vulnerability assessment FFS. This activity was aimed to increase community ability to assess the vulnerability of nagari and develop plan to handle it in terms of disaster risk reduction and climate change adaptation. It was conducted in 5 meetings, participated by 25 participants (female and male) with various backgrounds such as farmer and cadre in health and education.

The first meeting agenda was to understand disaster and climate change that took place in nagari by having discussion on their experience when disaster occurred. At the second meeting the community exercised transect to identify the vulnerability and drew map of the vulnerability. Generally, lack of knowledge in disaster risk reduction and climate change issue, community is unprepared in terms of food supply and health services were the vulnerability found in these 10 nagaris. Therefore, at the third meeting the community draw their vision in reducing the vulnerability and identify capitals existed in nagari that can be utilized to achieve their vision at the fourth meeting. Community generated activity plan in order to build resilience by utilizing nagari capitals that consisting of natural capital, infrastructure, human resource, financial and social capital in the fifth meeting.

The action plan generated by the community to reduce the vulnerability and increase resilience is as follow: 1) Basic

training on disaster preparedness for schools, community members and health providers, including posyandu cadres 2) Policy advocacy in terms of illegal logging, prohibition to take stones from the river and penning the livestock. Besides, follow up action plan on technical field schools aim at reducing risk on damage of community farming land and increasing community food sovereignty when disaster take place and post disaster. The technical FFS themes to be conducted are eco-rice, multi purpose trees, bio gas and living food bank.

**Keywords:** farmer field school, community based disk disaster risk reduction, participatory vulnerability and capacity assessment, disaster preparedness and education, food security.

## I. INTRODUCTION

Indonesia classified as one of high level of disasters, both natural disaster (earthquakes, volcanic eruptions, tsunami, floods and landslides) and or human-made disasters. In geographically, Indonesian archipelago is located at the intersection of three major plates, including the Eurasian plate in the northern of Indonesia, Pacific plate in the eastern and the Indo-Australian plate in the southern<sup>1</sup>.

Indonesia is also very affected by climate change. A tropical climate of Indonesia characterizes by extreme changes of weather, temperature and wind direction. One of the areas that are vulnerable to disasters is Padang Pariaman District in West Sumatra.

Field-Bumi Ceria is a program to be generated and support resilience on climate change and disaster risk reduction at the community level especially farmer groups, implemented by Field Indonesia Foundation. Resilience in Field-Bumi Ceria means community capability to adapt and evolve in the face of change.

The Nagaries<sup>2</sup> selected through rapid field observations and assessments, focus group discussions and transects.

<sup>1</sup> <http://id.shvoong.com/medicine-and-health/1898406-manajemen-bencana-berbasis-masyarakat/#ixzz1Y6uLJJAv>

<sup>2</sup> Nagari is similar to village or desa in java, means area managed by low level of government. As noted, nagari has different meaning if it related to local custom, religion and culture

In 2011, Based on vulnerability level (Nagari Profile, 2010), Field-Bumi Ceria chooses 10 nagaries including:

1. Nagari Ulakan in Kecamatan Ulakan Tapakis
2. Nagari Kasang in Kecamatan Batang Anai
3. Nagari Katapiang in Kecamatan Batang Anai
4. Nagari Lurah Ampalu in Kecamatan VII Koto Sungai Sariek
5. Nagari Sikukur in Kecamatan V Koto Kampung Dalam
6. Nagari Kudu Gantiang in Kecamatan V Koto Timur
7. Nagari Pakandangan in Kecamatan Enam Lingkungan
8. Nagari Batu Kalang in Kecamatan Padang Sago
9. Nagari Koto Baru in Kecamatan Padang Sago
10. Nagari Guguk in Kecamatan 2x11 Kayu Tanam.

Based on a year Field-Bumi Ceria's experiences, work with the farmer need to build from below, then work in small groups, neighborhoods and villages will be linked to build a replicable district level model of climate change adaptation and disaster risk reduction as a response to the problem of currently weak or missing community capabilities.

The field school approached (FS) conduct with principal of adult education. FS are an integrated series of learning processes undertaken by communities through direct learning and action. Usually this involves some 10 weekly half-day sessions followed by a field day bringing together the larger community to share learning, experiences, and plans.

In facing disaster and climate change, first phase of FS is conduct to assess vulnerabilities and capacities of the nagari called FS of participatory vulnerability and capacity assessment (FS-PVCA).

## II. MATERIALS AND EQUIPMENTS

Field school was conducted by utilizing the easily found and existing field materials and equipment including papers, markers, pens, books, and crayons. The building wall used as a board attached to the papers. If the discussion held in the open field space, then the group use an easy carry of thin plywood boards to stick the paper. Besides, FS was also use nature landscape and experiences of the participants as learning material.

## III. RESULT

About less and more of 25 participants are involved in FS-PVCA sessions in each nagari during April to June 2011 (Progress Report, 2011). The participants consisted of farmers, health cadres, education cadres, men and women. Field school was conducted in 5 times group level workshops with the inter-related topics to produce a community follow up action plans. The FS-PVCA was facilitating by 2 local trained facilitators.

Before, the local facilitators have increased their capacity in a Training of Trainers (ToT). The local facilitators are representative persons of nagari. Each

nagari has select 2 persons of their representative to be involved in a week of ToT.

Each group in each nagari conducts the socialization workshop after they finished the FS-PVCA sessions. The socialization workshop was attended by government of nagari, community representatives of nagari, government officer, religion leader, women leader, young leader, health provider, and head of sub-district, and others.

The FS-PVCA sessions are following up activities: preparation of FS workshop, 1<sup>st</sup> to 5<sup>th</sup> half day session of FS and socialization workshop.

### A. Preparation of FS Workshop

First, the participants introduce them self each other through games. Then, the local trained facilitators ask the participants to made criteria of learning participants, schedule, location, term of conduct and select the transect location to learn about field analysis on vulnerability and possibility of natural disaster.

The participants also ask to run down the FS-PVCA session topics, as following table.

TABLE I  
 FS-PVCA SESSION TOPICS

Workshop	Topics
1 <sup>st</sup> day	Introduction to disaster and climate change
2 <sup>nd</sup> day	Vulnerability analysis
3 <sup>rd</sup> day	Visioning of nagari
4 <sup>th</sup> day	5 capital analysis
5 <sup>th</sup> day	Follow up action

### B. First Day-Introduction to Disaster and Climate Change

The trained local facilitator guiding participants to learn and discuss on disaster and climate change. The workshop purposes to increase understanding of participants on disaster and climate change, while they understand intersection of these issues.

The learning participants are invited to share their experiences while disaster happened and climate is changed. The learning participants also invite to discuss on what danger, disaster, risk and threats, types of disasters and climate change as well as the causes and impact of disaster and climate in their area.

Refer to the framework of community based disaster risk reduction, in this day, participants are expected to recognize the threats that exist in nagari and more concerned about local wisdom-related disasters and climate change.

### C. Second Day-Vulnerability Analysis

The 2<sup>nd</sup> day workshop purposes to increase participants understanding on vulnerability and types of vulnerability. The session was open with review of past session and short introduction and examples of vulnerability based of experience of the participants and then the participants ask to held a transect walk.

The transect walk held in field landscape to witness the types of vulnerability, danger and safe area. The learning participants are invited in group discussion to talk about types of vulnerability, vulnerable groups, danger and safe area and potential of nagari regarding to 5 perspectives including human resources, natural resources, social resources, physical resources and financial resources. The

result of discussion is a map of nagari's vulnerability as shown in the figure 1. Beside of vulnerability, the participants have to analyze the risk and capacity of nagari's community



Fig. 1. Vulnerability map of nagari.

#### D. Third Day- Visioning of Nagari

The 3<sup>rd</sup> day workshop purposed to figure out the group's perspective on visioning of nagari. After review the last session, the learning participants are invited to figure out the vision of nagari. The vision of nagari is a condition in low level of vulnerability and the community group in nagari has to change to resilience community in utilizing their own capacity. The visioning of nagari created in a map called future nagari dreaming map.

The map will be a resource to discuss with large scale of nagari civilization. The discussion will hold to answer following questions: how to implement, how to monitor and evaluate, how to schedule, how the dream useful could to people. And the most important question is how to minimize or reduce risk of the disaster, adapt and mitigate climate change.

#### E. Fourth Day-5 Capitals Analysis

The 4<sup>th</sup> day workshop purposes to identify and classify 5 capitals and how to increase participants understanding to use the modals in effort on disaster risk reduction. The participants are invited to identify and classify 5 capitals refer to human resources, natural resources, social resources, physical resources and financial resources.

Then, the learning participants asked to elaborate the result of their own capital in a group discussion. The discussion has focused on how to reach the future nagari's vision through community own capitals.

#### F. Fifth Day- Follow Up Action

The 5<sup>th</sup> day workshop purposes to run down the priority action plan for increase community resilience in nagari level. Based on future nagari vision and capitals, the learning participants are invited to develop an action plan. The action plan could be implement by learning group, community groups and all level of government.

The participants ask to discuss about criteria of priority action plan. In general, the criteria are urgent, useful or needed by people, can be done using existing capitals and can improve resilience.

The action plans promote by learning participants as the result of participatory vulnerability and capacity assessment (2011) are:

1. Basic training on community preparedness in schools, communities and health providers including posyandu cadre. The topics are:
  - a. Trauma Healing
  - b. Rescue
  - c. First aid
  - d. Evacuation map
  - e. Early warning system
  - f. Public logistic management
2. Forming the Disaster Preparedness Group in each korong<sup>3</sup> and nagari including schools and health services provider:
  - a. Development of disaster preparedness post in each Korong and nagari
  - b. Encourage preparedness at the household level
  - c. Renewable data of population including vulnerable groups
  - d. Tree planting to reduce erosion and land slide, develop river bank barrier and terrace
  - e. Tree planting for greening
  - f. Tree planting to hold big wave
  - g. Planting of medicine, herbal and food bank in the house yard
  - h. Optimize the benefit of post-earth quake September 30, 2009
  - i. Develop evacuation route in each korong
  - j. Re-building (houses and public buildings) has to refer to save building schema
  - k. Optimize the management of clean water
  - l. Repair of the irrigation tunnels and watershed
3. Public policy advocacy:
  - a. Prohibition of illegal logging
  - b. Prohibition of taking stone in the river body
  - c. Livestock management.

Based on the result of multi stakeholders workshop (2011), in the implementation of the action plans, the community are invited to improve and develop the value of self-reliance by utilizing capital resources.

#### G. Socialization

The socialization workshop held to socialize the learning results to related stakeholder in nagari. In the socialization workshop, the learning participants were sounding the process of FS-PVCA especially the action plan. The learning participants raise awareness of the stakeholder to work together on disaster risk reduction, adapt and mitigate climate change.

In the socialization process, the community groups of nagari including stakeholder was break down the action

<sup>3</sup> Korong is part of nagari

plan to be nagari's action plan. As purpose of socialization, the community groups and stake holder bringing to optimize the sustainable entity in facing disaster. As noted, if the community groups and stakeholder couldn't unable to identify their vulnerability, has no knowledge on disaster, who will doing what, coordination and information to utilize the existing capital, then the risk will be very high.

In community strengthening activities are often standing behind the activities to give direct contribution to the communities during the emergency respond such as direct fund, food, etc. But, the community strengthening has to be a continuous activity emergency respond, rehabilitation and reconstruction and also community preparedness. FS-PVCA gave a major opportunity to the community to learn and prepare how to be facing the disaster through analysis of vulnerability, effort analysis in disaster, the capitals, and barrier and self-driving to realize their own resilience.

One step of collective action is establishment of Disaster Preparedness Group in nagari. The group consist of stake holder in nagari (farmers, government, informal leader, etc) is expected to handling task within the scope of community preparedness, both in emergency respond, rehabilitation and reconstruction. There are 5 teams in the group based on disaster management frame work.

1. Transportation and evacuation team, with major task:
  - a. Develop a rescue, safety and evacuation procedure, disaster preparedness post and early warning system
  - b. Evacuation plan on disaster
  - c. Develop a programmatic plan in transportation when disaster happen
  - d. Develop a relocation procedure
2. Information and data team, with major task:
  - a. Establish an information and data procedure
  - b. Select main target of disaster news
  - c. Establish a public communication procedure related to type of disaster, damage and impacts
  - d. Disaster recovery procedure
  - e. Procedure of utilizing the communication and information tools
3. Fire brigade team, with major task:
  - a. Manage risk of fire
  - b. Establish procedure on fire resistant building, minimized of fire resources such as short-circuit and electrical system
  - c. Develop a network with fire department on training and also resources
  - d. Develop a power risk failure consists of the transformation and damage
  - e. Manage a backup power
4. First aid team, with major task:
  - a. Develop a system on managing risk of victims of accidental and health
  - b. Collect data throughout the entity of resources, classify assets, the type of disaster risks and accidents
  - c. Train and prepare on first aid

- d. Together with related parties to first aid
  - e. Immediately report to the victim and detect health problems
  - f. Building relationships / network information with other groups to the findings of the possibility and responsibility to disaster management
  - g. Develop a deep data and documentation on survivor.
5. Public logistic team, with major task:
- a. Develop a risk management of food
  - b. Collect and organize public logistic post
  - c. Make savings program food with live food banks
  - d. Build relationships with various parties, especially the Department of Social
  - e. Collect data of vulnerable groups such as pregnancies, babies, disables, etc
  - f. Develop a public logistic management system.

Bad experiences of disaster are the community group has no disaster management skill. Those conditions made so many problems including hasn't information on victims, fatalities, injured and survivors that unable to safe the community. Besides, the community groups also couldn't reported the damage including loss of house and public buildings, evacuation route, relocation route, power sources, diseases, ect, that made barrier on disaster management and emergency respond.

#### IV. CONCLUSION

In the community-based disaster risk reduction, the community is invited to recognize and analyze the threat, danger, risk, vulnerability, and capacity of nagari's communities based on the experience of the disaster that has ever happened and transects to see the condition of the current nagari. The results of this analysis is then used as the basis for determining the activities of disaster risk reduction needs to be done by the nagari's community by utilizing resources in the nagari including human, nature, social, physical and financial resources.

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