ASSESSMENT ON THE ROLES OF TREES AND FORESTS IN BUILDING COMMUNITY RESILIENCE AGAINST DROUGHTS IN INDONESIA

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Bangkok, 10-11 August 2015

Outline

1. **INTRODUCTION**
2. **METHODOLOGICAL APPROACH**
3. **COUNTRY PROFIL**
4. **RESULTS AND DISCUSSION**
   - ❑ *Drought in the country*
   - ❑ *Lesson learned*
   - ❑ *Things to be done to promote a better future*
4. **CONCLUSION**

INTRODUCTION

- **Drought is influenced by a variety of causes** (climate, soil texture, topography, etc)
- National Disaster Mitigation Agency => **86 districts in 20 provinces** in Indonesia have experienced drought
- **Thus prolonged dry season** causes a number of environmental disasters
- **Drought in Indonesia ------a routine disaster** and it bring various impacts to the environment including to human livelihood.
- **Impact mitigation** - detail data/ information are needed

Objectives

This study is aimed at examining the relationship between forest, trees, human and drought in Indonesia. More specifically, this study try to address three issues: (i) identifying the key intersections between people/ communities/society and trees/forests and droughts; (ii) how those intersections are being managed; and (iii) how they might be managed better.

Rationale for case study area selection

- Drought may be influenced by a variety of causes depending on the typology of sites. Impacts may also varies across region.

- Four districts were selected based on drought history to represent region prone to drought, namely two District (Gunung Kidul and Situbondo) represent Java, Kupang District in Nusa Tenggara represents the island of Nusa Tenggara, Kapuas Hulu represents the island of Kalimantan.

METHODOLOGICAL APPROACH

Assessment technique

Primary data: data is obtained from observations and interviews of respondents in the field

Secondary data: secondary data is obtained from the recording of data already available in some official institutions / government

- **Development of questions**
- **Interview techniques**
- **Data analysis**

COUNTRY PROFILE

Indonesia is one of the developing countries that have a high level of vulnerability to natural disasters.
One type of the disasters is drought.

Geographical location between two continents and two oceans, and is situated around the equator that a climatological factors cause flooding and drought in Indonesia.

The most common drought occurred in Java , Bali and East Nusa Tenggara / West Nusa Tenggara. While in Kalimantan, generally prolonged dry season causing drought that potentially trigger wild / forest fire catastrophic.

TARGET LOCATIONS

Four districts: (Gunung Kidul and Situbondo) represent Java, Kupang District represents the island of Nusa Tenggara, Kapuas Hulu represents the island of Kalimantan.

1. GUNUNG KIDUL DISTRICT

- The physical configuration of area -----classified as karst areas,
- Divided into three (3) development zones, North Zone ; Central Zone ; South Zone with the altitude of 0 m - 300 m above sea level.
- Most People's livelihoods depend on agriculture
- **Target area**: Mertelu village, Gedangsari sub-District and Nglipar village and Pilangrejo village in the Nglipar sub-district. The other two vilages, Melikan and Pucang Anom from Rongkop sub-district.

1. GUNUNG KIDUL DISTRICT

Target location 1

Target location 2

Target location 3

2. Situbondo District, East Java Province

2. Situbondo District, East Java Province

- Situbondo District (1,669.87 sq.km with density of 400 individual/km2) (BPN Situbondo, 2014).
- Wonorejo, with size of 414,019 Ha, and bordered in the north with Baluran forest (Baluran National Park).
- This area has experienced with long dry season to serious damage to agriculture land, cattle and famine of animal in the forest.
- Local community also face the same situation such as crop failure due to this prolonged drought in 2011.

3. Kapuas Hulu District, West Kalimantan Province

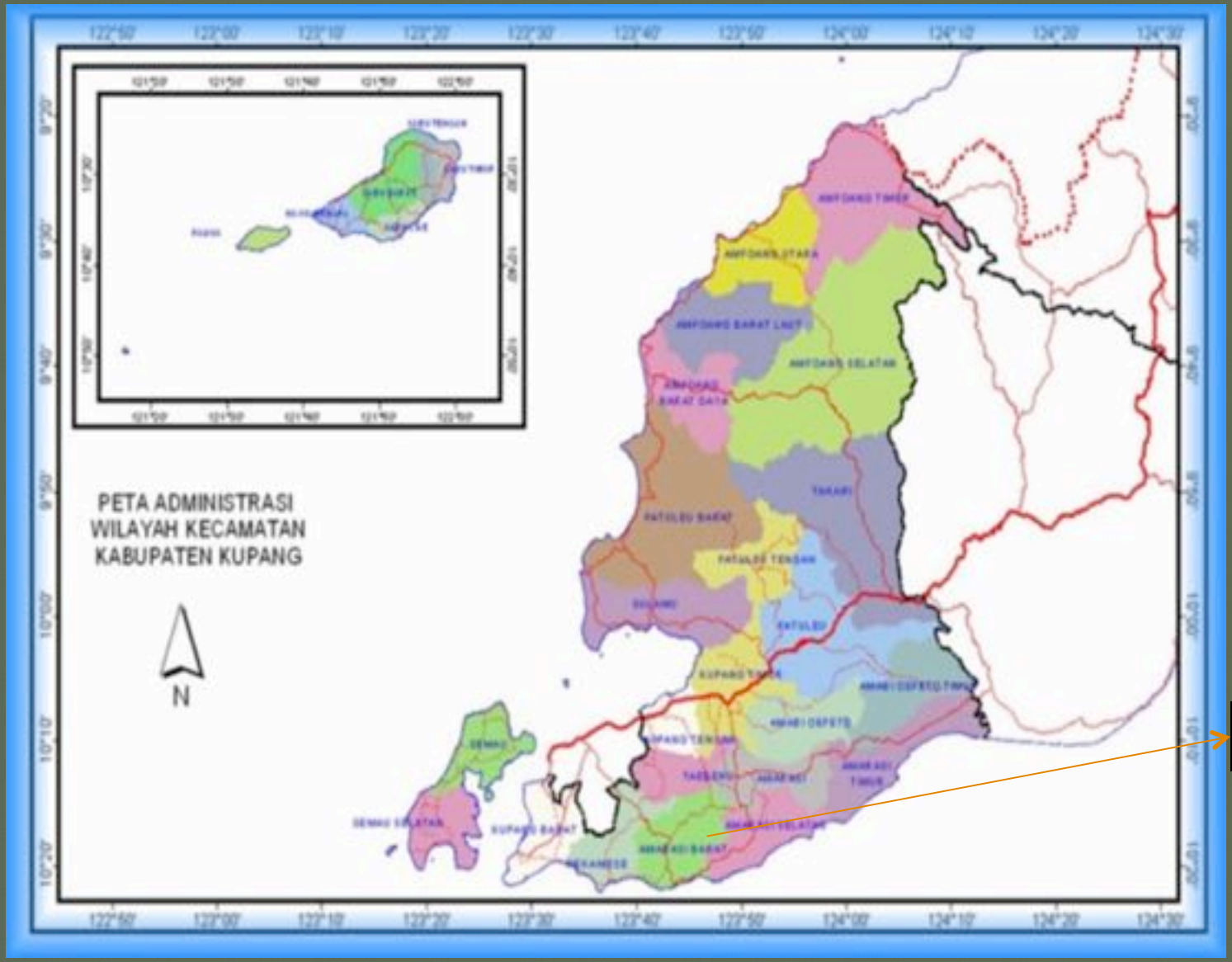
Target location 1
Embaloh hulu

Target location 2
Batang Lupar

3. Kapuas Hulu District, West Kalimantan Province

- Two national parks, Danau Sentarum and Betung Karihun National Park
- The topography is flat and hilly, Temperatures range between 22,9° C -31,05° C . The average rainfall per year is between 3500-4500 mm.
- In general terms, the population can be classified as Malay and Dayak. For their livelihoods, people from Malay ethnic are fishermen - fishing on lake - and farmers/ cultivators are the Dayak people.

4. Kupang District, East Nusa Tenggara



- ENT is located in the eastern portion of the Lesser Sunda Islands.
- The area of forest is about 40% with only 10% under dense forest. Cultivated intensively about 15%, and dominated by **dry land farming** .
- The **average temperature** is 29.96°C, average rainfall 117 mm/month (only 4 months).
- **Agroforestry system** is applied in poorest province and as many as 81% of people in Kupang District are farmers who depend on agriculture, forestry/plantation, animal husbandry and fisheries.
- Data was collected from **Merbaun village, Amarasi West** sub-District, Kupang District

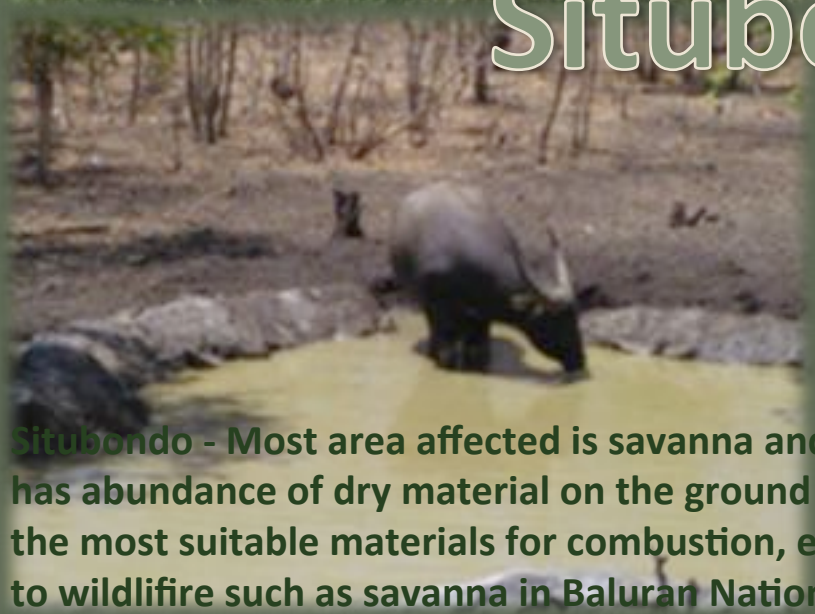
4. RESULT AND DISCUSSION

Danau Sentarum National Park (DSNP), in Kapuas Hulu District

Forest fires not only cause to uncomfortable microclimate condition, reduce crops and water quantity but the most significant one is reduce non-timber forest product which people are rely on for their livelihood.

Kupang, ENT

Five villages (Kualin, Toineke, Tuafanu, Tuapakas and Onie) in the sub-district of Kualin hardly received rain since December 2014. There has been several evidences of reduced water supply, soil cracked, dried up trees leading to crops failures. Thus, during this season people in these village have to share with their cattle to get "putak" for food (putak is made from boiled palm fruit (*Corypha elata Roxb.)* stem that a common fodder for livestock such as cow, pigs, goat and chicken in Timor region).



Situbondo

Situbondo - Most area affected is savanna and monsoon forest. During dry season, at Wonorejo has abundance of dry material on the ground from falling leaves and dry grasses which becomes the most suitable materials for combustion, especially when this materials available in area prone to wildlifire such as savanna in Baluran National Park which located nearby Wonorejo.

Gunung Kidul

Karst ecosystem is strongly influenced by secondary porosity causing water flowing into the underground system and lead to dry condition at ground level

LESSON LEARNED

1. Skill, culture and knowledge of local communities - made local community able to survive during severe drought;

2. Local wisdom - motivates local communities to carry out some innovative ways to anticipate drought;

3. Communication is the most important mechanism that need to be built across at all level

4. Best forest/agriculture management practices and water conservation programe to mitigate drought; and

5. Strong coordination mechanism among institution / stakeholders create more resiliency to community

Things to be done to promote a better future

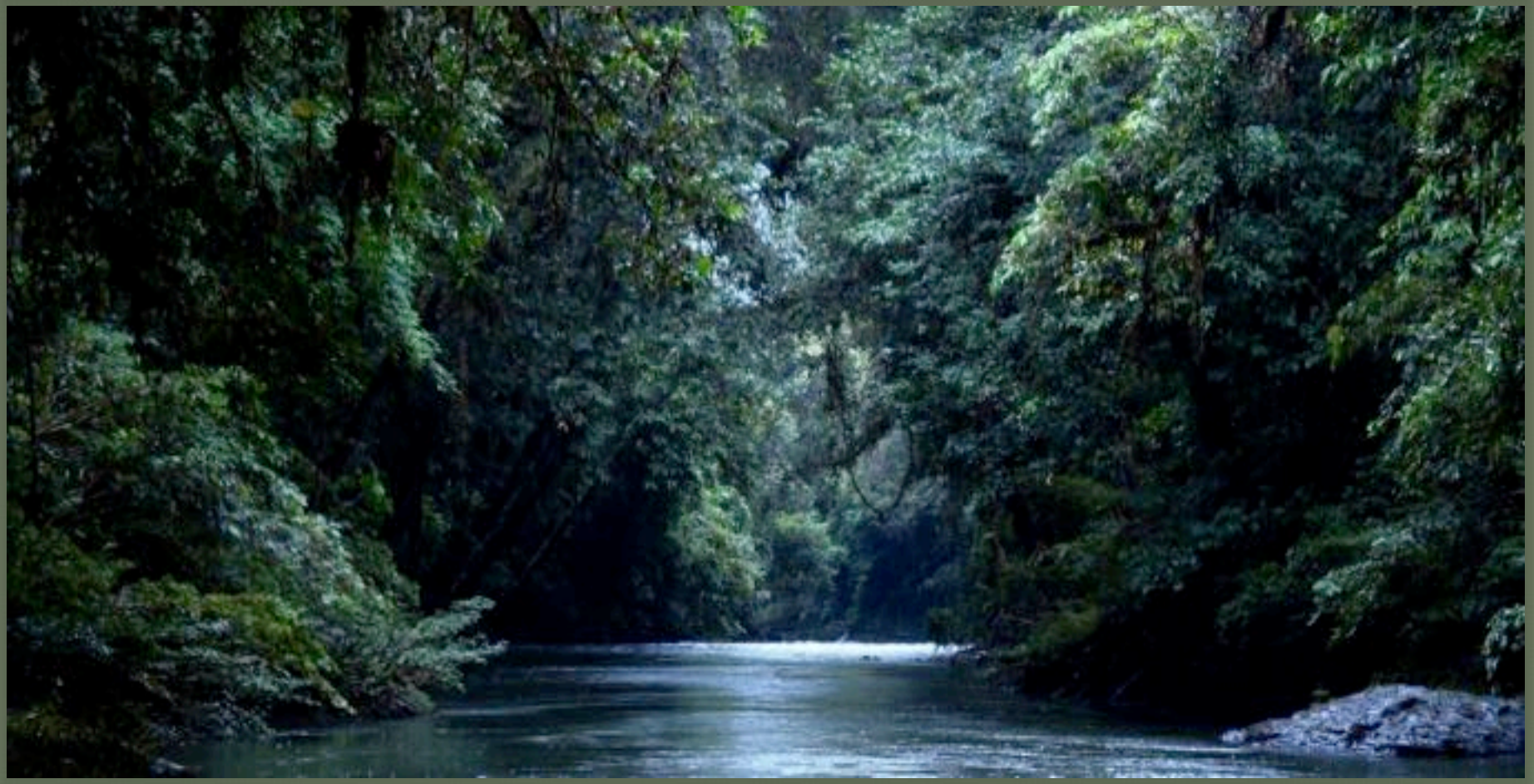
1) Strengthening communication in building resilience
2) Developing regulatory approach at the government, national and provincial level;
3) Providing intensive assistance
4) Maintaining all water resources through out the region (i.e, water caption management)

And in long-term run - community based-watershed management programme and water infrastructure development

Conclusion

- Community perceives tree/forest as an important factor influencing water supply
- Strong community resilience against drought is built through long experience, culture and local wisdom
- Community will react based on the level of connectedness among its member, which basically differ in term of skill, culture, knowledge and socio-economic background.
- Reducing and mitigating impacts of drought on forest and community requires site-specific approach such as through better communication among stakeholders, improved forest management strategy, and intensive assistantship from government.

Beauty of the forest



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