Introduction
Why the research important?

- Indigenous people are victims of the haze problem, their livelihood depends on the cultivation of the forest land, and they themselves are parts of the dynamics of stakeholders interactions relating to land use changes and forest fires → haze problem.

- It is associated with the principle of social responsibility stipulated in Article 14 of Universal Declaration on Bioethics and Human Rights.

- Three out of five elements of the concerns about social responsibility are relevant, including:
  - (1) improvement of living condition and the environment;
  - (2) elimination of marginalization and exclusion of persons on the basis of whatever grounds; and
  - (3) reduction of poverty and illiteracy (IBC, 2010: 9).
Aims to develop better understandings of the interaction between the ecosystem and the local community that creates the haze problem, its effects on them, and the related socio-cultural, local knowledge factors and agricultural practices.

Specific objectives:
(i) identify the stakeholders and socio-economic-cultural-policy drivers of haze;
(ii) investigate the linkages between forest fire and haze problem to the indigenous people; and
(iii) develop a sustainability framework for collaborative support to indigenous people and to overcome the forest fire and haze problem.
About the research - 2.

- It uses sustainability science perspective in attempt to formulate solutions to sustainable development, with an ambition to generate welfares for all relevant stakeholders.
- It is closely associated with the principle of social responsibility stipulated in Article 14 of Universal Declaration on Bioethics and Human Rights.
- A combination of methods was adopted, including literature review, focus group discussion (FGD), and field observation.
Sustainability Science Perspective
Life systems on earth, SD Problems and domains of sciences

Challenges for advancement and practicing Sustainability Science

• The obstacles are (Komiyama and Takeuchi, 2006: 3-4):
  • "(1) complexity of the problems and the specialization of the scholarship that seek to address them;
  • (2) the scientific discipline that examines this complex problems have themselves grown increasingly fragmented in recent years, so much research is conducted from a highly restricted perspective with regard to both phenomena identification and problem solving; and
  • (3) piecemeal approach which constraining the development and application of comprehensive solutions to these (sustainable development) problems".
• If social, economic and cultural factors are not included in the framing of the questions, a great deal of creativity can be wasted (p.5).

• If you want science to deliver for society, through commerce, government or philanthropy, you need to support a capacity to understand that society that is as deep as your capacity to understand the science (p.5).

• The need to establish multidisciplinary projects — and integrate natural sciences, social sciences and humanities from the outset.
Sustainability Science

• ... is a science discipline aim at generating scientific knowledge as the basis to formulate science-based innovative solutions to the sustainability problems and delivery of sustainable development goals (SDGs).

• Elements of sustainability science:
  – interdisciplinary (trans-disciplinary);
  – solutions oriented (of SD problems/issues/challenges);
  – optimising social and humanity potential (through learning process approach);
  – Maintaining continuation of benefits stream (from ecosystem);
  – aim at well-being for all.
FOREST FIRE AND HAZE PROBLEM

**Upstream**: Ethical elements and social responsibility issues.

**Downstream**: Problems and impacts.

Indigenous people

Both are equally important as stated in the conclusion of the IBC Report: “... it is requires not only a serious effort to improve health and health care delivery but also acceptance of responsibility to minimize or eradicate avoidable risk of threats to health and well-being” (IBC, 2010: 45).
Research results
Community preparedness to deal with forest fires and haze

• The existence of MPA (Fire Care Community) → still having problem with its sustainability.
• The possibility to build the capacity of MPA to be able to provide small-scale land clearance services to the community and small scale (legal) investor to prepare land for agricultural purposes.
• Members of MPA can be trained to improve their technical skills and provided with supporting equipment.
• The MPA can be given the right to cultivate land which functions as a showcase of how to properly conduct land clearance.
• The earning from the cultivated land can also support MPA operational costs and the livelihood of the active members in the long term.
• → This initiative can be part of the future strategies to deal with the threats of forest fires and haze.
Social indigenous system

- The indigenous people called Petalangan have existed in Pelalawan before Hinduism came to the region. Petalangan people had lived under the influence of several kingdoms prior to the Indonesian independence (Marzali, 2014).
- The social indigenous system in Pelalawan is called Pebatinan (Batin system). There are 29 Pebatinan in Pelalawan, each of which is led by a Batin.
- This system is based on communal ownership and control over land and forest, which is called hutan tanah ulayat → divided into three categories:
  - **Rimba perladangan**: seasonal forest land to grow food crops, using slash and burn method;
  - **Rimba cadangan**: reserved forest to harvest timber and non-timber forest products as income sources; and
  - **Rimba kepungan sialang**: forest allocated specifically as habitat for bees to produce honey, which is seasonally harvested by indigenous people.
Norms and ethics related to forest and land use rights and management

- *Nyanyi Panjang*: is a type of cultural event in the form of singing poems containing norms and ethics in the social life of the community. Through the event, the community is reminded from time to time about the principles of interactions among different aspects of their land- and forest-based life.

- *Menumbai*: is the practice of harvesting honey from sialang trees. Sialang is a term used to represent a group of tree types which are suitable as hotbed for bees (Apis dorsata type) to produce honey. This practice is conducted two or three times a year during the night with a torch made of coconut fruit fiber as the only source of light. The honey will be then shared among the team of harvesters, clan leaders, and the other clan members following adat.
Stakeholders

- Purnomo (2015) identified 17 stakeholders involved in the complex problem of haze and forest fires, including land claimants; farmers’ group (two); marketing team of cleared land; government agencies of different levels (five); land speculators; land buyers (two); palm oil and industrial plantation businesspersons and corporations (three); non-government organizations; and universities and research institutes.

- In this research the stakeholders classified into four main categories:
  - 1) Indigenous people;
  - 2) Migrants and land investors;
  - 3) Palm oil and industrial forest plantation corporations; and
  - 4) Government agencies.
Complexities and drivers of forest fire and haze
1) Haze problem is a consequence of land clearance for plantation (mainly palm oil and rubber). This situation is then worsened by illegal logging. Dry season with less rainfall and reduced soil water table also make forest and peatland more prone to be burned, and fire spread to a larger area. Two factors which make land clearance attractive include: (1) an increase in land price after clearance; and (2) the existence of palm oil factories which do not require plantation; instead, they obtain raw materials from non-corporate plantation which is mainly located on the area either under overlapped property right regimes or disputed tenure status (between the state, adat communal rights, and corporate concession).

2) The forest concession given by the government to palm oil companies, industrial forest (HTI), and logging concession (HPH) have overlapped the adat communal land claimed by indigenous people. This has created conflicts between the companies and the indigenous people. In addition, the development of palm oil plantation in earlier periods which was intended for and distributed to trans-migrants from outside Riau Province has left indigenous people with the feelings of being alienated and unequally treated.

3) Road construction in HTI locations to transport timbers has made it easier to access the forest and thus attracted even more land clearance.
• 4) The difficult economic condition of indigenous people (around 75% are classified as poor households) and their low educational level have limited their income sources to logging (in the adat communal forest land claimed by indigenous people), involvement in land clearance activities, and transfer of land rights to migrants from outside Riau Province as well as investors.

• 5) Migrants, whose population have prevailed quickly, hope to improve their livelihood through land-based economic activities in Riau Province. Indigenous people, feeling alienated by the government, consider migrants and land investors as partners to improve their livelihood through land clearance (by fire) and land right transfer.

• 6) The government, both central and local, did not have a firm standpoint and policies to tackle various aspects of the problem. Related regulations were considered insufficiently enforced. The migrants residing within the TNPP area have integrated into the nearby village, leading to an expansion of village area coverage, further land conversion, and an “open access” situation.
Land use changes, complexities, and drivers of haze problem

- **Palm Oil Plantation:** Used of adat claimed land and built plantation for transmigrants (mid 80s)
- **Transmigrants:** Better livelihood than indigenous (adat) people
- **Local and Central Government:** Population management, land use policy, and law enforcement (weak), creating an "open access" situation to the forest and land
- **Indigenous (adat) local people:** Poverty (low level livelihood), feeling alienated, used opportunity of legal pluralisms condition, land clearing for livelihood
- **HTI and HPH Companies:** Use of adat claimed forest/land and building access road
- **Migrants and land investors:** Collaborating with indigenous local people in transferring land rights and land clearing
Ethical framework for collaborative supports to indigenous people and overcome haze problem

• This ethical framework consists of four components:
• (1) property right regimes: state, private, communal, and open access
• (2) Ethical issues: The state-related ethical issue (protect and improving welfare of the people); Ethical issue of the private sector/corporations (CSE-R); Ethical issue of the community (environmentally friendly behavior in using and managing land and forest).
• (3) elements for actions and transition towards sustainability (cultural, socio-economic, and environment); and
• (4) addressed sustainability issues, by taking into account: (1) the social and cultural structures of indigenous people which are land- and forest-based; and (2) indigenous people have already developed local wisdom for sustainable management of land and forest.
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| **State land and forest** (currently not assigned any usufruct right, but also claimed as communal forest land) | State responsibility to protect the interests of indigenous people as well as other legal inhabitants, and improve their welfare | • Development of *kepungan sialang* forest under community forestry status (HKm) where appropriate;  
• Establishment of a collaborative model for developing palm oil and industrial forest plantation, which is between the corporations and indigenous people/other legal inhabitants, and facilitated by the government;  
• Development of state-owned permanent food crop land which is cultivated by local people, managed by local authorities, and with arrangements of yield sharing;  
• Social and cultural empowerment of indigenous people to sustainably manage land and forest, and to improve their livelihoods (i.e establishment and empowerment of MPA). | • Conservation of land, forest, water, and biodiversity;  
• Local economic development (NTFP);  
• Economic growth and employment;  
• Food security. |
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| Land and forest under concession to corporation (both palm oil plantation and HTI - still valid and on-going) | Corporate social responsibility             | • Supporting local economic development and forest conservation (i.e. development of *kepungan sialang* forest as for ecotourism purposes);  
• Development of state-owned permanent food crop land, which is cultivated by local people and managed by local authorities with yield sharing arrangements;  
• Empowerment of MPA.                                                                 | • Local economic development (NTFP, ecotourism);  
• Conservation of land, forest, water, and biodiversity;  
• Food security.                                                                 |
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| Land and forest under expired concession | Re-establishment of rights of indigenous people for a decent life | • (Inside TNNP): Development of *kepungan sialang* forest with the rights of indigenous people to harvest NTFP;  
• (Outside TNNP): Establishment of a collaborative model for developing palm oil and industrial forest plantation, which is between the corporations and indigenous people/other legal inhabitants, and facilitated by the government;  
• Development of state-owned permanent food crop land which is cultivated by local people and managed by local authorities with yield sharing arrangement;  
• Social and cultural empowerment of indigenous people to sustainably manage land and forest, and to improve their livelihoods (i.e establishment and empowerment of MPA). | • Social development & empowerment;  
• Local economic development (NTFP, eco-tourism);  
• Food security. |
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| Communal land and forest | • State responsibility to protect the interests of indigenous people and improve their welfare; • Corporate social responsibility | • Development of local economy and conservation of forest (i.e. improvement of *kepungan sialang* forest as eco-tourism destination).  
• (Wherever possible and agreed upon): Establishment of a collaborative model for developing palm oil and industrial forest plantation, which is between the corporations and indigenous people/other legal inhabitants, and facilitated by the government;  
• Development of state-owned permanent food crop land, which is cultivated by local people and managed by local authorities with yield sharing arrangements;  
• Social and cultural empowerment of indigenous people to sustainably manage land and forest, and improve livelihoods (i.e establishment and empowerment of MPA). | • Local economic development (NTFP);  
• Economic growth and employment;  
• Food security;  
• Conservation of land, forest, water, and biodiversity. |
Conclusion and recommendation

- A major root cause of forest fires and haze is the take-over of land and forest under the communal control by the state, which is then under concession of (mostly palm oil) corporations → this has left indigenous people with the feelings of being unequally treated, unable to get benefits from the land, and alienated in their own homeland.

- On the other hand, the development of palm oil plantation and industrial forest has contributed significantly to economic growth.

- Recommendation: Key solutions to the problem should be based on re-establishing the rights of indigenous people and empowering them so that they can actively get engaged in relevant processes.

- This research offers an ethical framework (which still needs further development) as the basis for the stakeholders to take actions in the transition towards sustainability and avoid the haze problem.
Terima kasih