

Promoting sustainable land use practices among the forest dependent communities: Case study of the Ra Du indigenous rice in A Luoi, Thua Thien Hue, Vietnam

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Introduction

In many parts of developing countries, unsustainable cultivation practices cause the conflict between food security and environmental deterioration leading to deforestation and forest degradation. Accordingly, the poor communities are especially more and more vulnerable due to increasing threats caused by climate change on their lives, their livelihoods and their food security. To address this, the research aims at promoting sustainable land use practices among the forest dependent communities with using a case study of the Ra Du indigenous rice in A Luoi, Thua Thien Hue, Vietnam.

Ra Du is a rare and long-standing indigenous rice variety of the Ta Oi ethnic people in A Luoi district, Thua Thien Hue province, Vietnam. This is considered to be one of the top-quality rice varieties among all local rice varieties currently. The Ra Du rice variety can be grown on upland fields with a growing period of about 180 days, and bring a higher yield than other varieties. The rice has many outstanding advantages compared to other traditional ones such as drought resistance, intensive farming toleration, less affected by pests and diseases. The average yield of Ra Du rice ranges from 26 to 31 quintals/ha. As the rice has good quality which is delicious and fragrant, the price is rather high, with an average of 1 USD/kg of rice and 2 USD/kg of rice seeds. This therefore brings good profits to farmers. Although consumer demand for this type of rice is increasing, Ra Du rice output is still quite limited and does not meet the market demand (UNDP, 2019).

Promoting the development of Ra Du rice variety has special significance in preserving indigenous rice varieties with high economic value, ensuring food security for ethnic minorities while reducing pressure on the forests and biodiversity of Thua Thien Hue province.



Figure 1: Ta Oi ethnic people with Ra du rice harvesting (UNDP, 2019)

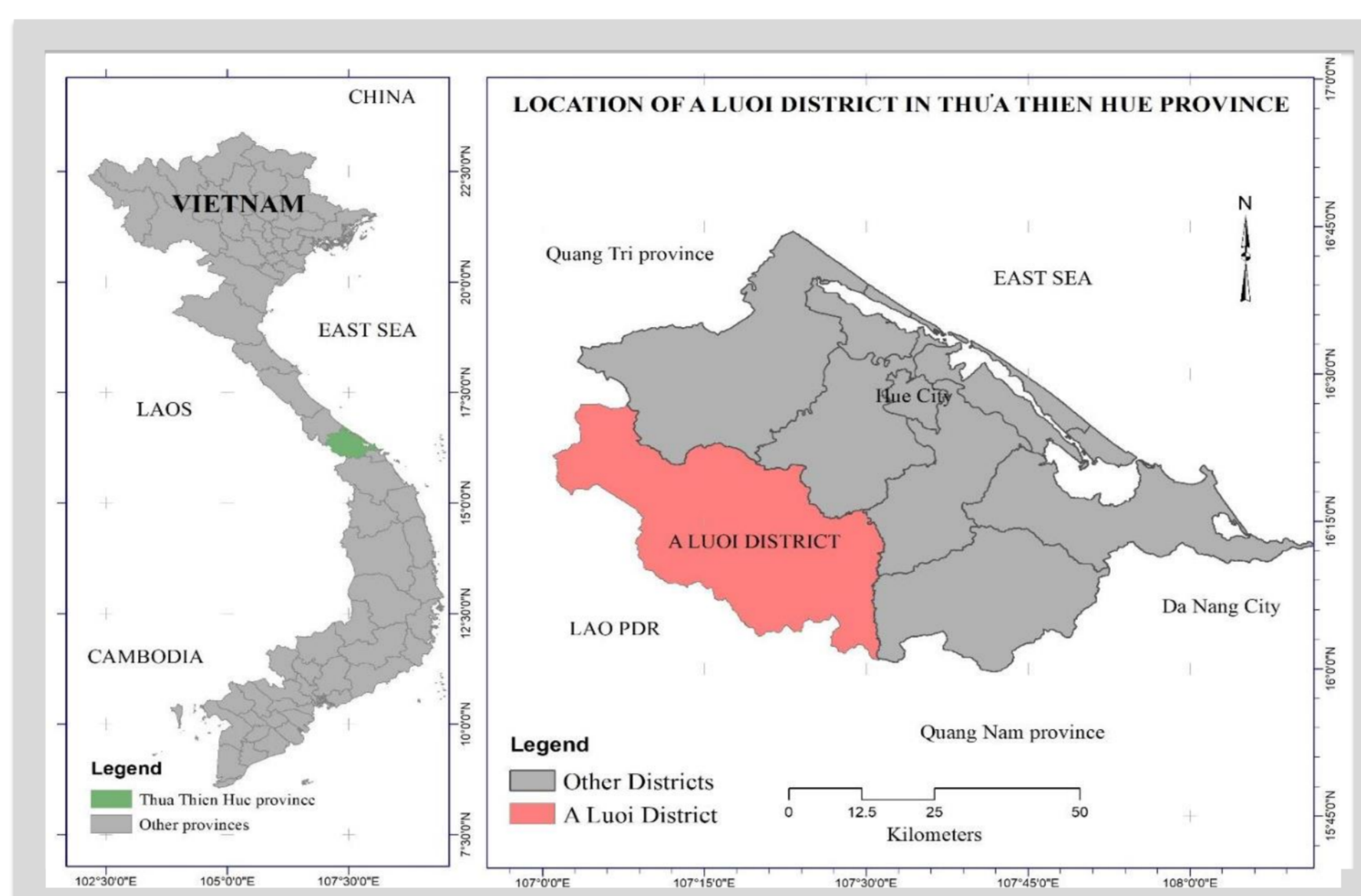


Figure 2: Map of A luoi district, Thua Thien Hue, Vietnam (Pham, T.G; 2019)

Method

This research is conducted by applying the Success Scenario approach. As such, the Scenario thinking is employed to explore the interrelationships between the critical uncertainties and important predetermined trends to develop scenarios and forming strategy for action points (Chanie, E; 2013).

Specific methods are included in this process, such as:

- Case study analysis
- Literature Review
- Analysis of Driving Forces
- Cross Impact Analysis
- Scenario development (Chanie, E; 2013).

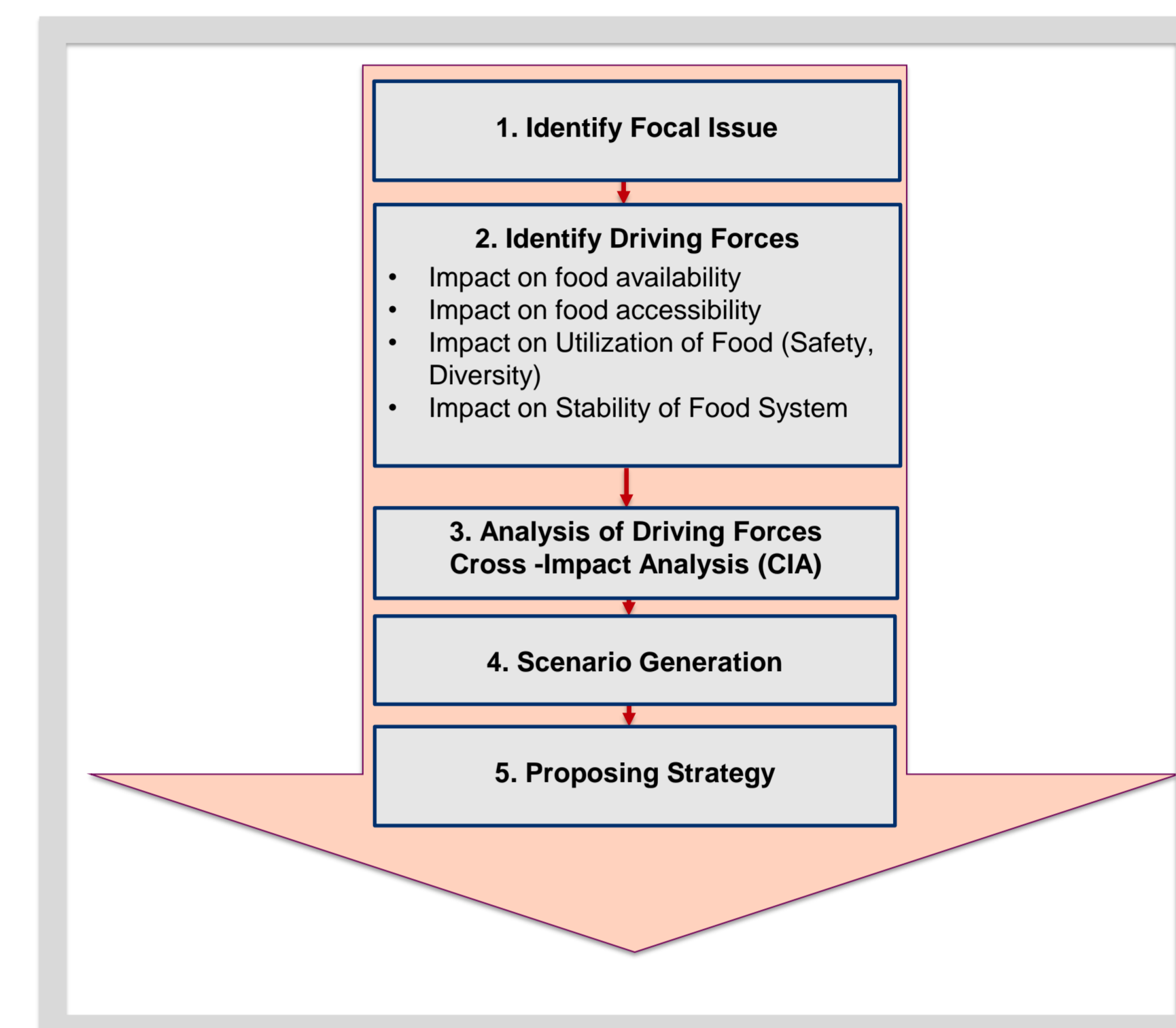


Figure 3: Study framework (Developed by author)

Results

Identify Driving Forces (Drivers of Change)

| | Impact on food availability | Impact on food accessibility | Impact on Utilization of Food (Safety, Diversity) | Impact on Stability of Food System (Resilience) |
|--------------------------|---|---|---|--|
| Favorable factors | <ul style="list-style-type: none"> Natural resources: soil characteristic, water sources; Climate condition: rainfall, temperature; Rice seed quality; High price of the Radu rice; Cooperative, networks; Technology support programs. | <ul style="list-style-type: none"> Subsistence production-based livelihoods; Local networks; Governance, policies on land use and supportive policies to minority ethnic groups. | <ul style="list-style-type: none"> Forest based livelihood activities: collection of wood, wild vegetables and fruit, medical plant, honey etc.; Governance policies on land use and supportive policies to minority ethnic groups; | <ul style="list-style-type: none"> Governance policies on land use and supportive policies to minority ethnic groups; |
| Limiting factors | <ul style="list-style-type: none"> Farming techniques; Market access; Infrastructure: irrigation, communication, transportation; | <ul style="list-style-type: none"> Annual income & income diversification, less saving; Market access; Infrastructure: communication, transportation. | <ul style="list-style-type: none"> Annual income; Infrastructure condition: communication, transportation; Access information. | <ul style="list-style-type: none"> Natural resources degradation and reduction; Education and health care system at the locality; Knowledge and technical skills; |
| Risks | <ul style="list-style-type: none"> Climate change impact, natural disasters; Soil erosion and the decline of arable land; Pests and disease. | <ul style="list-style-type: none"> Natural disasters and natural shocks; Water availability changes; Rising food price; | <ul style="list-style-type: none"> Natural disasters and natural shocks; Economic factors: inflation rate; Forest reduction and degradation. | <ul style="list-style-type: none"> Natural disasters and natural shocks; Water availability decline; Pests and disease. |

Figure 4: Matrix of Driving Forces (Synthesized by author)



Figure 5: Ra du rice farming (UNDP, 2019)

Cross impact analysis (STEEV)

To quantify the influence, the following scale is used:

- 0 = No influence;
- 1 = Weak relationship;
- 2 = Medium relationship;
- 3 = Strong relationship.

| Impact On Of | Social (S) | Technological (T) | Economic (E1) | Ecological (E2) | Political and Values (V) | Active sum |
|---------------------------------|------------|-------------------|---------------|-----------------|--------------------------|------------|
| Social (S) | | 2 | 2 | 2 | 3 | 9 |
| Technological (T) | 2 | | 1 | 3 | 2 | 8 |
| Economic (E1) | 2 | 2 | | 2 | 1 | 7 |
| Ecological (E2) | 3 | 1 | 3 | | 2 | 9 |
| Political and Values (P) | 2 | 2 | 2 | 2 | | 8 |
| Passive sum | 9 | 7 | 8 | 9 | 8 | |

Figure 6: Cross impact analysis (Adapted from Chanie; 2013)

Scenario Generation

Ecological & Social transition

As the Ra Du rice are grown on land along streams or small rivers, soil erosion and the decline of arable land will push the people to move to other land area to grow. Through applying traditional farming methods that people clear, burn, make holes and sow seeds. This can lead to the reduction of natural forests and affects to the biodiversity in the area (UNDP, 2019).

Ecological transition

Climate change and natural disasters are becoming more severe and more extreme. With limiting of farming techniques, ethnic people in A luoi will be difficult to cope with climate changes and unpredictable natural events. As such, the Ra du rice variety can be at risk of degenerating.

Proposed strategy for land use system

Based on the scenarios generated, Agroecological strategy is proposed as a holistic approach to address the issues of ecological and social transition in A Luoi district (FAO). Some specific activities are proposed including:

- Developing suitable land use planning to increase opportunities for people to access land (Mai, N. et al 2020);
- Strengthening and enforcing laws and regulations on protection of natural forest areas (Mai, N. et al 2020);;
- Promoting REDD+ mechanism as a major incentive for local people in sustainable management and conservation of forests areas (Mai, N. et al 2020);
- Building agroforestry models to increase the diversity and increase income of local people, e.g: Ra du rice production under the canopy of natural forests (FAO);
- Technique training on Ra Du rice seed production and commercial rice production toward organic approach;
- Forming co-operative for production and trading of Ra Du Rice to provide better services to local farmers.

Conclusions

With limiting of knowledge, skills, farming techniques and savings, the forest dependent communities will be harder in dealing with unpredictable changes and natural shocks. The Ra du rice variety thus can be at risk of losing this rare rice variety. Simultaneously, local practices can make deforestation to be more exacerbated. As a vicious cycle, forest reduction primarily affects the local people as they are dependent on a range of products obtained in surrounding areas for their living. From above analysis with applying of scenario planning method, the study proposed the Agroecological strategy as an integrated approach to promote sustainable land use practices among the local communities in A Luoi to reserve and develop Ra Du indigenous rice, meanwhile, afford the forest and biodiversity conservation goal.

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