THE FORMULATION OF SUSTAINABLE AND HIGHEST BEST-USE (SHBU) MODEL FOR FELDA LANDUSE DEVELOPMENT

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Abstract

FELDA land development focuses on settlements and agricultural areas, hence it is crucial for them to be managed efficiently. This study aims to establish a model that integrates sustainable land development with high income returns from the land. Therefore, this study identifies the elements essential for sustainable and highest best-use (SHBU). Several research approaches have been conducted namely Focus Group Discussion, documents analysis and questionnaire survey in order to search for key elements to be adapted into the SHBU model. From the analysis, five elements of the Sustainability and Highest-Best Use (SHBU) model, are discovered that they comprise of FELDA industries-based crops (FIbC) and SHBU, Strategic plan management (SPM), FELDA business centre (FBC), FELDA residential compound (FRC) and FELDA agro-preneur (FagP). These five-dimension SHBU model serves as a tool to assess the case study of FELDA settlement in order to come up with strategies to solve land development issues.

Keyword: Sustainability, Highest Best-Use, FELDA, Land development

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INTRODUCTION
Malaysia has an abundance of agricultural land, particularly the FELDA lands, which have the potentials for a higher return in modern agricultural, industry and business sectors. With vast agricultural lands, FELDA can be the leader in large-scale food industries either for local consumers consumption or the products could be exported. For this to take place, FELDA needs to play a key role in promoting and generating various rural economic activities to close the gap between urban and rural areas (FELDA, 2019), and to uplift FELDA itself towards sustainability and resilient settlement schemes. Presently, there is a substantial number of FELDA households that remain in the lower income bracket. This may be caused by multiplicative factors of unproductive crop activities, commodity’s market volatility, lack of reform strategies, high debt, and many other related issues as mentioned by the Minister in the Prime Minister’s Department (Economy) Datuk Seri Mustapa Mohamed in his speech on FELDA recovery plan, as recorded in The Sun Daily (2021). Due to these circumstances, there is a need to find interventions and solutions to such issues especially since FELDA lands have the potential to be part of the highest and best use of land with a higher return to enhance the quality of life and livability of its settlers and the nation, in general.

LITERATURE REVIEW
FELDA, by itself, has introduced a blueprint, the so-called report of Kertas Putih, which enforces a new direction of sustainable FELDA development in the future (FELDA, 2019). Through the Kertas Putih, two main catalyst projects were introduced: (i) the Settlers Development Programme (Program Pembangunan Peneroka - PPP) with the aim to generate additional income to settlers and support the national food security initiative; and (ii) Smart farming initiative via the Smart Plantation Management System (SPMS). The implementation of both is still at a pilot stage and this opens a venue for intervention (Rashid M.F.A, et.al, 2021). In short, PPP and SPMS are two catalyst initiatives in Kertas Putih, with the main goal of revitalising FELDA into a new chapter of transformation in terms of their fundamental issues, and prospects. Both are very significant initiatives to ensure the sustainability of FELDA as a national rural catalyst development to improve the livelihoods and prosperity of settlers and their new generation (FELDA, 2019).

Through PPP, it is estimated that each participant of this programme will get an additional monthly income ranging from RM500.00 to RM1000.00. PPP is going to focus on cash crops (such as MD2 pineapple, fertigation chilies, young ginger, etc.), aquaculture, and livestock on the identified areas or spaces at the settlers’ housing lots or vacant lots in FELDA settlement areas. These projects are granted based on several criteria such as the preference of the participants,
expected high additional income from the participants, minimal usage of land area, and technical expertise of FELDA. The project will be awarded to the participants in terms of a grant worth a maximum of RM10,000.00 or more for Plasma Category, and RM20,000.00 or more per participant for Cooperation Category. Currently, there are 3202 approved projects worth RM58.3 million (Rashid M.F.A, et.al, 2021).

Meanwhile, SPMS is a crop smart management system developed by FELDA Research and Development Department (R&D) that is based on Geospatial Information System (eGIS) to manage and monitor the palm oil estate efficiently. Currently, there are 26 FELDA settlement schemes throughout Malaysia that have been monitored by the SPMS application which is still in Phase 1. SPMS uses drone technology and satellite images for high-resolution images to screen and measure the performance of palm oil trees for monitoring and cost-efficiency purposes. Therefore, based on the discussion above, a gap is found. This gap needs to be closed to cater the shortfalls in both projects, especially on land selection decision making, high-crop scenario planning, measurement, and supportive intervention strategy formulation. The PPP, for example, is currently only implemented on a basis of settlers’ preferences on their own spaces without land allocation or suitability land analysis for the entire settlement scheme. Furthermore, a comprehensive planning of physical-support systems such as a business centre, crops collection hub, and so on, is required. Moreover, SPMS is undoubtedly an outstanding system that enhances the management of estates and crops. However, FELDA is still in a dire need of a comprehensive support to ensure sustainability and the highest-best use for cropland development (Rashid, M.F.S, 2021). With this, the study shall fulfil the gap through the exploration of the FELDA land development framework.

**RESEARCH AIM AND OBJECTIVES**

This study is aimed at formulating a model for developing FELDA land with sustainability while ensuring the highest and best-use of the land. This aim shall be achieved through the following objectives:

i. To identify the sustainability and highest-best use (SHBU) elements that incorporate them with the national policy inspirations.

ii. To understand the needs and opinions from the relevant stakeholders regarding the SHBU elements for better land development

iii. To propose suitable conceptual domains and the strategies that strengthened the FELDA land development.
RESEARCH METHODOLOGY

This study conducts qualitative research that consists of three main research approaches. First is document analysis that focuses on the concepts and approaches of sustainable and contemporary land development and best practices of the highest-best use relevant to FELDA transformation. Moreover, the contents analysis involves three identified reports or documents, namely Dasar Perancangan Fizikal (PDF), Desa Negara (2017), Dasar Pembangunan Luar Bandar (DPLB) (2018) and FELDA’s Kertas Putih (2019).

The second approach is based on two (2) focus group discussions (FGD) sessions. This processes help build a conceptual understanding of FELDA lands development based on real issues and problems faced by FELDA settlers and FELDA management in settlement areas. Discussion with this focus group revolves around potentials and suggestions in improving the land development and income generations of the settler. The first FGD was conducted on 29 June 2021 via an online Google Meet, and the subjects were represented by eight (8) participants. The focus group is made of four first-generation FELDA settlers, three from second FELDA generations and head of division official from FELDA branched and headquarters. Then, seconf FGD session was with FELDA Representatives: (a) FELDA Lands Management Office and head of Program Pembangunan Peneroka, and (b) eGIS and RnD departments. The special sessions were conducted on 28 July 2021 and 24 August 2021, respectively, via online Google Meet. The FGD and special sessions were conducted to obtain first-hand information and fundamental issues regarding FELDA development and their feedback on the proposed framework. All related information was then transformed into themes and interpreted accordingly to validate the formulation of the SHBU framework.

The third method of data collections involved questionnaire survey that was conducted for two weeks starting from 12th July 2021 until 18th July 2021 via Google Form. The survey was aimed to obtain the perspectives or views of the FELDA generations regarding the best future development of the FELDA lands and potential economic activities, as well as to obtain an overall picture of demographic and socioeconomics of the respondents. Moreover, it is also a process to triangulate the significance of the SHBU framework to cater to the current states or desires of the FELDA’s generations. The respondents of the survey were open to all generations that are willing to participate. Overall, 39 respondents were involved in the survey.

ANALYSIS AND DISCUSSION

Summary From the Document Analysis.
The analysis discussed the integration on sustainable element and Highest best-use. Rural Development Policy acts as a guidance in developing the rural area
until 2030. This policy was crafted based on three principles (Kementerian Pembangunan Luar Bandar, 2018) that are stated below:

1. **Sustainability** - which gives priority to quality and sustainable community life.
2. **Inclusive** - which considers balance development in all aspects of life.
3. **Holistic** - which encompasses various dimensions such as social, economic, spiritual, physical, culture and governance.

Basically, Table 1 shows the Rural Development Policy has 10 pillars that will become the basis of the SHBU Model. Generally, all pillars of Rural Development Policy are related to the scope of this research, except the 8th pillar - regarding Effective Delivery and Governance Systems. This situation shows that the scope of this research is parallel with Rural Development Policy.

### Table 1: Relationship of Pillars of Rural Development Policy and Scope of Research

<table>
<thead>
<tr>
<th>No.</th>
<th>Pillars</th>
<th>Element Adopted to FELDA Land Development, SHBU Model</th>
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<tbody>
<tr>
<td>1</td>
<td>Competitive and sustainable economy.</td>
<td>Cash Crop, Agricultural Projects</td>
</tr>
<tr>
<td>2</td>
<td>Entrepreneurship driven economic development.</td>
<td>Agropreneurship</td>
</tr>
<tr>
<td>3</td>
<td>Quality human capital.</td>
<td>Agropreneurship</td>
</tr>
<tr>
<td>4</td>
<td>Complete and modern infrastructure.</td>
<td>Business Centre, Residential Settlement</td>
</tr>
<tr>
<td>5</td>
<td>Excellent rural young generation.</td>
<td>Agropreneurship</td>
</tr>
<tr>
<td>6</td>
<td>Progressive rural women.</td>
<td>Agropreneurship</td>
</tr>
<tr>
<td>7</td>
<td>Sustainable rural life.</td>
<td>Residential, community</td>
</tr>
<tr>
<td>8</td>
<td>Effective delivery and governance systems.</td>
<td>Sustainable Plant Management</td>
</tr>
<tr>
<td>9</td>
<td>Biodiversity and sustainable environment.</td>
<td>Cash Crop, Agriculture</td>
</tr>
<tr>
<td>10</td>
<td>Housing, regional development and integrated rural settlement.</td>
<td>Residential</td>
</tr>
</tbody>
</table>

Source: Adopted from Kementerian Pembangunan Luar Bandar (2018)

Meanwhile for HBU, according to The Appraisal Institute, (2001), HBU is defined as the possible legal and logical use of an empty or upgraded property, which physically, reasonably, and financially feasible, allowing it to deliver the highest value (Utomo et al., 2018)
1. Legal Acceptance Analysis
   a. (private restriction, zoning, building codes, and environmental regulation)
2. Physically possible
   a. (size, shape, terrain, and the availability and capacity of public facilities)
3. Financial acceptance
   a. (cost of land preparation, construction costs (building costs and fixed equipment costs), professional service fees, administration fees, and other costs)
4. Maximum productivity analysis
   a. (value of land was determined based on gross development value, total development value, and minimum profit requirements)

Meanwhile, the term sustainable development is the idea that human societies must live and meet their needs without compromising the ability of future generations to meet their own needs. According to Walacik et al. (2020), the concept of sustainable development involves much more than the "green" issue. "Sustainable value" can reflect not only economic issues (reflected directly by property value) but can exceed its meaning to a broader sense, including sustainable development issues (social, political, environmental directions) at the same level. It thus can create an added value for real estate analysis (mainly based on "highest and best use" assumptions). Even though the "highest and best use" notion has been defined, its interpretation causes many ambiguities and problems. "Highest value" is a condition that requires consideration of all the circumstances (physical, legal, financial and productivity) with maximum: return rate/developed area/increase of build-up area. Maximal productivity in the highest and best use context means it does not directly cause any decreases in sustainable value or/and give the possibility to increase the sustainable value in the future.

Findings of Focus Group Discussion (FGD) with FELDA
The FGD was conducted on 29th June 2021 via an online Google Meet. It is aimed to obtain the opinion and perspectives of the FELDA representatives to respond to the research direction and the proposed framework of FELDA lands development based-SHBU, and other related fundamental issues to be discovered in the research. Eight participants holding various positions affiliated with FELDA attended the session. There were four first-generation FELDA settlers, 3 from second FELDA generations and a head of division official from FELDA headquarters.

The following are the summary of the comments, opinions and findings (based on dimensions and fundamental issues of the FELDA settlement), but not limited to:
i. **Element 1: FELDA Crops & Future Prospects**

- Under current practices, FELDA crop land is only used for rubber and palm oil commodities. However, some lands are cultivated while others are not because the settlers are not proactive.
- For oil palm settlers, the results are very good and profitable. Meanwhile, the opposite happened to the rubber settlers. They have to face low prices and issues with many diseases that attack rubber trees. R&D team needs to do something.
- Moreover, there is also a room for new crop suggestions, particularly interim crops during the replanting period because oil palm trees with a spacing of 28-29 feet will leave some space when replanted. As a result, it can be occupied by new crops, such as high-tech crops. Hence, the suitable areas can be added on with the short-term cropping.
- FELDA practices the existing three models for replanting: a) The settlers handed over the replanting to FELDA without receiving subsistence money. After 3 years, FELDA will hand it back to the settlers to manage themselves. Especially for settlers who have no debt because the cost of replanting has been covered by the Replanting Fund before. b) All crop matters are managed by the settlers themselves. Then, the settlers can make a claim from the Replanting Fund of RM17,000, and c) Settler’s hand over all replanting matters to FELDA and receive a subsistence of RM200-RM500/month for 3 years in duration.
- For the second generation of settlers (and more), it is recommended for them to adapt the original model of farm management which is to work on the land in groups. Most settlers are given lands in hilly areas and the location is far from home or difficult to access. This is one of the reasons many settlers that work individually were not successful. This issue requires a crop land suitability analysis.
- The issue of the use of 10 acres of land – it is recommended that the farm should be managed in groups and regulated by FELDA (either directly under FELDA or FELDA subsidiaries, e.g., FELDA Technoplant).
- The main commodity crops, such as palm oil and rubber tree, should be maintained. If anyone wants to implement new crops, he or she must work with other agencies. This will be a big challenge that will necessitate extensive research.
ii. **Element on New Physical Development (Business Centre, Residential Compounds)**

- Housing for the second generation must be given extra attention because they are the driving force for the progress of FELDA developments. The lack of the second-generation dwellers is due to limited residential area. This affects the efforts to develop FELDA’s lands/estate.
- The settlers cannot be expected to manage without the participation of the second generation. This can lead to a major difficulty in cultivating FELDA lands in the future.
- There is approximately 10% of the land reserved in every FELDA scheme. The reserved vacant land is to cater to any economic or physical development projects that are required. For these lands, FELDA has an agreement with the State Government, and the land is under the jurisdiction of the State Government.

iii. **Element on FELDA Agropreneur**

- There is a significant issue regarding other income of settlers through a *Program Pembangunan Peneroka* (PPP). The program is to focus on the second generation for their additional income to prevent out-migration from them.
- This can be materialised through an establishment of agropreneur as a diversified economic activities platform in the FELDA scheme.

**FGD with FELDA Representatives: FELDA Lands Management Office and Person In charge for Program Pembangunan Peneroka (PPP)**

The special session was conducted on 28th July 2021 via an online Google Meet. The session aimed to obtain further information regarding FELDA lands estate management and Program Pembangunan Peneroka (PPP) and their feedback towards the SHBU’s FELDA Model. The brief critical findings are summarized as follows:

- This research is timely as the organization need to cope with planning for future possible development in FELDA settlements and crops lands and to enhance the PPP programmes to improve settlers’ income, prosperity, and social well-being.
- The proposed model met with the current state of the FELDA land development and PPP programme. Close cooperation is needed during the research progress, especially on eGIS digital data and other support information and expertise.
There are few recommended potential case studies to be undertaken in the research, and they will be determined soon based on the selection of criteria set. The potential case studies are included but not limited to Tenggaruh, Rokan, Gemenchih, Besaut, Trolak, and Raja Alias.

Result from Socio-economy Survey: FELDA’s 2nd Generation and above

The important results derived from the 39 sampled questionnaire set are summarized as follows:

- Majority of the respondents were from Johor (56.4%), followed by Perak (17.9%), Pahang (12.8%) and the remaining from Negeri Sembilan, Selangor and Kedah. There were four settlers, 32 from 2nd generation and three from 3rd generation and above, and 87% living in FELDA settlements.
- The majority of the respondents work in FELDA settlements (as settlers, estate-based workers, business owners, others) with less than RM2,500 monthly incomes.
- Also, the majority of them are involved in Model A and Model C of estate land operations (Products and planting manage together by FELDA), and also about 20% is involved in Model B (manage separately as individual). Based on personal experiences, most of them (71%) agree that estate land operation with the original model is more profitable and successful to lift up their livelihood. So, most of them will continue or change into estate land operation under the FELDA management system.
- To sustain their livelihood, settlers require affordable housing development scheme in the settlement and other improvised economic activities to be introduced especially for the 2nd generation and above. With house ownership, they will remain in the settlement and contribute to the FELDAs’ projects and socio-economic transformation.

The above brief findings confirm that elements related to SHBU can be derived such as Strategic FELDA management for plantations, the needs for residential compound and business centre. From documents analysis, FGD and the questionnaire the development model will be formulated and refined to ensure reflections towards the national rural policies that resonate with the Sustainable Development Goals (United Nations, 2020). The outcome should enable FELDA to sustain the highest return in more comprehensive forms that is not only for the income of current settlers but also for the next generations of FELDA communities.
PROPOSED SHBU MODEL
By working on the analysis, Figure 1 demonstrates the formulated conceptual model of the Sustainability and Highest-Best Use (SHBU) namely: FELDA industries-based crops (FIbC) and SHBU plan management (SPM) from the HBU domain; and the remaining FELDA business centre (FBC), FELDA residential compound (FRC) and FELDA agro-preneur (FAgP) are from the sustainability domain.

APPLICATION ON CASE STUDY AND THE PROPOSED STRATEGIES
Furthermore, in -depth interview has been conducted in one of the case study areas which is Tanah Rancangan Bukit Rokan, Negeri Sembilan in order to propose strategies for the model. The interview was conducted so that the researcher can understand the scenario that currently exist in FELDA settlement within the context of the conceptual SHBU model. The discussion conducted with the Manager of FELDA Bukit Rokan and the Head of Settlers for their views, suggestions, and the challenges in adopting the SHBU model for crop plantation and future development in the area. Table 2 shows the critical summary of the interview in Bukit Rokan. Next, Table 3 will showcase a list of strategies proposed for one of the elements for SHBU model. This to depict the process of formulation of a comprehensive SHBU Model for reference by FELDA and other rural land development agencies that might benefit from this model.

Figure 1: The Sustainable and Highest, Best Use (SHBU) Model for FELDA Lands Development

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Table 2: Summary findings on five dimensions of the SHBU at FELDA Bukit Rokan

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Summary Findings</th>
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| **FELDA Industries-based Crops** | • Agreed with this dimension.  
  • Rubber trees are the major crop, and palm oil plantations will soon replace them.  
  • Planning for papaya plantation for 30 acres of vacant land.  
  • The oil palm plantation areas are flood-risk areas that require mitigation plans. |
| **FELDA Business Centre** | • Agreed with FELDA Business Centre proposed in the area.  
  • However, the location should be in the FELDA area to cater to all FELDA settlements in the region.  
  • Focuses on business activities and the market for PPP agricultural products.  
  • The residents also need public facilities such as a school. |
| **FELDA Agropreneur** | • Focuses on the PPP project to attract youth involvement to generate extra income.  
  • The area faces issues with jobs opportunity for the next generation.  
  • Currently, about 43 residents are involved in the PPP project.  
  • Suggestions are made for ecotourism activities such as Homestay, flying fox, archery, kayaking and shooting to diversify the economic clusters. |
| **FELDA Residential Compound** | • Agreed with this dimension.  
  • There is a housing demand from the 3rd and 4th generations.  
  • FELDA has provided 100 units in the FELDA region, but there is still a shortage to cater to the demand. |
| **SHBU Management Plan** | • 92% estate area is under FELDA management, so it is easy to decide on the plantation and other related matters.  
  • FELDA provides a lot of initiatives and assistance to ensure the welfare of settlers & workers.  
  • Facing a shortage of labour. |

The SHBU models assist in identifying issues in FELDA settlement as in Table 2 and facilitate the development of strategies and actions to curb the issues as depicted in Table 3. Thus, the following will outline strategies from one (1) of the Dimension in SHBU Model which is the dimension for Felda Business Centre.
Table 3: Strategies for Element 3 - FELDA Business Centre (FBC)

<table>
<thead>
<tr>
<th>Component of development</th>
<th>Strategies (Application and Monitoring)</th>
</tr>
</thead>
</table>
| 1. Economic Development  | i. Development and provision of commercial and small business spaces in strategic and accessible locations  
|                          | ii. Promoting Homestay programs - Collaboration with authoritative agencies to organize tourism exhibitions, food, and cultural events for local and international.  
|                          | iii. Development and provision of appropriate premises (collection centers, processing, logistics, etc., booth space)  
|                          | iv. The involvement of rural youth in the entrepreneurial sector is enhanced with various initiatives such as training and technical, incentives, and capital.  
|                          | v. Introduction to new areas of the economic sector, such as the digital economy and green economy  
| 2. Infrastructure Facilities | Development and provision of appropriate infrastructure  
| 3. Service Centre | Provision of one -stop centers for business consultation and advisory services such as OUTREACH programs for villagers (not only for selling fertilisers) and youth.  
| 4. Human Development | i. Encouraging communities to use e-commerce in the marketing of rural products – products PPP  
|                          | ii. Provide training centres and modules – enhance skill sets for the young generation to continue the legacy as modern settlers.  
|                          | iii. Youth-centric development and motivational programs. |

CONCLUSION
This study has been exciting and challenging to be carried out. Even though the focus mainly riveted on FELDA management, the researcher has no intention to highlight any negative aspect of the organization. The study unravel new information on various initiatives that FELDA management has carried out to develop settlements and agricultural areas. The establishment was comprehensive and covered various aspects. However, since it involves large areas and is located all over Malaysia, issues and problems will be part and parcel of a large organization, which also means that it needs monitoring and constant improvements. The study successfully achieves all the objectives. Factors of elements for SHBU have been presented through five (5) Dimensions or elements of SHBU model. The exploration of numerous literatures, discussion with the focus group, and FELDA management on the earlier stage contribute to the establishment of the overall model. Furthermore, the SHBU model was applied in the case study that the result assisted in strategies formulation. These strategies
will serve FELDA land development to move towards sustainability and high-income returns.

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