REFERRAL OF REGIONAL SPATIAL PLANS (RTRW) BY ANALYTICAL HIERARCHY PROCESS (AHP) METHOD (CASE STUDY: EAST KALIMANTAN PROVINCE)

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BACKGROUND

- The Importance of Spatial Planning
  Spatial planning is needed to overcome the competition and conflict between different utilization within a limited area. Spatial plans that do not comply with the suitability of land, will result in damage to the land.

- The Importance of Spatial Development Methods
  Poor baseline data characteristic for planning and management of the Mahakam river basin and the absence of reference Detailed Spatial Plan (RDTR) arrangement resulted in unplanned land use and environmental damage (Harijono in Susilowati 2010).
HYPOTHESIS & RESEARCH AIM

REGIONAL SPATIAL PLANS
Needed to overcome the competition and conflict between different utilization within a limited area.

THE BEGINNING OF REGIONAL SPATIAL PLANS

THE END OF REGIONAL SPATIAL PLANS

AHP Method (Analytical Hierarchical Process)
Method of Analytical Hierarchy Process (AHP) is helping to solve complex problems with the structuring of a hierarchy of criteria, interested parties, results and by attracting a variety of considerations in order to develop a weight or priority

RESEARCH AIM

This study aims at Referral of Regional Spatial Plans (RTRW) by Analytical Hierarchy Process (AHP) Method with case study East Kalimantan Province

Hypothesis

AHP method can be applied in spatial planning to produce a better regional spatial planning.
- Generation of alternative (scenario analysis).
- Accommodate the preferences of stakeholders.
- To conduct the analysis by using more criterias
PRECIPITATION MAP

SLOPE MAP
The Analysis Of The Regional Spatial Plans

<table>
<thead>
<tr>
<th>THE BEGINNING OF REGIONAL SPATIAL PLANS</th>
<th>THE END OF REGIONAL SPATIAL PLANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Spatial Plans (%))</td>
<td>Regional Spatial Plans (%)</td>
</tr>
<tr>
<td>Non-Forestry Cultivation Area (KBNK)</td>
<td>Non-Forestry Cultivation Area (KBNK)</td>
</tr>
<tr>
<td>26.29</td>
<td>39.63</td>
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<tr>
<td>Forestry Cultivation Area (KBK)</td>
<td>Forestry Cultivation Area (KBK)</td>
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<tr>
<td>49.94</td>
<td>32.66</td>
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<tr>
<td>Protected Area</td>
<td>Protected Area</td>
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<tr>
<td>23.46</td>
<td>27.25</td>
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<tr>
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<td>Watersheds</td>
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<tr>
<td>0.41</td>
<td>0.41</td>
</tr>
<tr>
<td>Total</td>
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- Increasing number of KBNK is 13.34%
- Decreasing number of KBK is 17.28%
Critical land obtained from the slope, soil, land cover, and precipitation.
In the beginning of regional spatial plans, critical land was dominated by the Non-Forestry Cultivation Area (KBK) and Forestry Cultivation Area (KBNK) with a rather critical area of KBK 26.92% and KBNK 9.02%.

In the end of regional spatial plans, critical land dominated by the Non-Forestry Cultivation Area (KBNK) and Forestry Cultivation Area (KBK) with a rather critical area on KBK 20.8% and KBNK 13.34%.
Cultivated area is triggered by the presence of land suitability for a particular commodity but must still consider the carrying capacity of the land.

- In the beginning of regional plans, there is the potential suitability accordingly (Suitability) with an area of 1,548,579.98 ha for KNBK and 1,021,757.75 on KBK for agricultural commodities. Agricultural commodities have the potential suitability of land with an S area 3,018,921.25 ha of KBNK and 3,640,922.40 ha of the KBK. Mining commodities have the potential suitability of land with an S area 2,334,533.79ha for KNK and 3,182,682.73ha of KBK. Commodity forestry land suitability with an S area and 3,071,106.66ha for KBNK and 2,902,474.78 ha of KBK.

- In the end of regional plans also have the potential suitability accordingly (Suitability), which increased the area of 1,869,347.88 ha in KNBK and decreased to 715,628.97 ha for agricultural commodities on KBK. For agricultural commodities have increased the potential for land suitability with an S area 3,917,694.42 ha in KBNK and decreased to 2,699,342.42 ha on KBK. And for mining commodities have the potential suitability of land with an S area and KBNK 2,940,213.13 ha and 2,447,880.17 ha on the KBK. Commodity forestry land suitability with an S area and KBNK 3,648,064.92 ha and 2,261,332.43 ha for KBK.
The Findings of Regional Spatial Plans

Regional Spatial plans in East Kalimantan Provinces:

- 5,294,720.11 ha Forestry Area (27.25%)
- 6,345,428.99 ha KBK (32.66%)
- 7,712,336.51 ha KBNK (39.63%)

4.4 RTRW vs Environmental Carrying

- Critical land dominated by the Non-Forestry Cultivation Area (KBNK) and Forestry Cultivation Area (KBK) with a rather critical area on KBK 20.8% and KBNK 13.34%.

4.5 RTRW vs Land Suitability

- Encourage land suitability for cultivation area.

Optimization Hierarchy for Land Use

There are three purposes of using AHP:

- Selecting of Commodities in the overlapping area
- Networking preferences of stakeholders in decision-making
- Performing analysis with multiple criteria
SCENARIO 1
(PRIORITY MINING I)

SCENARIO 2
(PRIORITY AGRICULTURE I)
### SCENARIO 3
**(PRIORITY PLANTATION I)**

<table>
<thead>
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<th>Activity</th>
<th>Value (MYR)</th>
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<tr>
<td>PERTANIAN</td>
<td>30,000.95</td>
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<tr>
<td>PERKEBUNAN</td>
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<td>KEHUTANAN</td>
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<td>NNNN</td>
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### SCENARIO 4
**(PRIORITY FORESTRY I)**

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<th>Activity</th>
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Data Area Commodities - Priority Designation

Scenario I, II are the best in area commodities
Agriculture area must be increased

PREFERENSI STAKE HOLDER
CALCULATION OF AHP

- In the mining priority located in critical lands that are not favorable outcome or impact (-).
- In priority agricultural land located in the critical gain a favorable outcome or impact (+). And priority of which is located in agriculture RTRW obtain a favorable outcome or impact (+).
- On priority estates located in critical lands, land suitability, and not critical RTRW unfavorable outcome or impact (-).
- In forestry priorities, located in critical lands, land suitability, and not critical RTRW obtain a favorable outcome (+).

CONCLUSION

AHP method can be applied in spatial planning to produce a better spatial Plan do:

- Presenting the results of calculations of several alternative scenarios based on social criteria, and considering the economic and environmental preferences of all stake holders.
- Allows to generate RTRW by considering preferences of all stake holders and to optimize land use to be economically optimal, in the use of sustainable and socially equitable.
THANK YOU