INDONESIA AGRICULTURAL MECHANIZATION STRATEGY

IAARD, MINISTRY OF AGRICULTURE

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<table>
<thead>
<tr>
<th>STRATEGIC ROLE OF INDONESIA AGRICULTURAL</th>
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<tbody>
<tr>
<td>Provide food for 245 mil. people</td>
</tr>
<tr>
<td>Provide 87% of raw material for small and medium scale industry</td>
</tr>
<tr>
<td>Contribute 14.7% of PDB</td>
</tr>
<tr>
<td>Foreign exchange income (US$ 43.37 M)</td>
</tr>
<tr>
<td>Provide 28.3% employment</td>
</tr>
<tr>
<td>70% source of income for rural people</td>
</tr>
</tbody>
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TARGET OF INDONESIA AGRICULTURE DEVELOPMENT

- Achieving sustainable food self-sufficiency
- Increasing food diversification
- Increasing added value, competitiveness and export
- Increasing farmer welfare
### TARGET OF PRODUCTION FOR 5 MAIN FOOD COMMODITY

<table>
<thead>
<tr>
<th>COMMODITY</th>
<th>TARGET OF PRODUCTION 2014 (Million ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rough rice</td>
<td>76,57</td>
</tr>
<tr>
<td>Maize</td>
<td>29,00</td>
</tr>
<tr>
<td>Soybean</td>
<td>2,70</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>3,1</td>
</tr>
<tr>
<td>Beef meat</td>
<td>0,51</td>
</tr>
</tbody>
</table>
PROBLEM AND STRATEGY OF AGRICULTURE DEVELOPMENT 2010-2014

- Land conversion
- Small land holding
- Climate change
- Use low level of technology
- Slow development of food industry
- Weak of farmer institution
- Poor access to credit/financial institution
- Use low level of technology
- Slow development of food industry
- Weak of farmer institution
- Lack of farm labor
- Low quality of farm labor
- Seed production and distribution system weak
- Deterioration of irrigation infrastructure
- High cost of production and transportation

STRATEGY

- Land intensification and expansion
- Improving irrigation infrastructure and mechanization
- Improving labor quality
- Providing farmer credit
- Strengthening of farmer institution
- Downstream industry

• Land conversion
• Small land holding
• Climate change
• Seed production and distribution system weak
• Deterioration of irrigation infrastructure
• High cost of production and transportation
• Poor access to credit/financial institution
• Use low level of technology
• Slow development of food industry
• Weak of farmer institution
• Lack of farm labor
• Low quality of farm labor
RICE PRODUCTION TARGET

- Reducing post harvest losses
- Increasing number of extension
- Improving pest control
- Increasing number and utilization of agric'l machine
- Increasing the use of balance fertilizer
- Increasing the use of HYV
- Increasing yield & Cropping Intensity
- Improvement of irrigation facilities

Land expansion
Role of Agric. Mechanization in Indonesia

- Contributing target of production through:
  - Increasing cropping intensity
  - Reducing post harvest losses
- Improving quality of product
- Increasing added value and competitiveness of agricultural products
- Reducing cost of production by increasing labor efficiency
- Increasing farmers’ income
- Attracting young generation work in agricultural sector
# Mechanization Utilization Index for Rice Production in Indonesia (%)

<table>
<thead>
<tr>
<th>Activity</th>
<th>2004</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land preparation</td>
<td>48</td>
<td>55</td>
<td>60</td>
<td>65</td>
</tr>
<tr>
<td>Seeding</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Planting</td>
<td>04</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Weeding</td>
<td>02</td>
<td>5</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Pest control</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Harvesting</td>
<td>5</td>
<td>10</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>Threshing</td>
<td>45</td>
<td>55</td>
<td>60</td>
<td>65</td>
</tr>
<tr>
<td>Drying</td>
<td>25</td>
<td>30</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>Milling</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: ICAERD, 2009
## Number of Agric. Machinery used in Indonesia.

<table>
<thead>
<tr>
<th>NO</th>
<th>Type of Agric. Machinery</th>
<th>2006 (Unit)</th>
<th>2010 (Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pump irrigation</td>
<td>185.322</td>
<td>187.801</td>
</tr>
<tr>
<td>2</td>
<td>Tractor 2-wheels</td>
<td>116.016</td>
<td>126.453</td>
</tr>
<tr>
<td>3</td>
<td>Tractor 4-wheels</td>
<td>2.853</td>
<td>2.969</td>
</tr>
<tr>
<td>4</td>
<td>Thresher (manual)</td>
<td>150.224</td>
<td>151.284</td>
</tr>
<tr>
<td>5</td>
<td>Power thresher</td>
<td>41.192</td>
<td>49.957</td>
</tr>
<tr>
<td></td>
<td>Box Dryer</td>
<td>1.416</td>
<td>1.436</td>
</tr>
<tr>
<td>6</td>
<td>Continuous Dryer</td>
<td>1.388</td>
<td>1.421</td>
</tr>
<tr>
<td>7</td>
<td>Mini RMU</td>
<td>58.512</td>
<td>68.386</td>
</tr>
<tr>
<td>8</td>
<td>Stationer RMU</td>
<td>39.267</td>
<td>40.495</td>
</tr>
</tbody>
</table>

Sources: BPS-Statistics Indonesia, 2007; dan Direktorat Alsintan, 2010
Agric. Mechanization Development Problems & Constraints

- Poor skill of operator for operation, maintenance and management of agric. machinery
- Poor capability of farmer institution (Business Service Unit of Agril’ Machinery)
- Lack number of extension worker
- High cost of farm machinery & equipments and difficult to access credit
- Lack of machinery suitable for specific agro ecosystem → Need R&D
- Short life time of agricultural machinery
- Poor farm road facility,
- Poor irrigation and drainage facility
- Lack of rural workshop facilities and spare parts
Strategy of Agricultural Mechanization Development

- Agricultural machinery grand and loan from Government to FARMER GROUPS
- Improving access to credit/ bank (credit for rural business/ KUR)
- Strengthening Agricultural Machinery Business Service Unit
- Training for agricultural machinery operator
- Establishing demonstration plot of farming using agricultural machinery
- Capacity building for extension worker
- Establishment of mechanization center at provincial and district level
- Strengthening R & D on agricultural engineering
- Strengthening partnership between R&D, agricultural machinery industry/trader and user/farmer
Closure

- Although utilization index of agricultural machinery in Indonesia is low, Agricultural machinery have been used widely and significantly increased yield and quality of agricultural product.

- Indonesia strategy to develop mechanization has been set up to increase crop production, quality and added value of agricultural product.

- Synergy between Government, Research Institution, University, Business, Industry is essentially needed to support the development of mechanization in Indonesian