Transformation of rural landscapes for sustainable and nutritious food systems in Myanmar

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IWRA Online Conference
9 June 2021
EAT LANCET Commission: healthy diets from sustainable food systems

Food is the **single strongest lever** to optimize both **human health** and **environmental sustainability** on Earth.
Myanmar: food systems

• Abundant agricultural production at the national level does not translate into adequate food and nutrition security

• 33% of households nationwide report food insecurity (MMFCS, 2017)

• 35% of households reported inadequate quality of food in the past year (MPLCS, 2015)

Agriculture: a major driver of environmental degradation:

• Deforestation
• Mangrove loss
• Soil degradation
• Water and air pollution
• Fisheries decline
• Climate change

“…..natural environment is the foundation upon which Myanmar’s social, cultural and economic development are sustained” (MSDP, 2018)
### Food group

<table>
<thead>
<tr>
<th>Food group</th>
<th>Average recommended quantity (g/adult/day)</th>
<th>Myanmar consumption (2010) g/AE/EP/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starchy staples</td>
<td>360</td>
<td>489</td>
</tr>
<tr>
<td>Pulses</td>
<td>45</td>
<td>22</td>
</tr>
<tr>
<td>Fish/Meat/Eggs</td>
<td>125</td>
<td>90</td>
</tr>
<tr>
<td>Small fish &amp; dairy</td>
<td>225</td>
<td>95</td>
</tr>
<tr>
<td>Dark green leafy vegetables</td>
<td>150</td>
<td>53</td>
</tr>
<tr>
<td>Other Vegetables</td>
<td>300</td>
<td>103</td>
</tr>
<tr>
<td>Fruit</td>
<td>200</td>
<td>74</td>
</tr>
<tr>
<td>Fats and oils</td>
<td>45</td>
<td>30</td>
</tr>
</tbody>
</table>

### Comparison with Bangladesh Dietary guidelines

#### Ayeyarwady - Food Consumption
- Starchy staples: 1.60
- Pulses: 0.80
- Fish/Meat/Eggs: 0.40
- Dark green leafy vegetables: 0.00
- Other Vegetables: 0.00
- Fats and oils: 0.00

#### Bago - Food Consumption
- Starchy staples: 1.60
- Pulses: 0.80
- Fish/Meat/Eggs: 0.40
- Dark green leafy vegetables: 0.00
- Other Vegetables: 0.00
- Fats and oils: 0.00

*Includes fish as culturally appropriate non-dairy source of calcium.
Water footprints

Ayeyarwady: Water footprints (water use per ton of food produced)

Ayeyarwady: Water footprints (water use per 1000 kJ)

Ayeyarwady: Water footprints (water use per 100g of protein)
Water use of crops and livestock
Greenhouse Gas Emissions

**Graph 1:**
- **Y-axis:** Median emissions (Gg CO2e)
- **X-axis:** Crops (rice, other crops, livestock, aquaculture)

**Graph 2:**
- **X-axis:** Regions (Ayeyarwady, Sagaing, Bago, Magway)

**Pie Chart 1:**
- **Aquaculture:** 0.8%
- **Livestock:** 31.9%
- **Rice:** 58.3%
- **Other crops:** 8.9%

**Pie Chart 2:**
- **Ayeyarwady:** 15%
- **Sagaing:** 13%
- **Bago:** 13%
- **Magway:**
# Greenhouse Gas Emissions

Total Median annual emissions 57399 Gg CO$_2$e

<table>
<thead>
<tr>
<th>Category (Gg CO$_2$e Yr$^{-1}$)</th>
<th>Median Estimates of current study</th>
<th>Year 2000 estimate (GHG inventory)</th>
<th>FAO annual average (2016/2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total emissions: rice</td>
<td>18,310</td>
<td>10,652</td>
<td>25,530</td>
</tr>
<tr>
<td>Total emissions: livestock</td>
<td>33,465</td>
<td>8,501</td>
<td>42,000</td>
</tr>
<tr>
<td>NO$_2$ emissions: aquaculture</td>
<td>482</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total emissions: energy sector</td>
<td>7,863</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

• Variation between states, but current dietary patterns are inadequate with respect to consumption of diverse nutritious food groups throughout the country.

• Water footprints of agricultural products vary. Livestock use large amounts but rice dominates agricultural water use in most states.

• At national level agriculture (livestock and rice) is biggest source of GHG emissions across Myanmar.

• Nutrition-sensitive fish agri-food systems should prioritise nutrient-rich foods and dietary diversity in agriculture development to combat malnutrition.

• Food production for healthier diets could, if carefully designed, use less water and emit less GHG than currently.

For a healthier diet:

National fruit and vegetable consumption needs to double

Dairy alternatives (e.g. small fish - Mola) for the provision of calcium

Increase legumes and pulse consumption

Increase animal source foods for vulnerable groups (e.g. women and children in first 1000 days of life)

Dietary need for a variety of fish species; optimise capture fisheries and the array of small indigenous fish species (including in aquaculture).
Thank you