Alternatives to paddy rice production that take into consideration environmental, social and economic dynamics must be implemented to effectively reduce agricultural methane emissions in Sri Lanka.

**Background & Introduction**
- Methane ($\text{CH}_4$) is 28 times more powerful than carbon dioxide ($\text{CO}_2$).
- As rice straw, the organic material left behind after paddy rice is harvested, decomposes in the submerged fields, microbes release methane into the atmosphere as a byproduct.
- Rice paddy cultivation is extremely labor intensive.
- Rice makes up 34 percent of the total cultivated area of Sri Lanka.

**Methods**
- Case studies of other paddy rice producing countries were analyzed including their methods of growing rice and the role of their smallholder farmers.
- Alternative technologies were explored as potential solutions for reducing paddy rice methane emissions.
- Expert panels and interviews were conducted at the United Nations Framework Convention on Climate Change, Conference of the Parties 23 to gain a more holistic and local understanding of the issue.

**Potential Solutions**
- Subsistence and/or polyculture farming result in healthier soils, more diverse cropping systems and a need-based economy, further resulting in reduced methane emissions.
- Addition of rice straw-derived biochar has been discovered to lower methane emissions in increased temperature and carbon dioxide conditions, congruent with future climates.
- Responsible water management such as slower infiltration techniques, breaking up of soil aggregates or alternate wetting and drying (AWD) would result in fewer methane emissions.
- Policy must encourage sustainable farming practices and address current subsidies.

**Conclusion**
Based on case studies, new technologies and information gathered from COP23, the most effective solutions will be a combination of
- Cooperatives between smallholder farmers,
- Alternate wetting and drying, and
- Policy incentivizing long-term sustainable farming.

**Further Reading**
*Raising and Sustaining Productivity of Smallholder Farming Systems in the Tropics: A Handbook of Sustainable Agricultural Development* by Willem C. Beets