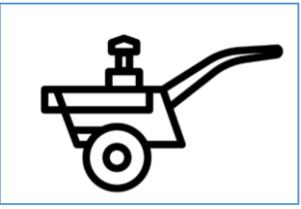


Scaling appropriate agricultural mechanization world-wide

Two-wheel tractors and smallholders farmers

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Session 6: Examples of Successes and Failures; Lessons Learned
Scale Up Conference - Innovations in Agriculture: Scaling Up to Reach Millions
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Challenges & Problems:

Two-wheel tractors to intensify smallholders farms sustainably

- Farm mechanization has transformed agriculture in high-income countries
- Adoption of mechanization in low income countries has been below expectations for years, despite:
 - 80% of agricultural production in developing countries from smallholder farms ranging between 0.25 to 2 ha
 - significant labor shortages and high drudgery/cost of alternatives (e.g. animal traction)
 - urgent need to professionalize and rejuvenate farming to stay competitive locally and internationally
 - Opportunities for rural entrepreneurship and mechanized service provision to reach smallholder farmer
- Responsibility check
 - Use of fossil fuels and ‘dirty’ technology, and need for regular repairs and maintenance
 - Risk of job displacement and shift to more knowledge intensive employment
 - Risk of business monopolies as in certain regions it is a specialty tool

*Large-scale adoption of the technology can aid smallholders farmers to become more **competitive** and more **responsive** to changing environment*





Tension between groups:

Matching business cases with strategic collaborations

■ Farmers:

- need to improve farming practices to stay competitive, but require labor and precision in operations
- need capital to invest, but financial service providers often don't have confidence in agriculture/farmers
- need services at specific times (planting, harvesting) whereas machinery service providers would like to spread service supply over area and time

■ Farm machinery service Providers:

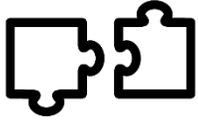
- need sufficient farmers clients in proximity and in time to increase ROI
- many models and accessories require good value chain integration
- Skilled labour and repair/maintenance tasks have to be recognized

■ Politicians:

- small mechanization is often seen as unprestigious
- afraid of short term unemployment (job and skill displacement), while failing to recognize importance of service provision and rural entrepreneurship
- misguided subsidy or support programs without proper extension and coaching

*Adaptable business models and value chain facilitation to generate **push and pull** towards movement for adoption*





Lessons learned:

Cross-regional feedback on scaling strategies

- Two-wheel tractors are technically viable
 - On-farm and fuel efficiencies are well-documented, but correct usage/maintenance is knowledge intensive
 - Multitude of accessories without clear notion of functional packages
 - Proximity and level of integration of value chain can complicate availability
- Financial viability is major bottleneck to scaling
 - Financial services do not invest spontaneously in tools for rural transformation
 - Investment cost is initially high and no collateral is available
 - Governments understand but poorly design subsidies
- Leadership and position brokers
 - The role of the leading institute should be flexible and adjusted on local situation
 - Clear collaborations on common goals and scaling effort should be brokered
 - Environment and job creation/displacement determine the optimal scale, rather than aiming for maximum scale

*Two-wheel tractor smallholder farmers can become **scale-catalysts** offering mechanized and affordable services enabling rural transformation*



Break out:

3 groups

- Table 1: **Technology:** What are challenges and opportunities for scaling multifunctional innovations ?
- Table 2: **Finance:** What are challenges and opportunities for scaling innovations that require a shift from low investment- high operational costs to high investment- low operational cost ?
- Table 3: **Policy:** What are challenges and opportunities for scaling innovations that are popular to benefit from subsidies ?

Groups discuss for 12 minutes

3x 2 minute feedback from each group