

#### The Spread of Smaller Scale Machinery in South Asia: Observations

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### Why the focus on smaller scale engines, equipment, and markets in services?

- Equity issues- that small scale via service provision makes "access" to agrimachinery more equitable
- "Operational Consolidation"- No need to physically consolidate land when small scale machinery are widely available (Mandal 2016).
- No evidence from traditional economists and engineers that current small scale mechanization on small holdings is any less productive than western-industrial farming
- Overwhelming concern of large scale agro-machinery in globalleconomic debates.





#### Illustrations of what are we talking about: Rural Capital Goods

- Capital goods are assets such as machinery, equipment, vehicles and tools used in the production of other goods.
- Used in analysis of the flow of goods and services between economic sectors
- Study of economic agents producing, acquiring and buying and selling services
  - —Concerned with structural dimensions of the economy
  - -Linkages between sectors of central importance





#### Illustrations of what are we talking about: rural capital goods in SA

"Good enough" diesel
 pump sets shallow tube
 wells and lay flat
 delivery pipe







#### Illustrations of what are we talking about: rural capital goods industry

25 meter shallow tube wells







### Illustrations of what are we talking about: rural capital goods industry

Chinese two-wheel tractors but also Indian, Thai, and lately Vietnamese.







### Illustrations of what are we talking about: rural capital goods industry

#### 12,000 "Good Enough" Chinese Mini Tillers in hills of Nepal

- Where avg life of MT is 3
   years but a pay back in 1-2
   years.
- Many of these small
   machines operate in same
   space, same economic and
   social environment as
   smaller or larger equipment





### Illustrations of what are we talking about: rural capital goods "industry "

Examples of agro sales, manufacturing and repair industries

- Examples Nuwakot Nepal
- Hikarie Sales Agency in Sri Lanka and

Rajkot, India mini-4WT factory









## Observations on the experiences from South Asia: #1 - diverse patterns of ag & rural mechanization (Estimates for 2012)

	Bangladesh			India			Nepal		
Energy Source	No Units	Total hp	% of total hp	No. units	Total hp	% of total hp	No. units	Total hp	% of total hp
2WTs*	500,000	7,500,000	53%	300,000	4,500,000	2%	16,000	240,000	13%
4Wts**	35,000	460,000	3%	3,500,000	122,500,000	55%	30,000	900,000	51%
Irrigation shallow tube well pump Diesel ***	1.2 M	6,000,000	42%	9,000,000	45,000,000	20%	120,000	600,000	34%
Irrigation pumpsets Electric****	100,000	200,000	1%	12,000,000	48,000,000	21%	10,000	40,000	2%
Total		14,160,000	100%		220,000,000	100%		1,780,000	100%

Estimates of the numbers of power sources (and their horsepower ratings) used primarily in agricultural and processing uses, including groundwater irrigation pumps. It does not for example include the many engines used in Bangladesh to power riverboats, rice mills, processing, etc, although these are a major part of the Bangladesh agriculture and rural economy

<sup>\*</sup> Average of 14 hp per 2-wheel tractors (2WT

<sup>\*\*</sup> Average of 30 hp per 4-wheel tractor

<sup>\*\*\*</sup> Diesel / petrol irrigation pumpsets are average 5 hp. 5 – 10 % of the pumpsets are petrol/kerosene

<sup>\*\*\*\*</sup> Avorage electric tubowell is 4 HD



#### Observation #2: Markets in "powered" services have always been present

In SA the Supreme Importance of Markets for providing needed agromachinery inputs and **SERVICES** 

- Water markets (STWs and LLPs) in Bihar, Bangladesh and Thailand
- Two and four wheel tractor tillage in Sri Lanka and Bangladesh
- Transport services in Nepal









# Observation #3: Innovation in rural engineering from the field is particularly important

- Mini tillers Nepal- Came out of no where-Pvt sector led
- Jumping of technologies between sectors
  - Pump engines jump to rural transport - boat engines in Bangladesh and Vietnam
  - Layflat Plastic drinking water pipe industry begins selling flexible hose pipes in Indo-Gantetic Plains





## Observation #4: South South Exchanges – A new thing?

- South Asia has a long history of South South exchanges and trade in small scale "good enough" equipment
  - Chinese pumpsets in Bangladesh (1980s)
  - Nepal: 2WTs from Japan (1970s)
     Korea (1980s) and China (1990 present)
  - Vietnamese 2WTs into Sri Lanka
  - Chinese small scale equipment coming into India in last 10 years
  - Axial flow pumps from Thailand to Bangladesh (2013)



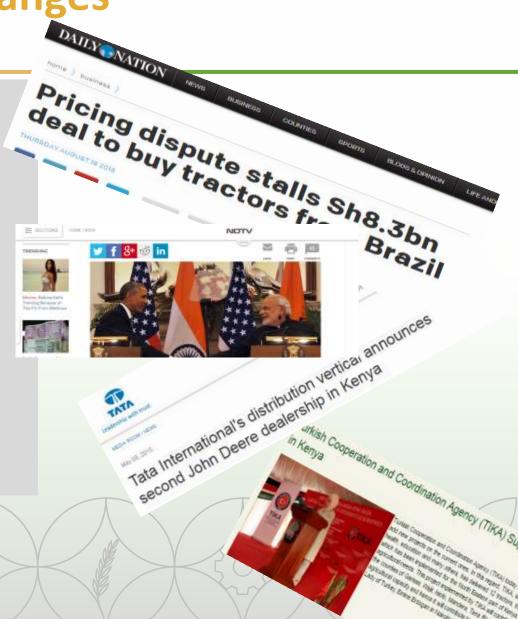




## **Evidence of new interest in South South exchanges**

A growing recognition of importance of South South exchanges and trade in agro industry

- By projects IFPRI South South,
   project, USAID India &
   "Triangular Trade" support into
   Kenya, Nepal, etc.
- Use of "South South" by export oriented "South" governments and MNCs based there and their claims that their products are solutions for African ag.





#### Problems encountered in South South Exchanges

- Lack of knowledge of available smaller scale equipment existing and spreading
  - National governments promoting their large scale equipment for export under South South justification
- Shortage of contemporary academic policy analysis of rural mechanization
- Expensive large machinery used in research programs serve as examples for government programs and projects- skew national aspirations
- Inadequate provision of training of operators and market support activities
- Agri Machinery MNCs of the "West" now have heavy footprint in the South confounding "what is South"





#### **Conclusions**

There are no generalizations for agricultural and rural mechanization policies.

- Local natural resources
- Local and intl political context
- Trade and industrial policy
- Energy policy
- Agenda of donor, MNCs, government agencies





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