ENERGIZING AGRICULTURE SECTOR IN NEPAL

15th May 2019

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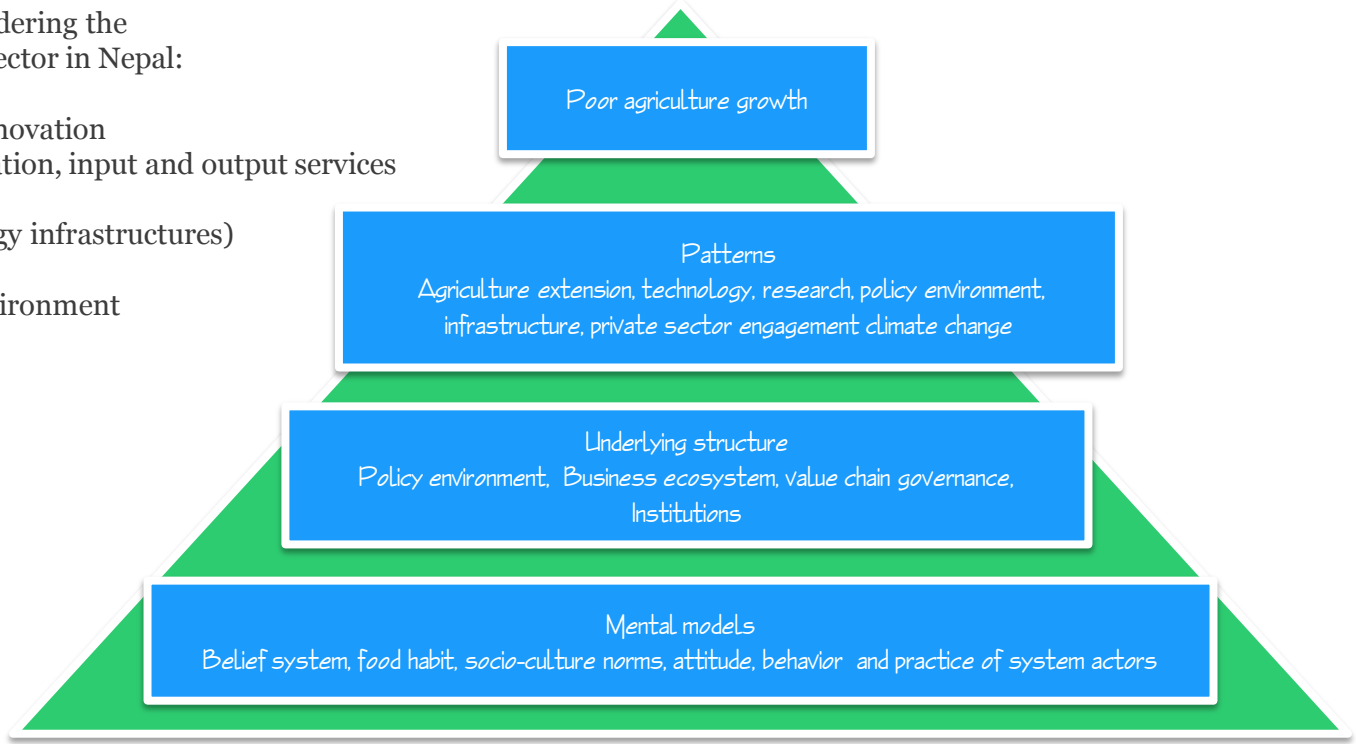
Project Background

- Green and Inclusive Energy (GIE), implemented by Hivos ENERGIA and funded by The Netherlands Ministry of Foreign Affairs.
- Advocacy and Lobby programme to support a transition towards green and inclusive energy services

Research Background

Major systemic blocks that are hindering the commercialisation of agriculture sector in Nepal:

- Business models and strategic innovation
- Access to knowledge and information, input and output services
- Economies of scale
- Agriculture infrastructures (energy infrastructures)
- Entrepreneurship
- Enabling policy and business environment



Research Background

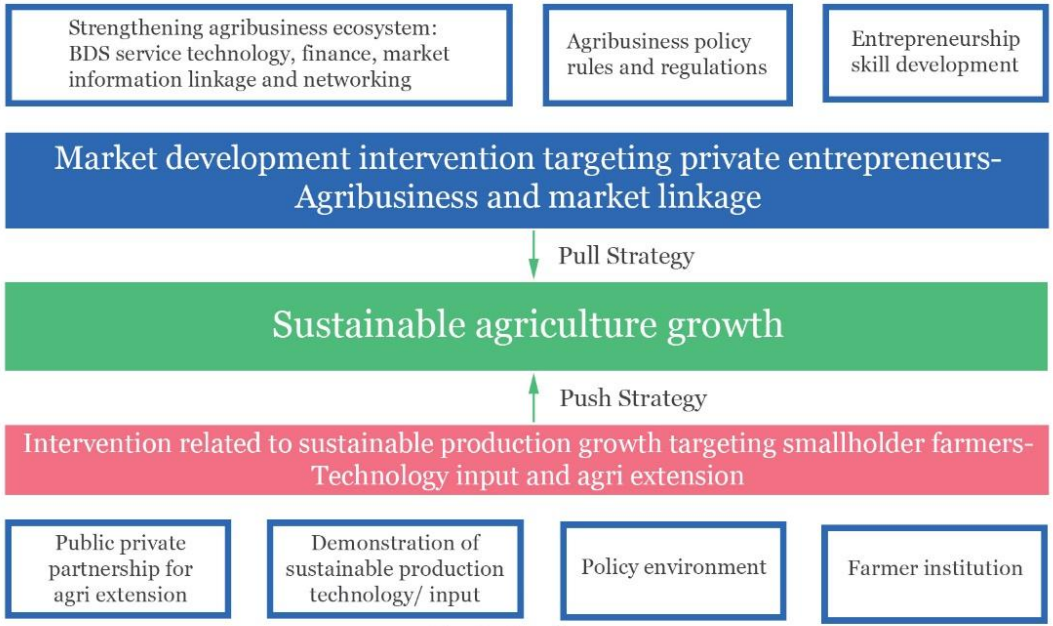


Fig: Push-pull strategy

Research Background

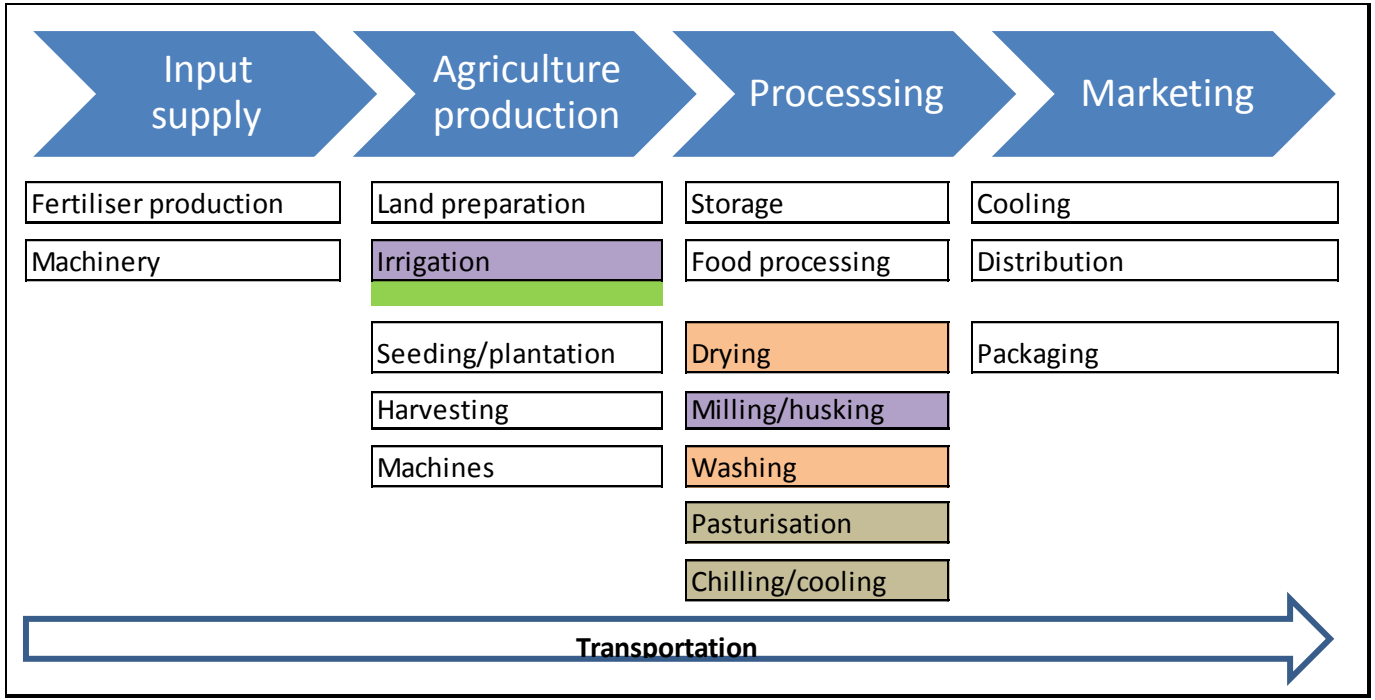
- 66 percent of Nepal's population directly engaged in farming with around two-third contribution to national Gross Domestic Product (GDP).
- Government of Nepal (GoN) has the vision of doubling agriculture production within five years that can be fulfilled only with the commercialisation of agriculture value chain through mechanisation and/or use of energy (GoN, 2016).
- Agriculture is mostly subsistence and productivity is very low, hence is less attractive for aspirant youths. This situation has pushed rural youths away from agriculture resulting into labour shortage in farming
- COVID-19 has again raised its importance

Research Objectives

To identify needs, opportunities and challenges for clean energy applications in the agricultural value chain

- Assessment of the eco-system (policy, finance and capacity) for promoting the use of clean/green energy in agricultural value chain
- Identification of the existing practices, opportunities and barriers for using clean/ green energy in agricultural value chain and opportunities and barriers for achieving the other intended impacts (e.g. improving the level of productivity, income, food security etc.)
- Analysis of the role of women and marginalised groups in energising the agriculture value chain and its implications

Energy application possibility/need & our research



Study Findings

Energy applications in rice value chain

Facts	Solution	Benefits
Out of 1.473 million hectares of land potential for rice farming. Only 33% land has year round irrigation facility from surface irrigation	1st option: Solar water lifting 2nd: Electric motor	- No running cost for fuel - Environment friendly - Financially viable investment
For rice processing, diesel motors are in operation but in few locations only leading to huge time cost to many families on transportation	- IWMs - Electric motor (MHP, grid)	- Cost effective. Financially viable - Utilization of local resources

Energy applications in ginger value chain

- favourable climatic conditions and increased demand in domestic and international markets

Facts	Solution	Benefits
After harvesting of ginger, cleaning, peeling and drying processes have to be carried out as soon as possible to protect it from fungus. Use of firewood for drying	- Solar Powered Ginger Dryer	- produces a higher quality, cleaner product - Cost effective, Financially viable - Simple to operate
Removing mud from ginger is a very tedious work and time consuming.	- Automated Ginger Washer	- saving of about 42.3 % of labour and 46.7 % time

Energy applications in vegetable farming

Facts	Solution	Benefits
There is very good prospect of commercial vegetable farming but it requires year round irrigation. Only 18% of arable agricultural land has year round irrigation facility	Solar/grid powered water lifting	- Financially viable investment - Environmental friendly - Availability of subsidies

Energy applications in Dairy Value Chain

Facts	Solution	Benefits
Dairy industries are facing short supply of fluid milk specially lean season, while farmers have not been able to sale their milk. There is need to increase production, reduce cost of production, reduce milk losses, improve product quality, diversify product ranges and increase income from it	Useful technologies in milk value chain include: i) Electric Heater for Pasteurization; ii) Milk Chilling Vat	- Financially viable investment - IRR of 77% for heater & 24 for chilling VAT - Environmental friendly

Irrigation Access Status

Irrigation type	Household (%)
Surface Irrigation-Year round	35.8
Surface Irrigation-Seasonal	20.0
Diesel pumps	9.2
Electric pumps	1.4
No irrigation	33.6
Total	100.0

First priority of farmers, if sufficient clean electricity available

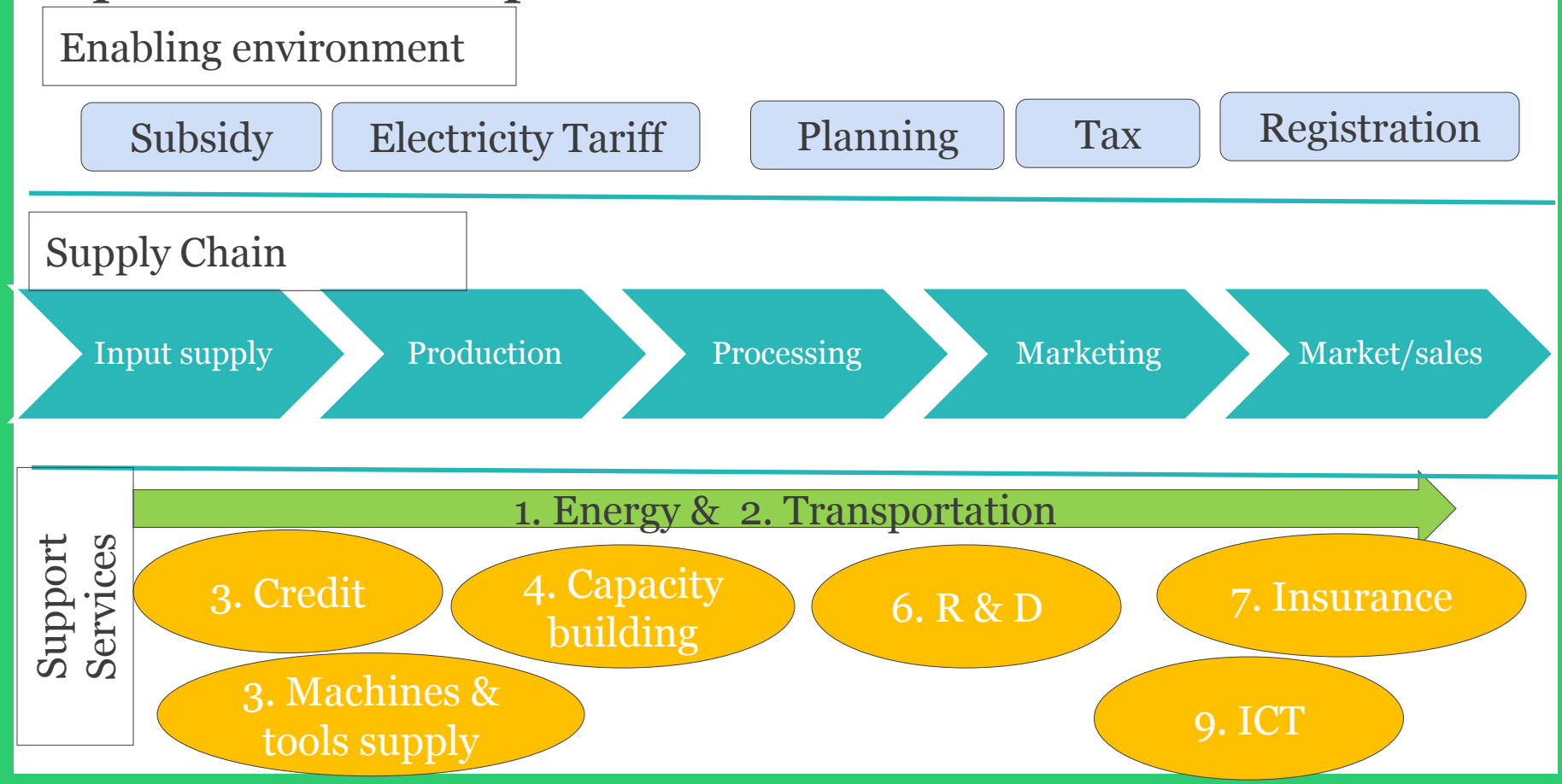
Energy Application	Household (%)
Water lifting	19
Agro-processing	7
Commercial vegetable farming	19
Cold storage	1
No plan	54
Total	100

Enabling Environment

Policy Environment

- Provision of subsidy for purchase of agricultural equipment; tractor, seeds and fertilizers and mechanical tools
- Provision of subsidy for solar water lifting, metallic gasifier, productive end uses of electricity etc.
- Provision of priority sector loan. The government bears 5 percent point interest rate on loans floated by Bank and Financial Institutions (BFIs) to these priority sectors to provide loan on subsidized interest rate.
- Commercial bank requires to disburse minimum 10 percent of their total credit to agriculture sector and minimum 15 percent to energy and tourism sector)
- Deprived sector lending has been made mainly to empower socially and financially deprived people such as women, Janajati, Dalit, and farmers.
- Agriculture promotion is one of the top priorities of the local governments also

Gaps and Areas of Improvements



Other gaps

- At present, energy application in entire agriculture sector is in its initial stage. Likewise, only large and well-off farmers and entrepreneurs have been applying modern energy services in agriculture value chain.
- In terms of demand side, subsistence farming, lack of commercialization and volatile market of agricultural products are some of the limiting factors.
- There is knowledge gap on knowing availability, uses/benefits & viability of investment on different technologies. Most of the farmers are not interested to take loan for agricultural activities as they perceive low rate of return from it.
- Additionally, accessing agricultural credit is not easy. It is more difficult for small holders and start-ups enterprises. There is requirement of collateral and many paper works. Interest rate of agricultural loan is similar to other types of loans. Provision of alternative credit scoring

Contd…

- most farmers do not have enough information on the subsidies and facilities provided by the different levels of the governments on agricultural mechanization and energy use in agriculture.
- Need for cross sectoral policy linkage (energy meter provisions, subsidised irrigation tariff)
- Packaged Advisory services (agri, energy, climate information)
- Agro met advisory services to include energy services
- Alternative credit scoring for landless, vulnerable, excluded group
- Marketing and payment services – no digital divide
- Energy security and food security
- Nutrients, biogas
- Services such as pluralistic extension, barefoot agro-vets, Climate advisory services, digital financial services, solar powered irrigation, remittance, insurance

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Thank YOU