

NEPALESE AGRICULTURAL MECHANIZATION POLICY AND STRATEGY



Presented by

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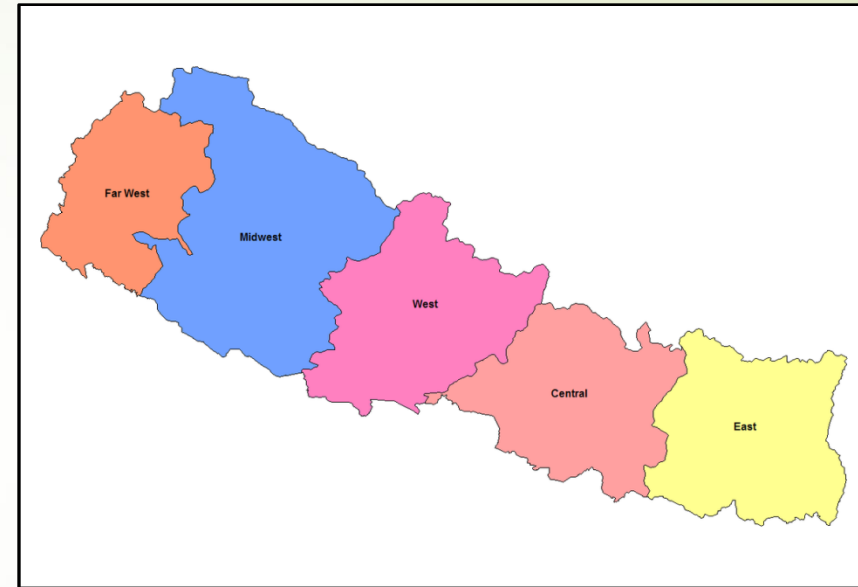
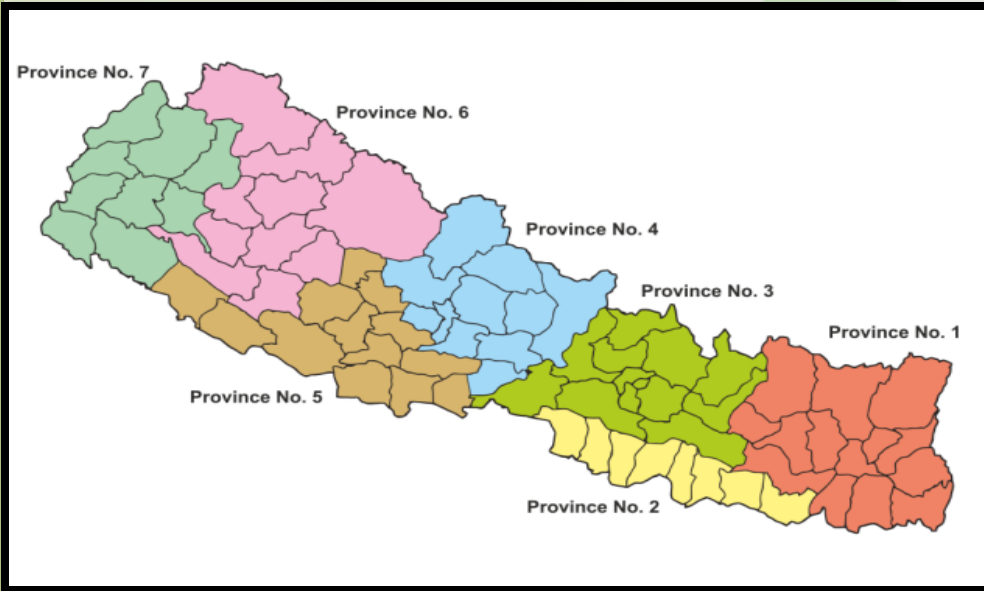
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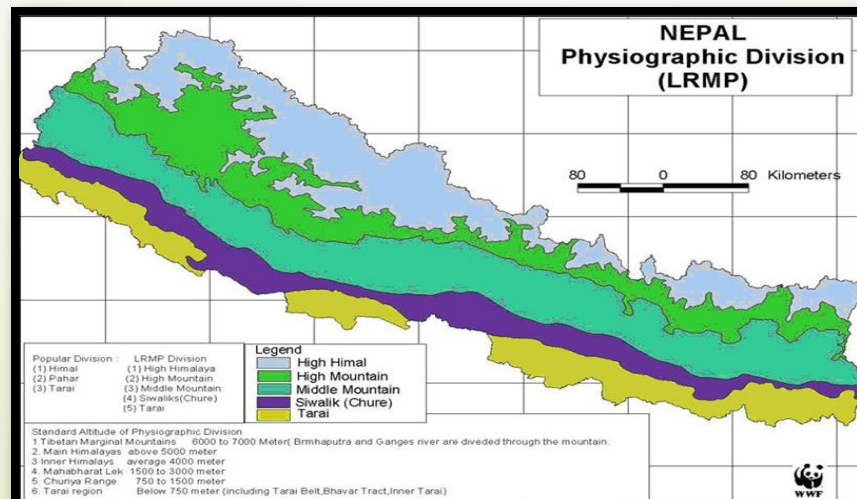
CSAM



Federal Democratic Republic of Nepal



Now



Then



Nepal at a glance

- Total land area - 147,181 sq. km, Only 0.1% of total land mass of earth
- 77 districts, 263 Municipalities, 3157 VDCs
- Population 28.98 millions, 10 religions
- 125 caste/ethnic groups, 123 languages spoken as mother tongue
- Predominantly an agrarian country
- 25.2 % people still below poverty line as of 2010
- Agriculture contributes 29.37 % to GDP, 66% employment
- 21% of the land is cultivable (47% rain-fed)
- Average land holding – 0.68 ha
- Major crops Paddy, Maize, Wheat and Horticulture
- Livestock: Cattles, Buffaloes, Sheep/Goat, Pigs and Poultry

Major Weather

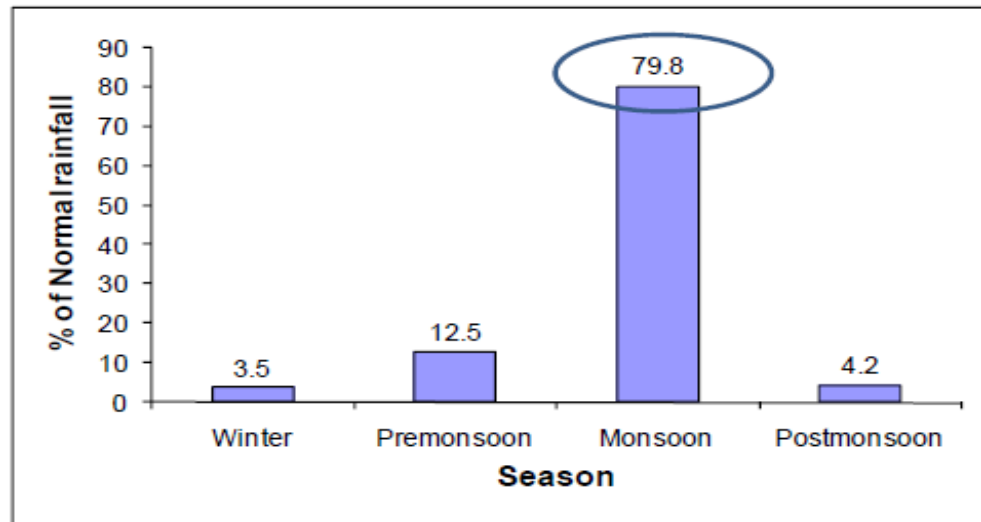
Climatic condition is strongly influenced by the monsoon circulation. On the basis of monsoon phenomena, there are four seasons in Nepal.

Winter (Dec-Feb)

Pre-monsoon (Mar-May)

Monsoon (Jun-Sep)

Post Monsoon (Oct-Nov)



- Country receives more than 80% of annual rainfall during summer monsoon
- Avg. Monsoonal day -102 day
- Mean Annual rainfall- 1530 mm
- July is the wettest month (~26 %)
- Nov. is the driest month (~0.6%)

Irrigation Status-2015/16

Particulars	Area in ha	Percentage Compared
National Area	14,718,100	
Cultivable Area	2,641,000	17.94 of National Area
Irrigable Area	1,766,000	66.86 of Cultivable Area
Farmer Managed Irrigation	198,140	14.23 of Irrigated Area
Surface Irrigation	785,494	56.42 of Irrigated Area
Underground Irrigation	408,543	29.34 of Irrigated Area
Total Irrigated Area	1,392,177	78.83 of Irrigable Area

Source: Statistical Information on Nepalese Agriculture, 2072/73 (2015/16), MoAD

Agricultural Mechanization Timeline

1921 - **Agriculture Office established** at Charkhal, Kathmandu

1924 -Beginning of Modern AgrilMech after **Mr. Krishna Bdr. Thapa of Biratnagar** 1st. time imported **single cylinder tractor**.

1953 -Establishment of **Agriculture Engineering Unit** under **Ministry of Agriculture Development**. Importation of modern farm equipments started for government agriculture and livestock farm

1959 -**Agriculture Equipment Research** Unit was established in **Ranighat, Birgunj of Parsa** for research and promotion of agricultural equipment for terai region- iron-made plough and rice thresher

1964 -**Agriculture Tool Factory (ATF), Birgunj** was established former **USSR**- iron-made plough, pedal thresher, corn thresher, wheel barrow, wheat thresher, pump-set and tractor-trailer

1970 -**Food Technology and Quality Control department** established a fruit processing pilot plant.

1971 -**Janakpur Agriculture Development Project (JADP)** by **Japan Government (JICA)** to promotion of deep tube-well, power-tiller and modern agriculture equipments.

Agricultural Mechanization Timeline

1973-1983 Agriculture Development Bank (ADB/N) started to prioritize the loan on tractors and pump-sets.

-**Livestock Development Farm**, Pokhara -German Technical Cooperation Agency (GTZ), use of Forage harvester, incubator

-**Jiri farm**, Dolakha -Swiss Government , use of some machineries

1991-Agricultural Engineering Division (AED), NARC-testing and developing different agriculture machines and equipment

1996-ATF privatized , now collapsed

2000-Agricultural Engineering Bachelor- at IOE, Dharan-48 students/ batch

2004-Directorate of Agriculture Engineering (DoAEngg), DoA- agricultural mech. extension and training services

2014 - Agricultural Mechanization Promotion Policy, 2071(2014)- Approved.

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)-In approval Process

Trend of Agricultural Mechanization 20 years

Types of Equipments	1991/92		2001/02		2011/12	
	Holdings using equipments ('000)	No. of items ('000)	Holdings using equipments ('000)	No. of items ('000)	Holdings using equipments ('000)	No. of items ('000)
Iron ploughs	315.1	354.5	870.3	890.2	1073.4	856.3
Power tillers	5.6	1.6	15.6	11.8	75.7	10.4
Shallow tube wells	50.9	48.2	119.7	109.5	367.7	262.0
Deep tube wells	20.1	15.7	58.6	51.5	159.7	82.0
Rower pumps	3.5	3.8	22.7	21.8	79.1	36.2
Tractors	35.2	5.5	272.9	150.6	844.7	37.4
Threshers	85.6	19.9	249.5	129.1	803.1	51.9
Pumping sets	81.1	41.3	210.4	146.1	548.2	150.3
Animal drawn cart	204.6	198.1	226.4	199.1	335.0	159.9
Sprayers	50.2	23.4	203.0	145.9	574.0	282.3
Others	296.5	878.4	449.0	1072.7	290.1	83.5

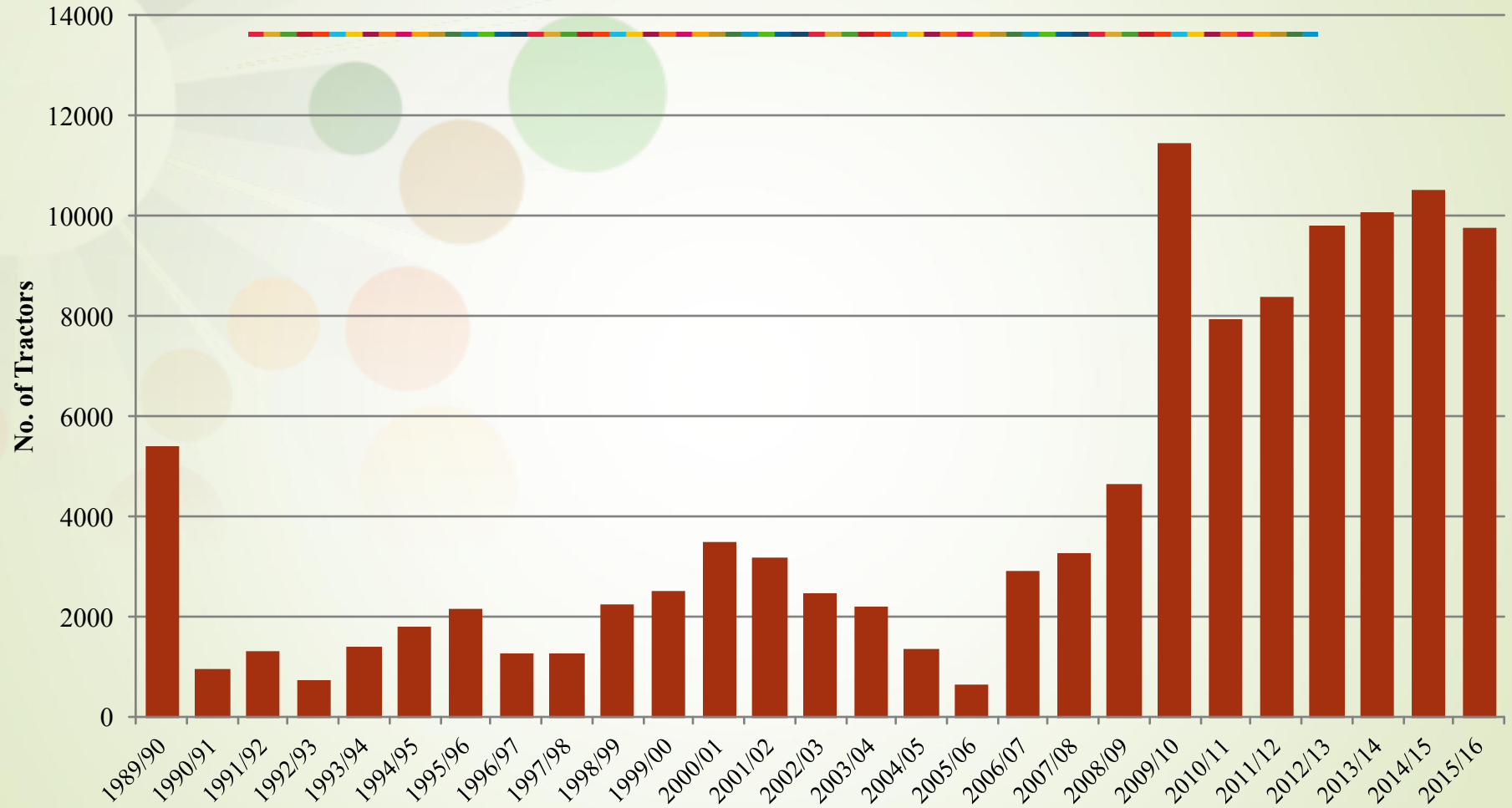
Source: National Sample Census of Agriculture, CBS

Agricultural Machinery Import, 2016/17

HS Code	Description	Unit	Quantity	Value in NPR '000	Source Country
87011010/87011090 /87019000	Tractor including Power Tiller	PCS	38,896	11,451,192	India, China
84321000	Ploughs	PCS	18,946	20,386	India, China
84322100	Disc harrows	PCS	4,595	35,125	India, UK
84322900	Harrows (excl disc harrows), scarifiers, cultivators, weeders, hoes including Mini Tiller	PCS	221,151	1,070,647	India, China, Indonesia
84323000	Seeders, planters and transplanters	PCS	2,763	20,042	India, China
84328000	Soil preparation/cultivation machinery; lawn/sports-ground rollers	PCS	38,068	143,689	India, China
84332000	Mowers (including cutter bars for tractor mounting)	PCS	1,129	26,899	India, China, Australia
84334000	Straw or fodder balers (including pick-up balers)	PCS	677	9,095	India, China
84335100	Combine harvester-threshers	PCS	1,930	353,761	India, China, Japan
84335200	Threshing machinery for agricultural produce	PCS	21,933	654,189	India, China, New Zealand, Turkey
84335300	Root or tuber harvesting machines	PCS	2,711	23,855	India, China
84335900	Harvesting machinery	PCS	17,802	58,737	India, China, Japan
84361000	Machinery for preparing animal feeding stuffs	PCS	176,638	697,678	India, China, Netherlands, Germany, Republic of Korea
84362100	Poultry incubators and brooders	PCS	844,222	219,934	India, China, UK, Malaysia
84371000	Machines for cleaning/sorting/grading seed grain or dried vegetables	PCS	10,666	508,893	India, China, Germany, Republic of Korea

Source: website of Department of Customs (<http://www.customs.gov.np/en/newdata.html>)

Trend of Tractor/Power Tiller Registered



Source: Department of Transport Management
(<https://www.dotm.gov.np/en/vehicle-registration-record/>)

Sector wise Policies Related to Agriculture

more than 20 different policy

- **National Agriculture Policy 2061 (2004)**
- Agriculture Business Promotion Policy 2063 (2006)
- Agriculture Biodiversity Policy 2063 (2006)
- National Tea Policy 2057 (2000)
- National Coffee Policy 2060 (2003)
- Dairy Development Policy 2064 (2007)
- National Seeds Policy 2056 (1999)
- National Fertilizer Policy 2058 (2001)
- Irrigation Policy 2060 (2003)
- Poultry Policy 2068 (2011)

Sector wise Policies Related to Agriculture

- Pasture Policy 2068 (2011)
- Floral Promotion Policy 2069 (2012)
- National Land Use Policy 2069 (2012)
- National Cooperatives Policy 2069 (2012)
- Commerce Policy 2065 (2008)
- Climate Change Policy 2067 (2010)
- Industrial Policy 2067 (2010)
- Supply Policy 2069 (2012)
- Science and Technology Policy 2069 (2012)
- Biotechnology Policy 2063 (2006.)
- **Agricultural Mechanization Promotion Policy, 2071 (2014)**

Policies, Strategies for Agricultural Mechanization

Constitution of Nepal 2072 (2015) :

PART 4 . Directive Principles, Policies and Responsibilities of the State

Article 51. State policies: Section (e) Policies regarding agriculture and land reform:

- Protecting and promoting rights and interests of peasants and utilizing the land use policy for **increasing production and productivity of agriculture and for commercialization, industrialization, diversification and modernization of agriculture;**
- Making arrangements for **agricultural tools and an access to market** with appropriate price for the produce.

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Policy, 2071 (2014)

Approved on 29th August 2014

Vision

Contribute to national development through modernization and commercialization in present agriculture system using agricultural mechanization

Mission

To contribute to sustainable economic development through the agricultural mechanization and agribusiness modernization

Goal

To research, develop, adopt, extend, and promote agricultural machines, implements & equipments to increase agricultural productivity and make it sustainable and competitive

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Policy, 2071 (2014)

4 Main Objectives

Approved on 29th August 2014

- To increase productivity through appropriate agricultural mechanization as per the economic and geographical need of the country in order to develop the sustainable, competitive and commercial agriculture sector
- To develop the services and business of agriculture machineries through the coordination among the government, private sectors and cooperatives in order to increase the access of the farmers and the business people.
- To identification and promotion of women and environment friendly agriculture machineries.
- To establish and strengthen the organizational structural to develop, quality standardization, regulation, monitoring and promotion of agriculture machineries for agricultural mechanization.

Policies, Strategies for Agricultural Mechanization

Agricultural Development Strategy (ADS) (2015)

Approved on 26 July, 2015

- 20-year strategic planning from 2015 to 2035
- Agricultural Mechanization as one of the thirteen outputs/core priorities

Vision

A self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth, and contributes to improved livelihoods and food and nutrition security leading to food sovereignty

ADS activities will have impact on three groups of farmers:

Commercial, Subsistence and Landless

Private sector is the major player to boost agricultural mechanization

Policies, Strategies for Agricultural Mechanization

Agricultural Development Strategy (ADS) (2015)

Output section 2.10: it is clearly mentioned that:
Agricultural mechanization strategy focusing on

- ✓ Awareness creation
- ✓ Demand stimulation
- ✓ A concessionary financing arrangement
- ✓ Technical capacity building of the dealer network, particularly for the 2-wheel power tillers and mini-tiller dealers throughout the country
- ✓ Some modifications in taxation.

Policies, Strategies for Agricultural Mechanization

Agricultural Development Strategy (ADS) (2015)

There are 6 components to this strategy:

Components	ADS Proposal
Information dissemination	<p>(a) Conduct social marketing campaigns on a cost sharing basis with 2-wheel tractor importers and dealers emphasizing the advantages of a 2-wheel tractor for the traditional forms of cultivation, harvesting etc.</p> <p>(b) Conduct three separate campaigns; viz., one each for the mountainous, hilly and terrain regions, with the aim of creating awareness to farmers of the potential options and choices.</p>
Improve customer access to finance	<p>Promote commercial banks to finance dealers to on-lend to their customers under two options: (i). Extend credit on commercial terms to dealers (ii). Access cheaper credit from the Rastra Bank's "deprived sector" lending program (cooperatives and micro-finance institutions).</p>
Capacity building of service and maintenance providers	<p>(a) Support dealers to increase the technical capacity of existing smaller workshops that are scattered through the countryside, rather than setting up their own repair workshops. These workshops could also stock spare parts and act as small brokers for around 30-35 dealers operating in major commercial centers.</p> <p>(b) Support dealers to offer technical training for 1,000 farmer/service providers to enable them to become local experts in the impacts of mechanization (additional germination rates, cost saving implications, the advantage of zero leveling, the impact of seed drills etc.)</p>

Policies, Strategies for Agricultural Mechanization

Agricultural Development Strategy (ADS) (2015)

There are 6 components to this strategy:

Components	ADS Proposal
Enable the business environment for leasing agricultural equipment	<ul style="list-style-type: none"> (a) Provide legal clarification (ruling) that the Banking Institutions Act does not restrict nonbanking institutions to engage in leasing; (b) Establish a pledge registry (under the Secured Transactions Act or under by amendment to the Contracts Act) to allow securing the financing for leasing operations by leasing companies.
Revise regulation and taxes to support mechanization	<ul style="list-style-type: none"> (a) Waive the VAT amount and import duty on spare parts to reduce the proliferation of sub-standard spare parts brought illegally across the border and promote business of local dealers and sub dealers. (b) Remove the 5-year restriction on change of ownership of 2-wheel tractors, to encourage mechanization (c) Impose full VAT on the purchase of 4-wheelers but not on 2-wheelers. Most 4-wheel tractors are used exclusively for commercial transport rather than for agriculture. (d) Reduce the road tax for Power Tillers. Currently, the levy is US\$28 for Tractors and US\$22.3 for Power Tillers, which is clearly a disincentive for a Power Tiller buyer, if it is to be used solely for agriculture.
Pilot a voucher scheme	<p>Entail provision of a 30% subsidy on all attachments for 2-wheelers and 4-wheelers, to increase the rate of attachment usage (seed drills, reapers, laser levelers, planters etc.). This would last just 3 years and be accompanied by the above mentioned social marketing campaign.</p>

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)- under approval stage

- It is the guiding document with
 - Implementation plan
 - Cost-estimation
 - Institutional and regulatory framework

- Focused on

“Sustainable Agricultural Mechanization for Food Security and Agricultural Commercialization”

- Overall purpose
 - To raise the level of mechanization for increased land and labour productivity
 - Adopting appropriate and sustainable agricultural mechanization technologies

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)- under approval stage

- ▶ Strategic framework comprised of 4 interrelated elements
- 1. Enhancing demand and use of appropriate agricultural machinery
- 2. Improving supply situation giving priority to domestic fabrication
- 3. Strengthening innovation system
- 4. Providing appropriate policy, institutional and regulatory measures

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)- under approval stage

- 6 components comprised of 4 interrelated elements
- 1-Enhance access to and use of agricultural machines and equipment at farm level
- 2-Domestic production and fabrication of feasible agricultural machines, movable parts and equipment
- 3-Innovation in agricultural mechanization
- 4-Improvement in business environment for the traders
- 5-Repair and maintenance facilities of agricultural machinery
- 6- Policy, Institutional reform and regulatory support

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)- under approval stage

- Private sector-led agricultural mechanization with optimal regulation and facilitation from the part of the government

identified 38 activities and 105 sub-activities within 6 components

Component	Key target groups/ focus	Emphasis	No of Activities	No of sub- activities
Component 1	Farmers	Information dissemination, awareness raising, training and capacity enhancement, demonstration, exhibition and fair	7	21
Component 2	Fabricators/ Manufacturers	Identification, development and capacity enhancement of public, cooperative and private enterprises, partnership and coalition building among education, research, extension and business/industry, financial and non-financial incentives to domestic fabricators/ producers, revitalization of Agricultural Tools Factory	6	26
Component 3	National Agriculture research and Extension system	Enhancing public sector research capacity, Participatory Technology development, AM design & testing, Upgrading AED/NARC research extension linkages	8	24

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)- under approval stage

Component	Key target groups/ focus	Emphasis	No of Activities	No of sub- activities
Component 4	Traders	Import and trade facilitation, reforms in tax and vehicle registration, monitoring the quality, standard and market price enhancing access to credit, after sale support.	5	9
Component 5	Repair Mechanics	Repair and maintenance, Produce, train and assist village agricultural mechanics Workshops support, Ensure availability of spare parts at fair prices, Ensure availability of after sale support from traders and producers	6	14
Component 6	Service Providers Policy Makers	Reorganization and upgrading of DoAEngg, policy and institutional interventions to support to improve access of farmers, fabricators and traders to credit and spare parts, Reforms in institutional and regulatory measures including AM Promotion Act	6	11

Policies, Strategies for Agricultural Mechanization

Agricultural Mechanization Promotion Operational Strategy (AMP_OS)- under approval stage

Targets set for raising the level of Agricultural Mechanization

Indicators and unit	Current status	Short-term (2017-2019)	Medium-term (2019-2022)	Long-term (2022-2027)
% of agricultural mechanization	40% (Terai-61%, Mid-hill 15%, mountains-2%)	50	60	70
Power use in Kw/Ha (Mechanical)	0.67	0.74	0.85	1.19

Source: AMP_OS study team report

Lessons Learned and Good Practices

✓ Government of Nepal approved the law

Combine Harvester along with baler or Straw Chopper has to be imported for straw mgmt

✓ Establishment of Testing Center

For Agricultural Engineering Division (AED)/NARC insisted by CIMMYT/USAID

✓ Establishment of Training Center

For Directorate of Agricultural Engineering (DoAEngg)/MoAD insisted by CIMMYT/USAID

✓ Establishment of Post Harvest Service Center

For safe storage and processing of seed

✓ Establishment of Seed Bank

For earth quake district for safe storage with processing machine



Lessons Learned and Good Practices

✓ Rural Livelihood Program

Training Blacksmiths, Operator, Mechanics

✓ Establishment of Resource Center

For repair and maintenance of tools and machine

✓ Training and Demonstration

PPP model- operation and demo of machines to farmers

✓ Subsidy

Interest Subsidy for Machine Financing

Capital Subsidy for Machine

✓ Establishment of Custom Hiring Center

Model Custom Hiring Center has been developed

Guideline Prepared – Under process of Approval

✓ Disaster Recovery Work

Like in Earth Quake CIMMYT/ USAID- Distributing grain storage materials and Agril Machine in eight EQ affected districts



Suggestions for Regional Cooperation amongst Countries

- Share National Policy, Strategy, Guid lines
- Cooperation in National Policy and Strategy Formulation
- Identification and Sharing of innovative solutions for sustainable agricultural mechanization
- Identify potential areas/countries for assistance or regional cooperation
- Develop Sustainable Agricultural Mechanization Strategy (SAMS)

Thank You



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