













































	Food Poverty	24%	16%	21% food insecurity 7.8% severe food insecurity	(NPC and WFP, 2019)
<b>Food and Nutrition Security</b>	Nutrition	41.5% stunting; 31.1% underweight; 13.7% wasting; 18% women with low Body Mass Index (BMI)	29% stunting; 20% underweight; 5% wasting; 15% women with low BMI	31.5% <sup>6</sup> and 36% Stunting (Global Hunger Index (GHI), 2020) 9% Wasting (GHI, 2020) 24.3% underweight 6.5% Severe underweight, 16% women with low BMI	(NMICS, 2020; and Von Grebmer et al., 2020)

Note: The indicators and some of the baseline data projections in the table has been retrieved from ADB technical consultant's report, 2013, and referred to assess the ADS review 2015/16 to 2020/21.

<sup>6</sup> [https://www.unicef.org/nepal/media/9076/file/NMICS\\_2019\\_-\\_Key\\_findings.pdf](https://www.unicef.org/nepal/media/9076/file/NMICS_2019_-_Key_findings.pdf)

# ANALYSIS OF THE AGRICULTURE SECTOR

In the following part of the research report, efforts are made to look into the current situation of agriculture and its production.

## 1.1 Productivity Achievements of Major Agriculture Commodities

Nepal's economy predominantly relies on agriculture. Sixty-four percent of the labor force is engaged in agriculture (ILO, 2021), which will comprise 27.6 percent of the GDP in 2021 (MoF, 2019/20a). Rice, wheat, maize, and barely are the major cereal crop producers. The agricultural land area of Nepal increased from 37,020 sq. km in 1971 to 41,210 sq. km in 2020<sup>7</sup>, growing at an average annual rate of 0.22, making up 28.7 percent of the total land (The World Bank, 2020a).

The production and productivity data provided by MoALD show that the productivity of major cereal crops such as rice, wheat, and maize is increasing. Among the major food crops, the productivity of paddy is comparatively high, followed by maize and wheat. In 2020/21, the productivity of paddy stood at 3.82 MT per hectare, maize at 3.1 MT per hectare, and wheat at 3 MT per hectare, which shows a gradual increase in productivity over the years (MoALD, 2020/21). However, for other crops like millet, buckwheat, and barley, the productivity has either remained stagnant or diminished over the same period. This is likely due to a combination of factors such as inadequate winter rainfall, limited seed availability, a lack of research and development in seed breeding, limited access to year-round inputs such as fertilizer, labor shortages in rural areas, and changes in food preferences caused by changes in external sources of income or remittances.

**Table 4. Productivity trend of major cereal crops in Nepal FY 2015/16 to FY 2021/22 (MT/ha)**

Fiscal Year	Rice	Wheat	Maize	Millet
2015/16	3.36	2.59	2.43	1.15
2016/17	3.15	2.33	2.5	1.13
2017/18	3.37	2.55	2.55	1.16
2018/19	3.51	2.76	2.68	1.19
2019/20	3.76	2.85	2.84	1.19
2020/21	3.80	3.09	2.96	1.22
2021/22	3.82	2.99	3.06	1.23

Source: (MoALD, 2015/16 to 2021/22).

Although there is an increase in production, it can hardly meet the country's demand. There is a strident increase in the trade deficit in cereal imports as the country is importing a large quantity of cereals, vegetables, fruits, and other meat and dairy products. According to MoALD experts and specialists, the increased import of cereals is due to the demand for cereals for industrial purposes and the change in food habits of people with improved economic status supported by remittances. There

<sup>7</sup> <https://tradingeconomics.com/nepal/agricultural-land-sq-km-wb-data.html>

is a high demand for fine rice, but the country production failed to meet the demand. The findings from Pokhrel (2020) shows Nepal is inclined towards the food self-sufficiency, for example, in case of tea (100%), coffee (100%), eggs (100%), cereals (97.4%), and potato (88.8%). Whereas, it is still deficit in case of milk (79%), vegetables (65.9%), meat (61%), pulses (26.6%), oil seeds (16.5%), and fruits. Similarly, in the time-series analysis of cereals yields, it shows that the food grains self-sufficiency ratio slightly declined to 87%, indicating still 13% of food grains needs import (Devendra et al., 2022).

**Table 5. The trend of Rice Import in Nepal in ‘000 MT and NPR ‘000**

Description	2015/16		2016/17		2017/18		2018/19		2019/20		2020/21		2021/22	
	KG	NP R	KG	NP R	KG	NP R	KG	NP R	KG	NP R	KG	NP R	KG	NP R
Various paddy including seeds of paddy rice (Total paddy)	94,364	2,494	163,302	4,286	215,051	5,972	235,168	6,846	348,336	10,479	698,062	20,549	551,749	16,990
Husked (brown rice)	9,287	417,983	288	13,478	351	25,649	463	38,590	5	239	48	3,522	6	676
Semi milled or wholly milled rice (whether or not polished or glazed)	391,304	18,758	393,823	18,758	498,198	22,799	488,982	24,591	410,919	22,237	546,876	27,620	528,375	29,045
Broken rice	44,653	1,131	32,685	81,980	29,791	73,498	44,955	1,118	29,232	93,395	89,344	2,612	50,385	1,536
<b>Grand total</b>	<b>539,608</b>	<b>22,830</b>	<b>590,098</b>	<b>23,878</b>	<b>743,390</b>	<b>29,233</b>	<b>769,568</b>	<b>32,595</b>	<b>788,492</b>	<b>33,651</b>	<b>547,664</b>	<b>50,694</b>	<b>51,427</b>	<b>47,573</b>

Source: (MoF, 2015/16c to MoF, 2021/22c).

According to the Department of Customs (DoC), Nepal imported food grains equivalent to NPR 74.28 billion in the fiscal year 2020/21. Of this value, the import value for rice and maize was NPR 47.57 billion and NPR 19.65 billion, respectively.

**Table 6. Share of Total Agri-food Import Value of Top 5 Major Commodities**

<b>S. No.</b>	<b>Agri-food Commodities</b>	<b>Shares of total Agri-food import value for 2015-2019 (in %)</b>
<b>1</b>	Cereals	27.12
<b>2</b>	Vegetables and certain roots and tubers; edible	10.71
<b>3</b>	Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes	9.12
<b>4</b>	Fruit and nuts, edible; peel of citrus fruit or melons	8.22
<b>5</b>	Food industries, residues, and wastes thereof; prepared animal fodder	8.04

Source: (BACI dataset, 2015 to 2020).

This trend shows the percentage share of each of the top 5 agri-food import commodities in relation to the total value of agri-food imports from 2015 to 2019. The average annual import value of agri-food for FY 2015–2019 is USD 1.23 billion. The data shows that cereals accounted for the largest share of total agri-food imports, at 27.12%, followed by vegetables and certain roots and tubers, which accounted for the second-largest share, at 10.71%. This trend indicates that cereals were the most significant commodities in the total value of agri-food imports during the 2015–2019 period, followed by vegetables and certain roots and tubers.

## 1.2 Current Status of Agricultural Inputs (Seed, Irrigation, and Fertilizer)

Location-specific seed availability, accessibility and availability of fertilizer, and sufficient year-round irrigation are the necessities to improve agriculture production in Nepal. In this section, efforts are made to identify the current status of agricultural inputs.

### 1.2.1 Seed Sector

The National Seed Vision (2013–2025) aims to improve food security by increasing the domestic production of high-quality, affordable seeds and making them available to farmers.

Looking at the trend from 2015/16 to 2017/18, the seed replacement rate increased from 15 to 22 percent for cereals. In recent days, some positive changes have been observed. The figure below shows the trend of seed production for major crops from 2015/16 to 2020/21. In the later years, there was some progress, which can be credited to the seed sufficiency program with its nationwide motto “seed guarantee for food security,” which has allocated about \$5.3 million for the implementation of seed policies through investment in resources and capacity building (The Kathmandu Post, 2022a).

However, analyzing the supply-demand status, demand far exceeds supply. For example, the total demand for cereal seed in 2020/21 is approximately 180 thousand metric tons, but the total supply can only meet the demand for 40 thousand metric tons (MoALD, 2020/21).

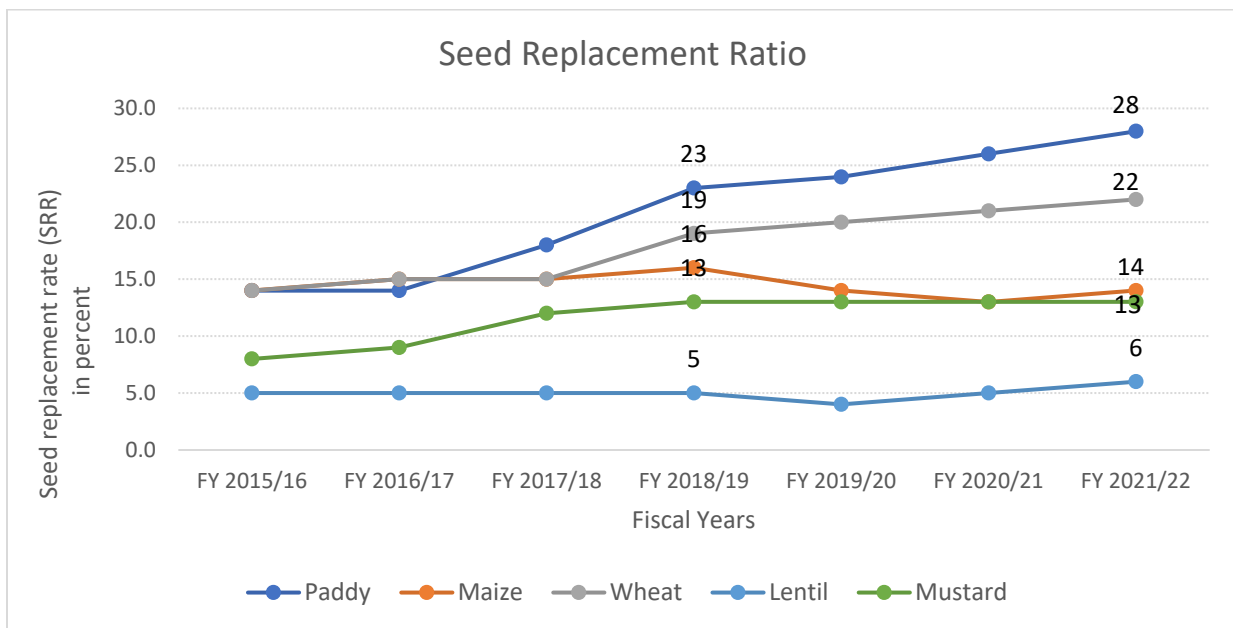
The formal seed supply system, which produces and sells released and registered crop varieties, only provides about 17% of the country’s crop seed (Choudhary et al., 2020). This formal system is



relatively new and is dominated by small-scale enterprises that emerged from government and donor seed sector development programs. Farmer cooperatives are important seed producers and cater to farmers where seed companies are absent. The government also produces significant amounts of seed through community-based seed producers and cooperatives for distribution to farmers under the government’s seed subsidy scheme.

But still, the country is facing a seed shortage. Farmers are compelled to buy imported seeds from foreign countries, which most of the time do not produce grains as expected. This is the time for the country to change its production strategy as per demand. There is a high demand for hybrid seed for fine rice, which could be the means to double productivity; however, factors like the lack of research and resources and certain policies of governments are holding it back. The country needs to act aggressively on the research and development of required seed varieties as per the topography and climatic conditions of Nepal and make them accessible to farmers.

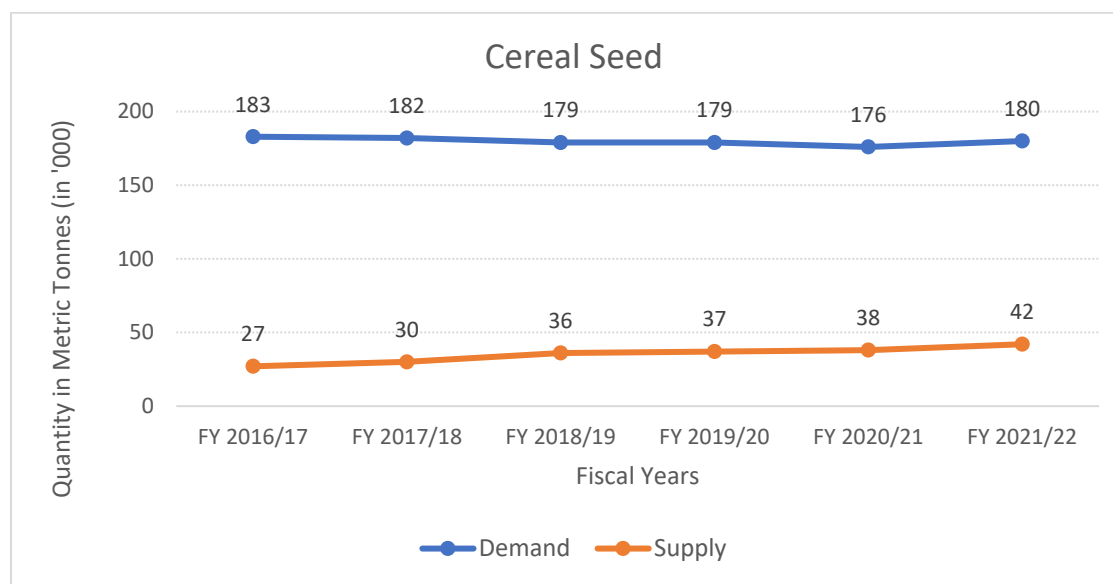
**Figure 2. Seed Replacement Ratio (SRR)**



Source: (MoALD, 2020/21)<sup>8</sup>.

<sup>8</sup> MoALD, 2020/21. Retrieved from Seed Quality Control Centre (SQCC).

**Figure 3. Demand and Supply Status of Cereals Seed**



Source: (MoALD, 2020/21)<sup>9</sup>.

### 1.2.2 Fertilizer Sector

The level of chemical fertilizer usage in Nepal used to be one of the lowest (19.1 kg/ha) in the region in 2007 (Pullabhotla et al., 2011), which reached 74 kg in 2015 and 102 kg per hectare in 2020 (The World Bank, 2020b). There is a continuous increase in the use of chemical fertilizers and in their demand as well. Despite an increase in total sales, the agriculture sector in Nepal continues to have constraints in accessing them because the demand far exceeds the supply. As per the statistics of MoALD, the annual demand for chemical fertilizers is more than 700,000 metric tons (KIIs with GoN Stakeholders; Adhikari, Gauchan and Singh, 2023); however, the country employs just 379,152 metric tons (MoALD, 2020/21).

The supply of chemical fertilizer in Nepal is completely dependent on imports, as there is no domestic production facility. As per the current policy, only two government entities, namely, AICL and Salt Trading Corporation Limited (STCL), are the authorized importers of the chemical fertilizers to be distributed to the farmers on price subsidies. As per the 2020/21 directives for the distribution of subsidized fertilizer, the quota is allocated to each local level. The concerned local level delegates the distribution of subsidized fertilizers to one agriculture cooperative from one Ward.

<sup>9</sup> (MoALD, 2020/21). Retrieved from Seed Quality Control Centre (SQCC).

**Table 7. Annual Sale (NPR) of Chemical Fertilizers in 2015/16 to 2020/21**

<b>Fertilizers</b>	<b>2015/16</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>
<b>Urea</b>	213,063	205,425	235,304	215,733	224,700	225,180	143,482
<b>DAP</b>	107,121	114,802	105,619	120,893	160,298	140,982	77,720
<b>Potash</b>	7,336	7,991	7,811	7,377	9,597	12,990	6,633
<b>Total AICL &amp; STCL</b>	327,520	328,217	348,734	344,004	394,595	379,152	227,836

Source: (MoALD, 2015/16 to MoALD, 2020/21).

The government of Nepal, for the first time, took the unprecedented step of importing chemical fertilizer from Bangladesh under a government-to-government (G2G) model, and imported a total of 50,000 MT of chemical fertilizer (MoFA, 2021). As per the G2G agreement with India in March 2022, Nepal is set to import a significant quantity of urea and DAP chemical fertilizers on an annual basis, this amount falls within the range of 150,000 to 210,000 metric tons every year. Additionally, over the course of the next five years, MoALD and AICL are expected to import a total of 935,000 metric tons of chemical fertilizers (urea and DAP) from India (Myrepublica, 2022).

In September 2022, the NSAF project and the Fertilizer Association of Nepal (FAN) held a policy dialogue in Kathmandu to identify the issues facing the supply of fertilizers in Nepal and to offer potential solutions. During the policy dialogue, several options were proposed to enhance the efficiency of the fertilizer supply system in Nepal. These included decreasing the current fertilizer subsidy by 20–30% and using the saved funds to increase imports and allocate subsidies based on demand, creating a procurement timeline to guarantee a timely supply of fertilizers for major crops, importing about 30% of fertilizers through G2G agreements, implementing a crisis management strategy by maintaining buffer stocks at a level of 20% of the total demand, and ensuring a fair environment for the private sector in the import and distribution of fertilizers.

In fiscal year 2021/22, the government had set aside NPR 12 billion for chemical fertilizer, with an additional 3 billion (in total 15 billion), in the face of COVID-19 impacts on international price hikes (MoF, 2021/22b; and The Kathmandu Post, 2021). There has been a massive increase in the international price of fertilizers in recent years, mainly due to the COVID-19 pandemic and the Russia-Ukraine crisis. The demand for chemical fertilizers, their prices, and government subsidies have been increasing every passing year. From KIIs with STCL, the urea, DAP, and MoP imports in FY 2020/21 were 1,221, 1,307.4, and 1,250 USD/MT, respectively (Adhikari, Gauchan and Singh 2023). This is nearly three times higher than the import price in FY 2019/20. The budget limitations and the international price hikes have led to significant fertilizer shortages in the country. Every year, there are issues with the short supply and timeliness of fertilizer supplies. The government is also mulling over adjusting the subsidized price.

The government of Nepal has been promoting organic agriculture for over two decades. So far, a number of policies and programs have been implemented. Promoting the production and use of organic fertilizer is one such initiative. Since FY 2010/11, the government has been providing a 50%

capital subsidy in machinery required to set up organic fertilizer factories (MoF, 2011/12). Twenty-three plants were established utilizing the government subsidy, but only around 15 of them are reported to be in operation now. Basically, a massive influx of organic fertilizer plants, the unavailability of raw materials, and unhealthy competition are to blame for the closure of many such plants. Two years later, the government started to provide price subsidies for organic fertilizers for the first time as per the 2011 organic fertilizer subsidy directives. Under the subsidy scheme, farmers were entitled to NPR 10 per kg of organic fertilizer, up to a maximum of 1,500 kg of organic fertilizer per farmer (Panta, 2020). A separate operational guideline was put in place to streamline the distribution of subsidized organic fertilizer at the district level. None of these programs exist today in their original form or spirit. These programs have seemingly ceased following the federalization and termination of the District Agriculture Development Office (DADO) and the district-level extension office. However, these and some other schemes for promoting organic fertilizer, together with the growing demand for organically produced foods, have resulted in the massive growth of organic fertilizer plants. Some local and provincial governments have programs and budgetary support to provide subsidies for the production and use of organic fertilizers. The government has recently issued a directive for the production of organic and biofertilizers. This directive is expected to facilitate the production, distribution, and use of quality organic and biofertilizer.

### **1.2.3 Irrigation**

Nepal has a cultivated area of 2,642,000 ha (18 percent of its land area), of which two-thirds (1,766,000 ha) is potentially irrigable. At present, 42 percent of the cultivated area has irrigation of some sort, but only 17 percent of the cultivated area has year-round irrigation. An estimate shows that less than 8 percent of the country's water potential is used for irrigation (Poudel, 2019). In 2020/21, an additional 15,508 ha were added to expand the irrigated land, among which 10,843 ha were surface and 4,665 ha of underground irrigation facilities (MoF, 2020/21a). Overall, the irrigated land increased from 583,000 ha in 1990 to 1.419 million ha in 2019 to 1.503 million ha in 2020, which shows progress in this sector (MoEWRI, 2019; and MoF, 2020/21a), but is still far from achieving the target set by ADS in 2016. However, the government is making continuous efforts to develop irrigation in Nepal. The table below shows the details of irrigation projects in Nepal.

**Table 8. Details on Irrigation Projects in Nepal**

<b>Projects</b>	<b>Budget in NPR billion</b>	<b>Commencement</b>	<b>Planned Completion</b>	<b>Irrigation area in ha</b>	<b>Cost/ha in NPR million</b>	<b>Physical progress in %</b>
<b><i>Mahakali Irrigation</i></b>	35	2006/07	2027/28	33,520	1.04	12%
<b><i>Sikta Irrigation</i></b>	25.02	2004/05	2028/29	42,766	0.58	71%
<b><i>Rani Jamara Kulariya</i></b>	27.7	2010/11	2023/24	38,300	0.72	52%
<b><i>Babai</i></b>	18.96	1988/89	2025/26	36,000	0.53	52.5%
<b><i>Bheri-Babai Diversion Multipurpose Project</i></b>	36.8	2011/12	2022/23	51,000	0.72	38%
<b><i>Sunkoshi Marin Diversion Multipurpose</i></b>	46	2019/20	2023/24	122,000	0.38	3.5%
<b>Total</b>	181.46			323,886	0.56	

Note: (MoEWRI, 2019; The Auditor General's 58<sup>th</sup> Annual Report, 2021; and The Auditor General's 59<sup>th</sup> Annual Report 2022).

The Government of Nepal has also started a subsidized solar irrigation program through the Alternative Energy Promotion Center (AEPCC). The government provides a 60 percent subsidy to install solar-powered pumps. In 2021, more than 2,000 farmers have received a subsidized solar pump (IWMI, 2022). MoALD is also providing support for farmer-managed irrigation and subsidies for electricity for irrigation. Different schemes are in place in different provinces and states to facilitate irrigation for agriculture.

#### **1.2.4 Farm Mechanization and Technological Changes**

The geography, fragmented land, and small and terraced plots pose challenges for farm mechanization in Nepal, which is another contributor to lower yields in cereals and crops. The fragmentation of land by the majority of smallholder farmers also poses challenges; 62.6 percent of farmers hold land less than 0.5 ha, of which 10.6 percent hold land less than 0.1 ha (National Agriculture Census, 2021).

Since 2011, 30,000 mini-tillers have been distributed in Nepal, targeting small-scale farmers with less than 0.4 ha (CSISA, 2021). Before the ADS inception period, the survey findings and literature show Terai Zone was quite active in the adoption of tractors and farm mechanization tillage. Takeshima (2017) via the Nepal Living Standards Survey (NLSS) reported that less than 8% of the farms used mechanized tillage (basically tractor) in the hills and mountains, while 46% of the farms used mechanized tillage in the Terai zone. The Agricultural Mechanization Promotion Policy was just promulgated during the ADS inception period of 2015 (Takeshima, 2017). Youth migration has

compelled the utilization of farm mechanization, which is resulting in an increase in adaptation to farm machinery.

The ADS has proposed two agri-mechanization centers in the Terai, one in the mid hills and one in the high hills. In response to this, the project “Sustainable Agricultural Mechanization,” implemented by the Center for Agricultural Infrastructure Development and Mechanization Promotion (CAIDMP), DoA, and MoALD, involved the establishment of two Custom Hiring Centers (CHCs) in *Siraha* district (*Laban* municipality) and *Udaypur* district (*Belaka* municipality), which are managed by committees primarily composed of women, making up over 75% of the committee. These CHCs provide mechanization services, such as the use of machinery and equipment for enhancing the productivity of crops such as rice, maize, wheat, and vegetables (Food and Agriculture Organization, 2022).

Through access to these mechanization services, the CHCs have been able to benefit over 250 members in the two districts. It has helped to reduce the labor intensity of farming, improve farm management, and save time and money. The CHCs are equipped with a wide range of machinery and tools, including two-wheel tractors and trailers, mini-tillers, planters, transplanters, weeders, reapers, mobile threshers, dehuskers with corn shellers, combined dehuskers and mills, and solar dryers (FAO, 2021).

Another effort was made through the PM-AMP, 2016-2025, which is one of the largest active projects under the MoALD in Nepal. This project aims to promote self-sufficiency in agriculture by boosting productivity and generating employment opportunities through agri mechanization and agri-business promotion. The project has established several infrastructures, including 583 custom hiring centers, 205 high-tech semi-high-tech nurseries, and greenhouses, 369 post-harvest centers, 18 agricultural industries and laboratories, irrigation facility for 4,236 hectares of land along with 952 additional irrigation schemes, solar facility for 62 places, fish ponds for 2,249 hectares, consolidated lands for 1,350 hectares, etc. (MoF, 2020/21a).

The National Agriculture Census (2021) shows the number of farmers using tractors for the agricultural operation nearly doubled from 8 lakh forty-five thousand (22%) in 2011 to 16 lakhs thirty-nine thousand (40%) in 2021. Also, the findings shows that the number of tractors increased from 37 thousand to 58 thousand during the interval of 10 years. The number of farmers using power tiller was found to be 4 lakh 11 thousand attributing only 11% of the farmers in 2021 while only 76 thousand (2%) of the farmers were using power tiller for agricultural purpose in 2011. Furthermore, only 8 lakh 3 thousand farmers used thresher in 2011 while it increased to 11 lakh 75 thousand farmers in 2021.

### 1.3 Food and Nutritional Security

Poverty alleviation, food, and nutritional security are crucial components embedded in agricultural achievements. Efforts by the government and other development agencies to address food poverty have made some progress, but they have not been able to contribute to reducing poverty and food scarcity in rural areas as anticipated by the government. The new report “Nepal Multidimensional Poverty Index: Analysis Towards Action (2021)” shows that Nepal succeeded in lifting 3.1 million people out of multidimensional poverty between 2014 and 2019, but still, 4.9 million people are multi-

dimensionally poor, which is 17.4% of Nepal’s population. Disaggregated data show that there are still 39.5 percent of people who are multidimensionally poor in *Karnali* province, followed by *Sudurpashchim* province 25.3 percent (National Planning Commission, 2021).

**Table 9. Multidimensional Poverty Index of Nepal**

<b>Provinces</b>	<b>Poverty Index (%)</b>
<i>Koshi</i>	15.9
<i>Madhesh Province</i>	24.2
<i>Bagmati</i>	7.0
<i>Gandaki</i>	9.6
<i>Lumbini</i>	18.2
<i>Karnali</i>	39.5
<i>Sudurpashchim</i>	25.3
<b>National</b>	<b>17.4</b>

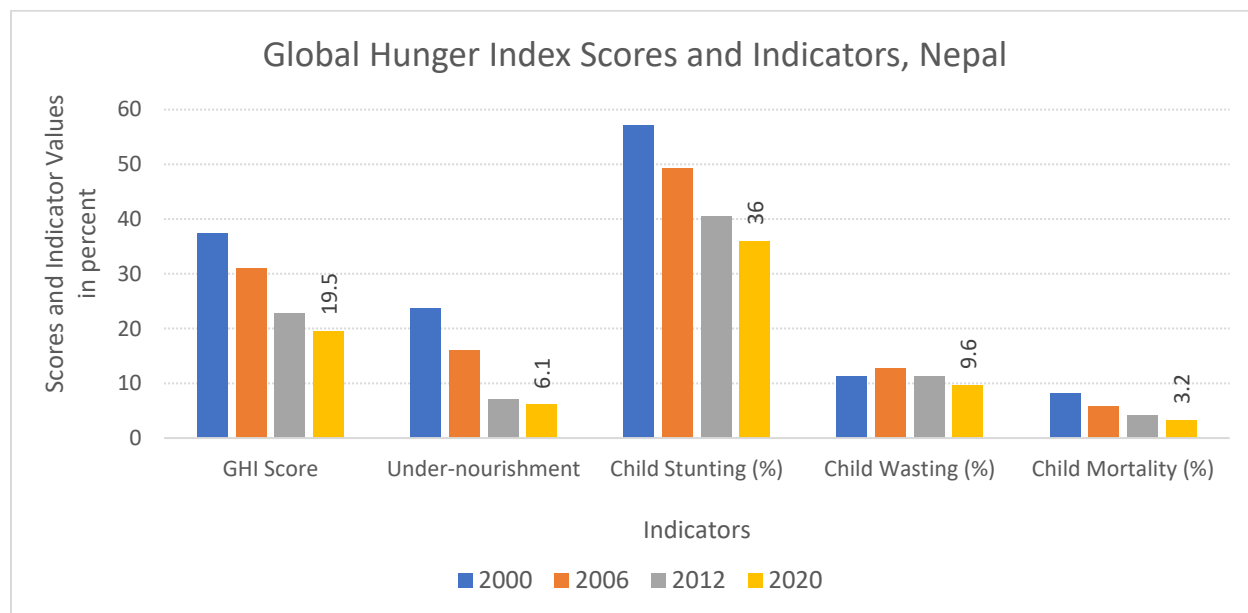
Source: (National Planning Commission, 2021)<sup>10</sup>.

Nepal is classified as a localized food insecure country, ranking 74<sup>th</sup> on the Global Food Security Index (GFSI) (Economic Impact, 2022). The GHI has fallen almost by half from 38 in 2000 to 19.5 in 2020, but it is still considered moderate, which is a concern for food insecurity in Nepal.

Undernourishment fell from 23 to 6 percent, child stunting from 57 to 36 percent (still high), child wasting modestly from 11 to 9 percent, and child mortality from 8 to 3 percent within the period of two decades (2000-2020). According to the five-year target of ADS, child stunting should have fallen to 29 percent and child wasting to 5 percent by now, but the values are still unacceptably high. The child stunting is particularly a concern in *Karnali* province (55 percent), which is almost twice as high as in *Gandaki* province. This can be linked to poor access to dietary nutrients and a lack of variety in nutrient-dense foods, resulting in micronutrient deficiencies in food crops (MoH, New Era and ICF, 2017).

<sup>10</sup> (Nepal Multiple Indicator Cluster Survey, 2019).

**Figure 4. Global Hunger Index Scores and Indicators**



Source: (MoH, New Era, and ICF, 2017 and Von Grebmer et al., 2020).

To address the issues of food poverty with the investment of 1 billion NPR by the ministry of finance, the government has established “food banks” with an aim to establish 200 food storage centers to tame food insecurity in Nepal (MoF, 2020/21a).

### 1.4 Agribusiness, Marketing, Value Chain and Trade

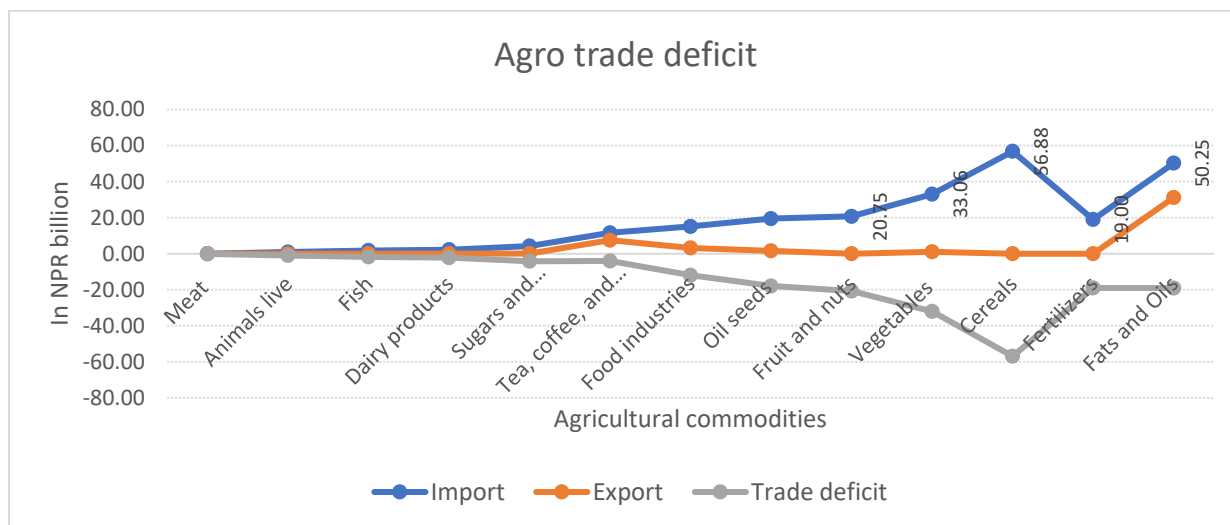
Agriculture in Nepal is transitioning from subsistence to commercial, but at a slow pace (MoF, 2020/21a). In 2018/19, 31.1% of the total exports and 14.6% of the total imports were agricultural commodities (MoF, 2018/19a). In 2020/21, the share of agricultural imports increased and reached 21% of the total imports (MoF, 2020/21a).

The top imports among agricultural commodities include cereals (NPR 56.88 billion), fats and oils (NPR 50.25 billion), vegetables (NPR 33.06 billion), fruits and nuts (NPR 20.75 billion), fertilizers (NPR 19 billion), along with numerous other goods. Among the total agriculture imports, cereals have the highest share and constitute more than 50 percent of the total imported food crops. Nepal mainly exports fats and oil (NPR 31.20 billion) and tea, coffee, and spices (NPR 7.52 billion); however, the trade deficit is noticeably significant in all agricultural commodities in 2020/21.

The following graphs show the current trade status of the country.

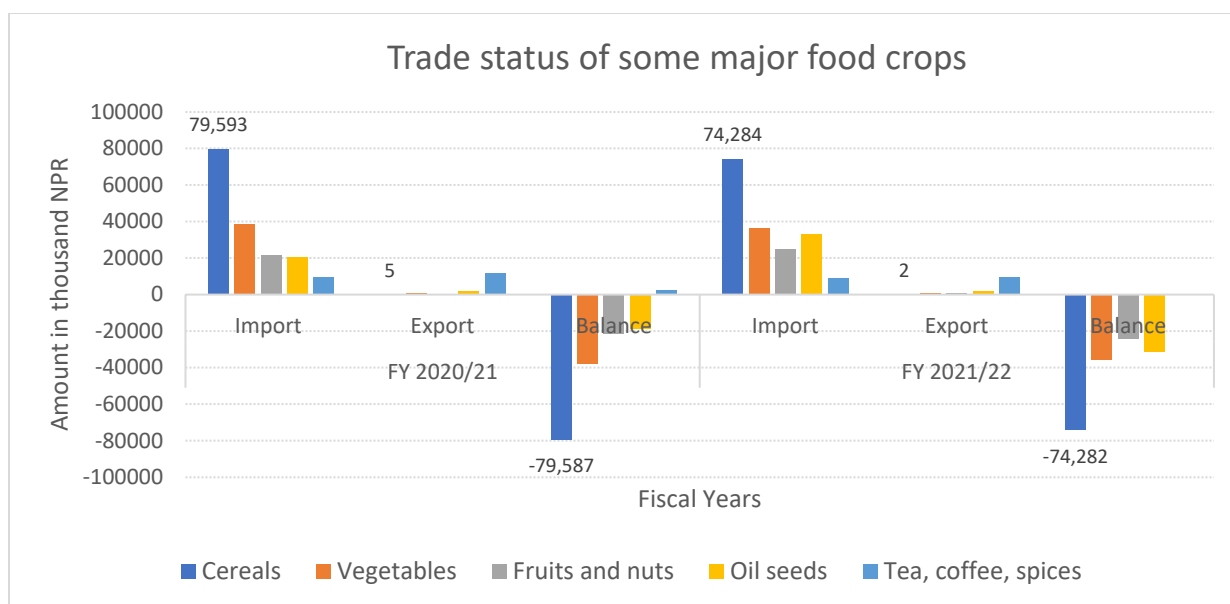


**Figure 5. Agro-trade deficit in Nepal**



Source: (MoF, 2020/21c).

**Figure 6. Trade status of some major food crops**



Source: (MoF, 2020/21c; and MoF, 2021/22c).

## 1.5 Agricultural Finance

Access to financial services is key to building farmers’ resilience. In 2017, NRB launched the Priority Sector Lending Programme (PSLP), under which banks and financial institutions allocate 10% of their loan portfolios to the agricultural sector. This share will increase to 12 percent in 2022. Commercial banks, development banks, and finance companies are engaged in this scheme (The Kathmandu Post, 2022b). As per the guidelines, loans shall be made available, at a 5% interest subsidy on the base rates

of these institutions, of up to NPR 50 million (USD 454,000) for businesses and NPR 15 million (USD 136,000) for individuals for producing, processing, and marketing agriculture and livestock commodities (Choudhary et al., 2020). The following table shows the agriculture finance trend and current status.

**Table 10. The trend of bank credit/loans in agriculture**

Details	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Number of credit transaction institutions	355	405	446	476	490	596	645
Number of farmers taking credit	68,816	83,242	102,746	125,087	145,036	174,349	193,786
Loan approved (in million NPR)	10,559.2	13,199.0	15,923.1	18,603.2	20,691.5	24,123.7	18,225.7
Loan investment (in million NPR)	9,797.9	11,975.0	15,005.1	17,724.9	17,242.9	20,601.6	15,642.0

Source: (MoF, 2020/21a; and MoF, 2021/22a).

However, due to banking fees, distance from banks, low literacy levels, and cultural barriers that make farmers hesitant to approach formal banks, farmers still do not have access to this finance in practice; only 45% of Nepalese use formal banks. Most of the rural population either stores cash at home or takes credit from the informal sector, where interest rates can soar as high as 48% (Winrock International, 2021). The table below shows the trend of the percentage share of loans in agriculture sectors.

**Table 11. Share of total loans in agriculture sectors, in NPR million**

Categories	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
	Jul	Jul	Jul	Jul	Jul	Jul	Jul (R)	Jul (P)
Agriculture	156,935	191,395	215,688	261,874	323,636	375,477	510,349	594,935
Total Credit	1,362,087	1,681,853	1,986,225	2,422,779	2,911,897	3,266,012	4,172,785	4,709,130
Share of credit inflows of the agriculture sector to the total credit	11.52%	11.38%	10.86%	10.81%	11.11%	11.50%	12.23%	12.63%

Source: Nepal Rastra Bank (2015/16 to 2022/23).

Note: R=Revised, P=Provisioned.

Agriculture sector is highly a risk prone sector, and the agricultural insurance is the key option to manage farm level risk induced by climate and other disaster (Warner et al., 2013). The government of Nepal has been implementing crop and livestock insurance since January 2013 by formulating crop and livestock insurance directives. The insurance scheme provided by various companies is quite effective, with 75 percent of the premium being provided by the government (MoAD, 2013)<sup>11</sup>. The current agricultural insurance schemes under the various categories of ‘sum insured, premium, subsidized premium, claimed paid are provided by the government to provide coverage of crops and livestock sectors along with fisheries, and birds (MoALD, 2020/21). The poor and marginal farmers continue to be deprived of the subsidies, often referred to as “hijacked subsidies” between the government and affluent farmers (Timilsina, 2019). At present, there are 20 insurance companies providing insurance in the agriculture sector in various regions of the country (Devkota et al., 2021). The federal government in 2018—at all levels—gave a boost to all kinds of subsidies by allocating around NPR 18 billion annually. However, the use of this assistance has not been fruitful because less attention has been paid to the crop sector (Kaini, 2020).

## 1.6 Budget vs. Expenses vs. Programs

The agriculture sector has always been less prioritized when allocating the budget with reference to its contribution to GDP. The government has introduced the National Campaign Year for the Agricultural Production for Self-Reliance in the current fiscal year (MoF, 2022/23), with an increased budget allocation of 33 percent to NPR 60 billion, equivalent to 3.3 percent of the total budget. Yet, the budget is still insufficient to cater to the rising needs of farmers and effectively implement modernization and commercialization in agriculture. Fiscal delivery has been poor, with only 62% of the budget delivered in the last five years.

The budget includes NPR 15 billion for the import of fertilizers, which is insufficient to meet even one-third of the country’s total requirement. Additionally, NPR 33.5 billion has been allocated for water resources and irrigation projects, despite many of these projects facing time and cost overruns and negatively impacting agricultural productivity. The government aims to irrigate 21,600 hectares of additional land and establish an NPR 500 billion microfinance fund for agriculture credit to small farmers. The goal is to reduce imports of key products such as paddy, maize, wheat, vegetables, and fruits by 30 percent in the coming year, though it is unlikely that imports can be reduced by one third within a year. This highlights a disconnection between resource allocation and targets and raises concerns about the credibility of the fiscal policy.

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<sup>11</sup> (MoAD, 2013). *Crop and Livestock Insurance Directives 2013*. Retrieved from: [https://doad.bagamati.gov.np/sites/default/files/final%20report\\_Crop%20insurance\\_NAES\\_2078\\_TBhandari\\_0.pdf](https://doad.bagamati.gov.np/sites/default/files/final%20report_Crop%20insurance_NAES_2078_TBhandari_0.pdf)

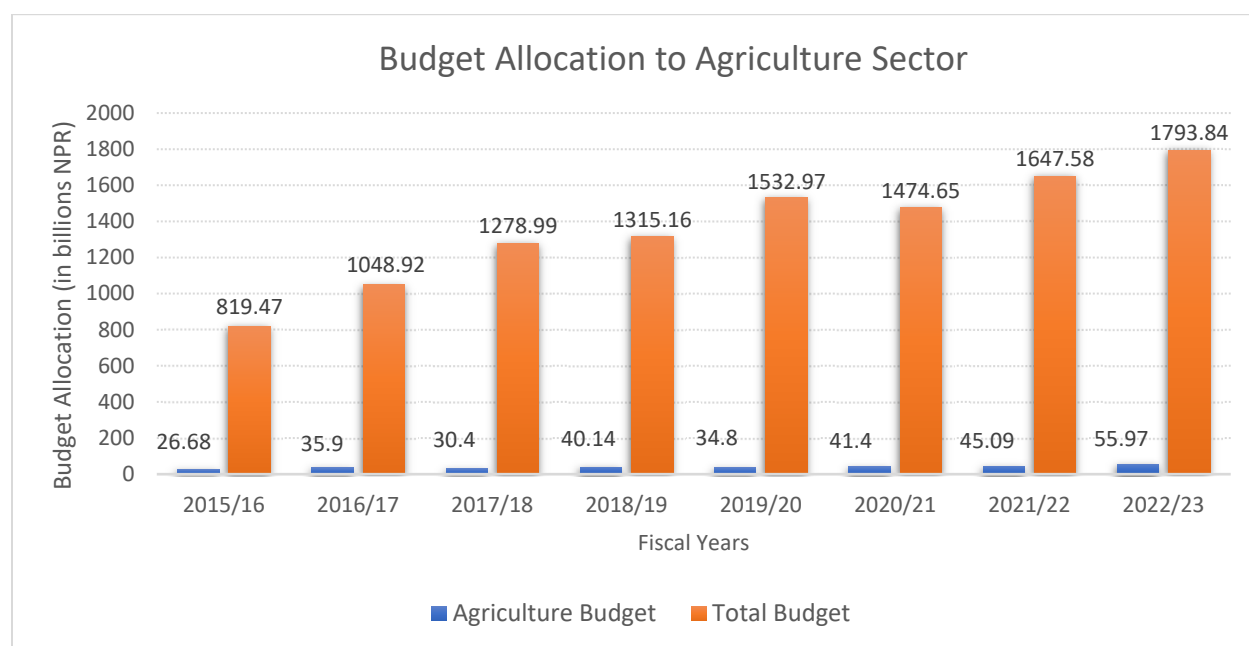
**Table 12. Share of agriculture budget (in billion NPR) to the total budget and its share of the expense**

Fiscal Years	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Share of agriculture budget to the total budget (percent)	26.68 (3.3)	35.9 (3.4)	30.4 (2.4)	40.14 (3)	34.8 (2.3)	41.4 (2.8)	45.09 (2.7)	55.9 (3.1)
Share of agriculture expense to agriculture budget (percent)	22.09 (83)	34.75 (96.8)	23.97 (78.9)	19.66 (49)	21.09 (60.6)	23.01 (55.6)	-	-

Source: (MoF, 2015/16b to MoF, 2022/23).

Note: Figure in parenthesis includes percent.

**Figure 7. Budget allocation to agriculture sector**



Source: (MoF, 2015/16b to MoF, 2022/23).

## 1.7 Cross-Cutting Themes (Climate Change and Social Inclusion)

Nepal is extremely vulnerable to climate change, and this has radically changed seasonal water availability, causing droughts during the dry season and increased flooding during the monsoon

season. Looking at the trend from 1975 to 2005, the mean temperature has risen by about 0.6°C in a decade, and from 2016-2045, it is expected to increase the global temperature by about 0.9–1.1°C (MoFE, 2019). This gradual change in mean temperature can have an influence on rainfall patterns and CO<sub>2</sub> levels, thus impacting total crop yields (Malla, 2008). A recurring trend of late monsoon has been observed in recent years, with subsequent impact on summer crops. Research conducted by the Nepal Country Vulnerability Study Team in 2009 has projected that Nepal’s mean annual temperature may rise by 1.4 degrees Celsius by 2030, 2.8 degrees Celsius by 2060, and 4.7 degrees Celsius by 2090 (NCVST, 2009). Nepal contributes only 0.027% of total greenhouse gas emissions globally, but due to rising atmospheric temperatures and its fragile geology and geographic location, Nepal is disproportionately affected by climate change. Extremely high precipitation, an increase in temperature, extremely low precipitation or drought, and increased climatic variability are major climate change event risks faced by all regions in Nepal.

Evidence suggests that the observed changes in temperatures and soil moisture are negatively affecting agriculture in many parts of Nepal. The Terai region, Nepal’s prime agricultural belt along the entire southern region of the country, is most at risk from flooding. This could lead to inundation or the depositing of sediments on agricultural land. Similarly, drought—both during winter and summer—is affecting crop production. In recent years, there has been a recurring trend of late monsoon, which has had an impact on summer crops. As there is a dominance of small and marginal farmers in the country, such groups are more vulnerable to climate shocks. The ability of Nepal’s agriculture sector to adapt to these changes is limited.

The national climate change policy of 2019 replaces the erstwhile National Climate Change Policy of 2010. It incorporates changes and amendments to certain provisions as a result of changes in international obligations and national scenarios, including the federal context. Agriculture- and food security-related policies, strategies, and working policies are proposed for dealing with climate change issues. Likewise, the Second Nationally Determined Contribution (NDC, 2020) proposes a mitigation and a National Adaptation Plan (NAP) framework and actions. The major provision of the second NDC pertinent to agriculture basically involves reducing emissions from agriculture, promoting climate-smart agriculture technology, and implementing climate-smart villages.

Although some provincial governments have implemented climate smart villages and other climate change adaptation-related programs, such programs barely meet the technical standards and quality requirements.

Currently, all three tiers of government units generally lack the capacity to implement the international conventions and treaties that Nepal has signed.

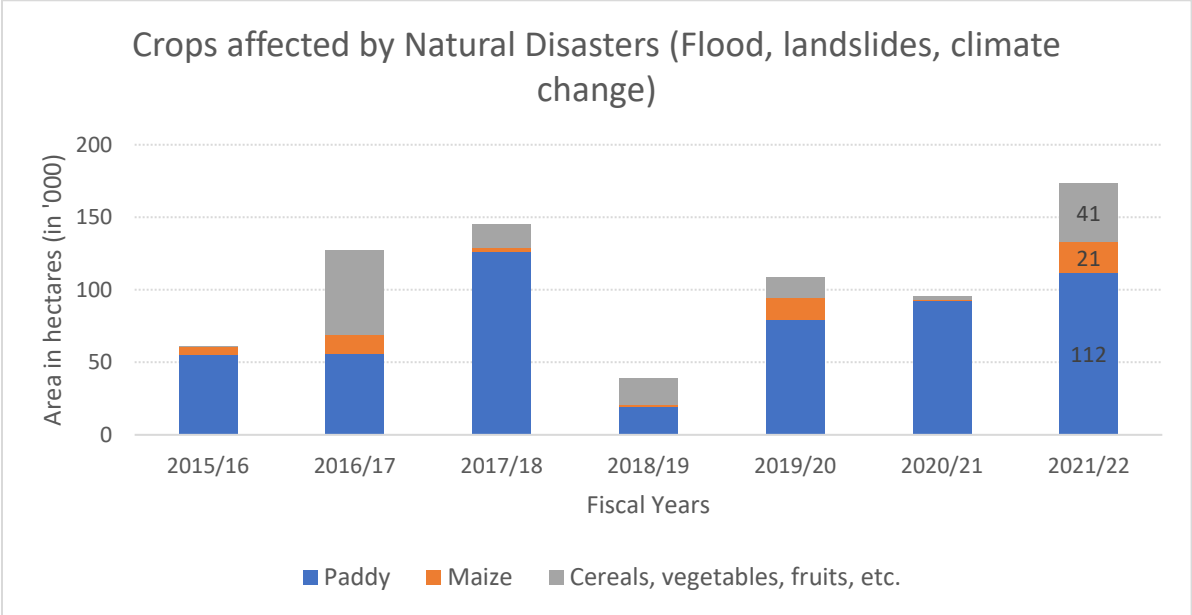
Despite the recognition of climate change adaptation in agriculture by various frameworks, the role of MoALD in formulating policies and designing programs and projects for adaptation needs to be strengthened. The Ministry of Forest and Environment (MoFE), being the focal ministry for climate change-related affairs, needs to play a more proactive role in involving MoALD in dealing with climate change issues in the agricultural sector.

In the recently concluded CoP 27, Nepal presented a report on the impacts it is facing in the face of a changing climate. In past CoPs, Nepal has largely failed to capitalize on a global platform such as the CoP by garnering international attention and support as one of the most vulnerable countries to climate change. Access to climate finance is touted as a big success for LDCs like Nepal, but the modality for such support has yet to be finalized. Back home, the representation of MoALD in CoP 27 and the intermenstrual communication and coordination between MoFE and MoALD in implementing the commitments made by Nepal in CoP 27 have been poor. One of Nepal’s NDC commitments is to maintain a forest cover of 45% of the total area of the country by 2030, with a maximum of 4% other wooded land (Government of Nepal, 2020). As of now, the country has a forest cover of 45.31%, including 3.62% of other wooded land (The Rising Nepal, 2022).

In a similar vein, natural disasters, climate change, weather-induced risks, and irregular rain patterns, including floods, landslides, and drought, have continued to cause a tremendous loss in crops, vegetables, and fruits. These effects are particularly prominent in paddy, which has incurred a loss of about 20,000 to 130,000 hectares of land over the past few years.

According to the National Agriculture Census, 2021, a 1807 thousand farmers were aware about the concept of climate change, among which 1639 thousand farmers (91%) reported that the impact of climate change was evident in their agricultural operation. Among those farmers cognizant of impacts of climate change in agriculture, 1387 thousand (85%) reported that the agriculture performance is affected by climate change.

**Figure 8. Crops affected by natural disasters**



Source: (MoF, 2015/16a to MoF, 2021/22a).

In the social dimension, there are also considerable gender differences in farm and off-farm activities in Nepal. In recent years, the outmigration of the young generation has added more workload for farmers (Adhikari and Hobley, 2015), especially for women and the older age group. Women play a

significant role in both crop and livestock production, in addition to off-farm and regular household responsibilities. Recent data revealed that in 2021, more than 1,700 Nepalese people will travel abroad daily for employment. According to the 2021 Census Data, there are 2.2 million Nepalis living abroad, 81.28% of whom are men and 18.72% of whom are women, who migrated out of the country in search of work (Rijal, 2022). Hence, this has increased feminization in agriculture. Thus, the task of managing land has now fallen to those left in rural areas, primarily women and the elderly. The ownership of land by women is only about 19.5 percent in Nepal (MoF, 2020/21a). The limited ownership of land has constrained women from obtaining incentives, loans, and subsidies for agricultural production from government and financial institutions (FAO, 2019).

Over the years, there have been remarkable achievements in gender and social inclusion in public agriculture development endeavors. Participation of women farmers, socially disadvantaged groups, and people from remote areas in agriculture extension and government support schemes has increased substantially. However, there has been a poor state of meaningful participation among such groups.

From the period 2004-2022 Nepal's agriculture sector has experienced significant policy developments. Newer policies are now promoting inclusivity in agriculture, targeting women, *Dalits*, marginalized groups, and youth. Current policies aim for 50 percent female representation, emphasize data disaggregation, and have introduced special programmes for agricultural enterprises owned by disadvantaged groups. In addition to improving access to seeds, bolstering food security, and ensuring biodiversity, mechanization has also been promoted to enhance farmers'/entrepreneurs' access to machineries for efficient and sustainable agriculture development. The Gender Responsive Budget Formulation Guidelines advocate to increase women's participation in planning and implementation of the MoALD and department's programs, and the beneficiary's level; capacity building of women officials and women beneficiaries; increasing women's access to the programs components (optimum 50% or more); monitoring through a disaggregate approach of the beneficiaries; increasing women's employment and income. Ensuring efficient time management and reducing the workloads of the women<sup>12</sup> (MoF, 2013). The implementation of Gender Responsive Budgeting (GRB) has been designed, coding in the three categories of direct responsive (code 1), indirect responsive (code 2), and gender-neutral categories (code 3) in coordination with NPC, MoF, and MoALD. The gender-balanced work force has been progressing at the federal level, and males are still dominating the workforce in the local bodies. The mandatory participation of women leaders in local bodies and 33% of women employees has a slow impact on the administration work force; 45% of reservations are for inclusive categories, and 33% are reserved explicitly for women in the civil service (Civil Service Act, 2014).

The share of direct budget allocation in the agriculture sector fluctuated between 2017/18 and 2019/20 before increasing in a trend that has continued until 2022-23, now at 54%. The neutral budget share has remained relatively low, now at 6 percent of the total. This indicates that the agriculture sector is highly sensitive to Gender-Responsive Budgeting (GRB), as there is a greater budget allocation in direct headings compared to national budget headings in these recent two fiscal years (Figure 9). The Ministry of Agriculture and Livestock Development (MoALD) has consistently

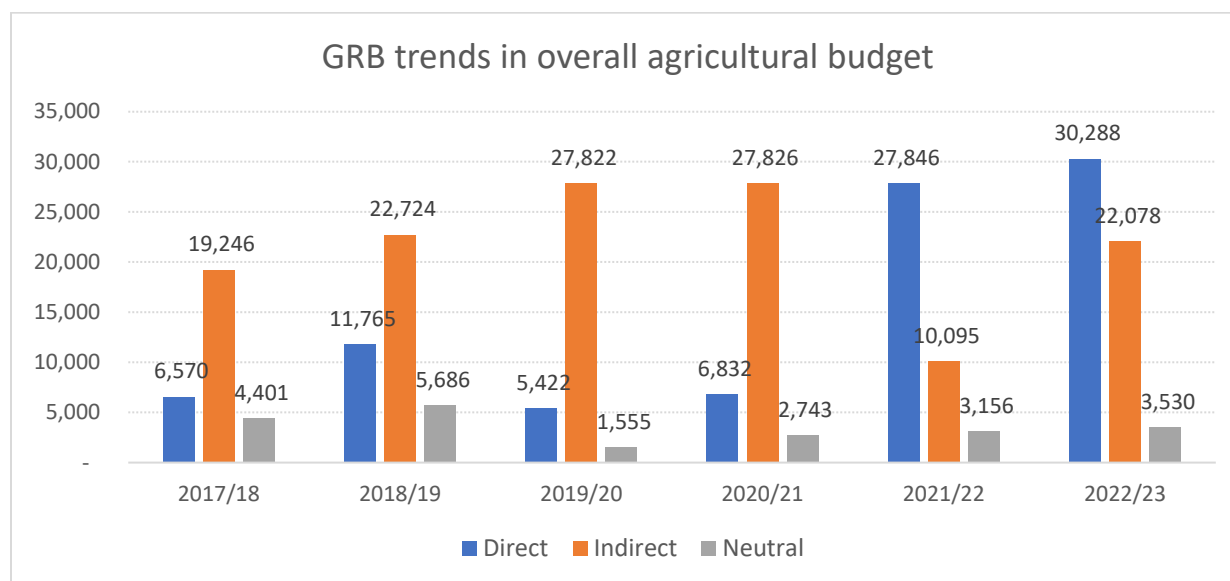
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<sup>12</sup> MoF. 2013. (<https://old.mof.gov.np/grbc/GRB%20Guideline.pdf>).

allocated more GRB budgets than any other ministry in each fiscal year since the introduction of GRB, as mentioned by MoALD officials. One possible reason for this could be related to the growing trend of men’s outmigration and the increased participation of women farmers in agricultural activities.

Overall, the implementation of GRB has been in shadow because of a lack of GRB tracking and implementation mechanisms in the accounting system, a lack of disaggregate data on women and men beneficiaries, a lack of clarity in GRB project categorizations, and capacity-building in the ministries and local bodies. The budget speech and red book details indicates huge mismatch of the programs and coding. Therefore, considering the social dimension during the program design is very important. Currently, the proxy basis of estimation based on the male and female farmers participation in the programs is the only way to get clues of the budget and program design and dissemination. The handling of the technological aspects both on accounting software, disaggregate basis of tracking and reporting mechanism, timely budget release and overall proper coordination of the three-tiers government are the key for the effective implementation of the GRB. The GoN should also mandate these as national priorities along with the climate and Sustainable Development Goals (SDGs) due to similar nature of the coding, tracking and reporting scope.

**Figure 9. GRB trend in overall agriculture budget**



Source: Analysis from the Budget Speech, MoF (FY 2017/18 – FY 2022/23). Note: FY 2017/18 and FY 2018/19 includes both Ministry of Agriculture Development and Ministry of Livestock Development, combined values.

Several formative changes have been made to make agricultural programs and initiatives Gender Equality and Social Inclusion (GESI) friendly, but not many substantive changes have been made.



## CONCLUSION AND RECOMMENDATION

Despite the critical role that agriculture plays in Nepal's development and the fact that more than 60% of the population relies on this sector for their livelihood, it has not received sufficient attention from policymakers. Since 2015, the contribution of agriculture to the GDP has decreased, from 29.4% to 24%, highlighting the need for increased investment and support. Nearly 63 percent farmer are small holders with less than 0.5 ha of land.

The country's agriculture system is still facing input shortages like seeds and fertilizers, limited access to extension services and credits, limited irrigation facilities, increasing production costs due to inflation of input materials, labor scarcity due to migration, and the impacts of climate change such as floods, unexpected rainfall, drought, an increase in pests and diseases, soil erosion in the hilly region, and the loss of soil organic matter, even though some sign of improvement.

The agricultural sector in Nepal has also been hindered by a variety of structural issues, including inadequate infrastructure and distribution systems, a lack of timely and sufficient access to chemical fertilizers, poor irrigation infrastructure, and a deficiency of improved seeds. Additionally, Nepal's agricultural sector has been impacted by a high level of subsidy in neighboring India, as well as the absence of quarantine facilities at key border points and a lengthy stretch of open border, which have facilitated the unrestricted imports of agricultural goods from India, regardless of quality or domestic production levels. As a result, Nepal has become heavily reliant on imports, even for basic agricultural products that it once produced itself.

The production trend of major agriculture commodities shows an increment; however, this does not necessarily mean that ADS strategies are adopted in line with government programs and plans, resulting in increased production and productivity. The constraints and problems remain the same as they were a decade ago. Some of the five-year targets set in the ADS look unrealistic; for example, the trade deficit is negative and the AGDP is only \$931.

In an effort to enhance Nepal's export potential, particularly in the agricultural sector, the government has identified a range of traditional products, including cardamom, ginger, tea, and coffee, as being particularly promising. However, despite this potential, a number of challenges currently stand in the way of maximizing export earnings from these products. These challenges include low factor productivity, a lack of cost competitiveness, and limited scalability.

The youth's out-migration is another irony currently distorting the adequate and cheap agricultural labor force requirement for the country. Nepal has led to a decline in subsistence farming and increased fallow land in rural areas in last decade due to demography changes in the rural areas. This has had negative consequences for agriculture, it has also contributed to the expansion of shrub and light forest coverage on abandoned land, resulting in an increase in forest cover to 45% of the surface area from a low of 39% in 1990. The remittances have altered the consumption patterns of the rural population, shifting them away from self-grown staples like millet, maize, and wheat towards market-bought rice.

Overall, ADS is a well-crafted vision and strategic framework to guide agriculture development in the country over the next 15-20 years. It has the capacity to transform the Nepalese agriculture sector. However, the implementation is at a primitive stage, which has suffered the most with the change in governance structure following the federalization.

The process is slothful, and not all targets set for 2020/21 have been achieved. The basic issues and concerns observed are in the areas of coordination and ownership. Almost every stakeholder had similar voices, which is an alarming concern for any strategy to be implemented successfully and achieve the targets.

The structural transformation has made some of the identified policies and regulations not applicable, as they were not designed for the new structural system. Hence, there is an urgent need to revise them.

The major concern being raised in the ADS is to strengthen the capacity of research institutes and address the scarcity of input through a modern information and communication technologies, tracking and distribution mechanism to the right farmers. The NARC, the main agricultural research agency in the public sector in Nepal, is responsible for the proper research and development and NPC, MoALD, MoF and line ministries to closely work and invest resources for programs and activities. GoN should have adequate plan, budget allocation and implementation mechanism in order to meet the basic inputs such as seeds, irrigation, soils health, fertilizer, extension system, market and other diverse research sectors from NARC. However, due to a lack of financial resources, human resources and adequate technologies, the demand has not been met by the ongoing projects and programs.

## Recommendation

In order to address these challenges and capitalize on Nepal's comparative advantages, it is recommended that the government focus on sectors where it has a natural advantage and consider employing a strategy of import substitution for goods that can be produced locally. To achieve self-sufficiency in major food crops, the government should adopt a "whatever it takes" approach and make significant investments in the agriculture sector.

Strong political commitment and the active and positive involvement of stakeholders are needed to redesign programs and activities as per the restructuring of the governance systems—at the federal, provincial, and local levels. A federal ADS plan of action needs to be prepared, identifying and assigning federal units responsible for carrying out specific ADS activities and achieving ADS targets. The institutional setup needs to be strengthened to effectively coordinate the ADS implementation. A powerful mechanism, possibly under the leadership of a senior minister, should be in place. The ADS coordination unit within the MoALD should also be strengthened with a team of professionals and a better logistical environment.

To support the growth and development of the agricultural sector in Nepal, promote self-sufficiency, and reduce dependency on imports, the following actions are recommended to be taken by the key stakeholders:

- In order to achieve self-sufficiency in major agricultural products by 2030, GoN should take critical approaches targeting key commodities such as rice, wheat, maize, vegetables, and pulses.
- By 2030, Nepal should aim to reduce its dependency on edible oil, fruits, and dairy products by 50 percent.
- The government should conduct a comprehensive study to determine the investment and action plan required to achieve these goals of self-sufficiency in the five major imports and a 50% reduction in dependency in the three products.
- By 2030, Nepal should aim to irrigate an additional 5 hundred thousand hectares to achieve year-round irrigation on the two thirds of total land used for producing rice.
- The use of balanced fertilizers and fertilizer blending with productivity gains of 10 to 30 percent should be expedited (Adhikari, Gauchan, and Singh, 2023).
- Soil tests should be conducted across the country, starting with areas with high potential for output.
- The NARC should be promoted for its role in research and development in the agriculture sector, MoALD and MoLMAC in efficient bureaucratic roles.
- The Nepal Rastra Bank should take steps to stop “agriwashing,” which is the allocation of credit to non-agricultural sectors under the guise of supporting agriculture. Allocation of credit to the agriculture sector has reached more than 12 percent, yet output growth has decreased from 3.5 percent in the previous decade to 2.8 percent in the current one. This suggests that credit may have been directed to other, less productive sectors under the guise of agriculture.
- The government’s farmer subsidy policy should be reviewed, and until self-sufficiency in major food crops is achieved, the supply of subsidized fertilizers should be universalized, and accessible to all farmers.
- GoN shall initiate proper implementation mechanism to the voucher system for tracking and distribution of entire facilities that GoN is planning.
- A comprehensive study should be conducted on the supply chain of both perishable and non-perishable agricultural produce to identify the layers of intermediaries and the margins added at each stage. Currently, the supply chain disproportionately favors intermediaries, putting farmers at a disadvantage. Producers bear a higher risk, while middlemen, who bear the lowest risk, reap the largest share of returns. This weak internal distribution system and long chain of intermediaries have hindered local farmers’ access to markets and fair prices for their produce, leading to high imports of vegetables despite local abundance.
- A study should be conducted on the real value added by the poultry sector, even though the country has achieved self-sufficiency.
- Measures should be implemented to encourage both land pooling and commercial farming, as well as cooperative agriculture farming through various incentives. These incentives should include irrigation facilities, the timely supply of blended fertilizers, access to finance and markets, subsidized electricity, cold storage, and duty-free agricultural equipment. These measures should be linked to the overall strategy of achieving self-sufficiency in major agricultural products.
- Quarantine facilities should be set up at key border crossings to test imported agriculture products. This will help in controlling the unrestrained import of low-quality agricultural produce from India.
- To mitigate the current hurdles of programs implementation, efficient monitoring and evaluation from the federal to local level governments is needed, and the roles of provincial

governments and local governments should be clearly defined, and measures should be implemented immediately via the updated Provincial Agricultural Development Strategy.

Overall, these policy recommendations aim to improve the efficiency and competitiveness of the agricultural sector in Nepal, supporting economic growth and lowering the rate of inflation. These measures, by promoting self-sufficiency and reducing reliance on imports, will also help to address the challenges the country is facing in its external sector as a result of rising negative trade terms.

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