"An Empirical Study of Food Inflation and Its Impact on Economic Vulnerability and Poverty in Udham Singh Nagar District"

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Abstract

Food is the most basic and essential need of human survival with a direct effect on health, productivity, and well-being. In addition to having a biological role, food is also one of the leading factors in determining social stability, economic growth, and human dignity. In line with this, the idea of human welfare revolves around the availability, accessibility, and affordability of food and these are universally accepted as being fundamental rights. Food affordability becomes a particularly pressing matter in developing economies like India and, in particular, in the regions of which a significant part of the population continues to rely on agriculture and low-paid jobs. In this background, inflation of food which refers to a prolonged rise in the prices of food commodities has become one of the biggest economic and social problems. Food inflation has a more immediate and direct effect on households as compared to general inflation since food accounts a significant portion of total consumption expenditure. Empirical surveys have repeatedly shown that low-income households in India are using a large share of their income to food, which makes them very vulnerable to even small changes in prices. Therefore, it can be suggested that increasing food prices can significantly reduce real income and purchasing power, particularly of economically disadvantaged groups. Although producers and especially large-scale farmers might be beneficiaries of the increased prices, small-scale and marginal farmers, landless labourers and informal workers of the urban poor are the net beneficiaries of food consumption and therefore suffer the negative impact. The inabilities of these groups to face stagnant or slightly rising incomes that do not match the rising food prices are common. Food inflation, therefore, increases the level of economic vulnerability and forces households to make hard trade-offs in terms of consumption, savings and investment in some basic services like health and education . The current research paper examines how the problem of food inflation affects economic vulnerability and poverty in the Udham Singh Nagar district of Uttarakhand. The study uses an empirical methodology, which incorporates the use of secondary data, to examine the dynamics, driving factors and the consequential outcomes of the rising food prices at the household level.

Keywords: *Food Inflation, Economic Vulnerability, Poverty, Welfare, Udham Singh Nagar, Food Security.*

I. Introduction

A close relationship with poverty is the other major impact of food inflation that is increasingly becoming more relevant. The increasing food prices may push the vulnerable households below the poverty line, and hence aggravate the deprivation on those who are already in poverty. The increased food prices can be met by reducing the amount of food as well as the quality of that food, with some foods rich in nutrient value, however, being replaced by less nutritious, yet less expensive products. This phenomenon creates acute food insecurity in the short term and, worse still, spreads long-term issues, such as malnutrition, negative health consequences, and the dilution of human capital formation. Such impacts are more eminent in women and children who are highly susceptible to nutritional deficiencies. In addition to this, the inflation of food has additional macro-economic and social consequences. It can influence the inflation expectations, savings and investment behaviour and augment income inequality. Food-price volatility is further amplified by structural factors, that is, climate change, unpredictable monsoons, increasing input prices, inefficiencies in the supply chain, and policy interventions. The recent COVID-19 pandemic may be seen as a graphic example of how the lack of supply chains and markets may increase food inflation rates and exacerbate economic hardship, particularly among the risk groups. Although there is an abundance of literature on inflation and poverty matters at both national and international scale, there still remains a significant gap in substantive literature on the effects of food inflation at the district level. The economic structure, agricultural capacity, market connections, and socio-economic status of regions may provide dissimilar experiences and results of food inflation.

Thus, micro-level research is necessary to be able to capture the true effects of food inflation on household welfare and vulnerability. The district of Udham Singh Nagar in Uttarakhand can provide a particularly useful case to investigate such a question. The district is located in the fertile Terrai area and is characterized by a combination of rural wealth and rapid industrialization. Even though agriculture still forms a major means of livelihood, the district has at the same time experienced a high occurrence of industrial and urban growth, hence bringing in a wide range of labour force. This two-tiered economic structure makes the district highly vulnerable to any production-side and consumption-side impacts of food inflation. Based on the above discussion, the current research paper attempts to test how food inflation impacts economic vulnerability and poverty in the Udham Singh Nagar district.

The combination of macro-level data and micro-level household analysis is aimed at providing a synthesized picture of the impact of increasing food prices on the income stability, consumption behavior, and the well-being of a particular population. It is also expected that the anticipated results will shape the policy due to the identification of the critical challenges and proposed specific interventions to alleviate the negative impact of food inflation and ensure the inclusive and sustainable development.

II. Literature Review

It has generally been established that food inflation is a major determinant of economic susceptibility and poverty especially in developing economies where a large percentage of household income is devoted to food consumption. The theoretical explanation of this association can be said to date back to the contribution of **Amartya Sen (1981, 1999)**, who maintained that food security does not solely rely on the supply of food but also on the economic capability of people to obtain food. The entitlement approach by Sen views inflation as a disadvantage to the purchasing power of the population, hence restricting people to access essential food commodities despite the fact that the supplies might be adequate.[1,2]

On the same note, **John Maynard Keynes (1936)** believed that inflation dilutes real income, particularly of fixed as well as low-wage earners, reducing consumption and causing increased inequality.[3] Based on this, **Stefan Dercon (2001)** defined vulnerability as the risk of households to enter the poverty trap as a result of external shocks like price increases, by which food inflation is a potent cause of economic instability.[4] Empirical research on the determinants and effects of food inflation has been carried out on a number of studies in the Indian context. **Mittal (2010)** has compared the consumption pattern of Indian households through QUAIDS model and has concluded that price sensitivity among Indian households is high in respect to nutritious food stuff like pulses, milk, fruits, and vegetables.[5] It implies that due to increased food costs, the dietary variety and nutritional consumption can be reduced. **Gulati and Saini (2013)** included the following structural factors in their list of solutions to the conditions of food inflation in India: the increasing costs of inputs, the soaring prices of energy, and supply chain inefficiencies; the authors also noted that the policy interventions, including Minimum Support Prices, also have its contribution to price pressures development.[6]

Bhattacharya and Sen Gupta (2018) noted that in India, the food inflation has been continuously high throughout the late 2000s and early 2010s, being both demand side, caused by increasing incomes and consumption habits, and supply side, due to the variability of climate and poor infrastructure.[7] Moreover, **Bhattacharya, Patnaik, and Shah (2019)** highlighted that the distributional effect of food inflation is wide-ranging since it negatively impacts not only the poor but also the middle-income households as it lowers their real purchasing power.[8] Latest studies including **Sharma and Kumar (2022**) brought into the limelight the compounding impact of the COVID-19 pandemic wherein supply chain disruptions caused more volatility in food prices and that this impact was disproportionately experienced by informal workers and low-income earners[9]. International organizations like Food and Agriculture Organization **(FAO, 2020)** and the **World Bank (2021)** also report that global shocks are also the major factors that affect domestic food prices and household welfare. The effects of food inflation on poverty and vulnerability has been well established even at the global level[10,11]. **C. Peter Timmer (2008)** claimed that the issues of food price volatility are mainly caused by the structural inefficiency of agricultural systems and insufficient investment into infrastructures.[12]According to **Cardoso (1992)**, food inflation was described as a retrogressive occurrence which is a taxation measure on the poor that decreases the real wages and enhances inequality.[13] In a study conducted by **De Hoyos and Medvedev (2009)** on the food crisis that took place globally in 2007-08, it was revealed that the escalating food prices were the major contributory factors towards an increase in levels of poverty in the developing nations.[14] On the same note, the **World Bank (2013)** projected that a moderate rise in food prices can drive millions of people to live below the poverty line[15]. **Headey and Martin (2016)** also showed that although increased food prices can work to the advantage of agricultural producers, they negatively impact the net food consumers who are majority of the poor in developing economies.[16] According to more recent evidence by **Bogmans et al. (2024),** food inflation is still diminishing food security and especially in countries with high income inequality and bad social protection systems.[17] There is also a considerable amount of literature that emphasizes the correlation between the food inflation, nutrition, and the development of a person. The works by **FAO (2018, 2020)** indicate that as the price of food increases, households are likely to consume more and more calorie-rich food instead of nutrient-dense ones, leading to hidden hunger and micronutrient deficiencies[18].

UNICEF (2021) also points out that women and children have a higher rate of exposure to food price shocks because intra-household food distribution usually places focus on earning members.[19] The statistics provided by the National Sample Survey office **(NSSO, 2012)** show that food forms a significant portion of the total household expenditure in India and therefore households are very sensitive to price changes.[20] This large reliance on food spending increases the negative implications of inflation on living standards and well beings. Food inflation is also an important cause of economic vulnerability in various ways. It decreases the real income, compels families to use coping mechanisms and either borrow or cut down on consumption, and constrains the amount of money that can be spent on basic services like education and medical care. **Gokarn (2011)** approximated that a slight rise in food inflation would has a great impact of diminishing buying capacity, especially to households with low income.[21] The **Reserve Bank of India (RBI, 2020)** also stated that inflation in food is a significant factor in the overall volatility of inflation in the country.[22] Another relevant aspect that can enlighten us on the long term impact of temporary shocks such as food inflation on households is the so-called concept of vulnerability as expected poverty, as formulated by **Chaudhuri, Jalan, and Suryahadi (2002),** which shows that temporary shocks have long-term effects by increasing the chances of households translating into chronic poverty.[23] Although the effects of food inflation and its causes have been widely reported in the literature, most studies are done at a national or state level with minimal attention paid to the district level analysis. Furthermore, the current literature tends to focus on macroeconomic indicators and neglects the micro-level household lives in addition to differences in regions. Also, there are no studies that integrate studies taking into account economic, nutritional, and social aspects of food inflation. That is why there is the obvious necessity of localized empirical studies of the particular dialectic of food inflation and its effect on economic vulnerability and poverty in the district level. The current research attempts to fill this gap by concentrating on the Udham Singh Nagar district to give a better insight into the impacts of increasing food price on the welfare of the household in a region which is both agricultural and industrial in nature.

III. Objectives and Methodology of the Study

The study underwent was taken with the following objectives which are enlisted as follows:

1. A comparison of food inflation in India and Uttarakhand.
2. The aim is to investigate the effect of food inflation on the household economic vulnerability.

3. To investigate the relationship between food inflation and poverty.
4. To understand the ways households cope with these economic challenges.
5. To offer policy recommendations to reduce the food inflation and lessen the negative effects in the economy.

The present study adopts a descriptive and analytical research methodological design. It integrates the macro level secondary data and micro level data of the household consumption expenditure to analyze the impact of food inflation on the economic vulnerability and poverty in Udham Singh Nagar district.

IV. Area Specific Study

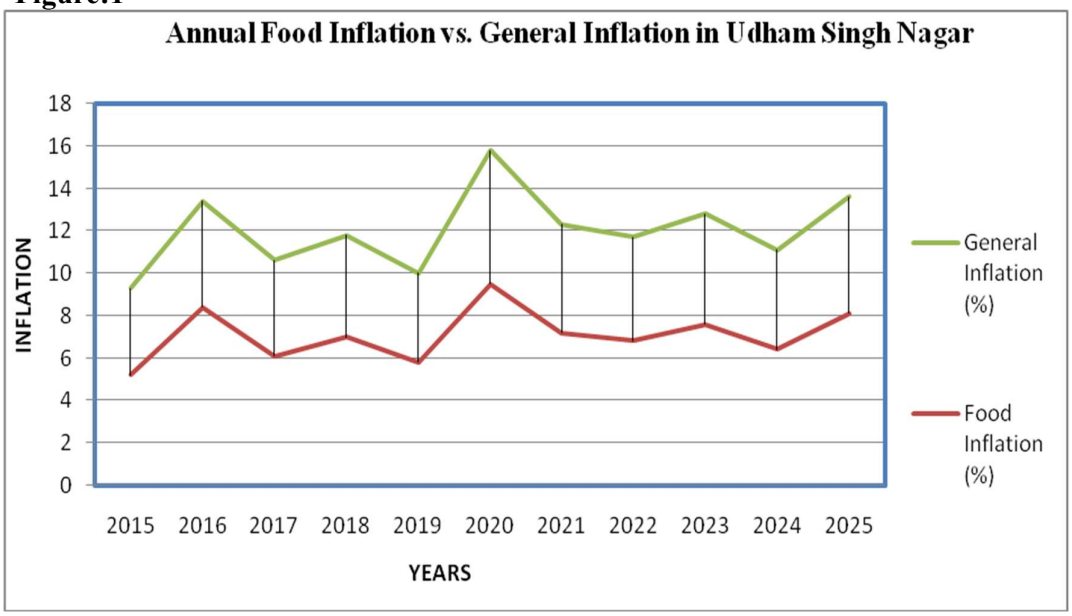
The study is based on the Udham Singh Nagar district in Uttarakhand, which is in northern India. The district is located at the foothills of the Himalayas and the fertile Terai, which boasts of strong agricultural foundation and favorable climatic factors. It borders the districts of Nainital and Champawat and the state of Uttar Pradesh, hence acting as a major economic nexus between plain and hill areas. The economy of the district is structurally bifurcated but the main pillars of the economy are agriculture and industry. However, a significant part of the population continues to rely on low-and-unstable incomes especially in rural and informal sectors which makes households very vulnerable to food price changes. The socio-economic heterogeneity and mixed livelihoods patterns of the district make it a suitable place to study the nexus of food inflation and economic vulnerability and poverty.

Table 1: Food Inflation versus general inflation in Udham Singh Nagar (2015-2025)

Year	Food Inflation (%)	General Inflation (%)	Key Notes
2015	5.2	4.1	Stable year, average increase in cereals.
2016	8.4	5.0	Bad Monsoon, pulse prices shoot.
2017	6.1	4.5	Vegetable price volatility
2018	7.0	4.8	Rising edible oil costs
2019	5.8	4.2	Stable supply chains
2020	9.5	6.3	COVID-19 disruptions, transport bottlenecks.
2021	7.2	5.1	Recovery stage, milk and dairy inflation.
2022	6.8	4.9	Fertilizers and fuel price rise.
2023	7.6	5.2	Climatic changes, Terai region floods.
2024	6.4	4.7	Moderate inflation, cereals stable.
2025	8.1	5.5	Pulses and vegetable scarcities.

Source: MOSPI – Consumer Price Index (CPI) Data (2013–2025)

Figure:1



The factual data show that the food inflation in Udham Sing Nagar has always been higher than the general inflation during the time period 2015-2025. There were also years of climatic stress and supply-chain disruptions that were characterized by pronounced spikes, specifically the insufficient monsoon of 2016 and the COVID-19 pandemic of 2020. These fluctuations highlight the greater sensitivity of households to food-price volatility as compared to more general inflationary processes.

Table 2: Commodity-based Food Inflation (2015-2025)

Commodity	Average Inflation (%)	Highest Spike Year	Notes
Cereals	5.5	2016	Monsoon failure
Pulses	9.2	2016, 2025	Supply shortages
Vegetables	8.0	2017, 2023	Seasonal volatility
Edible Oils	7.4	2018	Import dependency
Milk & Dairy	6.7	2021	Increased input prices.
Fruits	6.0	2020	supply chain disruption.

Sources: Ministry of Agriculture and Farmers Welfare, RBI Bulletin (2026).

The commodity-specific analysis shows that alimentary pulses and vegetables were the most volatile in food inflation in the period between 2015 and 2025, mainly because of the deficit in supply and climatic changes.

Increasing input costs and dependence on imports also found their reflection in edible oils and dairy products, which experienced the persistent inflationary pressures. These trends shed light on the structural aspects of food inflation that affects the household consumption patterns disproportionately.

Table 3: Household Expenditure share on Food (India, NSSO, 2022-23)

Income Group (Monthly)	Rural Food Share (%)	Urban Food Share (%)	Combined (%)
0-10,000	63	58	61
₹10,000–25,000	48	44	46
> ₹25,000	34	30	32

Source: NSSO Household Consumption Expenditure Survey 2022–23, MOSPI

Figure: 2

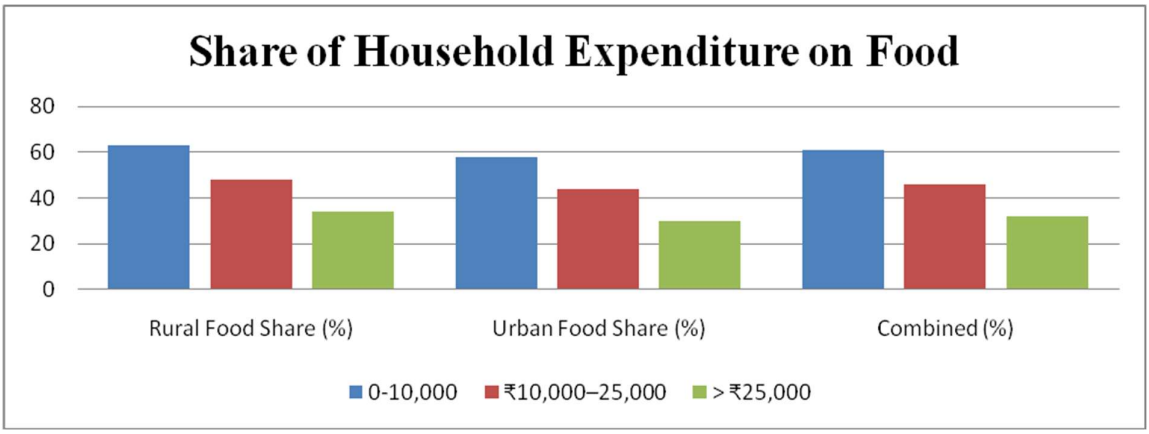


Table 4: Adjustment in the household budget in case of inflation in India (2015-2025)

Category	Pre-Inflation Share (%)	Post-Inflation Share (%)	Change (%)
Food	52	62	+10
Health	14	10	-4
Education	12	9	-3
Housing/Utilities	12	11	-1
Savings	10	8	-2

Source: MOSPI CPI Data; NSSO CES 2023–24

Figure: 3

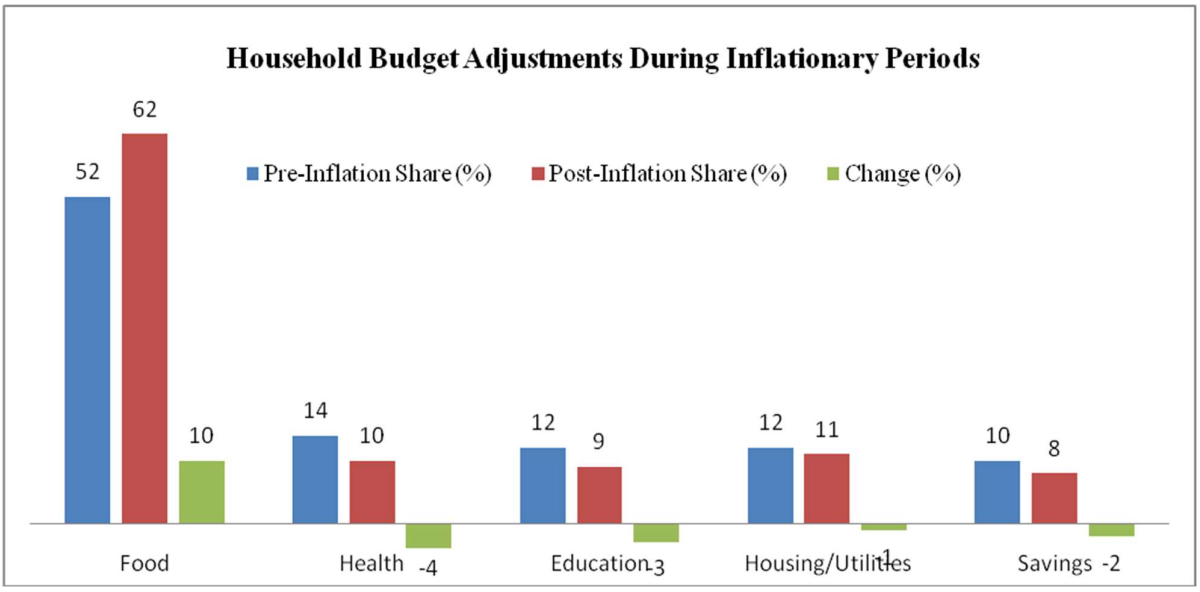


Table 5: Coping Mechanism Reported.

Coping Mechanism	% of Households Reporting
Reduced food quantity	40–45
Replaced with less and low-nutrition food	60–65
Informal sources from which money is borrowed to finance increase	25–30
Less expenditure on healthcare	35–40
Less expenditure on education	30–35

Source: NSSO CES 2022–23; RBI Inflation Bulletins

Secondary sources in NSSO and MOSPI have affirmed that food ranks as the major part of the household spending especially among the low-income earners who use close to two-thirds of their income towards food. The increasing food inflation forces the family to reduce expenditure on health and education, savings, and coping mechanisms like lowering the quality of food or debt increases put them at risk in the long-term. Therefore, the effect of inflation is a direct transfer to the economic burden and the increase in poverty bullets of marginal households.

Table 6: Headcount Ratio Pre and Post Food Inflation Spikes

Year	Food Inflation (%)	Poverty Line (₹/month per capita)	HCR Before Inflation (%)	HCR After Inflation (%)	Change (%)
2016	8.4	1,200	22	27	+5
2020	9.5	1,500	24	32	+8
2025	8.1	1,800	21	29	+8

Source: NSSO Household Consumption Expenditure Survey; RBI Inflation Bulletins

Table 7: Poverty Gap Index During Inflationary Periods

Year	Food Inflation (%)	PGI Before Inflation	PGI After Inflation	Change
2016	8.4	0.18	0.24	+0.06
2020	9.5	0.20	0.29	+0.09
2025	8.1	0.17	0.25	+0.08

Source: NSSO Household Consumption Expenditure Survey; RBI Inflation Bulletins

V. Discussion

- The results prove that there is a clear and consistent association between economy vulnerability and food inflation in Udham Nagar.
- The household spending habit indicates that low-income households are using an excessively high proportion of their income to purchase food so that there is no spare room to absorb price shocks. With food inflation above 8%, as was recorded in 2016, 2020, and 2025, households will have no choice but to cut expenditures on health, education, and savings.
- Even though the short-term coping mechanisms are essential, they are detrimental to long-term welfare because they help to cause malnutrition, low health results, and low human capital formation.
- The analysis of the poverty impact also highlights the effects of food inflation, which does not only increase the rate of poverty but also increases its severity level. Headcount Ratio rose by 5-8 percentage points in the times of inflation spikes whereas the Poverty Gap Index grew significantly showing that those already poorer households were pushed even further into poverty.

- The most affected were vulnerable groups such as landless labourers, small and marginal farmers and urban informal workers due to the limited ability to absorb price volatility. These effects are compounded by structural drivers such as supply-chain inefficiencies, changes in climatic conditions, increased cost of inputs and policy interventions.

- The problem of the duality of the economy is aggravated in Udham Singh Nagar, where agricultural producers face increased cost, uncertainty of returns, and industrial and migrant workers are net consumers of food, thus, bearing inflation. This twofold effect underscores the idiosyncrasy of the district to production side and consumption side pressures.

- Analysis at the district level reveals the need to use micro-level research to develop successful policy interventions. The policy-wise implications of the findings include the high urgency of the specific interventions. Besides, price stabilisation of food is not only an economic priority but also a social one because uncontrolled inflation poses a threat to equity, nutrition, and sustainable development.

VI. Key Findings

- The analysis indicates that, food inflation in Udham Singh Nagar has always been above the general inflation rates with sharp peaks in years of climatic stress, pandemic upheavals and shortages of supply.

- The household spending history reveals that low-income families use close to two-thirds of their income to buy food leaving them with very less room to absorb the price shocks. Increased food costs force families to spend less on health, education and savings, and coping mechanisms, like low food quality, borrowing, and replacing healthy foods with low-cost ones, increase their vulnerability in the long-term.

- The poverty impact analysis also indicates that food inflation does not only increase poverty incidence shown by 58 percent points increase in Headcount Ratio in peak years but also increases the level of deprivation among the already poor as shown by the increase in the Poverty Gap Index.

- Vulnerable population groups like landless labourers, small and marginal farmers and urban informal workers are most vulnerable to the price shocks, as their incomes stagnate and they rely on food markets. These are exacerbated by structural drivers such as inefficiencies in the supply-chain, climatic changes, increasing input prices and policy interventions, and the fact that the district is a dual agricultural-industrial economy is even more susceptible to both production-side and consumption-side pressures.

VII. Concluding Remarks:

The current paper highlights the critical importance of food inflation in determining the relationship between the household vulnerability and poverty in Udham Singh Nagar. It can be analyzed that food inflation is always higher than general, with intensive peaks of food inflation being associated with climatic stress, disruptions caused by the pandemic and supply shortages. As a result, low-income families, who already dedicate a significant portion of their income to food, have to reduce necessary spending, i.e. health, education, and savings, thus undermining the long-term health. Analysis of impact of poverty further shows that food inflation does not only increase the rate of poverty but also exacerbates poverty as indicated by the growing Poverty Gap Index.

The poor are vulnerable such as the land-less labourers, small and marginal farmers, the urban informal workers and so on are all affected disproportionately by stagnant incomes and lack of access to safety nets. These effects are further increased by structural drivers, including supply chain inefficiencies, rising input prices and climatic variability and the dual agricultural-industrial nature of the district makes it especially vulnerable to both production-side and consumptive-side pressures. All in all, the results highlight the pressing necessity of the existence of policy interventions targeting food price stabilization, supporting social safety nets, and agricultural infrastructure investment.

Food inflation is a problem that does not only involve economic priority, but it is also a social concern because uncontrolled inflation jeopardizes nutrition, equity and sustainable development. The suggested measures may reduce the household susceptibility, preserve livelihood, and promote inclusive development in Udham Singh Nagar and similar areas.

VII. Suggestive Measures

To curb the negative impact of food inflation and minimize households exposure to it in Udham Singh Nagar, a number of recommended actions may be taken which are enlisted as follows-

1. Immediate relief to the low-income households can be offered by strengthening the Public Distribution System (PDS) and increased coverage of subsidised food grains.
2. Agricultural infrastructure, including cold storage, warehouses and efficient transport networks money should be invested in them to minimise post-harvest losses and stabilise supply chains.
3. Crop diversification and agricultural systems sustainable to climate change can assist farmers to resist climate change shocks and limit instability in agricultural products like pulses and vegetables that are important to people.
4. The production pressures can be relieved by policies that control the costs of inputs including fertilisers, fuel, electricity, and ensure that the resources reach the production centres in time.
5. Social safety nets, such as cash transfers, job programs and nutrient programs, are also necessary in protecting vulnerable populations like land-less labourers, migrant workers, and informal families against the inflationary shocks.
6. Stringent regulation of the market and systematic observation of the changes in prices with the support of transparent policy measures can prevent the upsurge in speculative prices and guarantee the affordability of food on a lasting basis.

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