

## Labour Scarcity and its implication in India

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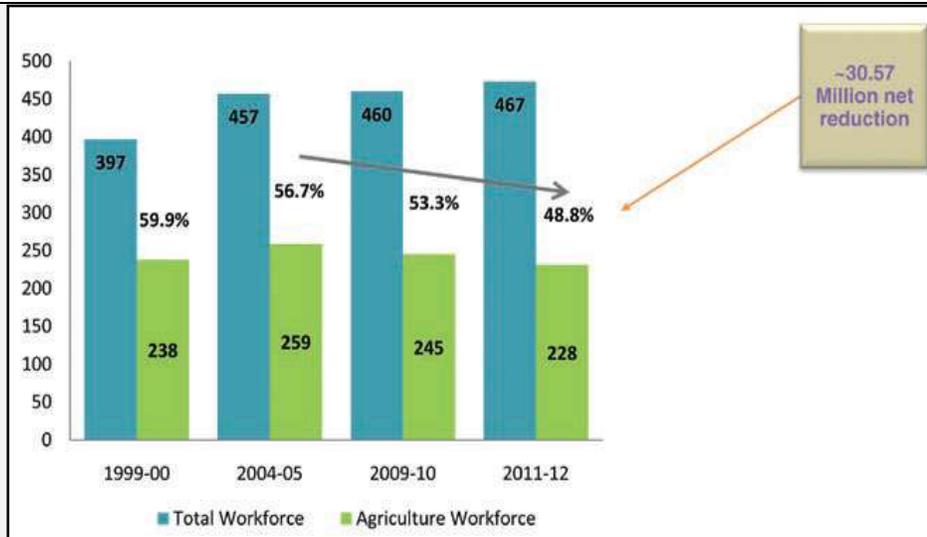
In India agriculture is the main sector which has employed a major portion of its total workforce since a long time ago. But the structural changes in the national and state economies, large scale migration of labour from agriculture and operation of the rural development and poverty alleviation programmes have systematically reduced the relative importance of agriculture in labour allocation decisions of rural households. Consequently, there has been considerable reduction in labour supply to agriculture. On the contrary, the spread of advanced farm technology, increase in cropping intensity, growing importance of timely farming operations, and a remarkable shift in agriculture from a family-labour based way of life kind of activity to a business enterprise have significantly increased the demand for farm labour. In such view of things agriculture is facing acute labour shortage and the notions of surplus rural labour and zero marginal product and opportunity cost of labour have become misnomers. Its impact on agriculture can be seen in terms of reduction in crop yield, reduction in cropping intensity and changes in traditional cropping pattern. It has impacted the whole economy also by increasing the wage rates thereby high cost of cultivation which is directly reflected in higher output prices resulting in the food inflation.

In 2011-12 out of the total workforce of 467 million, agriculture sector has constituted 228.3 million (48.9%). In agriculture labour has remained very less productive as compared to other sectors. Worker's productivity in agriculture is growing at only 2.9%, while in industry it is growing at comparatively higher growth rate of 6.7% and in services at 5.3% (Chand and Srivastava, 2014). Goldman Sachs (2014) has also calculated that labour is 4 times more productive in industry and 6 times more productive in services compared to agriculture in India. Usually as an economy matures there is a movement of excess agricultural workers from low productivity agricultural sector to higher productivity sectors. Higher productivity implies higher wages in other sectors. So natural movement of workers take place away from agriculture. Such shift should be coupled with technological advancement in the primary sector means adoption of lower labour intensive or higher capital intensive technology; otherwise agriculture productivity will be affected.

### **1. Trend in the agricultural workforce:**

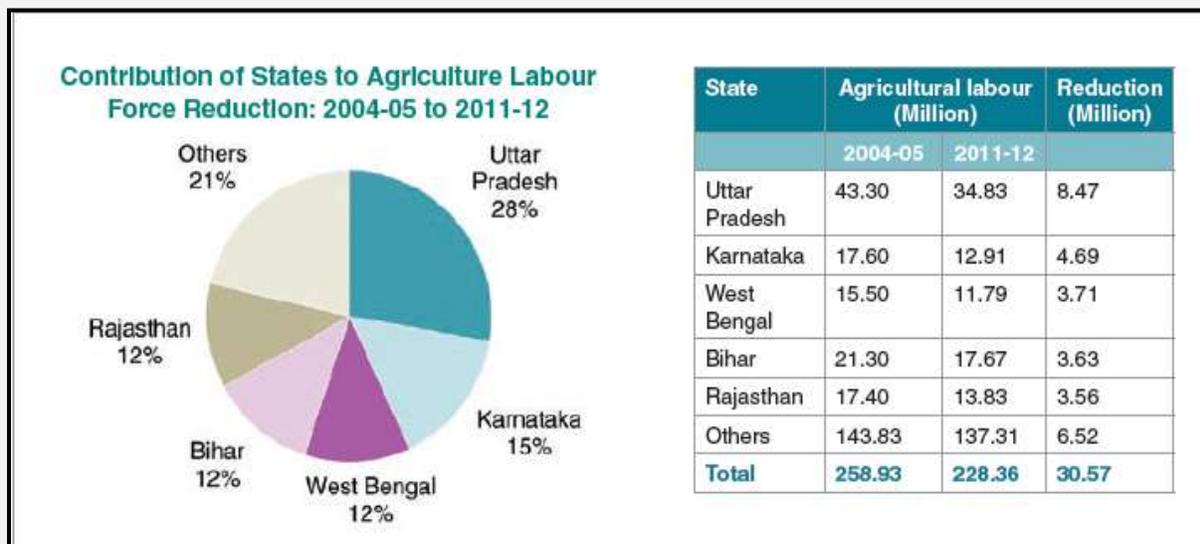
India is experiencing not only declining share of agriculture in total employment (from 56.7% in 2004-05 to 48.8% in 2011-12) but also a significant decline in absolute number of people employed in the agricultural sector (from 259 million in 2004-05 to 228 million in 2011-12 thus 30.57 million net reduction over this period). This brings to the fore that fewer people are being added to the workforce in agriculture and highlights the net migration to other sectors (Figure 1).

**Fig 1. People employed in agriculture and total employment**



Close to 75% of this reduction has been contributed by the five states only - Uttar Pradesh, Karnataka, West Bengal, Bihar and Rajasthan while the remaining states constitute the rest 21% (Figure 2).

**Fig 2. Contribution of states to agricultural labour force reduction**



Source: FICCI report, 2015

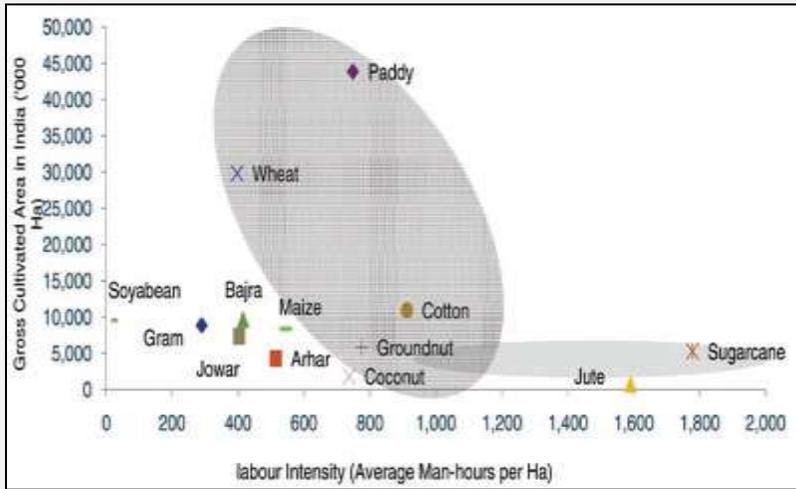
**2. Labour intensity across crops:**

The impact of labour scarcity is more pronounced in case of certain crops like paddy, wheat, groundnut, cotton and sugarcane which require significant amount of labour hours per unit area cultivated and are also widely grown in the country (Figure 3). Andhra Pradesh, Maharashtra, Madhya Pradesh and Uttar Pradesh have the highest area under cultivation of these five major crops (Figure 4). In these states labour shortage is likely to affect production and adequate steps are required to reduce the labour intensity associated with their cultivation.

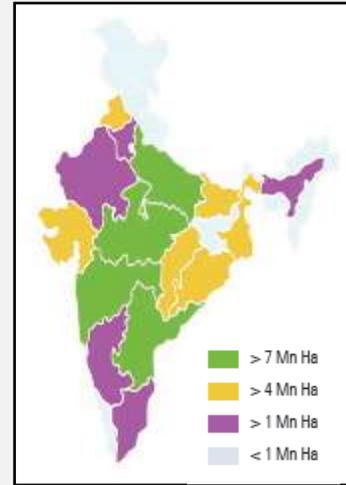
**Fig 3. Labour intensity across crops**

**Fig 4. Total area under paddy,**

wheat,cotton, groundnut and sugarcane in states



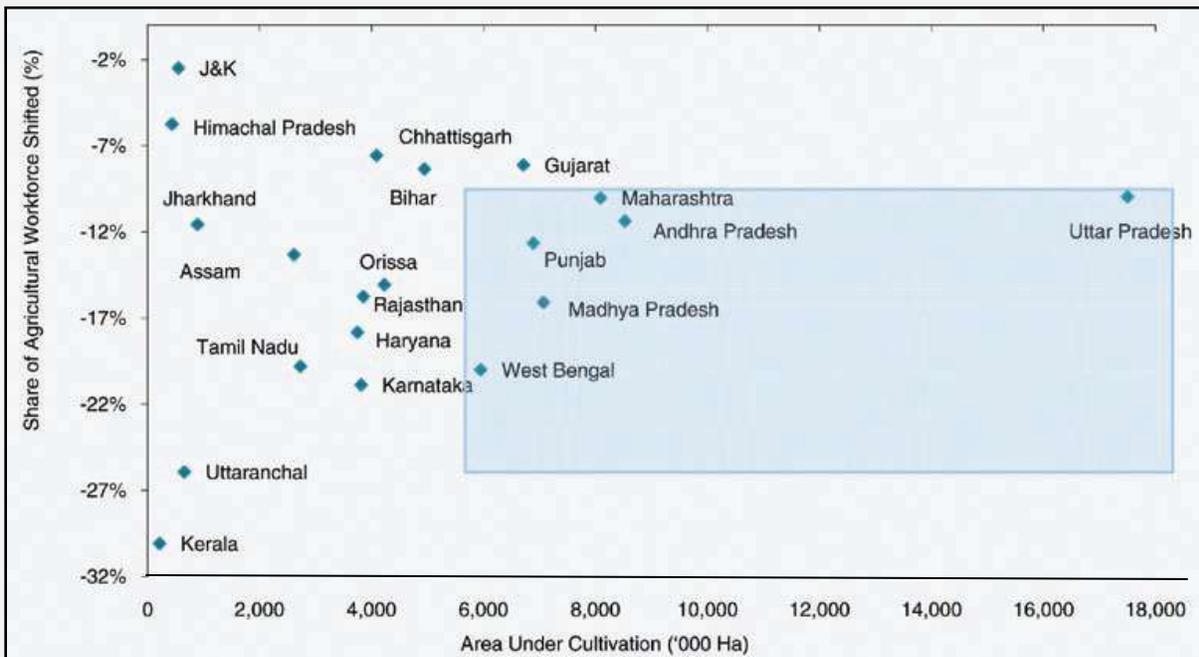
Source: FICCI report, 2015



**3. labour intensive crops vs agricultural labour shift from 2004-05 to 2011-12:**

Uttar Pradesh, Maharashtra, Andhra Pradesh, Punjab, Madhya Pradesh and West Bengal are the states which have substantial coverage under labour intensive crops and have also faced a considerable decline in labour availability (Figure 5). These states have a high propensity to face labour challenges going ahead and requires immediate attention.

**Fig 5. Coverage of labour intensive crops vs shift of labour from agriculture**



Source: FICCI report, 2015

**4. Estimation of agricultural labour force reduction by 2019-20:**

The size of the agricultural workforce is expected to shrink by another 23 million in the next eight years till 2019-20 and form only 41% of the total workforce and this trend calls for immediate steps to improve labour productivity in the sector.

**5. Reasons for labour scarcity in agriculture:**

The various reasons for labour scarcity can be categorised as follows:

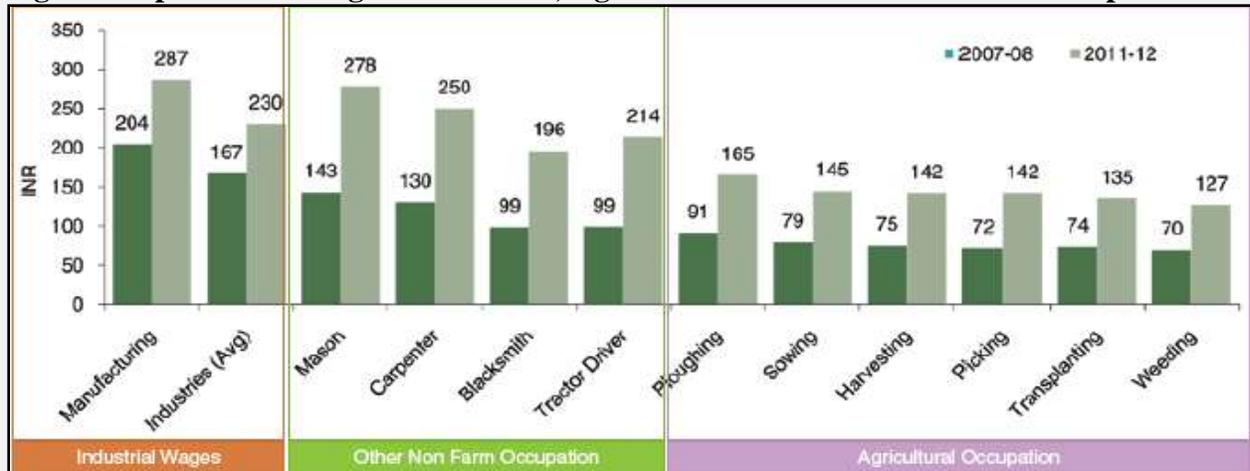
1. Higher wages in other jobs available locally or lower remuneration in agriculture.
2. Shifting to a regular/ permanent job in the non-farm sector since agricultural job is seasonal.
3. Migration from rural to urban areas.
4. MGNREGA and other Government sponsored employment schemes.
5. Agriculture labour is presumed to be a low esteemed job.

**5.1. Evidencing lower remuneration in agriculture:**

Various reasons have led to lower remuneration from agriculture. The average land holding size has decreased to 1.16 Ha per farmer in 2011 from 2.3 Ha in 1971. Increasing cost of inputs like fertilizers and labour have increased the cost of cultivation and thus reduced returns from each farm. For small and marginal farmers who have limited bargaining power, the price obtained for their produce is often not commensurate with market rates affecting realizations further. This has led to lower wages in the agricultural sector.

Comparison of wages in farm and other sectors reveals that wages in other non-farm occupations are 15-20% higher than agricultural wages and industrial wages are 1.5 times higher than that of agricultural which clearly explains the preference for these sectors (Figure 6).

**Fig 6. Comparison of Wages - Industries, Agriculture and Other Non Farm Occupations**



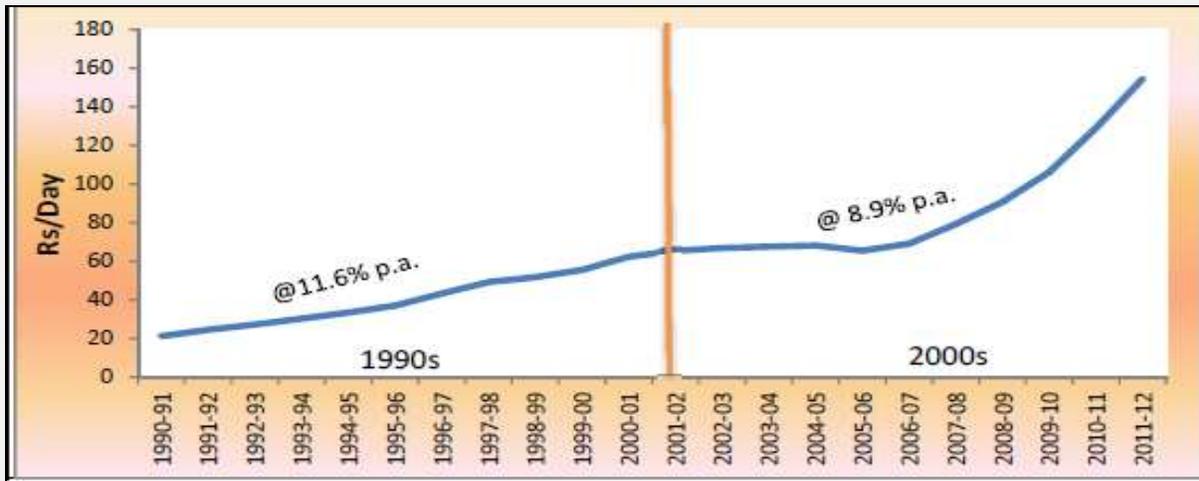
Source: FICCI report, 2015

**6.1.1 All-India farm wage rates (1990-91 to 2011-12):**

Nominal farm – wage rates were growing at 11.2% per annum in 1990s while it was growing at only 8.9% per annum in 2000s. Within 2000 decade, nominal farm wages grew at only 1.8 % per annum from 2001-02 to 2006-07 and at a high 17.5 % per annum during 2007-08 to 2011-12 (Figure 7). It was high in 1990s because in the 8<sup>th</sup> plan period (1992-97), agricultural sector growth rate was 4.8% but in subsequent 9<sup>th</sup> and 10<sup>th</sup> plan period it was reduced to ~2.5%. Thus this reduced growth rate along with falling world prices led to depressed farm incomes and thereby slow or even negative growth in real farm wages. Then because of slow recovery in

global agri-prices from 2003 to 2005 and many government sponsored employment generation activities like MGNREGA led to higher wage rates after 2006-07.

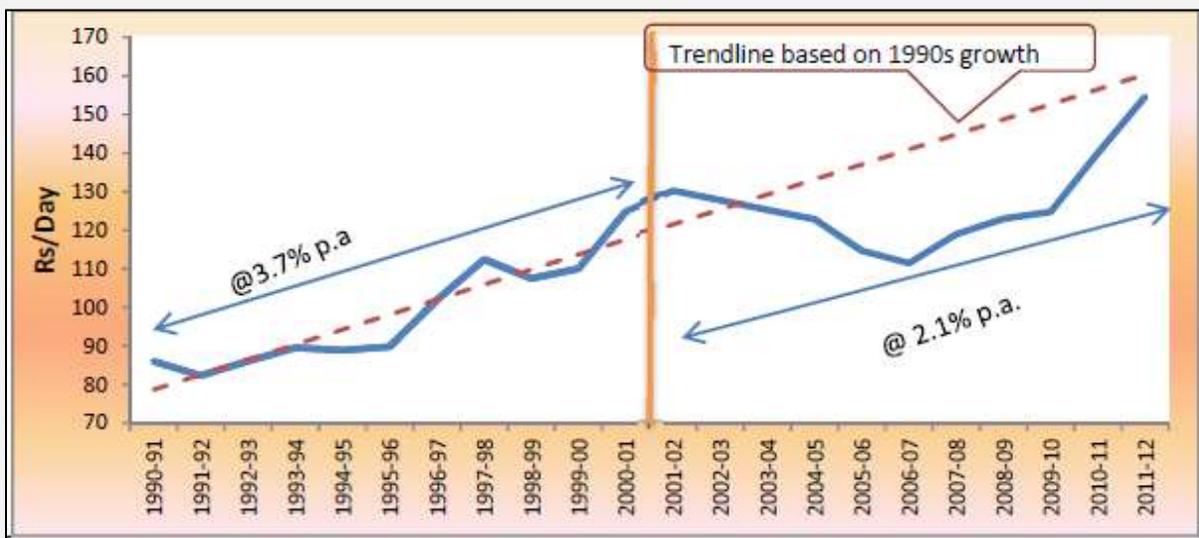
**Fig 7. All- India nominal farm wage rate**



Source: Gulati, 2013

Similar trend was seen in real farm-wage rates also, which fell by (-) 1.8 % per annum from 2001-02 to 2006-07 and then grew at 6.8 % per annum during 2007-08 to 2011-12 (Figure 8).

**Fig 8. Average Real Farm Wage Rate at 2011-12 Prices**

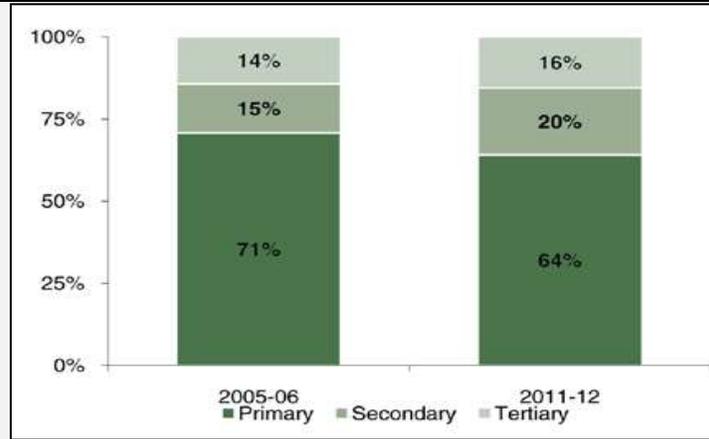


Source: Gulati, 2013

**5.2. Shift towards non-farm sectors in rural areas:**

While the share of primary sector in rural employment reduced from 71% to 64%, the secondary sector gained more from this shift and its share went up from 15% to 20%, while a small increase was witnessed in the tertiary sector as well between 2005-06 and 2011-12 (Figure 9). In the state also similar employment pattern shift was visible.

**Fig 9. Share of different sectors in rural employment**

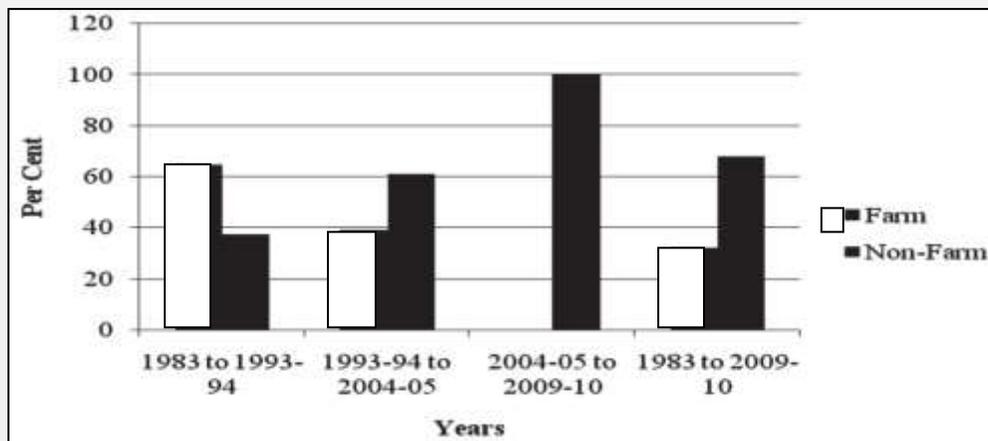


Source: FICCI report, 2015

Gender-wise disaggregation revealed a higher concentration of female workers in agriculture as compared to their male counterparts – 79.40% of total female workers and 62.80% of male workers were employed in the agriculture sector in 2009-10. Thus it is indicating increasing feminization of Indian agriculture (Chand and Srivastava, 2014).

Kumar *et al* (2011) has estimated the creation of additional employment opportunities in rural India from 1983 to 2009-10. He found that during 2004-05 to 2009-10 there was not at all any job creation in farm sector (reason may be distress in agriculture sector) and non-farm sector emerged as a sole source of additional employment creation (because of MGNREGA) (Figure 10).

**Fig 10. Sources of new jobs in rural India**



Source: Kumar *et al*, 2011

**5.3. Migration of labour:**

The share of rural to urban migration among males increased by nearly 5 percentage points to 39% in 2007- 08 from 34% in 1999-2000. Nearly 60 per cent of urban male migrants and 59 percent of urban female migrants had migrated from the rural areas in 2007-08 (Alha *et al*. 2011). There are two critical factors that affect the movement of labour away from the agriculture sector- pull and push factors. Various pull factors are job opportunities in non-agricultural sector, the pace of urbanization, improvement in the educational status and the push factors are the status of wages and incentives in rural areas and MGNREGA. MGNREGA has

actually reduced the push force of migration from rural to urban areas because it has created ample job opportunities in the rural area itself. Labourers are preferring MGNREGA work because of timely wage rates and less drudgery of work.

Sundaravaradarajan *et al.* (2011), on the basis of his study in Tamilnadu has identified various pull and push factors of out-migration and categorised them under economic and non-economic factors (Table 1).

**Table 1. Pull and push factors for out migration in Tamil Nadu**

<b>Pull factors</b>	<b>Push factors</b>
<b>Economic:</b>	<b>Economic:</b>
Availability of job at destination	Lack of continuous work at origin
Hope of getting a job at a destination	Low wages at origin
Higher wage at destination	Mechanization of agriculture
Information about employment	Economic status of family
Flexible hours of work at destination	Decline in per capita land availability
<b>Non-economic:</b>	<b>Non-economic:</b>
Skill development	Population pressure
Ambitions	Social differentiation
City connections and relatives	Poor infrastructure
Glamour of city life	Penetration of market economy
Urban comforts	Family feud

Source: Sundaravaradarajan *et al.*, 2011

Singh *et al.* (2011) has estimated the impact of migration on the family welfare in Bihar and UP and found that observed that there has been improvement in the education of children, food consumption, overall happiness and health in most of the migrant families. The destination areas of migration are also positively impacted because of availability of more labour at cheaper rate. But it has impacted only agriculture sector negatively.

#### **5.4. Linkage between MGNREGA and labour shortage:**

MGNREGA coverage data shows that states like Uttar Pradesh, Madhya Pradesh, Rajasthan, Tamil Nadu etc which have lost maximum labour from agriculture reported the highest employment under MGNREGA indicating a positive linkage between MGNREGA and the issue of labour shortage (Table 2).

**Table 2. number of household provided employment under MGNREGA- Million**

Number of Households Provided Employment under MGNREGA- Mn					
	2007-08	2009-10	2011-12	2012-12	Average (2008-13)
Andhra Pradesh	4.8	6.2	4.9	5.3	5.0
Uttar Pradesh	4.1	5.5	7.3	4.4	4.9
Rajasthan	2.2	6.5	4.5	4.0	4.4
West Bengal	3.8	3.5	5.4	4.7	4.1
Madhya Pradesh	4.3	4.7	3.7	2.5	4.0
Tamil Nadu	1.2	4.4	6.3	6.5	3.9
Bihar	3.9	4.1	1.7	1.5	3.1
Karnataka	0.5	3.5	1.7	0.8	1.5
Kerala	0.2	1.0	1.4	1.6	0.9
Gujarat	0.3	1.6	0.8	0.6	0.8
Maharashtra	0.5	0.5	1.4	1.3	0.8
Punjab	0.0	0.3	0.2	0.2	0.2
Haryana	0.1	0.2	0.3	0.2	0.2
<b>Total</b>	<b>33.9</b>	<b>52.5</b>	<b>49.9</b>	<b>41.6</b>	<b>42.7</b>

Vanitha & Murthy (2011) has estimated the participation of labour in agricultural activities before and after the implementation of MGNREGA in Mysore district of Karnataka and found the significant decreased participation after MGNREGA implementation.

**Table 3. labour supply to agricultural work in Mysore district of Karnataka**

Season	Before MGNREGA	After MGNREGA	Decreased participation
Kharif	80.39	66.27	14.12 (17.55)
Rabi and summer	64.12	30.39	33.73 (52.60)
Total	122.83	82.17	40.67 (33.11)

(Note: No. of person days, Figures within parentheses indicate the percentage decline)

Source: Vanitha & Murthy, 2011

The decline in labour supply for agriculture is higher in rabi and summer seasons (52.6%) than in kharif (17.55%), as most of the MGNREGS works are executed during the period from September to May (Table 3).

## 6. Impact of labour scarcity:

**6.1. Changes in cropping pattern:** Prabakar *et al* (2011) has estimated the probability of retention of different crops in Cuddalore district of Tamil Nadu for determination of the probable changes in cropping pattern. The probability of retaining paddy, the principal food crop, is only 37%, of sugarcane 46% whereas the probability of retaining cashew is 75% and of coconut is 67%. So cropping pattern can be seen clearly towards the tree crops which are less labour requiring. If this trend continues then of the total cropped area, around 32% will be under cashew and 21% under coconut — the tree crops and sugarcane and paddy will occupy 18% and 14%, respectively.

**7.2. Differences in the Productivity Levels of Labour-Scarcity Affected and Unaffected Farms:** The same study stated above has also observed a significant difference in

the average productivity between the labour-scarcity-affected and unaffected farms. The productivity difference was more pronounced in cotton (14.5%) and paddy (11.8%) crops (Table 4).

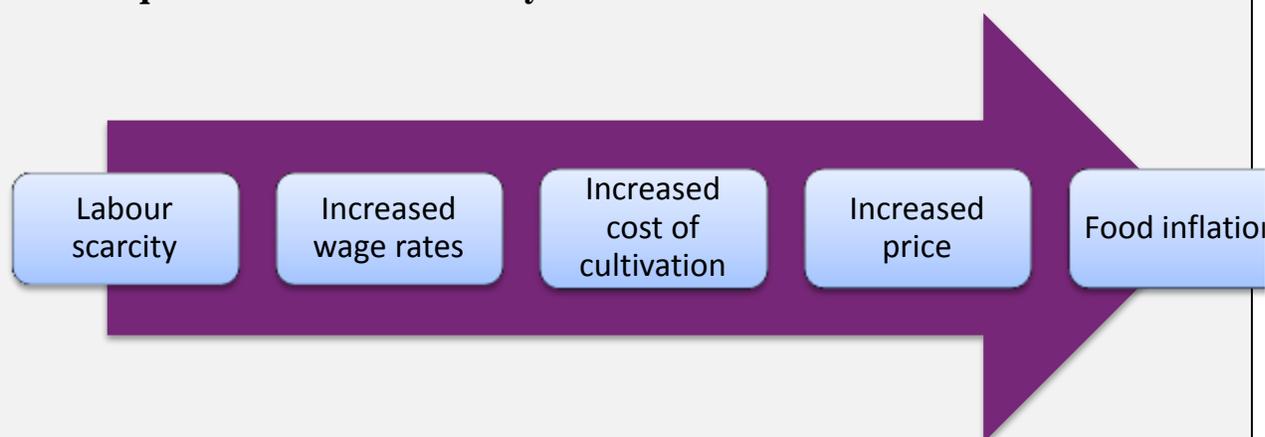
**Table 4. Productivity levels of labour-scarcity-affected and unaffected farms in Cuddalore district of Tamil Nadu**

Crop	Productivity		Productivity difference (kg/ha)
	Labour-scarcity unaffected farms(kg/ha)	Labour-scarcity affected farms(kg/ha)	
Paddy	5,090	4,487	603 (11.8)
Sugarcane	1,53,292	1,44,165	9,127 (6.0)
Groundnut	3,767	3,592	175 (4.6)
Pulses	850	780	70 (8.2)
Cotton	1,410	1,205	205 (14.5)

(Note: Figures within the parentheses represent the difference in per cent values with reference to unaffected farms.)

Source: Prabakar *et al*, 2011

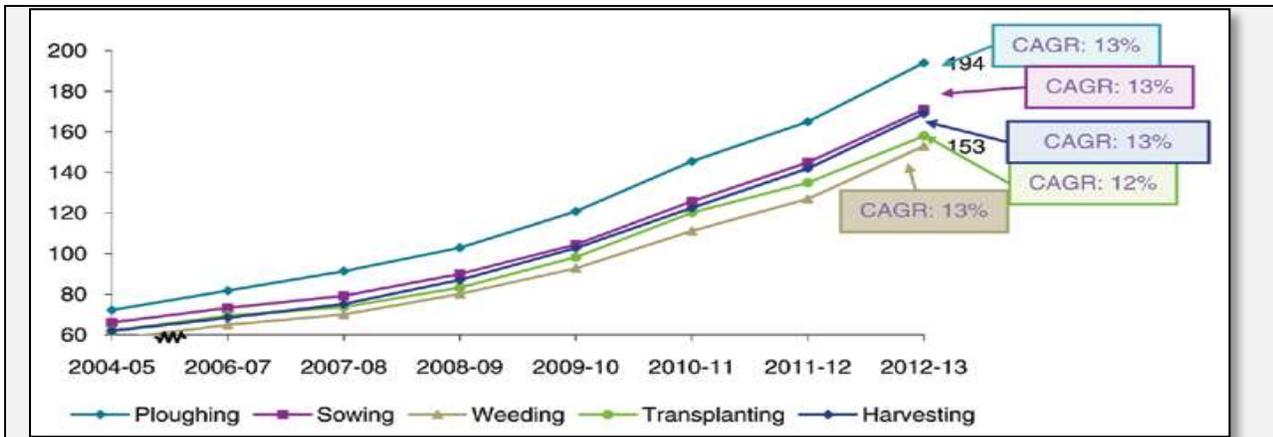
## 7. Consequences of labour scarcity:



Labour scarcity along with other factors like growth in GDP, MGNREGA have caused increased wage rates thereby increased cost of cultivation which is directly reflected in higher output prices and therefore resulting in food inflation.

**7.1. Steep Rise in Agricultural Wages since 2006-07:** Wages for almost all the agricultural operations have increased significantly since 2006-07 at a growth rate of around 12-13% (Figure 11).

**Fig 11. Wages for agricultural operations**

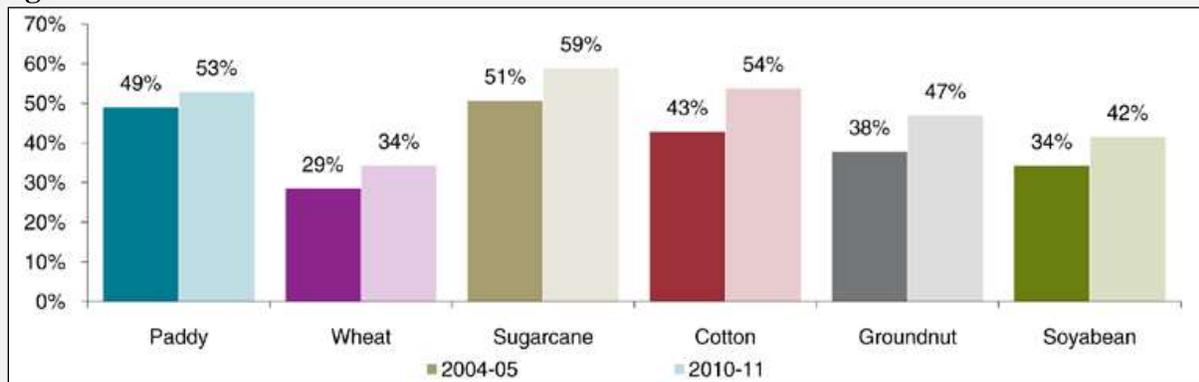


Source: FICCI report, 2015

### 8.2 Rising Share of Labour Cost in Overall Cost of Cultivation:

Because of higher wages the share of labour cost in overall cost of cultivation has also increased from 2004-05 for all the crops (Fig 12).

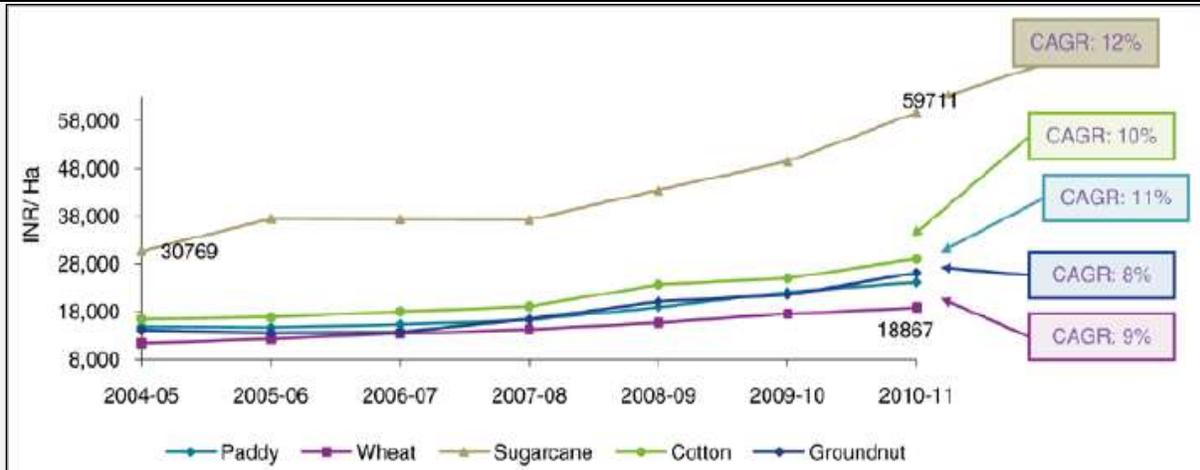
Fig 12. Share of labour cost in total cost of cultivation



Source: FICCI report, 2015

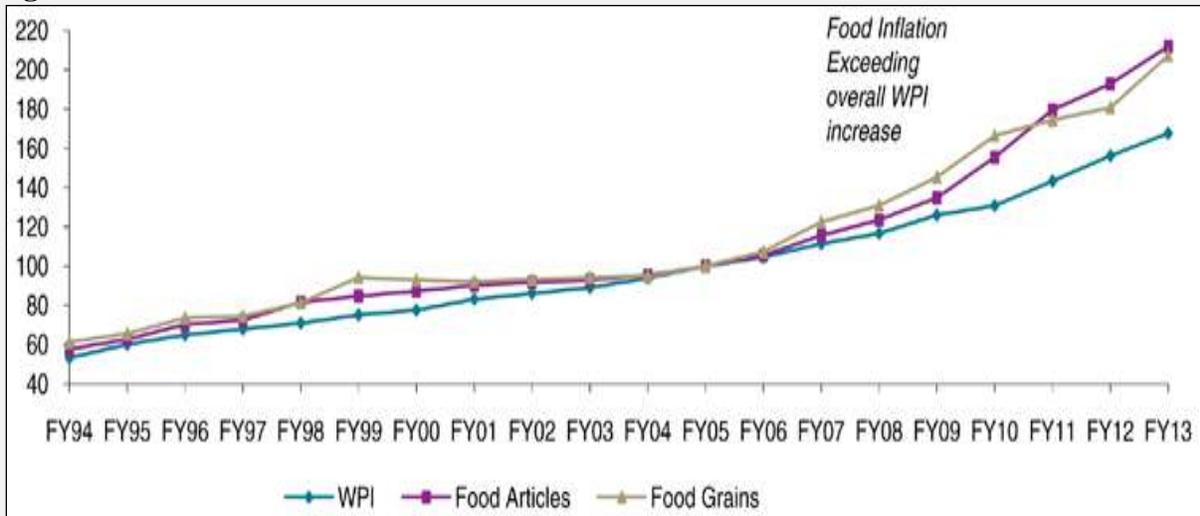
**8.3 Increased Cost of Cultivation and Resulting Food Inflation:** As a consequence of wage rate escalation, cost of cultivation has risen significantly in the last few years. This trend is witnessed across all major crops, especially the ones which are labour intensive (Figure 13).

Fig 13. Cost of cultivation of different crops



Source: FICCI report, 2015  
 The cost of cultivation of these crops has been growing at over 10% each year. The higher cost is passed on by the farmer, which has partly resulted in increasing wholesale prices of principal food commodities like rice and wheat at ~10% as opposed to overall inflation of ~7% (Figure 14).

**Fig 14. Wholesale Price Indices and Food Inflation**



Source: FICCI report, 2015

### 8. Strategic Options for Labour Shortage:

The problem of labour scarcity in agriculture has repercussions across states and needs to be addressed in order to contain its impact on the overall sector and the nation. A two pronged approach with respect to input factors and output factors has to be considered:

#### 9.1 Input factors:

- **Immediate effect:** Adopt techniques that can replace and/or reduce the requirement of human labour as follows:
  - a. **Mechanization of farms:** Mechanization of activities like sowing and harvesting can significantly reduce labour intensity.
  - b. **Promoting technology for seeds which reduce labour requirement:** For example seeds supporting direct sowing in rice which can save the labour required for

transplanting.

- c. **Increasing use of herbicides:** Use of herbicides can cut down on the labour required for weeding fields substantially.
  - **Long Term Effect:** Increase returns from agriculture and arrest the migration of workforce from agriculture to other sectors by adopting improved seed technology, improved cultivation practices like SRI etc.

## 9.2 Output factors

- Better farm to the Agri-business linkages so that no. Of intermediaries can be reduced thereby causing better price realization by the farmer which will improve their bargaining power and agriculture viability can be increased.
- a. **Contract Farming:** The buyer and farmer form an agreement with conditions on quantity, quality, delivery schedule in lieu of pre determined price and production support.
- b. **Agricultural Cooperatives:** The co-operative acts as an interface between the small farmers and buyers. It provides order taking, shipment and logistics, billing, collection and remittance services for farmers.
- c. **Farmer Equity Model:** A model of producers company where producers will directly invest their equity funds into the company

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