Economic Outlook of Maize in Pakistan

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12-4-2017

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Outline

- General Overview
- Comparison with other Asian countries
- Maize area and production trends in Pakistan
- Stunting and malnutrition problem
- Recent survey results
- Major challenges
- Opportunities
- Conclusions

General Overview

- The average yield of maize in the world is 5.2 tons/ha, in Asia its 4.97 tons/ha and in Pakistan its 4.28 tons/ha
- It is estimated that by 2050 the demand for maize will double in developing countries
- In Pakistan maize is grown on 4.8 percent of the cropped area
- Maize contributes 2.2 percent to value added in agriculture and 0.4 percent to GDP
- During 2014-15 about 0.015 million tons maize seed was imported amounting 6.56 billion PKR rupees (FSCRD)

(Source: US Dept. of Agriculture, 2014)

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Recent Comparison

Countries	Area (M ha)	Production (M T)	Yield (T/Ha)
China	35	215	5.9
Indonesia	3.8	9.9	4.9
Vietnam	1.1	5.2	4.4
Pakistan	1.14	4.9	4.2
Thailand	1.1	4.8	4.2
Philippines	2.6	7.7	2.9
India	8.6	23.6	2.7
Nepal	0.9	2.2	2.4

Source: FAOSTAT

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Technology Status

Country	Seed (Percentage)		Fertilizer
	Hybrid	OPV	
Bangladesh	100	-	<RD
China	95	5	>RD
India	40	60	<RD
Indonesia	60	40	>RD
Pakistan (Spring)	>90		
Pakistan (Autumn)	21	79	<RD
Pakistan (Overall)	30-40	60-70	

Source: Kumar et al. (2014)

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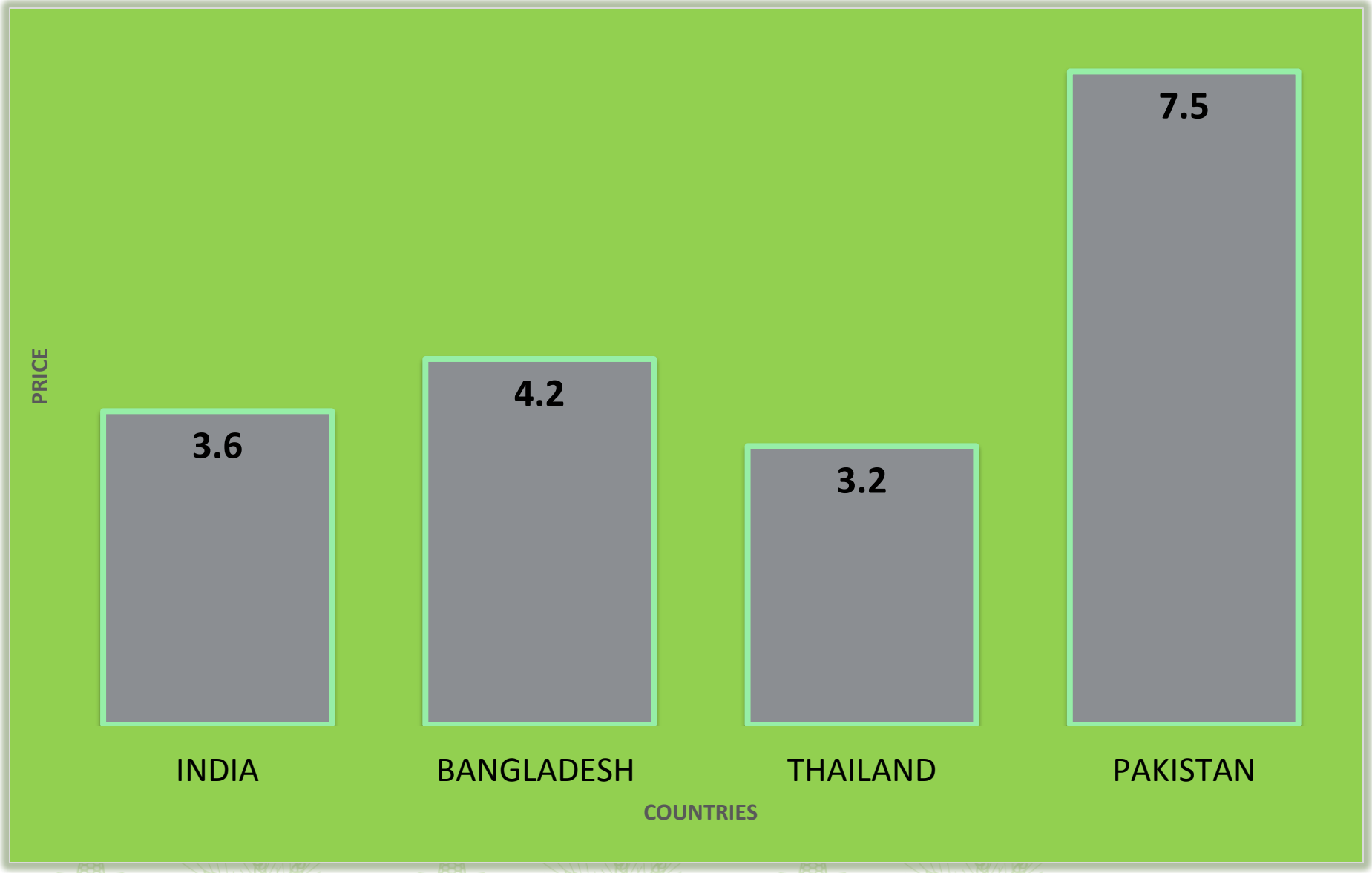
Comparison of Hybrid Seed Price (US$/kg)



Source: FAOSTAT

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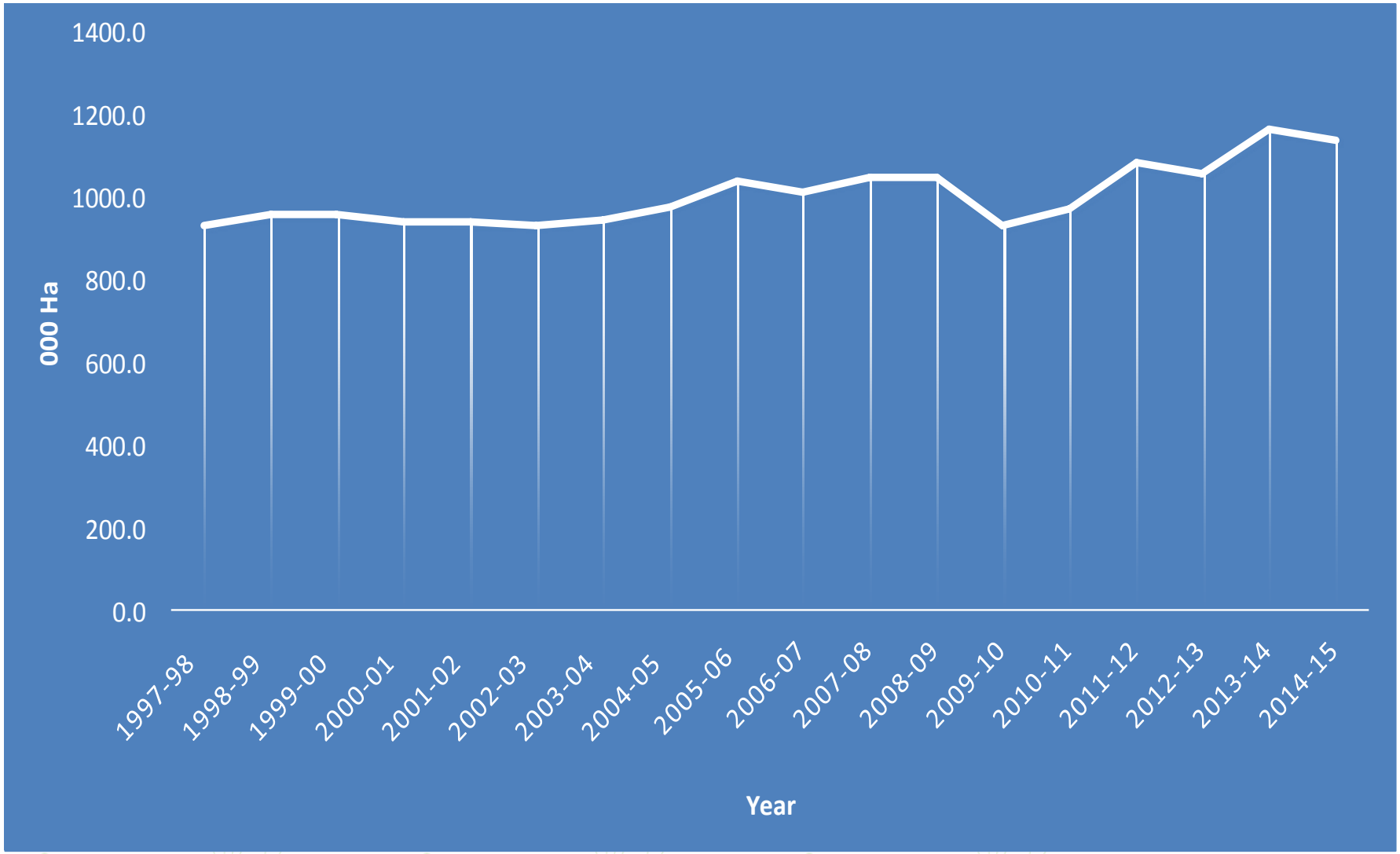
Drivers of Maize Demand

Country	Feed Industry (Poultry, Livestock and fish feed)	Other Industry (Starch and other industry usages)	Food (Human consumption raw or processed)
Bangladesh	****	**	*
China	****	**	*
India	****	**	*
Indonesia	****	*	***
Pakistan	*** (65%)	** (20%)	** (15%)

Source: Kumar et al. (2014)

Maize Area in Pakistan



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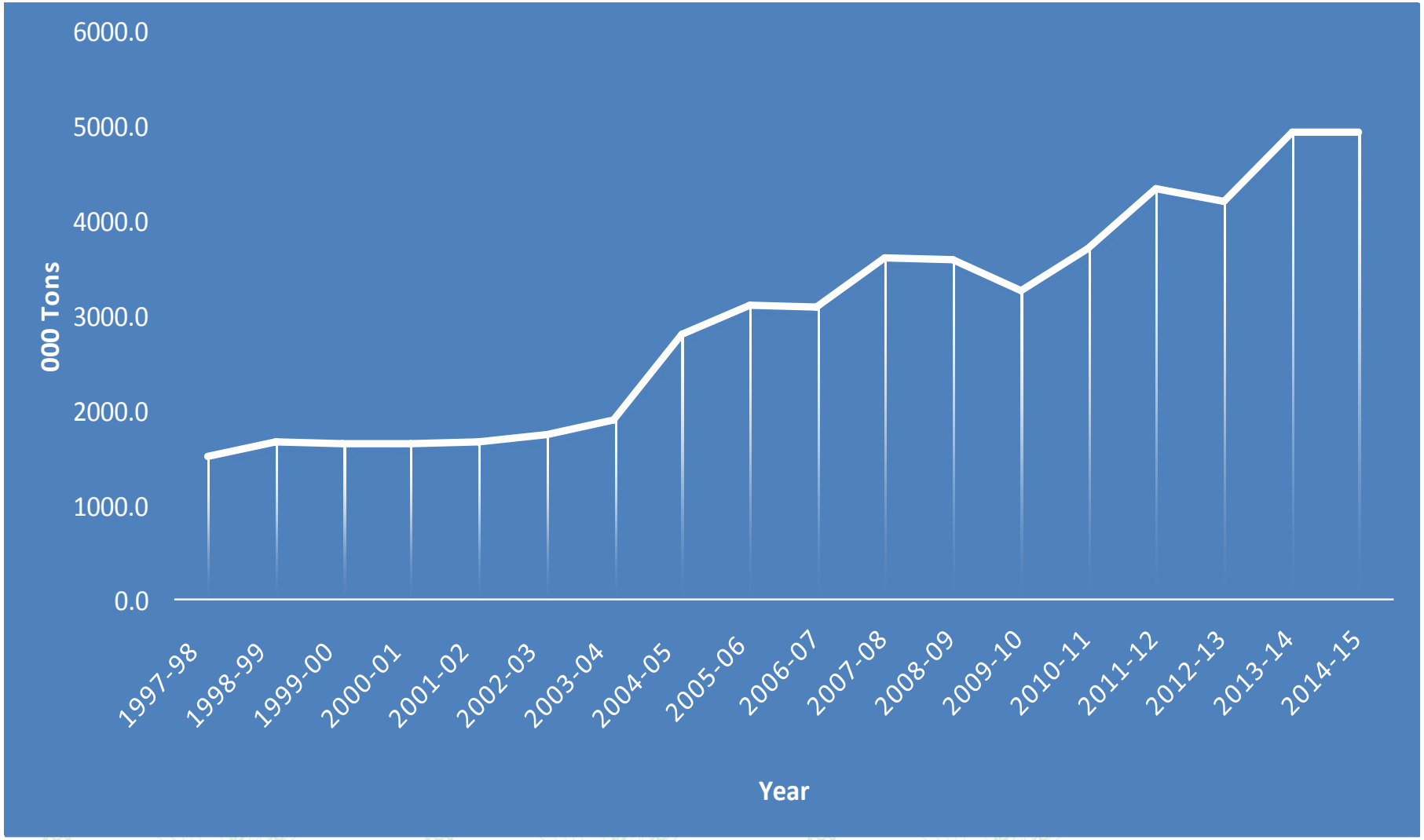
Production Trends of Maize in Pakistan



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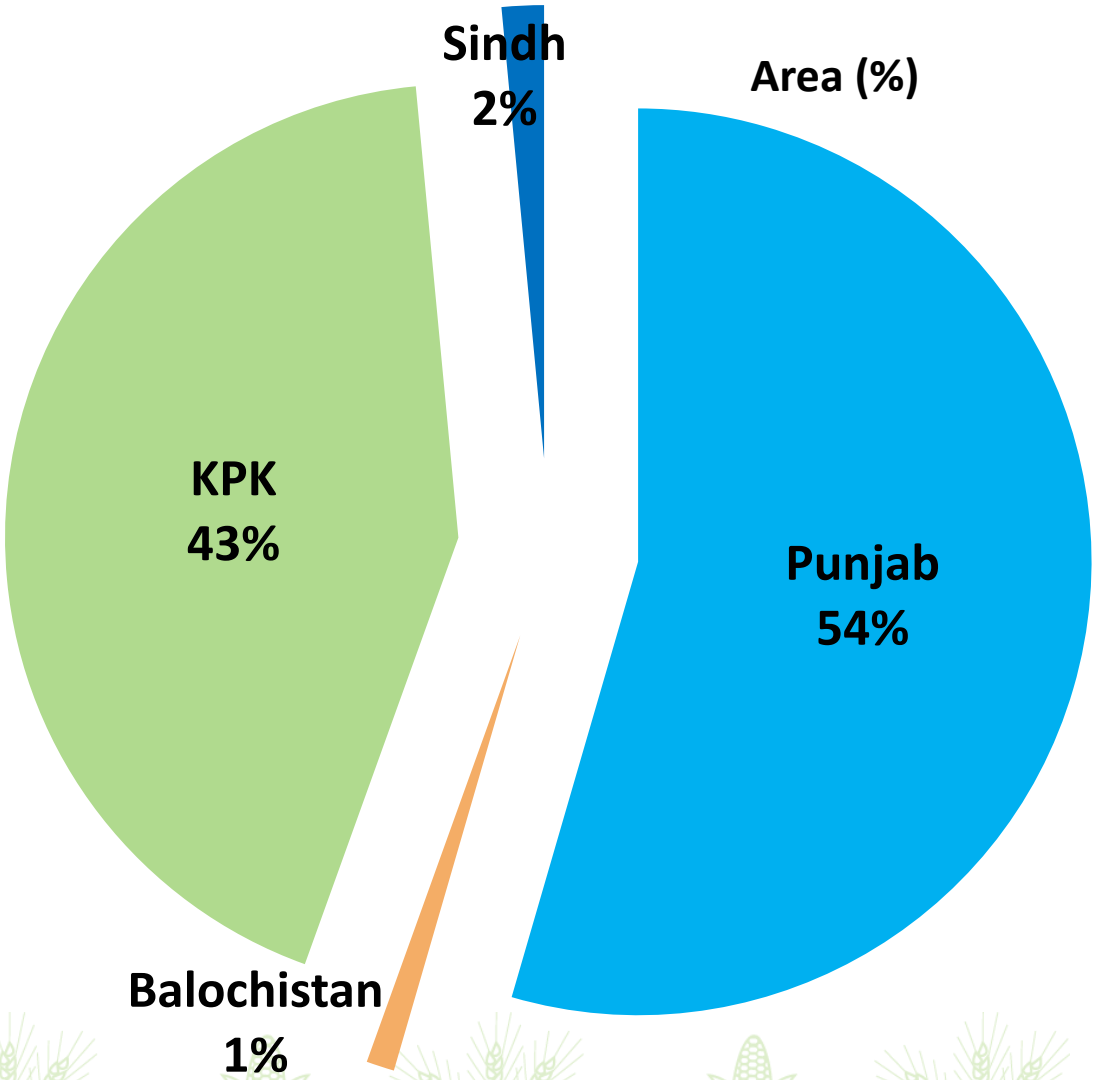
Province wise Maize Area Share



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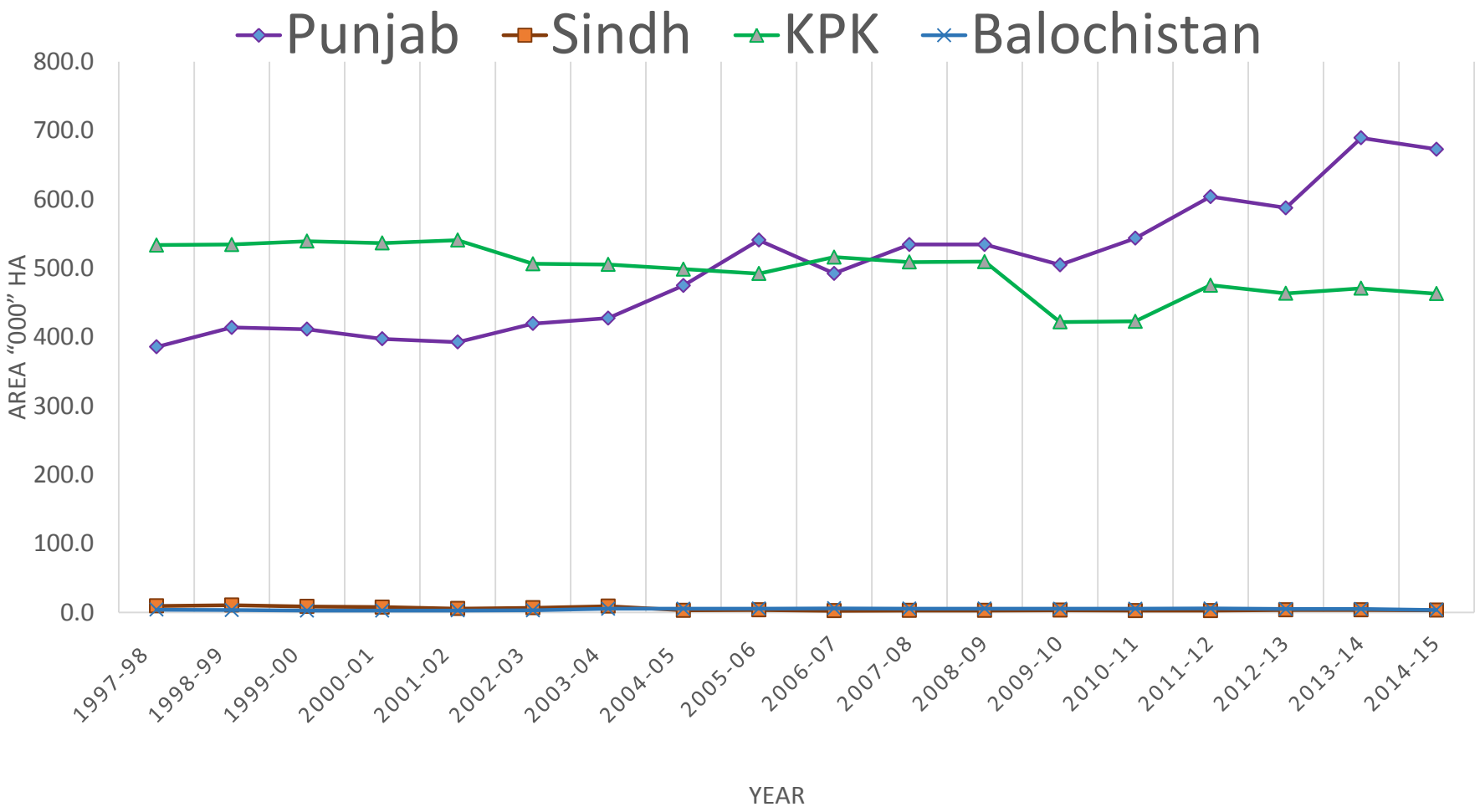
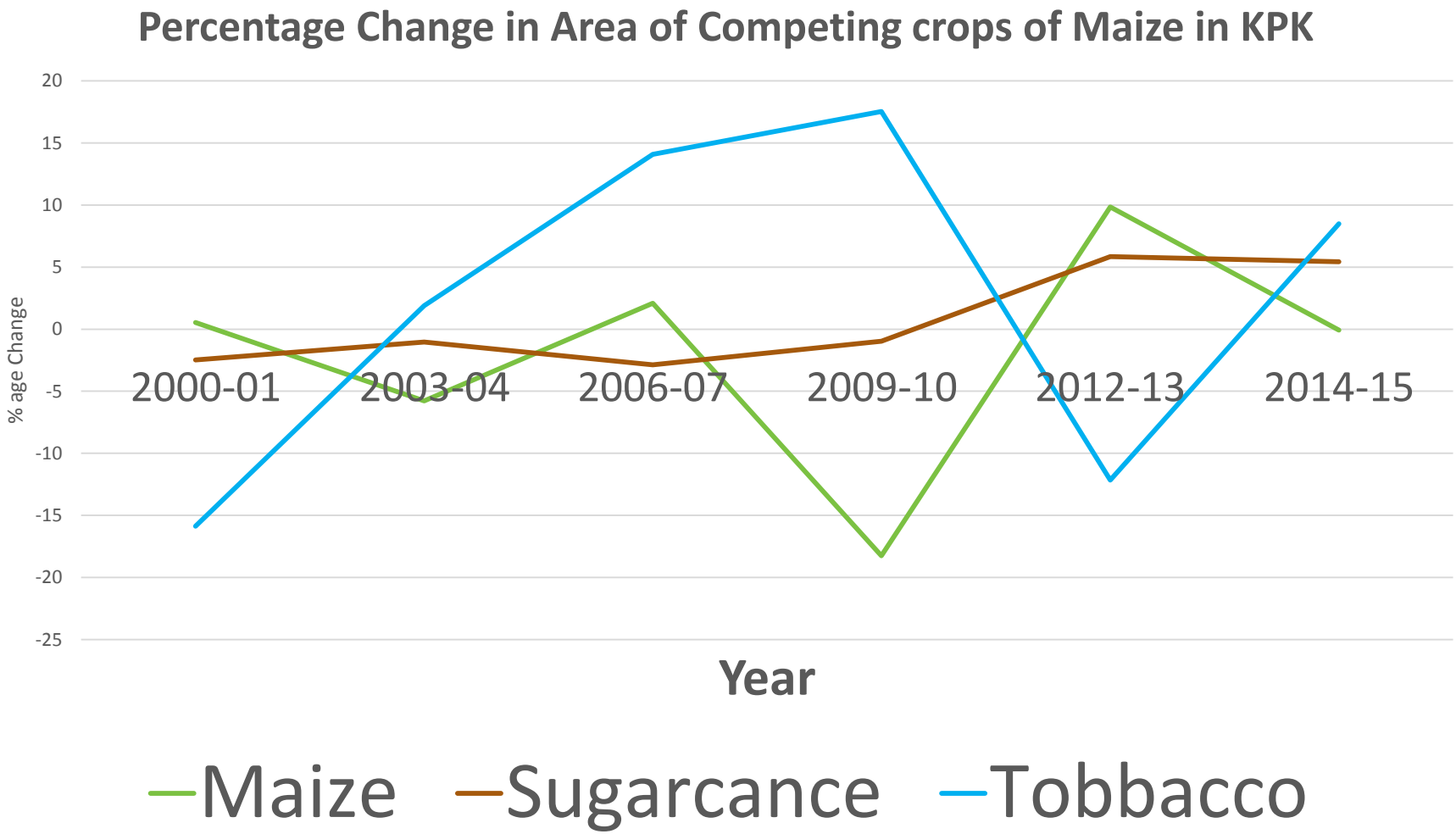
Province Wise Area under Maize (Pakistan)



Competing Crops of Maize in KPK



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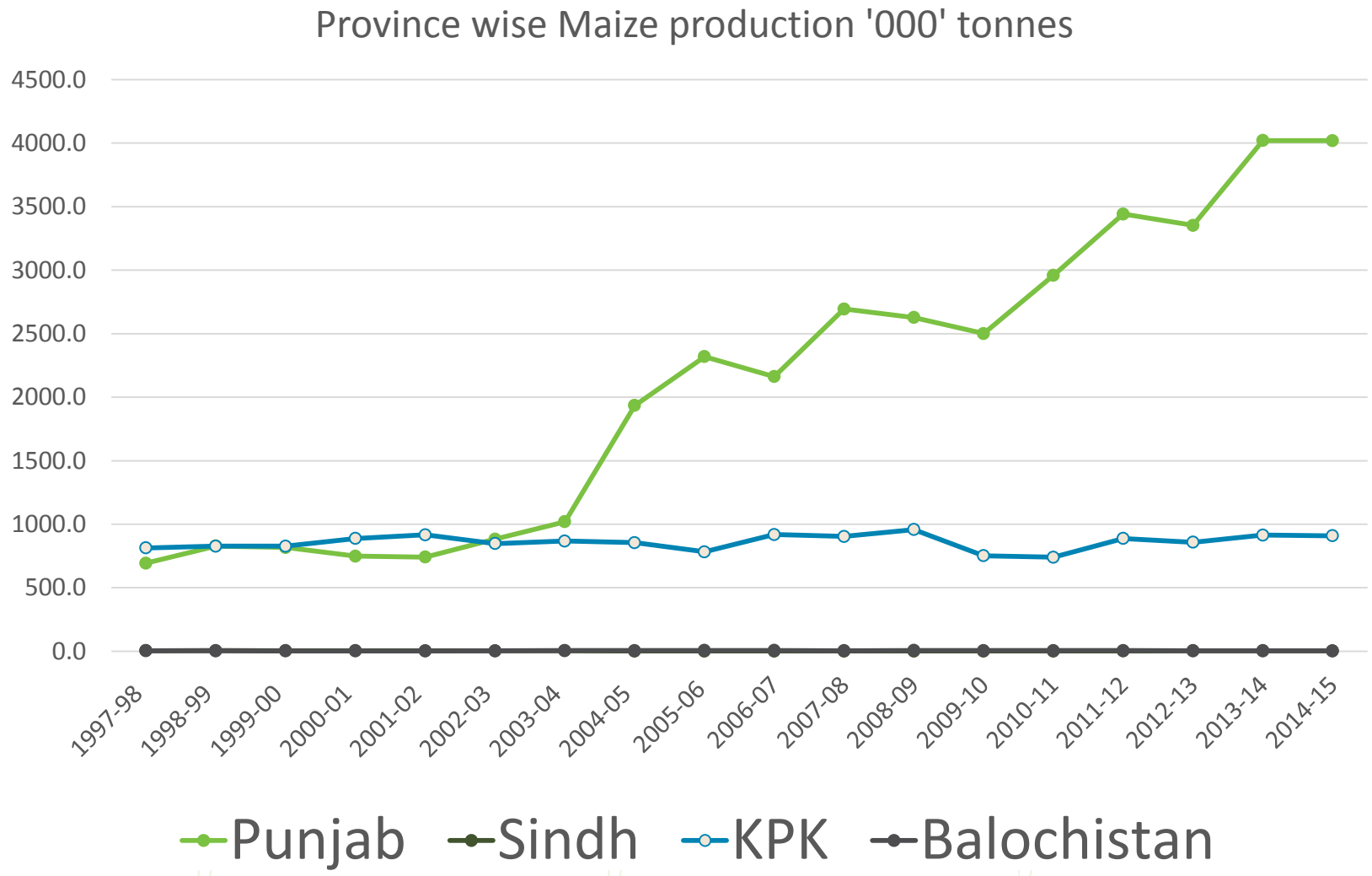
Province wise Maize production



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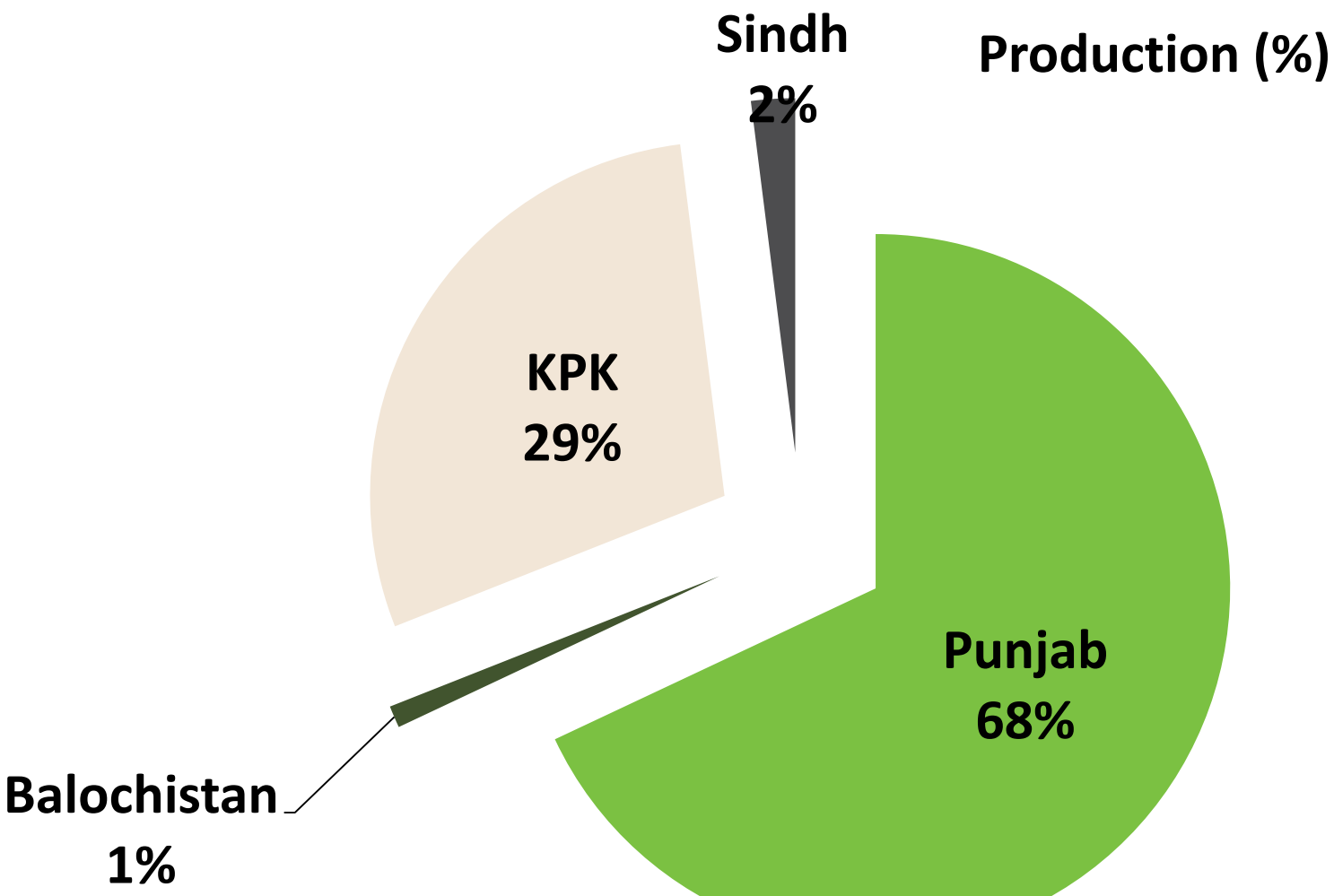
Province wise Share in Maize Production



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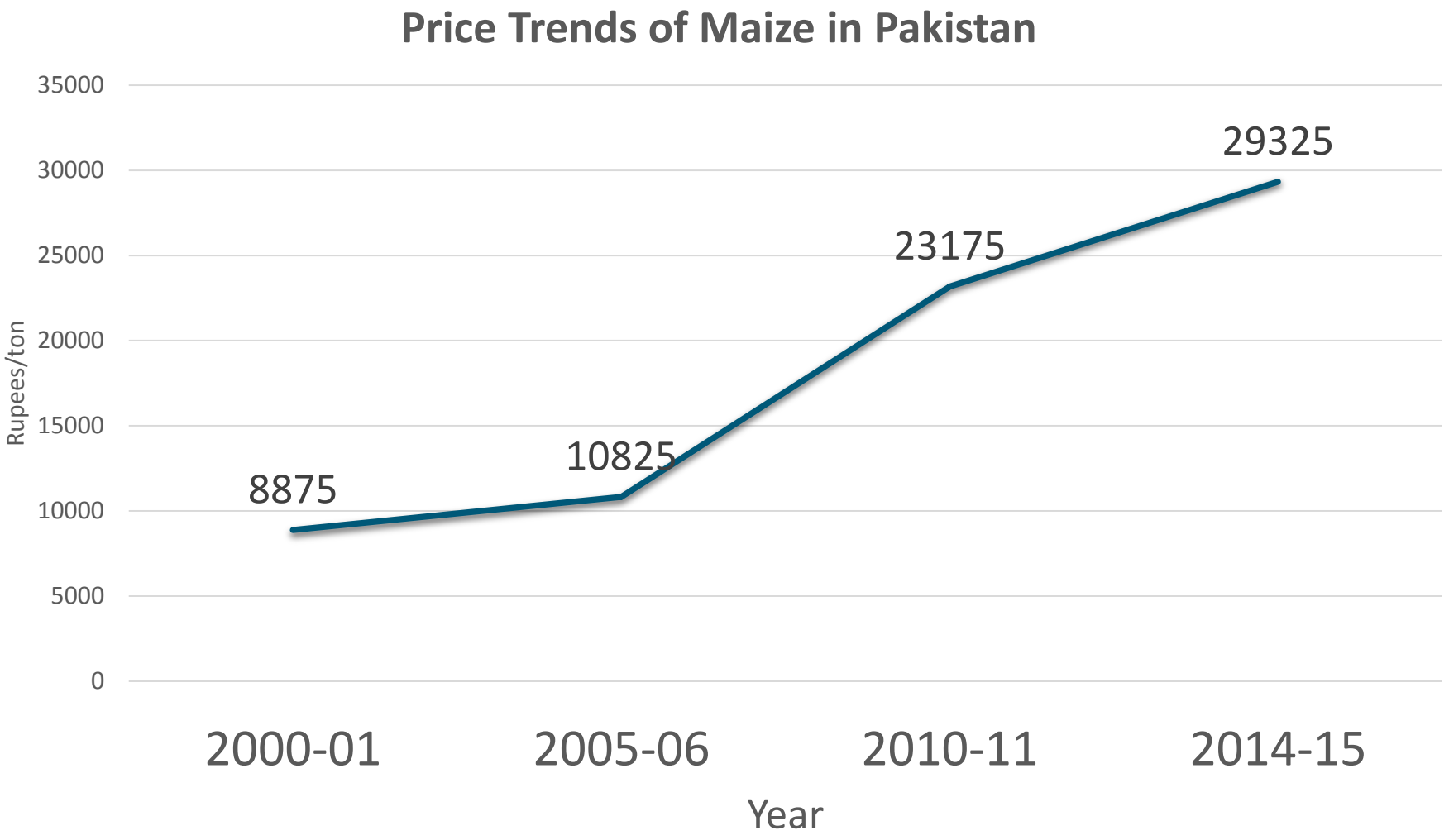
Price Trends of Maize in Pakistan



Source: Pakistan Bureau of Statistics

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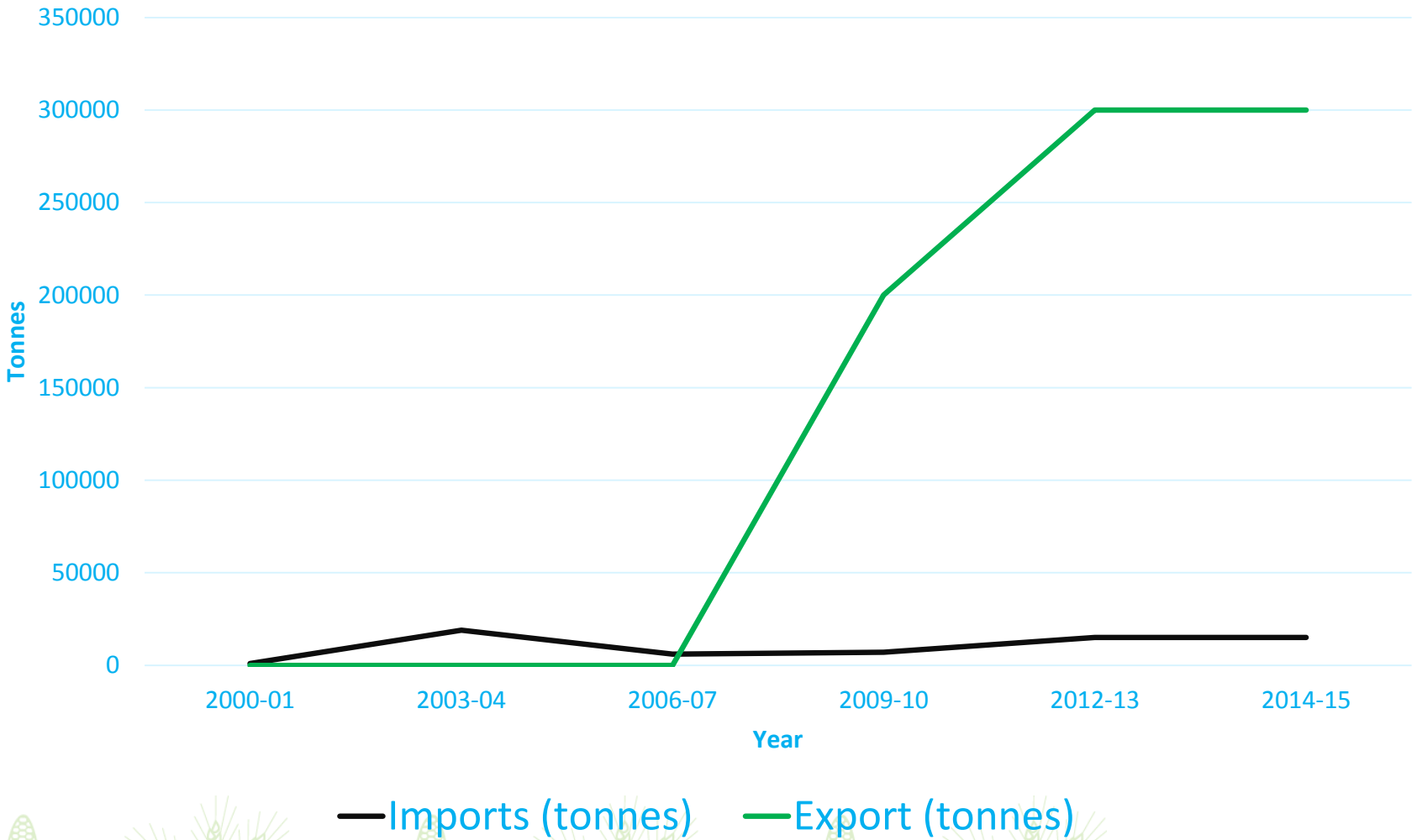
Import and Export of Maize in Pakistan



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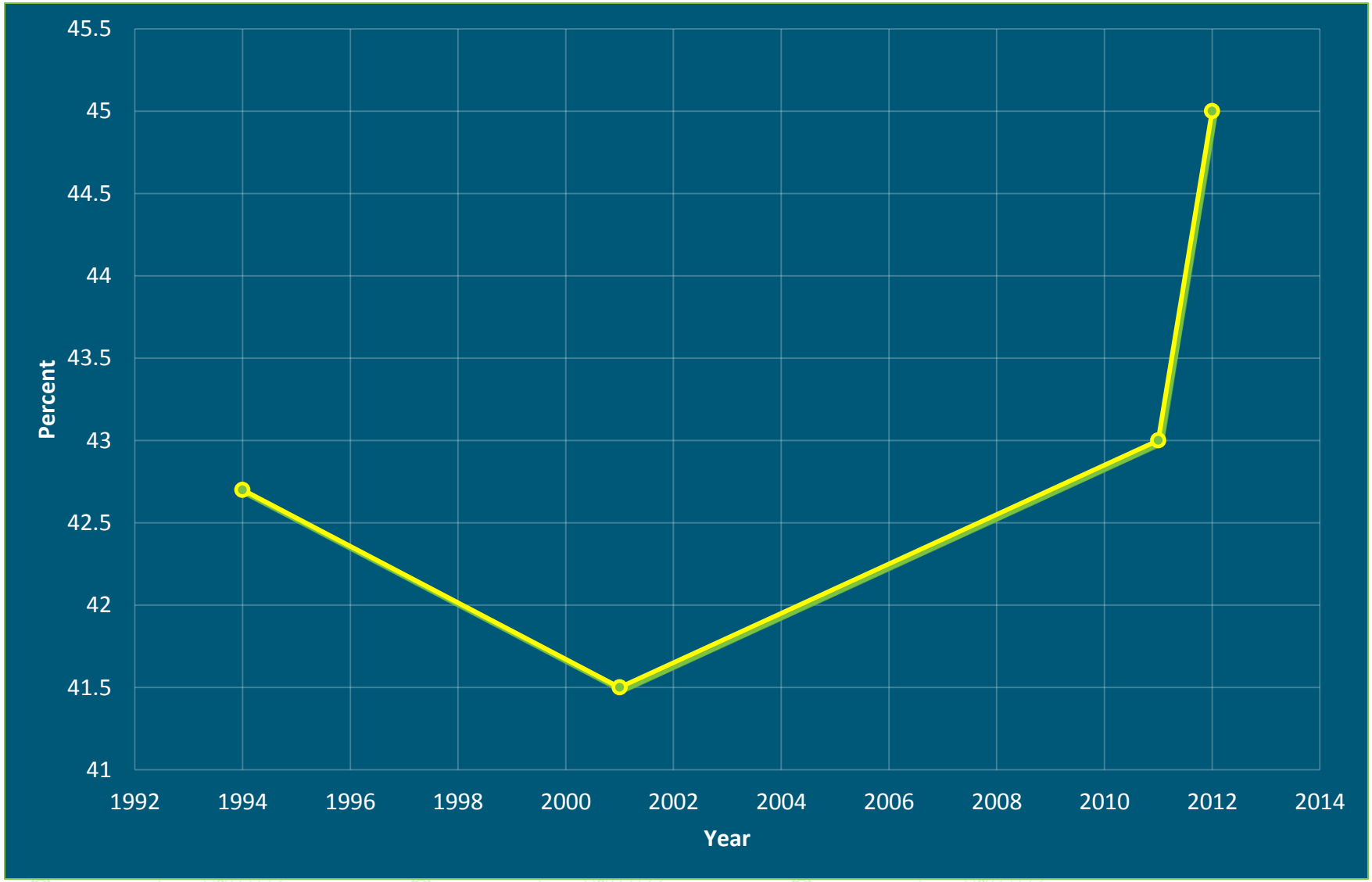
Prevalence of Stunting in Pakistan



Source :WHO

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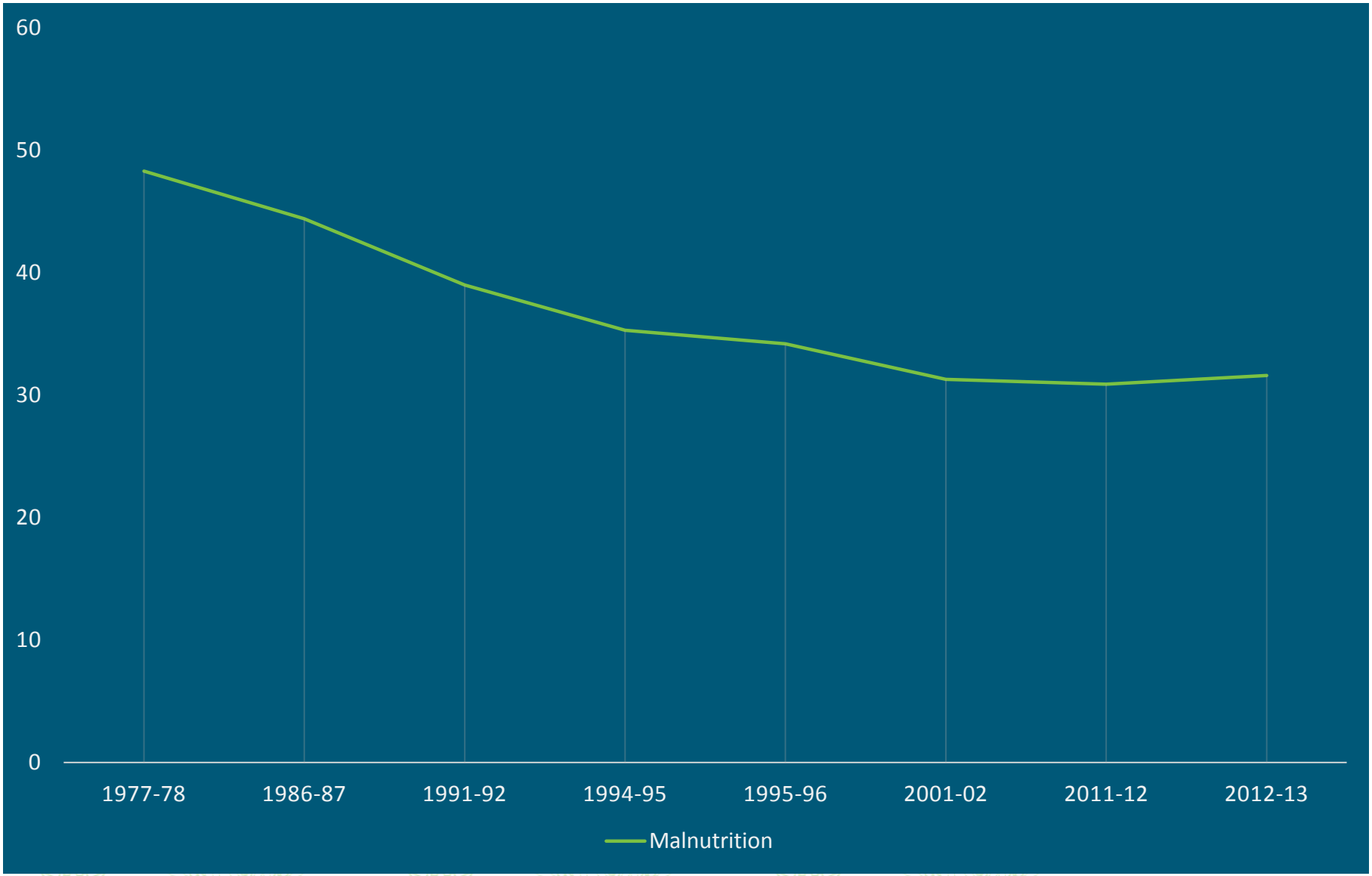
Prevalence of Malnutrition in Pakistan



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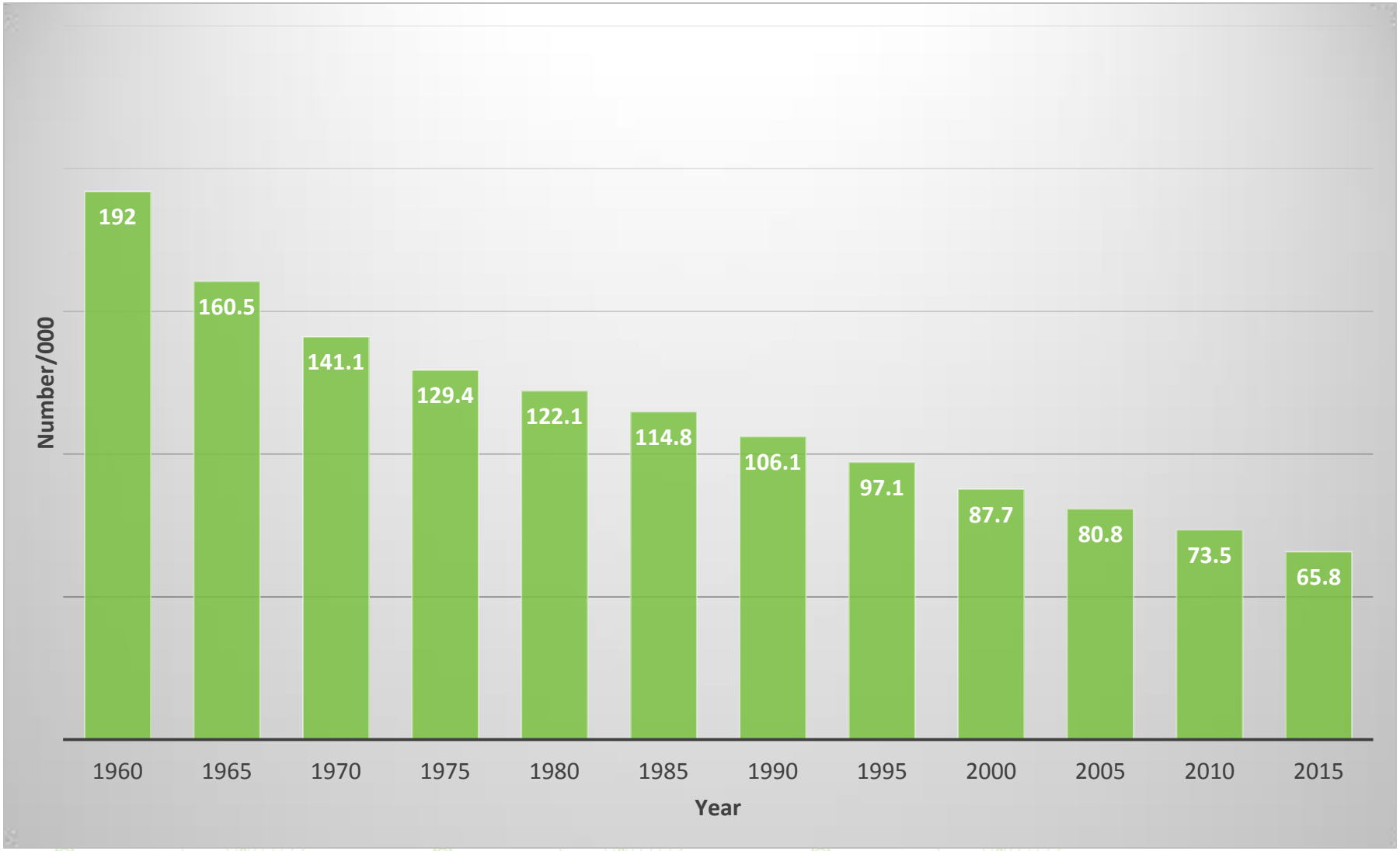
Infant Mortality Rate (per 1000 Live births)



Source: World Development Indicators

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Comparison of Hybrid Vs OPV (Per acre)

Indicators	Hybrid	OPV	Difference	Significance
Average yield (maunds/acre)	77	46	31	***
Cost of production (Rs/acre)	34981	25890	9091	**
Price (Per maunds)	947	875	72	-
Gross revenue (Per acre)	72919	40250	32869	***
Net Revenue	37938	14360	23578	***
Cost benefit ratio	2.08	1.55	0.53	*
Revenue per crop day	486	268	218	*

Farmers Preferences Hybrid vs OPV

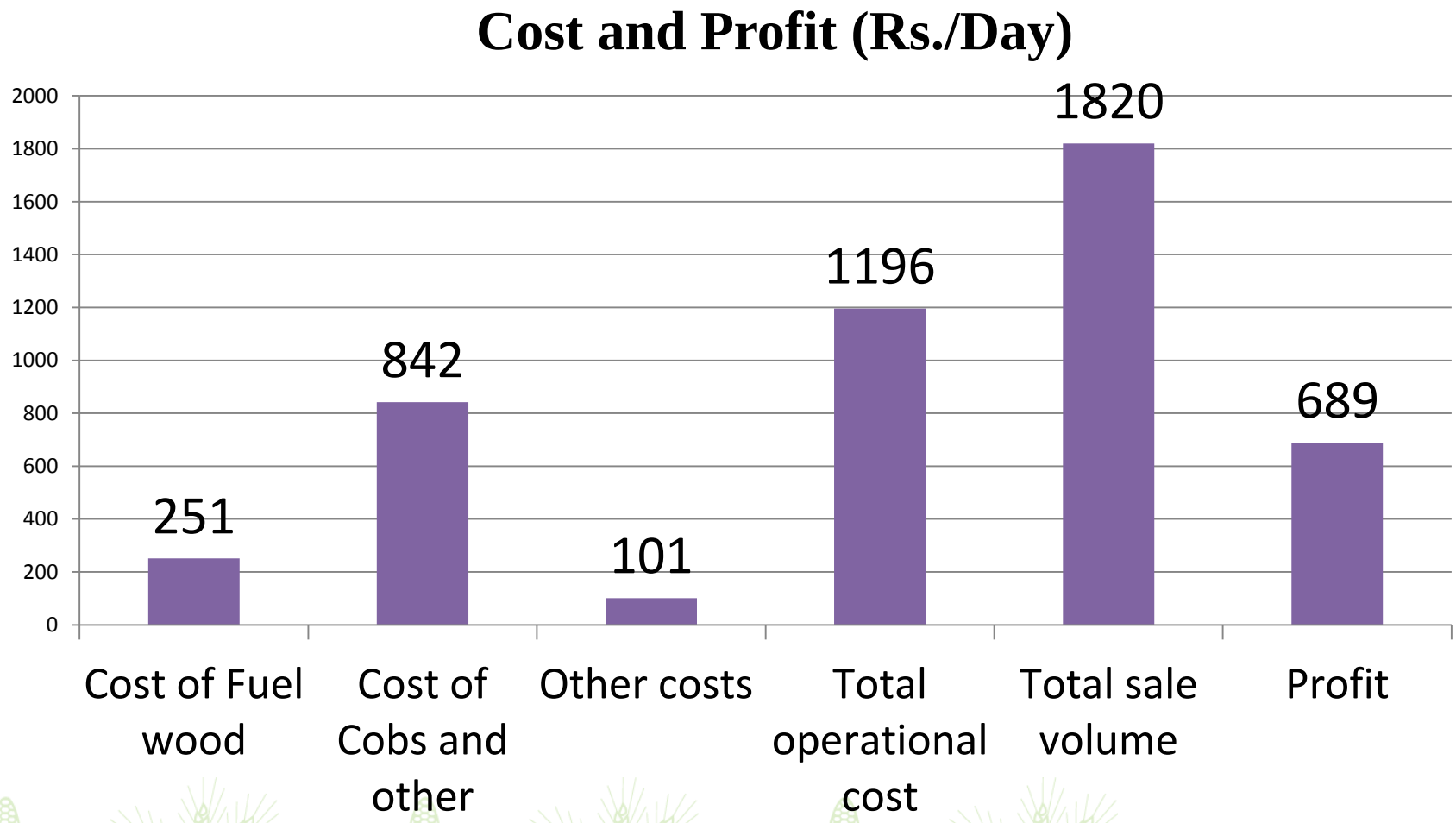
Preference	Percentage
High Grain Yield	86.8
Good Uniformity	6.7
Drought Tolerant	2.2
Disease Tolerant	0.6
Heat Tolerant	0.3
Good Straw Yield	1.1
Birds Resistant	0.3
Insect Tolerant	0.3
Taste	1.7

In case of 100 Percent Hybrids

Area under Maize (2015-16) (million hectares)	1.14
Current area under hybrids	30%
Area not under hybrids (million hectares)	0.798
Current production of maize (million tons)	4.9
Average yield of hybrids (t/ha)	7.7
Average yield of OPV (t/ha)	4.6
Difference	3.1
Production increase if 100 % hybrids	2.47
With same area production can be increased up to (m.t)	7.37
Yield per hectare can be (t/ha)	6.46

Livelihood of the Maize Street Vendors

Livelihood of the maize street vendors



- Challenges

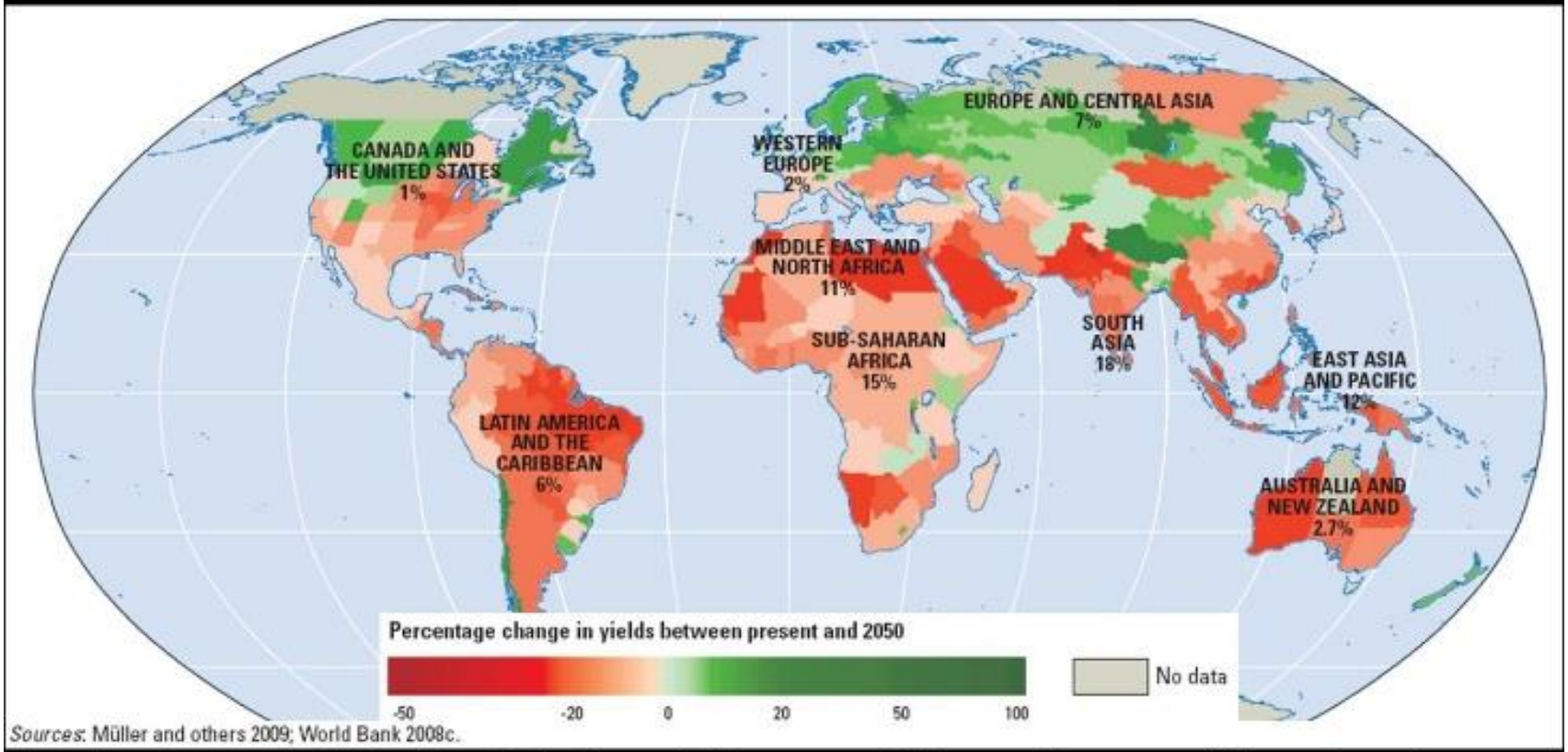
Constraints Regarding Maize Production

Constraints	Percentage
Seed Price	72
Credit	11
Seed Availability and Information	10
Production Technology	7
Others	1

Climate Change

Projected Temperature Increases

Up to 23% of South Asia's maize crop could will be lost due to higher temperatures by 2050.



Sources: Müller and others 2009; World Bank 2008c.

Krechowicz, et. al., "Weeding Risk: Financial Impacts of Climate Change and Water Scarcity on Asia' Food and Beverage Sector", World Resources Institute, 2010.

Diseases

- New Emerging diseases in other parts of the world
- Immediately after emergence, maize crop faces a serious threat of shoot fly and stem borer attack
- The stem borer can cause loss of 30-50 percent

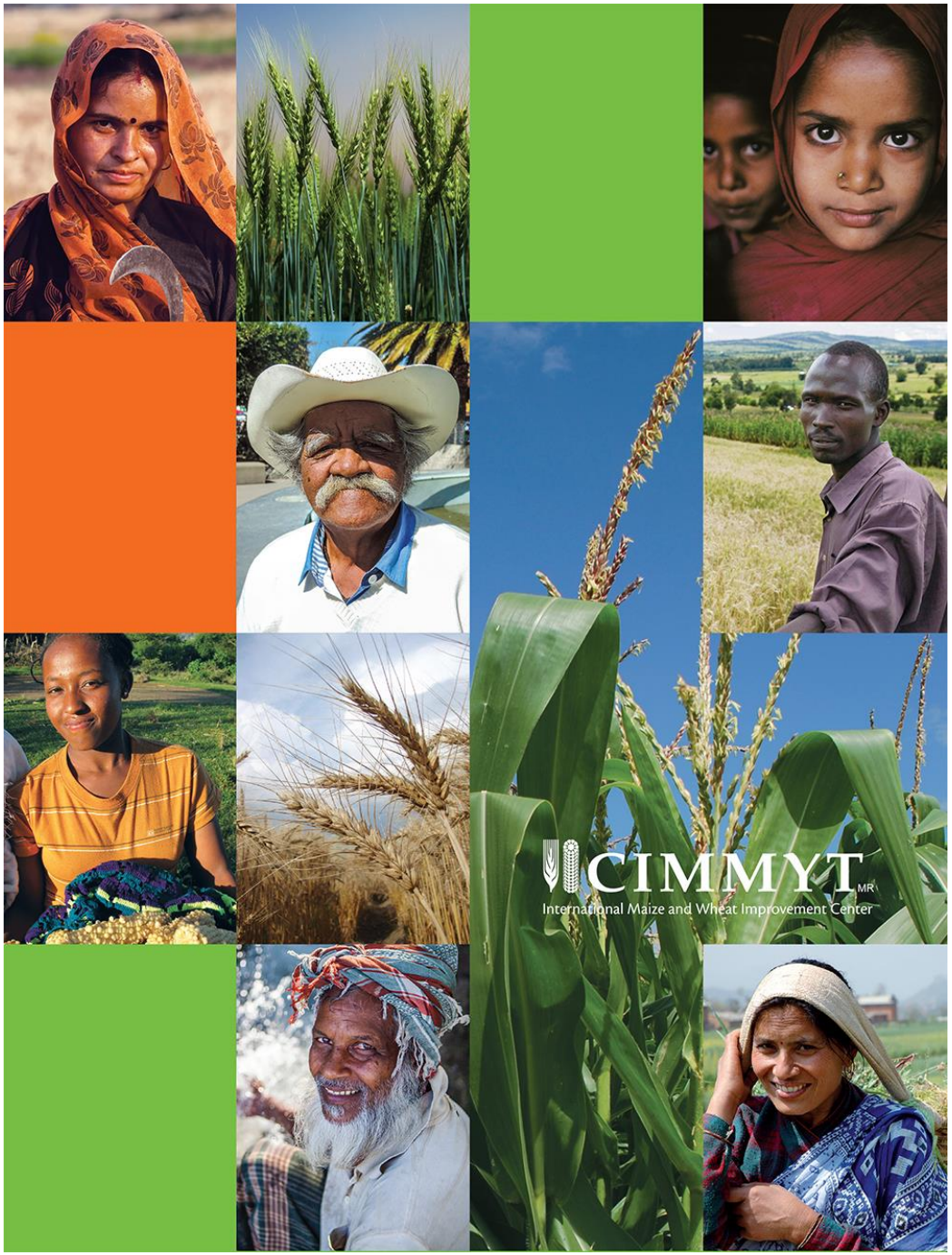
- Opportunities

Opportunities

- Huge market potential for the private seed companies (currently hybrid only on 30% area)
- Huge potential exists in Sindh and Balochistan provinces
- Value Chain and Linkages among different stakeholders

Conclusion

- Climate smart varieties
- QPM and Bio fortified Maize
- Awareness about production technology in new areas
- Public Private Partnership
- More Investment in Maize R&D



Thank you for your interest!

COMPARISON OF MAIZE CONSUMPTION AND PRODUCTION IN PAKISTAN

YEAR	MAIZE CONSUMPTION (000 TONNES)	MAIZE PRODUCTION (000 MT)
1960	440	439
1970	670	717
1980	946	946
1990	1185	1185
2000	1500	1643
2014	4800	4695
2015	5100	5100

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Maize Production in Pakistan-Historic Perspective

Year	Area (T. ha)	Production (000 MT)	Yield (T/ha)
1960	480	439	1
1970	640	717	1.1
1980	744	946	1.2
1990	845	1185	1.3
2000	944	1643	1.7
2014	1130	4695	4.1
2015	1150	5100	4.2

Hybrids in Pakistan

- In Pakistan hybrids are grown on 30 percent of the total area only
- Spring maize area is increasing in Pakistan and currently spring maize is grown on 12-15 percent of the total area while it accounts for 30-35 percent of the total production mainly because of high yield of hybrids

Utilization of Maize

- 65% utilized in poultry industry
- 20% in wet milling
- 10% in dairy/silage
- 5% is used for seed and food purpose

Gains in Maize

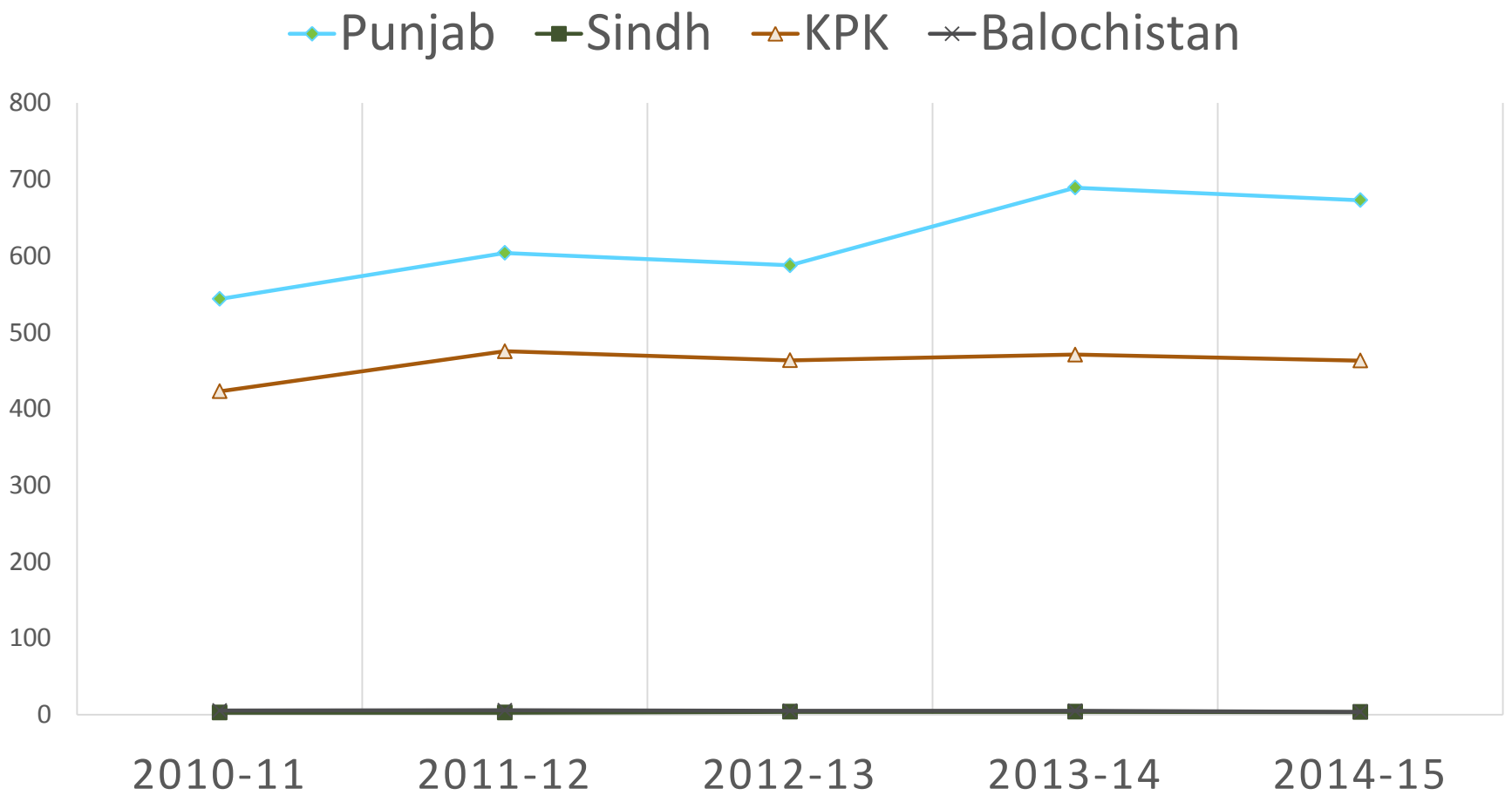
- Mainly the gains in maize are due to productivity gains (8.82%) with very slow growth in the area (0.61%)
- And the credit goes to hybrids

Year	Total seed Requirement	Seed Availability			Value of Imported Seed
	(MT)	Local (%)	Imported (%)	Total (%)	Million (Rs)
2000-01	28,740	629 (2.19)	2300(8.00)	2929 (10.19)	216.41
2001-02	27,970	908 (3.25)	2227 (7.96)	3135 (11.21)	223.87
2002-03	37,760	1470.78 (3.90)	3536.50 (9.37)	5007.28 (13.26)	443.43
2003-04	37,782	1572.00 (4.16)	3749.00 (9.92)	5321.00(14.08)	441.1
2004-05	38,010	1987.33 (5.23)	4318.07 (11.53)	6305.40 (16.59)	798.17
2005-06	30,888	3393.01 (10.98)	7443.61 (24.10)	10836.62 (35.08)	1337.24
2006-07	30,036	4947.70 (16.47)	6479.19 (21.57)	11426.89 (38.04)	1100.22
2007-08	30000	3286(10.95)	6175.00(20.58)	9785.00(32.62)	1152.86
2008-09	30036	770(2.56)	10259.00(34.19)	9785.00(32.62)2360	
2009-10	31170	2144(7.15)	7260.00(24.2)	9785(32.62)	1852
2010-11	31914	1686.51	7354.24		1762.13
2011-12	31914	1833.89(5.76)	10715(33.57)	12548.89(39.32)	3665
2012-13	31914	3705(11.60)	10303(32.28)	14008(43.89)	3659
2013-14	31914	3874(12.13)	14353(44.97)	18228(57.12)	5625

Year	Share of Local seed (%)	Share of Imported Seed (%)
2000-01	21.47	78.53
2001-02	28.96	71.04
2002-03	29.37	70.63
2003-04	29.54	70.46
2004-05	31.52	68.48
2005-06	31.31	68.69
2006-07	43.3	56.7
2007-08	34.73	65.27
2008-09	6.98	93.02
2009-10	22.8	77.2
2010-11	19.32	80.68
2011-12	14.6	85.4
2012-13	26.44	73.56
2013-14	21.2	78.8

- **Nutritive value of pure Wheat and Maize blended Wheat flours Flour Protein Ash Fat Crude Fibre**
- Wheat flour 13.14 1.77 1.0 2.88
- Blended with 5% maize flour 13.0 1.80 1.2 2.68

Province Wise Area Under Maize (2010-15)



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