



ADAPTING AGRICULTURE TO CLIMATE CHANGE IN KENYA: HOUSEHOLD AND COMMUNITY STRATEGIES AND DETERMINANTS

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Outline

- Study sites, design and methods
- Experience of climate shocks and coping strategies
- Perceptions of climate change
- Adaptation strategies, desired adaptations, and constraints
- Determinants of adaptation
- Priorities for adaptation
- Conclusions and policy recommendations

STUDY SITES, DESIGN & METHODS



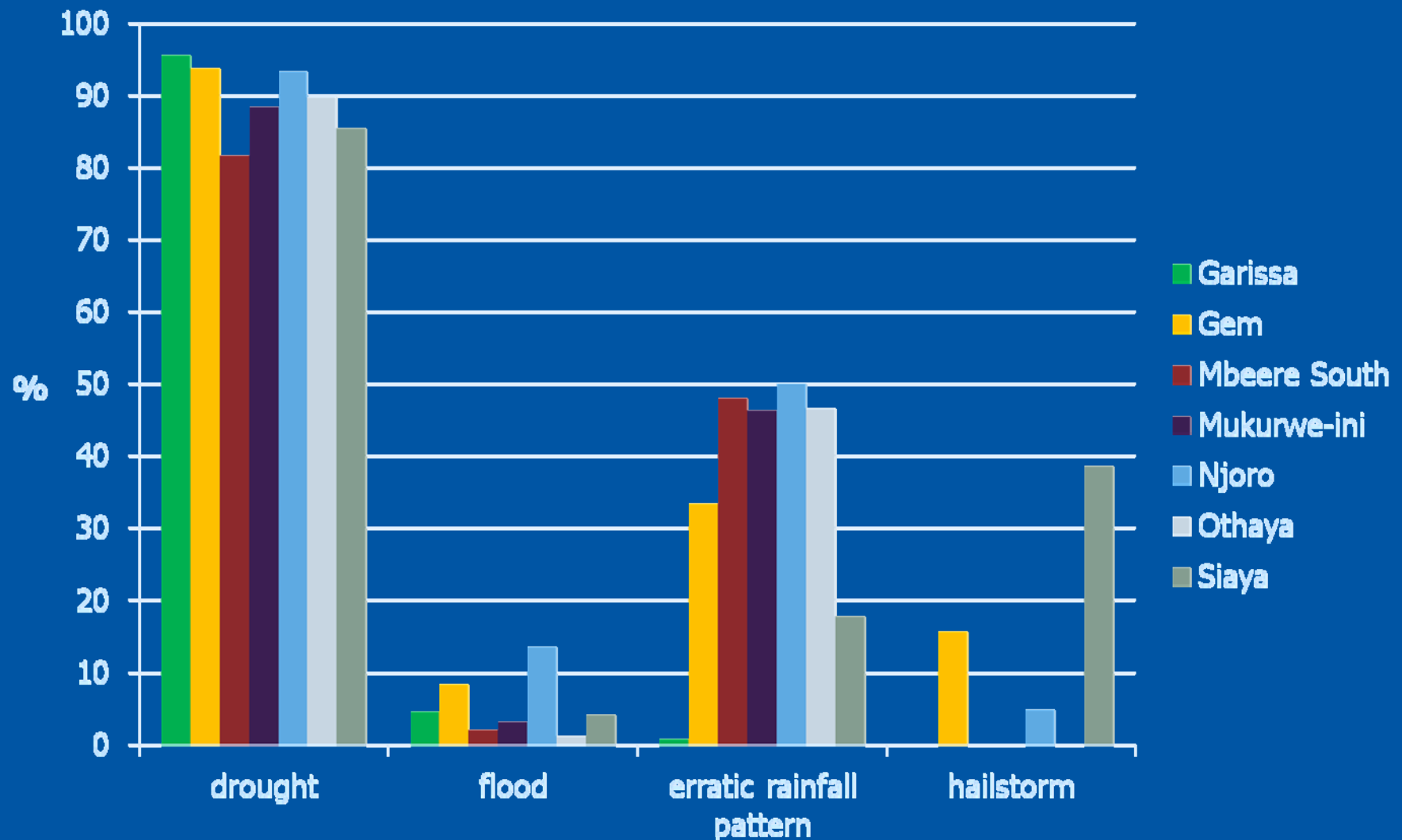
District	AEZ
Garissa	Arid
Mbeere South	Semi Arid
Njoro	Semi Arid
Mukurweini	Temperate
Othaya	Temperate
Gem	Humid
Siaya	Humid



Climate Shocks and Coping Strategies

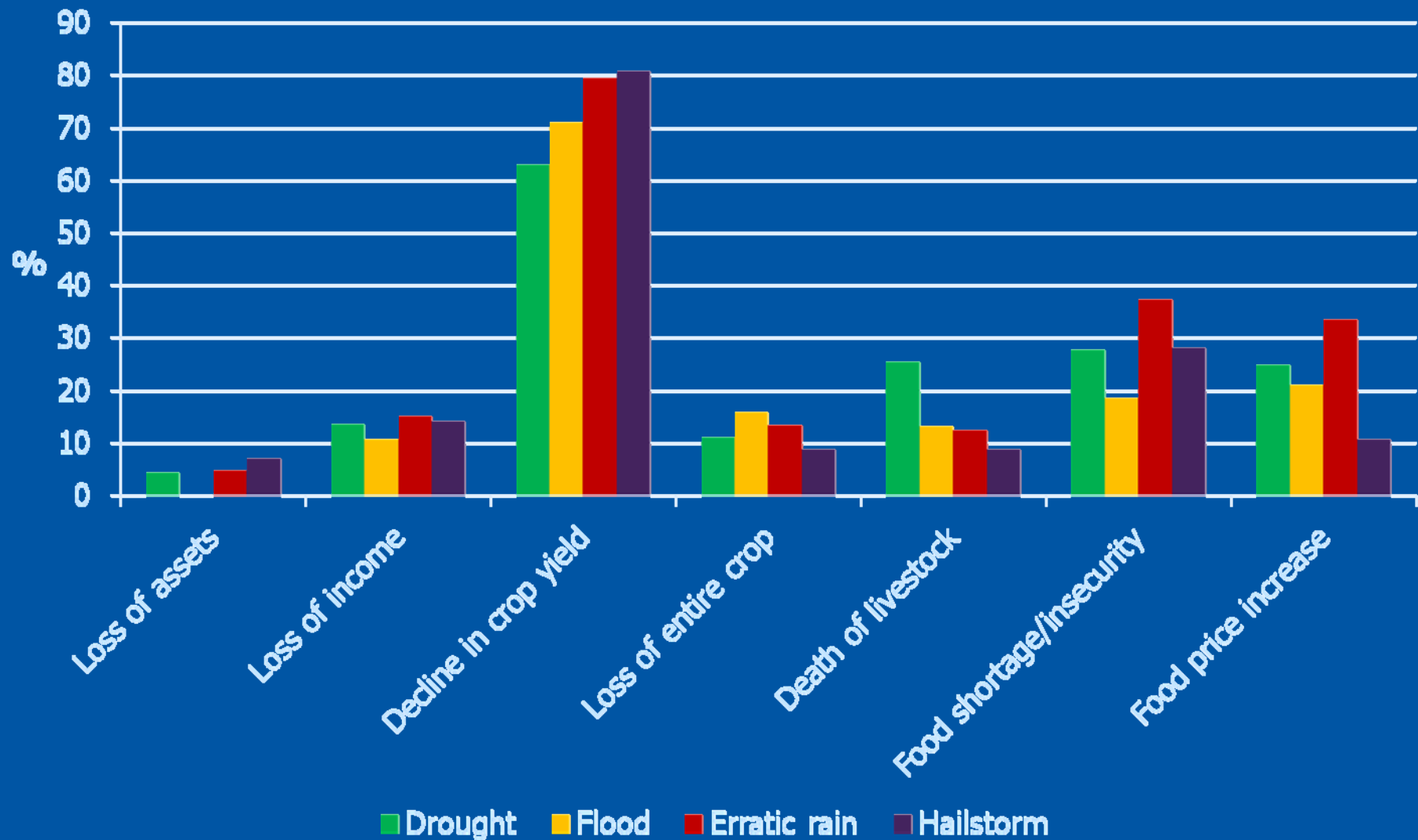
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Climate shocks experienced by farmers over the last 5 years, by district



Source: IFPRI-KARI 2010

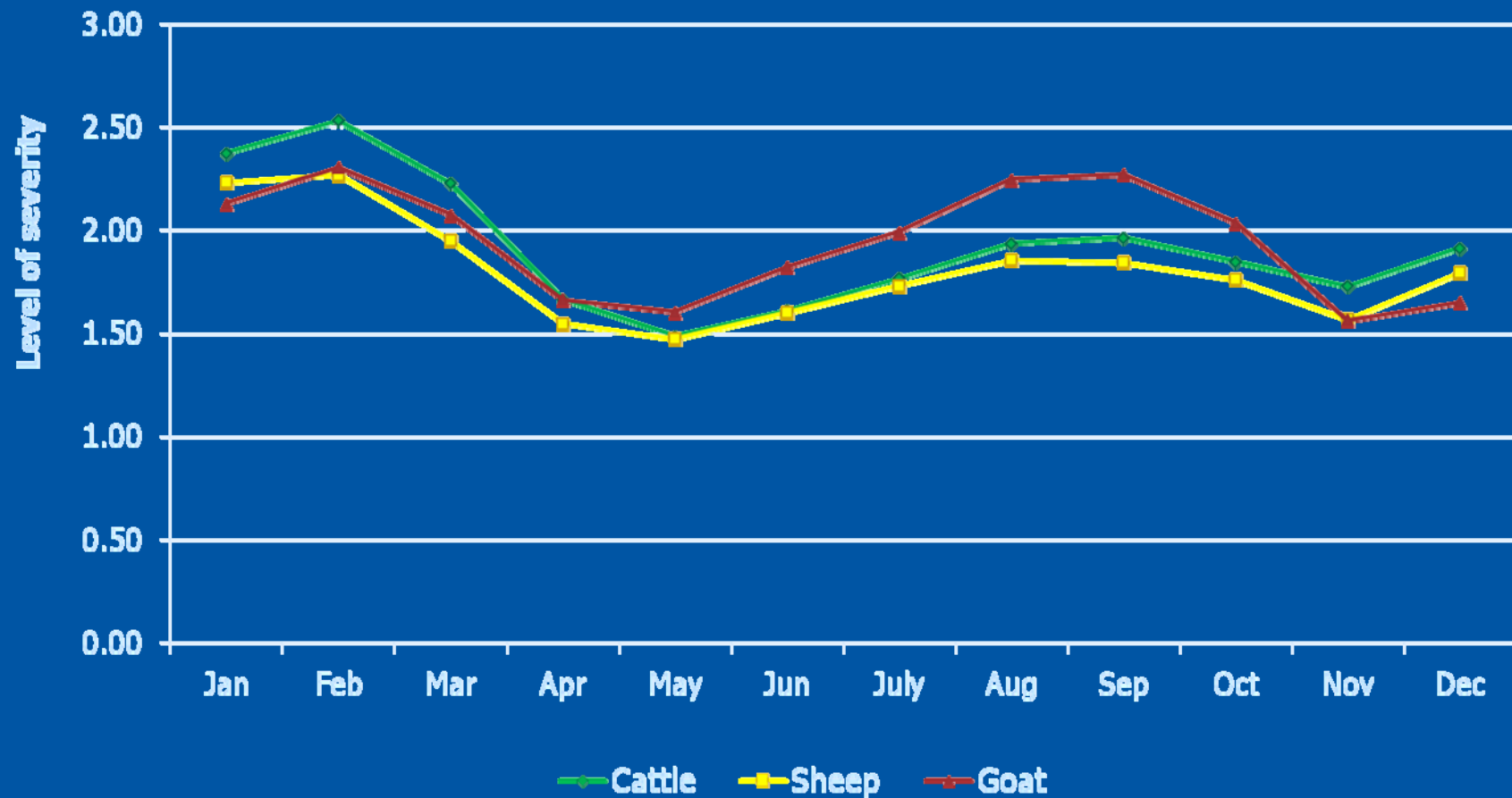
What were the effects of shocks?



Source: IFPRI-KARI 2010

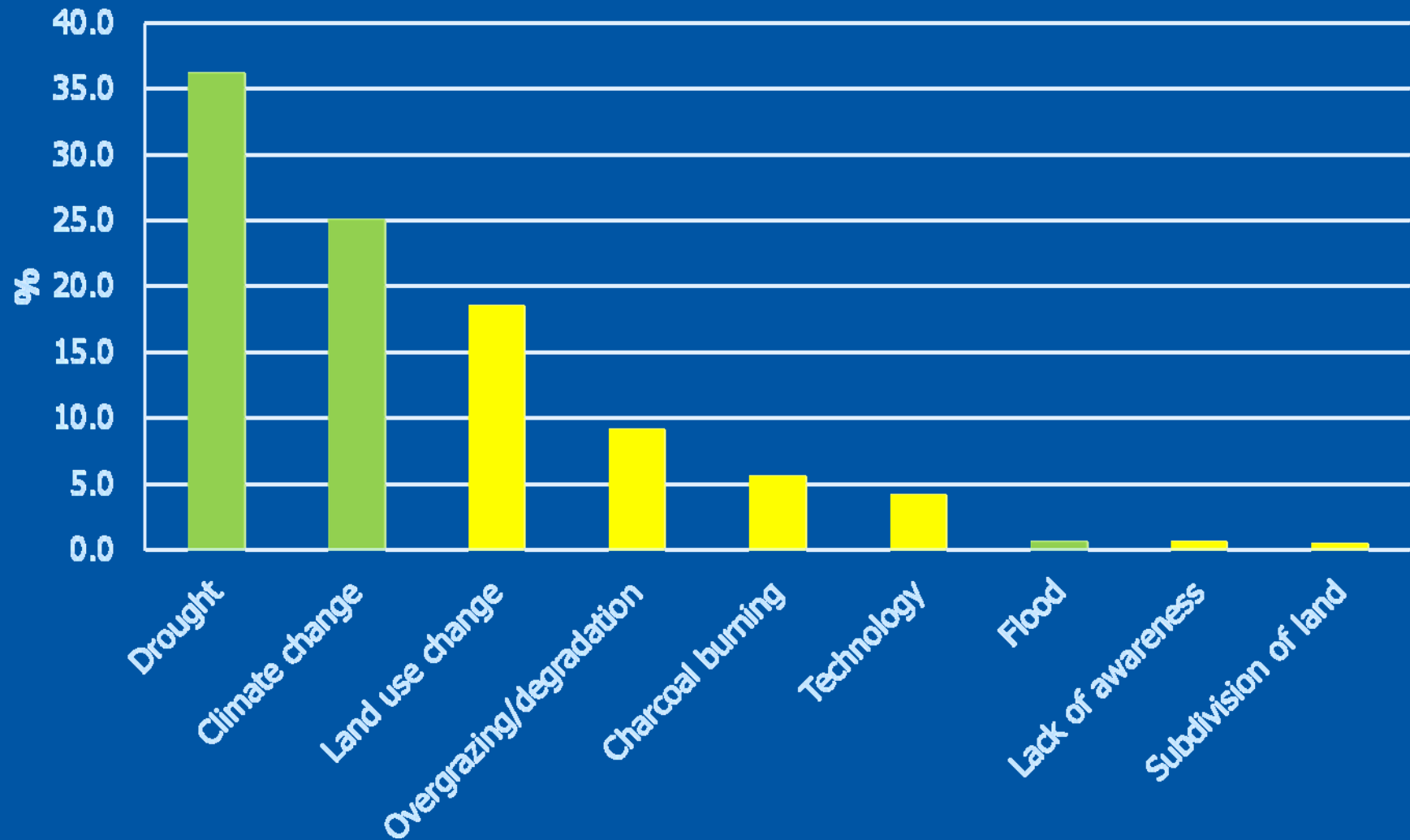
Climate change impacts on livestock

In which month(s) do you experience shortages of feed?



Level of severity: 1 = none; 2 = moderate; 3 = severe

Reasons for the appearance and disappearance of feed resources



How did households cope with shocks?

(percent of households)

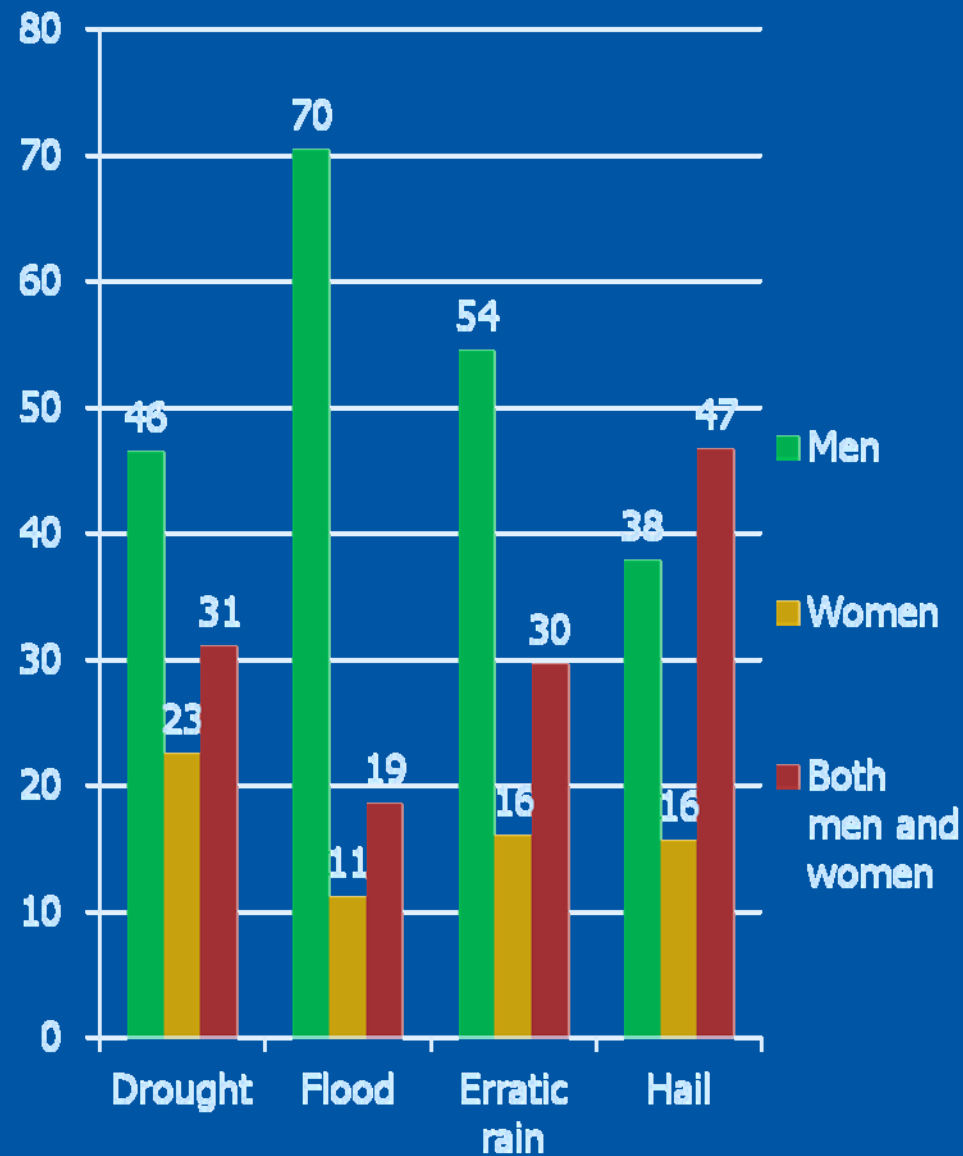
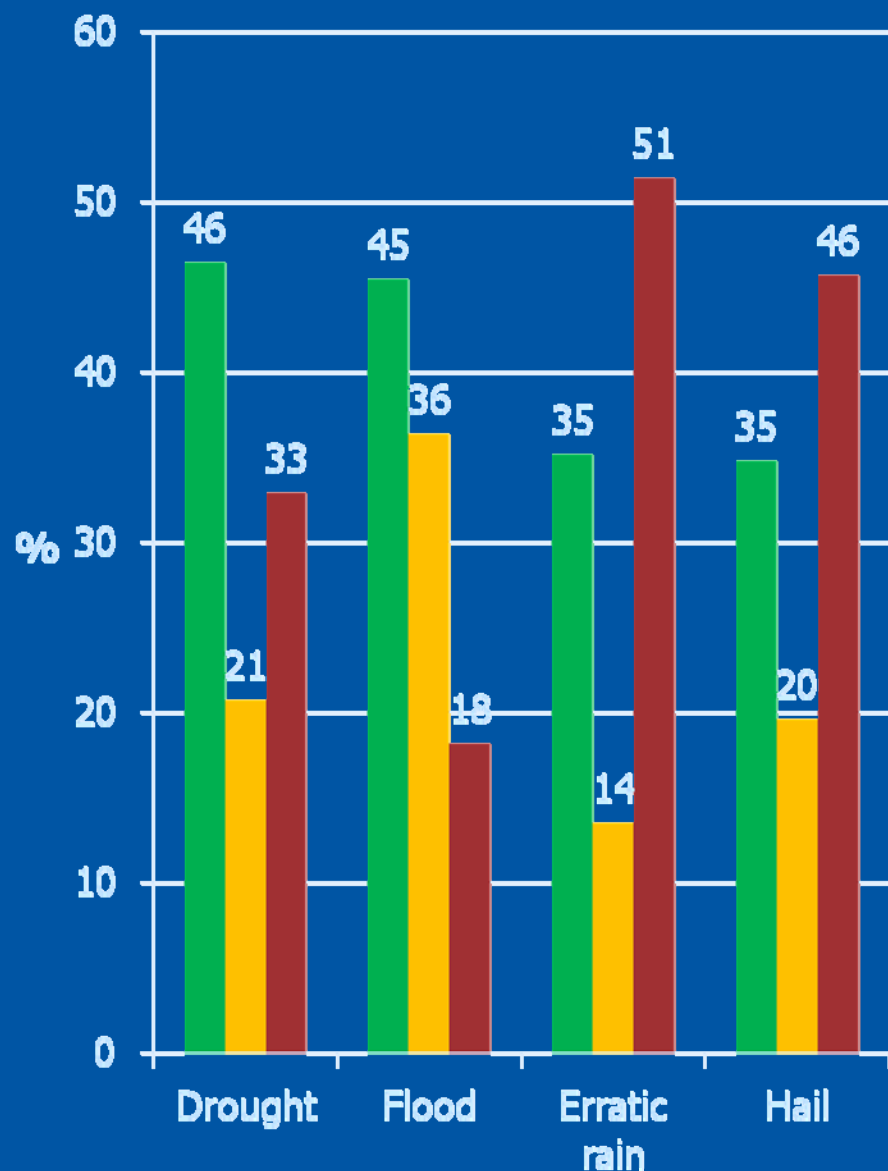
Coping strategy	Semi-			
	Arid	Arid	Temperate	Humid
Did nothing	87.3	27.7	19.1	11.5
Sold livestock	1.5	30.2	20.8	7.3
Borrowed from friends or relatives	0.0	4.5	5.5	6.3
Borrowed from the bank	0.0	0.0	6.0	0.5
Received food aid	0.5	5.0	2.7	2.1
Sought off-farm employment	0.7	0.7	5.5	4.2
Bought food	0.0	46.0	47.5	68.8
Ate less	3.7	8.4	8.2	27.6
Ate different foods	0.0	4.0	8.7	18.2

Source: IFPRI-KARI 2010

Who were affected and who took action?

Who was affected?

Who took action?



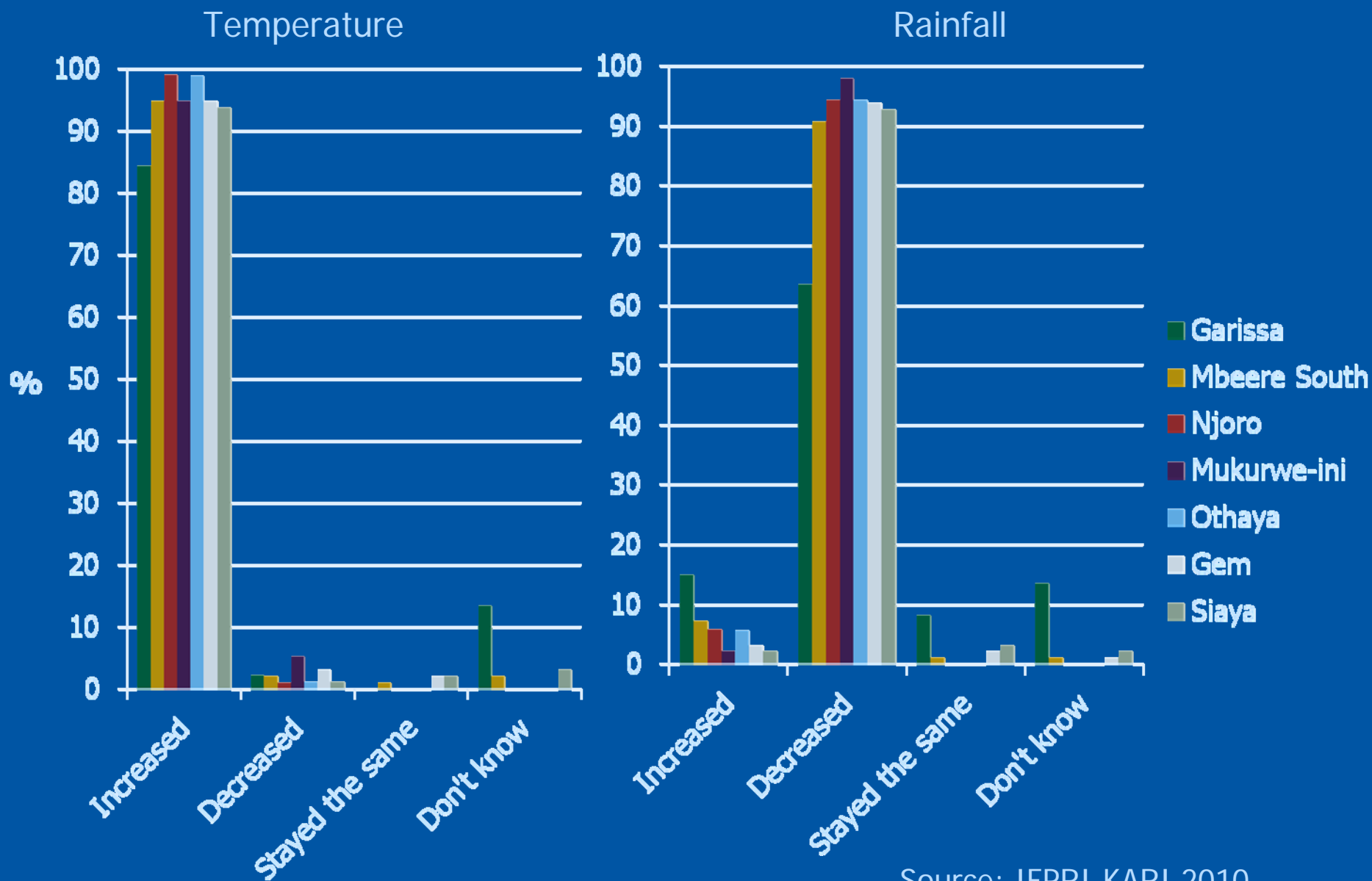
Source: IFPRI-KARI 2010



Perceptions of Climate Change

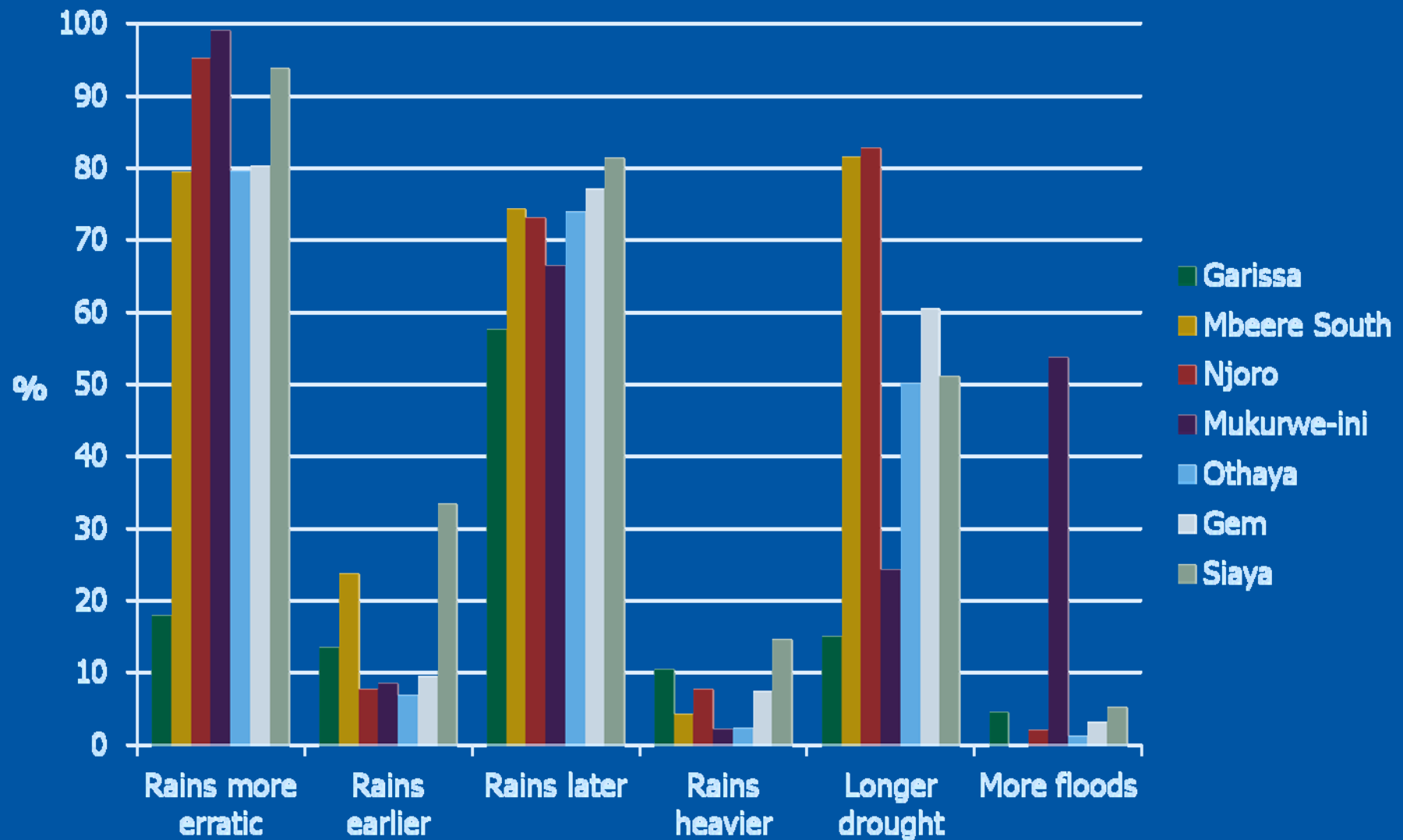
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Perceptions of long-term changes in average temperature and rainfall, by district



Source: IFPRI-KARI 2010

Perceptions of long-term changes in rainfall variability, by district



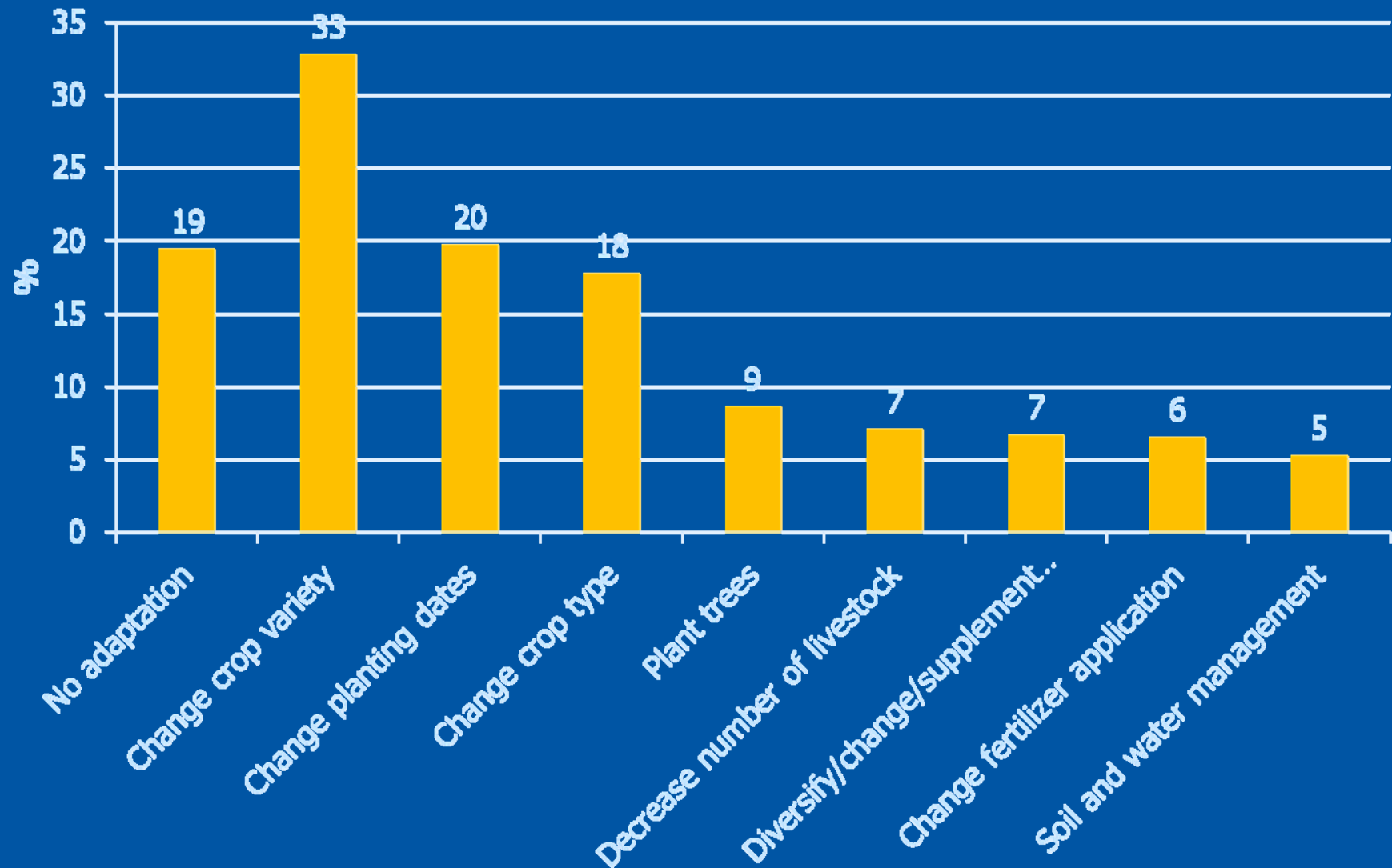
Source: IFPRI-KARI 2010



Adaptation Strategies and Constraints to Adaptation

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Adaptation to climate change



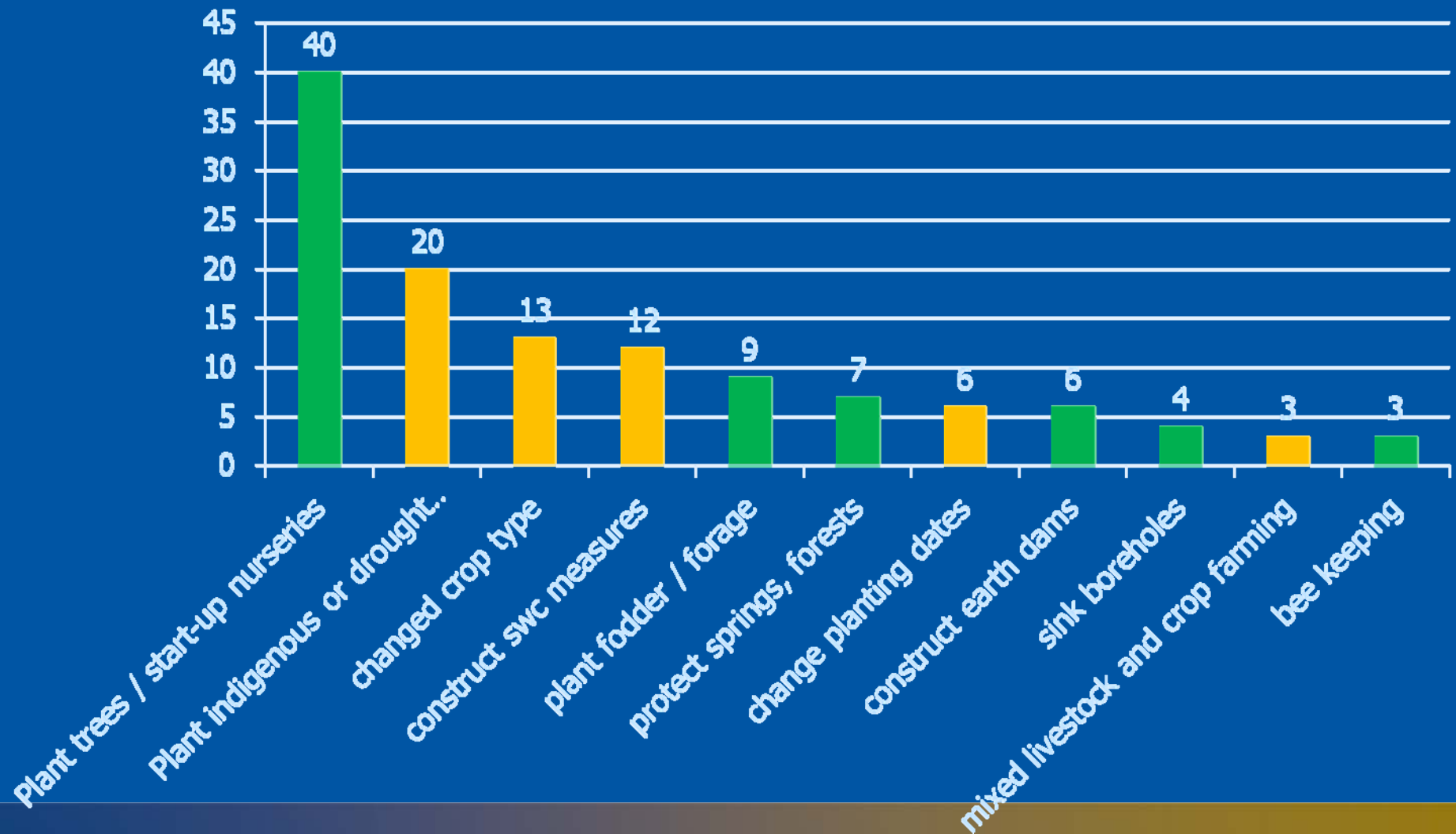
Source: IFPRI-KARI 2010

Adaptation to climate change by AEZ

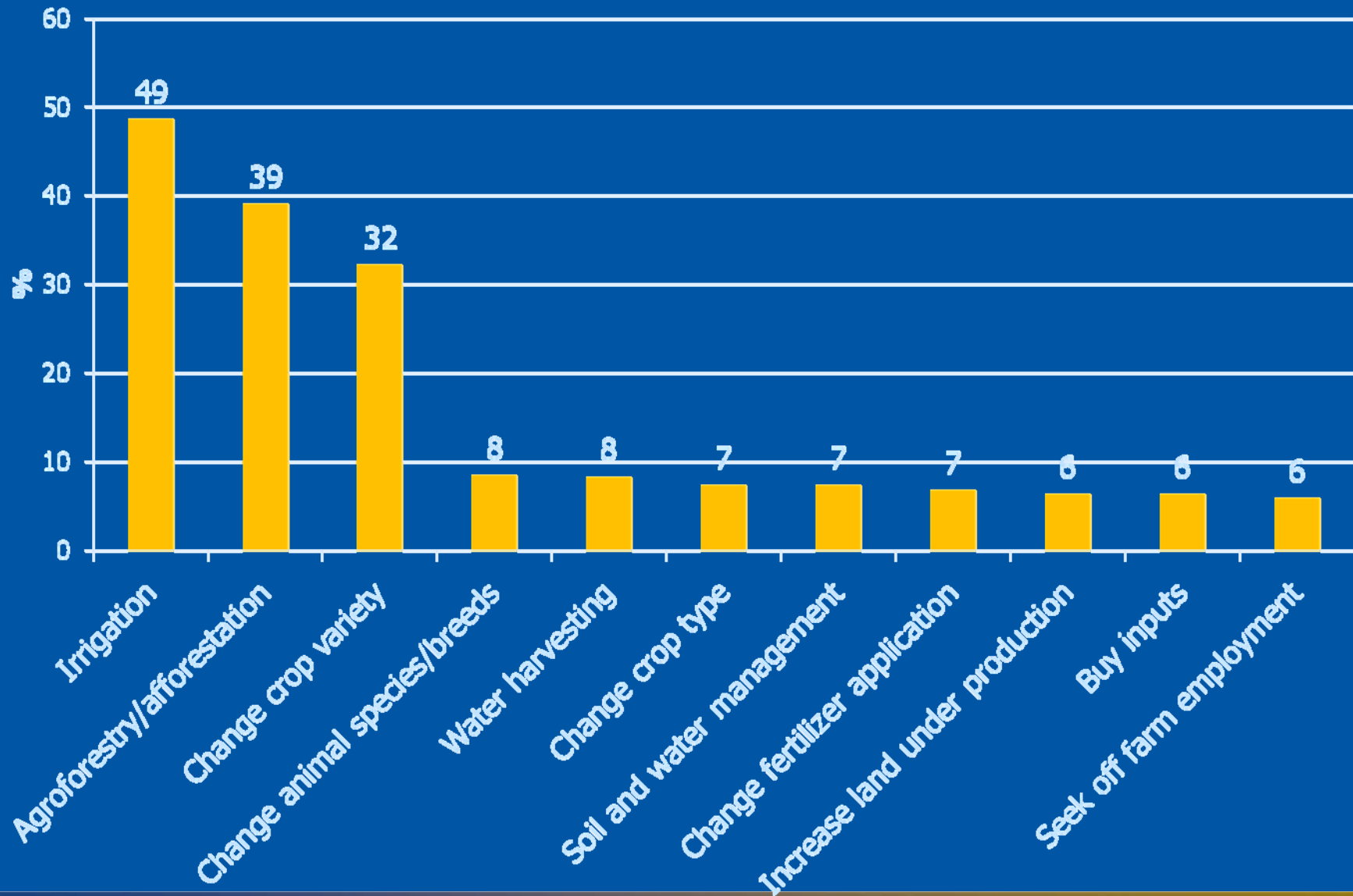
Rank	Arid	Semi-Arid	Temperate	Humid
1	Move animals	Change planting decisions (variety/type/date)	Change planting decisions (variety/type/date)	Change planting decisions (variety/type/date)
2	Change planting decisions (variety/type)	Change to mixed crop/ livestock systems	Change fertilizer application	Change fertilizer application
3	Change livestock feed	Planting trees	Change livestock feed	Increase land

Adaptations to climate change reported by community leaders

(number of mentions)



Desired adaptations



Insights from PRAs

- Greater emphasis on livelihood diversification activities as an adaptation strategy, including
 - Improved human and organizational capacity
 - Literacy and technical training (entrepreneurship, income generation activities, processing for value added, marketing, etc.)
 - Access to information
- Highlighted the need for better market infrastructure; better quality, affordability, and distribution of inputs; and livestock and veterinary services



Determinants of Adaptation

Determinants of adaptation

- Factors vary widely depending on the adaptation strategy chosen. Different strategies are needed to support the adoption of particular adaptation options.
- Extension services support the adoption of almost all adaptation measures, although certain types of extension are more effective for particular adaptation strategies.
- Climate information is important for changing planting dates
- Diversified sources of income (mixed crop livestock production and off farm sources of income) and credit support adaptation of some measures

Determinants of adaptation

- Social safety nets (food or other aid) support the adoption of some practices (changing crop variety, changing planting dates, and changing livestock feeds).
- However, farmers receiving food aid (usually targeted to the poorest households) were less able to take on larger investments, such as tree planting.
- Access to irrigation is an important determinant of whether farmers change crop types, suggesting that investments in irrigation infrastructure would help farmers switch to higher-value crops.
- Access to land is important for changing crop variety, planting trees, and constructing soil and water conservation measures.



Priorities for Adaptation

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Conclusions - Priorities for Adaptation

Management practices	Adaptation benefits ^a	Mitigation potential ^b	Productivity/ Profitability
Cropland management			
Improved crop varieties and/or types	positive	mixed	unclear
Changing planting dates	positive	unclear	unclear
Improved crop/fallow rotation/rotation with legumes	positive	mixed	mixed
Appropriate fertilizer/manure use	positive	positive	positive
Incorporation of crop residues	positive	positive	positive^c
Water management			
Irrigation/water harvesting	positive	mixed	positive
SWC	positive	mixed	mixed ^d
Livestock/grazing land management			
Improved livestock feeding	positive	positive	positive
Destocking	positive	positive	positive

^a As reported by farmers

^b As calculated with DSSAT and livestock mitigation models

^c Tradeoff with livestock feed in certain areas

^d Positive impacts in areas where soil moisture is a constraint, depends on combination of technologies



Conclusions and Policy Recommendations

Conclusions-Climate Shocks

- Climate shocks, particularly drought, pose hardships on poor smallholder producers
- Households have difficulties coping with shocks (many coping responses are “last-resort” decisions e.g. reducing consumption, selling livestock etc.)
- Households need greater resilience to cope with climate variability, through the accumulation of assets and wealth
- Particularly women who are less likely to take action in response to shocks
- Households in the arid zone have few options at their disposal

Conclusions - Adaptation

- Short term coping strategies, such as food aid, are necessary but need more support for long-term adaptation (e.g. livelihood diversification)
- Development/government agencies should focus more on supporting long-term adaptation strategies through greater investments in rural and agricultural development
 - Development and dissemination of technologies
 - Support for alternative supplementation
 - Improved quality and access to inputs (e.g. fertilizer)
 - Access to output markets
 - Rural services (credit and extension) for
 - Education and training for livelihood diversification within and outside agriculture
- Support for collective adaptation strategies and demand-driven approaches are needed



Thank You!

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