

# Adapting agriculture to climate change

Technical Workshop – Resilience  
Brussels, 11 December 2023

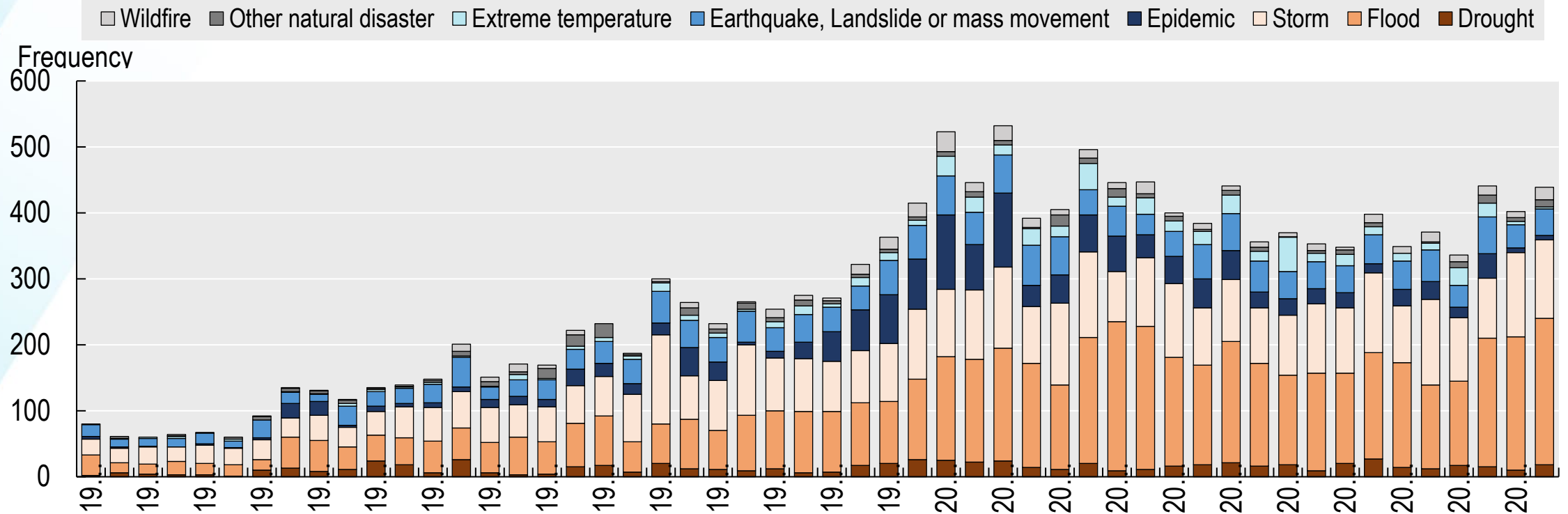
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# Even with mitigation, adaptation essential

*Rising impacts of climate change underscore the necessity of adaptation and reform of policies that hinder adjustments to agricultural production systems*

**Frequency of natural disasters worldwide, 1970-2021**



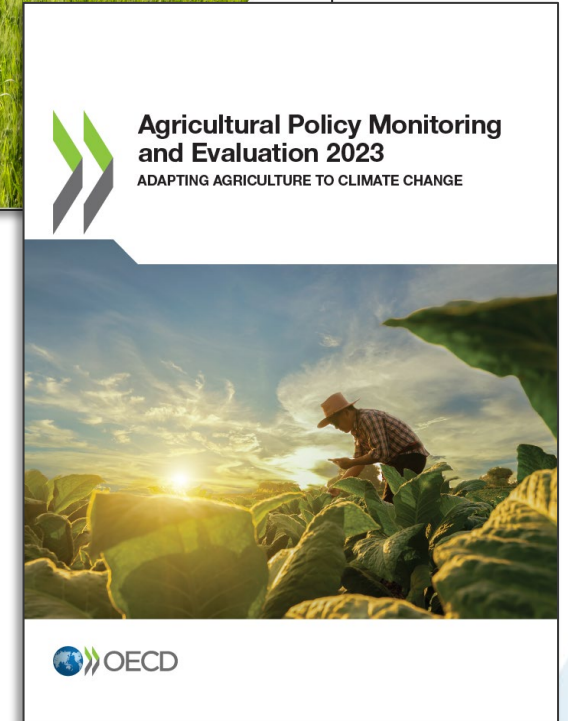
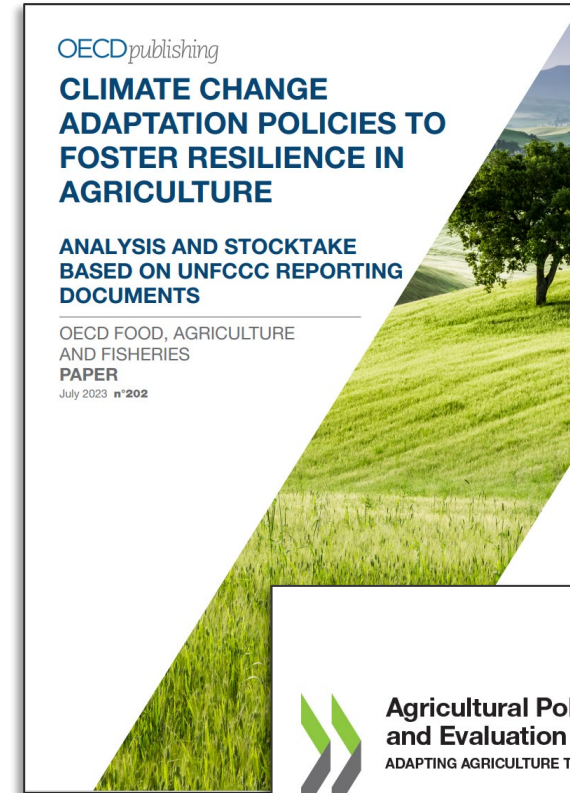
Note: Data include all natural disasters meeting at least one of the following criteria: 10 or more people dead; 100 or more people affected; a declaration of a state of emergency; a call for international assistance.

Source: EM-DAT, CRED / UCLouvain, Brussels, Belgium – [www.emdat.be](http://www.emdat.be)



# Questions


1. Have governments become more interested in agricultural adaptation over time?
2. What are governments doing to support agricultural adaptation (or to impede it)?
3. How do these measures potentially contribute to resilience in the sector?





## Methods

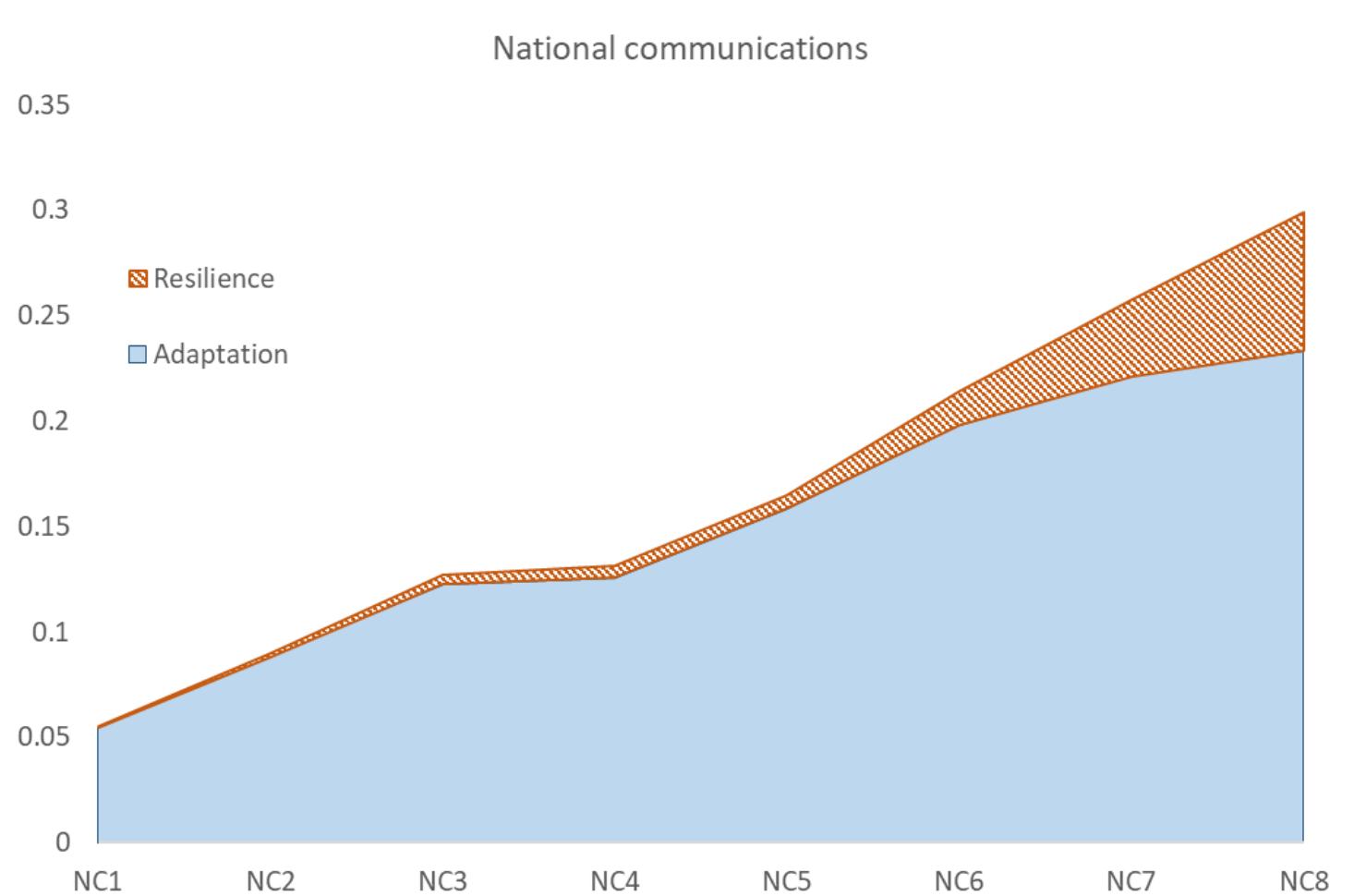
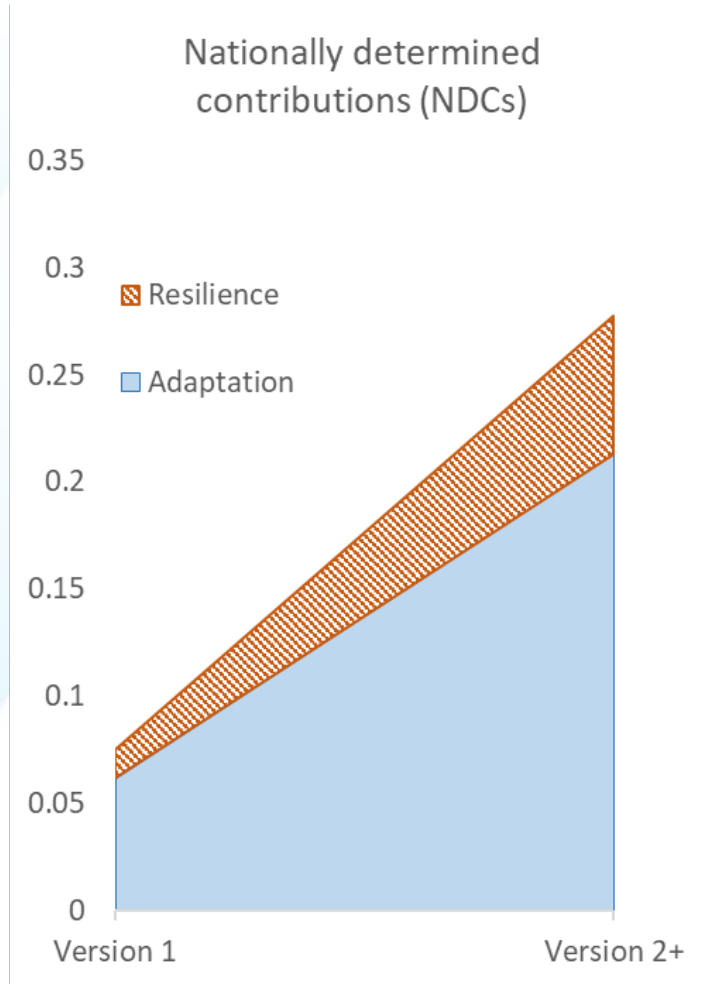
- Mixed-methods content analysis of 413 UNFCCC reports (1994-2023)
- Stocktake by Secretariat of adaptation programmes and activities in 54 countries, categorisation by approach
- Evaluation of potential distortions from existing policies
- Categorisation of adaptation programmes following OECD risk management & resilience framework for subset of OECD countries (non-EU, Annex I)



**Q1. Have governments  
become more interested in  
agricultural adaptation over  
time?**

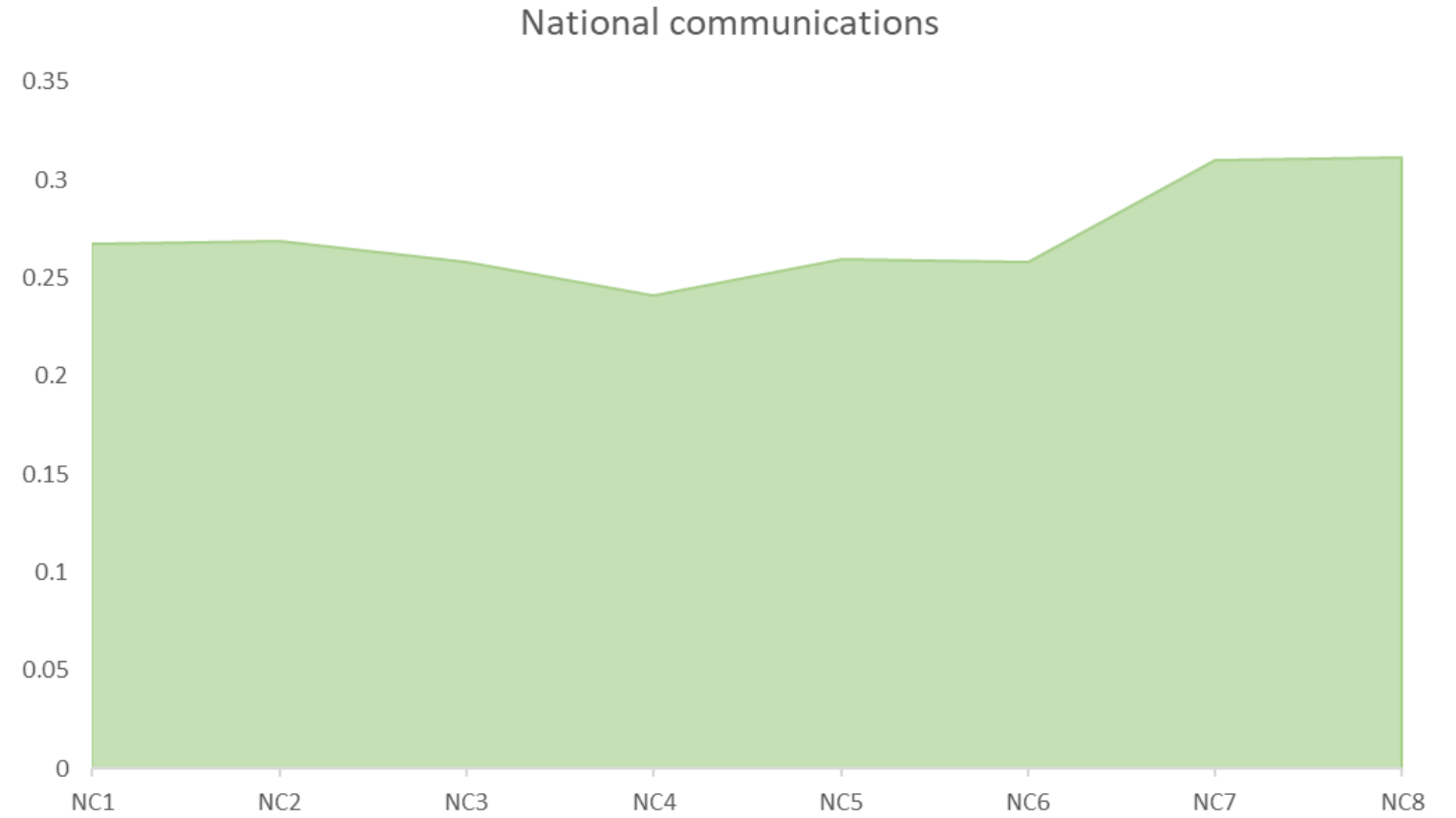
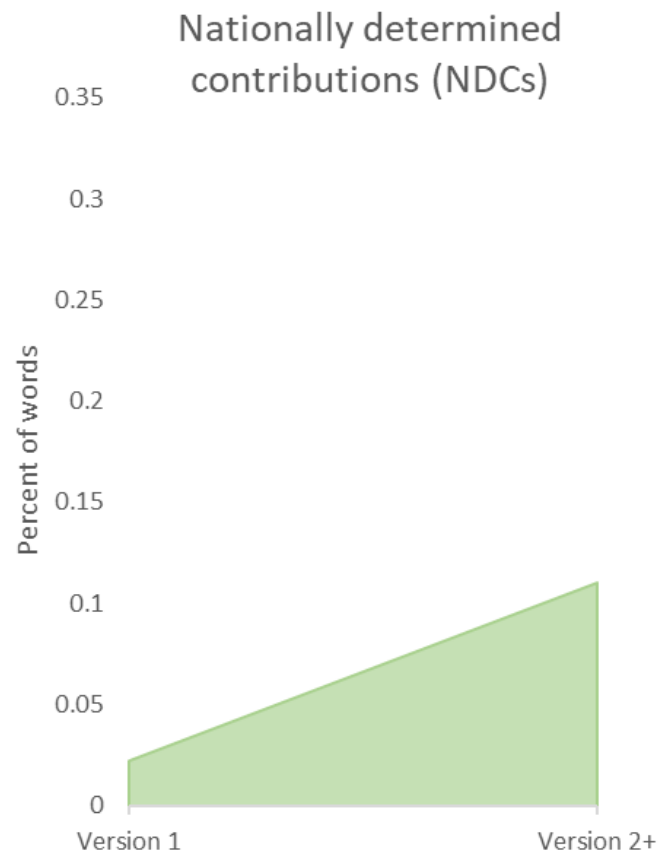


# Adaptation and resilience over time



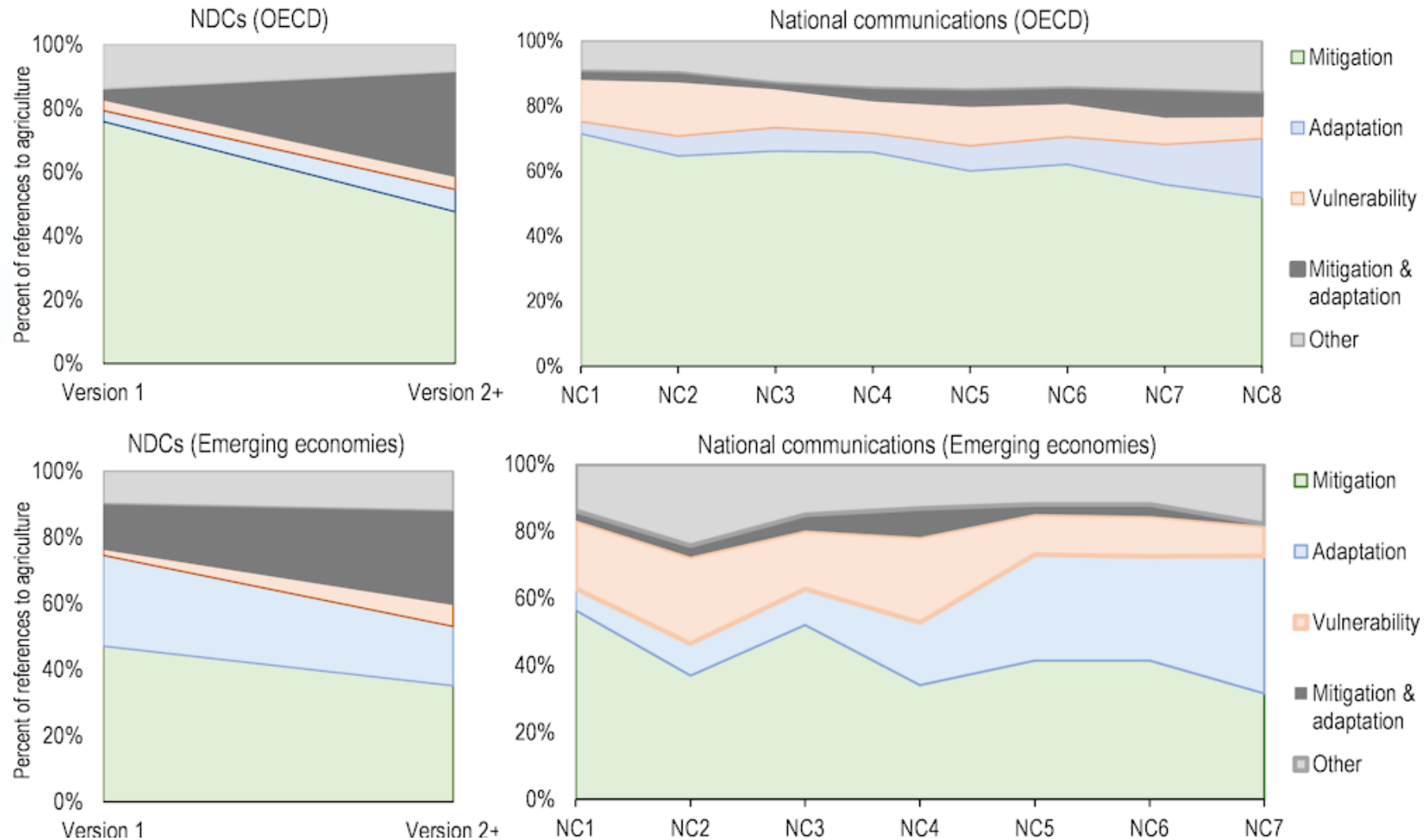


# Agriculture over time





# Agriculture in context








## Q1. Findings

Over +30 years...

- Increased reporting on **adaptation** in general
- Growing interest in **resilience**
- Greater **depth** of reporting on agricultural adaptation specifically
- **Evolving focus** from agricultural mitigation → adaptation and mitigation-adaptation co-benefits



**Q2. What are governments  
doing to support agricultural  
adaptation (or to impede it)?**

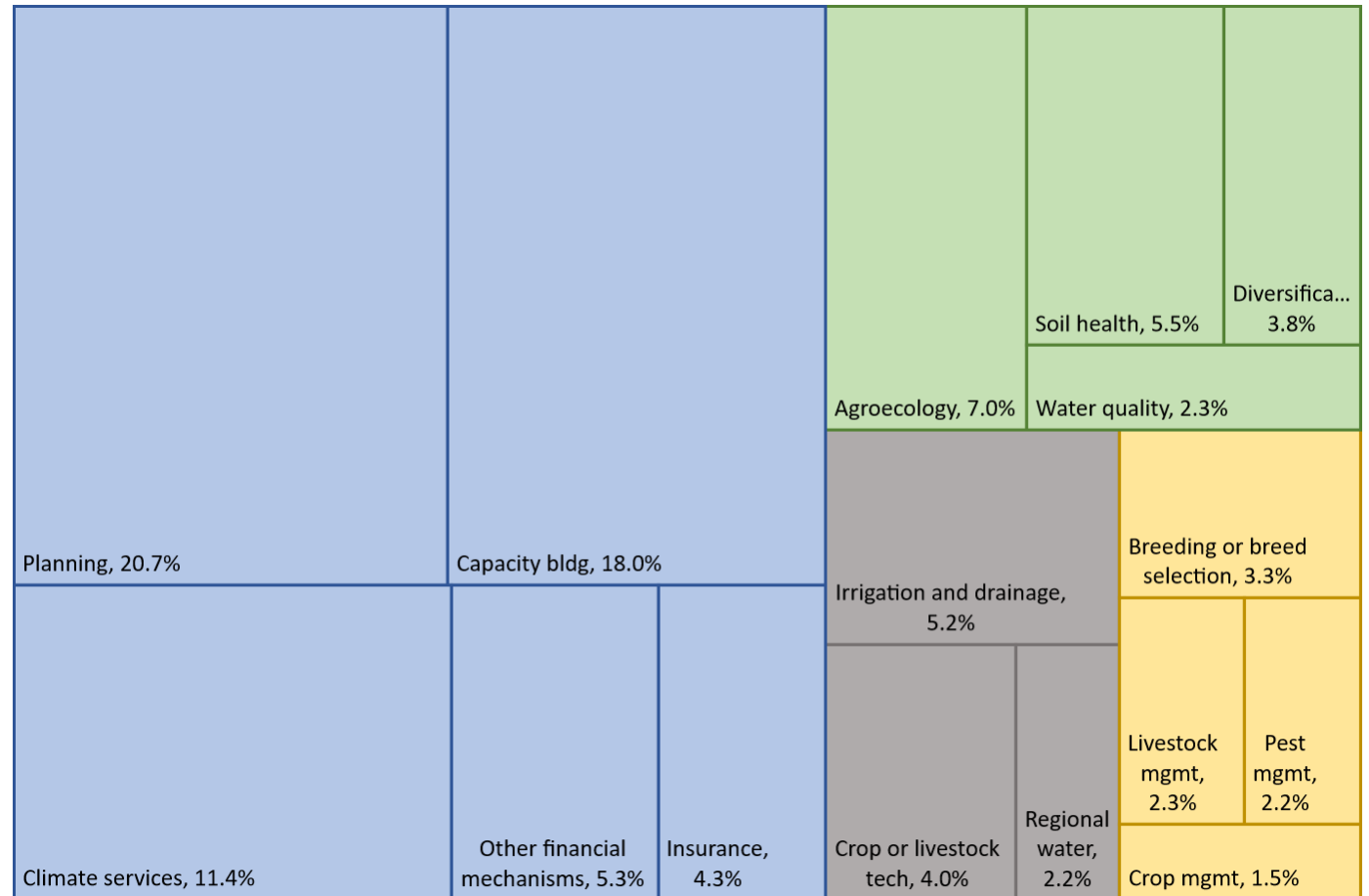


# Stocktake of programmes & activities

600 identified by Secretariat

- Social, economic & institutional, 61%
- Ecosystem-based, 19%
- Infrastructure & technological, 11%
- Behavioural & cultural, 9%

Over 20% focus on planning



■ Infrastructure and technological (INT) ■ Behavioural and cultural (BHC)  
■ Ecosystem-based (ECO) ■ Social, economic and institutional (SEI)

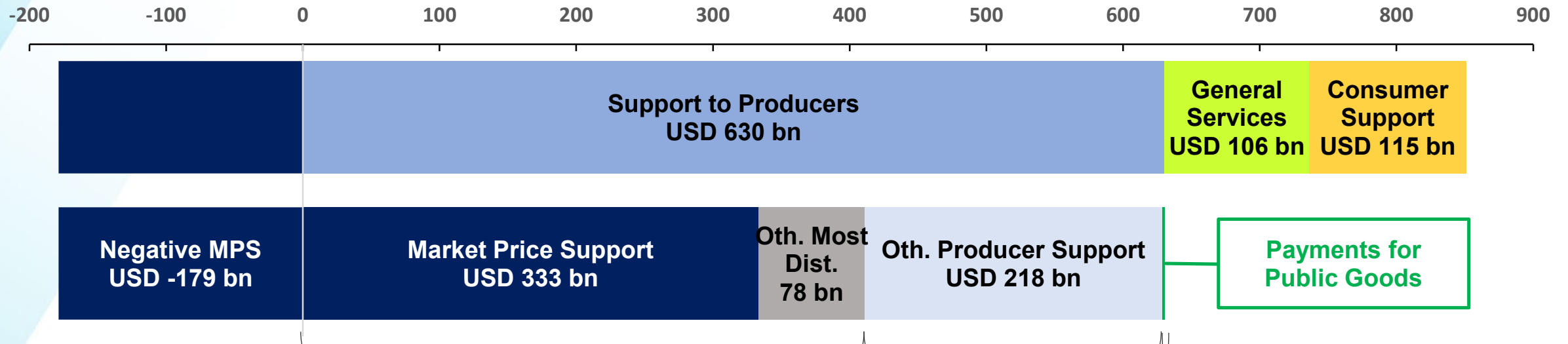


# Potential barriers to adaptation

*Agricultural support reached USD 851 billion per year in 2020-22*

Structure of support in All 54 Countries

USD billion per year (2020-22)



## Most distortive forms of producer support

- Encourages local expansion of production and intensification

## Less distortive payments

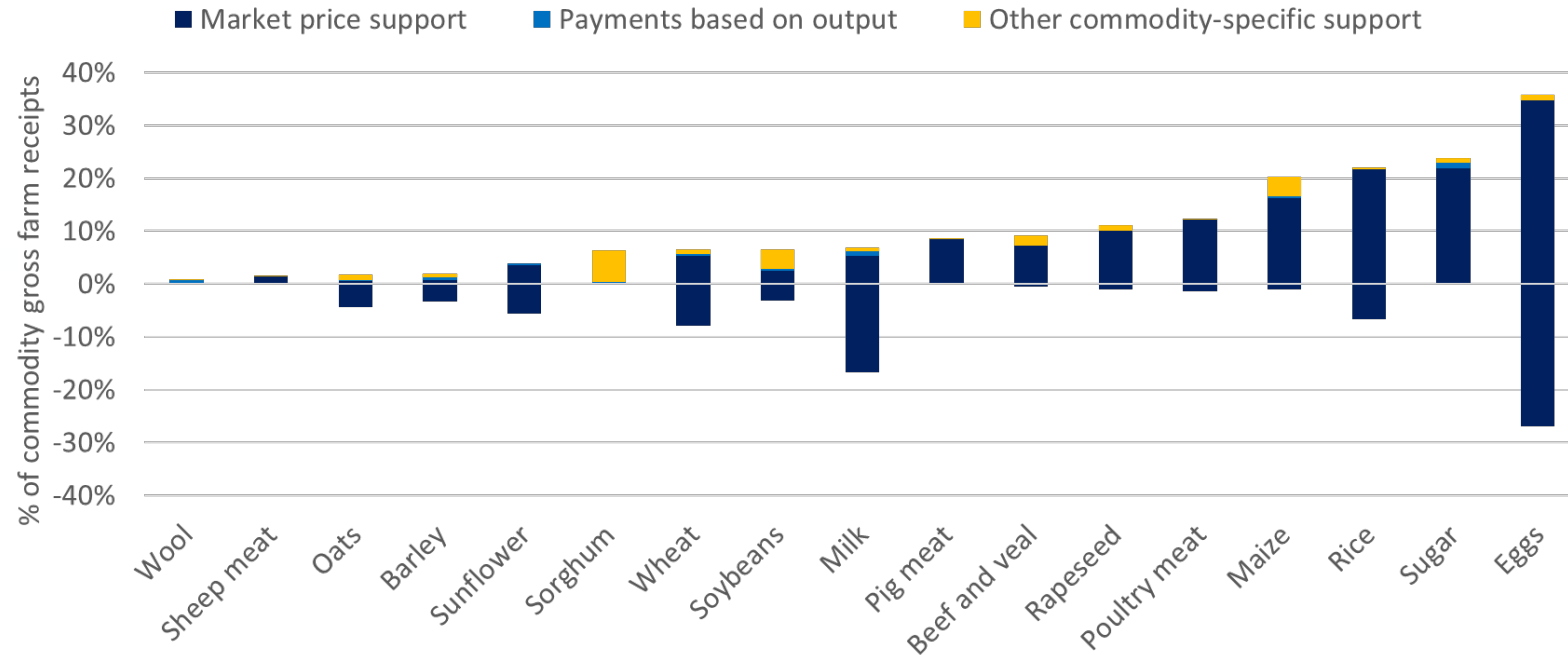
- Generally, less coupled to production and GHG emissions

## Non-distortive public goods

- Linked to non-commodity outputs (e.g. ecosystem services)



# Potential barriers to adaptation



- Support to specific commodities discourages production adjustments
- Trade distortions prevent flow of goods that smooths supply volatility
- Poorly designed short-run support (insurance subsidies, disaster assistance payments) can lead to moral hazard, impeding adaptation or leading to maladaptation



## Q2. Findings

Stocktake of current policies and evaluation of support reveals...

- Over **600 programmes** identified that seek to support agricultural adaptation to climate change
- Over 20% emphasize **planning**, with little evidence on implementation, monitoring or assessment
- Many current support mechanisms likely to **hinder flexibility and impede adaptation**



**Q3. How do adaptation measures potentially contribute to resilience in the sector?**



# Risk management for resilience

***Resilience: “the ability to prepare and plan for, absorb, recover from, and more successfully adapt and transform in response to adverse events”***

	Catastrophic Risks Rare, high damage and systemic	Marketable Risks Middle range	Normal Risks Small damage but frequent
On-farm resilience capacity		Farm business management acumen Contingency planning Financial management (equity, reserves or savings) Investments in farm-level infrastructure and technology Income diversification Adoption of best management practices (conservation farming, biosecurity measures)	
On-farm strategies			-Crop diversification -Production technologies
Market tools		-Forward contract -Private insurance	
Ex ante policies	-Public insurance -Tax provisions -Disaster risk reduction		
Ex post policies	-Ad hoc assistance		
Public goods and no-regret policies		Market information Weather and climate information, including early warning systems Climate change planning and assessment tools Research and development Support for knowledge transfer and innovation	





# Adaptation programmes and risk management

- 166 adaptation programmes and activities in non-EU, Annex-I OECD countries\*

		Adaptation approaches				
		Social, economic & institutional	Ecosystem-based	Infrastructure & technological	Behavioural & cultural	Total
Risk-management approaches	On-farm resilience capacity	11	15	11	9	46
	Ex ante policies	9	2	2	0	13
	Ex post policies	10	0	1	0	11
	Public goods and no-regret policies	<b>78</b>	7	2	9	96
	Total	108	24	16	18	166

\* AUS, CAN, CHE, GBR, JPN, KOR, NOR, NZL, USA



## Programmes to build on-farm resilience capacity (46)

65% target adoption of BMPs

- **AUS:** grants to adopt drought-resilient farming practices at large scale (multi-farm, landscape, region)
- **CAN:** funding to adopt nitrogen management, cover cropping and rotational grazing
- **JPN:** support to shift to integrated pest management systems

24% target investments in farm-level infrastructure & technology

- **NOR:** support for investments in drainage technology and practices to abate runoff
- **GBR:** grant scheme for new horticultural equipment that encourages use of alternative species

9% support improved farm business management acumen

- **USA:** risk management education and training for underserved farms



## Programmes for *ex ante* risk management (13)

46% target public provision of insurance

- **CHE**: federal contributions for crop insurance that includes large-scale risks (e.g. drought and frost) and where premiums are too high
- **USA**: whole-farm revenue protection support for diversified farms

54% target disaster risk reduction

- **GBR**: restoring floodplains to reduce risk of flooding
- **JPN**: decommissioning high-risk reservoirs and creating hazard maps



## Programmes for *ex post* risk management (11)

All target recovery following a natural disaster, but through diverse instruments

- **NZL**: funding to rural trust funds to cover essential living costs of farmers, their families and employees
- **USA**: disaster set-aside program delays repayment of loans to Farm Services Agency in designated emergency areas
- **USA**: non-insured disaster assistance program for loss of or damage to uninsured crops



## Programmes for public goods & no-regret policies (96)

32% target climate change planning & assessment

- **AUS:** regional drought resilience planning supports proactive, community-led efforts
- **CHE:** interdepartmental working group on vectors, pathogens and disease
- **NOR:** contingency planning for genetic resources and seed bank

27% target weather and climate services, including early warning systems

- **GBR:** investments in enhanced biosecurity and animal disease surveillance
- **USA:** AgroClimate decision support tool for southeastern region

24% target knowledge transfer & innovation

- **GBR:** innovation programme focused on practical application of science

17% target R&D

- **CAN:** development of living labs network for research into resilient production practices

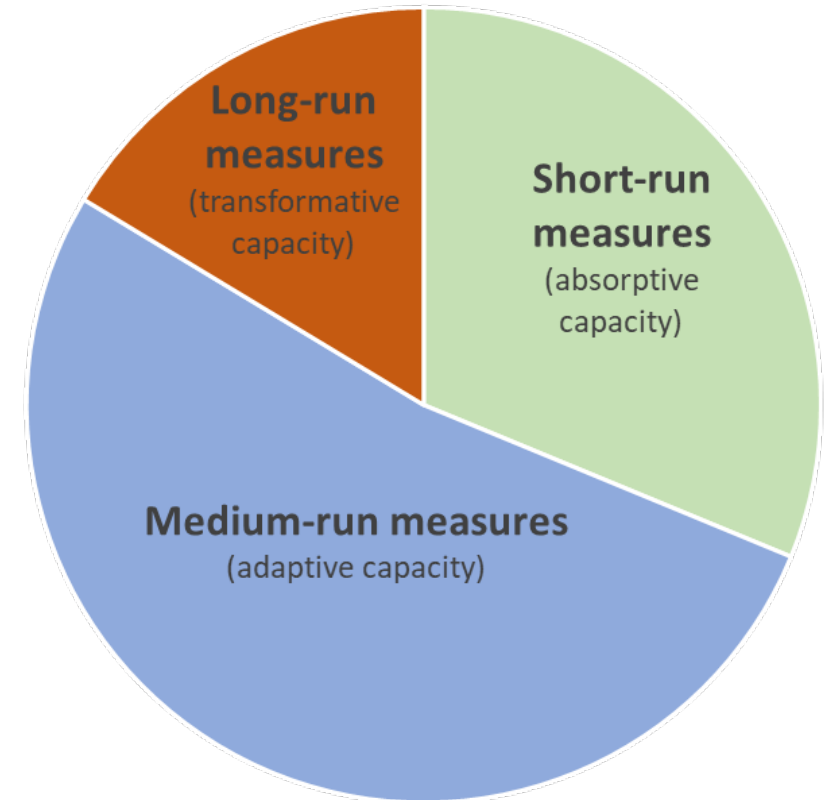


## Stocktake and resilience assessment

Measures emphasize **short and medium-run responses** with less attention to long-run transformation of agricultural systems

Investments in transformative capacity emerging

- Collaborative planning
- Decision support tools
- Multidisciplinary research





## Q3. Findings

Evaluation of agricultural adaptation programmes reveals...

- Greatest emphasis on public goods & no-regret policies, particularly for **planning** and **weather and climate services**
- Significant investments in on-farm resilience capacity, primarily with support for **BMP adoption**
- Support for **long-run transformation lags behind** support for short- and medium-run resilience



# Recommendations





## Recommendations

- **Phase out distortive support** that increases system rigidity and inhibits adaptation
- **Re-orient spending** to invest in risk management and resilience via investments in general services that support on-farm resilience capacity and public goods
- Continue to prioritise government engagement in agriculture's **risk management** by providing information, focusing insurance support on large-scale risks and evaluating design of short-run support
- Work to strengthen agriculture's **transformative capacity**, e.g. by diversifying income sources and increasing off-farm employment opportunities



## References

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