



Food and Agriculture Organization
of the United Nations

Livestock under climate change

Adaptation of livestock systems to climate change

KORONIVIA WORKSHOP ON: IMPROVED LIVESTOCK MANAGEMENT SYSTEMS, INCLUDING
AGROPASTORAL PRODUCTION SYSTEMS AND OTHERS
24 November 2020

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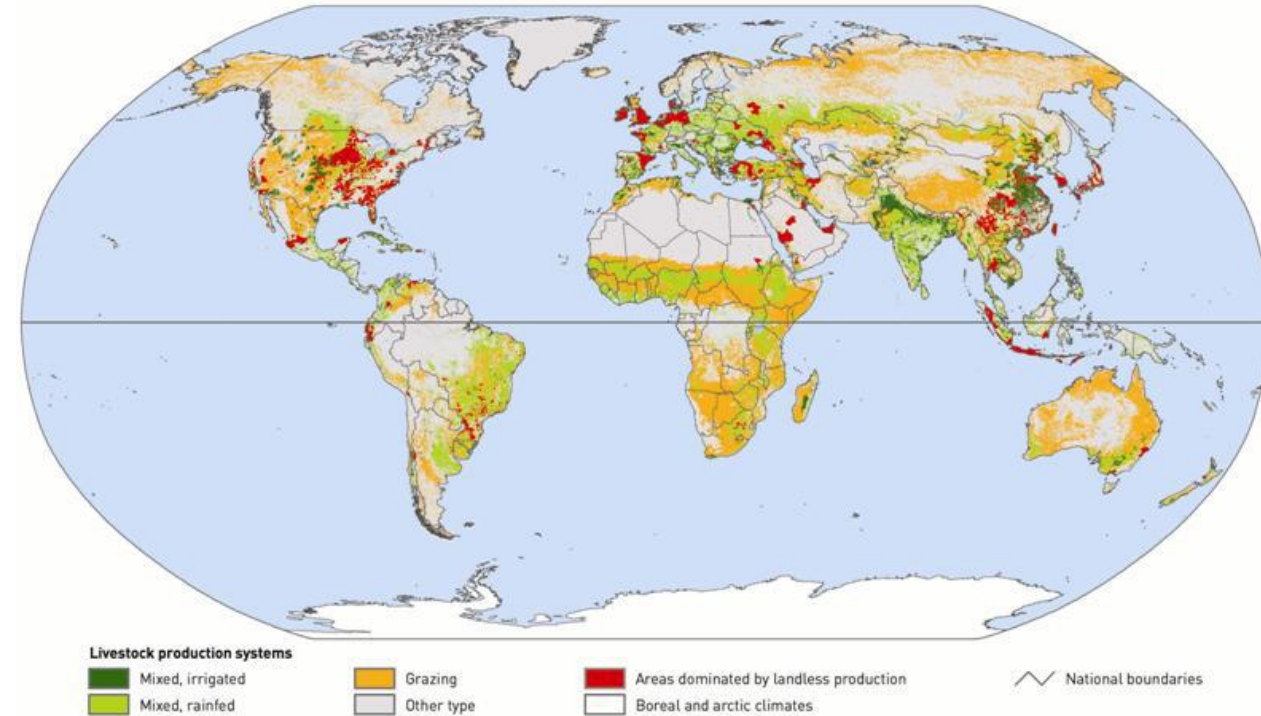
FAO's Sub-regional Office for Mesoamerica, Panama

Importance of livestock

- 33% of the protein consumed
- 1.7 billion people directly or indirectly dependent on livestock
- 40% of the global GDP of agriculture
- Highly diverse production systems with multiple roles: socio-cultural roles, crop production, biodiversity, etc.

+ Livestock can contribute to risk and vulnerability management, esp. for the poor

Livestock production systems

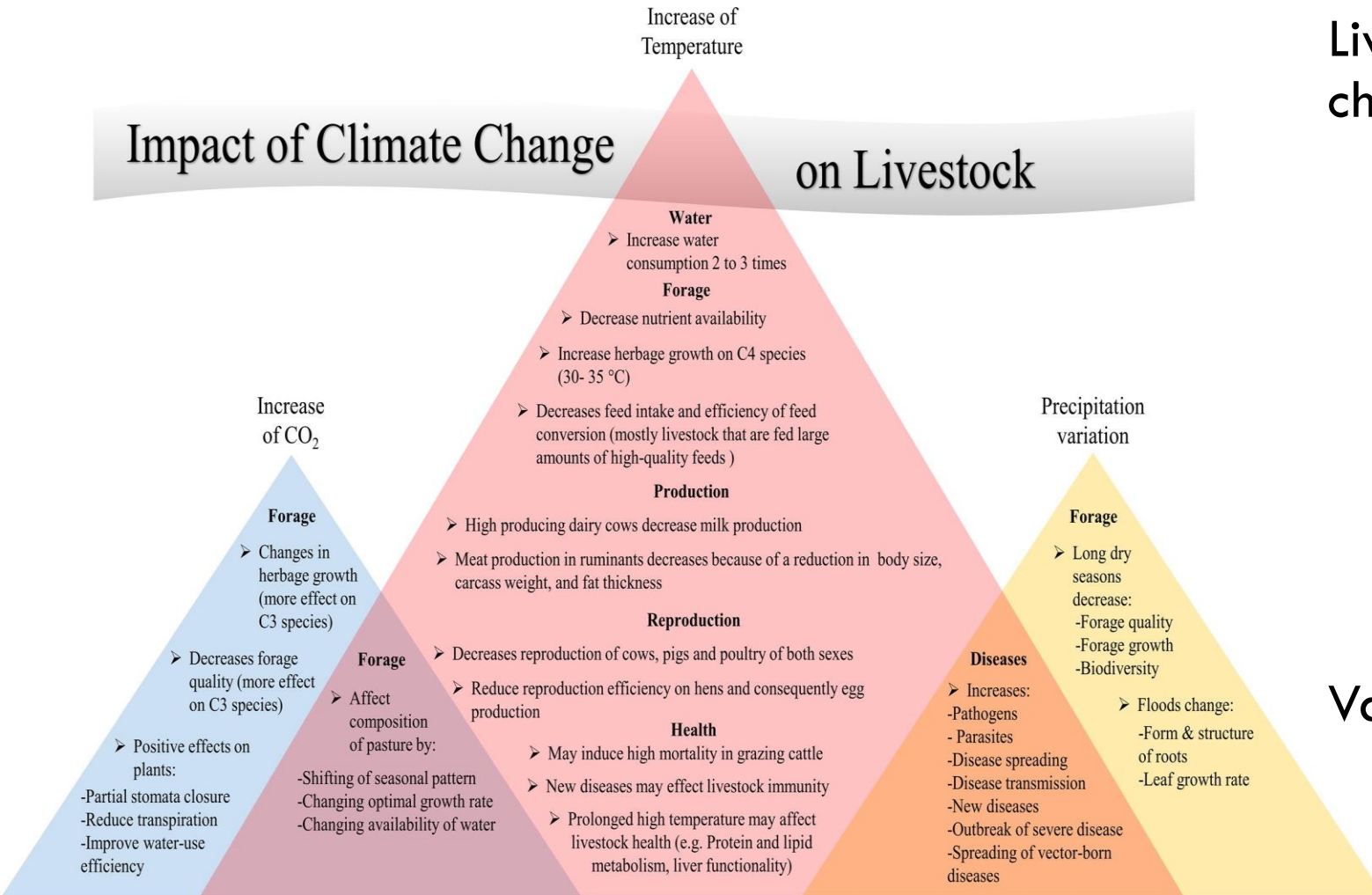


The challenge - need to address multiple objectives

- Food production and food security
 - Demand for animal source foods continues to rise
 - **+35%** from 2012 levels by 2030 and **+50%** by 2050
- Strengthening/protecting livelihoods of vulnerable groups and communities
 - **1 billion** poor livestock keepers
- Conservation of ecosystems and their services
- Adapting production systems to reduce climate vulnerability
- Mitigate GHG emissions

Livestock's vulnerability to climate change

Impact of Climate Change on Livestock



Livestock face a number of climate change-related challenges

Direct impacts

- Droughts and floods
- Thermal stress, mortality and reduced yields
- Water availability and quality (drinking, for forages and feedcrops)

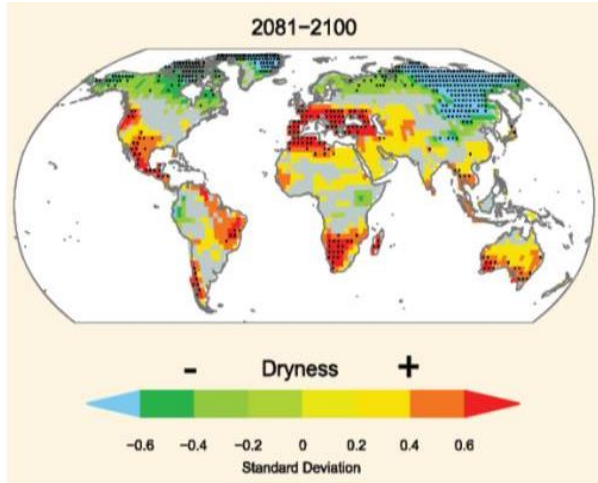
Indirect impacts

- Animal productivity and quality forages
- Disease and pest distribution (parasites, ticks, etc..)
- Increase in production costs

Varying impact on production systems

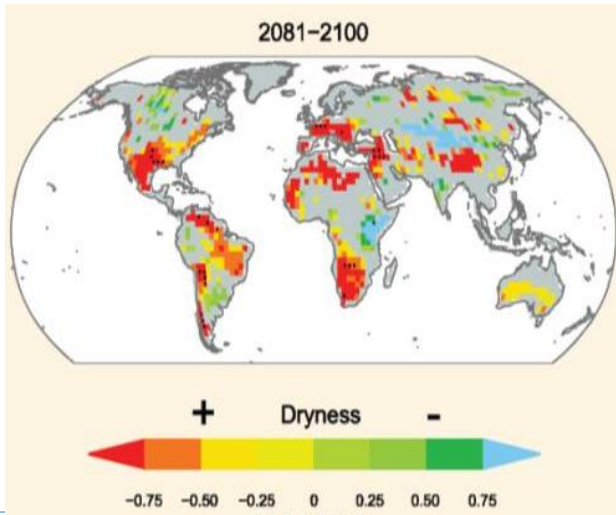
Extreme drought events in the future

Consecutive dry days

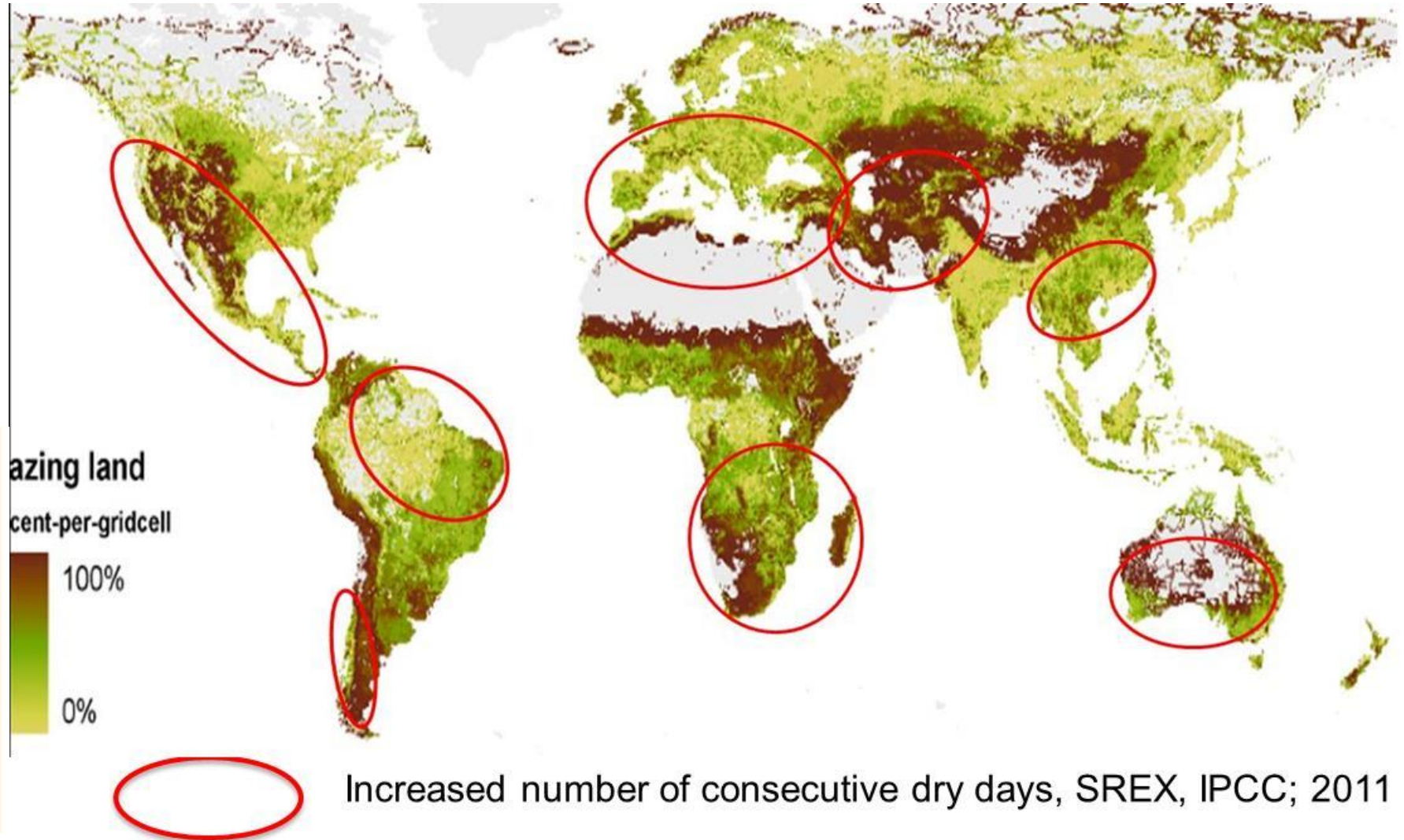


(IPCC, Special Report on Extreme Events, 2011)

Low soil moisture



Drying hot spots by 2080-2100 in global grasslands



Non-climatic stressors increasing vulnerability to climate change

- Increasing resource degradation e.g. rangeland degradation, water pollution
- Fragmentation of grazing areas e.g. loss of transhumance corridors
- Lack of/or change to land tenure (esp. indigenous peoples, pastoral communities)
- Governance, conflicts, migration and insecure access to resources
- Market and other shocks (e.g. COVID-19 pandemic)
- Limited knowledge to effectively address climate change hazards

A range of adaptation solutions exist for livestock production

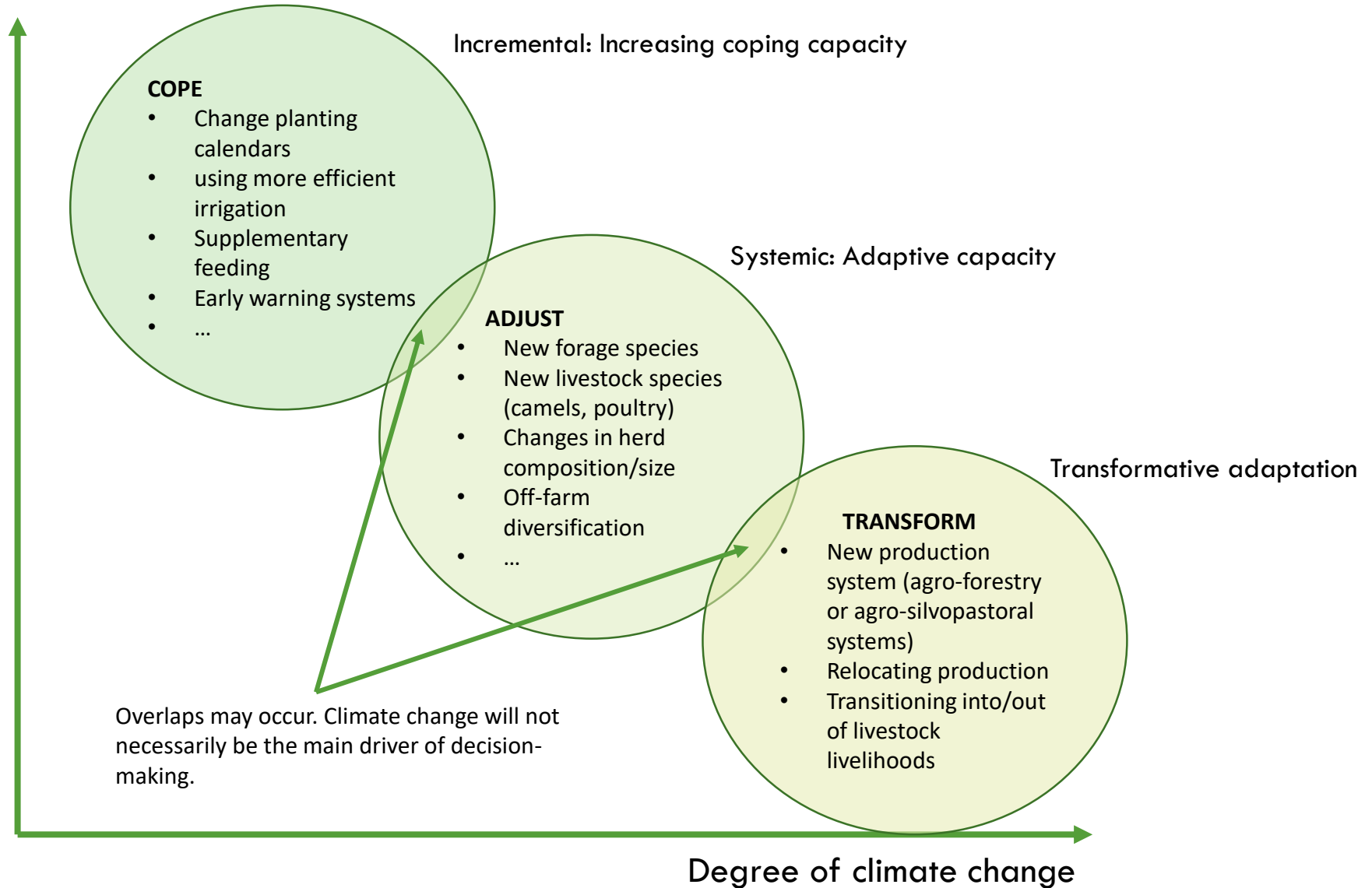
- Water management (e.g. boreholes)
- Breed for resistance to drought, heat and harsh environments
- Shifts in species, breed and or production systems (e.g. small ruminants, camels, poultry)
- Disease control and surveillance
- Cooling (indoor systems or provide shade)

- Supplementation strategies
- Breed feed crops and forage resistant to drought and heat
- Altered rotation of pastures, modification of grazing times
- Changes in cropping calendar
- Irrigation
- Agroforestry
- Increase mobility for resources
- Continuously matching of stocking rates with pasture production

- On-and-off farm diversification
- Insurance schemes
- Reconversion (in the context of national/regional production zoning)
- Institutional changes (e.g. trade, conflict resolution, income stabilization programs)
- Early warning systems
- Service and input provision
- Investment in infrastructure

- Immense diversity of livestock systems implies there is a correspondingly large array of possible adaptation options
- There is no “one-size fits all approach” for managing climate change adaptation
- Trade-offs may occur within different objectives: food security, mitigation

Transitions to resilient livestock systems



Orientations for an adaptation strategy

- Identify context specific adaptation options (technology, management and supportive mechanisms, institutional and policy interventions, investments, etc.)
- Prioritize measures that promote synergies and co-benefits
- Prioritize climate solutions that multitask
- Focus on measures that strengthen the role of livestock systems as a provider of ecosystem services
- Identify mechanisms to address hard choices (assessments, participatory multistakeholder processes, policy and incentives, etc.)

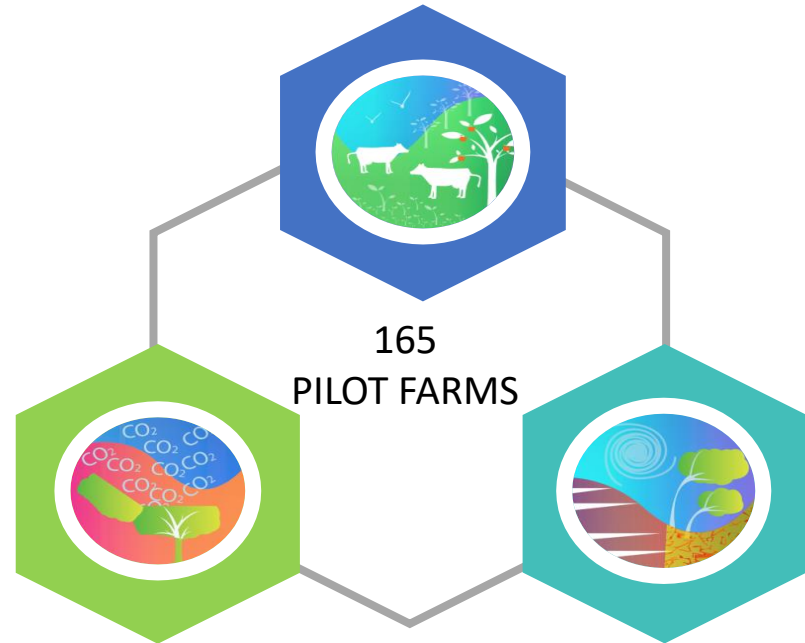


Organización de las Naciones Unidas para la Alimentación y la Agricultura



PRODUCTIVITY

Productivity increase and income improvement



165 PILOT FARMS

MITIGATION

Emission reduction
Carbon storage / fixation

ADAPTATION

Resilience to climate change

Objective: Reduce soil degradation, increase the capacity to adapt to climate change and mitigate GHG emissions through the implementation of policies and climate-smart livestock management, with an emphasis on vulnerable provinces (2017-2020)

CLIMATE SMART LIVESTOCK IN ECUADOR



CLIMATE SMART LIVESTOCK IN ECUADOR



Capacities Strengthening (FFS)

Co-financing

Technical Assistance

Monitoring and Evaluation

Sustainability to the CSL Approach



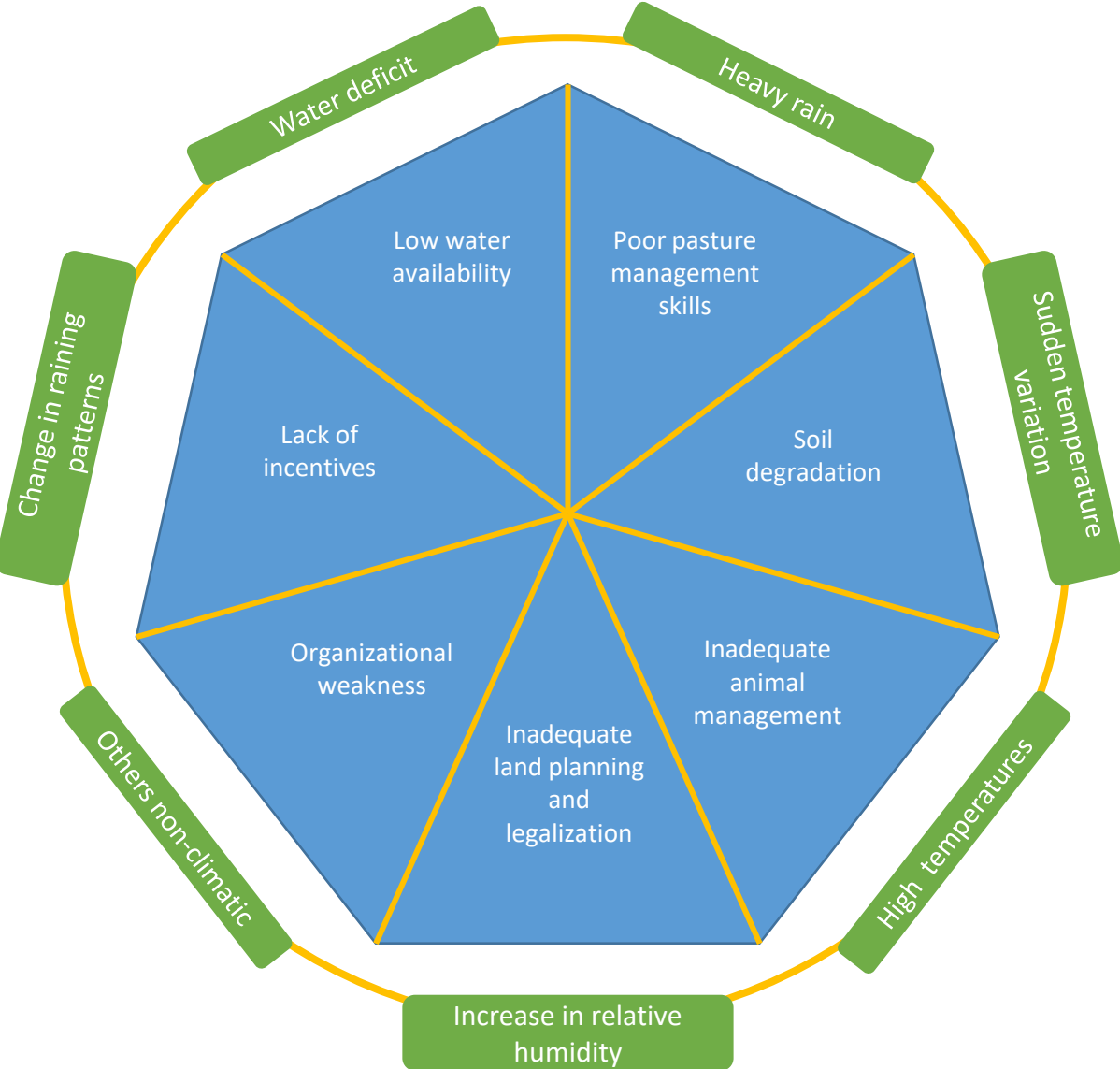
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CLIMATE SMART LIVESTOCK

Local Vulnerability Threats

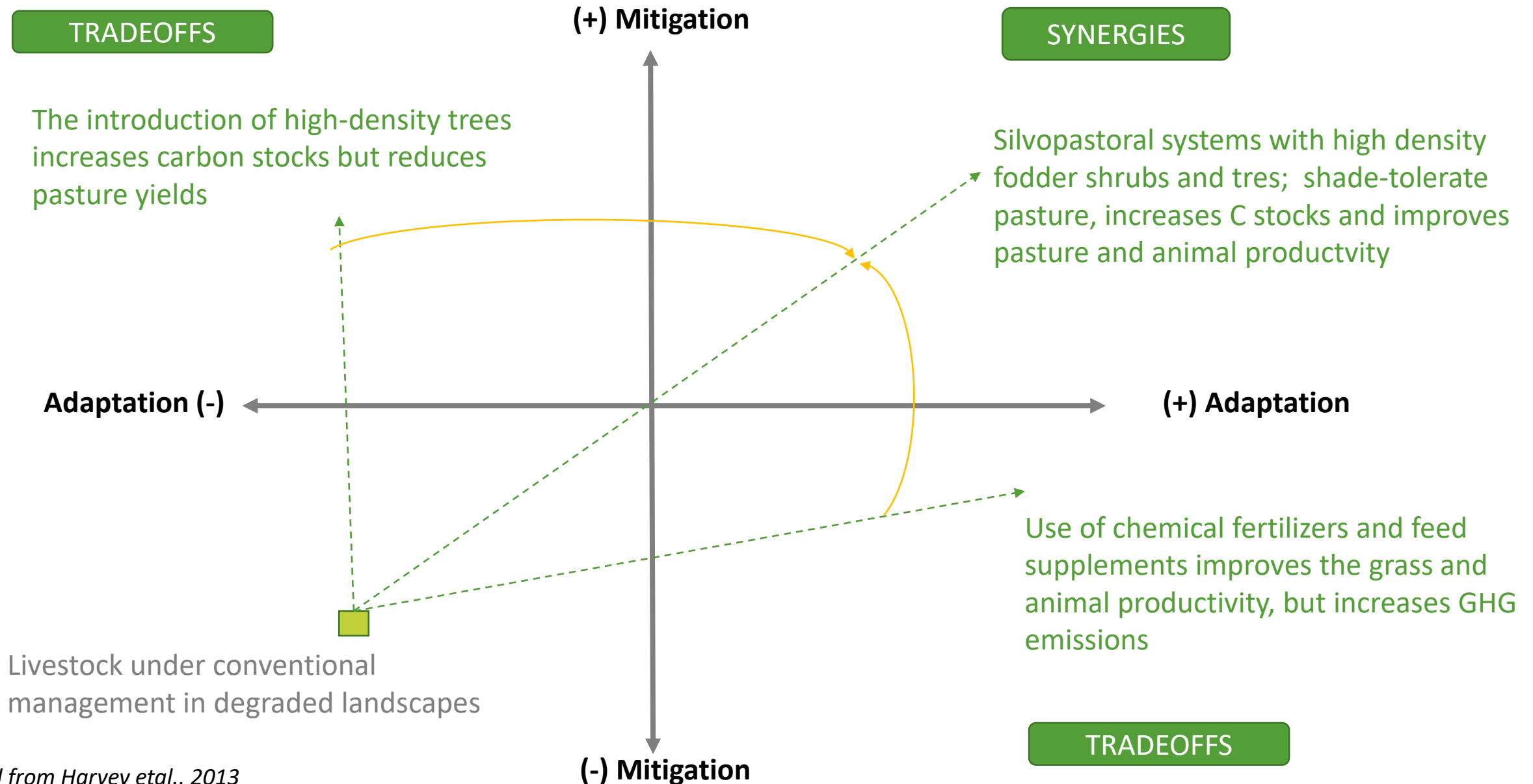
Problems identified by PRA



Prácticas Manual FAO (ACI)

	Productivity	Adaptation	Mitigation
Record Management	██████████		
Paddock irrigation	████████████████████		
Soil conservation	████████████████████		
Manure and waste management	██████████		██████████
Rotational grazing: electric fencing	██████████	██████████	██████████
Pasture renovation	██████████	██████████	██████████
Forage conservation	████████████████████		
Forage mixtures implementation	████████████████████		
Silvopastures	████████████████████		
Nutritional blocks and mineral salts	████████████████████		
Fodder Banks	████████████████████		
Herd health management	████████████████████		
Herd genetic improvement	████████████████████		
Pasture management	████████████████████		
Good milking practices	████████████████████		

Potential synergies and trade-offs





PRODUCTIVITY IMPROVEMENT

+ 17.78%



165 PILOT FARMS



EMISSIONS REDUCTION

- 20.24%



ADAPTIVE CAPACITY

+7.21%

IMPACT IN ECUADOR



347 female producers and **709** male producers linked



40.388 ha influenced
3.275 ha conserved
438 ha restored



37

Farm Field Schools

890 training workshops

24.469,54 t CO₂eq
Reduced (two years)



Vulnerability reduction: before (moderate), after (low)

Improved income **10,70%**,
productivity **17.7%**



Green Credit Line for cattle farming: USD **953 thousand**,
1 million kg CO₂eq per year



Prioritize climate solutions that multitask

- Addressing global environmental challenges is key to development and poverty reduction
- Integrating the work of the three Rio Conventions with the Sustainable Development Goals
- Provides opportunity to:
 - leverage co-benefits from the same investment
 - use resources more efficiently
 - Manage tradeoffs - ensure that one action does not negatively affect another policy priority
- Maximizing these synergies requires a close integration of adaptation actions with existing policies, “mainstreaming”
- Policy: ensuring coherence between the national action plans- NAPs, NDCs etc.
- Promote approaches and instruments that foster integration e.g. nature based approaches, land use planning and management, etc”.



Mainstreaming: FAO Integrating Agriculture in National Adaptation Plans (NAP-Ag) Programme



- supports 11 countries in Africa, Asia and Latin America to identify and integrate climate change adaptation measures into relevant national planning and budgeting processes, with a focus on the agricultural sectors.
- actively seeks to build synergies with of countries, including overarching national development plans and the SDGs, NDCs, disaster risk reduction plans and agricultural sub-sector plans (including livestock, crops, fisheries, aquaculture and forestry).
- Example: Uruguay’s alignment of its NAP and NDC targets

Example: Ecosystem-based adaptation

- Ecosystems underpin livelihoods
- Use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change (CBD, 2009 & IPCC, 2014)
- EbA in agricultural sectors:
 - Sustainable management
 - Conservation
 - Restoration

.... of natural resources and ecosystems that support agricultural livelihoods

Multiple Benefits:

1. Sustainable food production and water availability
2. Enhanced buffering capacities against extreme events (e.g. floods, droughts, landslides etc.)
3. Climate change mitigation co-benefits (reduction and sequestration)
4. Biodiversity conservation and ecosystem restoration

Agroforestry for adaptation



Scattered trees in pastureland



Live fences



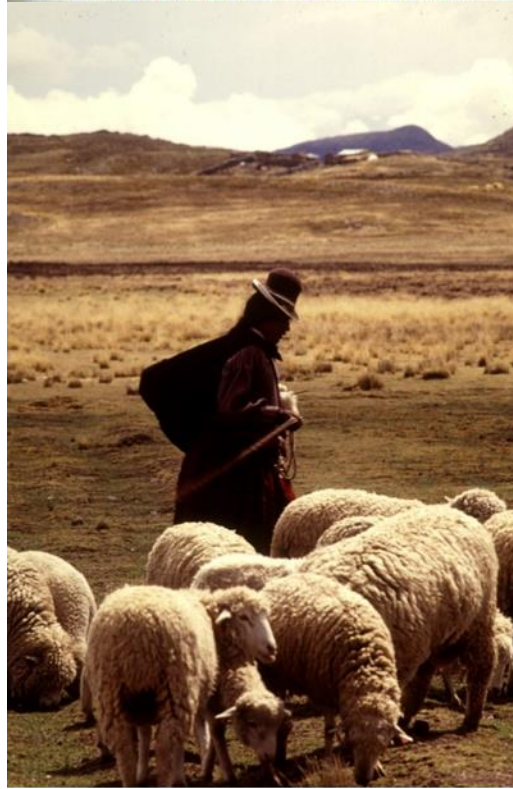
Intensive silvopastoral system



Mixed fodder bank (cut-and-carry system)

Dealing with hard choices

- In some circumstances and scenarios, adaptation will require making difficult choices
- E.g. exit from livestock sector, reduction in production, short term social and economic vs long term environmental objectives, food security vs conservation, etc.
 - Assessments – costs and benefits must be weighed
 - Participatory and multistakeholder processes for dialogue and consensus e.g. [Global Agenda for Sustainable Livestock, LEAP Partnership](#)
 - Policies and incentives (market-based mechanisms, removing environmentally harmful subsidies, payment for environmental services, etc.)



FAO's workshop series - "Boosting Koronivia in the Livestock Sector"



<http://www.fao.org/climate-change/our-work/what-we-do/koronivia/en/>

- 4 workshops held in 4 regions September/October 2020
- Over 80 government officials from more than 35 countries from Africa and Latin America and the Caribbean
- Space for exchange of experience on national climate actions in the livestock sector and to discuss informally how the KJWA can support climate actions on livestock while delivering the 2030 Agenda for Sustainable Development
- organized by FAO's Animal Production and Health Division and Office of Climate Change, Biodiversity and Environment, in collaboration with the **FAO Regional Office for Latin America and the Caribbean**, and **Sub-regional Offices for Mesoamerica, Eastern Africa, West Africa and Southern Africa**

<http://www.fao.org/climate-change/news/detail/en/c/1324024/>

FAO's workshop series - "Boosting Koronivia in the Livestock Sector"



Food and Agriculture
Organization of the
United Nations



Regional Technical Online
Workshop on **Boosting Koronivia**
in the **Livestock Sector**

Key points related to climate change adaptation

- Countries identified several adaptation practices for the livestock sector, including: promotion of locally adapted animal breeds, manage stocking rate to reduce pressure on land, investment in infrastructure such as water boreholes, promote integrated livestock systems (silvopastoral systems), animal disease control, improve fodder availability and quality for better animal nutrition.
- Prioritize adaptation options that provide food security and mitigation co-benefits.
- Consider climate change mitigation and adaptation jointly.
- Countries expressed the need to build evidence and assess the impacts of climate change on the livestock sector.
- Raise awareness among all stakeholders, especially farmers in order to enhance the implementation of appropriate adaptation and mitigation options.
- Develop the capacity of farmers, especially the capacity to adapt new technologies, and to implement adaptation practices

Conclusions

- Livestock has a central role to play in contributing to overall resilience to climate change. Its potential role should be recognized and further enhanced
- Many adaptation options are available for livestock systems but need to be tailored to local conditions
- Existing adaptation strategies can help offset many – but not all – effects over the next 20-30 years
- Improving the resilience of livestock systems to climate change requires protection of the natural resource base
- Many adaptation measures can contribute to the achievement of mitigation goals, other environmental and development and vice versa, thus maximizing the potential synergies and co-benefits
- Gaps in knowledge still remain
 - High uncertainty regarding future climate scenarios poses challenges for decision making
 - Limited evidence on costs, benefits (social, private) of adaptations
 - Question of tradeoffs

Thank You!

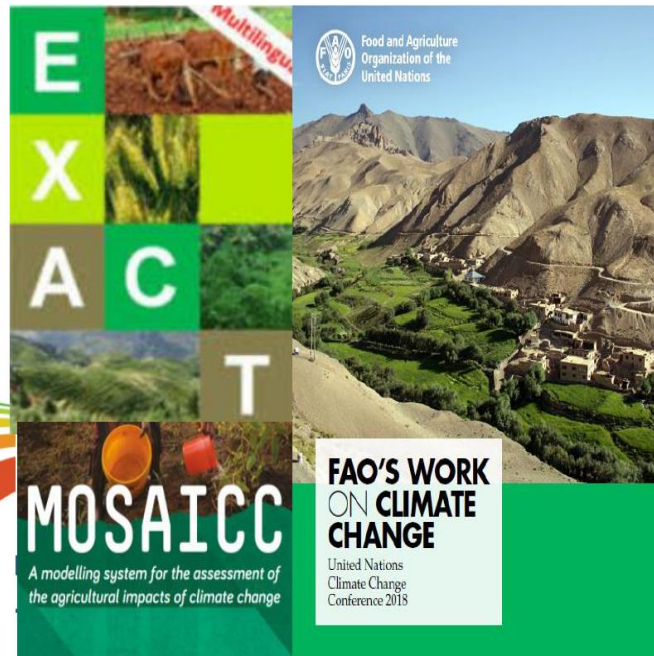
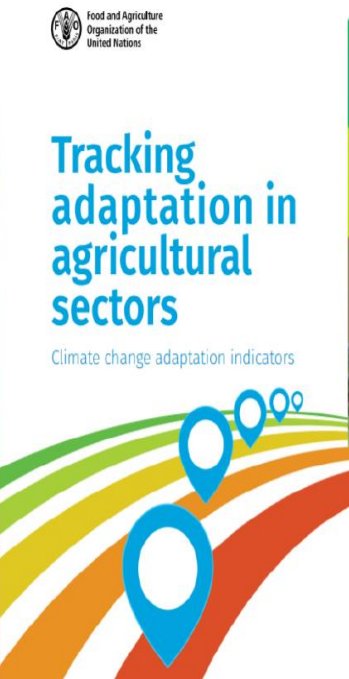
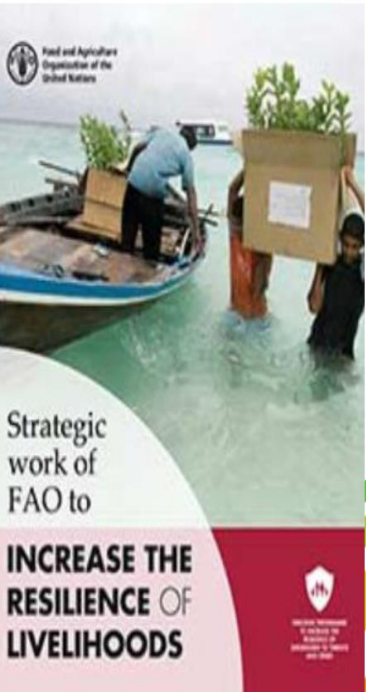
Please visit:

<http://www.fao.org/livestock-environment/en/>

<http://www.fao.org/climate-change/en/>

Leap | LIVESTOCK ENVIRONMENTAL ASSESSMENT AND PERFORMANCE PARTNERSHIP

 GLOBAL AGENDA FOR SUSTAINABLE LIVESTOCK



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BOOSTING KORONIVIA

FAO AND THE KORONIVIA JOINT WORK ON AGRICULTURE



Food and Agriculture Organization of the United Nations

FAO support to advance KJWA

Knowledge products and information exchange

For every Koronivia “topic”

BOOSTING KORONIVIA
 IMPULSANDO KORONIVIA
 RENFORCER KORONIVIA

تعزیز کورونوییا

