

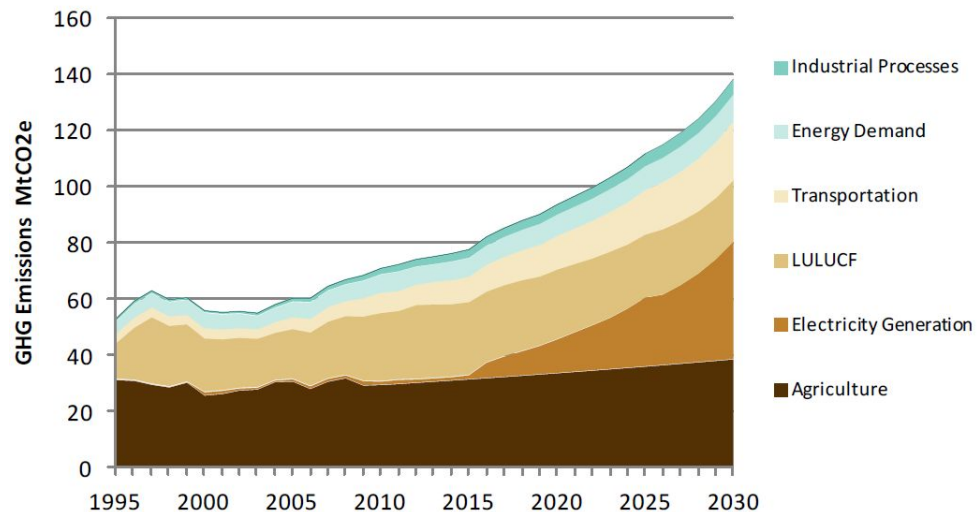
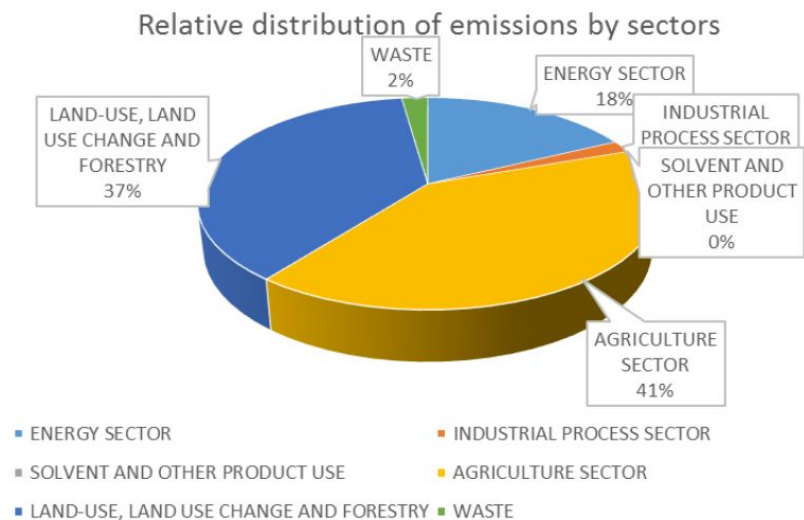
# Climate rationale for mitigation

By Dominik Wisser, Aimable Uwizeye, Jean de Dieu Ayabagabo and Monica Rulli

# Outline

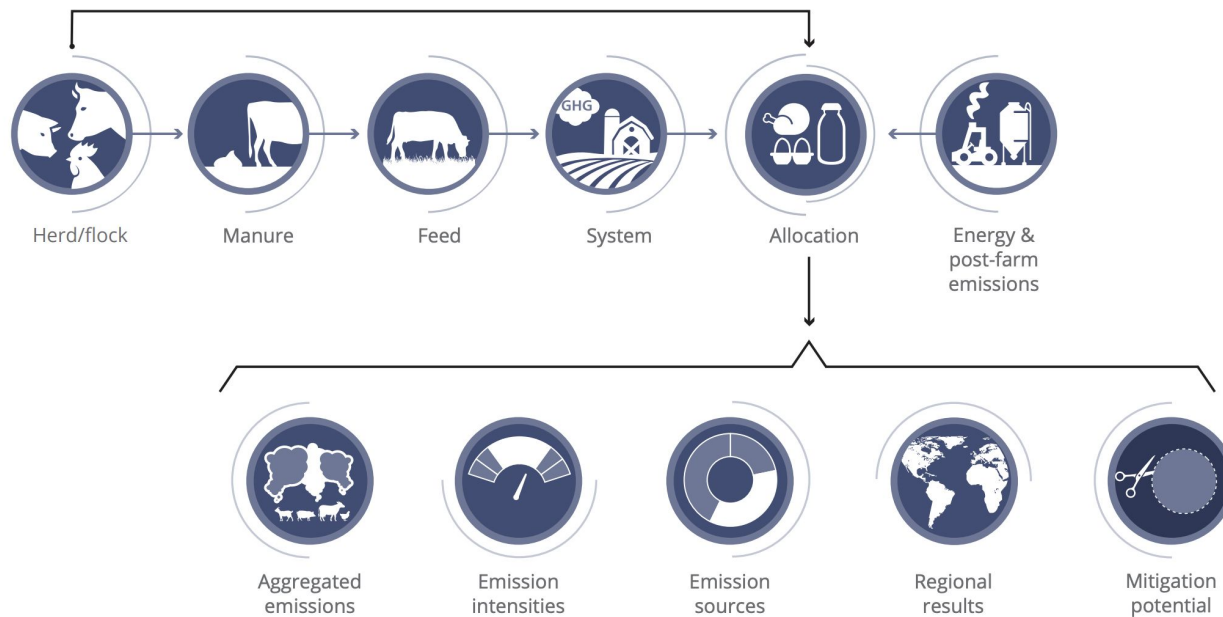
- **Emissions as reported in National communication**
- **Methods**
- **Results**
  - ✓ Dairy cattle population and distribution
  - ✓ Results of GHG assessment
- **Mitigation Options**
- **Policy framework and Alignment with country priorities**
- **Way forward**

# Total Emissions/ sector in CO2 Equivalents



Source: Kenya National Communication, 2015

# Methods

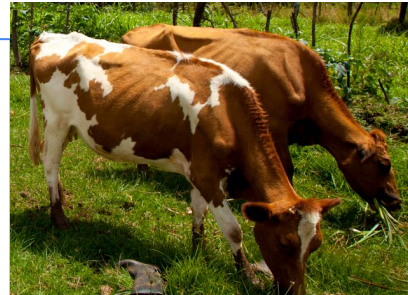


# Dairy cattle population and distribution

- 2019 Kenya Population and Housing Census (Kenya National Bureau of Statistics)
- Cattle population by production system and category computed using the **'Inventory of GHG Emissions from Dairy Cattle in Kenya 1995-2017'**.
- Proportion of dairy Indigenous computed from **Kenya Reducing enteric emissions Project**.



- 4.9 million dairy cattle
- 2 breeds :
  - Indigenous: 54 percent
  - Exotic: 46 percent
- 3 production systems (semi-intensive 41 percent, intensive 32 percent and extensive 26 percent)
- Data level by counties (47)

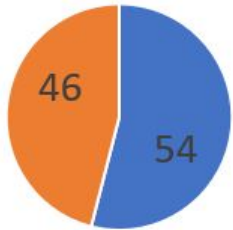


# Dairy cattle population and distribution

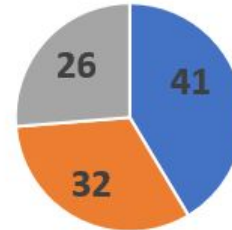
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4.9 million dairy cattle



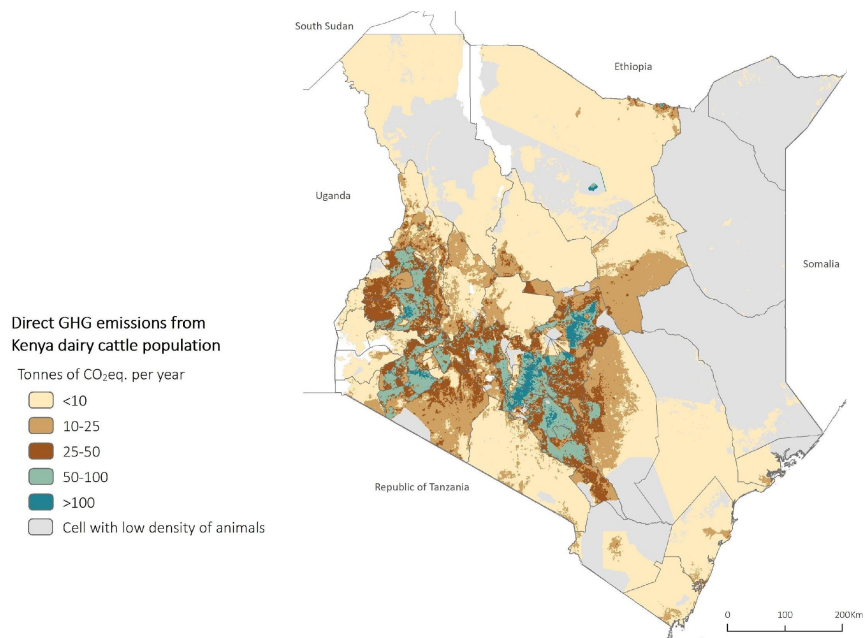
■ Indigenous ■ Exotic



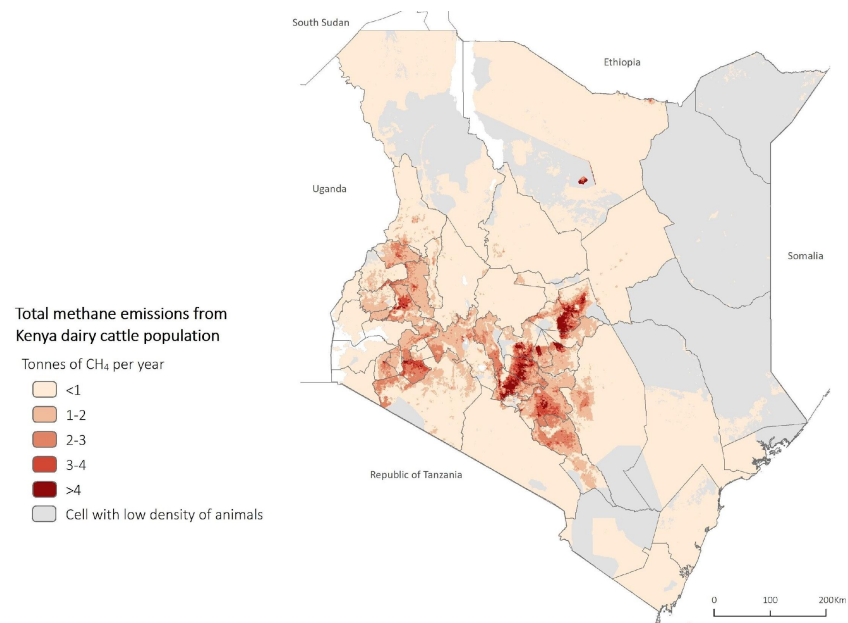
■ semi-intensive ■ Intensive ■ Extensive



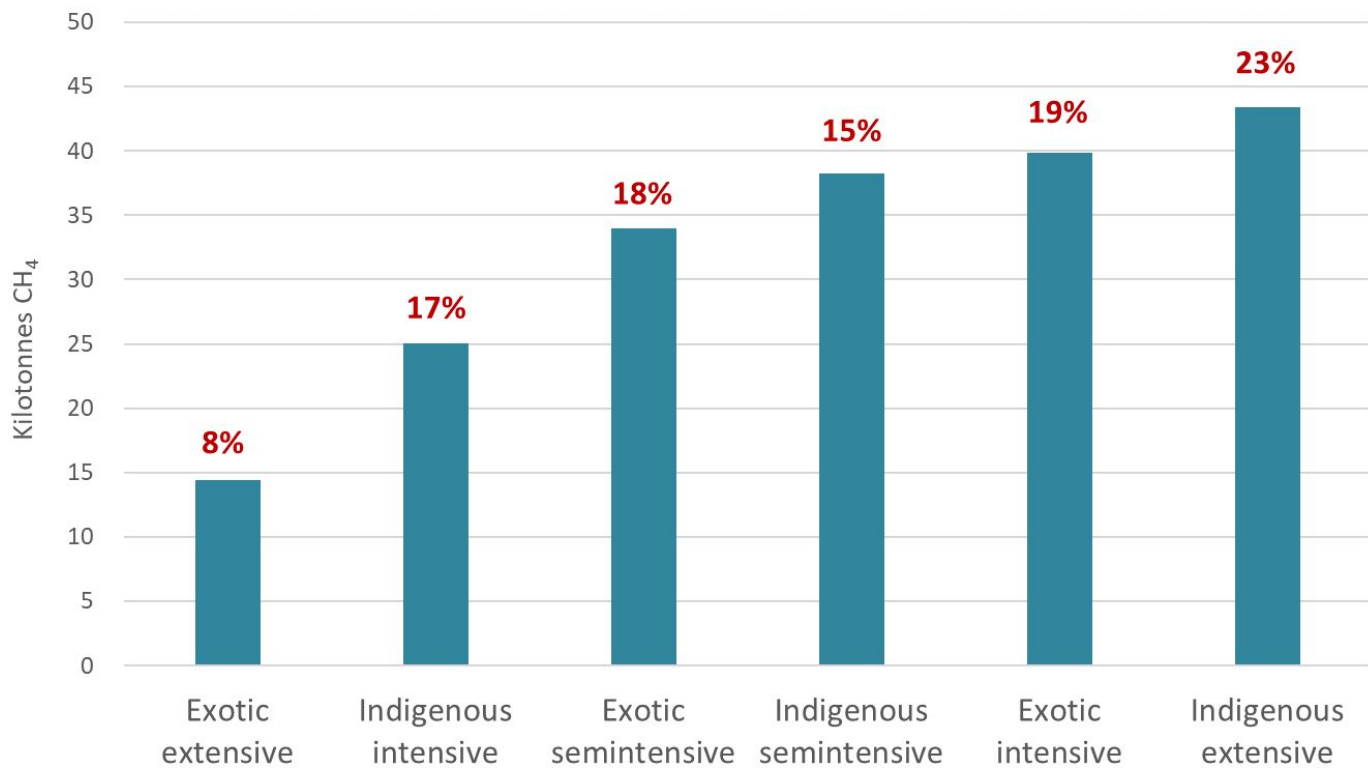
## Direct GHG emissions from Kenya dairy cattle systems



## Methane emissions from Kenya dairy cattle systems

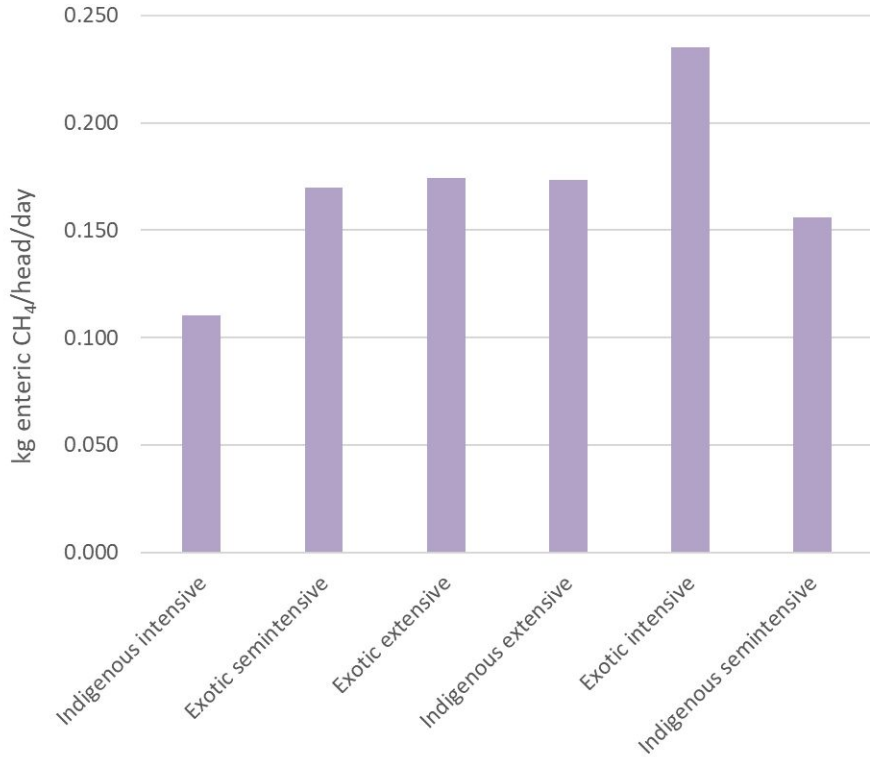


## 2019 - Methane emissions from enteric fermentation by PS (Kilotonnes of CH<sub>4</sub>)

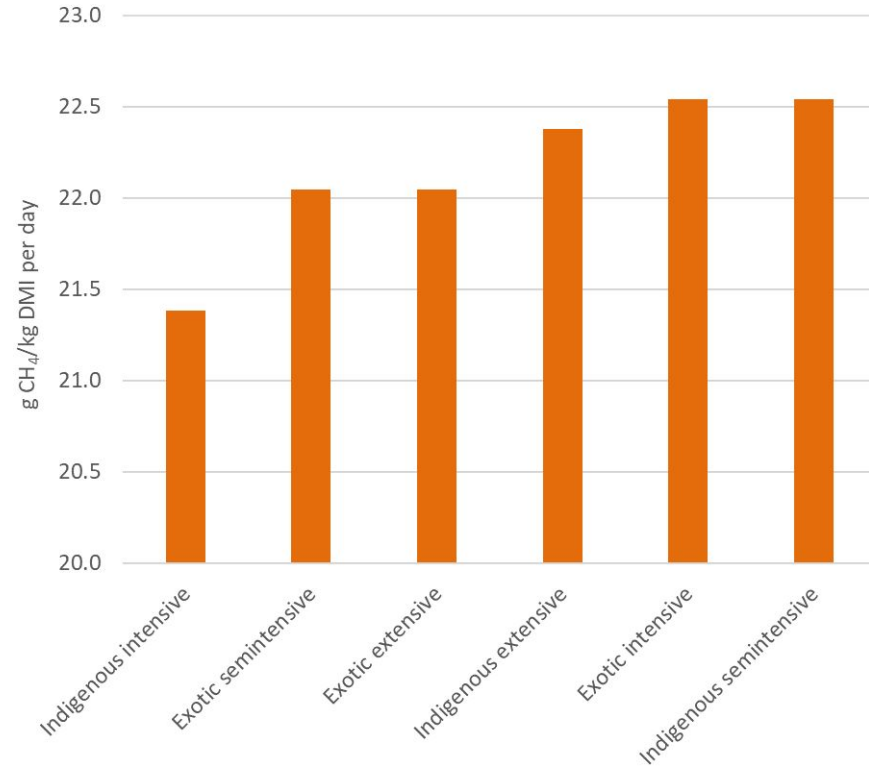




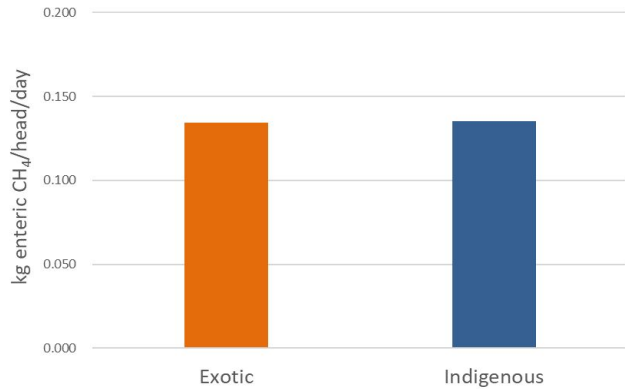
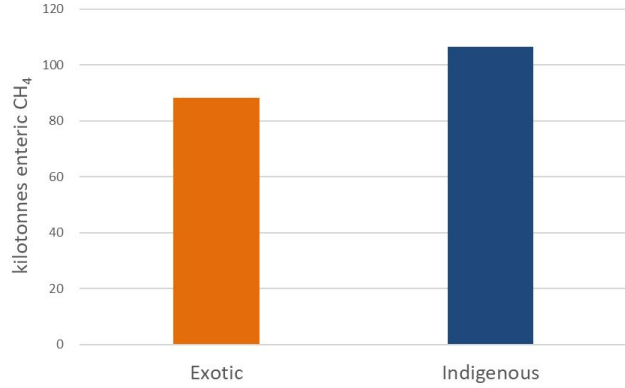
**Production : COW** Enteric CH<sub>4</sub> production (kg CH<sub>4</sub>/d)



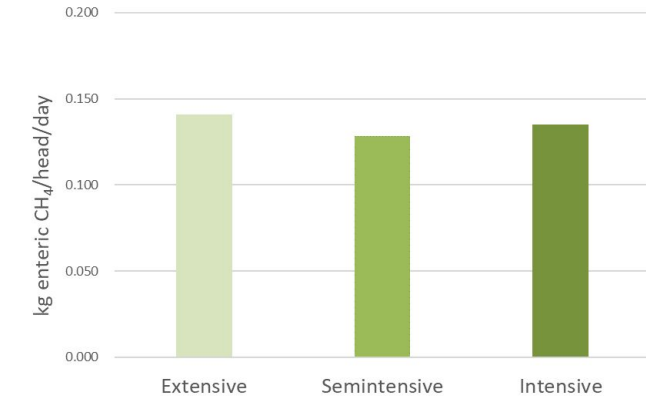
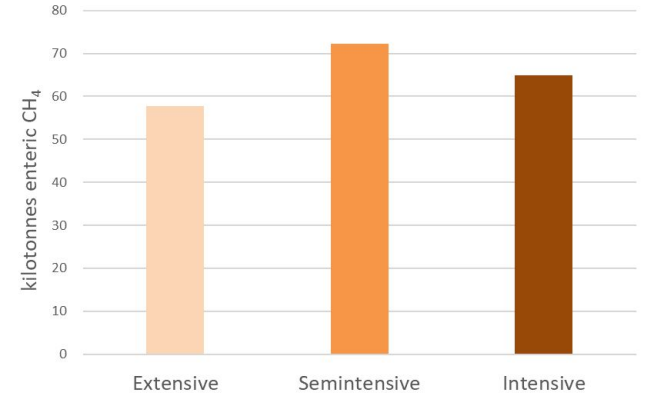
**Yield : COW** g CH<sub>4</sub>/kg DMI



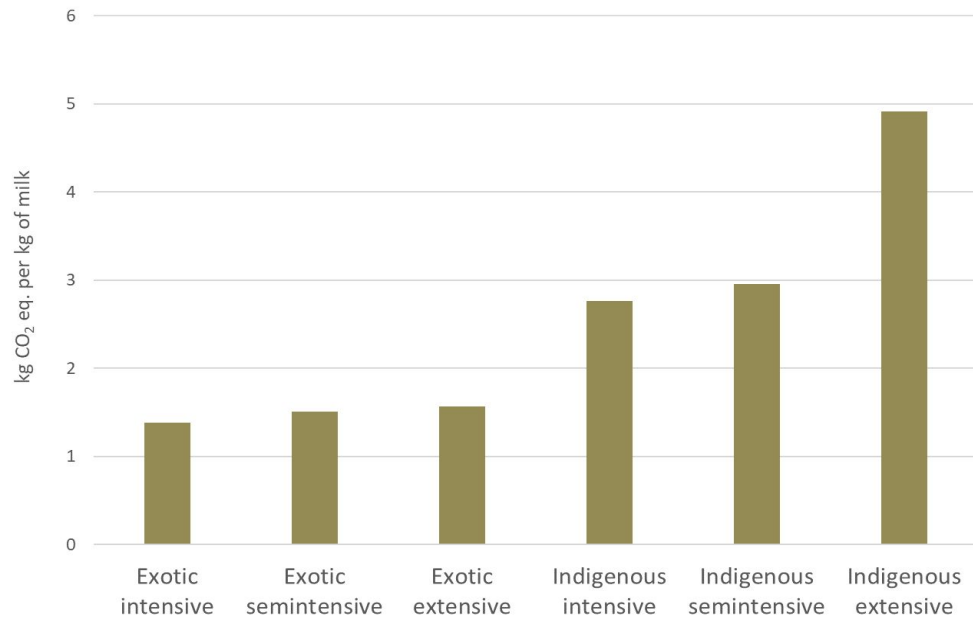
## Emissions from enteric fermentation by breeds



## Emissions from enteric fermentation by PS



## Enteric methane emission intensity by systems (kg CO<sub>2</sub> eq. per kg of milk)



# Mitigation Options

# Enteric methane mitigation strategies

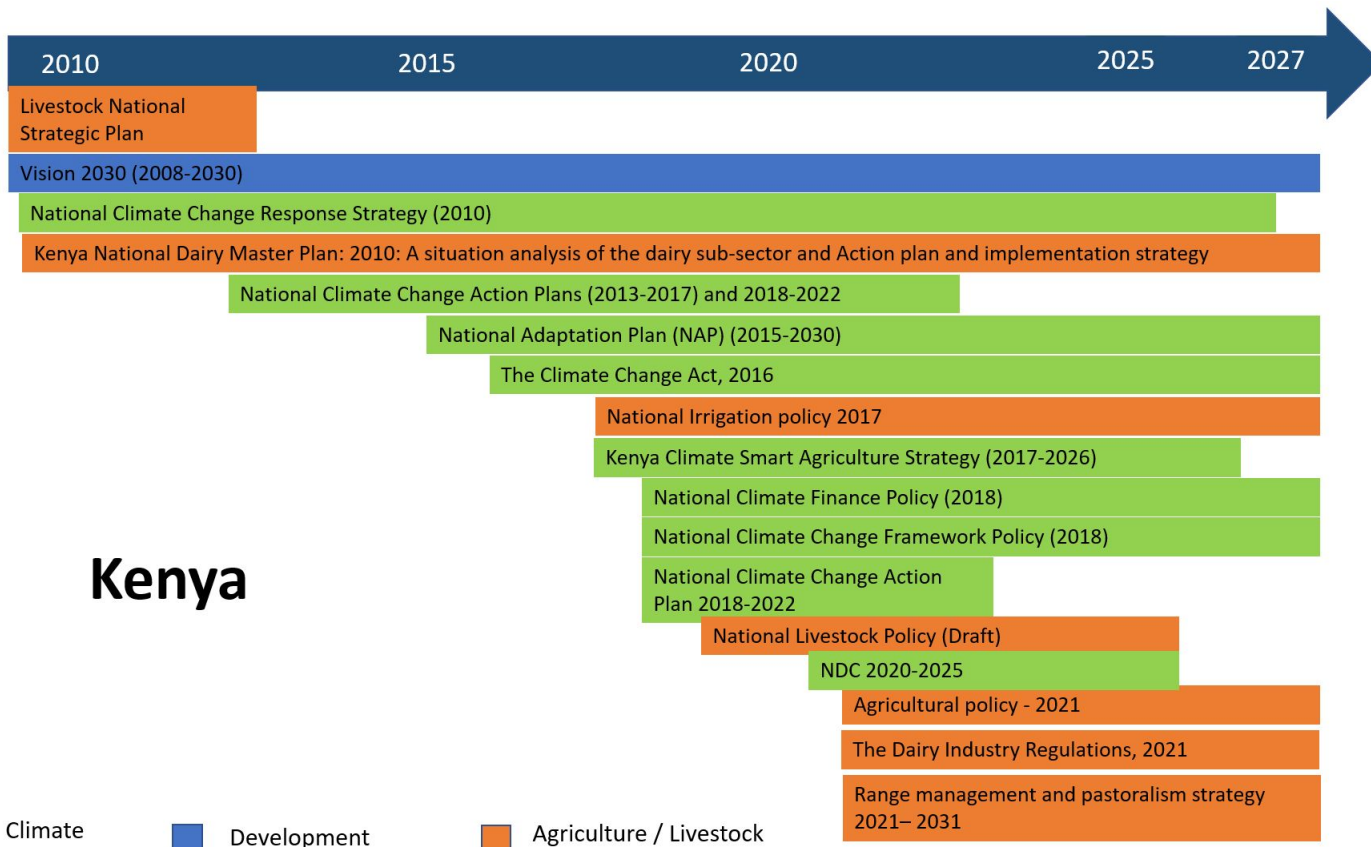
	g/day	g/kg meat/milk				
Increased animal productivity	↑	↓ to ↓↓	↑↑↑ (UPS, MAN)	↑	0	<ul style="list-style-type: none"> <li>• Cost/lack of financial incentives</li> <li>• Technical support</li> </ul>
Selection of low-CH <sub>4</sub> producing animals	↓↓	?	0	↓/↑	0	<ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Resistance to change</li> <li>• Technical support</li> </ul>
Levels of feed and Concentrate intake, Concentrate sources, processing	↑	↓↓	↑↑↑ (UPS, MAN)	↑	S-AN 	<ul style="list-style-type: none"> <li>• Cost/lack of financial incentives</li> <li>• Technical support</li> </ul>
Lipid supplementation	↑	↓	↑↓ (UPS, MAN)	↑	0	<ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Technical support</li> </ul>
Increased forage digestibility					0	<ul style="list-style-type: none"> <li>• Accessibility</li> <li>• Resistance to change</li> </ul>

# Enteric methane mitigation strategies

	g/day	g/kg meat/milk				
Perennial legumes			(UPS, MAN)		0	<ul style="list-style-type: none"> <li>• Accessibility</li> <li>• Resistance to change</li> <li>• Technical support</li> </ul>
High starch forages			(UPS, MAN)	0 to	0	<ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Resistance to change</li> <li>• Technical support</li> </ul>
Pastures and grazing management	0 to	0 to	(UPS, MAN)		0	<ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Resistance to change</li> <li>• Technical support</li> </ul>
Preservation and Processing	0 to	0 to	(UPS, MAN)	0 to	0	<ul style="list-style-type: none"> <li>• Accessibility</li> <li>• Cost/lack of financial incentives</li> <li>• Technical support</li> </ul>
3-Nitrooxypropanol			(UPS)		MAX	<ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives, Regulatory approval</li> <li>• Consumer acceptance</li> </ul>

# Enteric methane mitigation strategies

	g/day	g/kg meat/milk			
Asparagopsis spp.	↓↓↓	↓↓↓	↑↓ (UPS, MAN)	↓/↑	MAX, S-ANI S-HU M, SENV <ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Regulatory approval</li> <li>• Safety for the animal, the consumer, and the environment</li> </ul>
Tannins and saponins	↓	↓	↑↓ (MAN)	↓/↑	MAX <ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Resistance to change</li> <li>• Technical support</li> </ul>
Alternative electron acceptors (nitrate)	?	?	0 to ↑↑↑ (UPS, ANI, MAN)	↓	MAX, S-ANI <ul style="list-style-type: none"> <li>• Accessibility, Cost/lack of financial incentives</li> <li>• Resistance to change</li> <li>• Technical support</li> </ul>





	Policy	Strategy or Plan
Animal Productivity	NLP NDC	NCCAP NCCRS NAP
Animal breeding	NLP	NCCAP NCCRS NAP
fodder conservation: Hay and silage	NLP	NCCAP NCCRS NAP KCSAS
Supplementation with concentrates	NLP	KCSAS NAP
Establishment of fodder grasses and legumes (grasses and trees)	NLP	KCSAS NAP
Grazing management	NLP NDC	NCCAP KCSAS NAP
Water harvesting technologies	NIP	NCCRS NAP
Biogas	NDC	NCCRS KCSAS

**NCCAP:** National Climate Change Action Plan: 2013 -2017

**NCCRS:** National Climate Change Response Strategy

**NIP** National irrigation policy

**NLP:** National livestock policy

**KCSAS :** Kenya climate smart agriculture strategy 2017 – 2026

**NDC :** Nationally Determined Contribution

## Way forward

- ❑ **Projection of emissions**
- ❑ **Measures to strengthen dairy sector**
- ❑ **Institutional frameworks**
  - ❑ MRV reporting
  - ❑ Capacity building needs

- General **principle of subsidiarity** will be applied in decision-making processes, with delegation of implementation to direct users and institutions when possible.
- A **regional coordination unit (RCU)** will be established together with a **Regional Steering Committee (RSC)** to provide general guidance for implementation and knowledge management, bringing together various stakeholders.
- A **knowledge platform** specific to each country will be established, that will provide opportunities for exchange visits, development and sharing of studies, technical work, trainings, and financial initiatives between the four countries.
- At country level, PMUs will be the PCU for the IFAD-funded projects under design, placed under the authority of the Ministry of Livestock and Fisheries (MoLF). National steering committees (NSC) will be composed of various stakeholders and include the Ministries of Environment and Finance.
- Access to adaptation finance and financial services by dairy sector smallholders will be from local commercial banks or microfinance institutions (MFIs), as part of the ARCAFIM project. Access to larger investment funds through Financing Facility.