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# GHG Emission Trends and Projections for Agriculture Sector

**Aynur TOKEL**  
**GHG Inventory Expert**

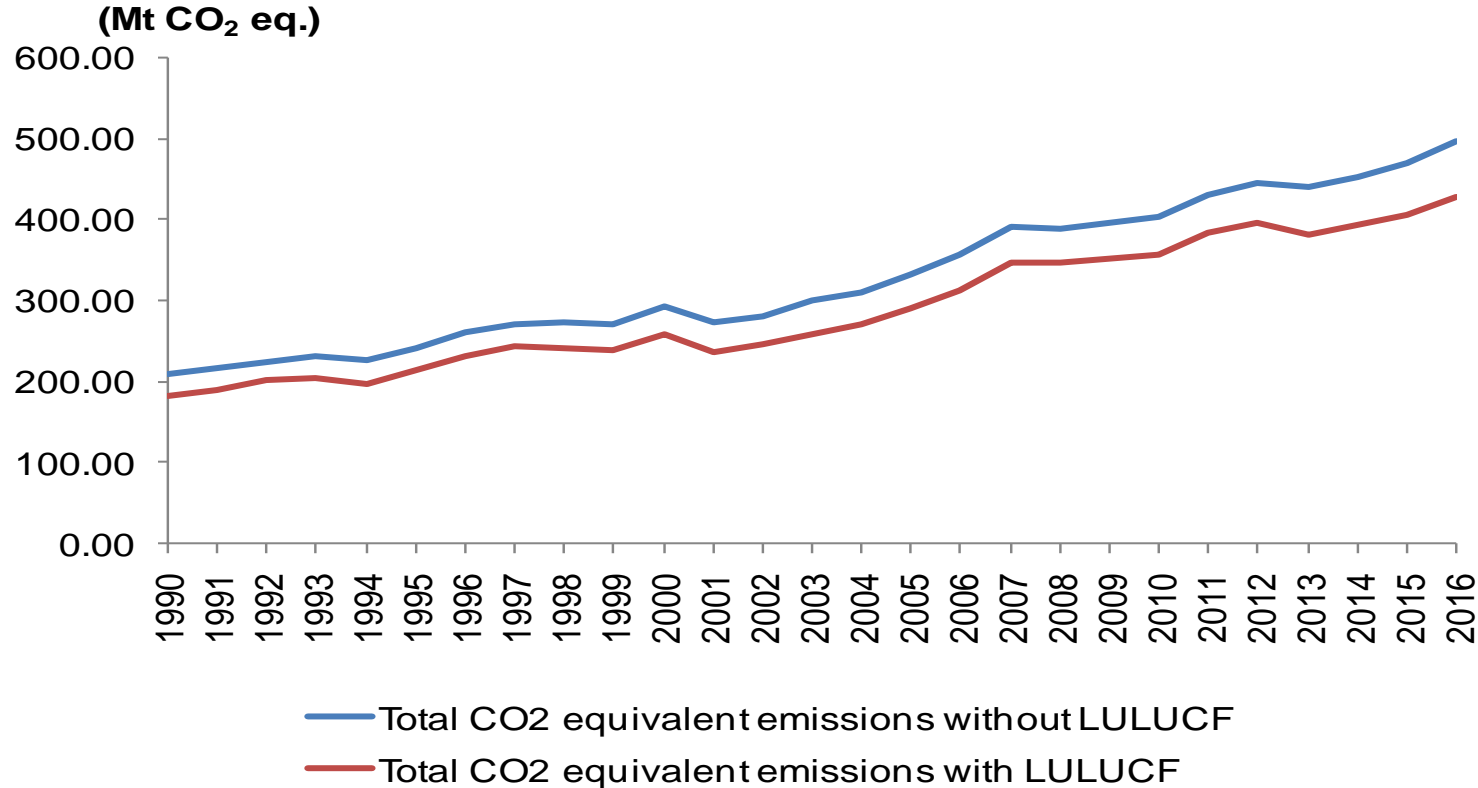
***Component 1 Dissemination Workshop***  
***23 May 2018, Meyra Palace Hotel, Ankara***





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# GHG Emissions



GHG emissions without LULUCF;

in 1990 : 210.7 Mt CO<sub>2</sub> eq.

in 2016 : 496.1 Mt CO<sub>2</sub> eq.

135.4% increase as compared to 1990 level

Source: UNFCCC National Inventory Submissions 2018



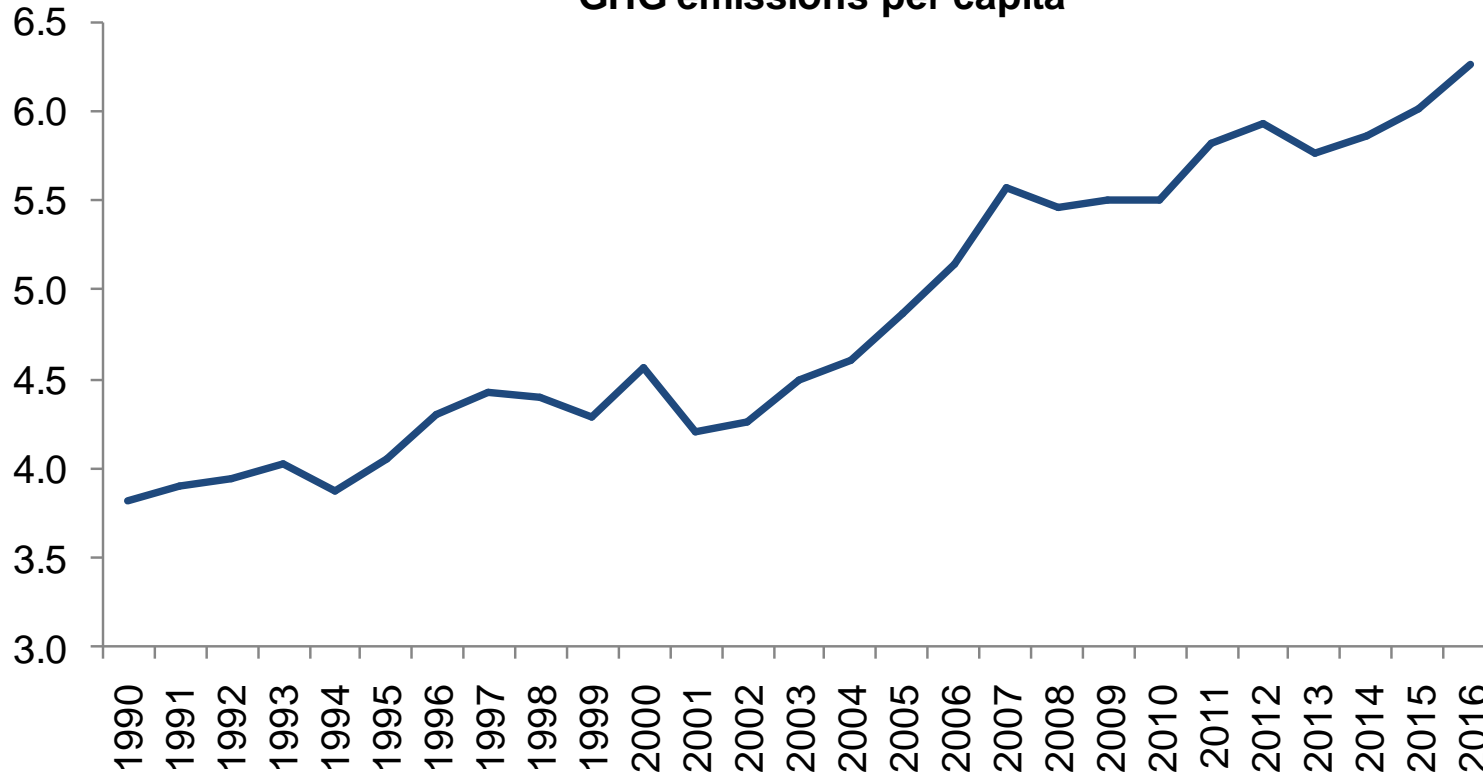


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# GHG Emissions

(tonnes CO<sub>2</sub>-eq./capita)

GHG emissions per capita



GHG emissions per capita;

In 1990 : 3.8 tonnes CO<sub>2</sub>  
eq/capita

In 2016 : 6.3 tonnes CO<sub>2</sub>  
eq/capita

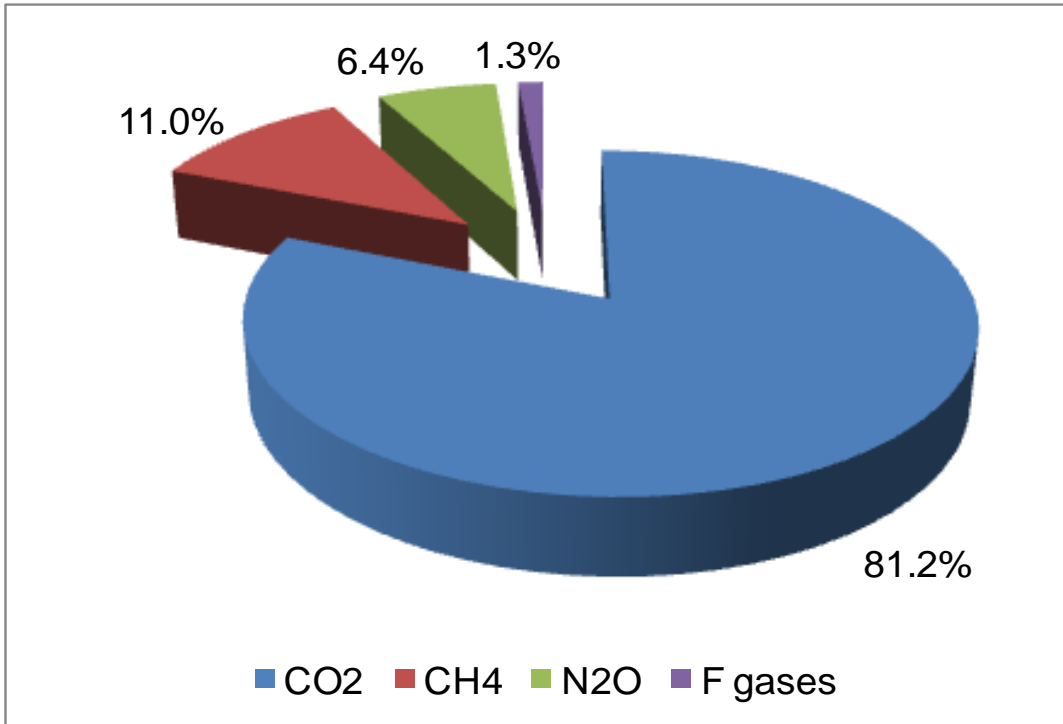
Source: UNFCCC National Inventory Submissions 2018





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# GHG Emissions

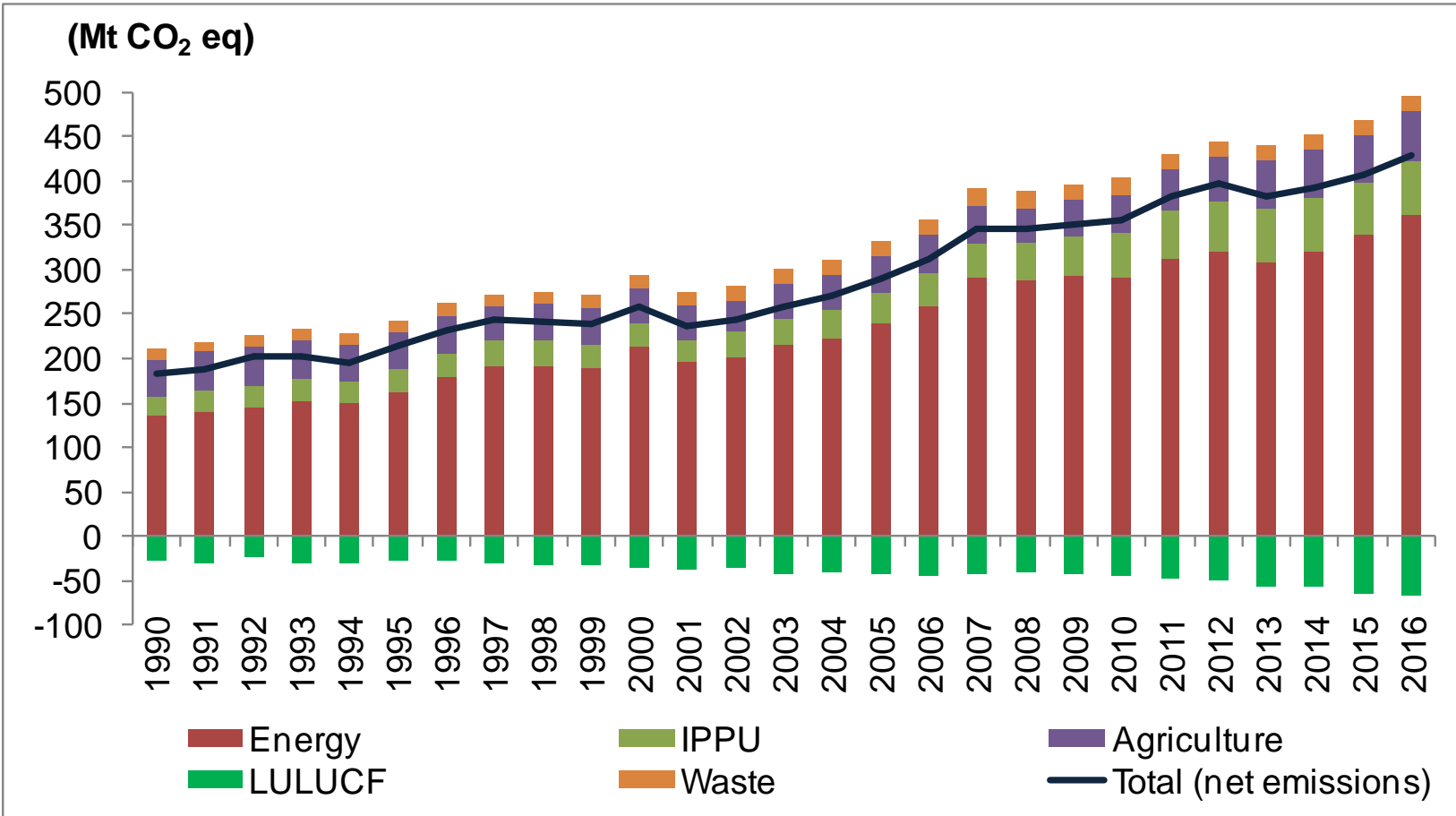


	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	F-gases
<b>Energy</b>	86.1	18.6	12.1	-
<b>IPPU</b>	13.6	0.03	3.8	100.0
<b>Agriculture</b>	0.3	55.5	77.6	-
<b>Waste</b>	-	25.8	6.5	-



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# GHG Emissions



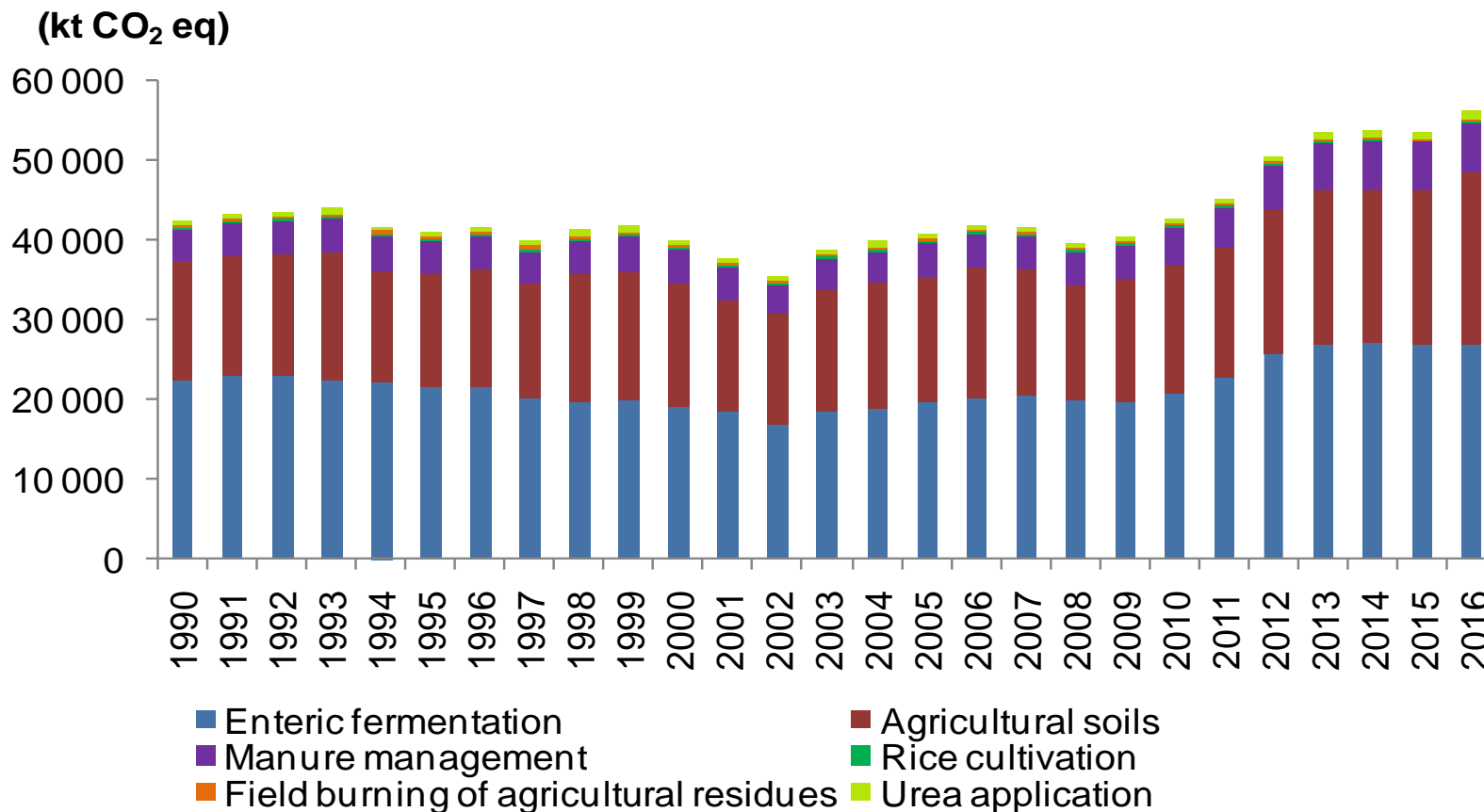
In 2016 sectors contribution to total GHG emissions;

- Energy: %72.8
- Industrial Processes and Product.Use (IPPU) : %12.6
- Agriculture : %11.4
- Waste : %3.3



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# GHG Emissions Agriculture Sector



GHG emissions from agriculture sector;

In 1990 : 42.4 Mt CO<sub>2</sub> eq.  
In 2016: 56.5 Mt CO<sub>2</sub> eq.  
(33.2 % increase as compared to 1990 level)

GHG emissions in 2016 ;  
CH<sub>4</sub> :53.8% (30.4 Mt CO<sub>2</sub> eq.)  
N<sub>2</sub>O : 43.9% (24.8 Mt CO<sub>2</sub> eq.)

Enteric fermentation: 47.7%  
Agricultural soils: 38.2%  
Manure management: 11.2%  
Urea Application:2.3%  
Rice cultivation: 0.4%  
Field burning of agricultural residues:0.3%

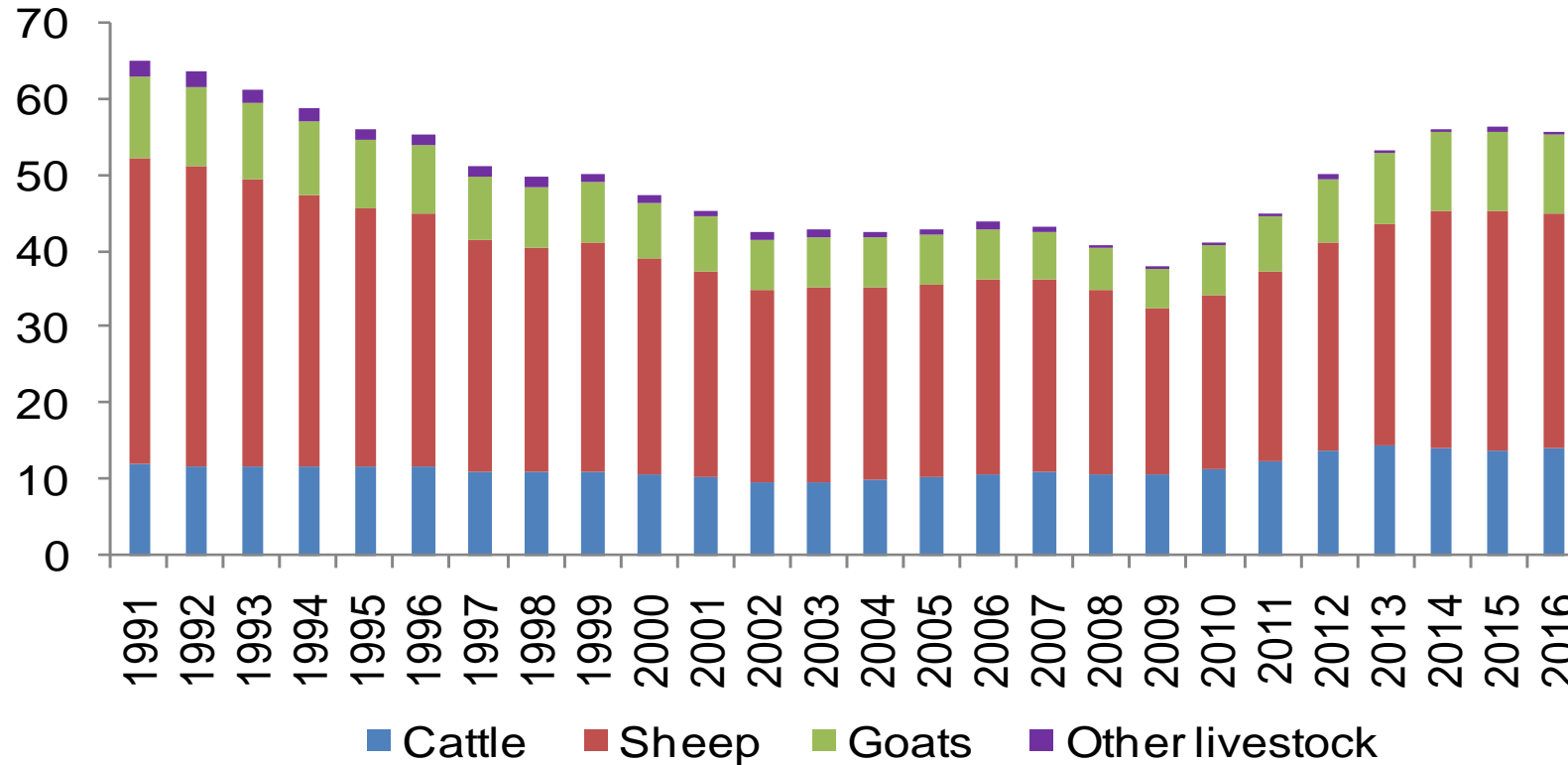


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# GHG Emissions Agriculture Sector

(Million head)

Livestock population



Livestock population in 2016;

Cattle :14.1 M head

Sheep:31 M head

Goats :10.3 M head

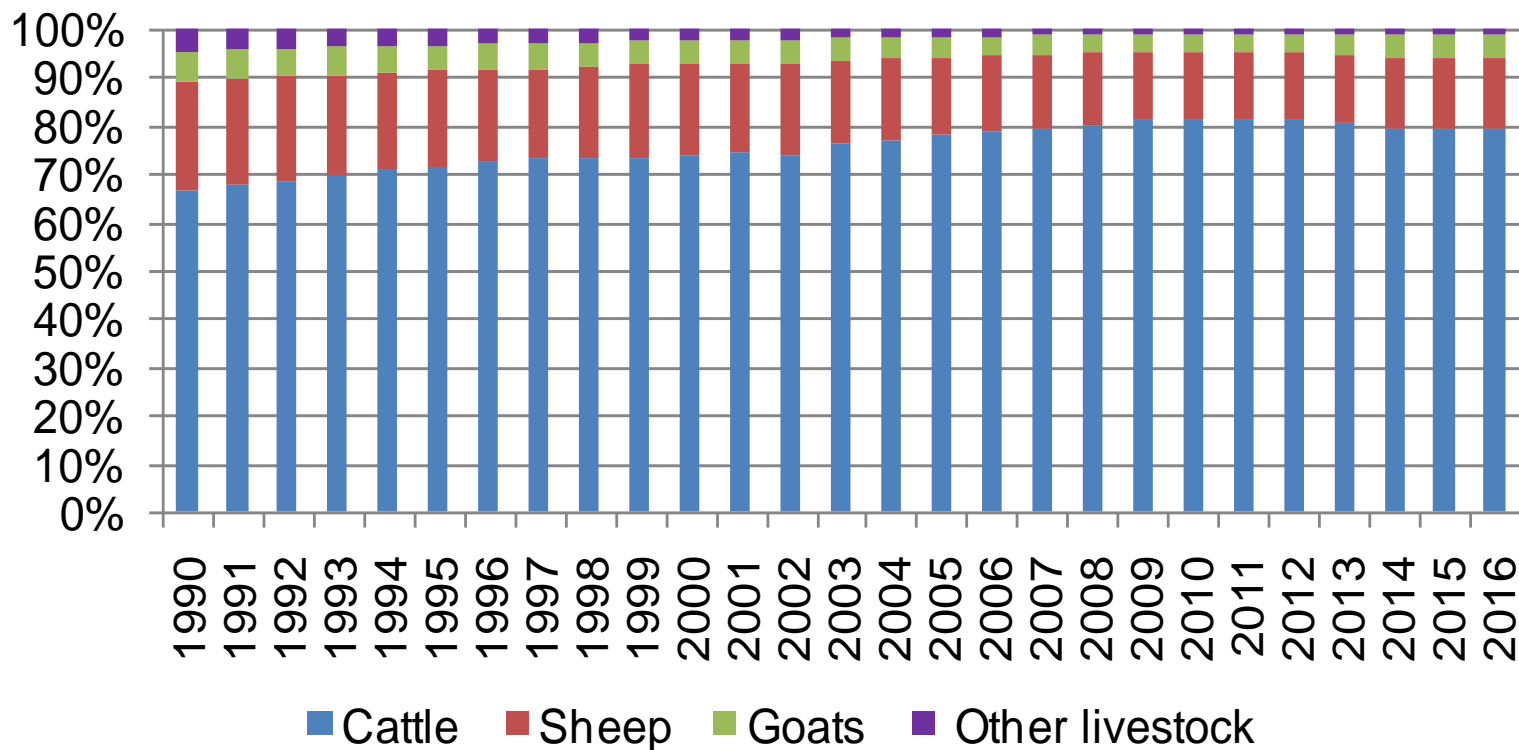
Other livestock :0.5 M head



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# GHG Emissions Agriculture Sector

### CH<sub>4</sub> emissions from enteric fermentation by livestock category



CH<sub>4</sub> emissions from enteric fermentation;

In 1990: 22.3 Mt CO<sub>2</sub> eq.

In 2016: 26.9 Mt CO<sub>2</sub> eq.

In 2016;

Cattle :79.4%

Sheep:14.7%

Goats :4.8%

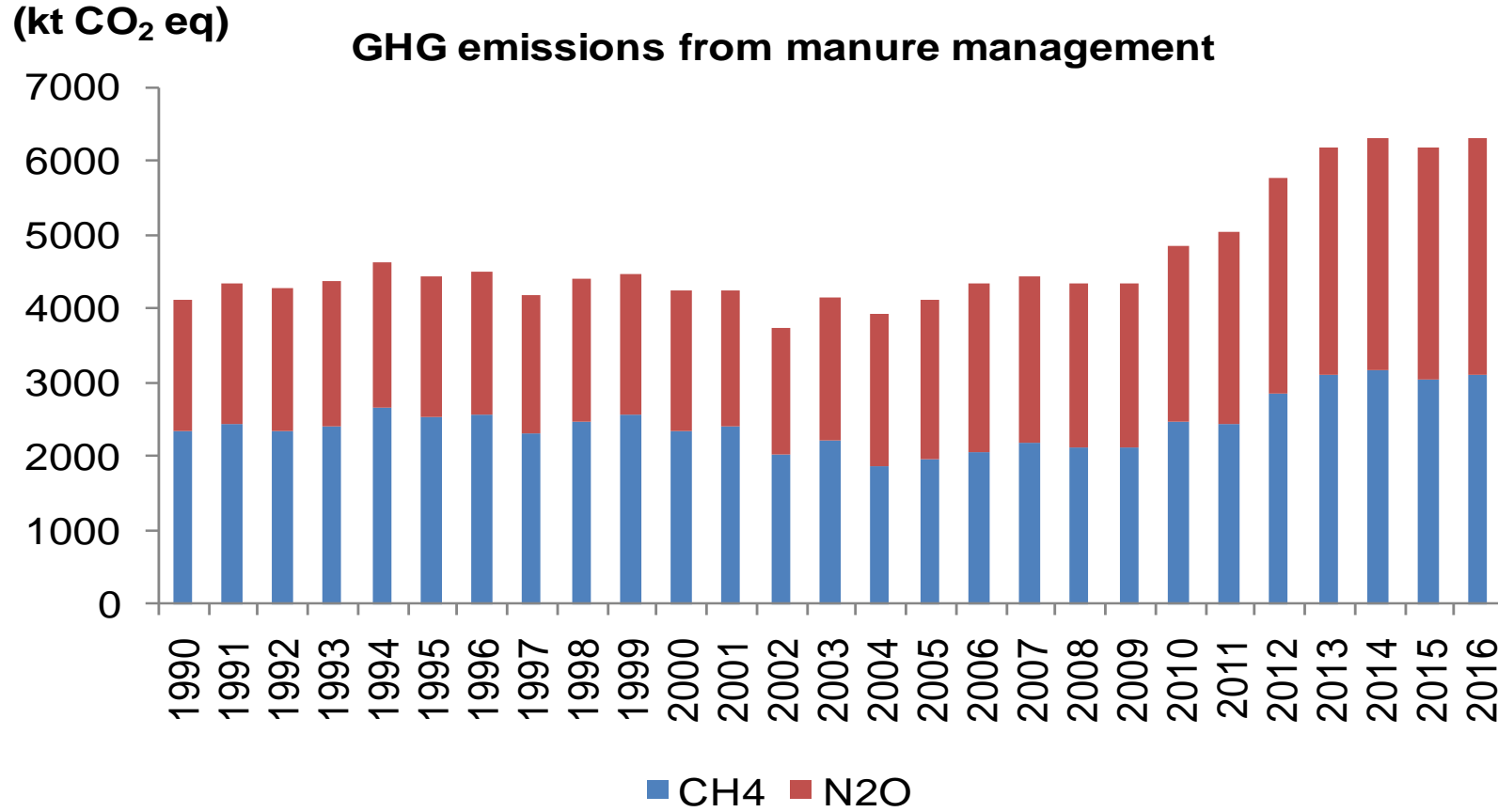
Other livestock :1.1%





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# GHG Emissions Agriculture Sector



GHG emissions from manure management;  
 In 1990: 4.1 Mt CO<sub>2</sub> eq.  
 In 2016: 6.3 Mt CO<sub>2</sub> eq.

75% from cattle in 2016

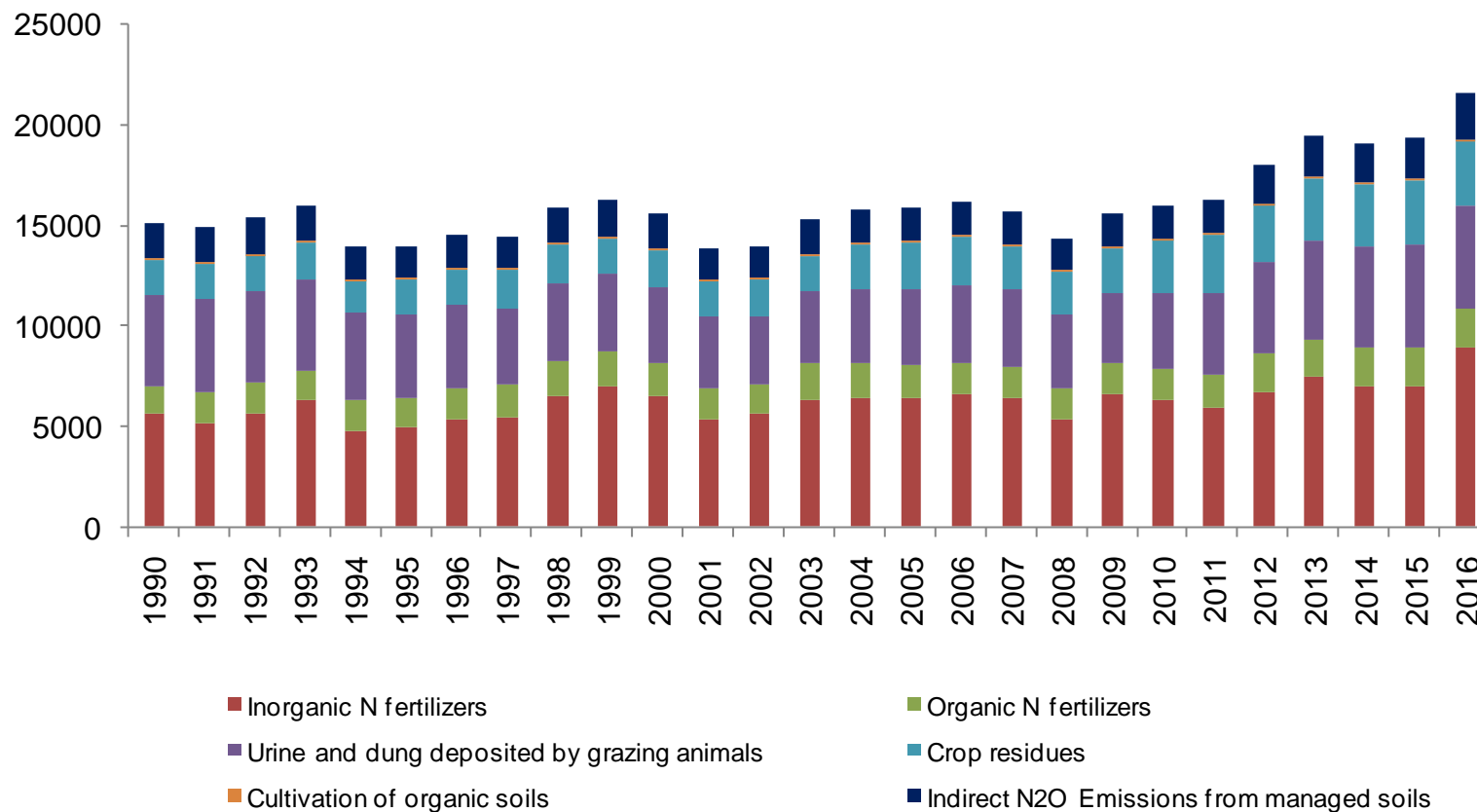


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# GHG Emissions Agriculture Sector

(kt CO<sub>2</sub> eq)

N<sub>2</sub>O emissions from agricultural soils



GHG emissions from agricultural soils;

In 1990: 15.1 Mt CO<sub>2</sub> eq.

In 2016 : 21.6 Mt CO<sub>2</sub> eq.

In 2016 ;

- Inorganic N fertilizer :41.2%
- Organic N fertilizer: 9.2 %
- Urine and dung deposited by grazing animals: 23.7%
- Crop residues: 15.2 %
- Cultivation of organic soils:0.4 %
- Indirect N<sub>2</sub>O emissions from managed soils:10.4%

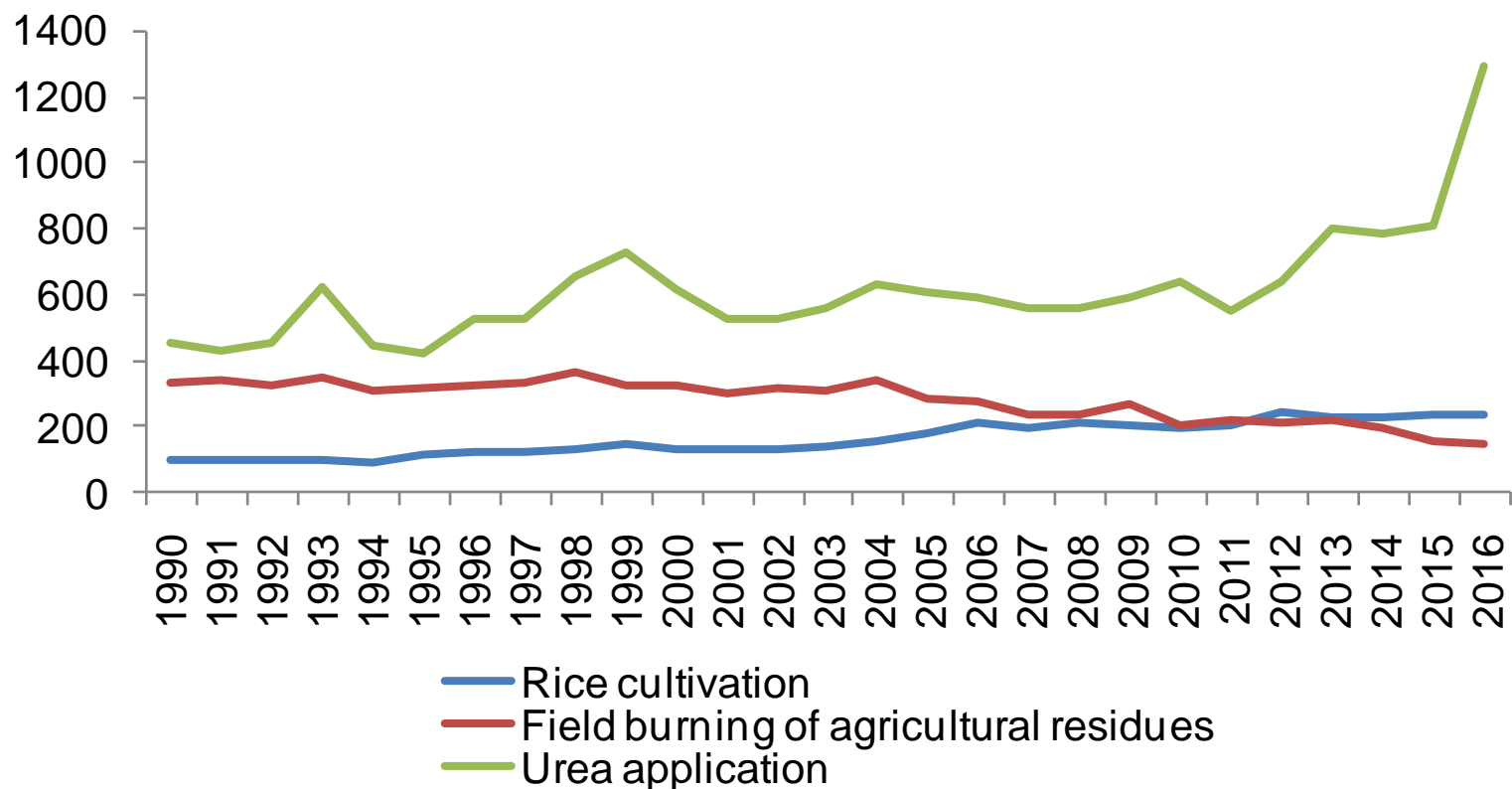


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# GHG Emissions Agriculture Sector

## GHG emissions from other agriculture categories

(kt CO<sub>2</sub> eq)



In 2016;

Rice cultivation: 0.2 Mt CO<sub>2</sub> eq.

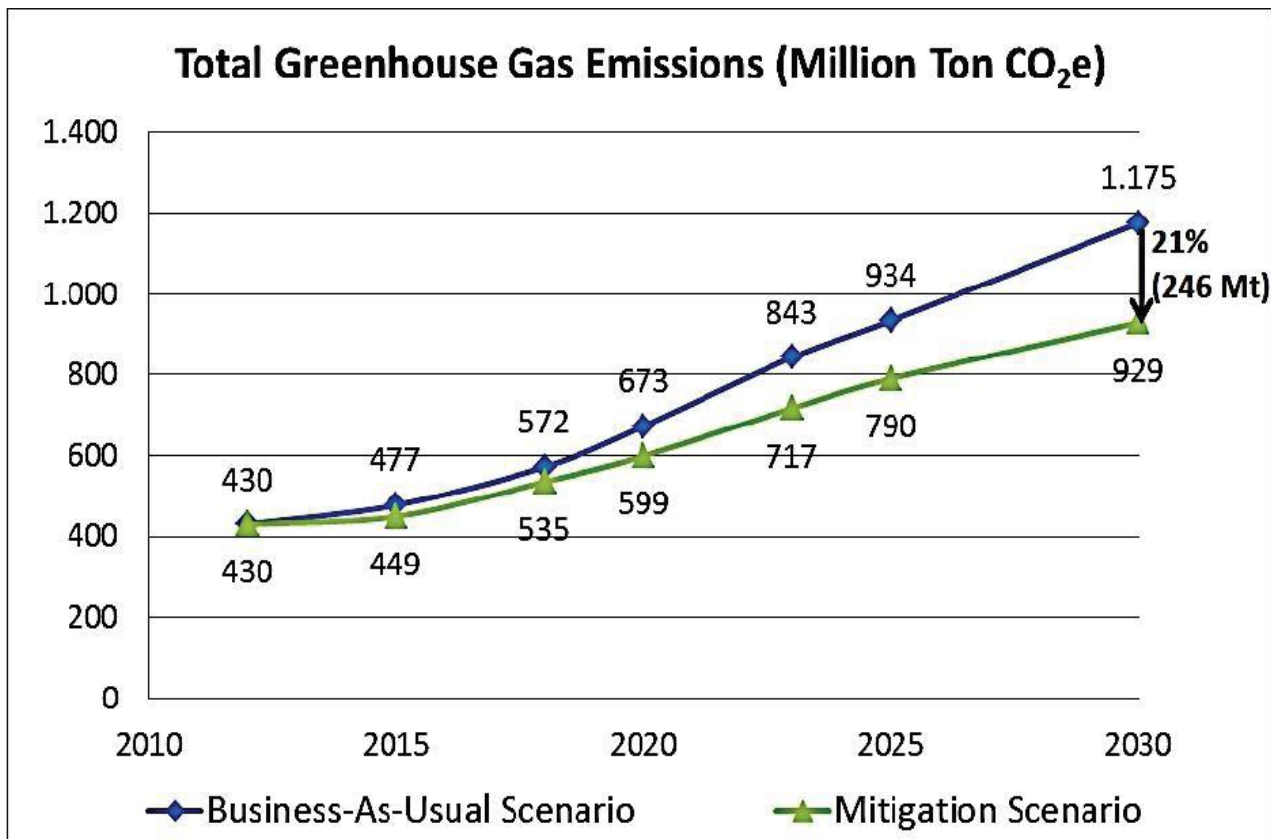
Field burning of agricultural residues: 0.2 Mt CO<sub>2</sub> eq.

Urea application: 1.3 Mt CO<sub>2</sub> eq.



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# GHG Emission Projections



Turkey Government's official INDC GHG target until 2030;  
 2030 yılında seragazi emisyonları (with LULUCF) :  
 With BAU scenario;  
 1175 Mt CO<sub>2</sub> eq.  
 With measures scenario;  
 929 Mt CO<sub>2</sub> eq.

Source: Turkey's 6th National Communication





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# GHG Emission Projections

Sectors	GHG emission projections without measures scenario		GHG emission projections without measures scenario		Decrease in emissions	
	(kt CO <sub>2</sub> eq)		(kt CO <sub>2</sub> eq)		(%)	
	2020	2030	2020	2030	2020	2030
Energy	538 887	943 547	499 336	738 266	-7.3	-21.8
Transport	101 190	136 513	101 113	135 994	-0.1	-0.4
Industry/industrial processes	94 750	169 754	94 785	169 754	0.0	0.0
<b>Agriculture</b>	<b>51 557</b>	<b>59 278</b>	<b>51 557</b>	<b>59 278</b>	<b>0.0</b>	<b>0.0</b>
Waste management/waste	27 900	40 900	23 610	31 400	-15.4	-23.2
Forestry/LULUCF	-40 193	-38 698	-70 036	-69 710	74.2	80.1
Total with LULUCF	672 901	1174 781	599 252	928 987	-10.9	-20.9
Total without LULUCF	713 094	1213 479	575 642	897 587	-19.3	-26.0

No decrease in emissions for agriculture sector

Source: Turkey's Third Biennial Report



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*Thank you for your attention*

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