



# **Greenhouse gas emissions from fossil fuels**

**Actualisation 2012**

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# Agenda

- Study 2005
- Actualization 2012
- Prognosis to 100% Condensation
- Conclusions

Source : Intertek/RDC

1. Replacing a heating oil boiler by a gas boiler in 2005 in Belgium would not decrease the GHG emissions
2. The use of high efficiency boilers offers an important reduction potential for GHG emissions, much more than a combustible change
3. GHG emissions from upstream the boiler are relatively higher for gas (32.1%) than for heating oil (14.3%)

# Conclusions

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## Market share and efficiency of boiler in 2005 (Belgium)

		Market share in 2005	Minimum legal efficiency regarding "AR 01/01/1998"	Variation hypothesis of efficiency (Hi)		Correction factor in function of load factor	Average nominal efficiency (at partial load) (Hi)	Average nominal efficiency (at partial load) (Hs)
				Min.	Max.			
Gas	HR+ traditional boiler	40.6%	80 + 3 log Pn	81,9	88,6	<b>0,86</b>	76,83	<b>69,28</b>
	HR+ LT boiler	40.6%	87,5 + 1,5 log Pn	86,7	88,9			
	HR top boiler	18.7%	97 log Pn	94,5	106,9			
Heating oil	Traditional boiler	10.3%	80 + 3 log Pn	81,9	91,9	<b>0,86</b>	76,70	<b>71,78</b>
	Optimaz boiler	89.7%	87,5 + 1,5 log Pn combustion eff. = 93%	86,7	93,2			

Marginal mix :

- Gas : 25% LNG (50% Algeria, 50% Middle east), 75% NG (75% Siberia, 25% Caspian Sea)
- Heating oil : 50% Russia, 50% Middle east

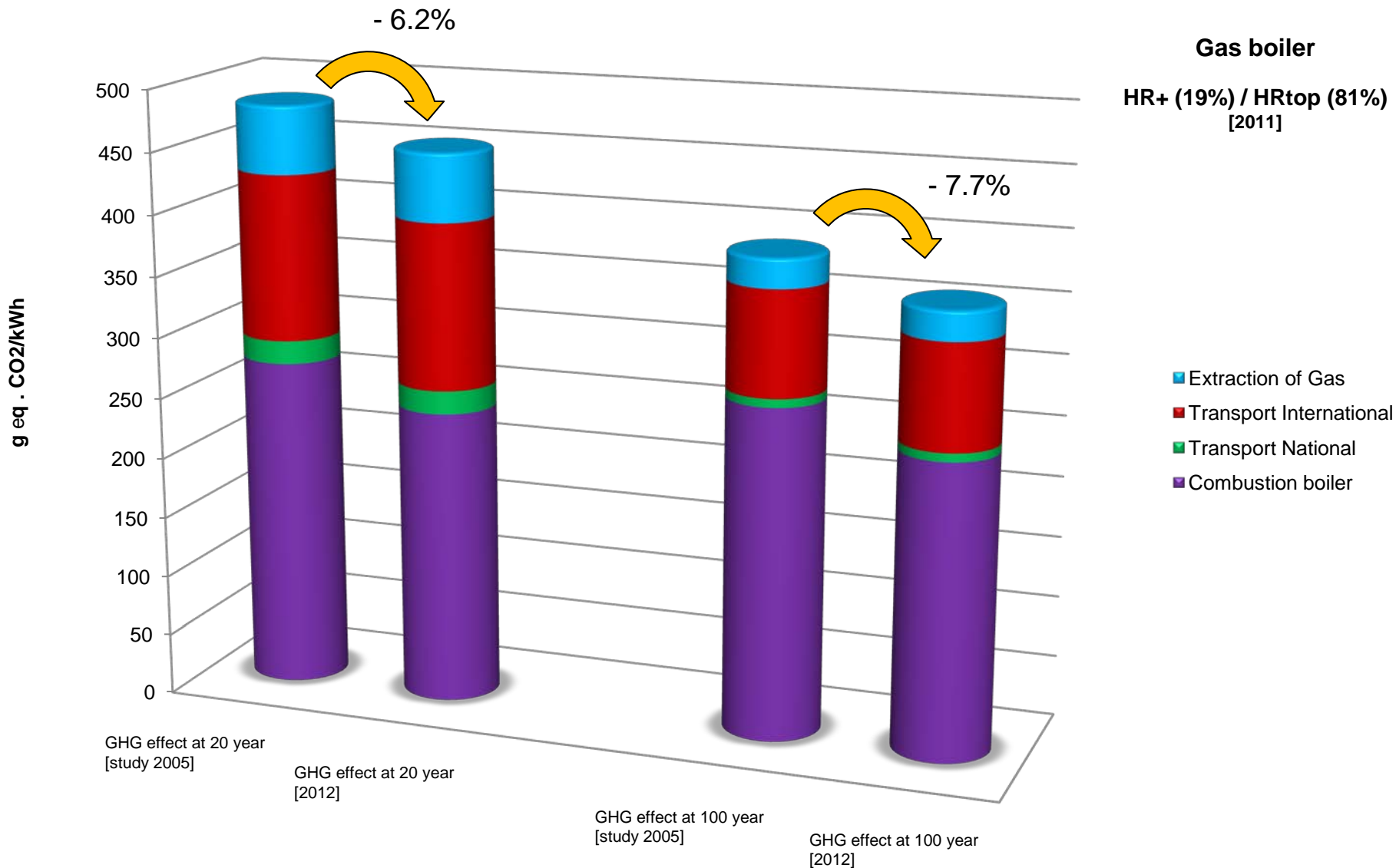
## Market share and efficiency of boiler in 2012 (Belgium)

		Market share in 2012	Minimum legal efficiency regarding "AR 01/01/1998"	Variation hypothesis of efficiency (Hi)		Correction factor in function of load factor	Average nominal efficiency (at partial load) (Hi)	Average nominal efficiency (at partial load) (Hs)
				Min.	Max.			
Gas	HR+ boiler	19%	87,5 + 1,5 log Pn	87	88,6	0,86	86,16	77,69
	HR top boiler	81%	97 log Pn	100,5	106,9			
Heating oil	Optimaz boiler	63%	87,5 + 1,5 log Pn combustion eff. = 93%	87	99		82,35	77,07
	Optimaz-elite boiler	37%	97 log Pn combustion eff. = 97,5%	99	104,5			

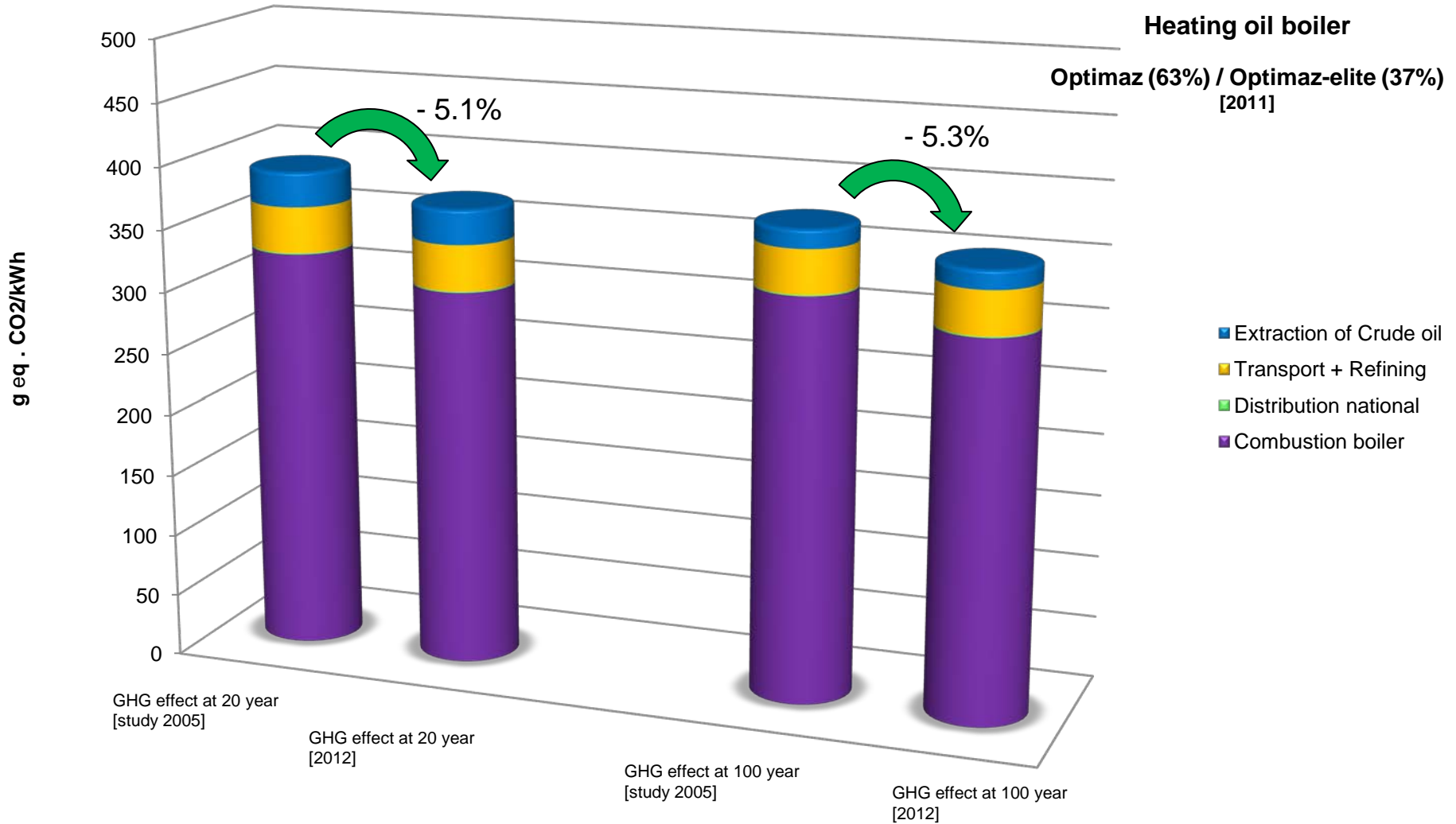
### Marginal mix :

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# Actualization 2012

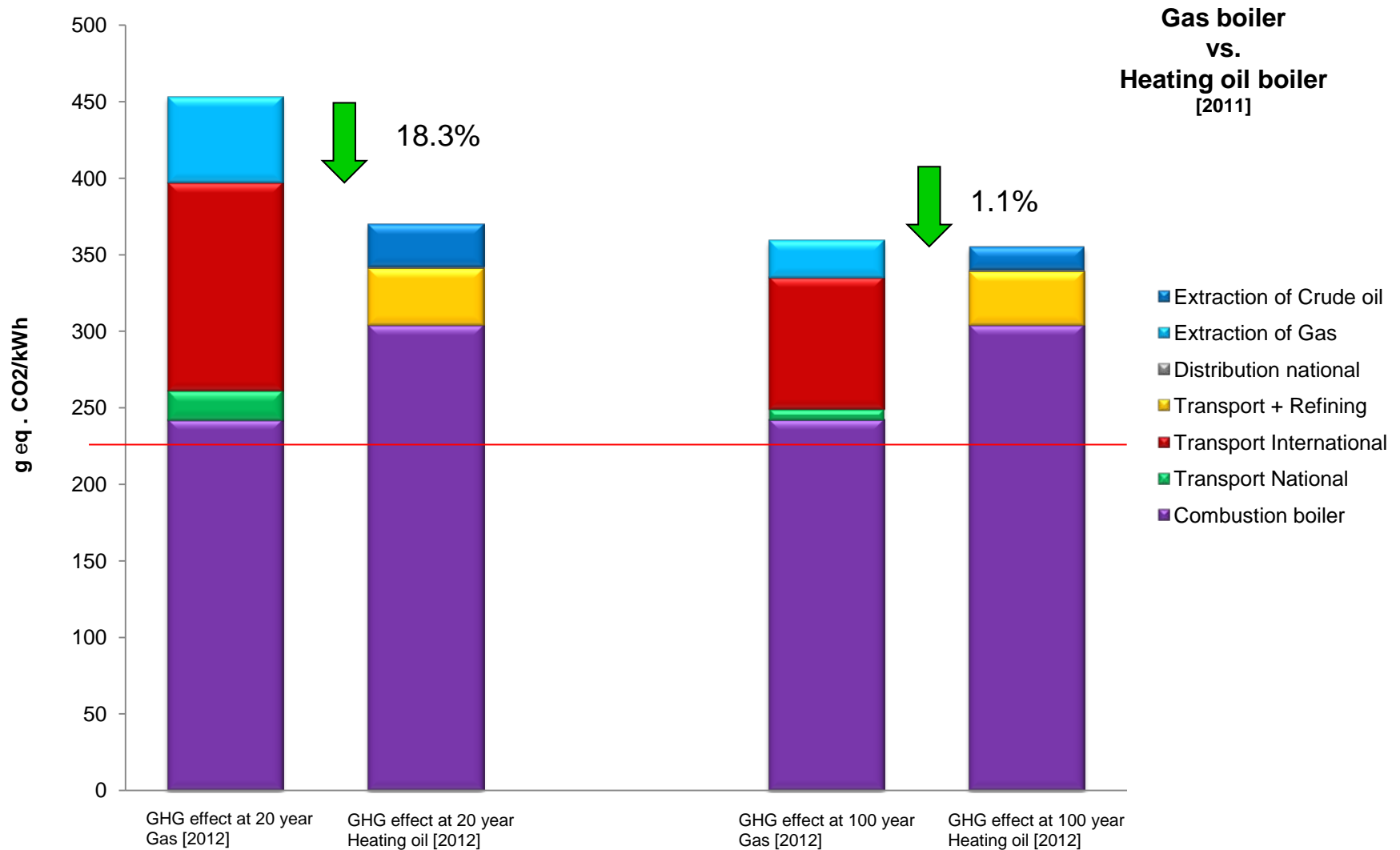


# Actualization 2012





# Actualization 2012



# Conclusions

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3. GHG emissions from upstream the boiler are relatively higher for gas (32.1%) than for heating oil (14.3%)

# Prognosis to 100% Condensation

	Market share	Minimum legal efficiency regarding "AR 01/01/1998"	Variation hypothesis of efficiency (Hi)		Correction factor in function of load factor	Average nominal efficiency (at partial load) (Hi)	Average nominal efficiency (at partial load) (Hs)
			Min.	Max.			
Gas	100%	97 log Pn	100,5	106,9	0,98	101,63	91,64
Heating oil	100%	97 log Pn combustion eff. = 97,5%	99	104,5		99,72	93,31

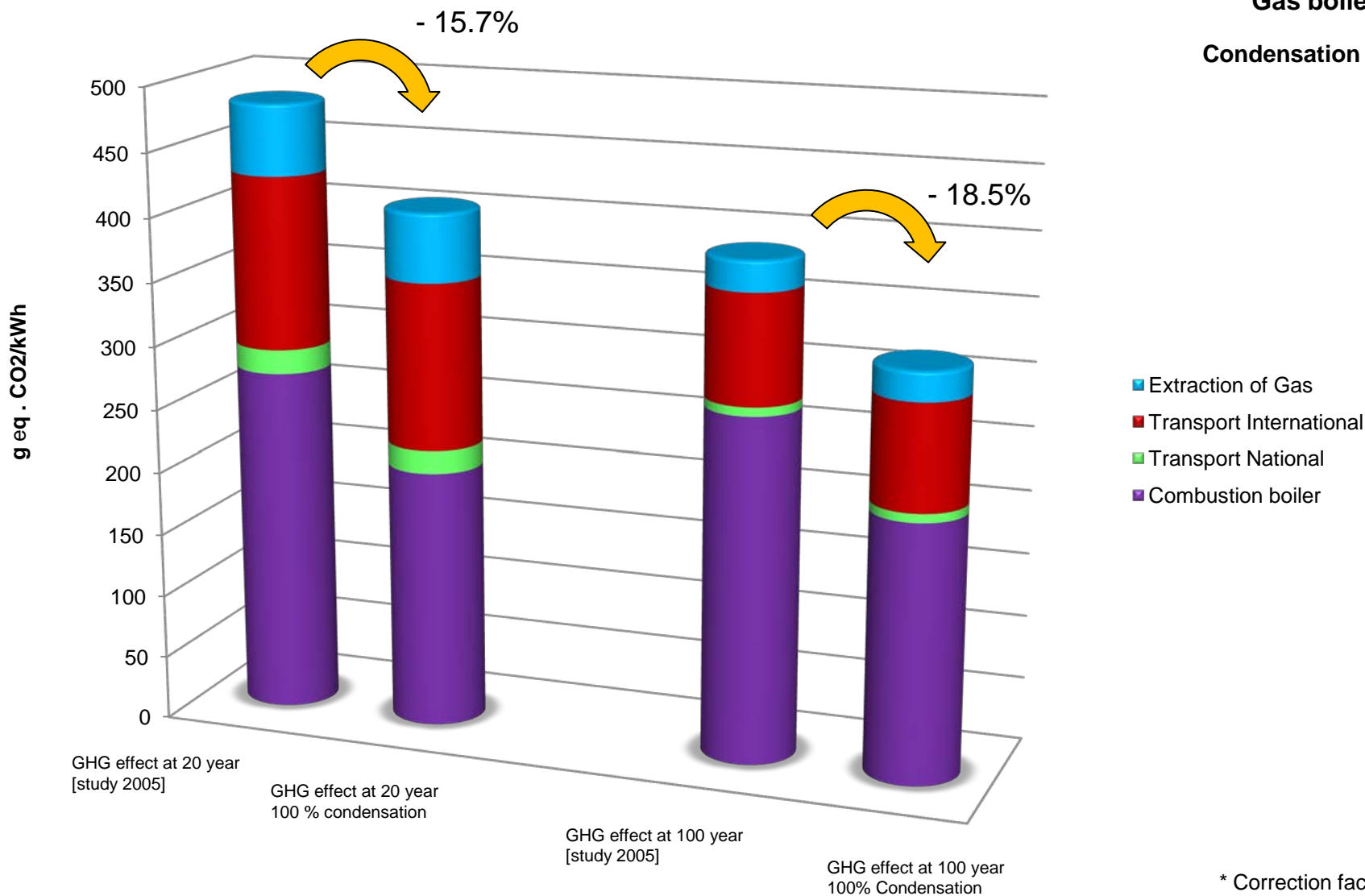
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# Actualization 2012

Gas boiler

Condensation 100%

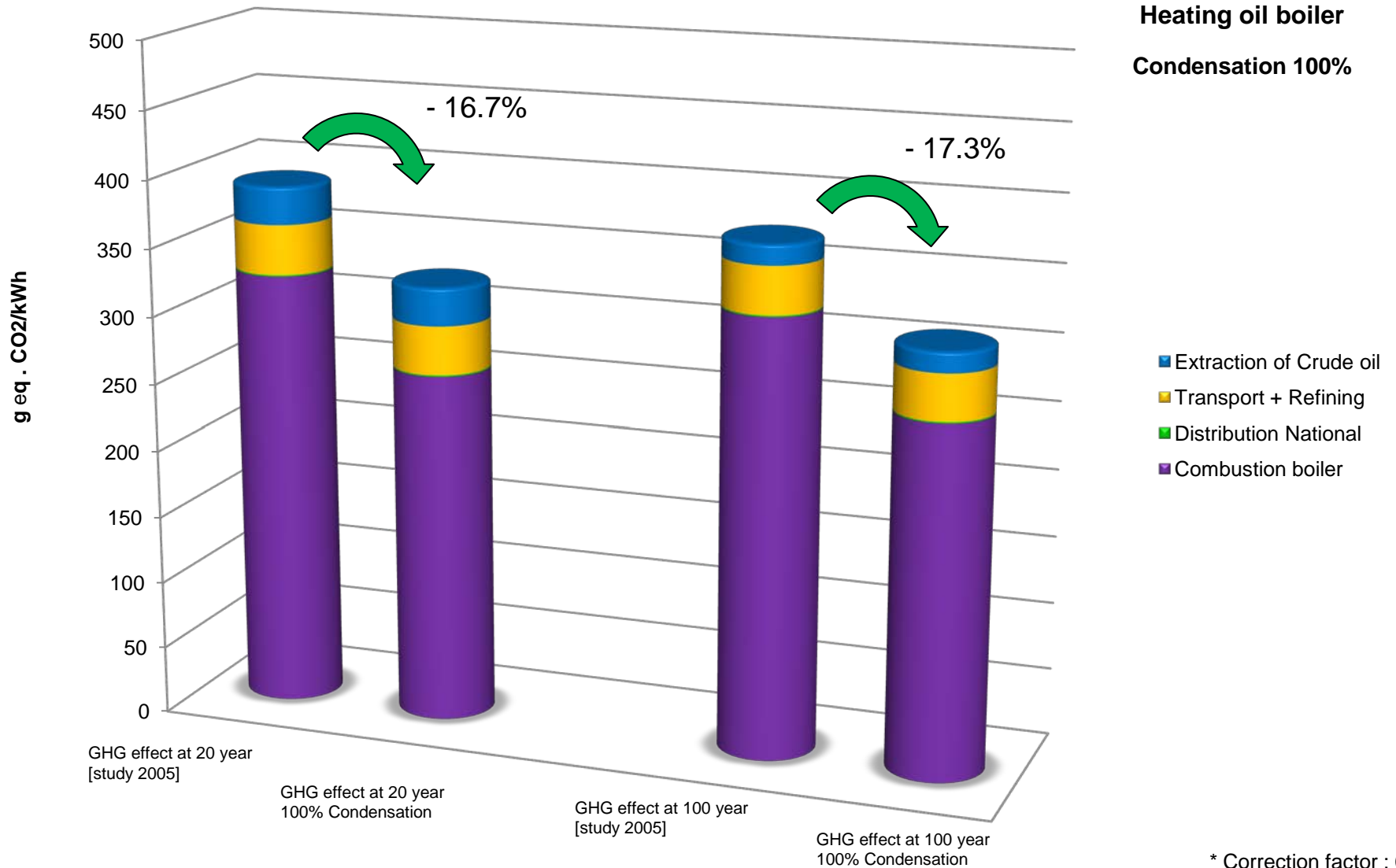


\* Correction factor : 0.98

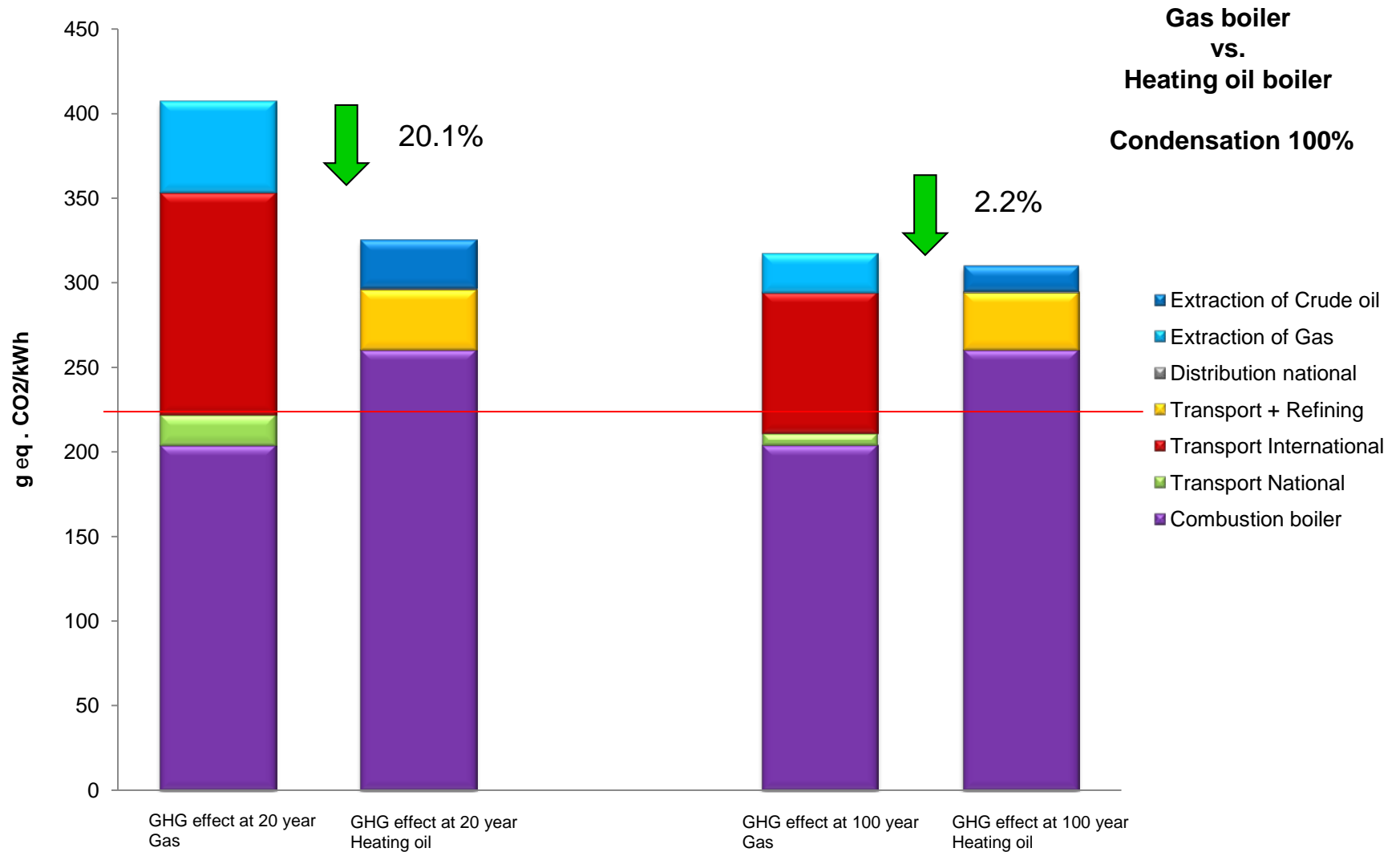
# Actualization 2012

Heating oil boiler

Condensation 100%



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**Thank you very much**

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