



CLIMATE AND
POLLUTION
AGENCY

Attainability of ambition levels - Norway

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Key points

- **National projections and GAINS scenarios are only in part corresponding.**
- **The reasons are not clear.**
- **The ambition level “Mid” seems to be attainable for PM_{2,5} and SO₂.**
- **We need further assessments to conclude on the attainability for NOx, ammonia and VOC.**

National projections vs GAINS BL (PRIMES)

	National emissions 2009	National projection 2020	GAINS national scenario BL 2020	GAINS PRIMES scenario BL 2020	
Kt					
VOC	141	143	88	86	-40% (-57 kt)
NOx	178	159* (148)	148	136	-14% (-23 kt)
NH3	23	23	23	22	- 4% (-1 kt)
PM2,5	42	X	42	31	X
SO2	16	21	24	24	+14% (3 kt)

* adjusted by Klif in February 2011

Possible reasons for differences in emissions?

- Emission factors?
- Removal efficiencies?



Examples of differences for specific sources

- **VOC**

	<u>GAINS</u>
– Offshore loading (oil ind):	14 kt lower
– Light duty vehicles (gasoline):	16 kt lower
– <u>Use of solvents:</u>	<u>20 kt lower</u>
SUM:	50 kt lower

- **NOx**

	<u>GAINS</u>
– Ships:	8 kt <u>higher</u>
– Heavy duty vehicles:	6 kt lower
– Off-road machinery:	5 kt lower
– Off-shore gas turbines:	8 kt lower
– <u>Process industry:</u>	<u>3 kt lower</u>
SUM:	14 kt lower

Are the “Mid” ambition levels attainable?

- **SO₂: Attainable**
- **PM_{2,5}: Attainable**
- **NO_x: ? (gap 36 kt)**
- **VOC: ?(gap 66 kt)**
- **NH₃: ? (gap 7 kt)**

