

Mercury-related policy developments in the European Union

Lesley Sloss

Principal Environmental Consultant
IEA Clean Coal Centre



<http://www.iea-coal.org.uk>

None





THANK YOU FOR YOUR ATTENTION

IEA CCC

www.iea-coal.org.uk

+44 (0)20 8780 2111 (tel)

+44 (0)20 8780 1746 (fax)

Lesley Sloss

lesleysloss@gmail.co.uk

International legislation - European Union

- emission limits,
 - BAT;
 - plant permits;
 - trading for CO₂
-
- aimed at SO₂, NO_x, CO₂ and particulates, *not* Hg

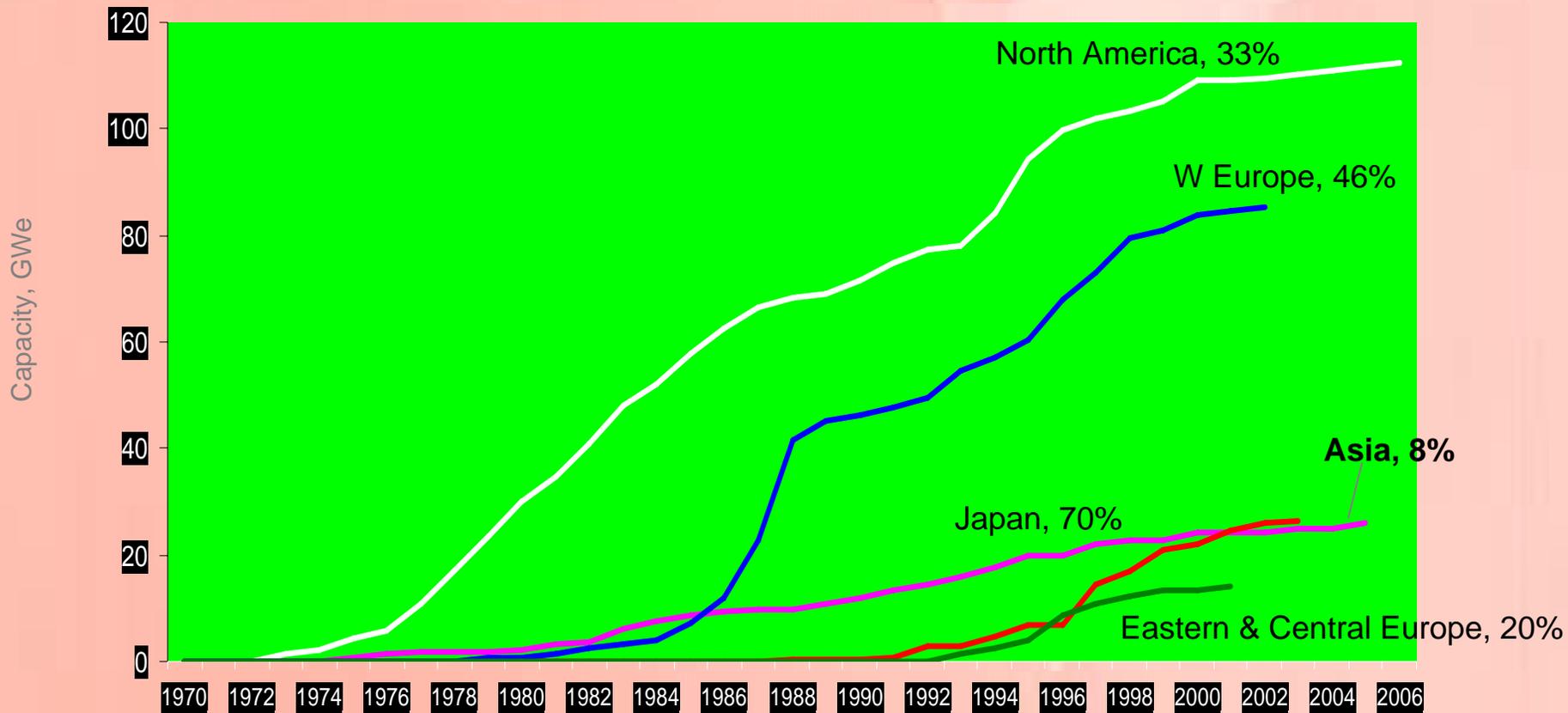
Potential mercury removal for various plant configurations

Technology	mercury removal, %		
	Bituminous	Subbituminous	Lignite
ESP	+	+	+
SCR+ESP	+	+	+
SDS+BH	++	++	++
SCR+SDS+BH	++	++	++
ESP+wet FGD	++++	+++	+++
SCR+ESP+FGD	+++++	+++	+++

SDS = spray dry scrubber

BH= baghouse

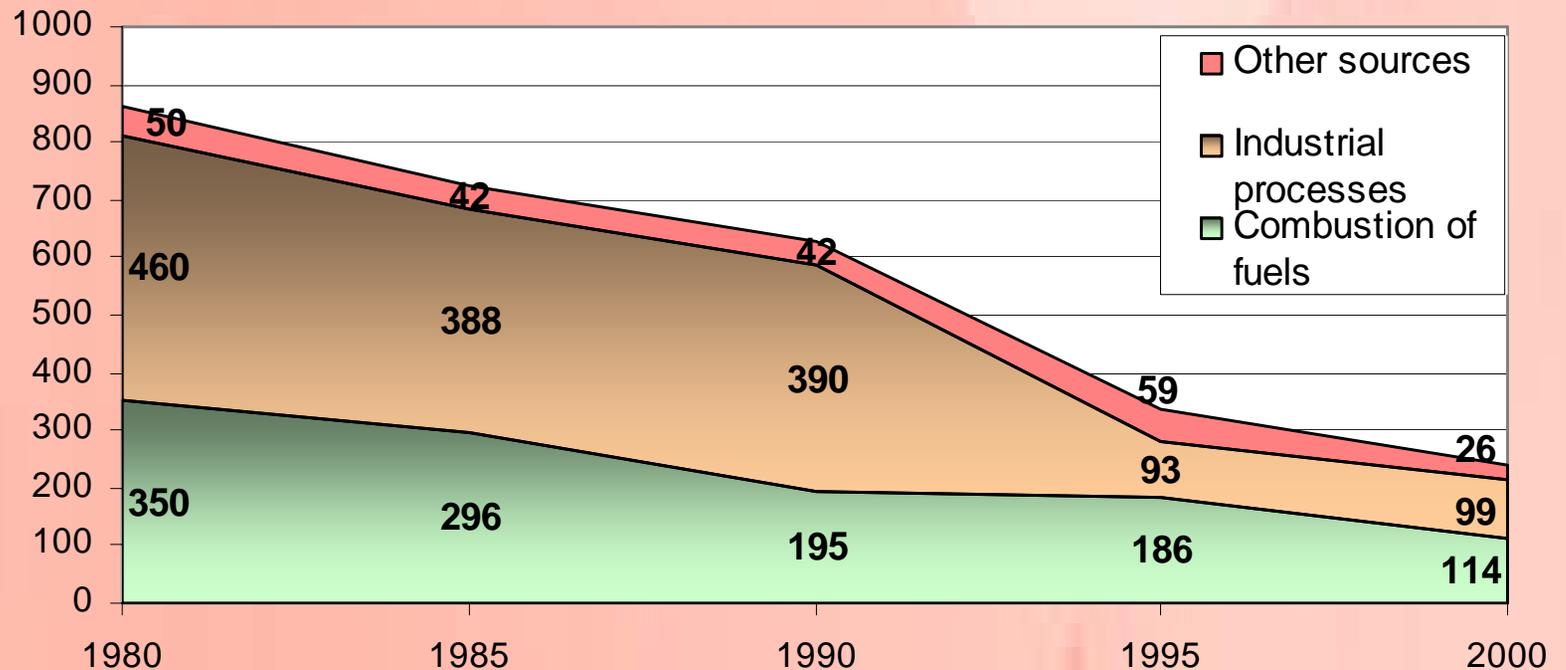
Growth in FGD capacity



Total emissions
in Europe
down by 70%
1980-2000

Europe - Emissions to air have fallen ...

Changes in total anthropogenic mercury emissions in Europe
(tonnes/year)



Amendment to LCPD and IPPC

ELVs being reduced to:

- 90 mg/m³ for NO_x
- 50 mg/m³ for SO₂

Which will mean FGD + low NO_x/OFA + SCR + low S/N coal.

Trends for coal plant in Europe

- FGD and DeNOx on all plants beyond 2016 (and now low S fuel);
- carbon capture ready (beyond 2020) move towards higher efficiency plants, ZETs - zero emissions technologies;
- ETS - increased plant efficiency, fuel switching away from coal

Mercury emissions are likely to continue to decline, despite new plant build

First ever air pollution regulation...?

Be it known to all within the sound of my voice, whosoever shall be found guilty of the burning of coal shall suffer the loss of his head.

King Edward I, 1273

Mercury emissions from coal plants in Europe, t/y

	EU-15	+10	total
1995	22	30	53
2000	20	14	34
2005	15	14	29
2010	11	13	24
2015	12	14	26
2020	9	6	15

... or less

Rest of the world?

- USA, Canada, Japan, EU and others are already tackling the mercury problem
- mercury emissions still increasing globally due to developing countries
- need a global plan

UNEP Global Mercury Initiative

- meetings in Nairobi and Bangkok
- global legally binding mechanism may be likely
- 5 target areas:
 - chlor-alkali
 - artesanal gold mining
 - products
 - air transfer
 - coal

Coal partnership

Goals?

Plans?

Measurable outcomes?

Draft business plan

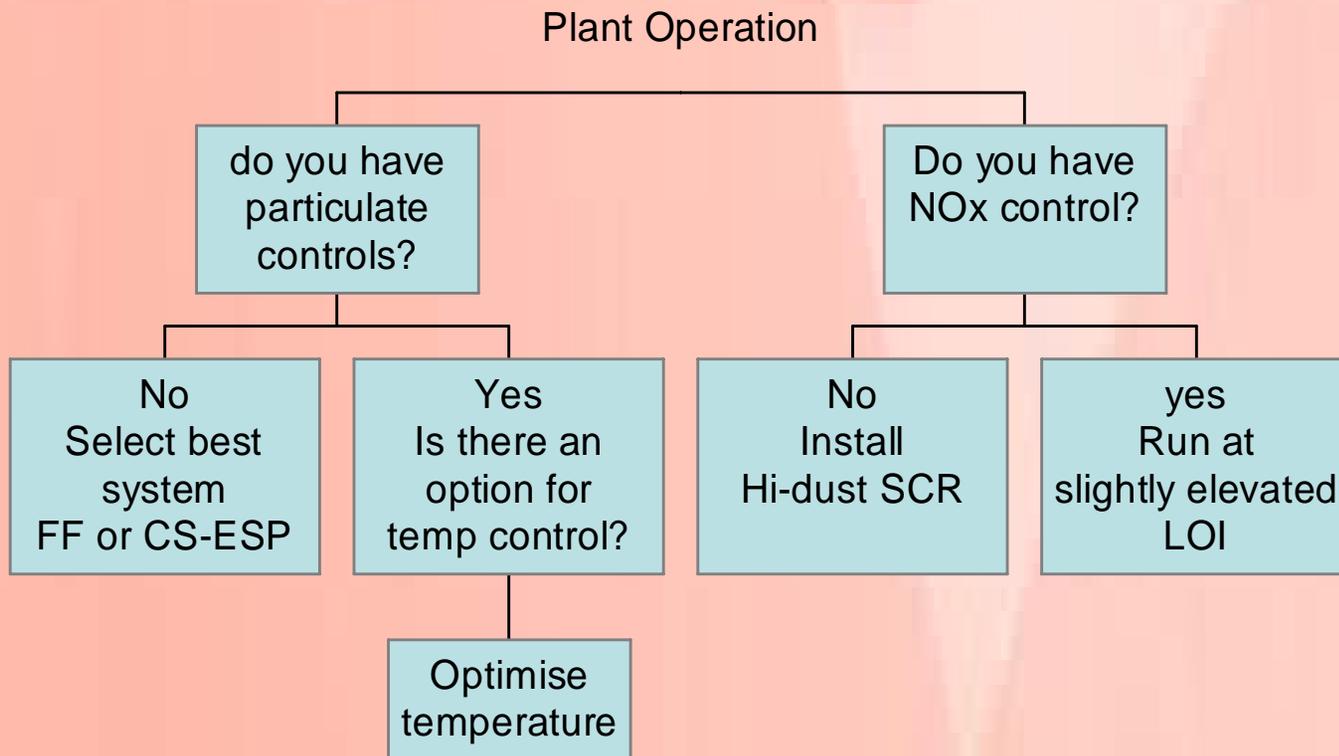
Priorities could include:

- help define and promote BAT/BEP for mercury, including economic co-benefit approaches;
- life cycle management from coal mining to coal combustion wastes;
- improve emission inventories;
- information dissemination

What is BAT/BEP for Hg from coal combustion?

- at the moment there is no single BAT/BEP for mercury:
- co-benefit effects are significant and economic;
- co-benefit effects can be enhanced or “tweaked”;
- mercury specific control technologies are being developed and will become more effective and economic

VERY simplified example for maximising co-benefit effects



“*TWEEC*”

Existing activities: CCC/UNEP report

"Economics of mercury control":

Draft due Dec 2007

- review co-benefit approaches
- review mercury-specific control technologies
- review selection process for BAT/BEP
- potential strategies for developing countries?



Partners so far:

Doosan Babcock, UK
CREIPI, Japan
EERC, USA
US EPA
EPRI, USA
CEE/NILU, Norway, Poland
Reaction Engineering, USA
EnBW Kraftwerke, Germany
EVN Ag, Austria

US DOE
Niksa Energy As.
Silesia Uni, Poland
KEMA, Netherlands
NEDO/Jcoal etc
Tsinghua Uni, China
Vosteen Cons, Germany
Yonsei Uni, Korea
IEA CCC

Interested?

- proposed project between Japan and China on coal selection/blending and plant optimisation for mercury reduction
- meeting April 1-3rd Geneva, Switzerland
- first stages, significant reductions in mercury could be achieved by simple and economical information transfer - talk is cheap!



THANK YOU FOR YOUR ATTENTION

IEA CCC

www.iea-coal.org.uk

+44 (0)20 8780 2111 (tel)

+44 (0)20 8780 1746 (fax)

Lesley Sloss

lesleysloss@gmail.co.uk