

# NEAT Results for Germany, the U.S. and Others

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## NEAT results for Germany, the U.S. and others

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Fraunhofer Institute  
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Innovation Research

## Problems

- 1.) Unclear and incomplete data
- 2.) Obvious inconsistencies
- 3.) Methodological uncertainties and limits



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## 1.) Unclear and incomplete data

### a) Lack of data and unprecise data

Solvents and others

### b) System boundaries of data

- MTBE, methanol, ethyl benzene, styrene etc. included in non-energy data?
- System boundaries very often unclear for all products used both as fuel and as chemical feedstock
- Foreign trade of lubricants, methanol, pet coke & others
- Softeners in production data for plastics?
- Double counting: E.g. octanol and butene for polymers

### c) Feedstock and process alternatives

Feedstocks: Olefins, NH<sub>3</sub>, CH<sub>3</sub>OH; PET: DMT/TPA; PA6:PA66,  
Rigid: Flexible PUR

### d) Steam cracking

Severity; energy self sufficiency

### e) Backflows

Steam crackers, aromatic plants, others

## 2.) Obvious inconsistencies

- a) Energy statistics <-> production/trade statistics, e.g. for:  
bitumen, lubricants
- b) Calculated <-> statistical data on backflows
- c) Negative values for "other intermediates"
- d) Coverage:  $Q_{NEU,NEAT} \leq Q_{NEU,Statistics}$

## 3.) Methodological uncertainties and limits

- a) Simplification of the interlinkages material flows
- b) Ratio short life : long life assumed to be the same for exports of  
"intermediates" and consumption of "other intermediates"
- c) Only relevant for "Consumption Approach" (Downstream  
perspective):
  - No foreign trade data for "Other uses of intermediates"
  - practically unfeasible to trace the carbon flows down to the end  
products

Photocopy of documents

GERMANY	Coverage ( $Q_{NEU,NEAT,var. def.} / Q_{NEU,Stat.}$ )		
	C-STRÖME	EUROSTAT	CEFIC
	$Q_{NEU} = Q_{TF}$	$Q_{NEU} = ?$	$Q_{NEU} = Q_{TF}$
for $Q_{NEU} = Q_{TF} - Q_F - Q_{E,int}$ :	88%	108%	85% - 88%
for $Q_{NEU} = Q_{TF} - Q_{E,int}$ :	96%	118%	93% - 97%
for $Q_{NEU} = Q_{TF} - Q_F$ :	95%	116%	91% - 95%
for $Q_{NEU} = Q_{TF}$ :	103%	126%	99% - 103%



USA	Coverage ( $Q_{NEU,NEAT,var. def.} / Q_{NEU,Stat.}$ )		
	IEA	Nat. Communic	CEFIC
	$Q_{NEU} = ?$	$Q_{NEU} = Q_{TF}$	$Q_{NEU} = Q_{TF}$
for $Q_{NEU} = Q_{TF} - Q_F - Q_{E,int}$ :	102%	88%	80% - 93%
for $Q_{NEU} = Q_{TF} - Q_{E,int}$ :	113%	98%	89% - 103%
for $Q_{NEU} = Q_{TF} - Q_F$ :	111%	96%	87% - 101%
for $Q_{NEU} = Q_{TF}$ :	122%	105%	96% - 111%



Italy	Coverage ( $Q_{NEU,NEAT,var. def.} / Q_{NEU,Stat.}$ )		
	Bilancio En. $Q_{NEU} = ?$	EUROSTAT $Q_{NEU} = ?$	CEFIC $Q_{NEU} = Q_{TF}$
for $Q_{NEU} = Q_{TF} - Q_F - Q_{E,int.}$	92%	93%	87% - 90%
for $Q_{NEU} = Q_{TF} - Q_{E,int.}$	100%	101%	95% - 98%
for $Q_{NEU} = Q_{TF} - Q_F$ :	97%	98%	92% - 96%
for $Q_{NEU} = Q_{TF}$ :	105%	107%	100% - 104%

Japan	Coverage ( $Q_{NEU,NEAT,var. def.} / Q_{NEU,Stat.}$ )		
	Energy Bal. $Q_{NEU} = ?$	IEA $Q_{NEU} = ?$	
for $Q_{NEU} = Q_{TF} - Q_F - Q_{E,int.}$	83%	88%	
for $Q_{NEU} = Q_{TF} - Q_{E,int.}$	90%	96%	
for $Q_{NEU} = Q_{TF} - Q_F$ :	89%	95%	
for $Q_{NEU} = Q_{TF}$ :	97%	103%	

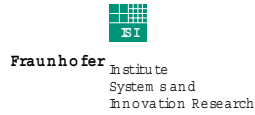
Korea	Coverage ( $Q_{NEU,NEAT,var. def.} / Q_{NEU,Stat.}$ )		
	Interviews etc. $Q_{NEU} = ?$	IEA $Q_{NEU} = ?$	
for $Q_{NEU} = Q_{TF} - Q_F - Q_E, int:$	84%	89%	
for $Q_{NEU} = Q_{TF} - Q_E, int:$	96%	100%	
for $Q_{NEU} = Q_{TF} - Q_F:$	93%	98%	
for $Q_{NEU} = Q_{TF}:$	104%	109%	

United Kingdom	Coverage ( $Q_{NEU,NEAT,var. def.} / Q_{NEU,Stat.}$ )		
	Interviews etc. $Q_{NEU} = ?$	EUROSTAT $Q_{NEU} = ?$	CEFIC $Q_{NEU} = Q_{TF}$
for $Q_{NEU} = Q_{TF} - Q_F - Q_E, int:$	102%	107%	93%
for $Q_{NEU} = Q_{TF} - Q_E, int:$	108%	112%	98%
for $Q_{NEU} = Q_{TF} - Q_F:$	106%	111%	97%
for $Q_{NEU} = Q_{TF}:$	112%	117%	102%

**Percentage of  $Q_{TF,NEAT}$  by country (Mt CO<sub>2</sub>/Mt CO<sub>2</sub>)**

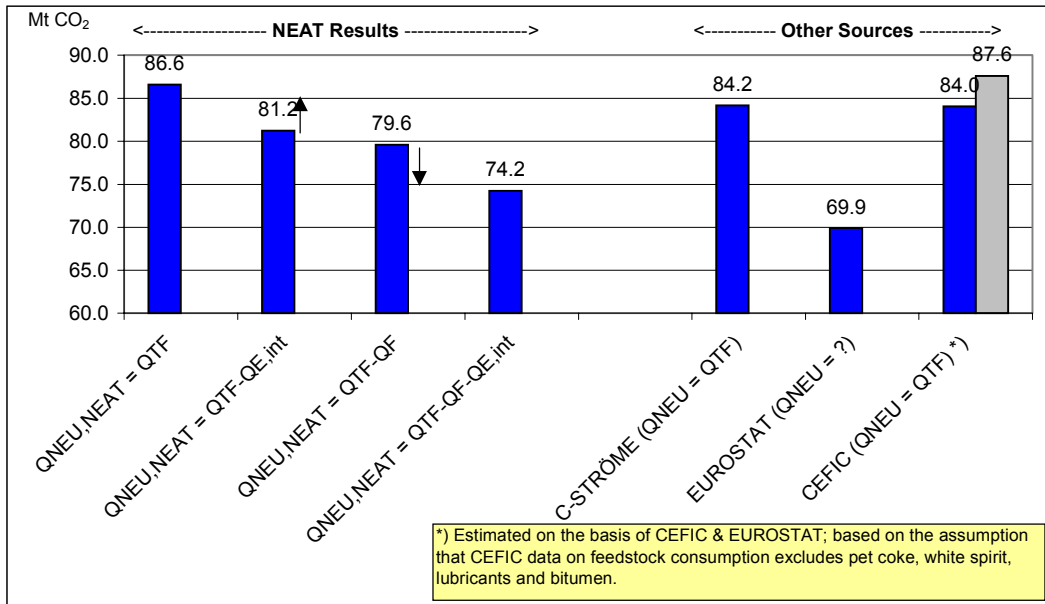
Country	CS <sub>III</sub>	CS <sub>II</sub>	CS <sub>I</sub>			Industrial processes	Fuel use st. crackers	Backflows st. crackers
			Total	long life	short life			
GERMANY	92%	86%	76%	54%	22%	10%	6%	8%
ITALY	92%	87%	84%	54%	30%	2%	5%	8%
JAPAN	92%	86%	83%	58%	25%	3%	6%	8%
KOREA	89%	81%	78%	65%	14%	3%	8%	11%
UNITED KINGDOM	95%	91%	86%	57%	29%	6%	4%	5%
U.S.A.	91%	84%	76%	54%	22%	8%	7%	9%

Notes:  $CS_{III} = Q_{TF} - Q_F$   
 $CS_{II} = CS_{III} - Q_{E,int}$   
 $CS_I = CS_{II} - CO_2$  from industrial processes



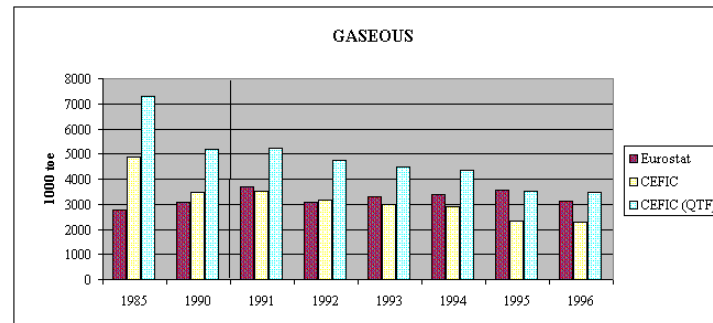
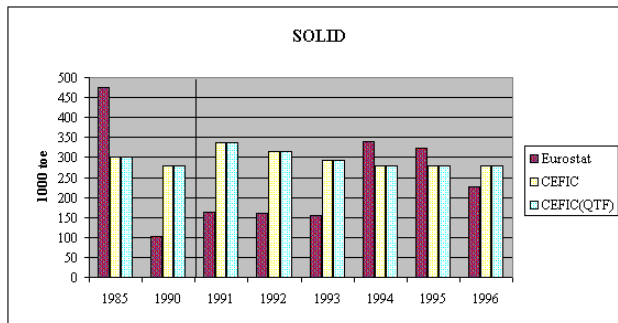
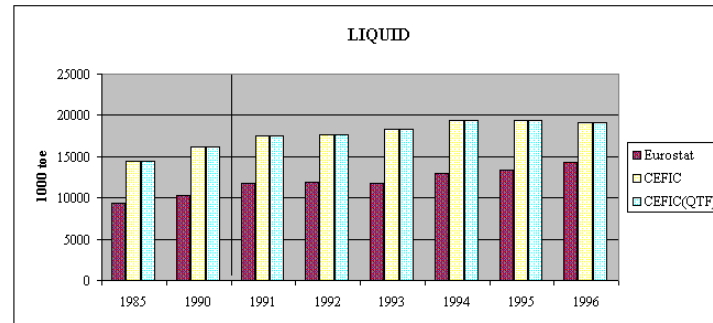
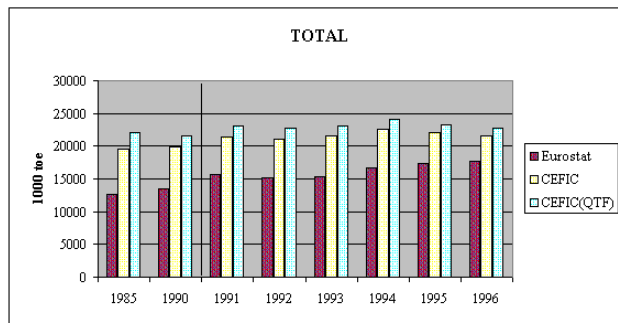
**NON-ENERGY USE - COMPARISON OF NEAT RESULTS WITH STATISTICAL SOURCES**

Country: **GERMANY** Year: **1995**



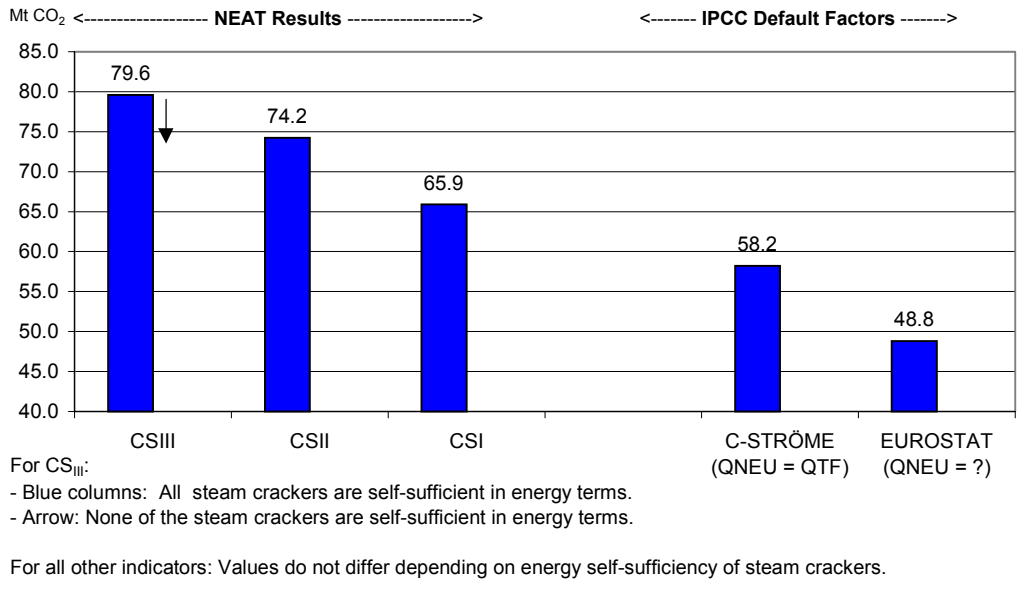
1000 TOE	Total				Solid				Liquid				Gaseous			
	Eurostat	CEFC	CEFC(Q <sub>TF</sub> )	Eurostat/ CEFC(Q <sub>TF</sub> )	Eurostat	CEFC	CEFC(Q <sub>TF</sub> )	Eurostat/ CEFC(Q <sub>TF</sub> )	Eurostat	CEFC	CEFC(Q <sub>TF</sub> )	Eurostat/ CEFC(Q <sub>TF</sub> )	Eurostat	CEFC	CEFC (Q <sub>TF</sub> )	Eurostat/ CEFC(Q <sub>TF</sub> )
1985	12639	19629	22059	57%	475.0459	300	300	158%	9376.9541	14470	14470	65%	2787	4859	7289	38%
1990	13529	19923	21654	62%	101.17528	280	280	36%	10335.825	16181	16181	64%	3092	3462	5193	60%
1991	15659	21363	23112	68%	162.5128	336	336	48%	11808.487	17530	17530	67%	3688	3497	5246	70%
1992	15091	21118	22706	66%	159.35107	315	315	51%	11838.649	17628	17628	67%	3092	3175	4763	65%
1993	15253	21578	23077	66%	153.65996	294	294	52%	11800.34	18287	18287	65%	3297	2997	4496	73%
1994	16896	22600	24053	69%	338.90427	280	280	121%	12986.096	19414	19414	67%	3368	2906	4359	77%
1995	17348	22010	23183	75%	321.83954	280	280	115%	13411.16	19385	19385	69%	3577	2345	3518	102%
1996	17628	21646	22798	77%	227.55985	280	280	81%	14270.44	19062	19062	75%	3130	2304	3456	91%
1997	0	23500		#DIV/0!	0	280		#DIV/0!	0	20555		#DIV/0!	0	2665		#DIV/0!

Note: 1985 + 1990 BRD, ABL



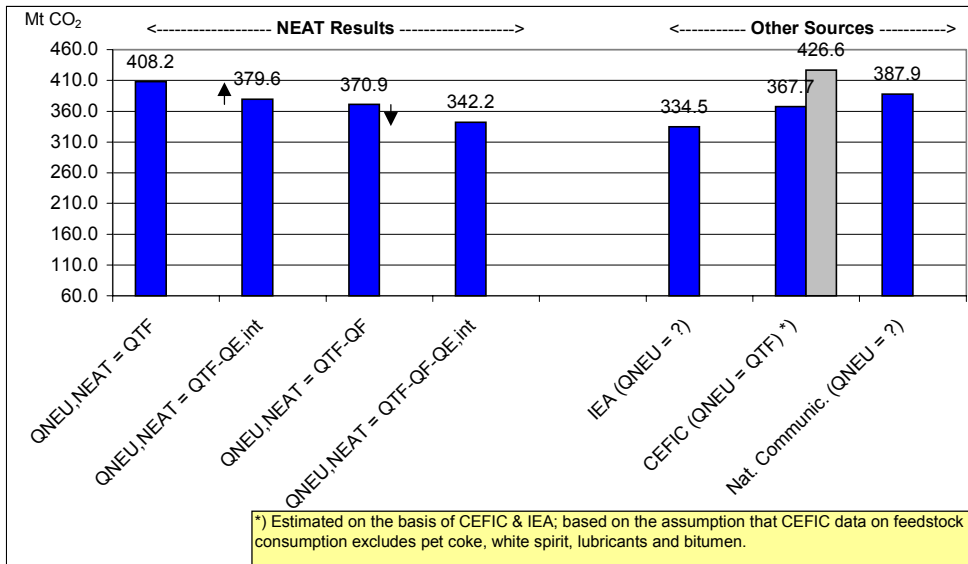
**CARBON STORAGE**  
**- COMPARISON OF NEAT RESULTS WITH RESULTS USING IPCC DEFAULT FACTORS**

Country: **GERMANY** Year: **1995**



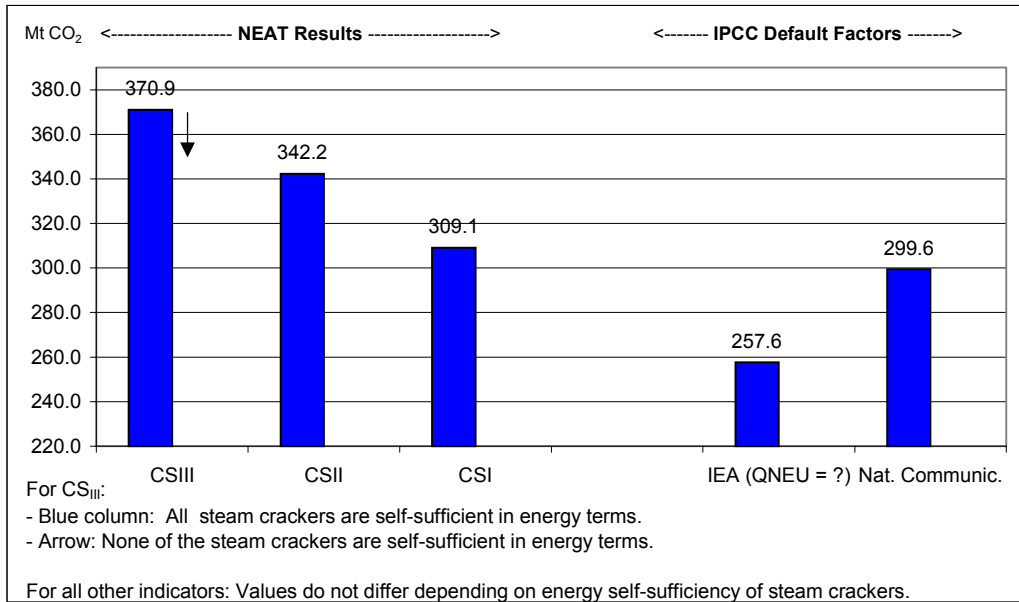
**NON-ENERGY USE - COMPARISON OF NEAT RESULTS WITH STATISTICAL SOURCES**

Country: **U.S.A.** Year: **1995**



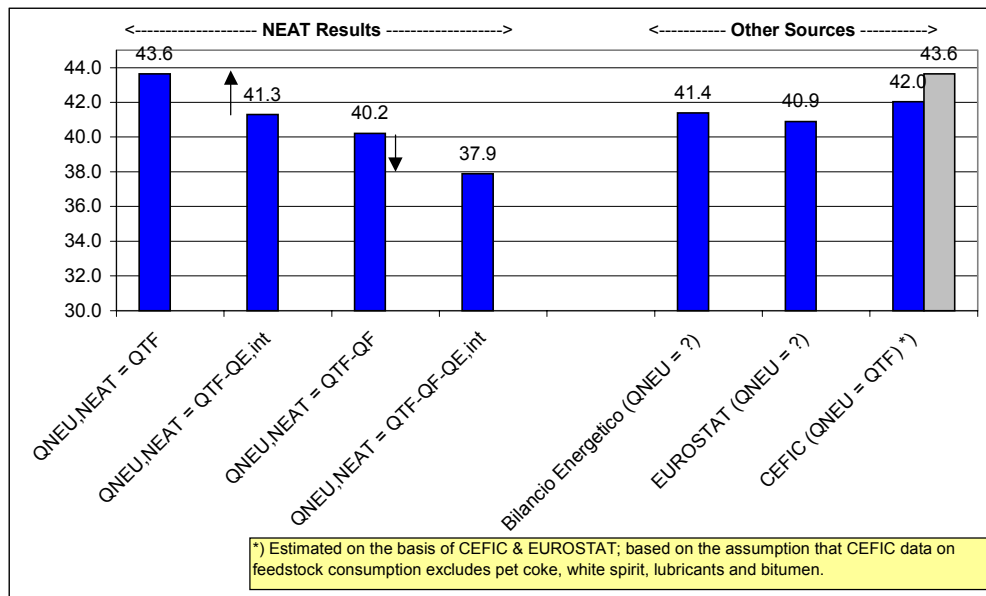
**CARBON STORAGE**  
**- COMPARISON OF NEAT RESULTS WITH RESULTS USING IPCC DEFAULT FACTORS**

Country: **U.S.A.** Year: **1995**



**NON-ENERGY USE - COMPARISON OF NEAT RESULTS WITH STATISTICAL SOURCES**

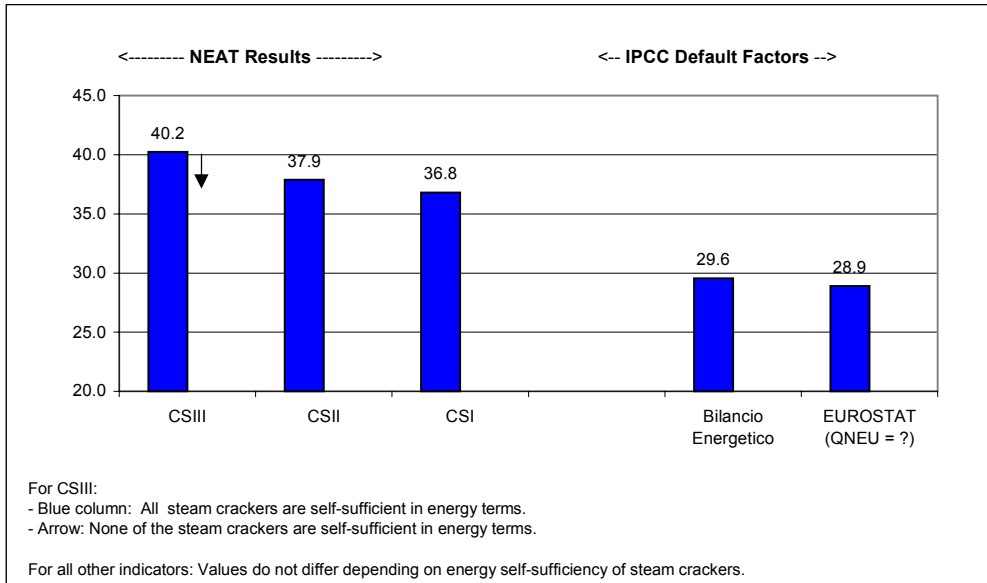
Country: **ITALY** Year: **1996**



**- COMPARISON OF NEAT RESULTS WITH RESULTS USING IPCC DEFAULT FACTORS**

Country: **ITALY**

Year: **1996**

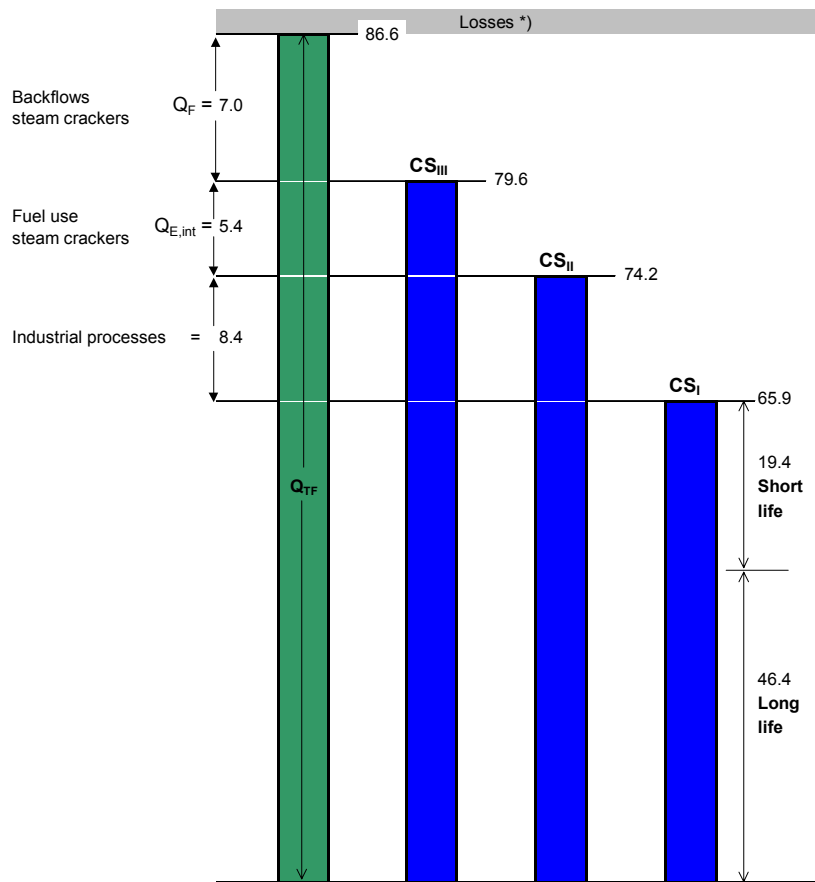


**NEAT RESULTS**

Country: **GERMANY**

Year: **1995**

All figures in Mt CO<sub>2</sub>



\*) Organics in wastewater, fugitive emissions  
 Individual figures may not add up to totals due to rounding.

