

CCU potential, barriers and opportunities

EIES 2020



Volumes on 'short' term

Emitters/providers	Volume (kton/yr)	Operational	Demand	Volume (kton/yr)	Operational
			<u>CCS</u>		
			Porthos Rotterdam	2000-8000	2024
AEB Amsterdam	500	2023?	Athos Amsterdam	1500-7500	2027
AVR Rotterdam	500	2023?			
Suez Roosendaal - gtb	140	2024	<u>CCU</u>		
AVR Duiven - gtb	50	Now	Glastuinbouw (OCAP)	1200-2500	2019->
HVC Alkmaar	PM		Liquefaction	250	2020
Twence	PM		Mineralisation	50-500	PM
Shell - gtb	400	Now	Chemistry	100-1000	PM
Alco	200	Now	Fuels	100-1000	PM
Tata Steel	PM		Total	1700-5250	
Total	1790 + PM				



Challenges



- Positioning in ETS, Carbon Removal Certification
- Swaps and certificates
- CO₂ tax for Waste incineration plants
- A level playing field for CO₂ as a raw material (cf. SDE for energy)
- System integration as a future perspective
- Match supply and demand, chicken and egg dilemma



Opportunities



Opportunities

- Upcoming subsidy schemes
- What do Porthos, Athos and OCAP have to offer each other?
- What value will CO₂ from biogenic origin have?
- An LCA approach to CCU
- Hydrogen: when used in mobility and raw materials industry: is there synergy with CCU?



Collaborations ? / !



Port of Rotterdam
Suez Roosendaal
OCI
VNCI
Alta
Glastuinbouw
Vattenfall
Porthos
Carbon Upcycling
Nouryon
Feyecon
TU Delft
Fieldlab FLIE ZH
Deep Branch
Sky NRG
RVO
SHELL
North CCU Hub
TNO
Air Liquide
VOPAK
RWE
GasUnie
Athos
Avantium
NEN
OCAP
TATA
Avantium
Coval
Brightlands
ISPT
Carbon 8
InnovationQuarter
UvA
Alco
ZEF
TKI
HVC
Greenfish
AVR
Green Minerals
Linde Gas
AEB Amsterdam
Clean Tech Delta
BioMCN
Shell
Antecy / Climeworks
Carbon Collectors
Omega Green
Deltalinqs
Dow Chemical
Dyecoo
Photanol
Twence
Greensand

