

Corporate environmental management through industrial clusters in China

中国における産業クラスターを通じての
企業環境管理

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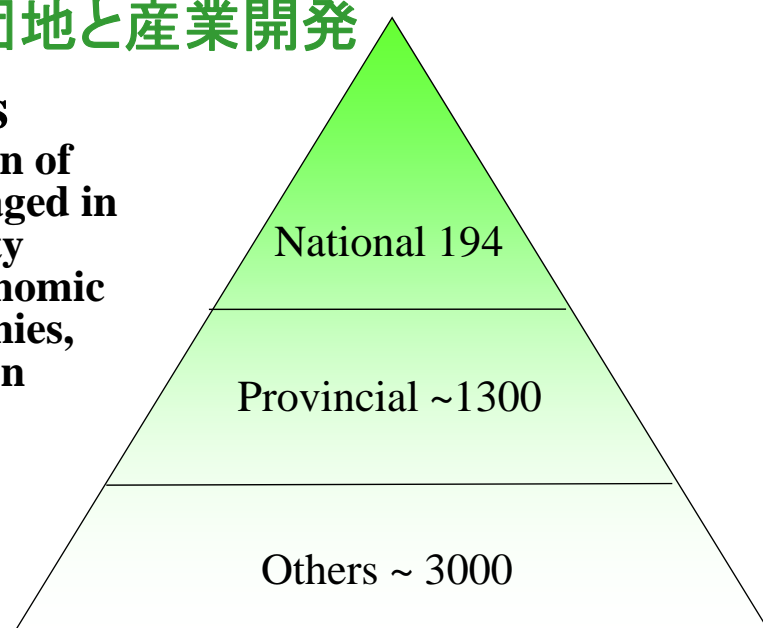
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Industrial clusters, industrial parks and industrial development

産業クラスター、工業団地と産業開発

Industrial clusters
Geographical agglomeration of
firms and ancillary units engaged in
the same sector or activity
Generates significant economic
gains - External Economies,
Collective Joint Action



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Eco-industrial parks

エコ工業団地

- An Eco-Industrial Park is a community of manufacturing and service businesses located together on a common property. Members seek enhanced environmental, economic, and social performance through collaboration in managing environmental and resource issues. (Eco-industrial Park Handbook)

Win-Win solution at industrial Parks



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The biggest national experiment in EIPs – CHINA

- 1978 — Reform & open policy 中国EIPsにおける最大の国家戦略
- 1984 — Economic & Tech Development Zone
- 1992 — High-tech Industrial Parks
- 2001 — **MEP Pilot EIPs**
- 2003 — **EIP Guidelines**; Cleaner production promotion law
- 2005 — To fasten circular economy development
- **EIP Tech. Standards**
- **Regulation on EIP management**
- **EIP: TEDA, Suzhou IP, Suzhou High-tech Park**
- **Circular economy promotion law**
- 2010 — **EIP: Wuxi High-tech Park, Yantai EDA, Weifang EDA**



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EIP – from strategic niche to mainstream development

EIP – 戦略隙間から発展主流へ

- **Technological trajectory (path dependency)**
- **Spaces for experimentation, to open windows for tech., information, funding**
- **Government as enabler, a powerful recruitment group is important**
- **Regional competitiveness**



EIPs provide new opportunities for CEM

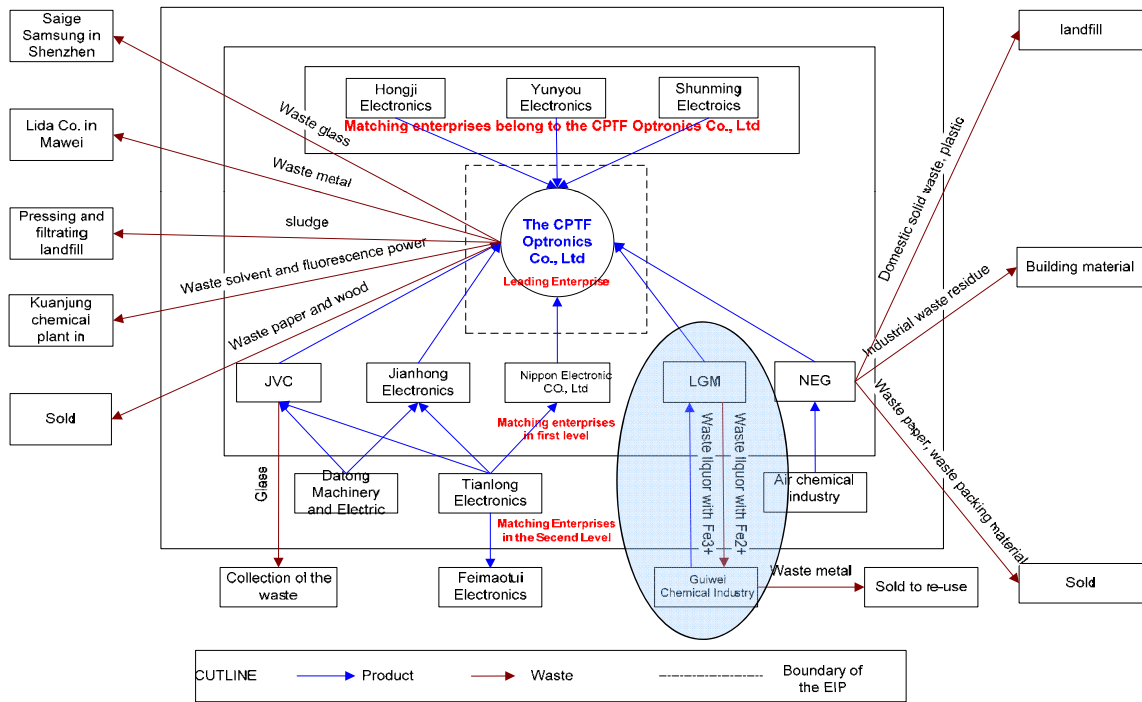
EIPがCEMへの新しい機会を提供

- **Geographical agglomeration of firms and ancillary units**
- **Generation of significant economic gains - external Economies, collective joint action**
- **Waste exchanging**
- **Cascading usages of energy, water and material**
- **Infrastructure sharing**
- **Social embeddedness**



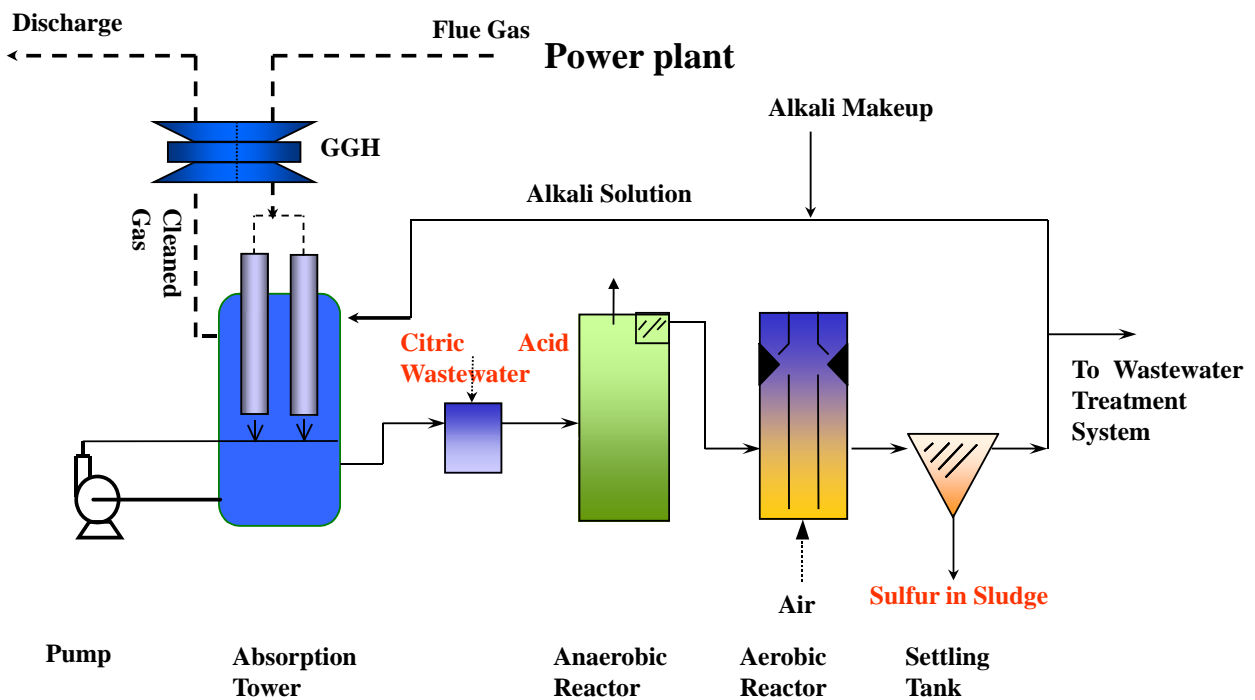
Success stories – CRT cluster

成功事例 - CRTクラスター



Success stories – Biodesulfurization

成功事例: バイオ脱硫システム



Success stories – Heat and power cogeneration 成功事例 - 熱と電力同時供給システム



To replace 36 boilers in 18 companies;
To save fuel oil 582t/h
To reduce SO₂ 22,000 tons



Some problems remained for CEM in EIPs EIPsにCEMについて残っている問題点

- **Low capacity on eco-innovations;**
- **Weak economic incentives, especially ignorance of market rules due to strong governmental behavior;**
- **lack of information platforms**
- **Institutional issues**
- **Legal issues**



Unsuccessful stories

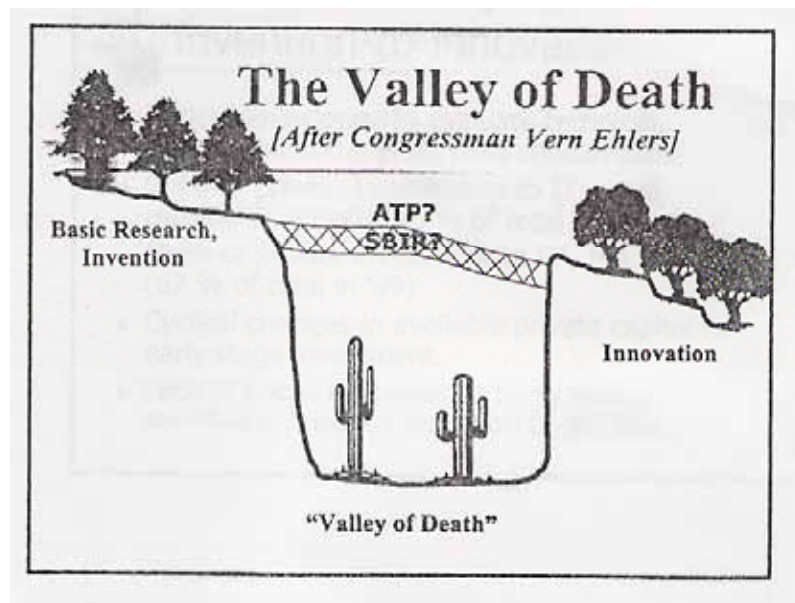
失敗事例

- H₂ and CO₂ exchanging between coking plant and methanol plant;
- Steam and water exchanging among plants;
- Industrial collapse due to withdrawn of key plants
- ...



O'Rourke et al (1996): **A large gulf** separates descriptions of what industrial ecology can be, and specific examples and strategies for implementing industrial ecology

EIP can be considered as industrial parks' eco-innovation. The valley of death also exists.



Policy implications 政策の含意

- **Consequences for governance (local cluster governance and chain governance)**
- **Consequences for local upgrading**
- **The double externality problem**
- **The regulatory push/pull effect**
- **The increasing importance of social and institutional innovation**



Thanks for your attention!

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