

**JAOCC Conference, june 8.-10th 2009
Aalborg, Denmark**

Jesper Lindgaard Christensen:

**'Greens rush in? Cleantech venture capital
investments – prospects or hype?**

Objectives

Industry dynamics and the investments into this industry. Compatible with the venture capital model?

Paradox: Denmark has outstanding strongholds conducive to attracting vc investments but all growth in vc investments are foreign vc firms. Why?

Mapping of investment trends and –segments

Understand the dynamics of the industry from an investor perspective

Specific point :

VC investment focus moved from ICT to biotech to cleantech. Based on rational expectations of the prospects related to the industry or 'follow the leader' effects?

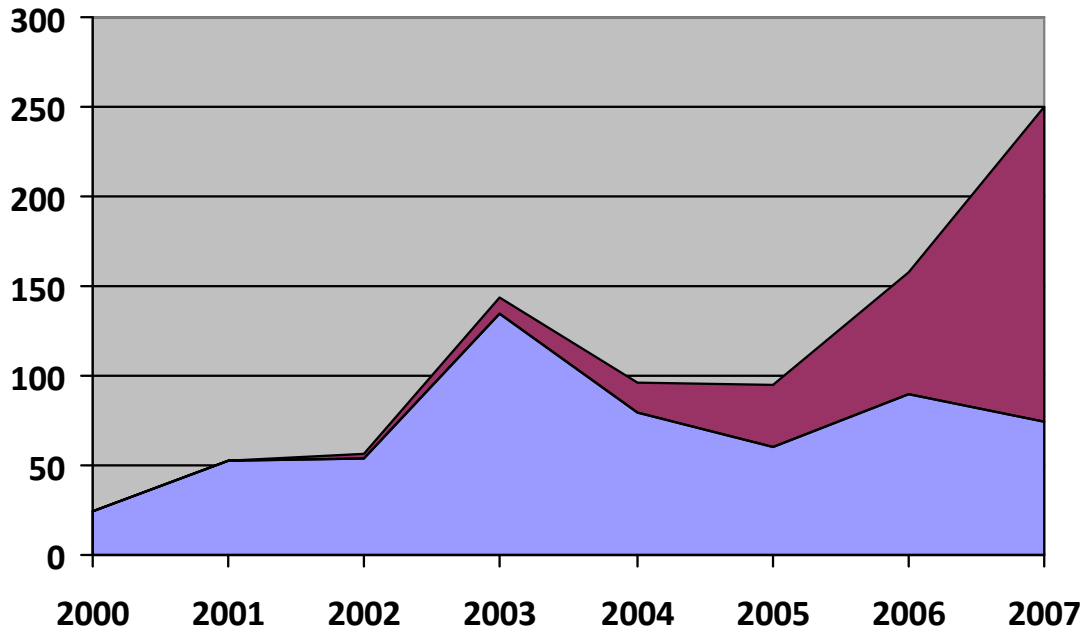
Generally – two broad issues:

- 1. Investment criteria for venture capital investments?**
- 2. How does changes in investment focus (industries) take place?**

The second is profoundly under-researched

Investment trends - Denmark

Cleantech investments by investor type.



Source: Vækstfonden, 2008

Investment trends –
worldwide growth.
3rd most popular
inv.target.

Why no growth in
Danish
investments??

Drivers in the evolution of industries

- Klepper et al. and numerous contributions in industrial dynamics literature
- Specifically for cleantech:
 - environmental problems
 - increases in energy prices
 - Regulation
 - Innovations and productivity
 - CSR (ESR)
 - Political pressures, consumer demand
- Many segments are fast growing, large markets – Venture capital

Cleantech – compatible with the venture model?:

scaleable

familiarity to previous investments

time horizon and capital for development

IPR

STRONGHOLDS

Strongholds Denmark

Danish strongholds in this industry:

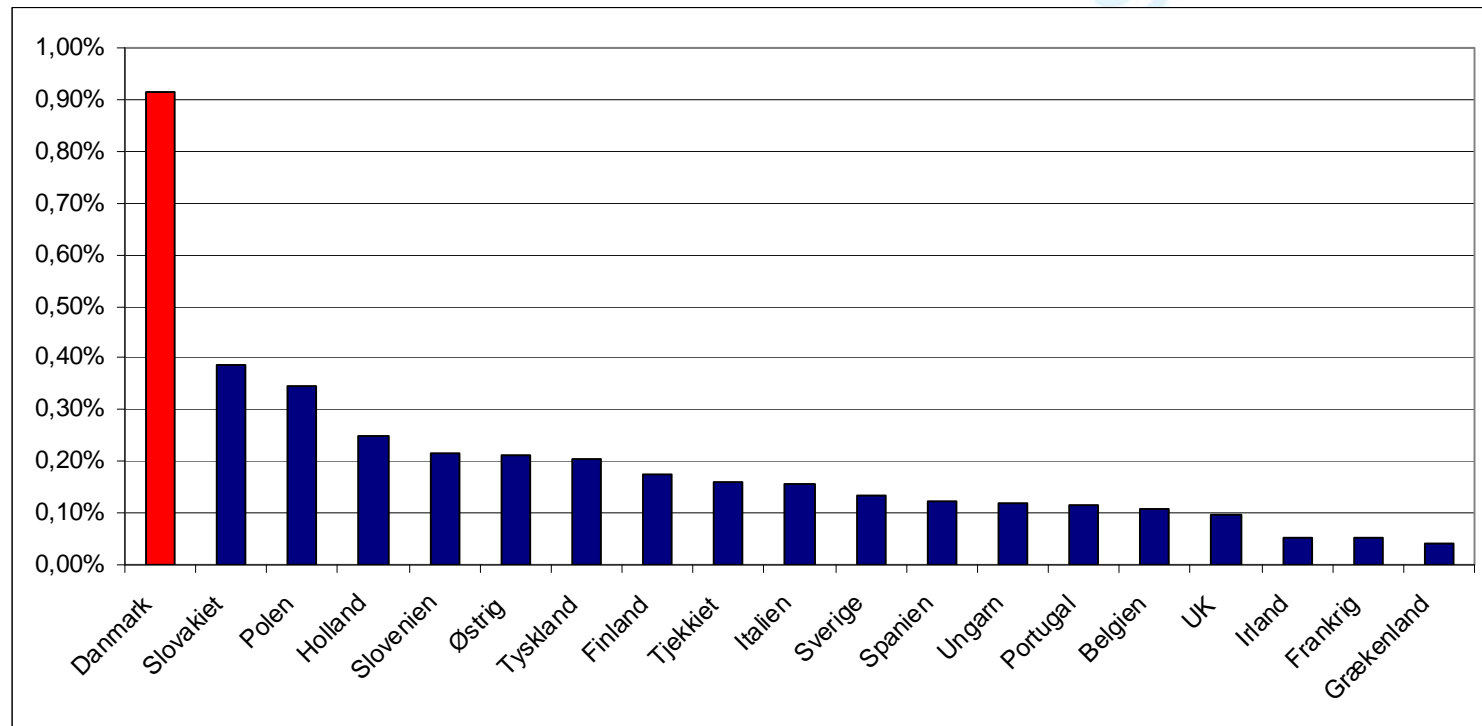
- air pollution, filters and catalysts,
- enzymes with 60% of world production.
- waste water cleaning,
- fuel cells,
- recycling,
- bio mass, and
- wind

Many of these strongholds were stimulated by government funded research.

Illustrations:

Strongholds - Denmark

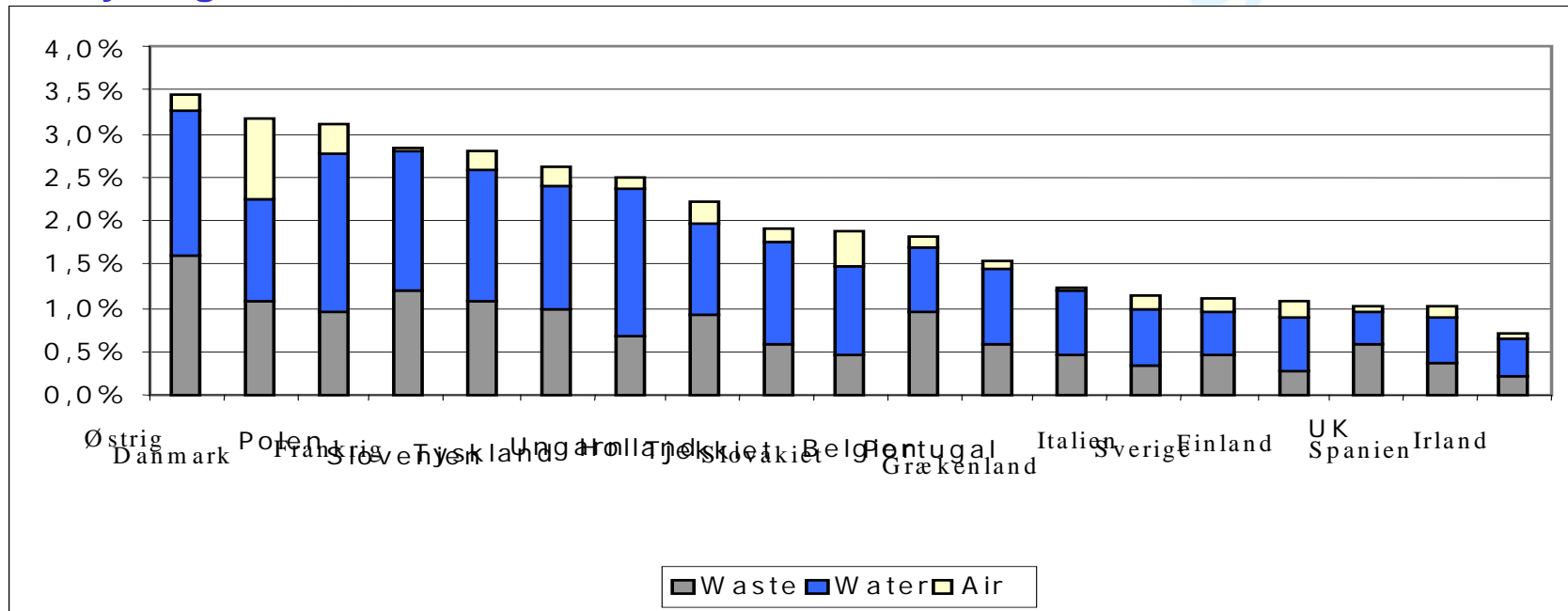
Revenues from equipment for limiting air pollution as pct. Of GDP



Source: EU-Commission 2006

Strongholds - Denmark

Revenues in environmental technologies as percentage of GDP, 2004, recycling, water, air.



Source: EU-Commission 2006 and The Growth Fund, Denmark.

Changes in Industry targets – inertia due to...

Requires competences, which in turn takes specialisation

Investments in building these

Takes time to diversify

Networks need to be build – inv. In cleantech = b2b – networks.

Success stories, Danish VC market not matured, public funding

Exit routes

Mutual learning and synergies through industry mass

Mix of pioneers and conservatism. Back-funding inst. Evergreen funds rare

Sum-up

The paper discusses investment criteria, generally and applied to cleantech

Discussion of industry evolution drivers and how these fit with the venture investment model

Discuss hindrances to diversify into the cleantech area.

Mapping of investment trends and –segments

Financial crises: both exits and establishment of new funds difficult.

Public-private funding partnerships to ensure both capital and competences