



PBL Netherlands Environmental  
Assessment Agency

# The Valley of Death for Eco-Innovation

[alexander.vandervooren@pbl.nl](mailto:alexander.vandervooren@pbl.nl) |  
Brussels 11 March 2015

## Conclusions

Crossing the valley of death is more difficult...

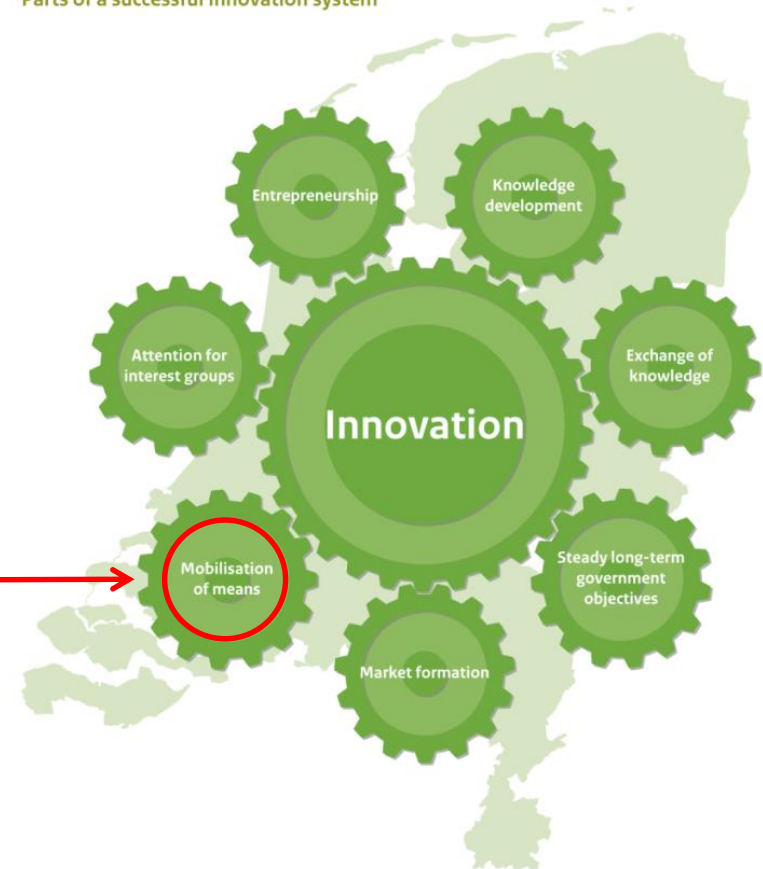
...for eco-innovation than for generic innovation.

...in the Netherlands than in most other countries in Northwest Europe.

# What's hindering innovative start-ups

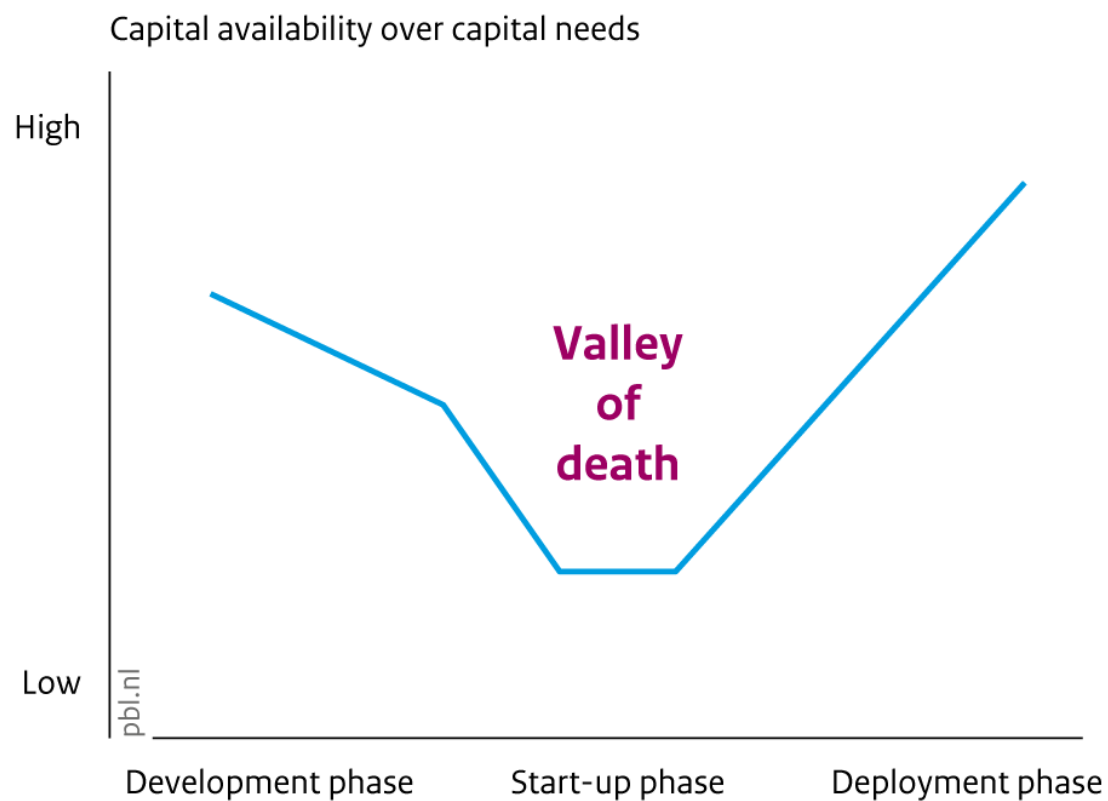
- Unstable policy
- Too few price incentives
- Regulatory barriers
- Vested interests
- Lack of business experience,
- Access to finance
- Critical mass

Parts of a successful innovation system



Source: PBL 2013, based on Hekkert (2007) and Suurs (2009)

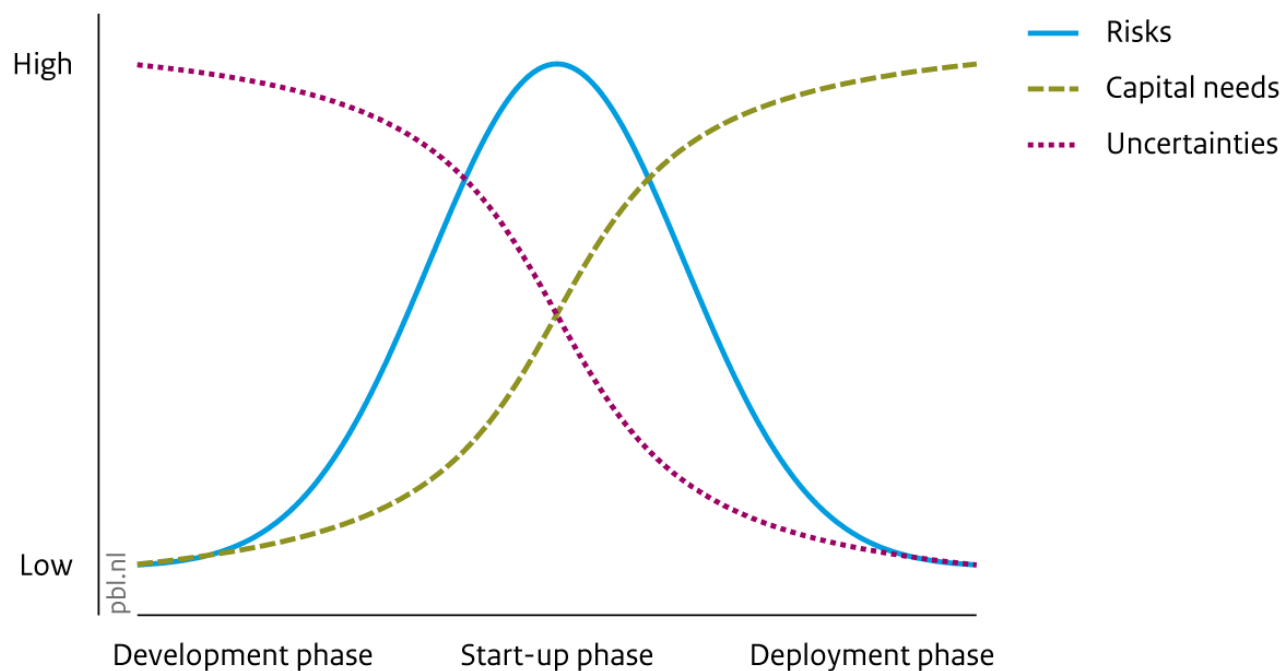
## Valley of death in innovation process



Source: Rabobank 2014; edited by PBL

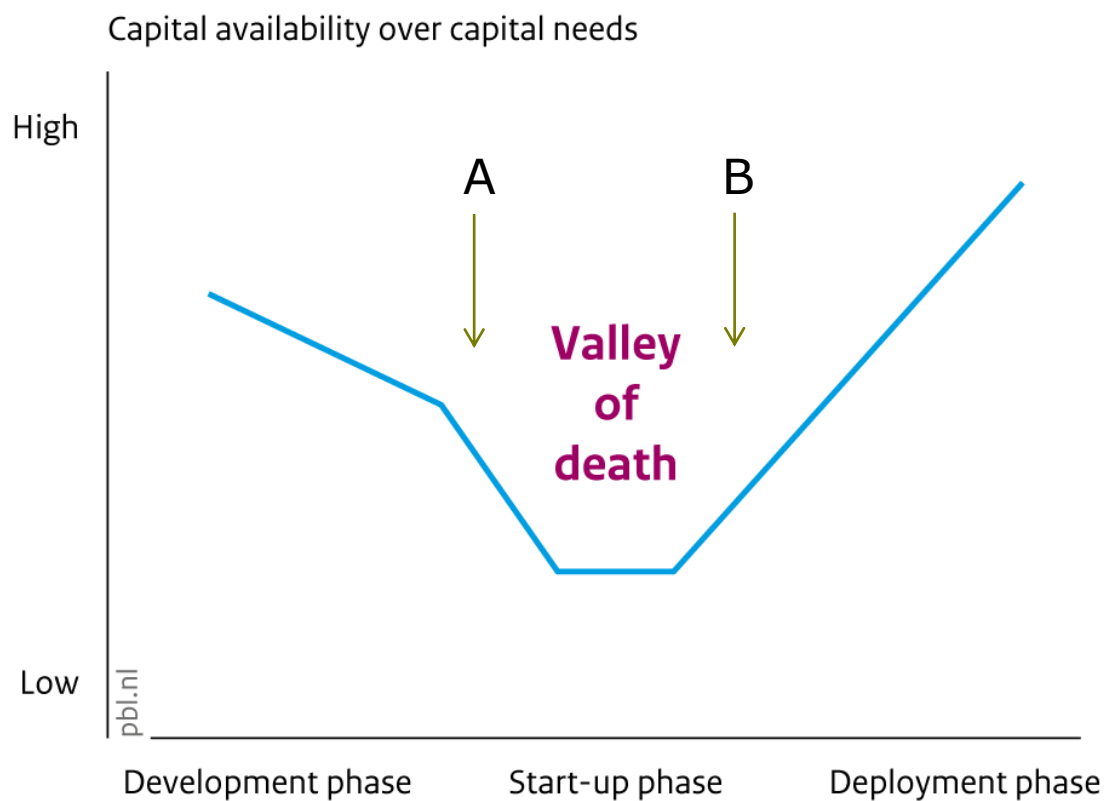
# Innovation process

## Risks, capital needs and uncertainties of investments in innovation process



Source: AWT 2011; DTI 2006; edited by PBL

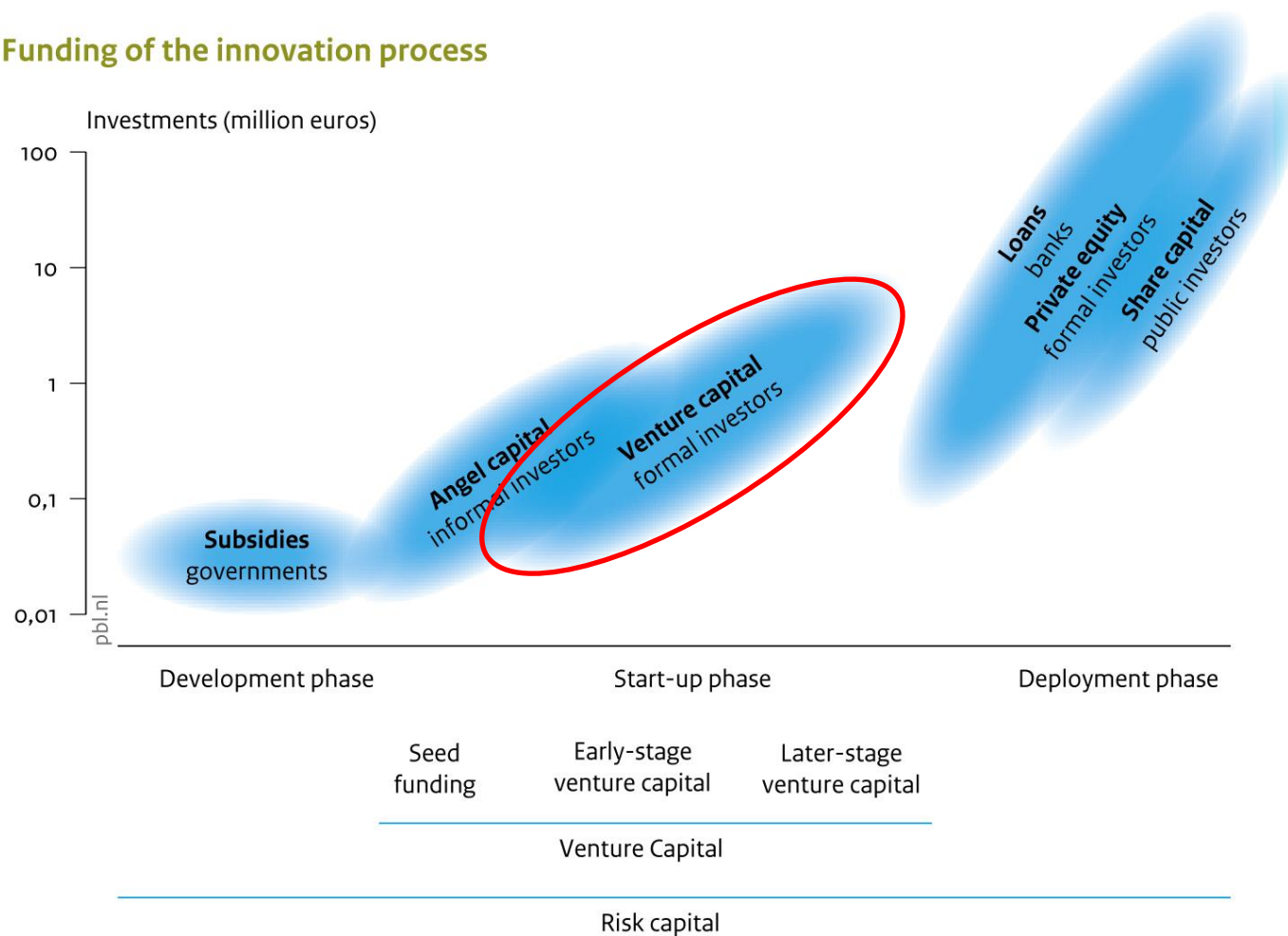
## Valley of death in innovation process



- A. Transition from public to private funding
- B. Expansion, but not break-even or profitable

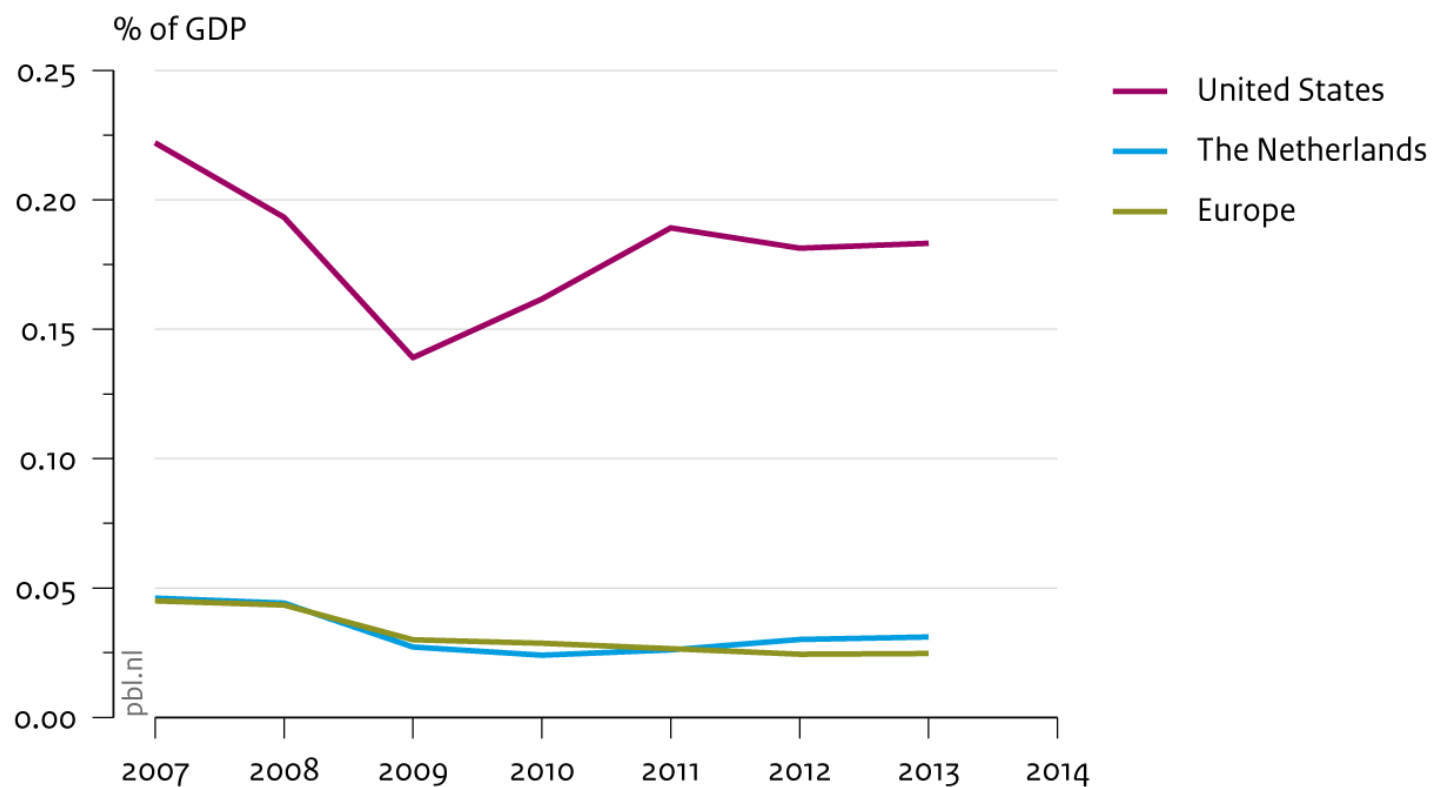
Source: Rabobank 2014; edited by PBL

## Funding of the innovation process



Source: AWT 2011; Pierrakis en Westlake 2009; edited by PBL

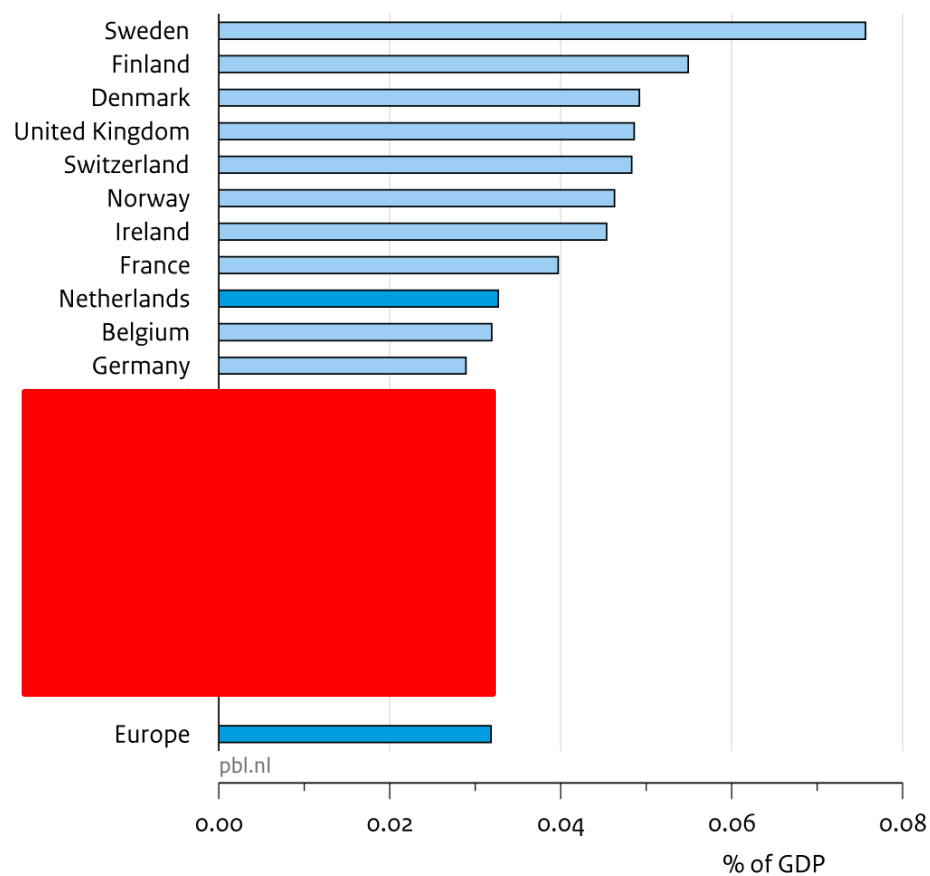
## Venture capital investments as percentage of GDP



Source: EVCA 2014; PwC/NVCA 2014

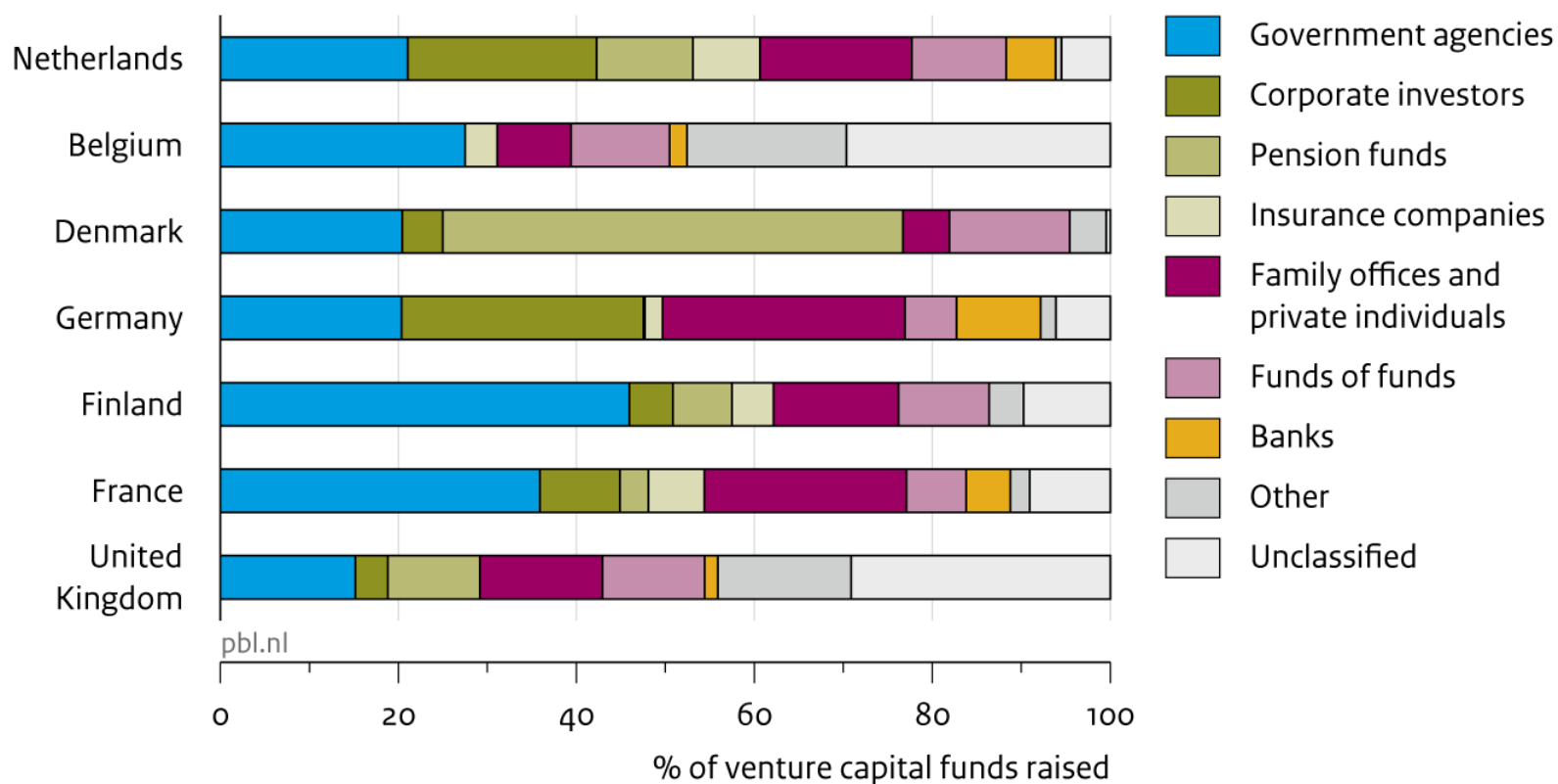


## Venture capital investments as percentage of GDP in Europe, 2007 – 2013



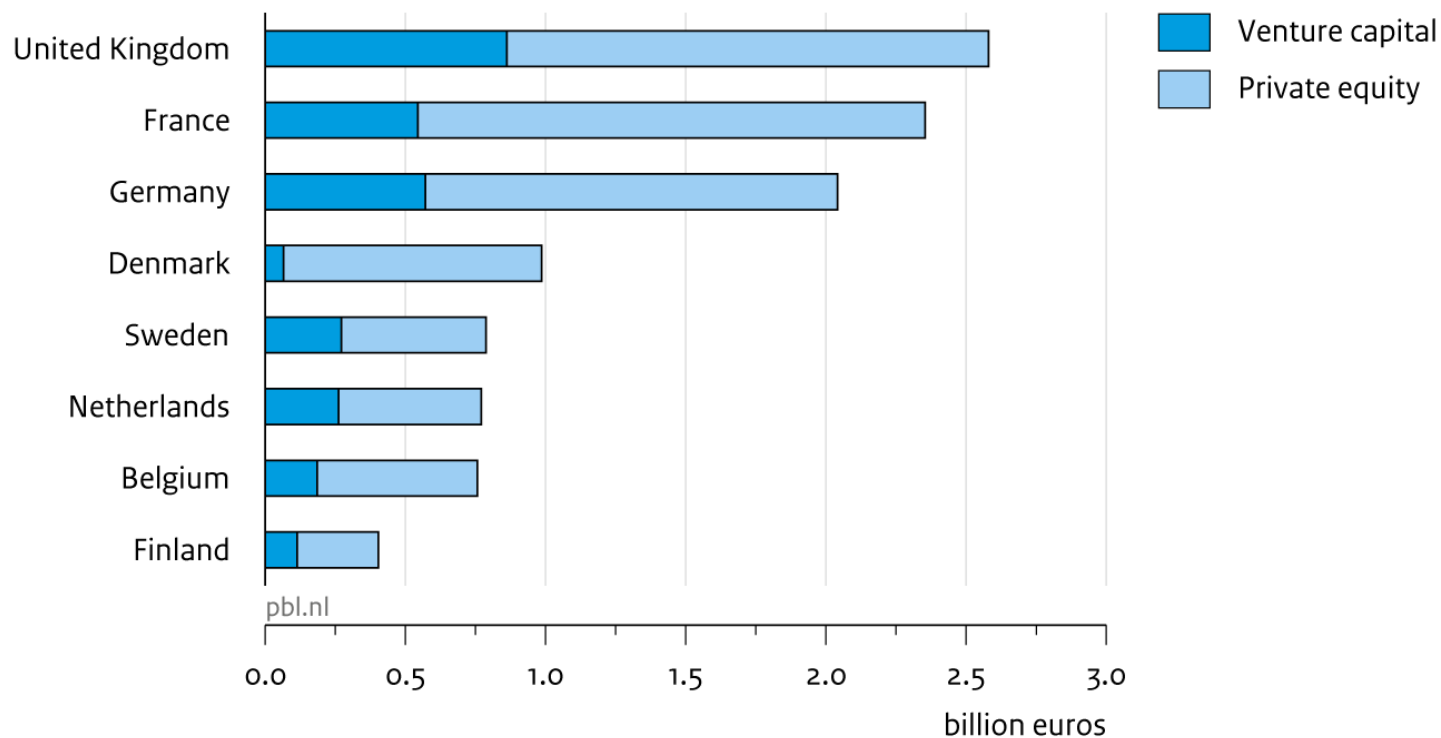
Source: EVCA 2014

## Origin of venture capital funds raised, 2008 – 2013



Source: EVCA 2014

## Cleantech investments, 2007 – Q3 2014



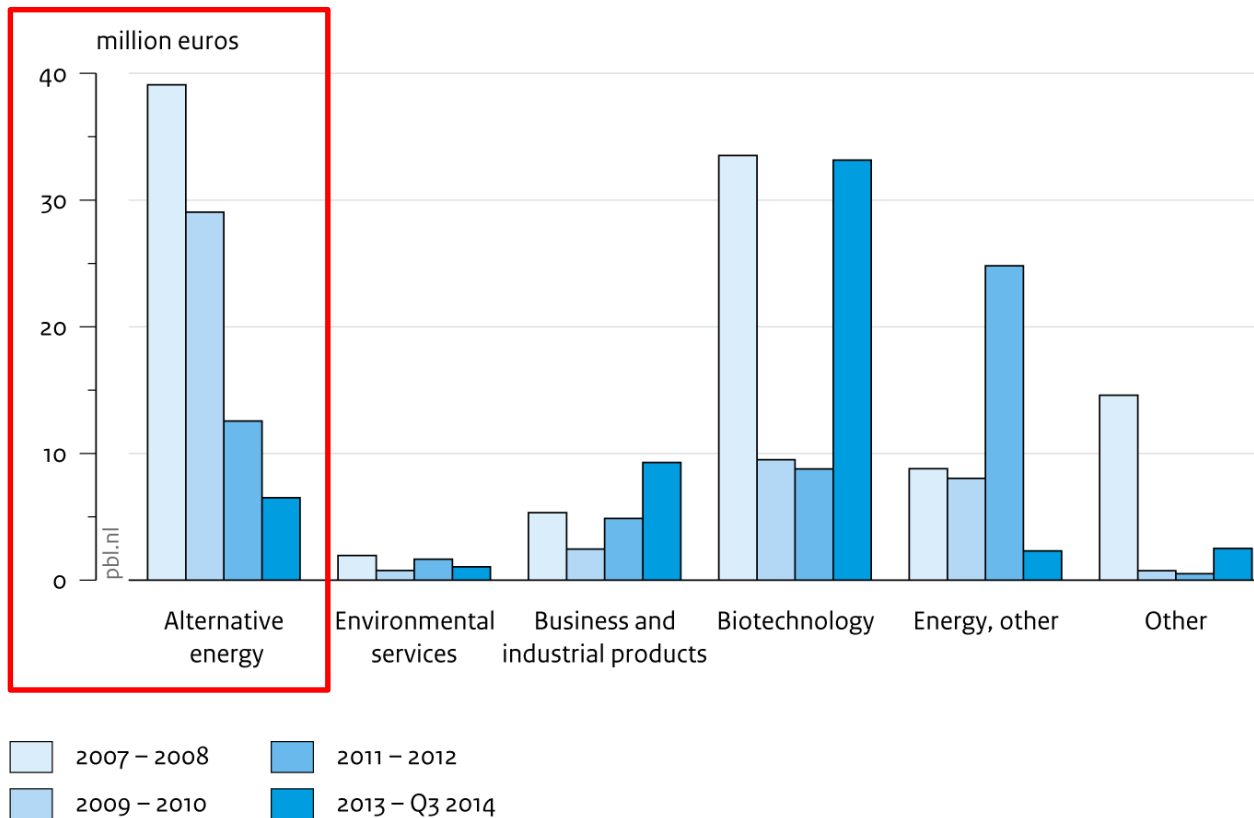
Source: EVCA; edited by NVP

## Why VC is not easy for eco-innovation

Eco-innovation compete with generic innovation for VC

- Collective benefits for nature and environment not internalised in price
  - governmental support needed for positive business case
- Higher investment costs, pay-off time longer
  - above average expected returns necessary
- Investors lack knowledge of eco-innovation / no trackrecord
  - risk perception too high

## Venture capital investments in cleantech sectors in the Netherlands



Source: NVP based on data of EVCA.



## The Netherlands

- Years of unstable government policy (alternative energy)
- Only few venture capital funds directed at eco-innovation
- Lack of later-stage venture capital and other follow-up money

# Policy instruments NL (technology push) (incomplete)

## Development phase

- Generic: R&D tax credits → 800 M (2015)
- Specific: 9 Top Sectors → 500 M (2015) (40% private sector)

## Start-up phase

- Regional Develop.
- Seed capital funds
- Dutch Venture initi

### Government spendings:

- Not eco-innovation specific
- Limited for start-up phase

C deals

## Deployment phase

- Garuantee schemes for loans: BMKB → 705 M (2015)



## Policy instruments NL (market pull) (incomplete)

- Stimulating of sustainable energy production(SDE+)
  - 3.5 billion Euro in 2014
  - Most cost-effective technologies
  - Great for deployment / greening
  - Not for eco-innovation



## Policy implications

- More venture capital for eco-innovation is needed:
  - Long term vision + predictable policy
  - Collective benefits for nature and environment internalised in price
  - Deployment instruments that stimulate eco-innovation
  - Eco-innovation specific venture capital instruments
  - Get pension funds and insurance companies back on board



## Publication

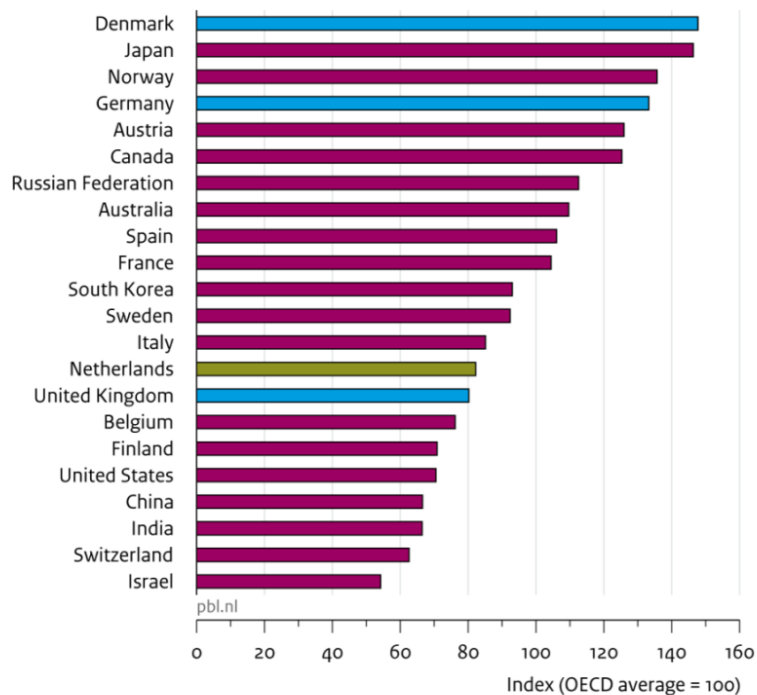
Vooren, A. van der & A. Hanemaaijer, *De vallei des doods voor eco-innovatie in Nederland*, Den Haag: PBL.

<http://www.pbl.nl/publicaties/de-vallei-des-doods-voor-eco-innovatie-in-nederland>



Innovation phase	Instrument	Budget (in mln euro)		Budgetshare start-ups in 2013
Development phase	WBSO	794		9%
	RDA	238		n.v.t.
	Innovatiekrediet	60		64%
	DEI	35		nieuw
	VFF	5,7		nieuw
	MIT	30		n.b.
	TKI-toeslag	75		n.b.
Start-up phase	SEED Capital	23		100%
	DVI	20*		n.b.
	ROMs	n.b.		n.b.
Deployment phase	BMKB	705		15%
	GO-regeling	400		n.v.t.
	Groeifaciliteit	85		n.b.

### Green-innovation index for OECD countries, 2000 – 2010

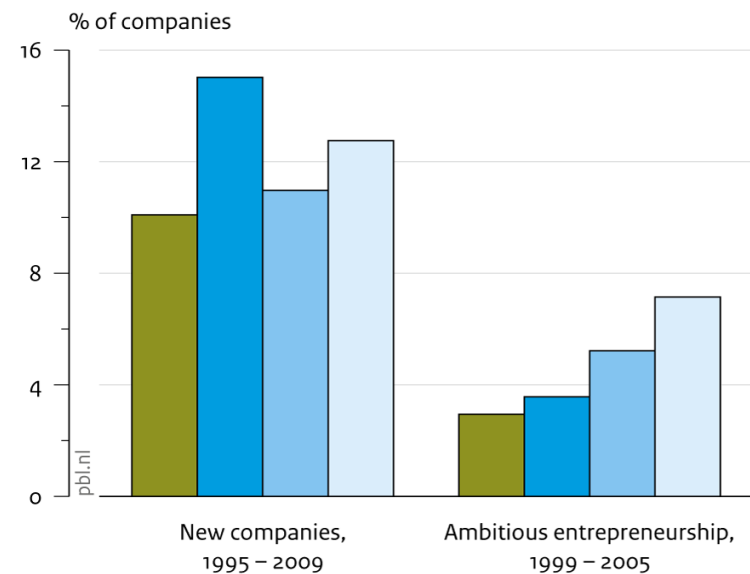


Share of green patents in all patents in OECD countries with over 30 eco-patents per year



Source: OECD, 2013

### Share of new companies and ambitious entrepreneurship



Source: GEM, 2011/2012

