Mission Oriented Investment Led-Growth in the EU: challenges and opportunities

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Rethinking the ‘direction’ of growth

• European Union Horizon 2020
  • Smart growth (better innovation)
  • Sustainable growth (more green)
  • Inclusive growth (less inequality)

• United Nations SDGs

• Come back of ‘industrial strategy’
Levelling the playing field?

standard policy tool kit:

Set rules of the game

De-risk, enable, incentivise, ‘facilitate’ private sector

Fix market and system ‘failures’

Lender of last resort
Coordination failures e.g. pro-cyclical investment

Public goods e.g. knowledge, clean air

Negative externalities e.g. pollution

Information failures e.g. SME finance

Imperfect competition e.g. monopolies

Just fixing failures?
Market failure policies didn’t get us the GPTs

• ‘mass production’ system
• aviation and space technologies
• IT and internet
• nuclear power
• nanotechnology and AI
• green technology
... and won't get us the SDGs
Risk-taking and market making along entire innovation chain

1. research
2. concept/invention
3. early stage technology development
4. product development
5. production/marketing

| Source frequently funds this technological stage |
| Source occasionally funds this technological stage |

- NSF, NIH, DARPA
- Corporate research
- Angel investors, corporations, technology labs, SBIR, NASA
- VC, SBIR, InQtel, NIH, ARPA-E, Yozma, KfW
- Corporate venture funds, equity, commercial debt

source: adapted from Auerswald/Branscomb, 2003
Creating missions not fixing markets

NASA’s mission is to “Drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth.” NASA 2014 Strategic Plan

“Creating breakthrough technologies for national security is the mission of the Defense Advanced Research Projects Agency (DARPA).”

“The ARPA-E mission is to catalyze the development of transformational, high-impact energy technologies.”

“NIH’s mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.”

“The mission of the KfW Group is to support change and encourage forward-looking ideas – in Germany, Europe and throughout the world.”
We measure success by how many risks we have been willing to take (with inevitable failures) and whether the successes actually matter. 

Cheryl Martin, ex-Director ARPA-E, 2014
Green tech: state leads business follows

Figure 4: Risk-capital intensity classification of RE finance

Boundary of the present study: asset finance

- Low Risk
  - High Capital Intensity
  - (project finance/existing firms)
- High Risk
  - High Capital Intensity
  - (Hard to fund)

Low Risk
- Low Capital Intensity
- (existing firms/bank debt)

High Risk
- Low Capital Intensity
- (Venture Capital)

Green tech public & private investments (2011)

- Development Finance Institutions: $123.0 bn
- Project developers (including public utilities): $102.0 bn
- Corporate actors: $66.0 bn
- Households: $33.0 bn
- Commercial Financial Institutions: $21.0 bn
- Government (budgets): $12.0 bn
- Private Equity, Venture Capital and Infrastructure funds: $1.0 bn
- Institutional Investors: $0.4 bn

Source: Climate Finance Initiative
KfW funding for industrial environmental and climate protection projects in Germany
2001-2012

Billion

- KfW Renewable Energies Programme
- Other Renewable energy programmes

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China Development Bank

CDB founded CDB Capital, a ‘public equity’ fund with $US 5.76 bn to finance innovative start-ups from the energy and telecom sectors.

_Yingli Green Energy_ received $1.7 bn from 2008 through 2012 with a $5.3 bn line of credit opened for it. LDK Solar ($9.1 bn); Sinovel Wind ($6.5 bn); Suntech Power ($7.6 bn); and Trina Solar ($4.6 bn),
Heterogeneous actors in renewables

Direct government funding and tax support for business R&D, 2015
As a percentage of GDP


Legend:
- Tax incentive support for BERD
- Direct government funding of BERD
- Total government support for BERD, 2006

Data on tax incentive support not available for Israel, Poland and Sweden.
Business R&D spending (BERD)
“I have worked with investors for 60 years and I have yet to see anyone — not even when capital gains rates were 39.9 percent in 1976-77 — shy away from a sensible investment because of the tax rate on the potential gain. People invest to make money, and potential taxes have never scared them off. And to those who argue that higher rates hurt job creation, I would note that a net of nearly 40 million jobs were added between 1980 and 2000. You know what’s happened since then: lower tax rates and far lower job creation.”

And….why did capital gains fall in 1976?
“Businessmen have a different set of delusions from politicians, and need, therefore, different handling... You cold do anything you liked with them, if you would treat them (even the big ones), not as wolves or tigers, but as domestic animals by nature, even though they have been badly brought up and not trained as you would wish.”

Keynes to F.D Roosevelt (1938)
Figure 1 below illustrates the movement from broad challenges to specific missions.

Figure 1. From Challenges to Missions Image: RTD - A.1 based on Mazzucato (2017)

3 illustrative examples for EU
CLEAN OCEANS

A PLASTIC-FREE OCEAN

Reduction of 90% of plastics entering the marine environment and collection of more than half of plastics present in our oceans, seas and coastal areas by 2025

Grand Challenge

Mission

Areas of interest & cross-sector

R&I Projects

Chemical industry

Social innovation

Biotech

Human health

Marine life

AI technology

Design sector

Waste management

Autonomous ocean stations to remove plastic pollution

Re-usable and biodegradable plastic substitutes

Plastic and micro plastic digestion mechanism

Re-use of packing items through personalised collection services

Image recognition and deep learning waste separation system for domestic and marine waste
CITIZEN HEALTH AND WELLBEING

DECREASING THE BURDEN OF DEMENTIA

Halving the human burden of dementia by 2030

Grand Challenge

Mission

Areas of interest & cross-sector

R&I Projects

Medical Sector
Social Sector
Pharmaceutical Sector
Service Sector

Tech sector
Consumer goods
Design Sector
Behavioural

Innovative techniques for personalised diagnosis of Alzheimer’s
AI support for physical and intellectual patient independence
Improved understanding of probability of acquiring neurodegenerative diseases
New personalised treatments for neurodegenerative diseases
Social standards and caregiving approaches
Criteria

• Bold and addressing societal value
• Concrete targets: you know when you got there!
• Involving research and innovation: technological readiness over limited time frame.
• Cross-sectoral, cross-actor, cross disciplinary
• Multiple competing solutions
Implementation

• Selection (who decides?)
• Impact-driven (targets / milestones)
• Pro-active portfolio management (DARPA style)
• Flexibility and adaptability
• Accountability
• Connecting and engaging citizens
• Public sector capacity building and relationship to industrial strategies of member states
rethinking how public value is created, nurtured and evaluated
Derisking
Welcoming uncertainty
Fixing markets
Co-creating and shaping
Levelling playing field
Tilting towards a direction

Outsourcing
Capacity building
Picking winners
Picking the willing
Cost benefit
Dynamic spillovers


