



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

Mariana Mazzucato

Professor in the Economics of Innovation and Public Value
University College London

Director of the Institute for Innovation and Public Purpose

<https://www.ucl.ac.uk/bartlett/public-purpose/>

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:

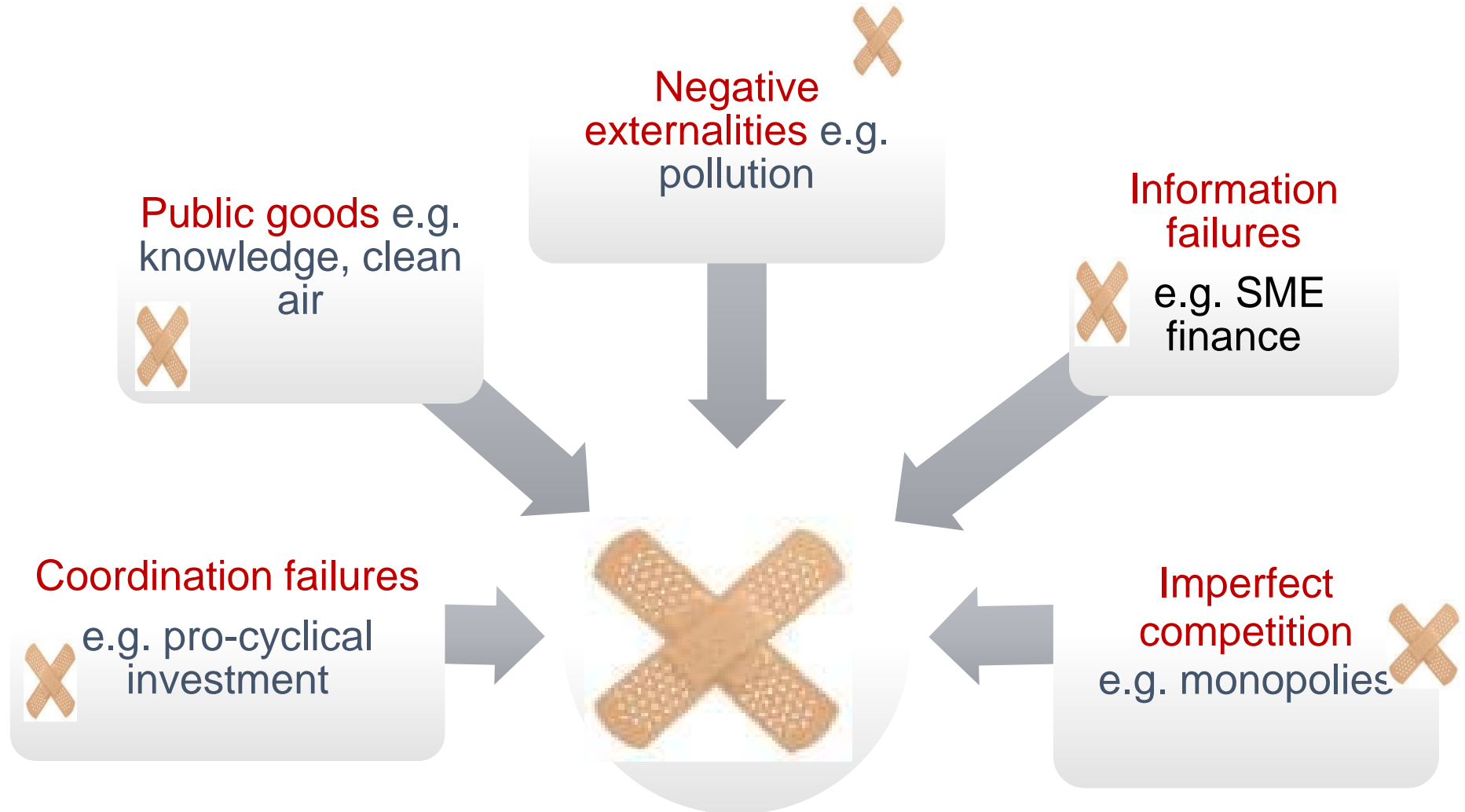
Set rules of the game

De-risk, enable, incentivise, 'facilitate' private sector

Fix market and system 'failures'

Lender of last resort

Just fixing failures?



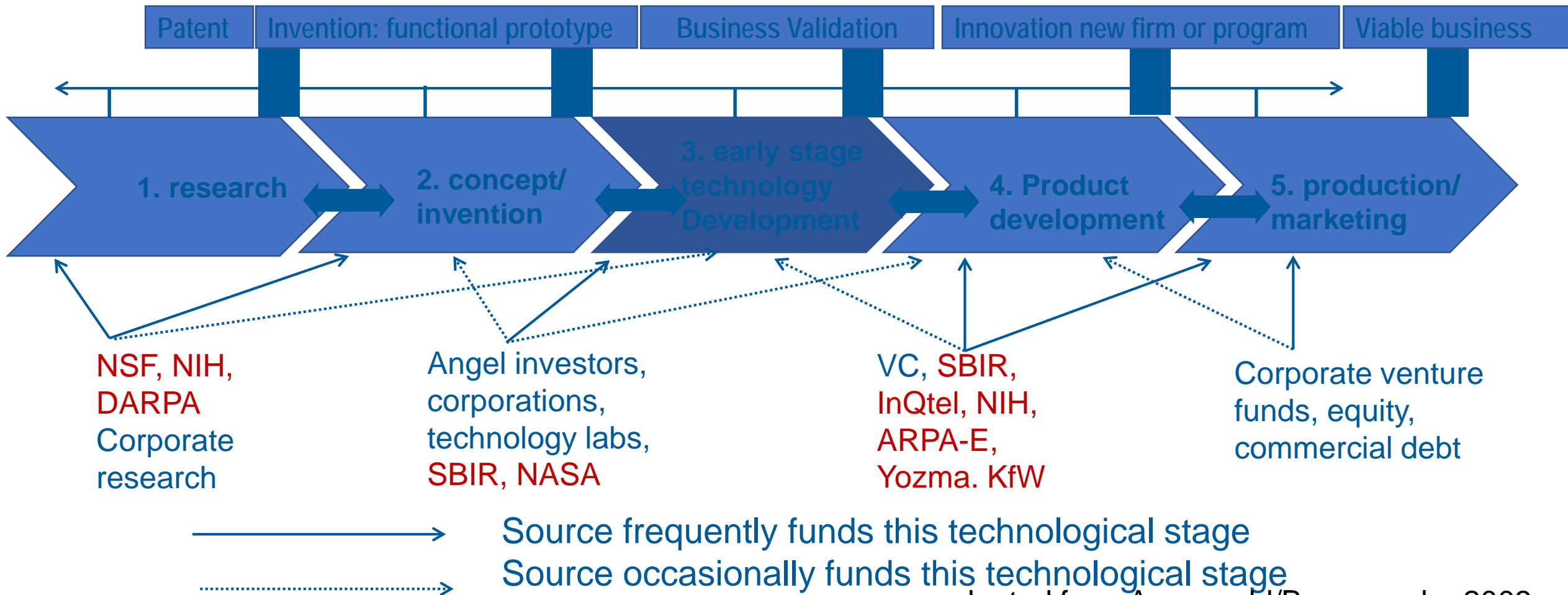
Market failure policies didn't get us the GPTs

- 'mass production' system
- aviation and space technologies
- IT and internet
- nuclear power
- nanotechnology and AI
- green technology

... and wont get us the SDGs



Risk-taking and market making along entire innovation chain



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).*”

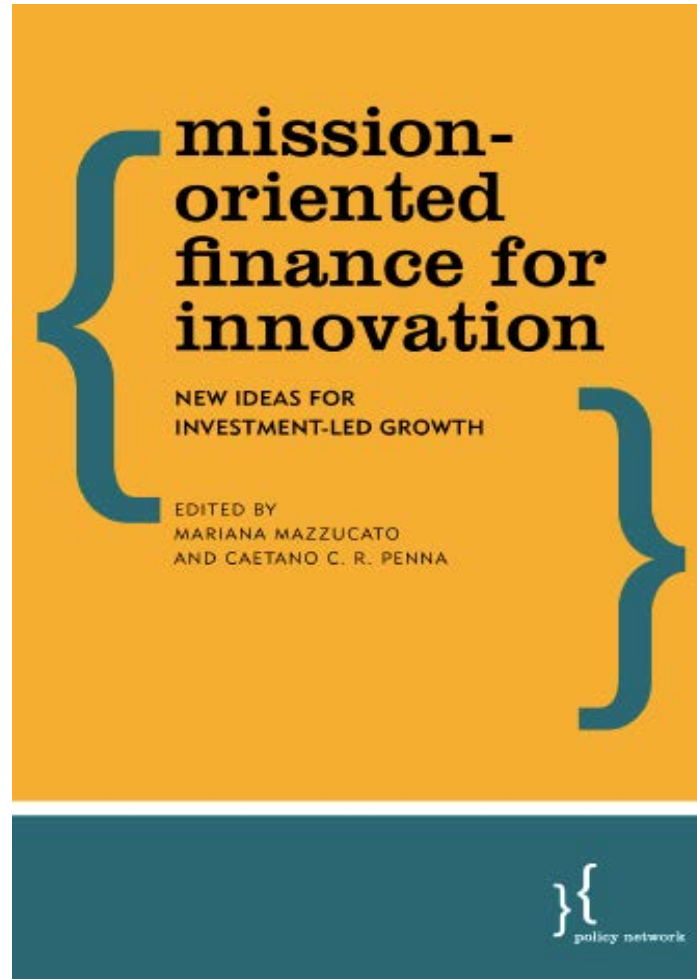
“The **ARPA-E mission** is to *catalyze* the development of transformational, high-impact energy technologies.”

“**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.”

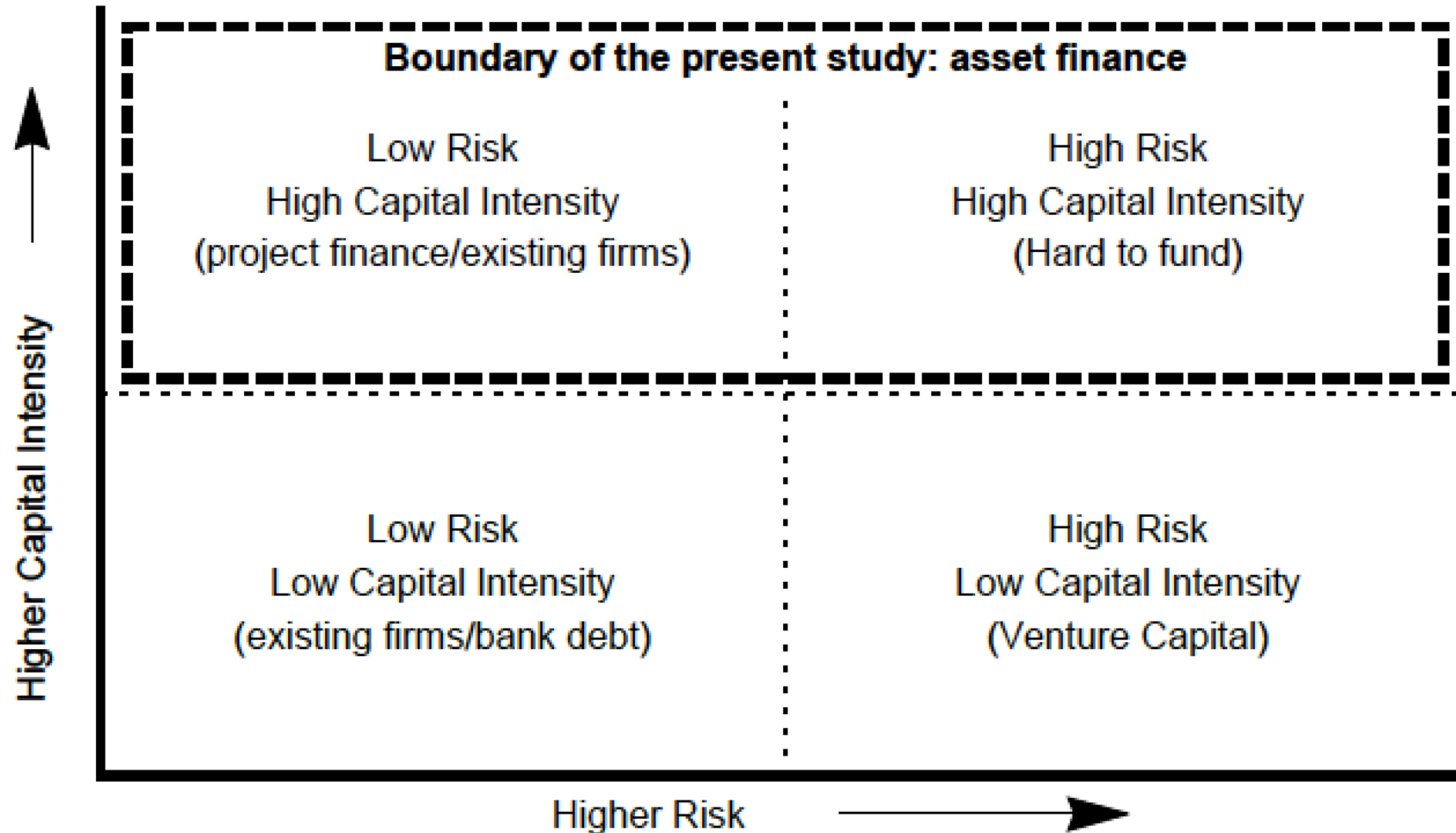
We measure success by how many risks we have been willing to take (with inevitable failures) and whether the successes actually matter.

Cheryl Martin, ex-Director **ARPA-E**, 2014



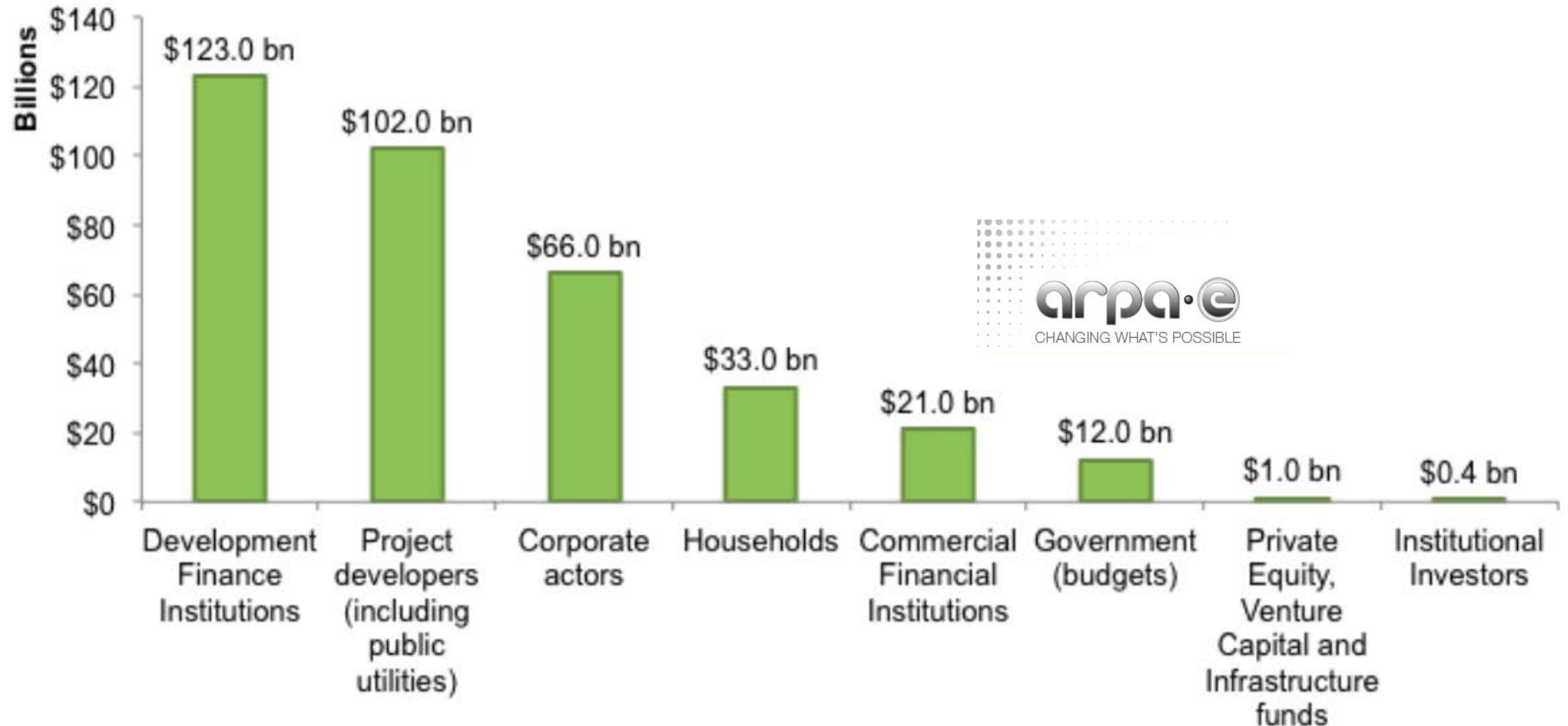
Green tech: state leads business follows

Figure 4: Risk-capital intensity classification of RE finance



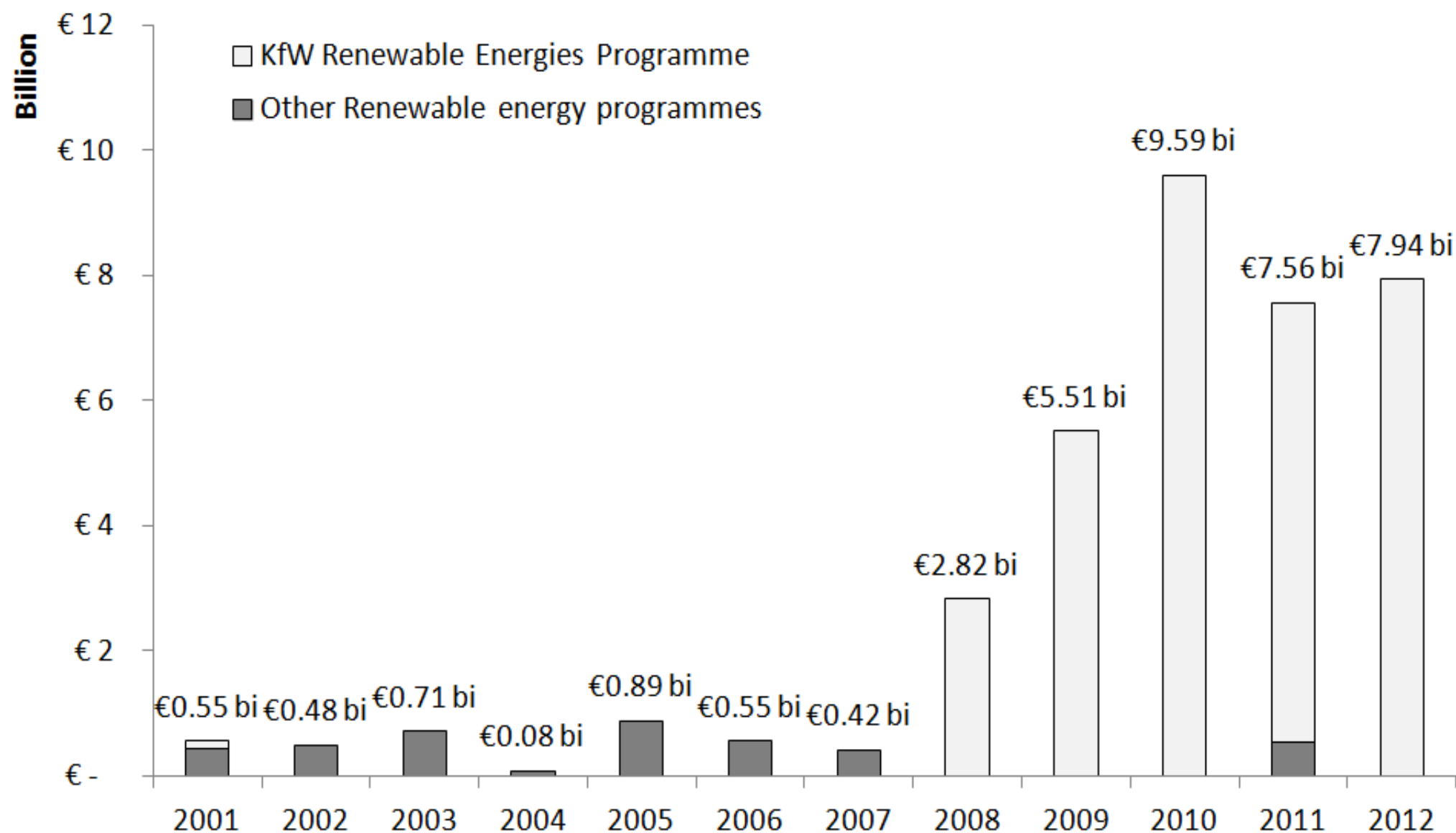
Mazzucato, M. and Semieniuk, G. (2016) **“Financing Renewable Energy: Who is financing what and why it matters”** forthcoming *Technological Forecasting and Social Change*

Green tech public & private investments (2011)



Source: Climate Finance Initiative

KfW funding for industrial environmental and climate protection projects in Germany 2001-2012

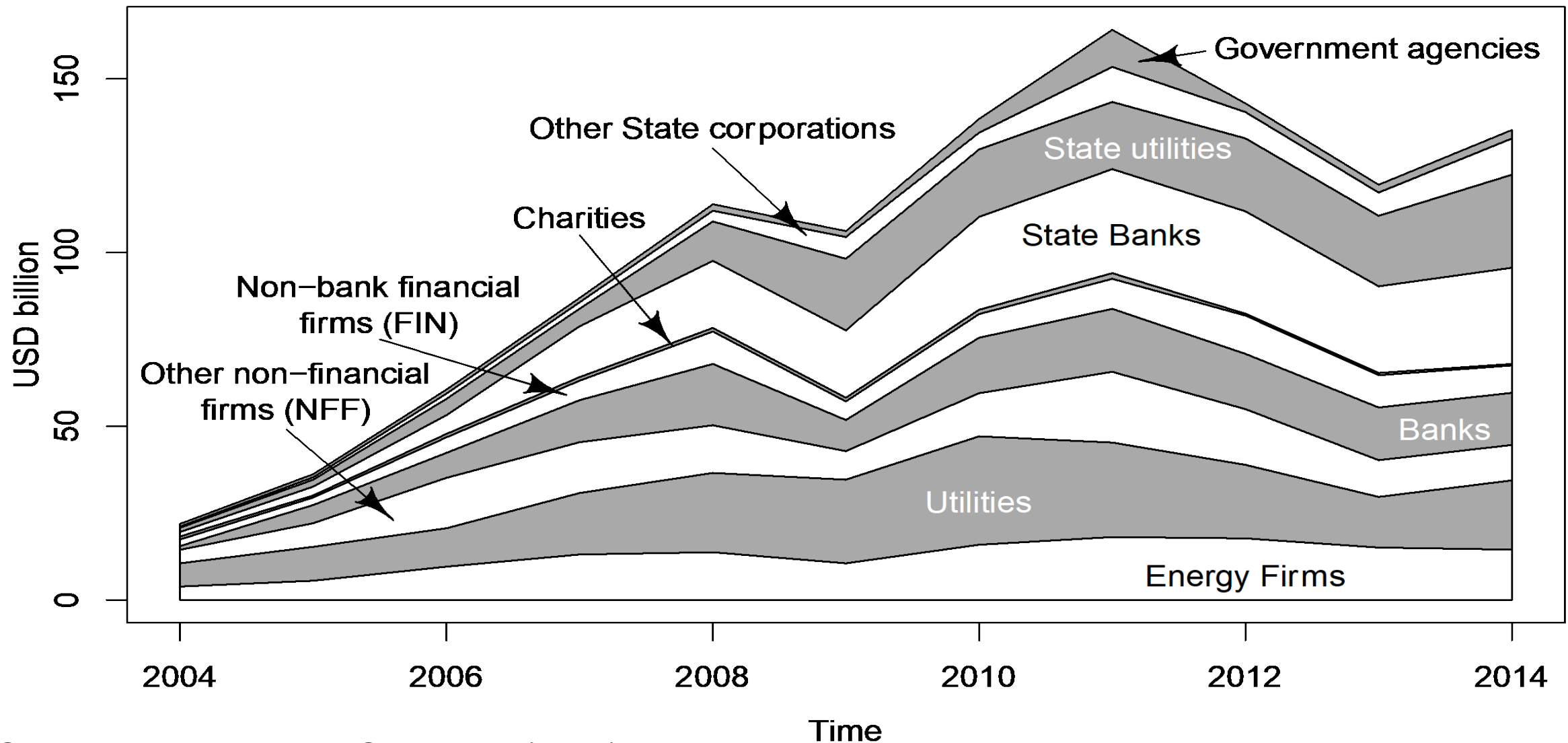


China Development Bank

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

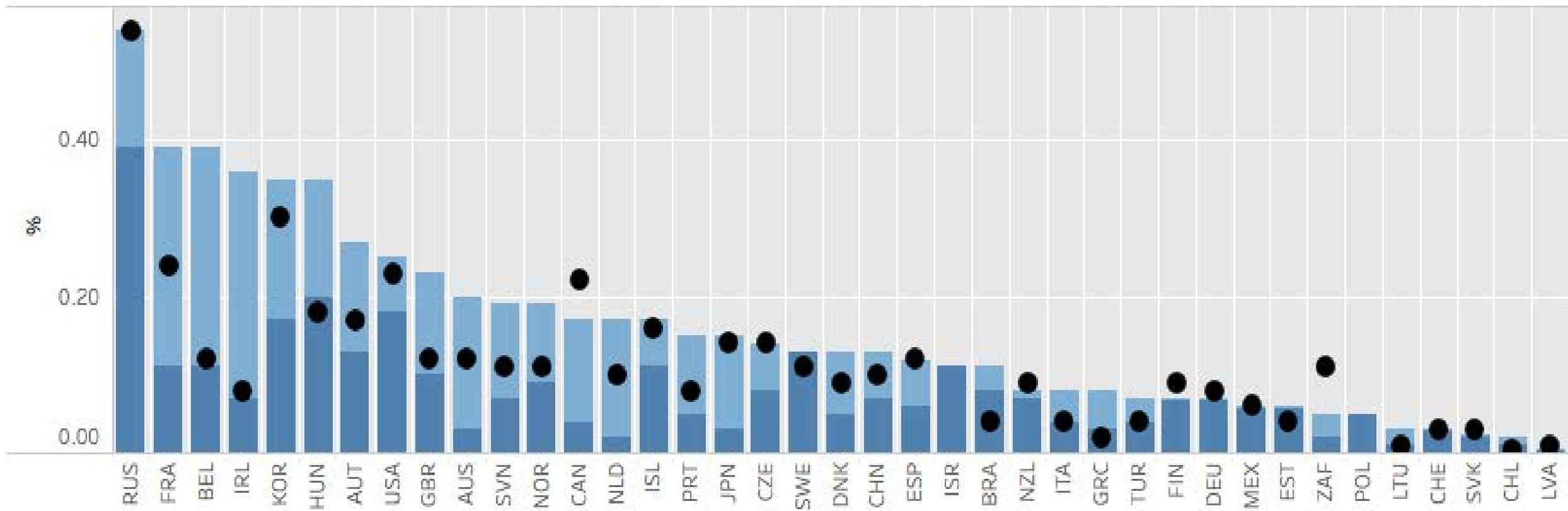
Yingli Green Energy received \$1.7 bn from 2008 through 2012 with a **\$5.3 bn line of credit** opened for it. **LDK Solar (\$9.1 bn)**; **Sinovel Wind (\$6.5 bn)**; **Suntech Power (\$7.6 bn)**; and Trina Solar (**\$4.6 bn**),

Heterogeneous actors in renewables



Source: Mazzucato and Semieniuk (2016), based on data by Bloomberg New Energy Finance.

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



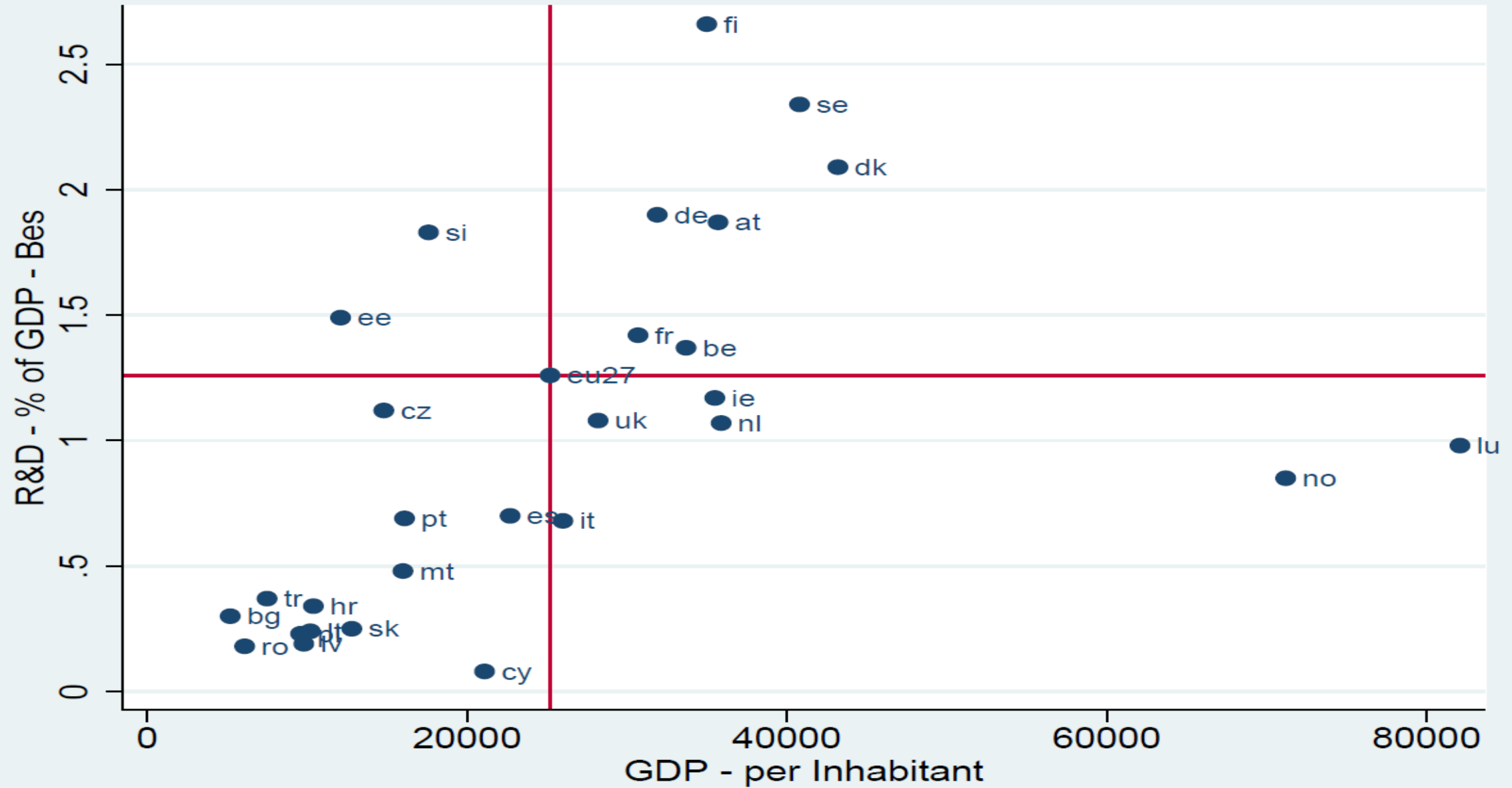
Legend:

- 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.

Source: OECD, R&D Tax Incentive Indicators, <http://oe.cd/rdtax>, July 2017. Data & notes: <http://dx.doi.org/10.1787/888933619410>

Business R&D spending (BERD)



Warren Buffet

“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?

Keynes to F.D Roosevelt (1938)

“Businessmen have a different set of delusions from politicians, and need, therefore, different handling... You could 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.”



MISSIONS

Mission-Oriented Research & Innovation in the European Union

A problem-solving approach to fuel innovation-led growth

by Mariana MAZZUCATO



Figure 1 below illustrates the movement from broad challenges to specific missions.

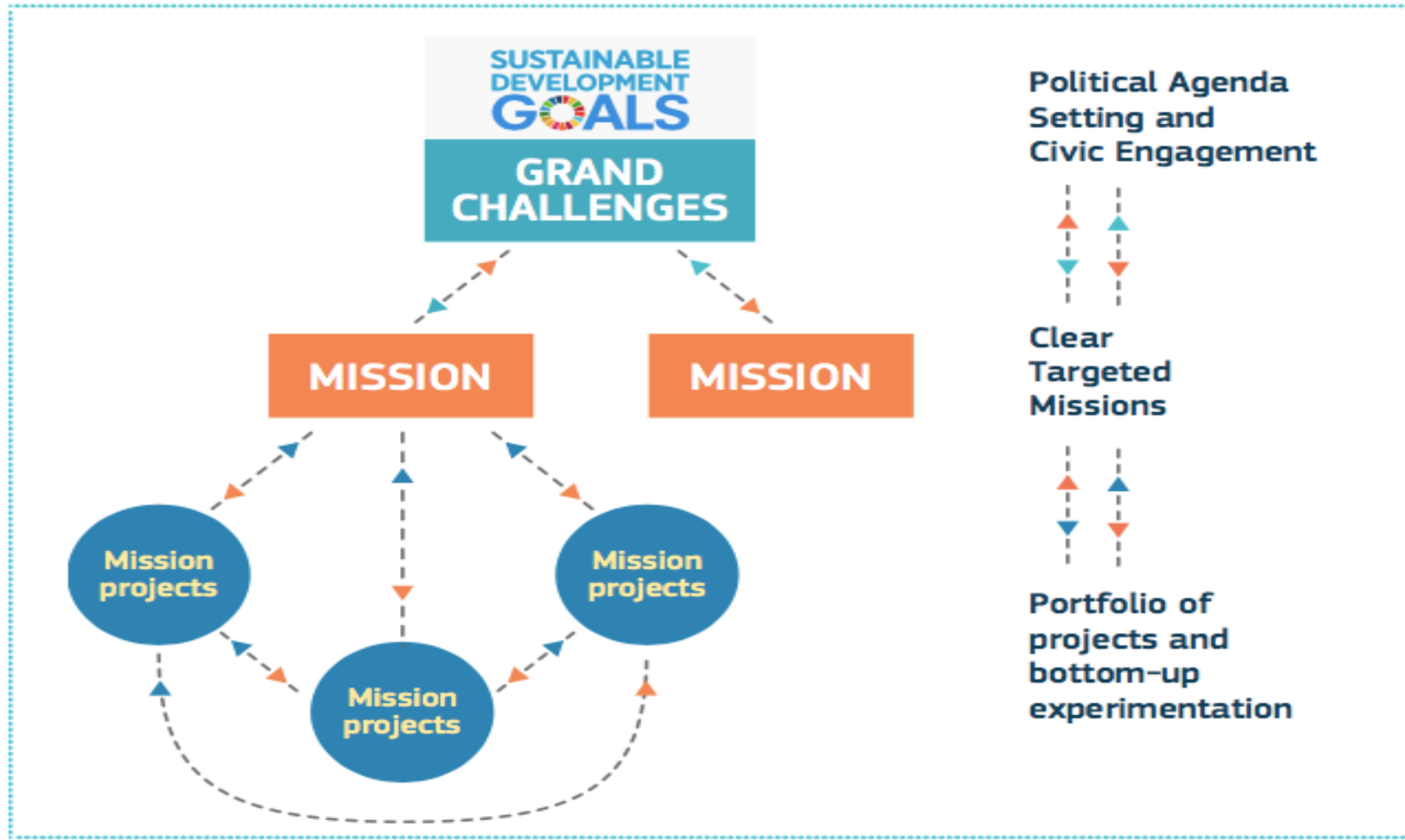
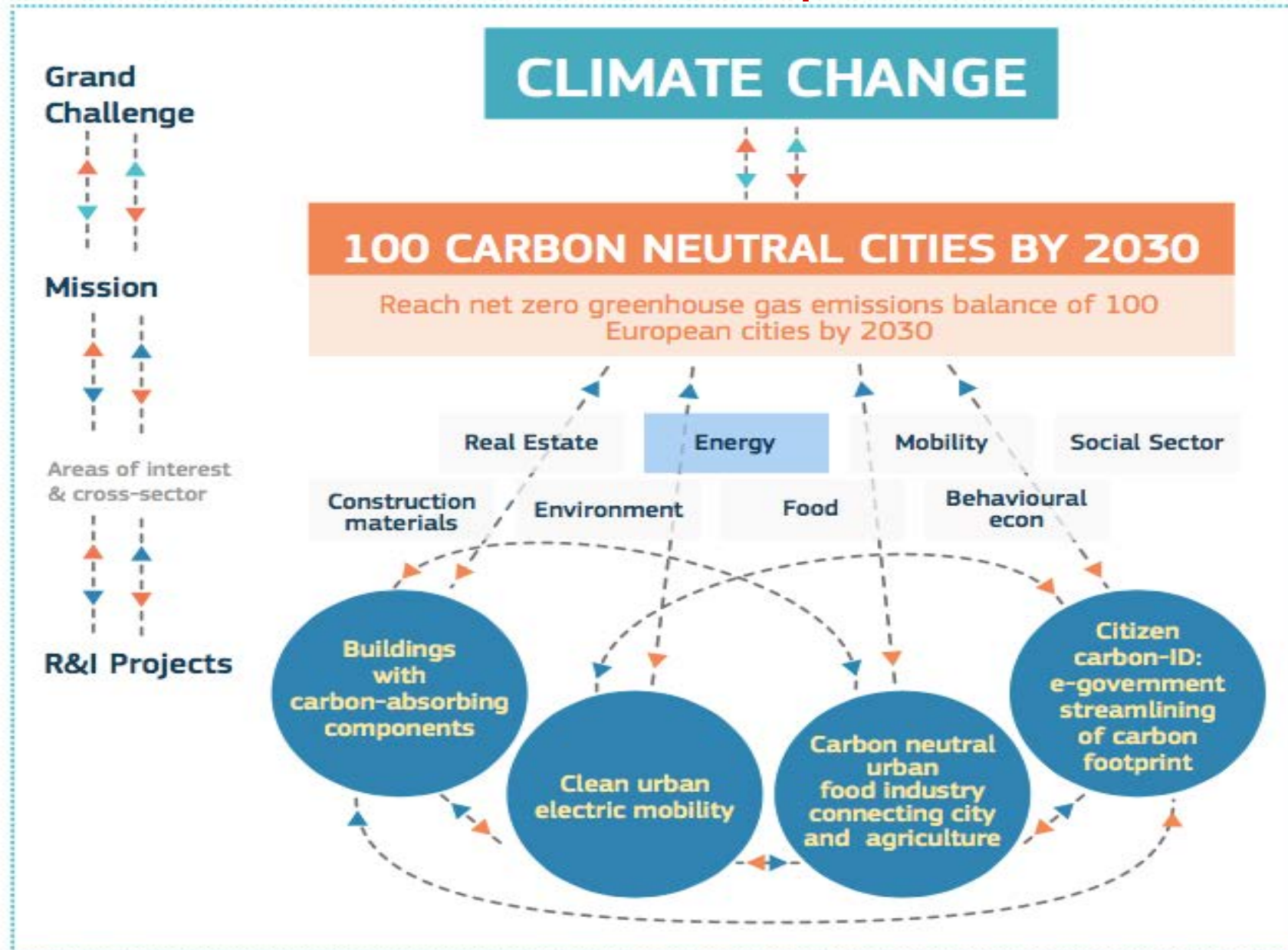


Figure 1. From Challenges to Missions Image: RTD - A.1 based on Mazzucato (2017)

3 illustrative examples for EU



Grand
Challenge



Mission



Areas of interest
& cross-sector



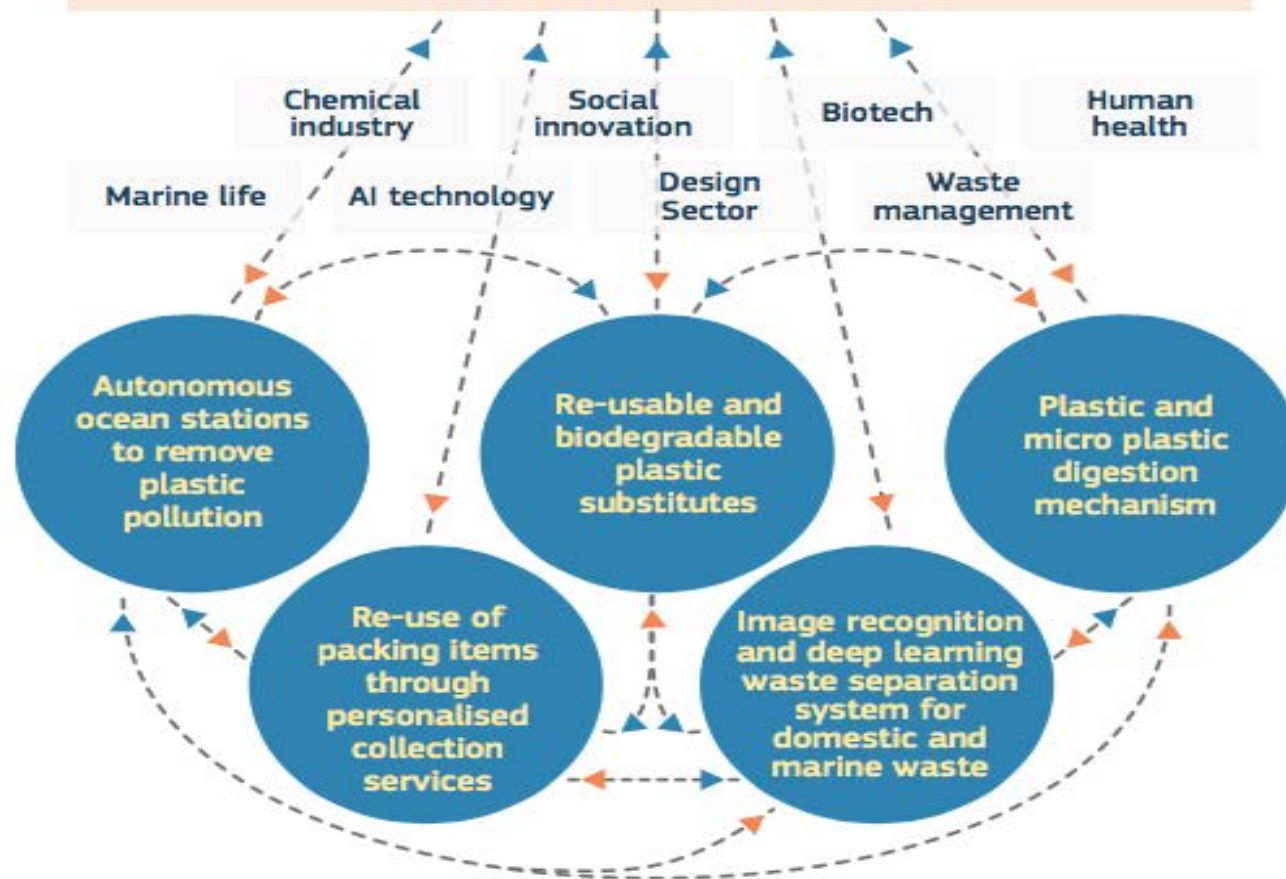
R&I Projects

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



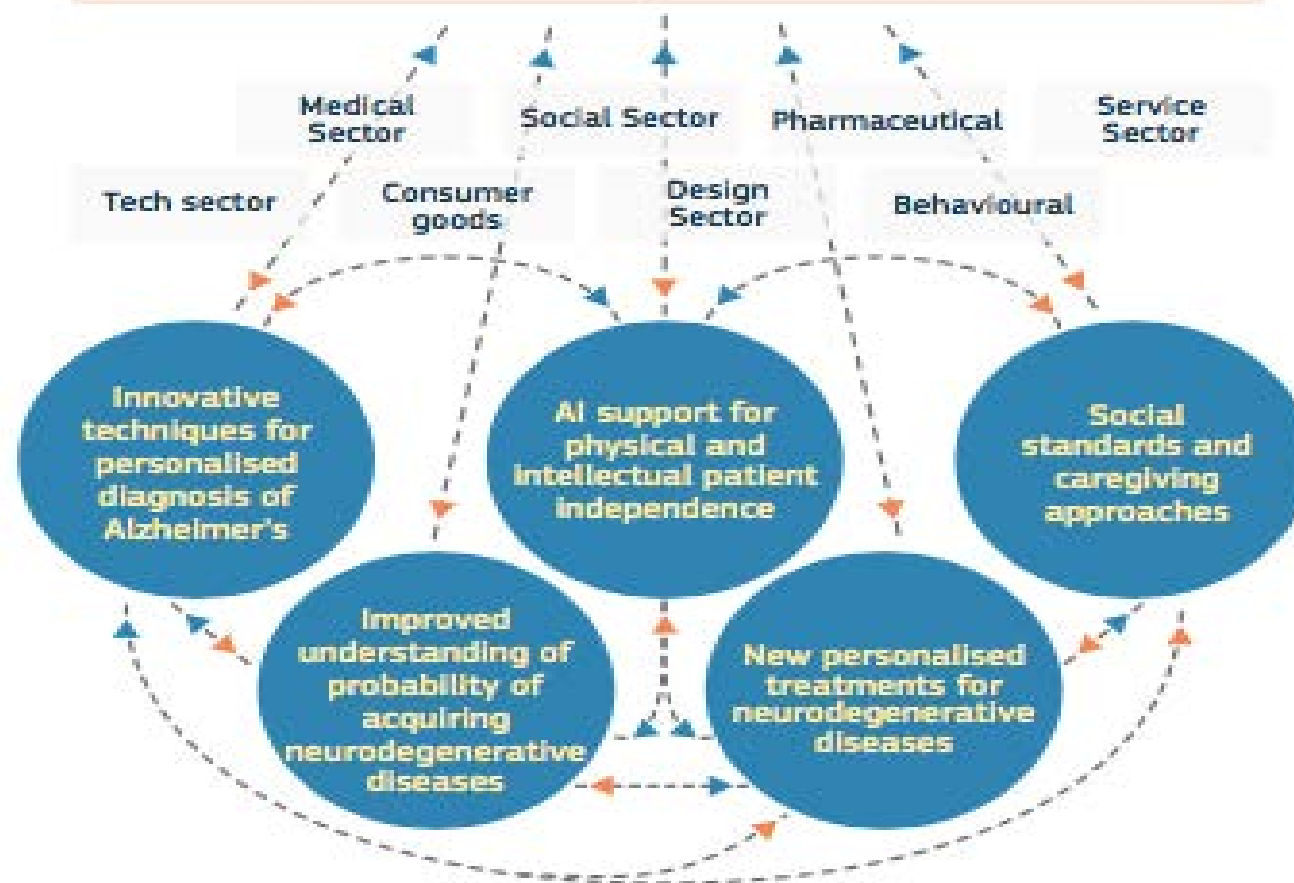
R&I Projects

CITIZEN HEALTH AND WELLBEING



DECREASING THE BURDEN OF DEMENTIA

Halving the human burden of dementia by 2030



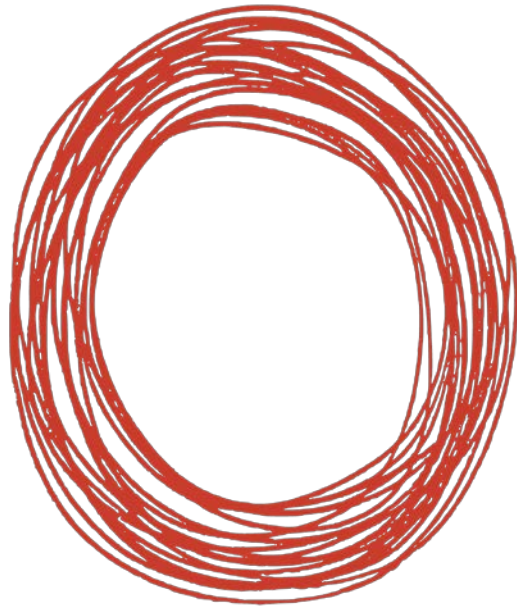
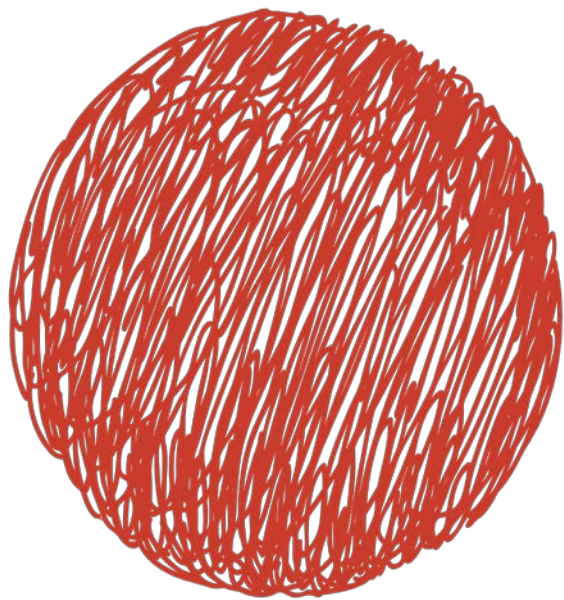
Criteria

- 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

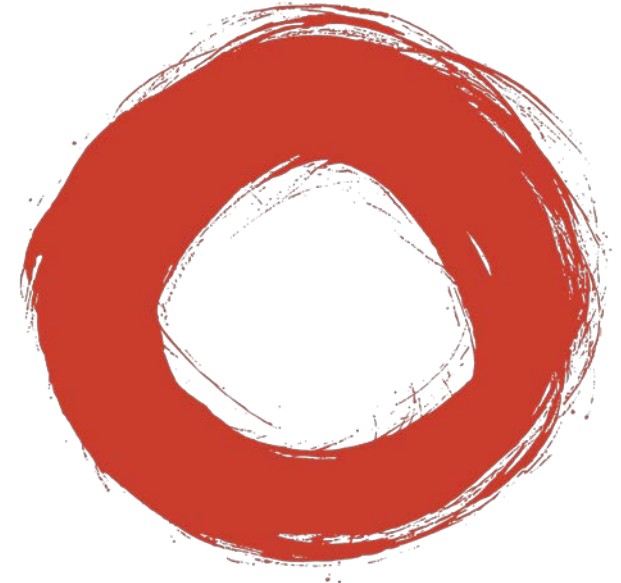
Implementation

- 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



UCL Institute for
Innovation and
Public Purpose



~~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

Mazzucato, M. (2013), **The Entrepreneurial State: debunking public vs. private sector myths**, Anthem Press: London, UK, ISBN 9780857282521, US edition (Public Affairs)

Mazzucato, M. (2014), Think Piece: “**A Mission Oriented Approach to Building the Entrepreneurial State**”, paper commissioned by Innovate UK-Technology Strategy Board November 2014T14/165 <https://www.gov.uk/government/news/long-term-growth-innovations-role-in-economic-success>

Mazzucato, M. and Penna, C. Eds (2015) **Mission-Oriented Finance for Innovation: New Ideas for Investment-Led Growth**, Rowman & Littlefield, Book, ISBN 978-1-78348-495-9 <http://www.policy-network.net/publications/4860/Mission-Oriented-Finance-for-Innovation>

Mazzucato, M. and Penna, C. (2016) “**Beyond market failures: the market creating and shaping roles of state investment banks**”, *Journal of Economic Policy Reform*, 19(4): 305-326

Mazzucato, M. (2017) “**Mission-oriented Innovation Policy: Challenges and Opportunities**”, UCL Institute for Innovation and Public Purpose Working Paper Series, (IIPP 2017-01) <https://www.ucl.ac.uk/bartlett/public-purpose/wp2017-01>

Mazzucato, M. and Semieniuk, G (2017) “**Financing renewable energy: who is financing what and why it matters**”, *Technological Forecasting and Social Change* (June 2017) <http://www.sciencedirect.com/science/article/pii/S0040162517306820>

Mazzucato, M. (2018) “**Mission-Oriented Research & Innovation in the European Union: A problem-solving approach to fuel innovation-led growth**”. Report for the European Commission, ISBN 978-92-79-79918-1 <https://publications.europa.eu/en/publication-detail/-/publication/5b2811d1-16be-11e8-9253-01aa75ed71a1/language-en>