How Fares the Entrepreneurial State? Empirical Evidence of Mission-Led Innovation Projects Around the Globe

Other titles in Foundations and Trends® in Entrepreneurship

Entrepreneurs' Search for Sources of Knowledge
Albert N. Link
ISBN: 978-1-63828-296-9

The Evolution of Hidden Champions as Niche Entrepreneurs
Erik E. Lehmann and Julian Schenkenhofer
ISBN: 978-1-63828-258-7

Entrepreneurship in the Long-Run: Empirical Evidence and Historical Mechanisms
Michael Fritsch and Michael Wyrwich
ISBN: 978-1-63828-108-5

Minority Entrepreneurship 2.0
Timothy Bates
ISBN: 978-1-63828-048-4

From the Metaphor to the Concept of the Entrepreneurial Journey in Entrepreneurship Research
Tõnis Mets
ISBN: 978-1-63828-016-3

Student Entrepreneurship: Reflections and Future Avenues for Research
Bart Clarysse, Philippe Mustar and Lisa Dedeyne
ISBN: 978-1-63828-012-5

How Fares the Entrepreneurial State? Empirical Evidence of Mission-Led Innovation Projects Around the Globe

Maral Batbaatar
Stockholm School of Economics
maralbb34@gmail.com

Johan P. Larsson
University of Cambridge
jpl66@cam.ac.uk

Christian Sandström
Jönköping International Business School
christian.sandstrom@ju.se

Karl Wennberg
House of Government and Public Policy (GaPP)
karl.wennberg@hhs.se

now
the essence of knowledge
Boston — Delft

Foundations and Trends® in Entrepreneurship

Published, sold and distributed by:
now Publishers Inc.
PO Box 1024
Hanover, MA 02339
United States
Tel. +1-781-985-4510
www.nowpublishers.com
sales@nowpublishers.com

Outside North America:
now Publishers Inc.
PO Box 179
2600 AD Delft
The Netherlands
Tel. +31-6-51115274

The preferred citation for this publication is

M. Batbaatar *et al.*. *How Fares the Entrepreneurial State? Empirical Evidence of Mission-Led Innovation Projects Around the Globe*. Foundations and Trends® in Entrepreneurship, vol. 19, no. 8, pp. 664–772, 2024.

ISBN: 978-1-63828-333-1

Foundations and Trends® in Entrepreneurship
Volume 19, Issue 8, 2024

Editorial Board

Editorial Scope

Topics

Foundations and Trends® in Entrepreneurship publishes survey and tutorial articles in the following topics:

- Nascent and start-up entrepreneurs
- Opportunity recognition
- New venture creation process
- Business formation
- Firm ownership
- Market value and firm growth
- Franchising
- Managerial characteristics and behavior of entrepreneurs
- Strategic alliances and networks
- Government programs and public policy
- Gender and ethnicity
- New business financing:
  - Business angels
  - Bank financing, debt, and trade credit
  - Venture capital and private equity capital
  - Public equity and IPOs
- Family-owned firms
- Management structure, governance and performance
- Corporate entrepreneurship
- High technology:
  - Technology-based new firms
  - High-tech clusters
- Small business and economic growth

Information for Librarians

Foundations and Trends® in Entrepreneurship, 2024, Volume 19, 4 issues. ISSN paper version 1551-3114. ISSN online version 1551-3122. Also available as a combined paper and online subscription.

Contents

How Fares the Entrepreneurial State? Empirical Evidence of Mission-Led Innovation Projects Around the Globe

Maral Batbaatar[1], Johan P. Larsson[2], Christian Sandström[3] and Karl Wennberg[4]

[1]*Stockholm School of Economics and Ratio, Sweden; maralbb34@gmail.com*
[2]*Department of Land Economy, University of Cambridge, UK, and Ratio, Sweden; jpl66@cam.ac.uk*
[3]*Jönköping International Business School and Ratio, Sweden; christian.sandstrom@ju.se*
[4]*House of Government and Public Policy (GaPP), Stockholm School of Economics, and Ratio, Sweden; karl.wennberg@hhs.se*

ABSTRACT

While considerable efforts have been made to conceptualize and outline the theoretical and normative logic of mission-oriented innovation policies and the role of the entrepreneurial state, there is a stark lack of empirical studies concerning how missions are designed and executed, and when they may work or do not. This monograph reviews theoretical rationales for mission-oriented innovation policy and provides an empirical overview of 30 articles which together cover 51 concluded or ongoing missions from around the world. We synthetize varieties of mission formulations, actors

Maral Batbaatar, Johan P. Larsson, Christian Sandström and Karl Wennberg (2024), "How Fares the Entrepreneurial State? Empirical Evidence of Mission-Led Innovation Projects Around the Globe", Foundations and Trends® in Entrepreneurship: Vol. 19, No. 8, pp 664–772. DOI: 10.1561/0300000114.

involved, and analyze characteristics of missions described as more or less failed or successful. Among the projects analyzed, many do not fulfill common definitions of "innovation missions." Missions related to technological or agricultural innovations seem more often successful than broader types of missions aimed at social or ecological challenges, and challenges in the governance and evaluation of missions remain unresolved in the literature. None of the mission cases contain a cost-benefit analysis or takes opportunity cost into consideration.

1

Introduction

Industrial policy is back in fashion. The list of local, national, and global challenges to take on is endless, as is—by necessity—the number of proposed solutions. Certainly, we will *want* to "fix" climate change, sluggish economic growth, inequality, as well as their interactions, if the challenge is our mere ability to do so. As the analysis in this monograph shows, these ideas are far from new. Similar thoughts have in fact permeated innovation and growth policy in the industrialized world for many decades. But it is undoubtedly the case that scholars of a growing literature argue that a proactive government ought to direct technological trajectories and, indeed, determine direction of private and public sector innovation. Yet scientific inquiry into how, when and to what extent these major interventions bring about their stated objectives is almost completely lacking. While belief in the potential of these "missions" is already permeating innovation policy in many OECD countries, both scholars and policy makers lament the lack of systematic knowledge of which past missions have been effective and, worse, knowledge of factors that determine future success. In this monograph we raise some basic, but unanswered, questions about the premises of mission-oriented innovation policy. What can we learn from

historical and contemporary missions in terms of mission formulations, actors involved, and criterion of success? We review and parse the eclectic empirical literature on this topic and assemble the first database to systematically track previous work in the field.

This shift towards "directed" innovation policies has been labelled the "third generation" of innovation policy, following the "first" and "second" generations of innovation policy based on investments in research and development, and establishing regional innovation systems, respectively (Bergkvist *et al.*, 2022; Schot and Steinmueller, 2019). These ideas have been diffused among policymakers and scholars, most notably in books by Mariana Mazzucato, who argued in *The Entrepreneurial State* (2015) and the follow-up *Mission Economy* (2021) that brave and encompassing governmental efforts had paved the way for economic, technological, and social progress. This progress is depicted as not limited to the original technological area of focus, but is carried by private enterprise and other means to new and existing parts of the economy. The creation of the internet is a frequently heralded example (Agarwal *et al.*, 2021).

During the COVID-19 pandemic's initial strife in ensuring public health, developing vaccines, and protective measures, many authorities noted that to achieve the desired effects, a broader government commitment across policy areas and sectors was required (Sebhatu *et al.*, 2020). The success of the Trump Administration's "operation warp speed" where public health authorities, pharmaceutical companies and regulations working coordinated and with pre-procured vaccines still in development (Bryan *et al.*, 2022; Kim *et al.*, 2021) highlighted ongoing discussion where traditional innovation policies are deemed as insufficient for large collective endeavours such as health crises due to e.g., weak directionality in R&D, lack of holistic coordination across sectors, and fragmentation of the policy mix (Bergkvist *et al.*, 2022; Schot and Steinmueller, 2019). There are also responses to less immediate threats and challenges. The perceived need for a new approach towards innovation policy has culminated in, for instance, The Biden administration's new Clean Energy program, the European Union's Green Deal, and investments in the thousands of billions over the coming years in initiatives seeking to accomplish a plethora of technological,

environmental, and social goals. Large and ambitious programs are put in place, and bold statements have been made concerning the potential of a mission-oriented approach: *The Green New Deal needs to radically transform capitalism—if it is to be saved from itself, and us from it. The only way to do this is through reorienting the economy around mission thinking. This means redesigning financial systems, public–private partnerships and public policy to align with the Sustainable Development Goals* (Bryan *et al.*, 2022; Kim *et al.*, 2021) The European Union's funding program Horizon Europe, which has committed to spend 5 billion euros until 2027 in five mission areas depicted as "grand societal challenges" and has encouraged member states to re-focus their innovation policies in accordance with a mission-oriented approach. Mazzucato (2021, p. 2) summarizes the mission-oriented logic as that "Innovation requires direction, and direction requires a vision of where we want to go as a society. This is where the state comes in." In short, missions are already here, they are sizeable and they already permeate innovation policy in many OECD countries, especially in the European Union.

With ideas of *The Entrepreneurial State* and *Mission Economy* put into practice and rolled out across the globe – notably in Europe – researchers and policymakers look to probe the theoretical logic behind such interventions with data on empirical cases of missions. But the state of our knowledge about their effects is still lacking. What types of missions have been conducted and in what settings? How are those missions deployed, by whom, with what constellation of actors, and what have been the outcomes thus far? Can studies of concluded missions be assembled to identify characteristics of mission failure or mission successes? Empirical answers to these questions are still missing in the scientific literature. This monograph represents our ambition to heed that call.

While conceptual and theoretical descriptions of mission-oriented innovation policies are legion, we are unaware of any systematic coverage of the empirical literature hitherto published on the subject. Indeed, we have seen few empirical evaluations or studies of how missions are designed and executed, as well as of their outcomes. As a result, we know little about when missions tend to work and when they do not. In response to this lack of knowledge we review the theoretical rationales

for mission-oriented innovation, summarize central facets of mission-oriented innovation policy, and provide an empirical overview of 51 concluded or ongoing missions from around the world. We synthetize varieties of mission formulations and policy tools attached to such missions and critically discuss what precise characteristics that may define them as "missions." Finally, we analyze characteristics of missions depicted as more or less failed or successful, and compile policy recommendations and future research recommendations on mission-oriented innovation policy.

References

Abrahamson, E. (1996). "Management fashion". *Academy of Management Review*. 21(1): 254.

Agarwal, R., S. Kim, and M. Moeen (2021). "Leveraging private enterprise: Incubation of new industries to address the public sector's mission-oriented grand challenges". *Strategy Science*. 6(4): 385–411.

Arrow, K. (1962). "Economic welfare and the allocation of resources for invention". In: *The Rate and Direction of Inventive Activity: Economic and Social Factors*. Princeton University Press. 609–626.

Arrow, K. J. (1951). "Alternative approaches to the theory of choice in risk-taking situations". *Econometrica: Journal of the Econometric Society*: 404–437.

Arrow, K. J. (1978). "A cautious case for socialism". *Dissent*. 25(4): 472–480.

Arslan, B., G. Vasudeva, and E. B. Hirsch (2023). "Public-private and private-private collaboration as pathways for socially beneficial innovation: Evidence from antimicrobial drug-development tasks". *Academy of Management Journal*. In press. DOI: 10.5465/amj.2021.1260.

Asgari, M., M. Tyrstrup, and J. Törnblom (2022). "Missionsorienterad innovation—En kunskapsöversikt [Mission-oriented innovation—An overview]". *Stockholm Center of Governance*.

Begemann, S. and L. Klerkx (2022). "Scrutinizing the construction of transformative missions through the lens of policy assemblages: The case of the dutch circular agriculture mission". *Mission*. URL: https://ssrn.com/abstract=4137893.

Bergkvist, J.-E., J. Moodysson, and C. Sandström (2022). "Third-generation innovation policy: System transformation or reinforcing business as usual?" *Questioning the Entrepreneurial State*: 201.

Bloom, N., J. Van Reenen, and H. Williams (2019). "A toolkit of policies to promote innovation". *Journal of Economic Perspectives*. 33(3): 163–184.

Brett, N., T. Magnusson, and H. Andersson (2023). "From global climate goals to local practice—Mission-oriented policy enactment in three Swedish regions". *Science and Public Policy*: scad010.

Bryan, K. A., J. Lemus, and G. Marshall (2022). "R&D competition and the direction of innovation". *International Journal of Industrial Organization*. 82: 102841.

Burgess, J., A. Stirling, J. Clark, G. Davies, M. Eames, K. Staley, and S. Williamson (2007). "Deliberative mapping: A novel analytic-deliberative methodology to support contested science-policy decisions". *Public Understanding of Science*. 16(3): 299–322.

Cappellano, F. and T. Makkonen (2020). "The proximity puzzle in cross-border regions". *Planning Practice & Research*. 35(3): 283–301.

Deleidi, M. and M. Mazzucato (2021). "Directed innovation policies and the supermultiplier: An empirical assessment of mission-oriented policies in the US economy". *Research Policy*. 50(2): 104151.

Denrell, J. (2003). "Vicarious learning, undersampling of failure, and the myths of management". *Organization Science*. 14(3): 227–243.

Edquist, C. and J. M. Zabala-Iturriagagoitia (2012). "Public procurement for innovation as mission-oriented innovation policy". *Research Policy*. 41(10): 1757–1769.

Eriksson, K. A. and R. Nykvist (2022). "Public-steering and private-performing sectors: Success and failures in the swedish finance, telecoms, and city planning sectors". *Questioning the Entrepreneurial State*: 299.

ESIR (2017). "Towards a Mission-Oriented Research and Innovation Policy in the European Union; An ESIR".

Essén, A., A. Krohwinkel, and K. Wennberg (2022). *Assessing Whether Mission-driven Innovation Makes a Difference: Mission Impossible?; Developing a Guiding Framework for the Evaluation of Five Mission Driven Environments for Health in Sweden; Pre-study Report Commissioned by Vinnova: Stockholm School of Economics*.

Fastenrath, S., S. Tavassoli, D. Sharp, R. Raven, L. Coenen, B. Wilson, and D. Schraven (2023). "Mission-oriented innovation districts: Towards challenge-led, place-based urban innovation". *Journal of Cleaner Production*: 138079.

Fisher, R., J. Chicot, A. Domini, M. Misojic, W. Polt, A. Turk, M. Unger, H. Kuittinen, E. Arrilucea, and F. Van Der Zee (2018). *Mission-Oriented Research and Innovation: Assessing the Impact of a Mission-Oriented Research and Innovation Approach*. European Commission EC.

Foray, D. (2018). "Smart specialization strategies as a case of mission-oriented policy—A case study on the emergence of new policy practices". *Industrial and Corporate Change*. 27(5): 817–832.

Foray, D., D. C. Mowery, and R. R. Nelson (2012). "Public R&D and social challenges: What lessons from mission R&D programs?" *Research Policy*. 41(10): 1697–1702.

George, G., J. Howard-Grenville, A. Joshi, and L. Tihanyi (2016). "Understanding and tackling societal grand challenges through management research". *Academy of Management Journal*. 59(6): 1880–1895.

Grillitsch, M., T. Hansen, L. Coenen, J. Miörner, and J. Moodysson (2019). "Innovation policy for system-wide transformation: The case of strategic innovation programmes (SIPs) in Sweden". *Research Policy*. 48(4): 1048–1061.

Grundy, Q., C. Campbell, R. Ali, M. Herder, and K. Holloway (2023). "'A most equitable drug': How the clinical studies of convalescent plasma as a treatment for SARS-CoV-2 might usefully inform post-pandemic public sector approaches to drug development". *The Journal of Law, Medicine & Ethics*. DOI: 10.2139/ssrn.4322653.

Hekkert, M. P., M. J. Janssen, J. H. Wesseling, and S. O. Negro (2020). "Mission-oriented innovation systems". *Environmental Innovation and Societal Transitions*. 34: 76–79.

Henrekson, M., C. Sandström, and M. Stenkula (2024). *Moonshots and the New Industrial Policy—Questioning the Mission Economy*. New York: Springer.

Horan, R. D., E. P. Fenichel, K. L. Drury, and D. M. Lodge (2011). "Managing ecological thresholds in coupled environmental-human systems". *Proceedings of The National Academy of Sciences of The United States of America*. 108(18): 7333–7338.

Janssen, M. J., A. Bergek, and J. H. Wesseling (2022). "Evaluating systemic innovation and transition programmes: Towards a culture of learning". *PLOS Sustainability and Transformation*. 1(3): e0000008.

Janssen, M. J., J. Torrens, J. H. Wesseling, and I. Wanzenböck (2021). "The promises and premises of mission-oriented innovation policy—A reflection and ways forward". *Science and Public Policy*. 48(3): 438–444.

Kim, J. H., P. Hotez, C. Batista, O. Ergonul, J. P. Figueroa, S. Gilbert, M. Gursel, M. Hassanain, G. Kang, and B. Lall (2021). "Operation warp speed: Implications for global vaccine security". *The Lancet Global Health*. 9(7): e1017–e1021.

Kivimaa, P. and F. Kern (2016). "Creative destruction or mere niche support? Innovation policy mixes for sustainability transitions". *Research Policy*. 45(1): 205–217.

Kivimaa, P. and K. Rogge (2020). "Interplay of policy experimentation and institutional change in transformative policy mixes: The case of mobility as a service in finland". *SWPS 2020-17*. URL: https://ssrn.com/abstract=3712545.

Kuhlmann, S. and A. Rip (2018). "Next-generation innovation policy and grand challenges". *Science and Public Policy*. 45(4): 448–454.

Kuittinen, H., W. Polt, and K. Weber (2018). "'Mission europe'. A revival of mission-oriented policy in the European Union": 191–207. *RFTEE-Council for Research and Technology Development (Ed.): RE: THINKING EUROPE-Positions on Shaping an Idea, Vienna, September*.

Larsson, J. P. (2022). "Innovation without entrepreneurship: The pipe dream of mission-oriented innovation policy". *Questioning the Entrepreneurial State*. 77.

Lindner, R., F. Wittmann, T. Jackwerth-Rice, S. Daimer, J. Edler, and D. Posch (2023). "Transforming Germany: How mission agencies can pioneer innovative solutions for grand challenges". *Fraunhofer Institute for Systems and Innovation Research*.

Mateos-Garcia, J. (2019). *Mapping Research & Innovation Missions: With an Application to the UK Government Mission to Transform the Prevention, Diagnosis and Treament of Chronic Diseases using Artificial Intelligence*. United Kingdom: NESTA.

Mazzucato, M. (2015). *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. Anthem Press.

Mazzucato, M. (2016). "From market fixing to market-creating: A new framework for innovation policy". *Industry and Innovation*. 23(2): 140–156.

Mazzucato, M. (2021). *Mission Economy: A Moonshot Guide to Changing Capitalism*. Penguin UK.

Mazzucato, M. and C. C. R. Penna (2015). "Introduction: Mission-oriented finance for innovation". In: *Mission-Oriented Finance for Innovation*. Ed. by M. Mazzucato and C. C. R. Penna. London, UK: Rowman & Littlefield. 1–10.

Meseguer, C. and F. Gilardi (2009). "What is new in the study of policy diffusion?" *Review of International Political Economy*. 16(3): 527–543.

Mowery, D. C., R. R. Nelson, and B. R. Martin (2010). "Technology policy and global warming: Why new policy models are needed (or why putting new wine in old bottles won't work)". *Research Policy*. 39(8): 1011–1023.

Nelson, R. R. (1977). *The Moon and the Ghetto: An Essay on Policy Analysis*. New York: Norton.

Nelson, R. R. (2011). "The moon and the Ghetto revisited". *Science and Public Policy*. 38(9): 681–690.

Nylén, E.-J., J.-E. Johanson, and J. Vakkuri (2023). "Mission-oriented innovation policy as a hybridisation process: The case of transforming a national fertilising system". *Science and Public Policy*: scad004.

OECD (2021). "The design and implementation of mission-oriented innovation policies: A new systemic policy approach to address societal challenges". *OECD Science, Technology and Industry Policy Paper No. 100*. DOI: 10.1787/23074957.

Olbrei, E. and S. Howes (2012). "A very real and practical contribution? Lessons from the Kalimantan forests and climate partnership". *Climate Law*. 3(2): 103–137.

Prest, A. and R. Turvey (1966). *Cost-Benefit Analysis: A Survey*. Ed. by A. E. Association and R. E. Society. Springer.

Prochaska, L. and D. Schiller (2021). "An evolutionary perspective on the emergence and implementation of mission-oriented innovation policy: The example of the change of the leitmotif from biotechnology to bioeconomy". *Review of Evolutionary Political Economy*. 2: 141–249.

Quirapas Franco, M. A., R. Aboagye-Gyan, and M. F. Gul (2018). "Sources, drivers and barriers of innovation in Singapore's electronic road pricing". *Asian Journal of Public Affairs*. 11(1): e3.

Reinecke, D. (2022). "Moonshots to nowhere? The metroliner and failed high-speed rail in the United States, 1962–1977". *The Journal of Transport History*. 43(1): 33–53.

Rittel, H. W. and M. M. Webber (1973). "Dilemmas in a general theory of planning". *Policy Sciences*. 4(2): 155–169.

Sarasvathy, S. D., N. Dew, S. Read, and R. Wiltbank (2008). "Designing organizations that design environments: Lessons from entrepreneurial expertise". *Organization Studies*. 29(3): 331–350.

Schot, J. and W. E. Steinmueller (2019). *Transformative Change: What Role for Science, Technology and Innovation Policy?: An Introduction to the 50th Anniversary of the Science Policy Research Unit (SPRU) Special Issue*. Elsevier. 843–848.

Sebhatu, A., K. Wennberg, S. Arora-Jonsson, and S. I. Lindberg (2020). "Explaining the homogeneous diffusion of COVID-19 nonpharmaceutical interventions across heterogeneous countries". *Proceedings of The National Academy of Sciences of The United States of America*. 117(35): 21201–21208.

Thøgersen, D. (2022). "Windows of translation in public service innovation. Introducing a new mission in public childcare". *Journal of Change Management*. 22(4): 401–421.

Tosun, J., C. Heinz-Fischer, and R. Luo (2023). "Who takes the lead? A disaggregate analysis of the EU's engagement in the clean energy ministerial and mission innovation". *Journal of Cleaner Production*. 382: 135240.

Wright, B. D. (2012). "Grand missions of agricultural innovation". *Research Policy*. 41(10): 1716–1728.

Ziegler, R. (2020). "Paludiculture as a critical sustainability innovation mission". *Research Policy*. 49(5): 103979.