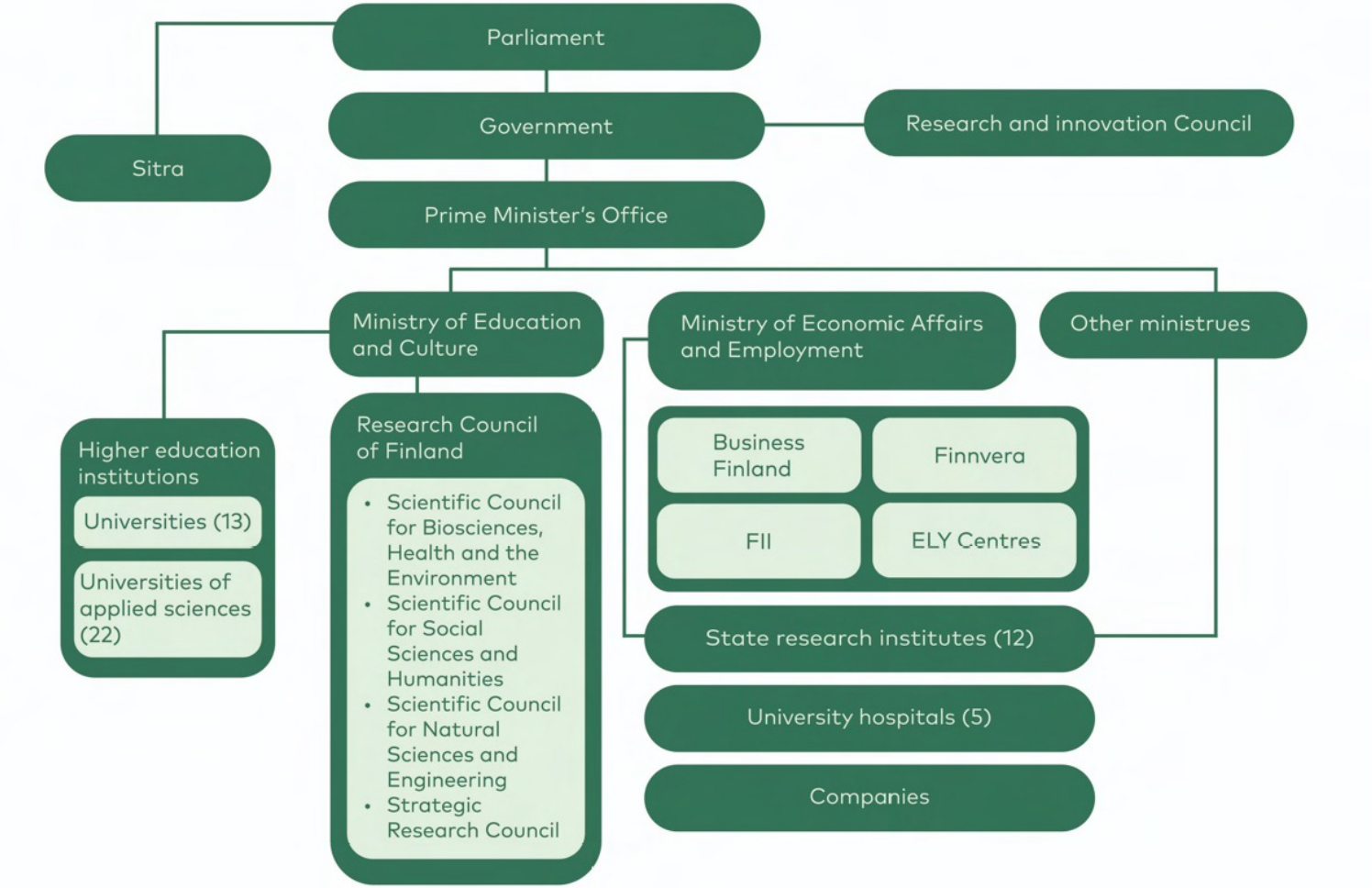
Charles Edquist: Towards a holistic innovation policy

https://www.youtube.com/watch?v=HWyAyqXUGH0

A simplified illustration of the main public innovation policy set-up in Finland Source: Sotarauta, 2024, based on OECD, 2017.



Composition and meetings of the Research and Innovation Council of Finland

Ministerial members

Prime Minister **Petteri Orpo**, Chair
Minister of Finance **Riikka Purra**
Minister of Science and Culture **Sari Multala**, 1st Vice-Chair
Minister of Economic Affairs **Wille Rydman**
Minister of Education **Anders Adlercreutz**
Minister of Agriculture and Forestry **Sari Essayah**

Other members

Riikka Heikinheimo, Director, Confederation of Finnish Industries
Ilkka Kivimäki, Partner, Maki.vc
Markku Kulmala, Academy Professor, University of Helsinki
Sari Lindblom, Rector, University of Helsinki, 2nd Vice-Chair
Vesa Taatila, Rector, Turku University of Applied Sciences
Antti Vasara, President & CEO, VTT Technical Research Centre of Finland
Kai Öistämö, President & CEO, 3rd Vice-Chair

Permanent experts

Timo Lankinen, Permanent State Under-Secretary, Prime Minister's Office
Olli Kärkkäinen, Strategy and Research Director, Ministry of Finance
Sirkku Linna, Director General, Ministry of Education and Culture
Juhapekka Ristola, Director General, Ministry of Economic Affairs and Employment
Paula Eerola, President, Academy of Finland
Lassi Noponen, Director General, Business Finland

Secretariat

Johanna Moisio, Secretary-General, Prime Minister's Office
Antti Pelkonen, Chief Specialist, Prime Minister's Office
Harri Länsipuro, Chief Specialist, Ministry of Economic Affairs and Employment
Jussi Alho, Chief Specialist, Ministry of Education and Culture

Finland:

Science Council (1963->1987)
Science and Technology Council (1987-2008)
Research and Innovation Council (2009->)

Positive impacts of the innovation system approach

(Björn Asheim)

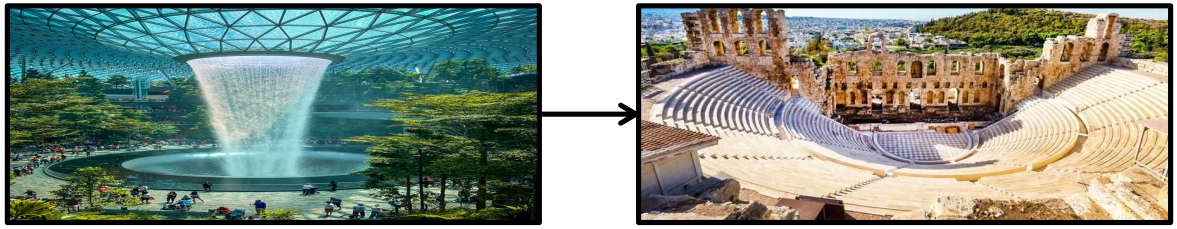
New view on what constitutes international competitiveness

- From relative wages (low road or weak competition) to non-price competitiveness national policies of promoting innovation and learning (high road or strong competition)

The 'system' dimension moved attention from linear to interactive thinking of innovation

- from science and technology policies to innovation policy

From fountain to forum



Photos by Rids on Unsplash

3. Transformative innovation policy (mission-oriented)

- Places social and environmental problems at the core
- Layered upon (not fully replacing) earlier innovation policy paradigms
- Conceptual variety

‘Mission-oriented innovation policy is a co-ordinated package of policy and regulatory measures tailored specifically to mobilise innovation in order to address well-defined objectives related to a societal challenge, in a defined timeframe’ (OECD)

Policy discourse, 2010 >>

- OECD (2010): On eco-innovation in industry: emphasises system innovation, understood as innovation characterized by shifts in how society functions and how its needs are met
- OECD (2011): Towards Green Growth: highlights the importance of a transition to green growth, which involves systemic changes across the entire economy, including new ways of producing and consuming things
- UNEP (2011): Towards a Green Economy: green economy transitions and economic transformation that necessitate a fundamental rethinking of our approach to the economy
- EU (2010): Europe 2020 - importance of changing tracks and exploring new development paths to produce smart, sustainable and inclusive growth.

Challenges – transformation failures

- Directionality
- Experimentation
- Demand articulation
- Policy learning and orchestration

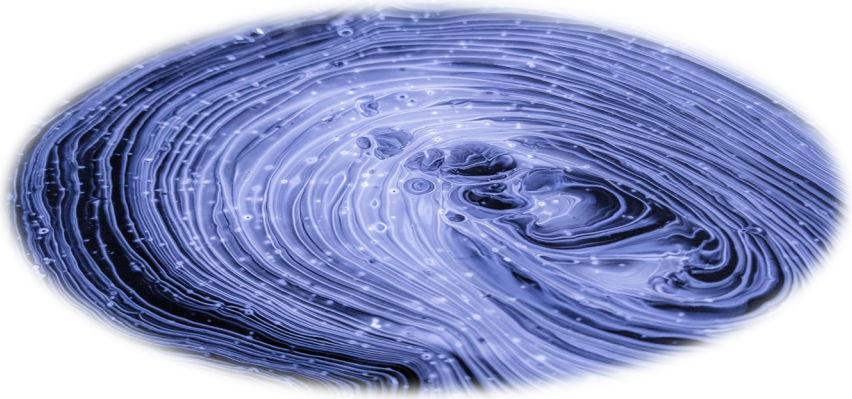


Photo by Adrien Converse on Unsplash

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Green growth

- **The belief**: it is possible to reduce ecological impact while achieving economic growth through the use of new technologies and sustainable practices.
- A term to describe a path of economic growth that uses natural resources in a sustainable manner
- It provides an alternative concept to typical industrial economic growth

(e.g. OECD, 2011)

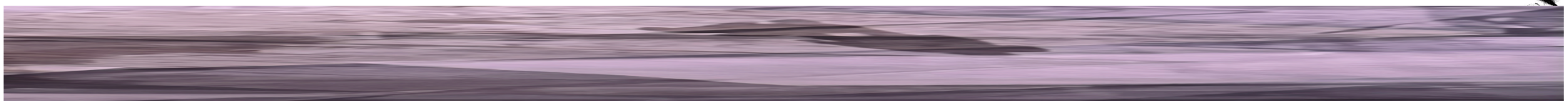
Degrowth

- **The belief**: economic growth is inherently unsustainable and we need to reduce our consumption and production levels to achieve a sustainable future (Stratford, 2020)
- "The planned and democratic reduction of production and consumption as a solution to social-ecological crises." (Parrique and Cosme, 2022)

The proposals to support degrowth include:

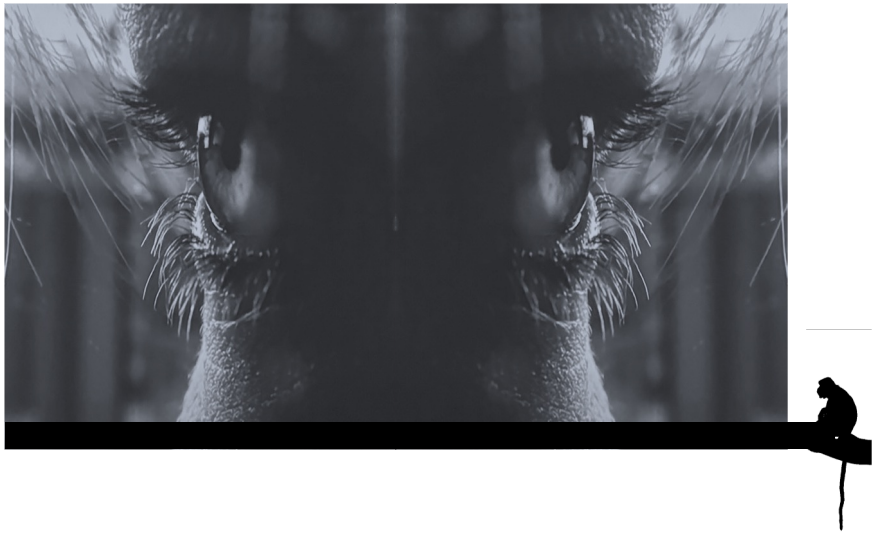
1) Reduce the environmental impact of human activities
2) Redistribute income and wealth both within and between countries
3) Promote the transition from a materialistic to a convivial and participatory society

(Cosme, Santos and O'Neill, 2017)

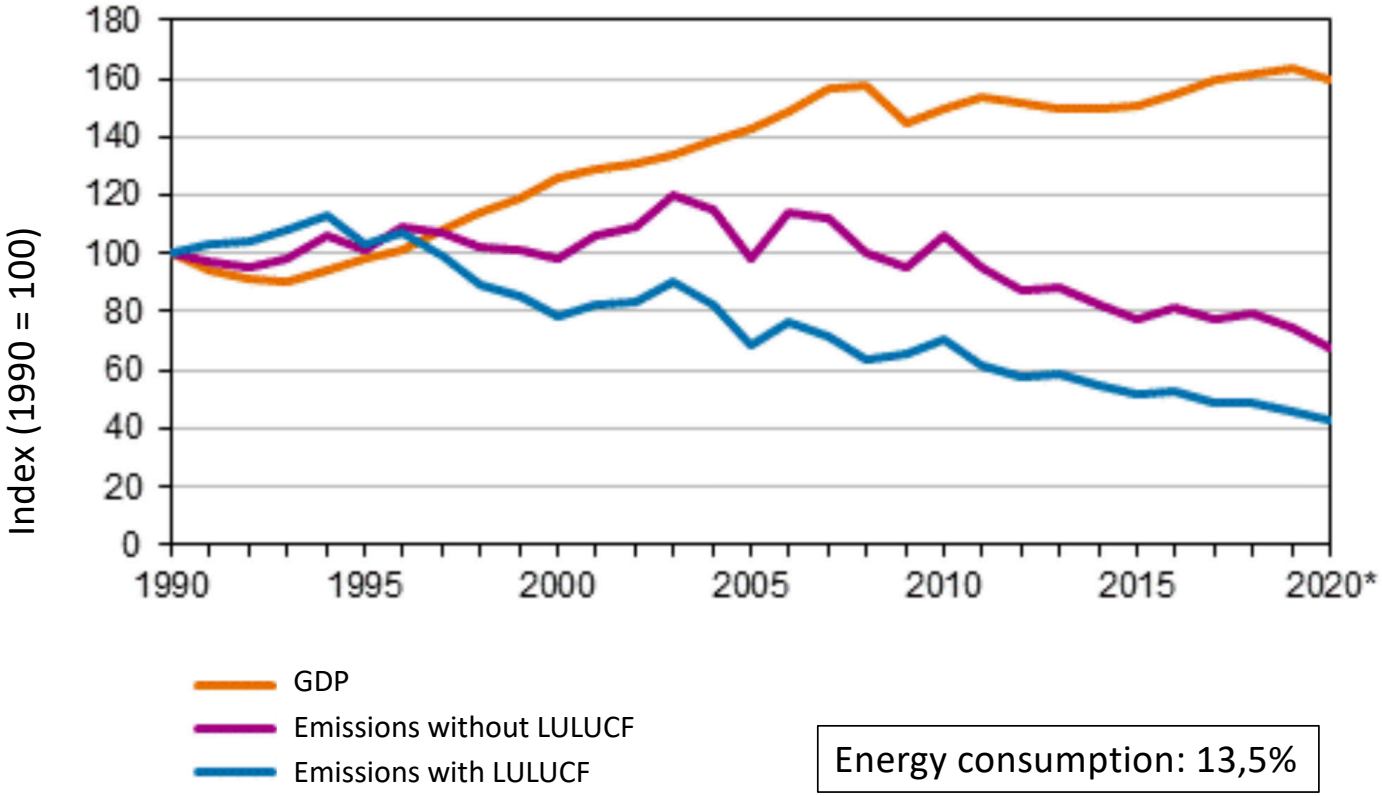


The tension

- A shared purpose: transforming economies to achieve sustainable economic development.
  - The theories on which they are based differ significantly, potentially leading to socio-political tensions.
  - The central issue between the two approaches is whether economic growth can be separated from environmental degradation.



Green growth – decoupling of economic growth and emissions



Energy consumption: 13,5%

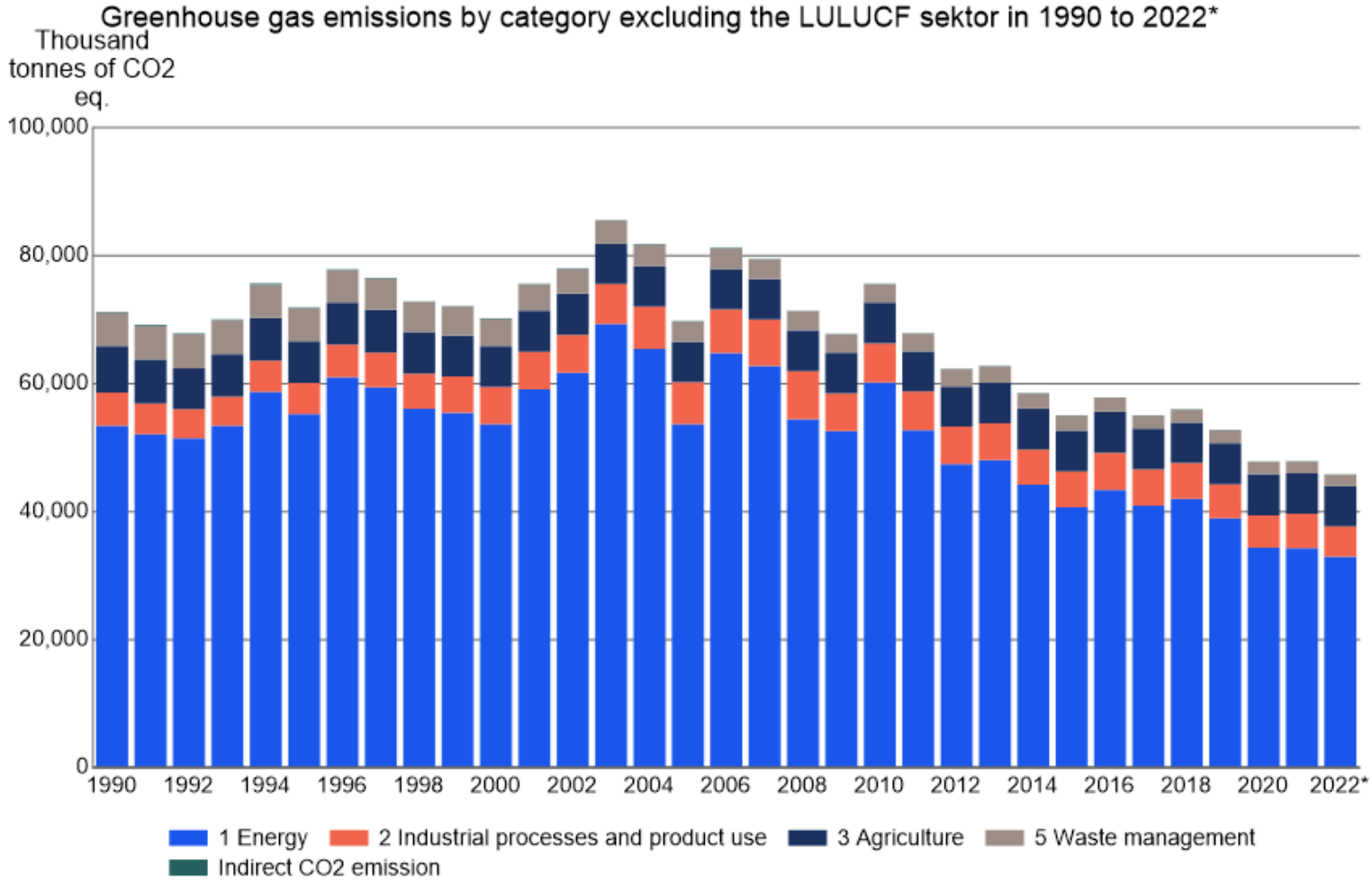
Decoupling: Countries that achieved economic growth while reducing CO_2 emissions, 2005–20

Our World in Data

Emissions are adjusted for trade. This means that CO_2 emissions caused in the production of imported goods are added to its domestic emissions – and for goods that are exported the emissions are subtracted.

Average incomes are measured by GDP per capita (except for Ireland, for which it is measured by GNI per capita).

Data sources: Global Carbon Project & World Bank.
There are more countries that achieved the same, but only those countries for which data is available and for which each change exceeded 5% are shown.



Source: Statistics Finland, greenhouse gases

The transformation to more sustainable regional economies

- not only about new greener products or cleaner forms of energy.
- also about conflicting forces intersecting in a region, misaligned thinking, misplaced investments and related power struggles.

Kevin Morgan: The Public Animateur: mission-led innovation and the “smart state” in Europe

https://youtu.be/EhXwfvD2sk4

The World Economic Forum's Global Competitiveness Report highlights the 'Nordic model' as 'the most promising in leading economic systems towards greater sustainability and shared prosperity'

(Schwab & Zahidi, World Economic Forum, 2020)

Walking the talk? Innovation policy approaches to unleash the transformative potentials of the Nordic bioeconomy

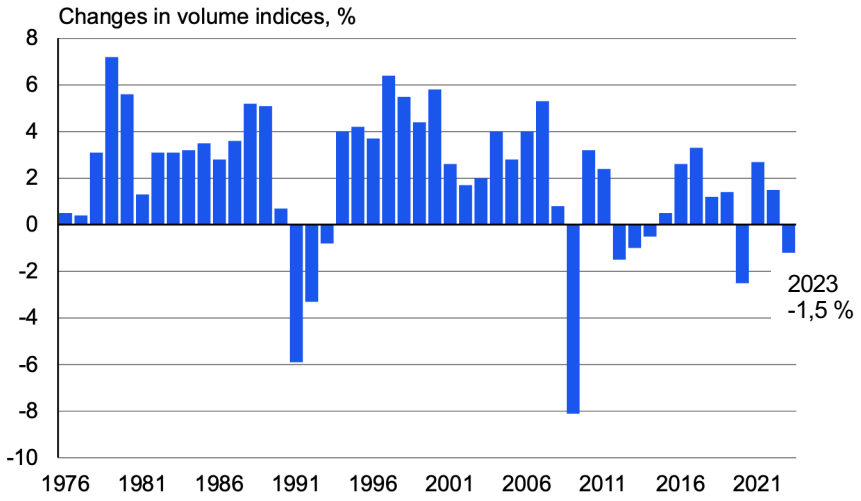
Lisa Scordato[1,*], Markus M. Bugge[1,2], Teis Hansen[3,4], Anne Tanner[5] and Olav Wicken[2]

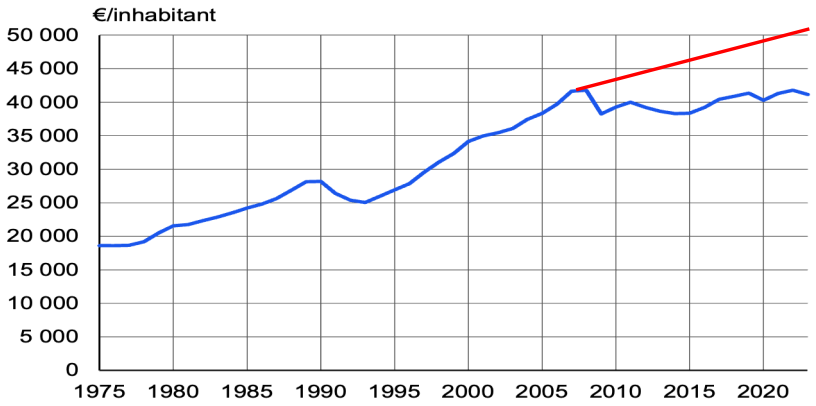
- The analysed bioeconomy policy strategies in the four Nordic countries incorporate all three innovation policy approaches
  - Technology push
  - Systems of innovation
  - Transformative change

- Policy layering - refers to the process of adding new policy goals and instruments to existing policy mixes without discarding previous measures
- Policy drift occurs when new goals replace old ones without changing the instruments used to implement them.

Innovation policy in Finland

Annual change in the volume of gross domestic product, 1976–2023*





https://stat.fi/tup/suoluk/suoluk_kansantalous_en.html

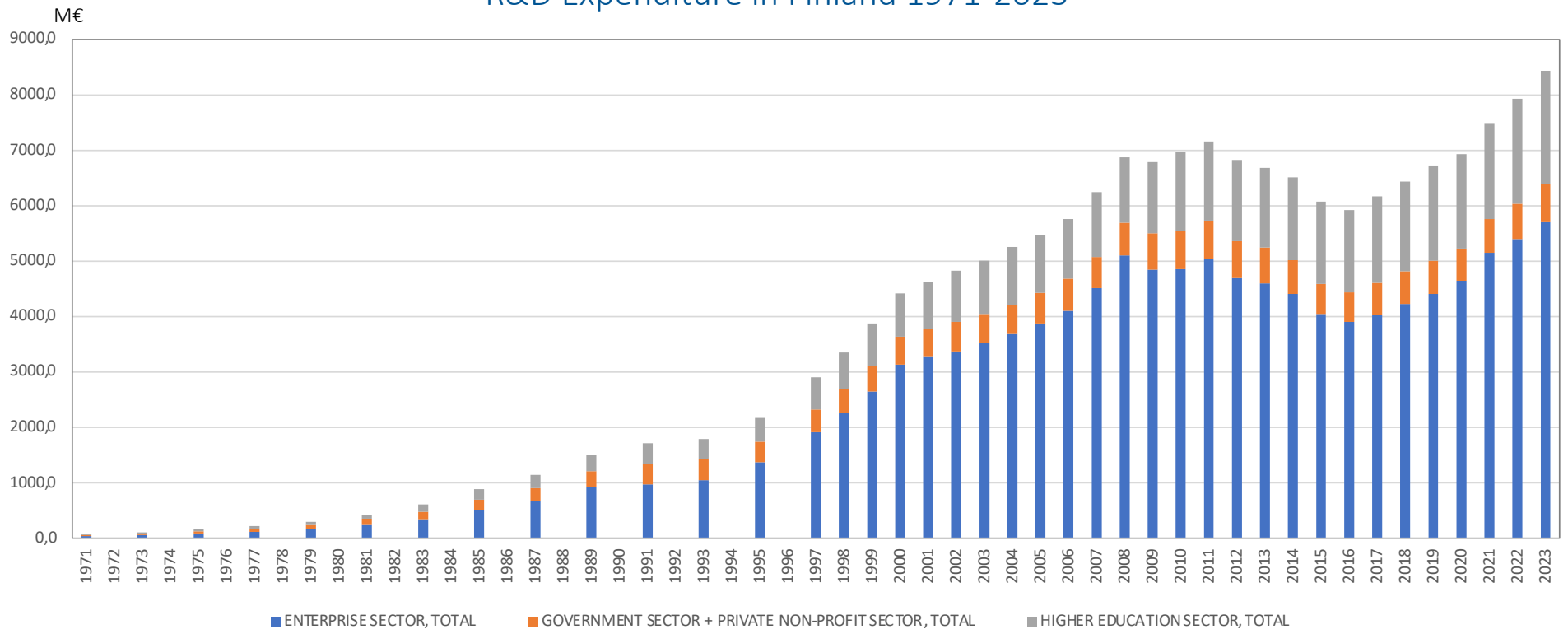
Cluster policy and innovation system entered Finland

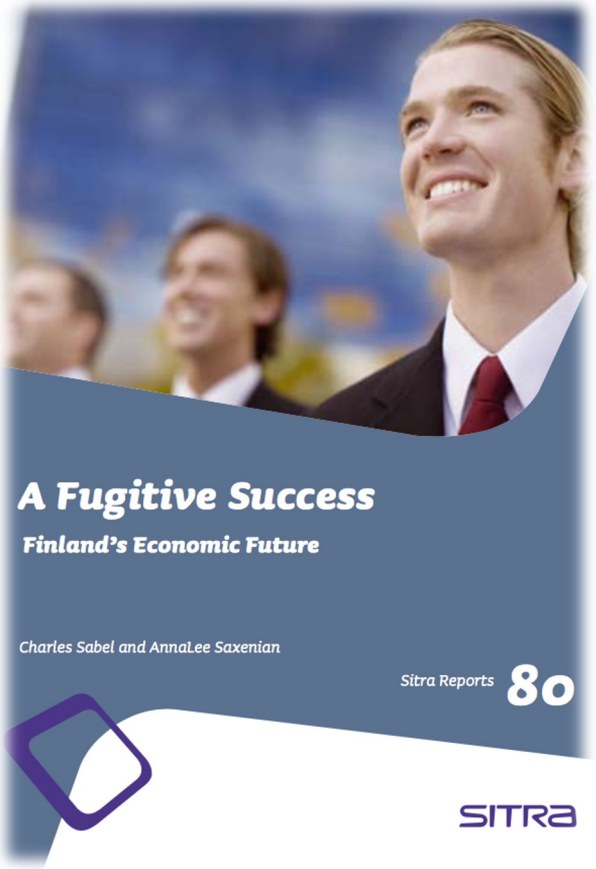
- Deep recession of the early 90's
- High-road targeted - continuing with the old path simply was not an option
- **Cluster and innovation system as key focusing devices**

Platforms and innovation ecosystems entered Finland

- Lost 15 years (2009/10->)
- Something more dynamic called for
- **Platform and innovation ecosystems as key focusing devices**

R&D Expenditure in Finland 1971-2023





Sabel and Saxenian (2009)

”Finland is at risk of becoming a victim of its economic success”

”The core products of both industries - pulp, paper and packaging for the one, cell phones for the other—have become commodities in the fast growing markets in the rapidly expanding economies of the developing world”

”…prospects of longer term growth in Finland will require rethinking … . [The system] that fuelled successful innovation … appears to have become self-limiting in the global environment of the 2000s”

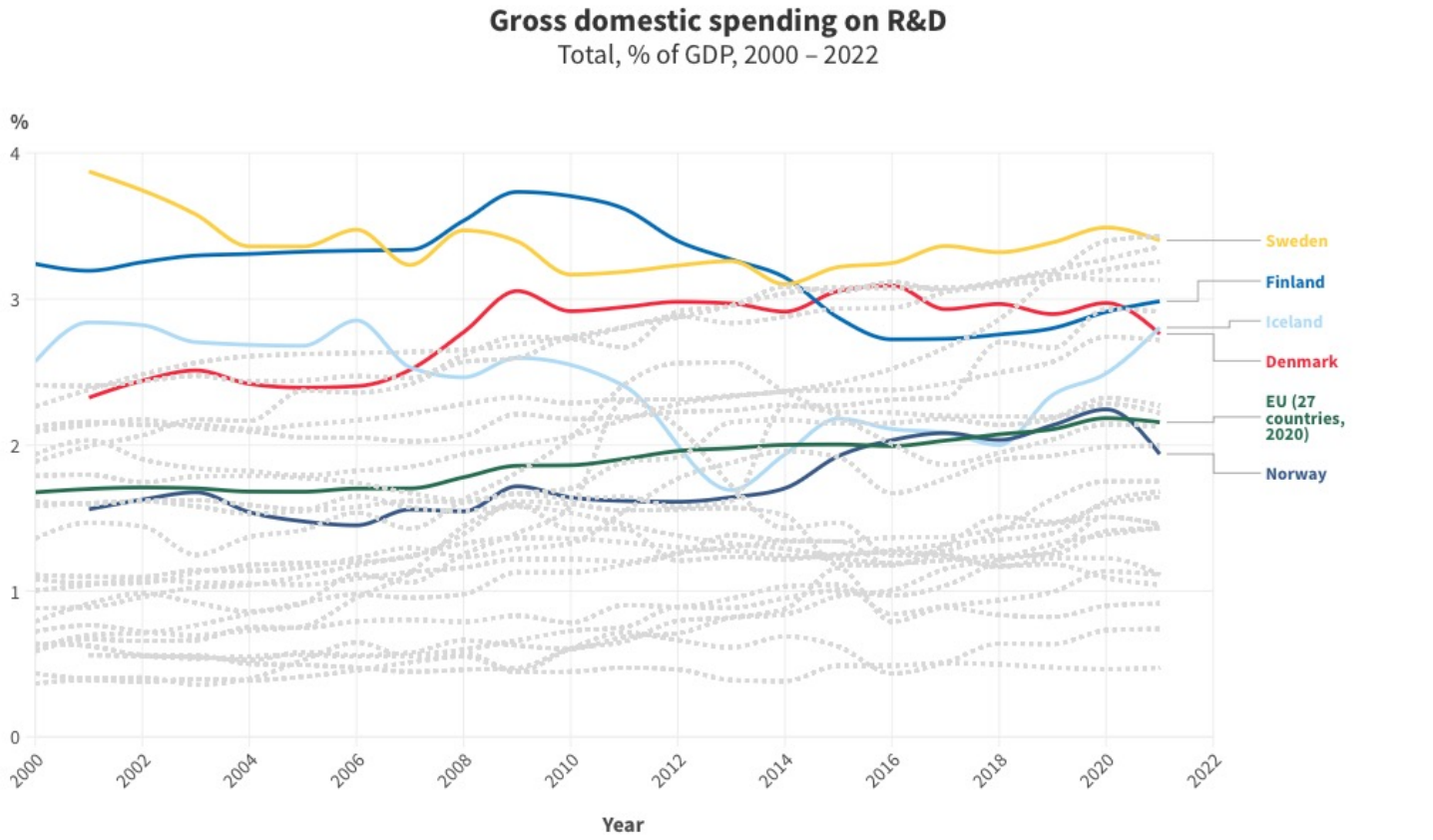
Challenges of the Finnish System, as presented in 2009 by the international panel that evaluated the Finnish NIS

- Loosing ground in competitiveness
  - Main growth drivers weakening, core sectors in turmoil
  - A victim of its economic success (Sabel & Saxenian, 2009)
- Lot of R&D inputs – little output?
- Lack of growth aspirations
- Heavy technical orientation
- Innovation dominated by established firms primarily in manufacturing
- Low level of internationalization
  - Low international researcher mobility

Prime minister Juha Sipilä expressed his doubts about the long-held innovation policy logics by asking:

"…how in the world this happened? Why weren't we better able to exploit global economic growth in spite of exceptional investments in expertise and R&D"

(free translation from Finnish by MS)



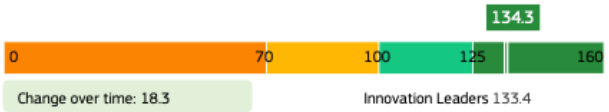
Source: data.oecd.org

European Commission

European Innovation Scoreboard **2023**

Country profile

Finland



Finland	Performance relative to EU in 2023		Performance change 2016-2023	Performance change 2022-2023
SUMMARY INNOVATION INDEX	**134.3**		**18.3**	**4.0**
Human resources	**157.1**		**-11.2**	**-1.4**
Doctorate graduates	159.3		-11.4	11.4
Population with tertiary education	92.5		3.6	3.6
Lifelong learning	230.4		-29.7	-29.7
Attractive research systems	**156.6**		**35.5**	**-0.6**
International scientific co-publications	224.3		94.6	4.9
Most cited publications	122.1		3.0	-6.9
Foreign doctorate students	143.6		55.0	8.8
Digitalisation	**158.2**		**36.0**	**14.8**
Broadband penetration	130.2		70.8	29.2
People with above basic overall digital skills	196.5		0.0	0.0
Finance and support	**103.6**		**26.9**	**6.0**
R&D expenditures in the public sector	123.4		-12.9	-4.8
Venture capital expenditures	134.9		103.7	10.1
Government support for business R&D	39.3		0.8	16.6
Firm investments	**109.1**		**6.5**	**0.9**
R&D expenditure in the business sector	138.9		-6.2	7.7
Non-R&D Innovation expenditures	72.8		14.4	-9.1
Innovation expenditures per employee	110.1		11.7	3.4
Use of information technologies	**190.6**		**0.9**	**0.0**
Enterprises providing ICT training	187.9		1.9	0.0
Employed ICT specialists	193.3		0.0	0.0
Innovators	**147.5**		**58.1**	**28.8**
Product innovators (SMEs)	147.9		25.7	14.2
Business process innovators (SMEs)	147.0		92.7	44.2
Linkages	**218.6**		**71.7**	**-7.1**
Innovative SMEs collaborating with others	243.7		119.1	0.0
Public-private co-publications	369.8		57.1	-23.7
Job-to-job mobility of HRST	133.3		35.3	-5.9
Intellectual assets	**124.6**		**-7.7**	**-9.9**
PCT patent applications	150.1		-0.6	-0.6
Trademark applications	109.4		10.3	-7.2
Design applications	104.2		-30.8	-23.6
Employment impacts	**138.0**		**22.6**	**7.0**
Employment in knowledge-intensive activities	127.7		0.0	0.0
Employment in innovative enterprises	146.4		44.1	13.6
Sales impacts	**116.4**		**32.3**	**16.4**
Medium and high-tech goods exports	73.6		10.2	9.3
Knowledge-intensive services exports	142.0		14.8	2.8
Sales of innovative products	149.8		88.2	44.2
Environmental sustainability	**78.3**		**-4.6**	**-1.0**
Resource productivity	24.8		5.5	0.1
Air emissions by fine particulate matter	99.3		8.4	-0.3
Environment-related technologies	101.1		-26.5	-2.7

The second column shows performance relative to that of the EU in 2023. Colours next to the column show matching colour codes: dark green: above 125% of the performance of the EU in 2023; light green: between 100% and 125%; light orange: between 70% and 100%; dark orange: below 70%. The next columns show performance change over time between 2016 and 2023 and between 2022 and 2023, with scores relative to those of the EU in 2016. Positive (negative) performance changes are shown in green (red).

FINLAND is an **Innovation Leader** with performance at 134.3% of the EU average. Performance is above the average of the Innovation Leaders. Performance is increasing at a rate higher than that of the EU (8.5%-points). The country's performance lead over the EU is becoming larger.

Relative strengths

Public-private co-publications
Innovative SMEs collaborating with others
Lifelong learning
International scientific co-publications
People with above basic overall digital skills

Relative weaknesses

Resource productivity
Government support for business R&D
Non-R&D Innovation expenditures
Medium and high-tech goods exports
Population with tertiary education

Strong increases since 2016

Innovative SMEs collaborating with others
Venture capital expenditures
International scientific co-publications

Strong decreases since 2016

Design applications
Lifelong learning
Environment-related technologies

Strong increases since 2022

Business process innovators
Sales of innovative products
Broadband penetration

Strong decreases since 2022

Lifelong learning
Public-private co-publications
Design applications