

TRANSFORMATIVE INNOVATION POLICY IN PRACTICE IN AUSTRIA, FINLAND AND SWEDEN

What do the Recovery and Resilience Plans tell us about linking
transformation and innovation policy?

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Background

- Urgency, uncertainty, complexity of the challenges societies face are putting new demands on policymaking
 - Innovation policy is increasingly focusing on system transformation and societal challenges
- ⇒ Increasing focus on institutions, governance, context, history
- ⇒ Urgency of combining learning and doing in policymaking and linking to teaching

”Wir stehen vor einer globalen Herkulesaufgabe: Es geht ja um nicht mehr und nicht weniger als die Transformation unser ganzen Lebens- und Wirtschaftsweise” (Angela Merkel, FAZ, April 22, 2021)



THE RRF/RRP INSTRUMENT



RRF/RRP as an example of transformative policy?

Context

COVID-19

- A sudden **external and economic shock** with potentially major long-term consequences
- Crises as **times of change** ... and of new options for action!

Resilience and Recovery Facility (RRF)

- **Investment packages** as part of NextGenerationEU to help overcome the economic consequences of COVID-19 pandemic
- Funds (EUR 723.8 Mrd over 5 years) for:
 - **Green Transition 37%**
 - **Digital Transition 20%**
- Member States prepare **national Recovery and Resilience Plans (RRPs)** to receive funds from RRF
- Payments are tied to commitments regarding the achievement of **reform milestones**

Why a comparison?

- The RRFs provide a rare opportunity to analyse how countries are trying to drive and manage (transformative) change through policy.
- The RRFs were prepared in a short period of time and are therefore a reflection of current policy priorities.
- The amount of funding distributed makes the RRF one of the largest transformative policy initiatives in the world.
- Little empirical work on the relationship between R&I policies and socio-technical transitions.

COVID-19 crisis and transformation

- In the wake of Covid-19, governments mobilised financial resources at a scale rarely seen before, with recovery packages meant both
 - to shield people from disruption and economic downturn and
 - to prepare society and the economy to transform towards a more sustainable future
- Critical need of ensuring the right balance or combination between the different objectives of ‘protect-prepare-transform’ (ESIR 2021)
 - what we do today will shape our future.
- Current research, analysis and evaluation of innovation and innovation policy does not meet the needs of transformative innovation policy
 - need for real-time, interactive analysis, iteration and learning

Transformative ambition of RRP

”This is more than a recovery plan. It is a once in a lifetime chance to emerge stronger from the pandemic, transform our economies, create opportunities and jobs for the Europe where we want to live. We have everything to make this happen.” (European Commission, 2022).

Recovery and Resilience Facility

The **Recovery and Resilience Facility** is the central pillar of the **recovery plan for Europe**, Next Generation EU. It provides financial support to EU countries to mitigate the social and economic impact of the COVID-19 crisis.

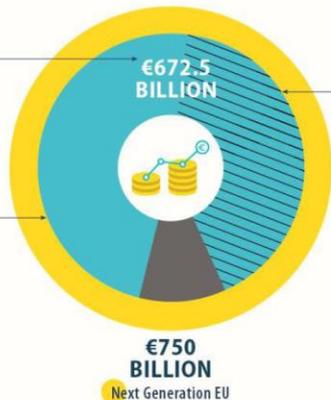


The Facility is a temporary recovery instrument. It allows the Commission to raise funds to help Member States implement reforms and investments that are in line with the EU's priorities and that address the challenges identified in country-specific recommendations under the European Semester framework of economic and social policy coordination.

How much money?

Recovery & Resilience Facility (RRF)

€360 BILLION RRF LOANS



€312.5 BILLION RRF GRANTS

Grant allocation key

2021-2022 (70%)

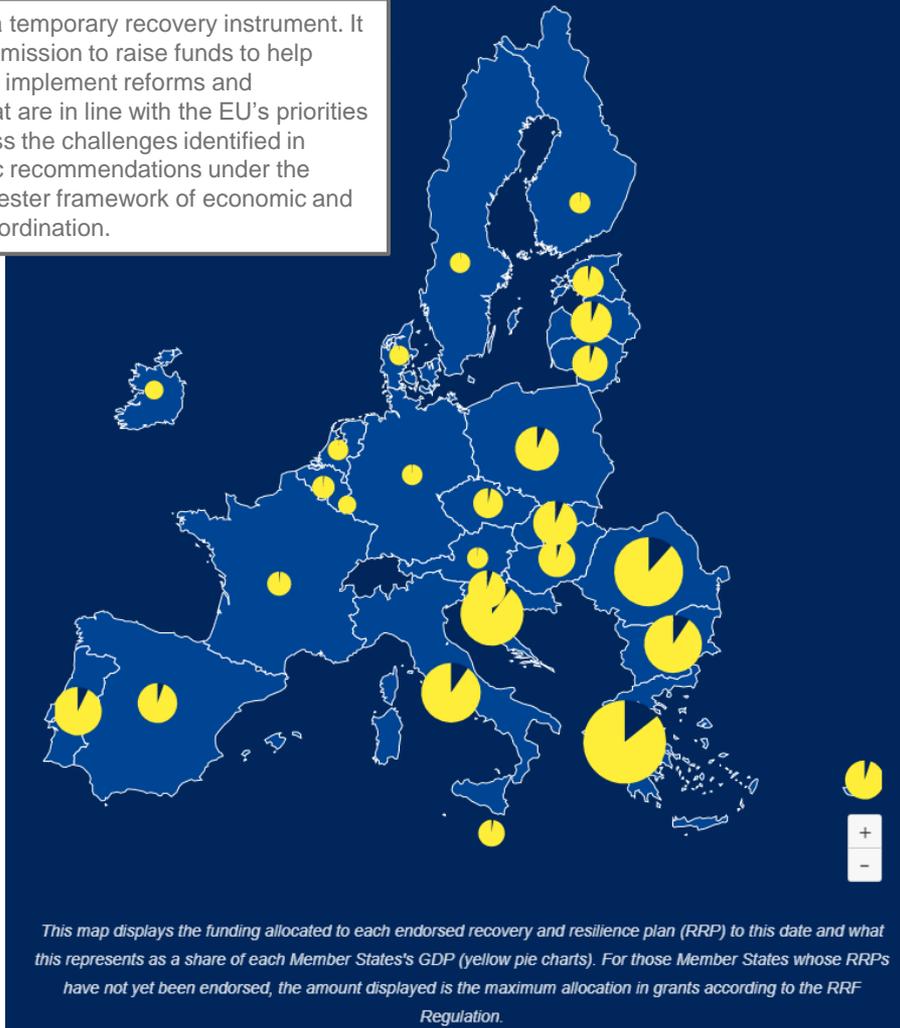
- unemployment 2015-2019
- inverse GDP per capita
- population share

2023 (30%)

- drop in real GDP over 2020
- overall drop in real GDP 2020-2021
- inverse GDP per capita
- population share

*Figures expressed in 2018 prices. In current prices, the Next Generation EU envelope amounts to €807.1 bn, including €724 bn for the Recovery and Resilience Facility (€338 bn grants, €386 bn loans).

Source: [Recovery and Resilience Facility - Consilium \(europa.eu\)](https://www.europa.eu/recovery-and-resilience-facility)



Source: [Recovery and Resilience Scoreboard \(europa.eu\)](https://www.europa.eu/recovery-and-resilience-scoreboard)

GOVERNANCE CONTEXT



	Governance	STI policy context	Other significant factors
Austria	<p>Strong ministries, tradition of detailed steering of government agencies</p> <p>Limited coordination mechanisms across policy fields</p>	<p>Strong increase in R&D intensity in past two decades</p> <p>Bottom-up, non-directional character of STI policy (eg, R&D tax credit, university funding)</p> <p>Ambitious recent transformation efforts in selected sectors (eg, mobility)</p>	<p>'Super ministry' of Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMVIT) combined with political commitment to combating climate change</p> <p>Focus on facilitating transformation in selected sectors (energy, mobility, cities, circular economy)</p>
Finland	<p>Strong ministries with well defined roles but also agencies with freedom to create own initiatives</p> <p>Ministry of Economic Affairs & Employment with central role in innovation and coordination of climate & energy policy</p> <p>long history of horizontal cross-sector coordination between administrative sectors</p>	<p>Significant drop in R&D intensity (albeit from comparatively high levels). A current government proposal, e.g., to cut 120 million for Academy of Finland 2023 budget.</p> <p>STI policy strongly focused on enhancing competitiveness and growth</p> <p>Transformation pursued mainly through sectoral policies rather than STI policy, e.g., Ministry of Transport & Communications advancing mobility transformation.</p>	<p>Fortuitous timing of the RRP:</p> <ul style="list-style-type: none"> - New government (blank slate) - Previously identified policy areas that needed funding (healthcare and social reform, labor market reform) - Recent austerity means government welcomes injection of funding - Reawakening consensus on importance of STI - Opportunity for Business Finland to position itself in climate change and strengthen its influence
Sweden	<p>Highly independent government agencies</p> <p>Fragmented system with many government / public funders of research and innovation</p> <p>Efforts to strengthen whole-of-government policy (eg climate change, innovation)</p> <p>Emphasis / consensus on involving / supporting industry in transition to sustainable competitiveness</p>	<p>One of the first countries to realign STI policy towards societal challenges (as a complement to bottom-up, non-directional funding), but maybe mainly rhetorical, not so much in terms of funding?</p> <p>Innovation policy and climate change policy live separate lives, with the exception of the government innovation partnership program on climate-neutral industry</p>	<p>Weak coalition government locked into a coalition agreement which limits room for maneuver (eg to seize opportunity presented by RRF)</p> <p>Strong popular consensus on need to combat climate change</p>

Short preparation time: „programmes in the drawers“?

- EC published its RRF proposal in summer 2020,...
- ... it was accepted by the Council in December 2020, and ...
- ... it became effective on 19 February 2021

	Austria	Finland	Sweden
Submission of plan	30 April 2021	26 May 2021	28 May 2021
Endorsement of plan by EU Commission	21 June 2021	4 October 2021	29 March 2022

- Finland conducted a comprehensive inter-governmental consultation on the RRF, whereas consultation was more limited in Austria
- Austria and Finland submitted their plans very quickly and received approval soon after
- Sweden was initially reluctant to engage with RRF; the proposed plan was endorsed after ten months only

How were funds distributed?



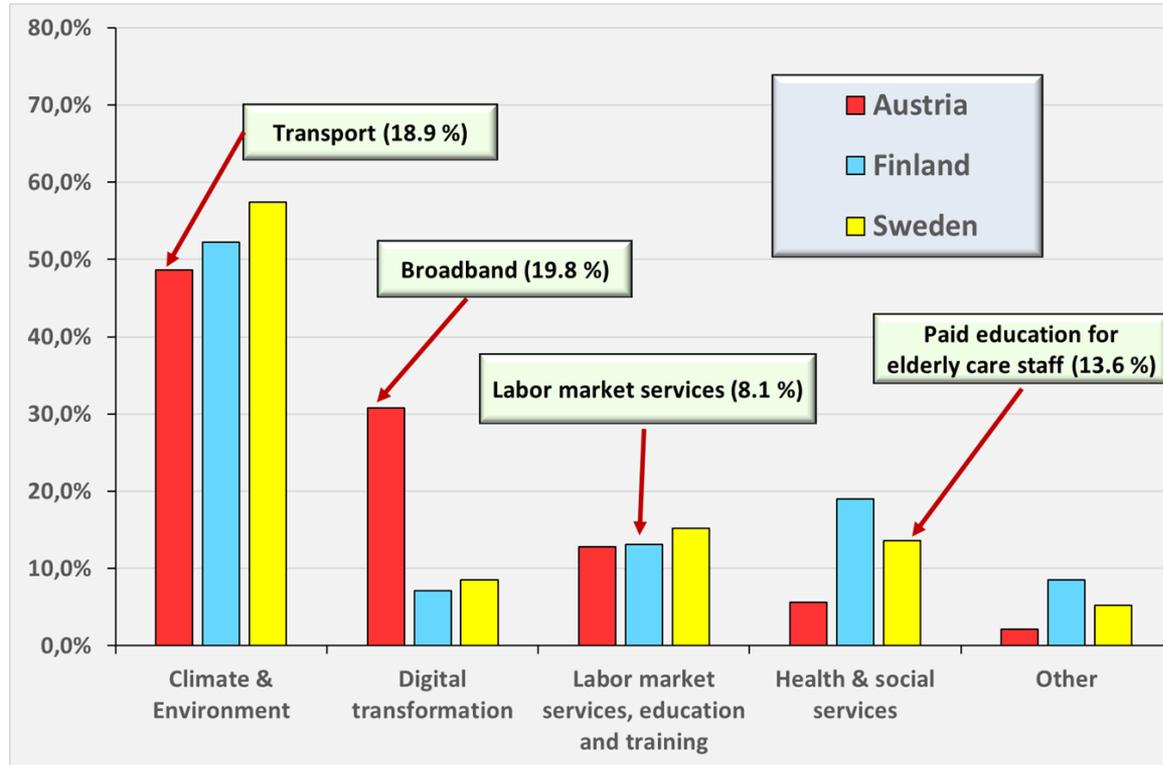
AUSTRIA	Investments				Reforms
	Million EUR	Percent	Climate	Digital	Number of
1. Sustainable recovery	1,507	33.5	86%		5
2. Digital recovery	1,828	40.6	27%	73%	3
3. Knowledge-based recovery	868	19.3	20%	56%	3
4. Just recovery	296	6.6	19%	9%	16
Sum Total	4,500	100.0	45%	41%	27

FINLAND	Investments				Reforms
	Million EUR	Percent	Climate	Digital	Number of
1. The green transition will support structural adjustment of the economy and underpin a carbon-neutral welfare society	825	39.2	99%	7%	10
2. Digitalisation and the data economy will strengthen productivity and make services available to all	234	11.1	14%	97%	7
3. Raising the employment rate and upskilling to accelerate sustainable growth [incl "RDI, research infrastructure and piloting"]	638	30.4	31%	22%	8
4. Access to health and social services will be improved and their cost-effectiveness enhanced	405	19.3		36%	1
Sum Total	2,102	100.0	50%	27%	26

SWEDEN	Investments				Reforms
	Million EUR	Percent	Climate	Digital	Number of
1. Green recovery	1,552	47.2	86%	1%	4
2. Education and transformation	504	15.3		32%	2
3. Improving conditions for meeting demographic challenges and secure the integrity of the financial system	452	13.7			4
4. Expansion of broadband infrastructure and digitalization of public administration	485	14.7		100%	0
5. Investments for growth and housing construction	296	9.0	40%		7
Sum Total	3,289	100.0	44%	21%	17

Thematic investment priorities

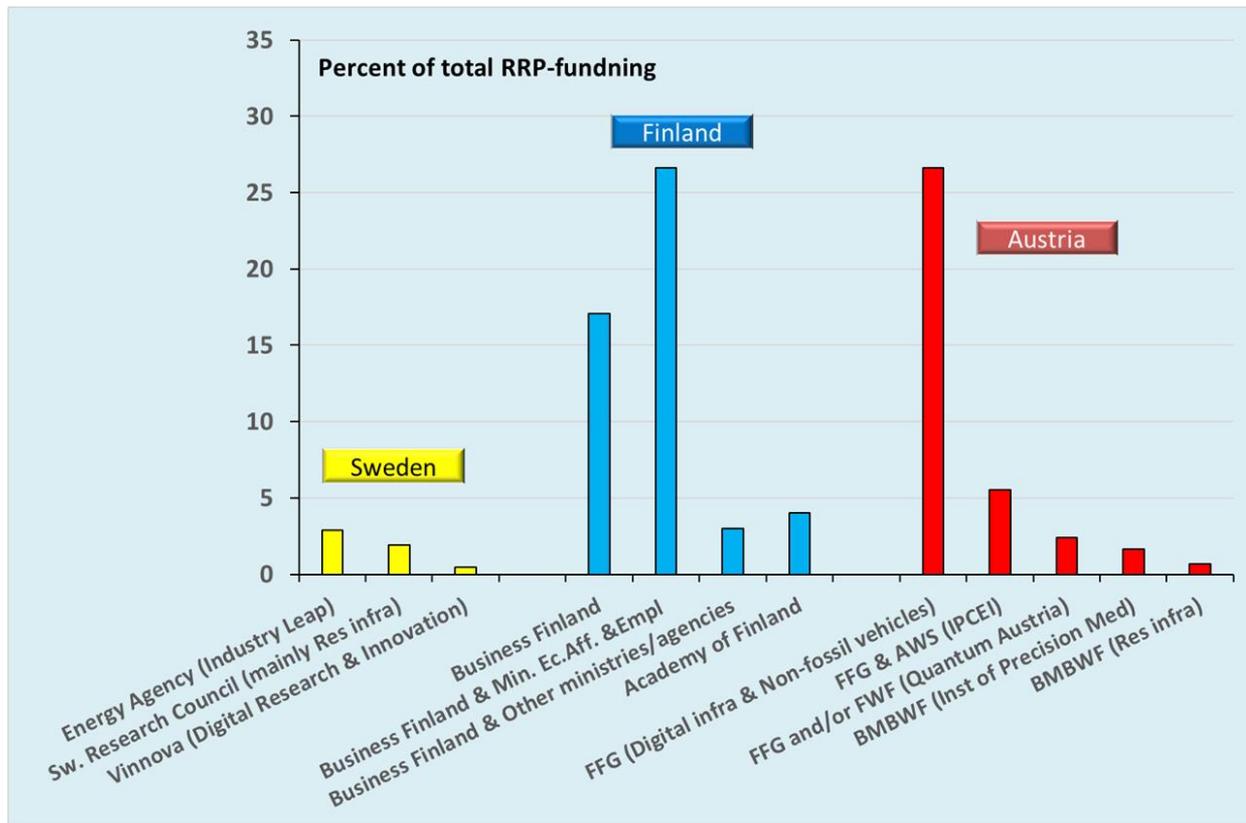
Distribution of investments in the RRP of Austria, Finland and Sweden



A closer look into digital and labour-related priorities

Main focus	Subfocus	Component measures	Austria	Finland	Sweden
			Percent of total RRP-investments		
Digital transformation	Infrastructure	Broadband	19,8%	2,4%	6,0%
	Technology	RDI on advanced digital technologies	5,2%	1,2%	2,0%
		"Investment premium" for digitization of companies	2,2%		
		Digitalization of business sector		1,3%	
		Digitalization Public administration	3,6%		0,6%
		Cross-sectoral digitalization projects, incl. cybersecurity		2,2%	
		Focal area share of RRP	30,8%	7,1%	8,6%
Labor market services, education and training	Labor market services	Reforming labor market services	-	8,1%	
		Vocational and continuous education	6,2%	2,1%	5,9%
	Education and training	University education	-	0,7%	9,3%
		Addressing inequalities in education	2,9%	-	-
		Digitalization in education system	3,8%	2,2%	
				Focal area share of RRP	12,8%

Research and Innovation in the RRP's



Quelle: authors

The triggering effect of RRP

- The absolute volume of RRP was comparatively limited in all three countries, also compared to national COVID-19 measures
- It is almost impossible to establish objectively if and how much the RRP funding has "caused" various initiatives, as national budget planning and development of the RRP have been done simultaneously.
- Investments in Austria and Sweden have, for most parts, not been dependent on funding from the RRP, but there are some exceptions.
 - In Sweden the program for investment in energy efficiency in buildings might have been triggered or scaled in response to the RRP funding availability?
 - In Austria, several investments supported by RRP had been discussed for long, but without being funded; RRP allowed making them happen.
- With more constrained public budgets in Finland, many of the funding programs seem to have been newly designed as part of the process of planning the RRP (eg, "Sustainable Growth Programme for Finland).

Some differences between the three countries' RRP's

- **Finland's** is the **most complex with much cross-ministerial coordination** and many initiatives which appear to have been created during RRP-planning process. Concrete cross-sectoral digitalization projects central in several of the initiatives (e.g. Academy of Finland's "twin transition" programme)
- **Finland** appears to have a much larger share of investments going to **not well proven technologies or systems solutions**, especially for climate-related investments.
- **Austria** stands out with its large emphasis on **transportation and broadband infrastructures**.
- **Sweden** has the strongest emphasis on **reskilling** (aimed at facilitating transformations) even if RRF-funding is only a minor part of increased investments for this purpose.
- Both **Austria and Finland include IPCEI:s** (both Hydrogen and Microelectronics) in their plans while Sweden does not even if it plans to join the IPCEI-Hydrogen.

THE TRANSFORMATIVITY OF RRPS



The ambition of RRP's: Protect, prepare, transform

- **Protect** the overall wellbeing of individuals during the crisis from its adverse impacts - i.e. how RRP's respond to the impacts of Covid-19
- **Prepare** better for future pandemics and crises and their large-scale risks, i.e. how RRP's create mechanisms to respond to future crises, enhance resilience against future crises, and thus also minimise future systemic risks
- **Transform** the European economy and society; deep transformation to be able to reconcile sustainability with resilience in the future, i.e. how RRP's contribute to transforming socio-technical systems in line with the twin transition goals

Source: ESIR, 2020

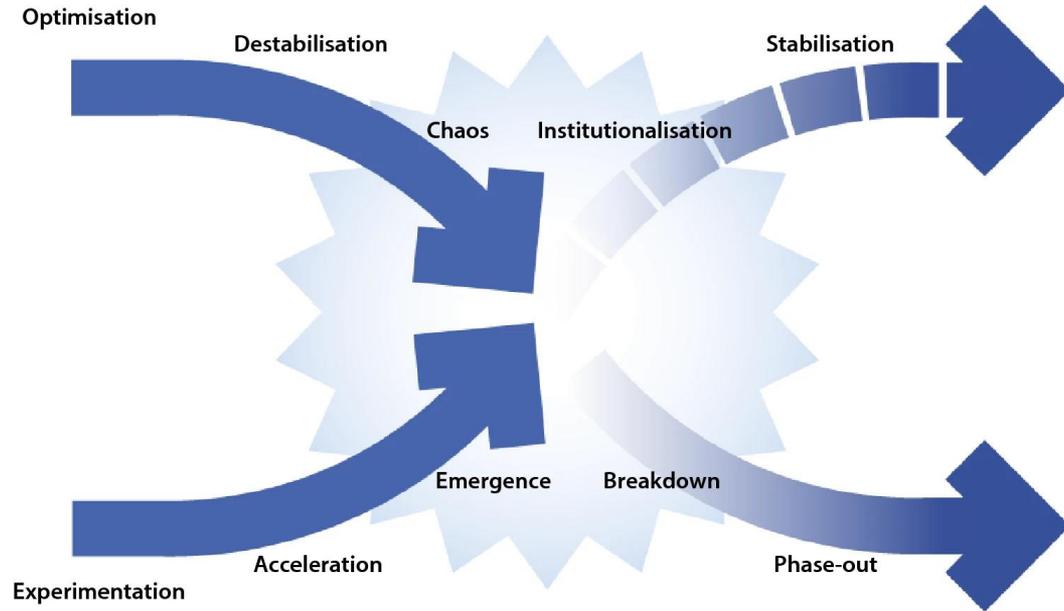


Conceptual framework I: X-curve of sustainability transitions

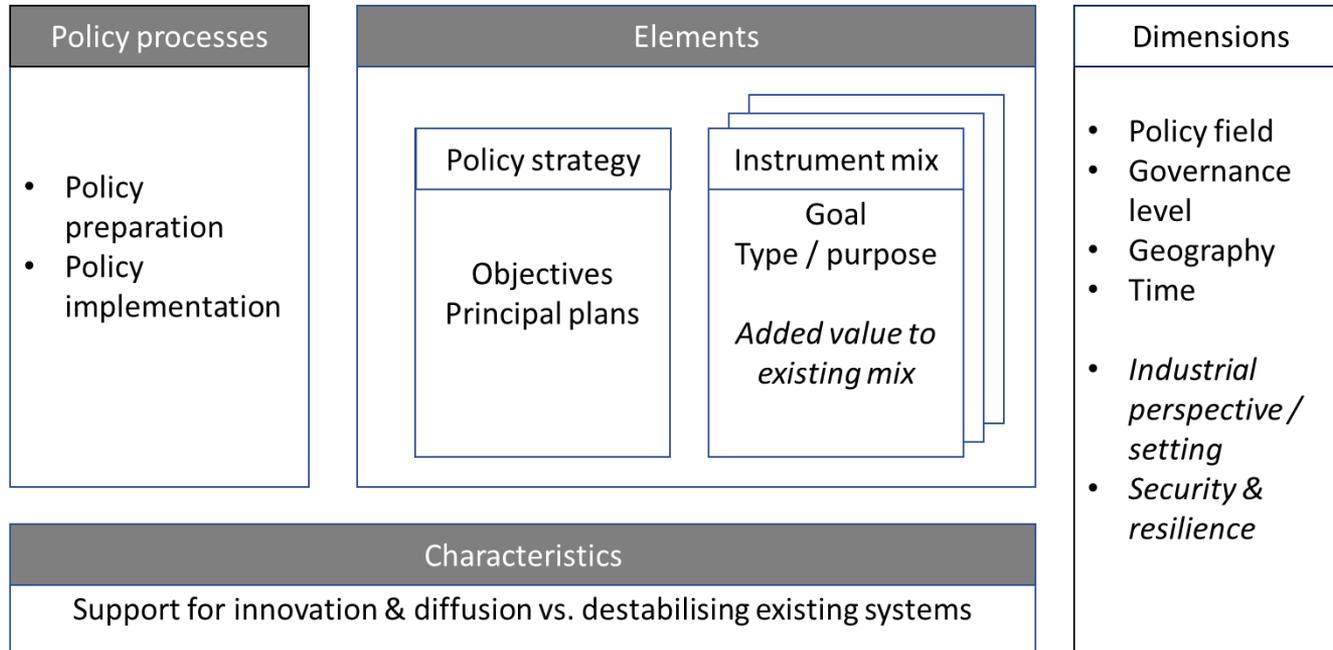
How to break lock-ins of socio-technical systems and trigger their transformation

Destabilising policies with elements of compensating to the 'losers'

Policies for innovation development & acceleration of diffusion



Conceptual framework II: policy mix for transitions



Combining Rogge & Reichart (2016) 'Policy mixes for transitions' with Kivimaa & Kern (2016) 'Innovation policy mixes for niche support and regime destabilisation'

How to assess transformativeness of RRP's?

➤ **Intent (revealed thinking) & impact (too early to tell)**

- Transformation can occur in different ways and needs different types of stimuli from the public sector!
- Different conceptual models of how transformations occur underpin policy practice

➤ **Destabilisation of existing paradigms and systems**

- Importance of **reforms** as significant governance and policy framework changes
- Building of new capability and skills (unlearning)
- But difficult due to lock-ins and incumbent power positions

➤ **Mobilisation of system innovation**

- Experimentation / piloting
- Acceleration, new market/demand creation (pull that can also 'protect' by creating employment)
- E.g. investments in research, new technology

➤ **Scaling and "institutionalisation"**

- New solutions at large scale, infrastructure
- Capacities, e.g. human capital
- Institutional changes in terms of what is being done and how it is being done

Two examples from the Finnish RRP

Pillar	Regime destabilising reforms	Mobilisation of system innovation & scaling	Preliminary analysis
Green transition - Energy system transition (Pillar 1)	<ul style="list-style-type: none"> * Significant reduction of energy use of coal by 2026 (C1R1); * Comprehensive reform of energy taxation (C1R2) 	<ul style="list-style-type: none"> * Energy infrastructure investments (C1I1); * Investments in emerging energy technology (C1I2) 	<p>The large-scale system level reforms are connected to the targeted RDI investments to demonstrate and scale up technologies in the Finnish context.</p> <p>→ Prepare & transform</p>
Access to health and social services will be improved and their cost-effectiveness enhanced (Pillar 4)	<ul style="list-style-type: none"> * Improving access to health and social services and enhancing cost-effectiveness (C4R1) 	<ul style="list-style-type: none"> * Promoting compliance with the care guarantee and reducing the care, rehabilitation and service deficit in health and social services (C4I1) * Promoting compliance with the care guarantee by reinforcing preventive measures and early identification of problems (C4I2) * Strengthening the knowledge base and effectiveness-based guidance supporting the cost-effectiveness of health and social services (C4I3) * Introducing service-oriented digital innovations that will help achieve the care guarantee (C4I4) 	<p>Overarching societal reform that aims to combine the preventive health-care with treatment mobilised by advancing several enabling investments to knowhow and digital infrastructures</p> <p>→ Protect & prepare</p>

Selected transformative effects in the three countries

• Austria

- Strengthens and reorients existing markets/actors (e.g. rail & broadband) to **achieve improvements quickly** (i.e. until 2030), instead of aiming for systems transformation via new market creation or actor-constellations
- Yet **coincided in timing with new government plans for climate policy**, which RRF 'reforms' made more binding and strengthened their legitimacy
- Some indications: support for diffusion of solutions for energy efficiency in buildings; revision on R&D Bill regarding digitalisation

• Finland

- RRF package adopts **transition to low-carbon circular economy** as a key approach (2 pillars), supporting Government Programme
- **Green transition pillar supported by digitalisation pillar** (considered innovative) and attention to skills needed (employment pillar)
- Significant investments in energy technologies, **RDI investments as key**, indicating technology-push based thinking, but combined with broader reforms

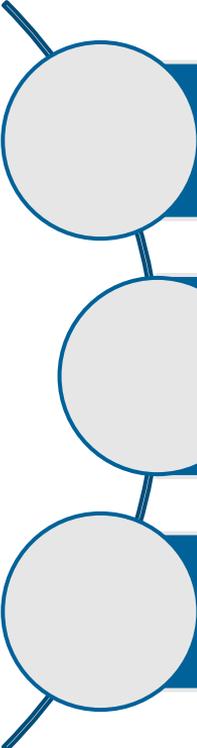
• Sweden

- **No clear transformative efforts** as connected to other efforts under way, thus, perhaps complement to other quite advance policies on green transformation?
- Significant **investments in new technologies** and **scaling** sustainability solutions in municipalities
- Opportunity to use RRF as a mobilising force for transformation was not used

CONCLUSIONS



Lessons learned on the role of RRP's (1/2)

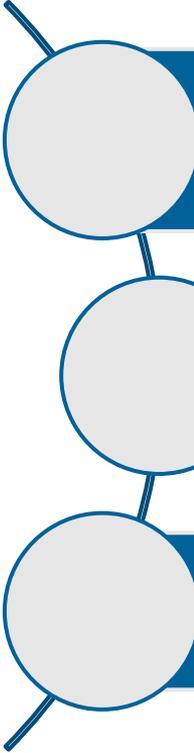


The RRP's of the three countries are strongly based on national policy and complement national COVID-19 measures (Austria: investment premium)

The focus in all three countries is on investment in physical infrastructure (AT: broadband funds). In contrast, the proportion of R&D and innovation expenditure is low in all three countries.

By linking disbursements to milestones (e.g. institutional reforms), the EU extends its influence on national policy

Lessons learned on the role of RRPs (2/2)

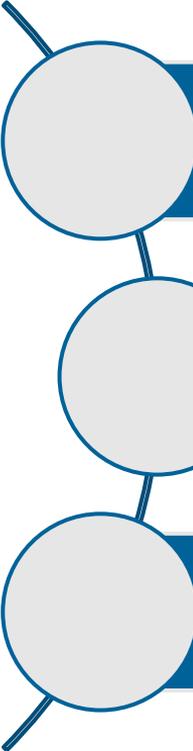


Both the content requirements and the procedural effort involved in developing the RRPs differ significantly: great restraint in SE, aggressive use in FI, moderate requirements and effort in AT

The short preparation time allowed for less transformative content than the EC's announcements had led us to expect - no regime destabilisation, but investment in 'old' technologies?

RRPs have helped to professionalise and systematise processes of policy learning within the framework of the governance of transformations, often with a pilot function for other policy areas

Some observations on the transformative effects of R&I policy



R&I policy can assume coordinative functions to prepare coupled transformation processes (environment-climate-agro, energy-mobility)

R&I policy can play a key role in creating experimental spaces for testing institutional changes (e.g. for sectoral/overarching policy fields or in the multi-level system)

Investing in existing technologies and solutions may provide quick opportunities to move towards transformative goals, but R&I (policy) is critical to the later stages of a transformation pathway

PUBLICATIONS

Schwaag Serger, S., Dachs, B., Kivimaa, P., Lazarevic, D., Lukkarinen, J., Stenberg, L., Weber, M. (2023): Transformative innovation policy in practice in Austria, Finland and Sweden. What do the Recovery and Resilience Plans tell us about linking transformation and innovation policy?, OECD/CSTP Policy Paper No. 156, Paris

Dachs, B., Weber, M., (2021): National recovery packages, innovation, and transformation, Rat für Forschung und Technologieentwicklung, Vienna

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