
Tracing new "policy styles" in German STI policies

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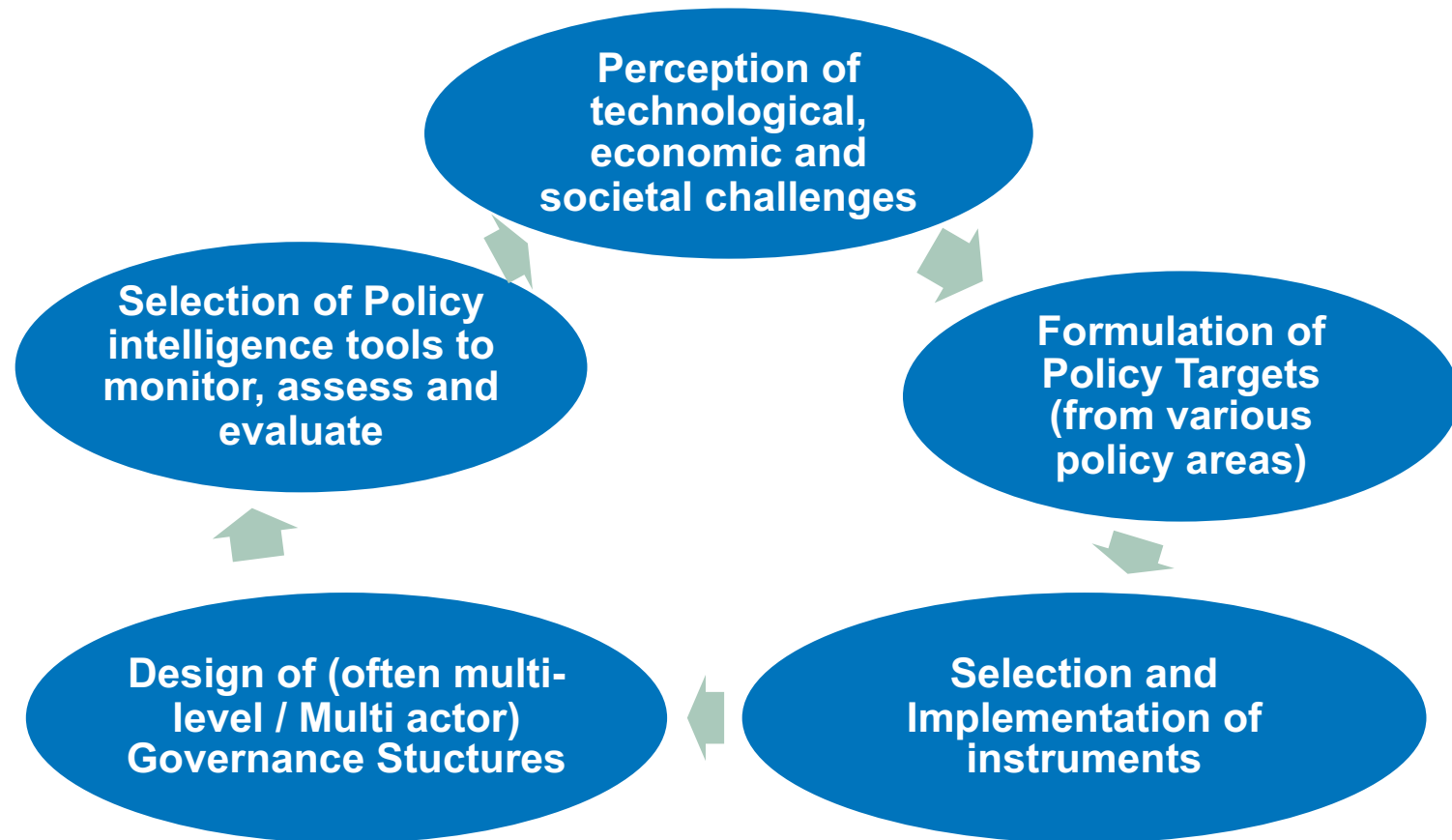
Background

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- Project commissioned by the German Expert Commission on Research and Innovation (EFI)
- Title: 'New Role of the State in STI Policy (with special emphasis on mission-oriented approaches)'
- Project team: Joanneum Research POLICIES and Fraunhofer ISI
- Duration: 01/2020 - 08/2020

Are there new 'policy styles' and what are their characteristics?

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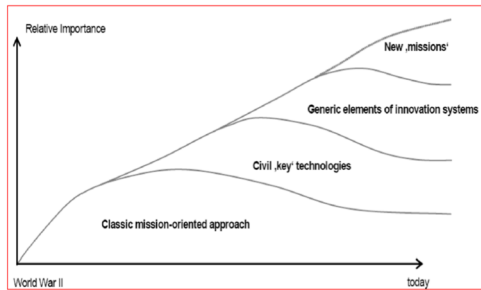


Task and approach

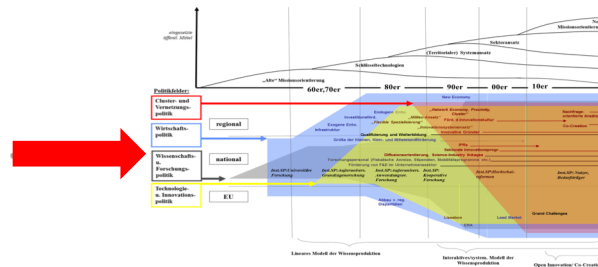
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<i>Guiding questions</i>	<i>Approach</i>
<i>Is there evidence for the emergence / diffusion of new policy styles?</i>	<i>quantitative analysis / text mining</i>
<i>What characterises these new policy styles?</i>	<i>quantitative analysis / text mining and qualitative analysis</i>
<i>Is there a specific / characteristic mix of instruments for each policy style?</i>	<i>quantitative analysis / text mining and qualitative analysis</i>
<i>Can we assess the effectiveness / efficiency of the new policy styles?</i>	<i>evaluation and monitoring reports + expert assessment</i>
<i>Shall policies be oriented more towards these new policy styles?</i>	<i>expert and policy debate</i>

Elaboration of a Conceptual Framework



Gassler, Polt, Rammer 2006



Ploder, Polt 2018

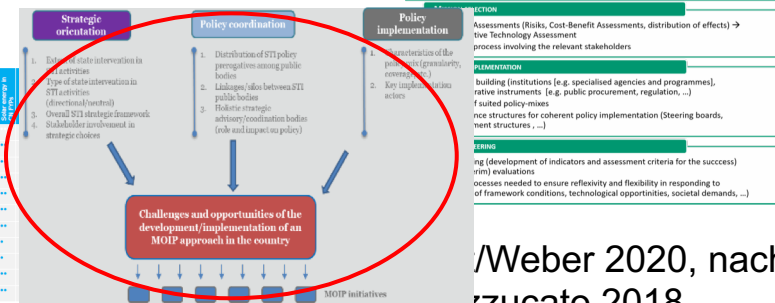
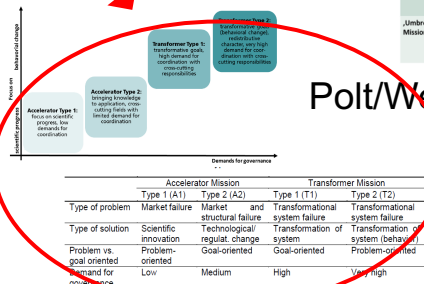
	Innovation system reconfiguration policy	Scientific challenge missions	Large-scale technology missions	Socio-technical challenges-led missions	Policies for disruptive innovation breakthroughs
Focus	Structures & framework conditions in innovation systems	S&T-centric large-scale initiatives	S&T-centric large-scale initiatives	Socio-technical systems	New paradigmatic innovation and business models
Ambition	Triggering structural reconfiguration of IS	Guiding major scientific discoveries	Planning major projects	Socio-technical transitions	Facilitating disruptive breakthroughs
Generalisation mechanism	Regulatory stability incentives	Science-driven	Public procurement, PPP investment partnerships	Holistic innovation policy, policy coordination	Autonomous dynamics
Policy rationale	Sceptical view on state directional intervention	Balancing openness and control to handle uncertainty	Controlled steering strong directionality	Colling the dilemma, weak reflexivity, learning/adaptation	Positivist, enabling and framing industrial dynamics
Governance mode	'hand-off', division of labour	Balancing hierarchical planning and scientific autonomy	Public planning, hierarchical/dominated	Reflexive governance, multi-actor, goal-oriented modulation	Private sector entrepreneurship, self-regulation, reactive governance
Examples of policy approaches	'Agile' innovation system policy (DE)	Science missions (EU FET Flagships)	Technology or accelerator missions (EU Partnerships & Missions)	New transformative missions (EU Mission (AI/MS), SE, DE, etc.)	EIC, Silicon Valley/US

Weber 2019

Type of Mission	Goals / Orientation	Examples
Science / Breakthrough-Mission*	Aiming at scientific breakthroughs sometimes, but not always with view to the potential application	Human Brain Project, Ebola
Technology / Accelerator-Missions	Realizing functioning complex solutions, which need concerted and massive application of resources	Apollo/Artemis-Mission, civil nuclear powerplants, TGV, Concorde, Battery research
Transformative Missions*	Change of existing (large-scale) socio-technical systems, social, technological and institutional in nature	German 'Energiewende'
Umbrella-Missions*	Initiatives that follow goals, including pa-missions in the pre of different sorts	

Wanzenböck et al 2019

Polt/Weber 2019/2020



JiIP et al 2018

Larrue/Polt 2020

Wittmann et al 2020
EU-SPRI 2020

4 ideal-type missions in STI policies

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	Goals	Obstacles/potential issues
A1	<ul style="list-style-type: none"> Increasing research output and scientific knowledge production in defined area 	<ul style="list-style-type: none"> Coordination of instruments and research actors Ensuring efficiency of means and resources used Setting up and implementing instruments, selection beneficiaries Creation of appropriate infrastructure and context conditions
A2	<ul style="list-style-type: none"> Creation of new infrastructure Adjustment of regulatory framework Bringing products to market 	<ul style="list-style-type: none"> Coordination of support schemes, regulation, interplay of different actors Transfer of knowledge (science -> economic actors) Management of insecurity about outcomes
T1	<ul style="list-style-type: none"> Substitution/Reconfiguration of existing systems 	<ul style="list-style-type: none"> Coordination of transformation process and policy mix Long-term orientation and strategic planning Translation efforts between different areas and from science to application
T2	<ul style="list-style-type: none"> Substitution/Reconfiguration of existing systems Change in behavior and attitudes 	<ul style="list-style-type: none"> Coordination of transformation process and policy mix Long-term orientation and strategic planning Translation efforts between different areas and from science to application Moderating transformation processes and changes in societal behavior Compensation of potential losers of transformation

Operationalizing the Framework: From types of missions to policy styles

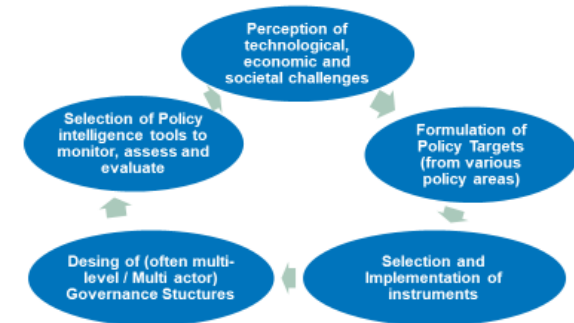
4 ideal-type „new“ policy styles along the four types of missions

+ 2 existing policy styles in STI policies: systemic cluster-oriented and systemic diffusion oriented

	Accelerator Mission		Transformer Mission	
	Type 1 (A1)	Type 2 (A2)	Type 1 (T1)	Type 2 (T2)
Type of problem	Market failure	Market and structural failure	Transformational system failure	Transformational system failure
Type of solution	Scientific innovation	Technological/regulat. change	Transformation of system	Transformation of system (behavior)
Problem vs. goal oriented	Problem-oriented	Goal-oriented	Goal-oriented	Problem-oriented
Demand for governance	Low	Medium	High	Very high

Wittmann et al 2020

Identificaion of **policy-style specific vocabulary** from academic literature and policy documents in an iterative process along the five dimensions

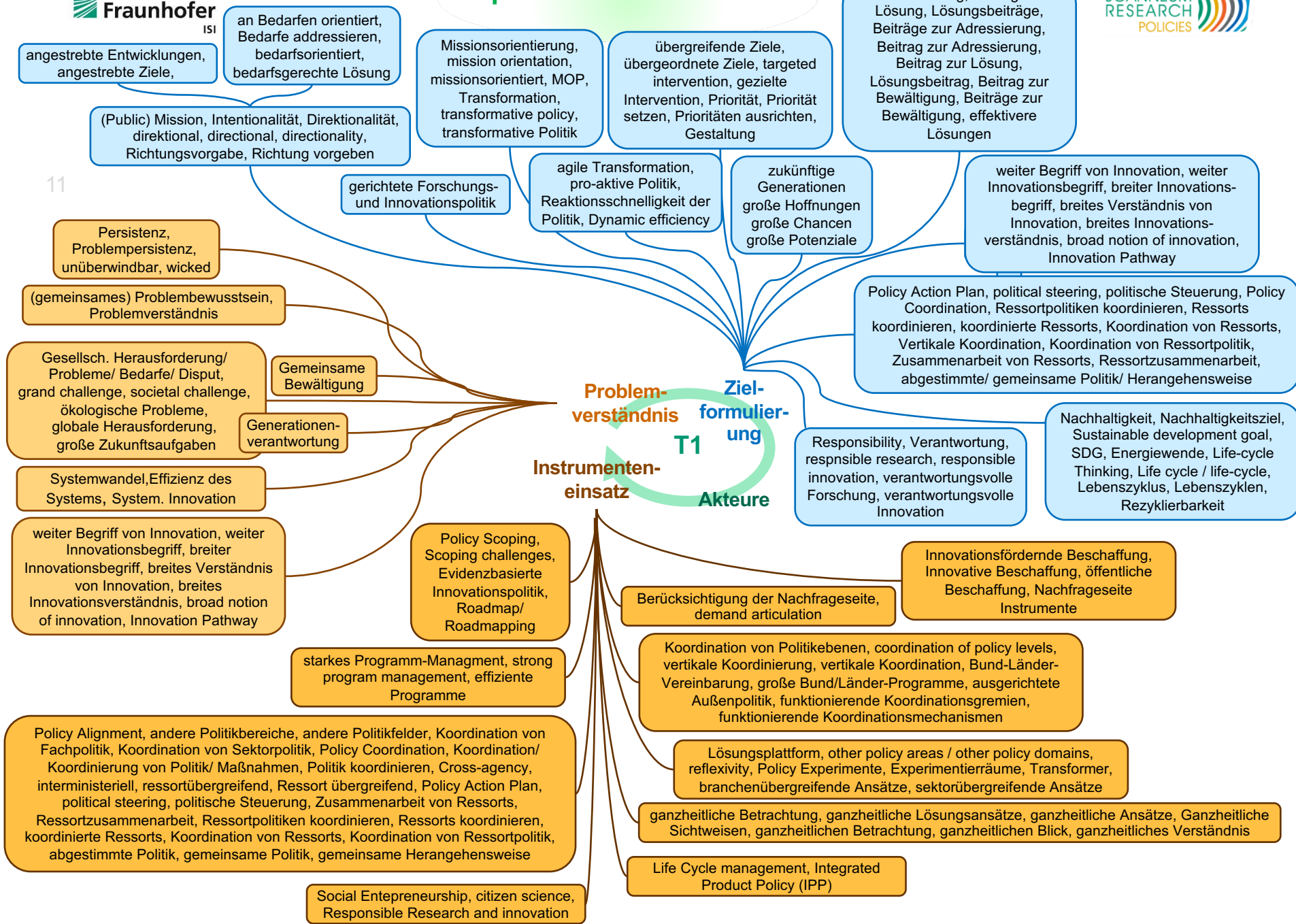


Thesaurus on policy styles in STI policies (~400 terms – English and German)

Development of Thesaurus

		Politikentwicklung - Zielformulierung						
Systemisch sektoral- Cluster- orientiert	Systemisch diffusionsor- ientiert	Akzelerator TYP1	Akzelerator TYP2	Transformator Typ 1	Transformator Typ 2	Bewertung Trennschärfe Keyword (3=hoch; 1=gering)		
Wahrnehmung der Problemlage			Digitalisierung von Hochschulen Exzellenzinitiative Exzellenzstrategie kritische Masse Technologischer Durchbruch Vorstoß	(Public) Mission Beyond STI breiteres Innovationsverständnis broad notion of innovation citizen science Digitale Agenda		3 2 3 3 2 3		
		Alleinstellungsmerkmale anstößen capacity building Disruptive Innovation Entrepreneurial University Fokussierung Frugal Innovation				3 2 3 3 2 3		
	Break-through Erkenntnis- und Techno Internationalisierung v Marktversagen öffentliches Gut Translation Attraktivität des FuE-Standorts Deutsch Künstliche I Disruptive Innovation	Akzeptanz breiteres Innovat Digitaler Wandel ecological problems Externalitäten Generationen(verantwortw Gesellschaftliche Heraus gesellschaftliche Herausforderungen				1 2 1 3 2 3		
Beteiligte Akteure								
Systemisch sektoral- Cluster- orientiert	Systemisch diffusionsor- ientiert	Akzelerator TYP1	Akzelerator TYP2	Transformator Typ 1	Transformator Typ 2	Bewertung Trennschärfe Keyword (3=hoch; 1=gering)		
				Großforschungsinfrastruktur Hochschulen large-scale research infras Universitäten	Inklusion interministeriell Nutzer Partizipation partizipativ	3 2 3 3 3 2 3 3 3 3	Cross-agency interministeriell Nutzer Partizipation partizipativ Philanthrop Philanthropie ressortüberg Social Entrepreneur Verantwortlich	3 2 3 3 3 2 3 3 3 3
Beteiligte Instrumente								
Systemisch sektoral- Cluster- orientiert	Systemisch diffusionsor- ientiert	Akzelerator TYP1	Akzelerator TYP2	Transformator Typ 1	Transformator Typ 2	Bewertung Trennschärfe Keyword (3=hoch; 1=gering)		
	Alleinstellungsmerkmale Exzellenz herausragend kritische Masse Flächendeckende Wirkungsforschung Input-Output-Gap Ökonomische Bewertung (der FuE-Förderung)		Exzellenzinitiative Flagship FuE-Förderung Grundlagenforschung Netzwerk Robotik Wissenschaftspolitik Großforschungsinfrastruktur Accelerator	Alignment andere Politik Berücksichtigung der Nachfrage coordination of measures / instruments coordination of policy levels demand articulation demand-side instruments Einbeziehung c Evidenzbasierte Innovationsp Experimente Innovationsfördernde Beschaffung Innovative Beschaffung Involvement o		3 3 3 3 3 3 3 3 3 3 3 2 3		

Example: Transformer 1



Text mining: Corpus

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Institution	Dokumententyp	vor/ab Okt 02 - 18.10.2005	18.10.2005 - 22.10.2013	22.10.2013 - April 2020	Σ
Bundestag	Plenarprotokolle	188	487	400	1.075
	Unterrichtungen ¹²	687	1.738	1.577	4.002
	Antworten ¹	858	7.041	10.502	18.401
PROMO	Programm- und Strategiedokumente	0	60	130	190
	Förderinstrumente (BMBF & BMWi)	0	860 230	940 250	2.280
SIPER ³	Evaluationen	1	29	87	117
BMWi	Gutachten wiss. Beirat	22	28	32	82
BMBF	Beratende Gremien ⁴	33	77	82	192
		1.789	10.550	14.000	26.339

¹ Kategorie „Wissenschaft, Forschung, Technologie“;

² enthält u.a. Programm- und Strategiedokumente, EFI Gutachten

³ SIPER Evaluationsdatenbank der Forschungsinfrastruktur RISIS sowie eigene Erhebungen (Kulicke 2020)

⁴ EFI, WBGU, Hightech-Forum, Ethikrat, Bioökonomierat

Phasen des Politikprozesses:

- Debatte / Problemwahrnehmung
- Strategische Orientierung
- Politische Instrumente / Umsetzung
- Strategische Intelligenz / Evaluation

Stand 2.6.2020, vorläufig.

Text mining: First Results

(Extract, 2020-05-05)

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*Selected terms
associated with
Transformer policy
styles*

Phase des Politikzyklus	Schlüsselbegriff	2013-2020		2005-2013	
		in <i>n</i> Dok	in %	in <i>n</i> Dok	in %
Problemwahrnehmung	Systemische Innovation	110	0,62%	47	0,31%
Problemwahrnehmung	governance handlungsfeld	55	0,31%	19	0,13%
Orientierung	Public Mission	204	1,15%	126	0,84%
Orientierung	politische Steuerung	775	4,35%	449	2,99%
Orientierung	gesellschaftliche Steuerung	349	1,96%	242	1,61%
Orientierung	politische Steuerung	775	4,35%	449	2,99%
Orientierung	Transformation	536	3,01%	205	1,37%
Orientierung	transformative policy	13	0,07%	2	0,01%
Orientierung	transformative Politik	52	0,29%	5	0,03%
Orientierung	SDGs	208	1,17%	8	0,05%
Orientierung	Nachhaltigkeitsziele	196	1,10%	27	0,18%
Beteiligte Akteure	partizipativ	48	0,27%	18	0,12%
Beteiligte Akteure	user innovation	366	2,06%	253	1,69%
Beteiligte Akteure	policy platform	77	0,43%	31	0,21%
Instrumente	program management	106	0,60%	59	0,39%
Instrumente	policy coordination	45	0,25%	25	0,17%
Instrumente	citizen science	47	0,26%	3	0,02%
Instrumente	Einbeziehung stakeholder	144	0,81%	56	0,37%
Evaluation	Social impact	122	0,69%	51	0,34%

Tentative findings and conclusions

- 15 ■ **Conceptual Contribution:** Deduction of policy styles from MIOP
discussion: connects to a more holistic view of the whole policy process and tries to advance understanding of policy-style specific governance arrangements and instrument (mixes) (*though we are modest about this, as there is a lot of path dependency and fuzziness here!*).
- **Operationalisation for text mining:** Policy-style specific thesaurus, discussed and validated with experts, shall become open source
- **Preliminary empirical findings:**
 - There is evidence that (i) a new discourse is emerging in STI policies (different perception of challenges, new policy targets), (ii) that STI policies are beginning to re-direct, but (iii) it is still confined to a rather small number of programmes and initiatives.
 - While there is a conceptually advanced discussion, we expect the ideal-type policy styles to mix in reality. Our next step of analysis shall help to better understand how policy styles mix and how new elements combine with existing ones.

Case studies

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To be drawn from:

- Accompanying research on the German High Tech Strategy
- DG RTD / JIIP 'Inventory of Mission-Oriented Policies
- OECD Project on Mission-Oriented Policies



Thank you for your attention!