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The energy transition – Actors and advocacy coalitions

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SPRU, University of Sussex
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SusTec @ ETH Zurich

- Focus: Technological **innovation**, institutional change and organizational **strategy** and their role for **sustainability**
- Group of 20+ researchers: seniors/post-docs, PhDs, master students
Management & Economics Department



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My research

- Interaction of technology, actor strategies and institutional structures
 - Emerging **technological fields** (e.g. smart grids, PV, wind, fuel cells, biogas)
 - Sectoral change & **sustainability transitions** (e.g. energy transition)
- Specific topics
 - Technological fields <-> **Contexts**: variation, legitimacy issues
 - Role of **Actors**: org. resources, strategies, alliances, conflicts
 - Complementarities**, tech-tech interaction, infrastructures, TIS 2.0
- Frameworks
 - RBV, institutional theory, innovation systems, multi-level perspective, ACF

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Outline

- Emerging field of sustainability transitions
- Energy transitions
- Actors & politics of transitions
- Advocacy coalitions in Swiss energy transition policy
- Conclusions



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1 Sustainability Transitions

- Long-term, multi-dimensional & fundamental **transformation of large socio-technical systems** towards more sustainable modes of production & consumption
- Emerging scientific field
 - Regular IST Conference (2015 SPRU)
 - Dedicated journal: EIST
 - STRN network (800 people, website, mailing-list, newsletter)
 - Mission & research agenda

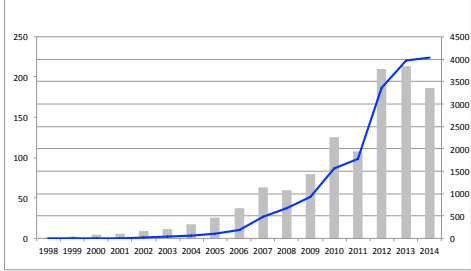



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Around 200 articles & 4000 citations per year



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Past shifts in the use of primary energy carriers

- 1st: Wood, wind & hydro → Coal
Industrial revolution (18th century), steam engine, railway system
- 2nd: Coal → Oil
Transportation (early 20th century), cars & gasoline
- 3rd: Oil → Natural gas & uranium
Electricity sector (1960s onwards), CCGTs & nuclear power plants

Source: Araujo 2014

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Examples of recent energy transitions

Case	Scope	Time frame	Major developments	Key drivers
Nuclear France	Electricity	1970-2000	Massive increase of nuclear for electricity generation (from 0 to 75%)	Oil price shock, Policy support: R&D and subsidies
Ethanol Brazil	Transport	1975 till today	Massive increase of ethanol as a fuel (from 0 up to 27 bil ltrs in 2009)	Oil price shock, Policy support: subsidies
Windpower, CHP & biogas Denmark	Electricity and heat	1970s till today	Windpower up to 33% of electricity production	Oil price shock, Policy support: learning & subsidies
Renewables & nuclear phaseout Germany	Electricity	1990s till today	Renewables up from 3% to 24% of electricity production, nuclear down from 28% to 15% (2013)	Climate change & nuclear accidents, Strong policy support broad societal consensus

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Energy transitions: key characteristics

- Multi-dimensional: technological, institutional & organizational changes
- Policies are central: **purposive** transition
- Context dependent: regional/national differences (nat. resources, infrastructures, market structures, political goals, culture)
- Multiple technological fields involved; emergence & decline
- Systemic:
 - Strong complementarities: technological and non-technical
 - Lock-in & inertia: capital intensive, durable assets; established practices
- Contested: struggles over societal values, actors with conflicting interests

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3 Actors in transitions: novel sub-field

[Farla et al 2012]

- Different types of actors, strategies, resources [Bakker 2014; Budde et al. 2012; Erlinghagen & Markard 2012; Konrad et al. 2012; Markard & Truffer 2008]
- Creation of new structures, system building, niche development [Brown et al. 2013; Hughes 1997; Kivimaa 2014; Hargreaves et al. 2013; Musiolik & Markard 2011; van Lentle et al. 2003]
- Maintenance of existing positions & structures, incumbents [Kern & Smith 2008; Lawhon 2012; Penna & Geels 2012; Smink 2013; Stenzel & Frenzel 2008]
- Collaboration, network formation [Hermans et al. 2013; Musiolik et al. 2012]
- Struggles & conflicts [Erlinghagen & Markard 2013; Kern 2012; Penna & Geels 2012; Smink et al. 2013/15]

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Politics of transitions

- Policy change: integral part of sustainability transitions [Kern & Smith 2008; Meadowcroft 2011; Voß et al. 2006]
- Conditions for policy change not explored widely in ST research; recent calls to strengthen research on the 'politics of transitions' [Lawhon & Murphy 2012; Shove & Walker 2007; Smith et al. 2010]
- Emerging work on interests, power & discourses in transitions [Avelino & Rotmans 2009; Bosman et al. 2014; Grin 2012; Kern 2011; Lawhon & Murphy 2012]
- Networks & advocacy coalitions [Jacobsson & Lauber 2006; Musiolik et al. 2012; Negro et al. 2008; Ulmanen et al. 2009]

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Advocacy coalition framework [Sabatier 1998; Sabatier & Weible 2007]


- Explains: How policy change comes about ...
- Key concepts: policy subsystem, coalitions, policy core beliefs
- Core assumptions:
 - Coalitions based on shared beliefs
 - Beliefs relatively stable
- Why suited for sustainability transitions studies?
 - explicit attention to policy making process
 - focus on actors and coalitions
 - beliefs & values central for sustainability issues
 - established methods, including social network analysis

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Socio-technical change and policy change interrelated


- Advocacy coalition framework
- Timespan 10+ years
- Policy core beliefs and coalitions stable, change occurs through learning, external shocks and negotiated agreements
- Focus on policy actors & beliefs

Policy System



- Multi-level perspective
- Timespan 50+ years
- Regimes stable, novelties emerge in niches, external shocks from landscape
- Focus on niche processes and landscape developments

Socio-technical system



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Interaction socio-technical system and policy system

Policy output

institutional structures, including policies

actors

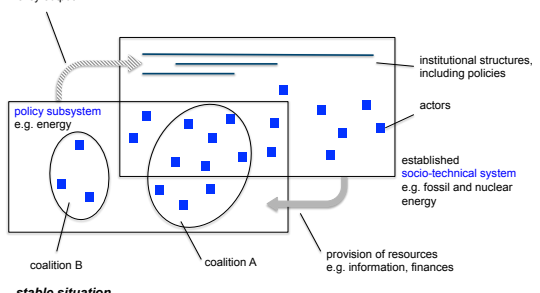
established socio-technical system e.g. fossil and nuclear energy

provision of resources e.g. information, finances

coalition B

coalition A

stable situation



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Beginning change

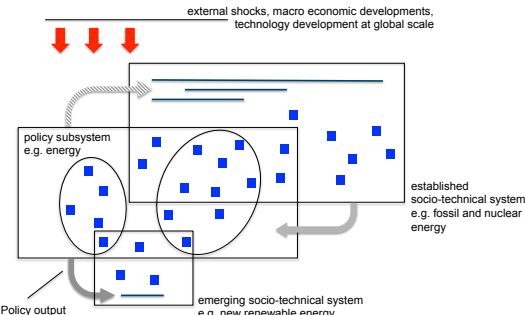
external shocks, macro economic developments, technology development at global scale

policy subsystem e.g. energy

established socio-technical system e.g. fossil and nuclear energy

emerging socio-technical system e.g. new renewable energy

Policy output e.g. specific R&D subsidies



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Major change

external shocks, macro economic developments, technology development at global scale

Subsidy cuts, technology ban

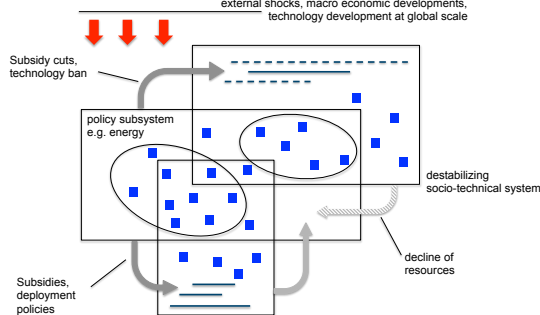
policy subsystem e.g. energy

destabilizing socio-technical system

decline of resources

Subsidies, deployment policies



expanding socio-technical system



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4 Advocacy coalitions in Swiss energy policy

- 2011: Government decided to phase-out nuclear power (40% of electricity supply)
- "Energy Strategy 2050" policy proposal in parliamentary process; Set of policies, which target energy efficiency, renewables and smart grids
- **Research question:** How did advocacy coalitions in Swiss energy policy change over the past 12 years? Implications for the energy transition?

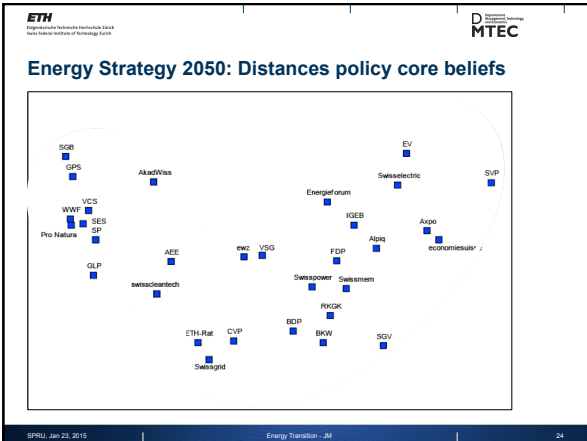



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Methods

- Identification of key actors (→ 41)
- Analysis of consultation documents of 3 major energy policy processes:
 - Electricity market directive (2001)
 - Power supply and energy directive (2007)
 - Energy Strategy 2050 (2013)
- Development of category system for policy core beliefs
- Coding of responses (4 ordinal groups)
- Calculation of distances & identification of clusters

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Energy Strategy 2050: Distribution of actors

	"pro ecology" coalition (2)	"pro economy" coalition (1)
Political parties	GLP, GPS, SP	BDP, CVP, FDP, SVP
Trade associations	SGB, Swisscleantech	Economiesuisse, EV, SGV, Swissmen
Environmental protection and consumer organizations	Pro Natura, VCS, WWF	
Energy supply companies	Alpiq, Axpo, BKW, EWZ, Swissgrid, Swisspower	
Energy associations	AEE Suisse, SES	Energieforum, IGEB, Swisselectric, VSE
Scientific organizations	AkadWiss	ETH-Rat
Others		RKGK

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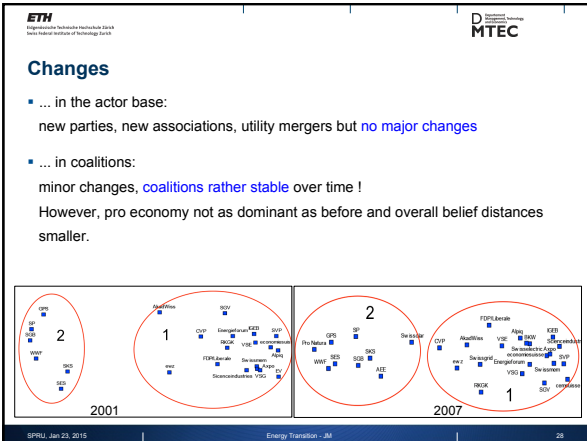
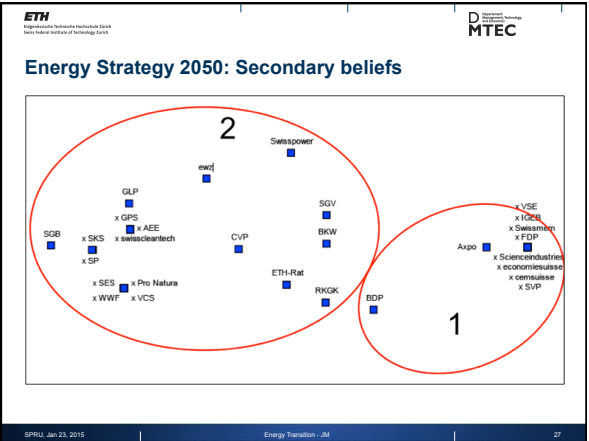
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Energy Strategy 2050: Coalitions' policy core beliefs

Policy Core Beliefs	"pro ecology" coalition (2)	"pro economy" coalition (1)
Seriousness of the problem	Expansion of renewable energies is important; energy transition is an opportunity	No need to change the existing energy supply system
Role of the state	Public policies are necessary for energy policy	State interventionism has negative effects on the economy in general
Environment	Climate change and environmental protection are important issues for energy policy making	[low degree of mobilization]
Economy	Expansion of renewable energies creates jobs and economic benefits	Low energy prices are important to maintain industry competitiveness
Society	Energy must be affordable for everyone	Energy transition must be ultimately approved by public vote

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Summary

- Coalitions largely stable - despite Fukushima
- Findings consistent with 'minor transition progress' in the past
- However, some indications towards potential major policy change
 - Pro ecology coalition has grown, now even including industry associations
 - Belief distances have declined & mid-right parties leaning towards supporting the energy transition
 - Clear majority in favor of the energy transition (secondary beliefs)

December 2014: Swiss parliament (largely) votes in favor of energy transition

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Limitations / further research

- Similar beliefs vs. actual collaboration
- Resources & resource flows
- Methods: 'blind spots' in beliefs (non-mobilization)
- Policy issue change /technological change: analyze systematically
- Discourse activities & changes in discourse

5 Conclusions

- Policy change: important role in energy transition
- Policy change not exogenous:
 - Firms & associations of energy sector affect policy process
 - New technological fields: business players (here: in addition to NGOs)
- Progress in emerging technologies: policy issue changes!
 - Today: renewables compatible with conservative values
- Mobilization of concepts from political sciences
promising and necessary