Comparing Climate Change Policy Networks: Project Overview and Some Findings

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University Alliance for Sustainability

Berlin, Germany

Purpose

- Cross-national comparative study
- Of climate change politics
- Looking for factors conducive to
- (policies that make)
- Reduction of carbon emissions

Outline

- Background hypotheses
- Policy network method
- COMPON implementation process
- Some findings
- Discussion and Conclusion

Background Hypotheses

Sources of Hypotheses

- Janicke and Weidner, 1997, 2002, 2005
- The Social Learning Group, 2001
- Christoff and Eckersley, 2011

Some Causal Hypotheses:

Factors Affecting National Emissions Trajectories

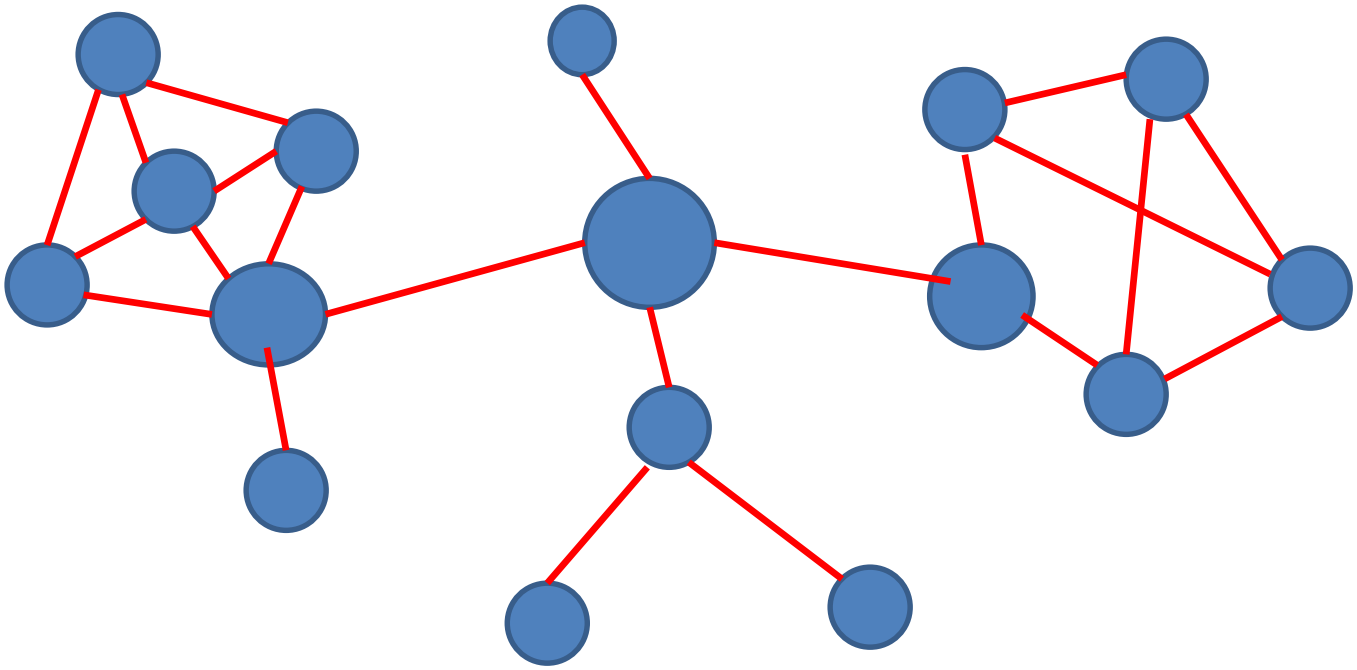
- Receptivity of culture/actors to IPCC science
- Information centrality of science community
- Media presentation of science and norms.
- Normative culture supporting public goods
- Relative power of fossil fuel interest groups
- Consensus capacity (multi-stakeholder forums)
- Autonomous capacity of civil society
- Participation in international regime formation

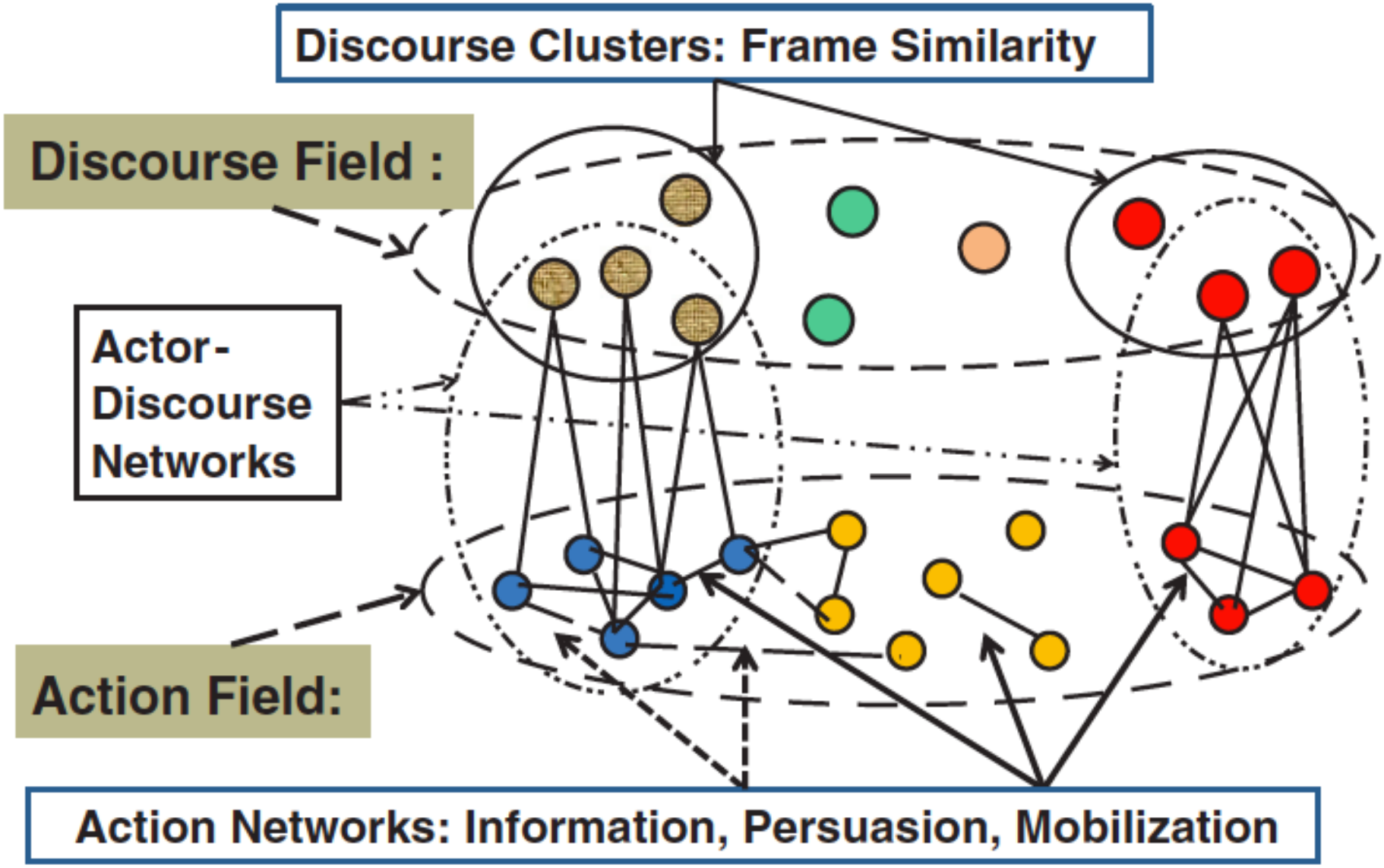
Policy Network Method

Basic Approach

- Evaluate relative effect of different factors.
- Look for empirical evidence on hypotheses
- In the relative dominance of
- Different advocacy coalitions and other actors
- And their (relational) means of influence
- In the policy-formation process.

Policy Network Diagram





Two fields of analysis: discourse and action (see Color Plates, Fig. 13.3)

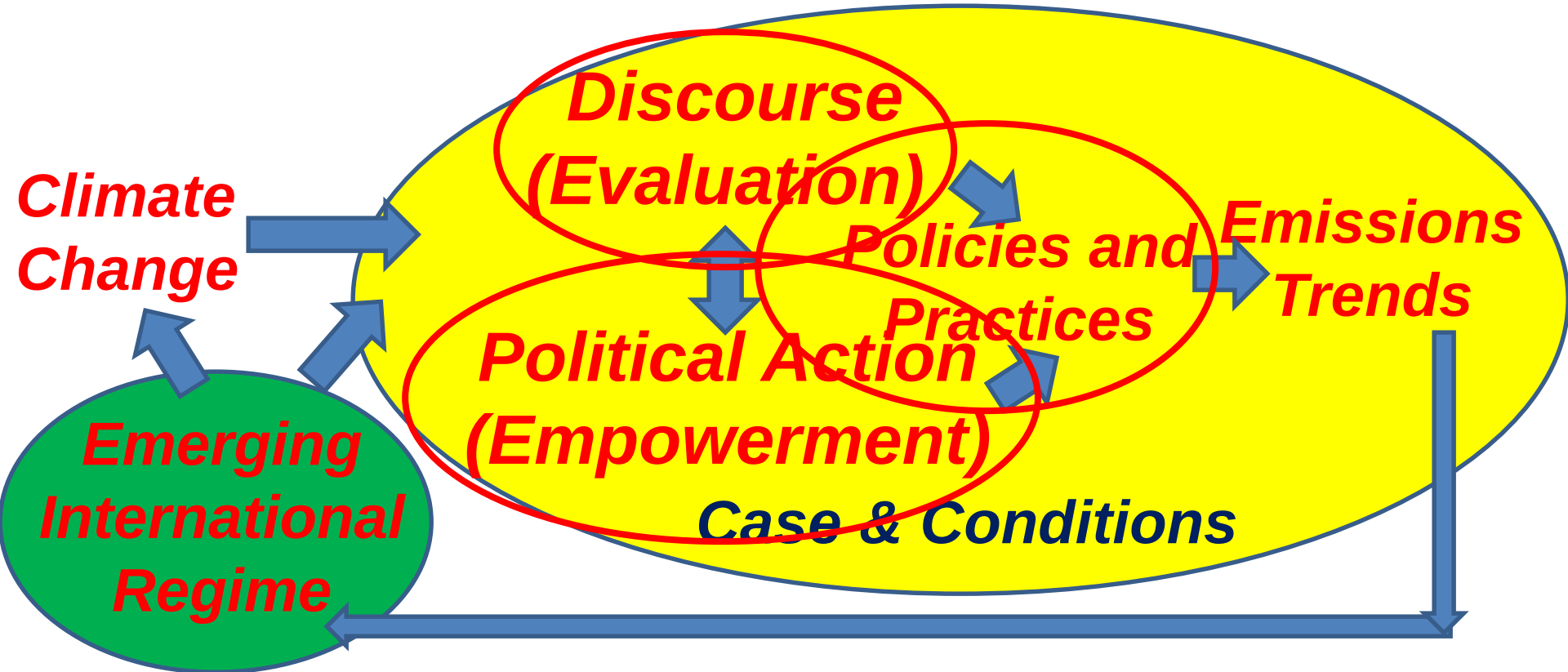
COMPON implementation process

COMPON Project

- *COM*paring Climate Change *PO*licy *N*etworks-
- [In Japanese, *compon* (根本）means “basis”]
- Use cross case variation in mitigation performance
- As a “naturally” occurring experiment to study:
- *What factors case variation in national outcomes?**
- To test the explanatory validity of hypotheses
- As single factors and in combination,
- By cross-national comparative research (Tilly)

The Global/National Process

- Climate Change scientific knowledge
- National reactions and decisions on mitigation
- Producing different national emissions trends.
- Affect possibilities of international agreements



Logistics

- Organize and coordinate collaborative teams
- Started in 2007, Coordinating Office UMN
  - NSF Grant, PI JB,
  - “Policy Networks as Agents of Change in CC Politics”
- Many international meetings to design research
- Grown to include research teams in 25 societies
  - (NCA 17 cases/PN 12 cases), CIFOR REDD+ (8)
  - Funded by many national science foundations*
- Headquarters now at University of Helsinki
- Open to new cases
- www.compon.org

Data Collection Instruments

- *Phase One*–Newspaper Discourse Analysis
  - Three major papers (prog, econ, cons) per case
  - Level 1—Keyword news share 1997-2010
  - Level 2—Content analysis of CC articles
  - Level 3--Discourse Network Analysis of CC articles
- *Phase Two*—Policy Network Survey
  - political networks (12+ cases)
  - *Network survey of 50 to 100 organizations*
  - engaged in climate change politics

Policy Network Approach

- Policy Domain of 50- 100 organizations
  - Selection of target organizations
- Includes main politically-active organizations:
  - Gov't ministries, agencies
  - business & labor orgs
  - political parties;
  - civil society
  - scientific research
  - mass media

Policy Network Approach

- Questions about attitudes and beliefs
  - About causes of and solutions for climate change
- Questions about organizational resources
- Questions about policy-making participation

Policy Network Approach

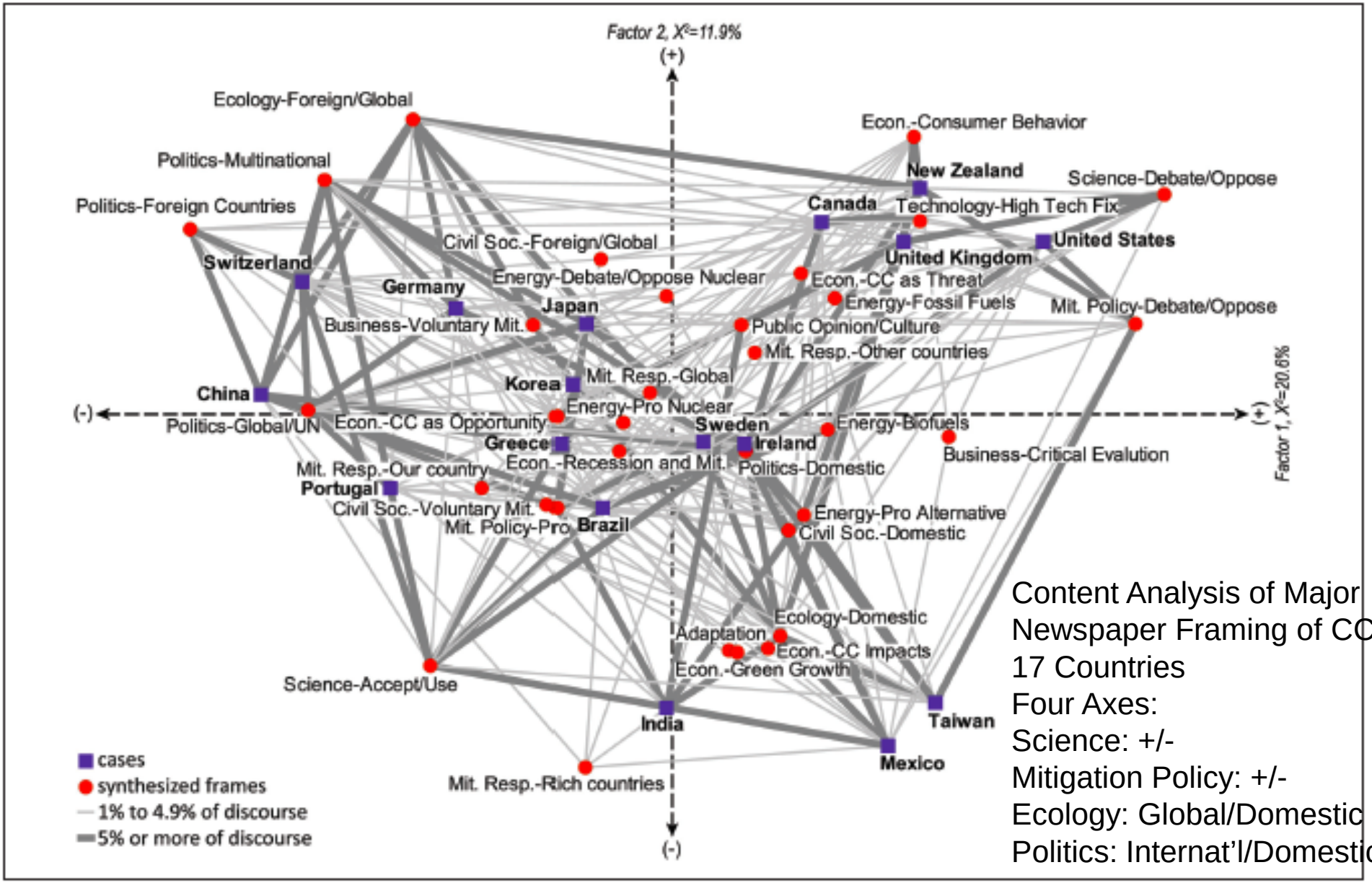
- Types of relationships (choice from lists)
  - Resource transfer or exchange
    - Scientific information (SI) -- “non-depleting”
    - Political collaboration (PC) -- “depleting”
  - Socially embedded network:
    - Expected Reciprocity (ER)-long-term
      - Social capital: Invested or constitutive
  - Reputation for influence

Data Collection Rates

- Phase One newspaper data
  - Success through Lexis-Nexis and Factiva (describe)
  - 17 cases in Compon, 8 cases in REDD+
- Phase Two policy network survey
  - Nearly 100% in labor politics survey (US, Germany, Japan)
  - Many obstacles in climate change Compon survey
    - China and Russia not feasible

- Country response rate to policy network survey
- Australia 45,3 %
- Brazil 45,6 %
- Canada 49,6 %
- Czech Republic 68,9 %
- Germany 72,9 %
- Finland 85,4 %
- Ireland 91,2 %
- India 50,7 %
- Japan 57,6 %
- Korea 82,1 %
- New Zealand NA
- Portugal 67,9 %
- Sweden 69,7 %
- Taiwan 82,1 %
- UK NA
- USA 59.3 %

Some Findings



Content Analysis of Major Newspaper Framing of CC
17 Countries
Four Axes:
Science: +/-
Mitigation Policy: +/-
Ecology: Global/Domestic
Politics: Internat'l/Domestic

Broadbent, et. al., 2016

Figure 2. Global field of media discourse about climate change.
Note: CC = climate change; Econ. = economy; Mit. = mitigation; Resp. = responsibility; Soc. = society; UN = United Nations.

Germany, Japan, US Comparison

- Analysis by Keiichi Satoh, Ph.D., post-doctoral fellow at University of Konstanz

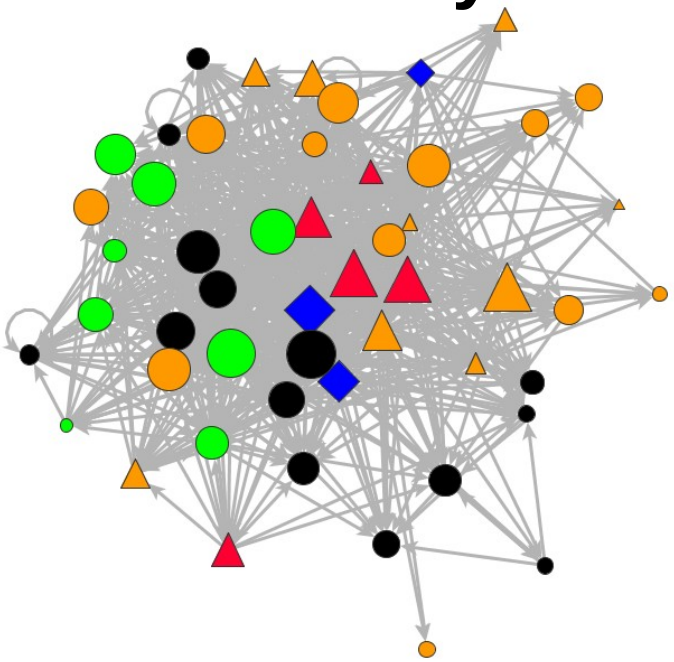
H1: IPCC Credibility

5: Strongly agree 3: Neutral 1: Strongly disagree	**DEU**	**JPN**	**USA**	**F (over) Pairwise t-test (under)**
A: CC is real	4.84 (0.43)	4.58 (0.61)	4.48 (0.83)	5.594** DEU>JPN† DEU>USA*
B: Human activities are an important driver of CC	4.80 (0.50)	4.45 (0.67)	4.40 (0.99)	6.145** DEU>JPN* DEU>USA*
C: Other policy issues are more important than CC (-)	3.15 (1.02)	2.01 (0.91)	3.07 (0.68)	25.165*** DEU>JPN*** USA>JPN***
D: [Our government] puts too much effort into reducing GHG emission (-)	4.39 (1.00)	3.15 (1.20)	4.28 (1.02)	19.192*** DEU>JPN*** USA>JPN***
IPCC Credibility Score (A+B+C+D)/4 (α=0.75)	4.31 (0.59)	3.59 (0.73)	4.05 (0.72)	15.579*** DEU>JPN*** DEU>USA† USA>JPN***

NOTE: The order of Items with (-) was reversed

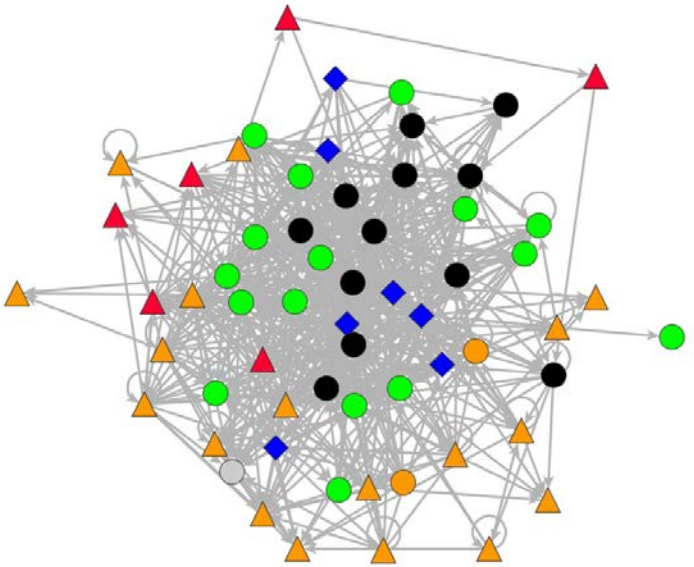
H2: Science Science community's position

Germany

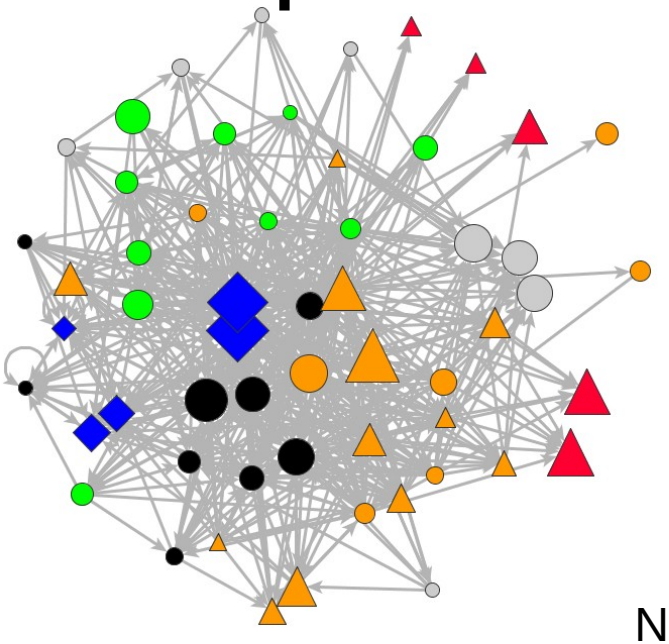


Science Source Network

USA



Japan



▲: POL

●: SCI

▲: BIZ

●: COR

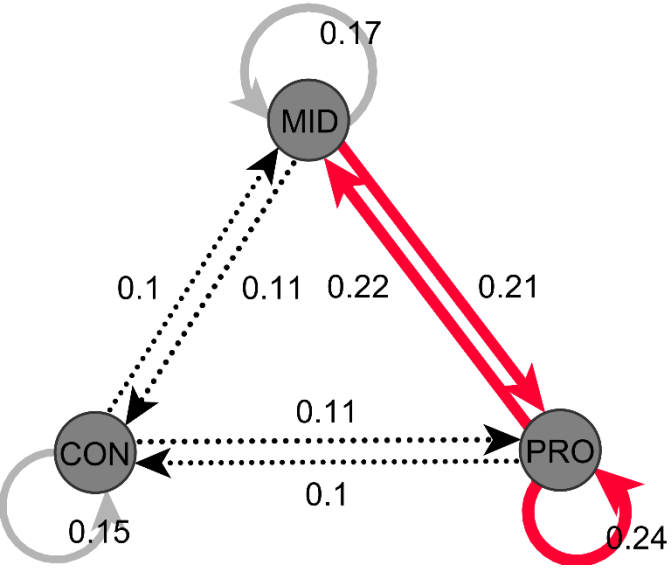
●: CSO

●: OTH

Node size: Reputation Score

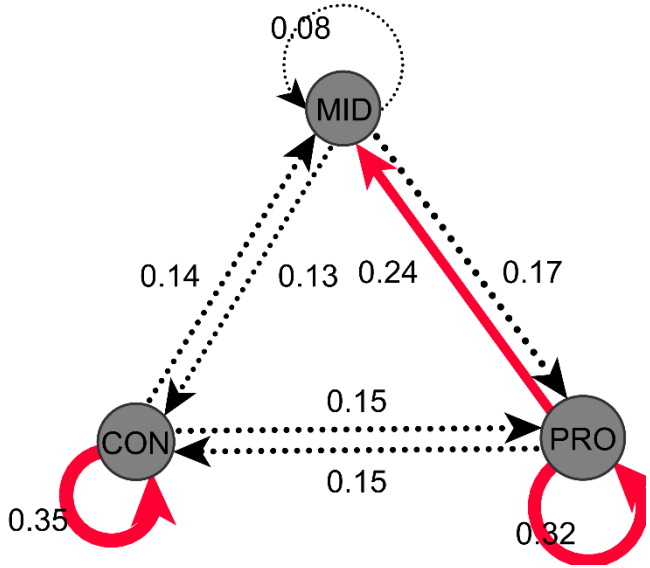
H3: Coalition Building

Germany

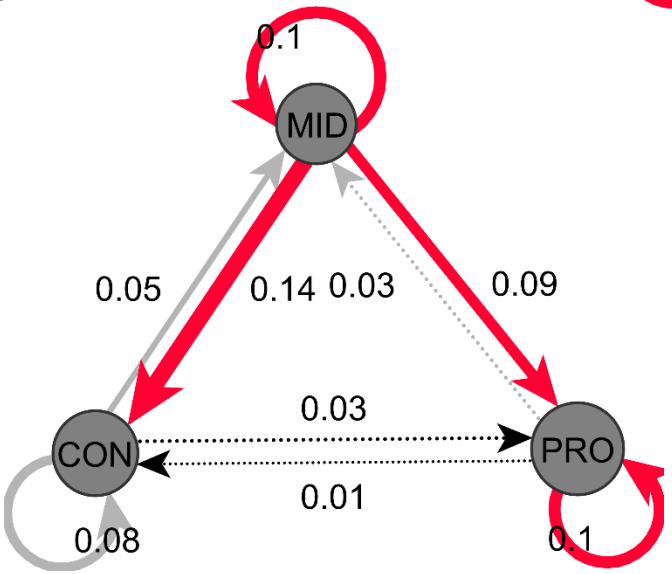


Collaboration Network

USA



Japan



Node size: Outdegree
Line width: Density

Red line: significantly **more**
Black dot: significantly **less** than random distribution (p <.05)

Note: Arrow heads show information flows

Result

- Centrality and reputation of science community,
- Capacity of Pro actors to establish
- Coalition with Middle actors is associated with
- Germany’s greater success in mitigation.

Finland, Sweden Comparison

"Divergent Neighbors: Corporatism and Climate Policy Networks in Finland and Sweden"

Antti Gronow, et. al., forthcoming, *Environmental Politics*

Why in two highly similar Nordic corporatist countries do climate change policies diverge so much? (Sweden +, Finland -, per cap emissions)

Corporatism is thought to facilitate consensus around political issues, including environmental.

Jacob and Volkery (2006: 84), Janicke (2005), Christoff and Eckersley (2011), (Karapin 2016, p. 54).

Others disagree (exclusion, cooptation)

Koch and Fritz (2014), Karapin (2012), Dryzek et al. (2002)

- They measure three features of corporatism:
  - consensualism
  - inclusiveness
  - tripartite strength
- as features of meso-level social organization
- (policy networks).

Table 2. Summary of main results

Characteristics of Corporatism and Their Measures	**Sweden**	**Finland**
1. Inclusiveness	**High**	**High**
a. Concentration of power	Relatively equal	Relatively equal
b. Access to decision making of NGOs and tripartite organisations	NGOs more dominant	Others more dominant
2. Consensualism	**High**	**Lower**
a. Pro-climate beliefs	High (0.79)	Slightly lower (0.75)
b. Consensus on pro-climate beliefs	High (STD 0.17)	Slightly lower (STD 0.21)
c. Pro-climate beliefs, top 15 influential organisations	High (0.73)	Lower (0.64)
d. Consensus on pro-climate beliefs, top 15 influential organisations	High (STD 0.15)	Lower (STD 0.29)
3. Tripartite Strength	**Lower**	**High**
a. Influence of tripartite organisations	Lower (0.18)	High (0.35)
b. Influence gap between NGOs and tripartite organisations	Negative (-0.02)	Positive (0.17)
c. Advocacy coalitions	None	Tripartite, Government, NGO
d. Ties of tripartite coalition to the state	N.A.	Strong

Result

- Exclusiveness and power of
- tripartite coalition in Finland
- associated with lower mitigation success

Discussion and Conclusion

- Each country takes unique pathway in detail
- But can see variation in constitutive factors.
- Strong potential of policy network method
- For analysis and comparison of cases
- And testing of hypotheses
- About causes of policy outcomes variations
- In different policy domains
- (i.e. emissions trajectories)

- END

Policy Network Genealogy

- Laumann and Pappi, *Networks of Collective Action* (1976)

begat

- Laumann and Knoke, *The Organizational State* (1987)

begat

- Knoke, Pappi, Broadbent and Tsujinaka, *Comparing Policy Networks: Labor Politics in US, Germany and Japan* (1996)

begat

- Broadbent and Tsujinaka: *Global Environmental Policy Networks* survey (1997)
- Broadbent and colleagues, *COMparing climate change POlicy Networks* (COMPON, 2007 ~On-going)

The capacities for the environment are constituted by:

1) the strength, competence and configuration of organised governmental and non-governmental proponents of environmental protection and
2) the (a) cognitive-informational, (b) political-institutional and (c) economic-technological framework conditions. (d) cultural-motivational

The utilisation of the existing capacity depends on:

3) the strategy, will and skill of proponents and
4) their situative opportunities.

This has to be related to:

5) the structure of the environmental problem: its urgency as well as the power, resources and options of the target group.

(Janicke, 2002: 7)

- “. . . . climate policy delay is strongest in those jurisdictions in which climate science has been reduced to an ideological marker between political adversaries (such as the US, Australia) than in those jurisdictions where climate science received bipartisan respect and acceptance (such as Germany).”
- (Christoff and Eckersley, 2011: 442)

- ". . . The motivating force for most of the changes we observed were coalitions of actors more or less loosely joined for the express purpose of affecting issue development. . . The most influential groups were . . . Like the domestic "advocacy coalitions" portrayed by Sabatier and Jenkins-Smith (1993) and the international "advocacy networks" discussed by Keck and Sikkink (1998) . . ."
- (The Social Learning Group, 2001: 187)

Dilemma of Global Climate Change

- Burning of Fossil fuels to produce energy
- Has brought huge and expanding benefits
- Society has become addicted to their use.
- (Also mal-distribution and exploitation)
- But fossil fuels also created the gravest threat
- To human and biosphere welfare and survival:
- *Global Climate Change*

Global Collective Action Problem

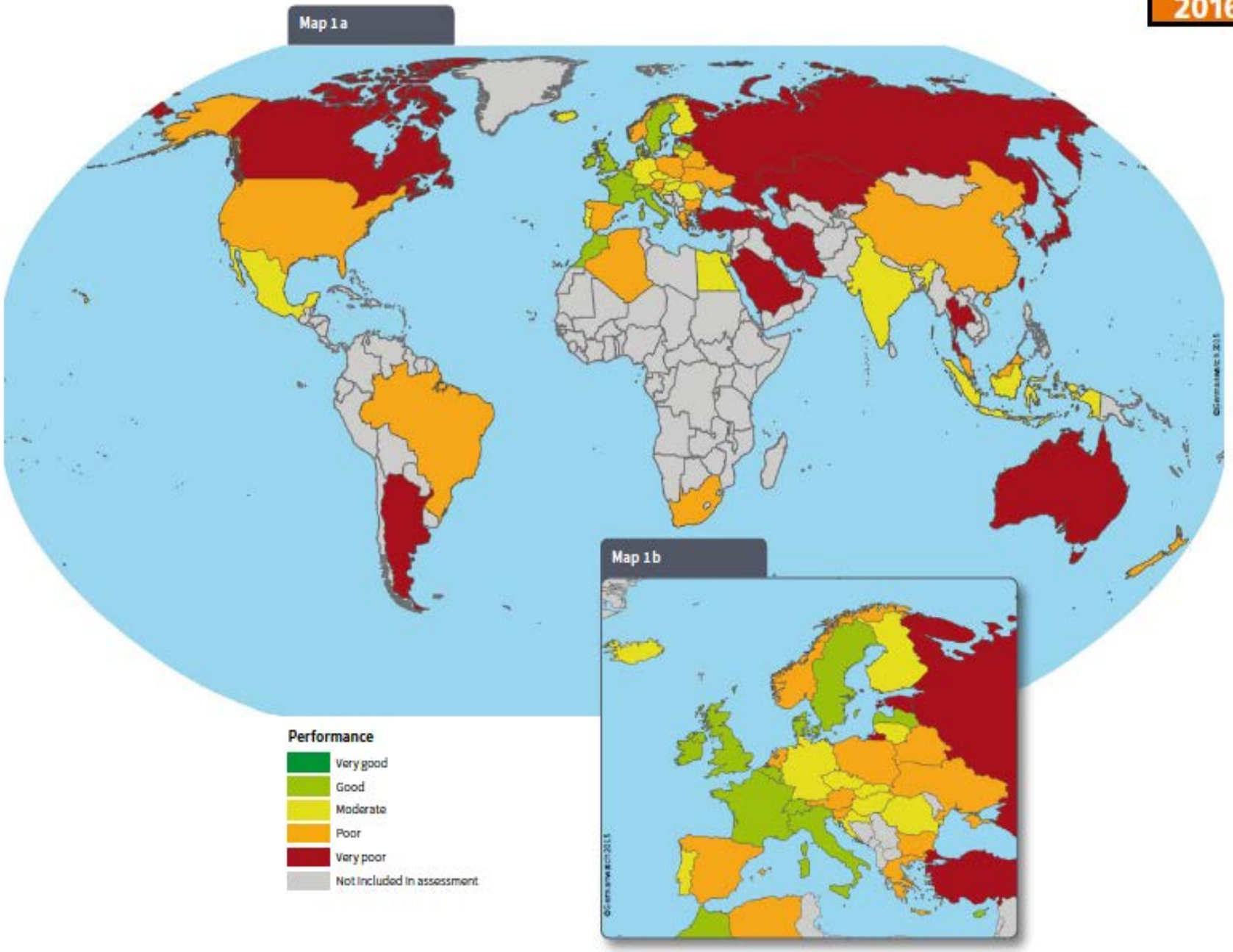
- Global emissions and disasters increasing rapidly.
- How can we level off and reverse these?
- UN established knowledge, norm and targets
- But these create dilemmas for national cases.
- Defection → Immediate case economic benefit
- But also contributes to long-term collective disaster.

Variation in Mitigation Response

- Under Kyoto Protocol.
- Annex 1 countries agreed to targets
- Annex 2 countries were not given targets.
- Annex 1 countries have responded differently.
- Their CO2 outputs rising, level, decreasing.
- Annex 2 countries rise at varying rates (China)

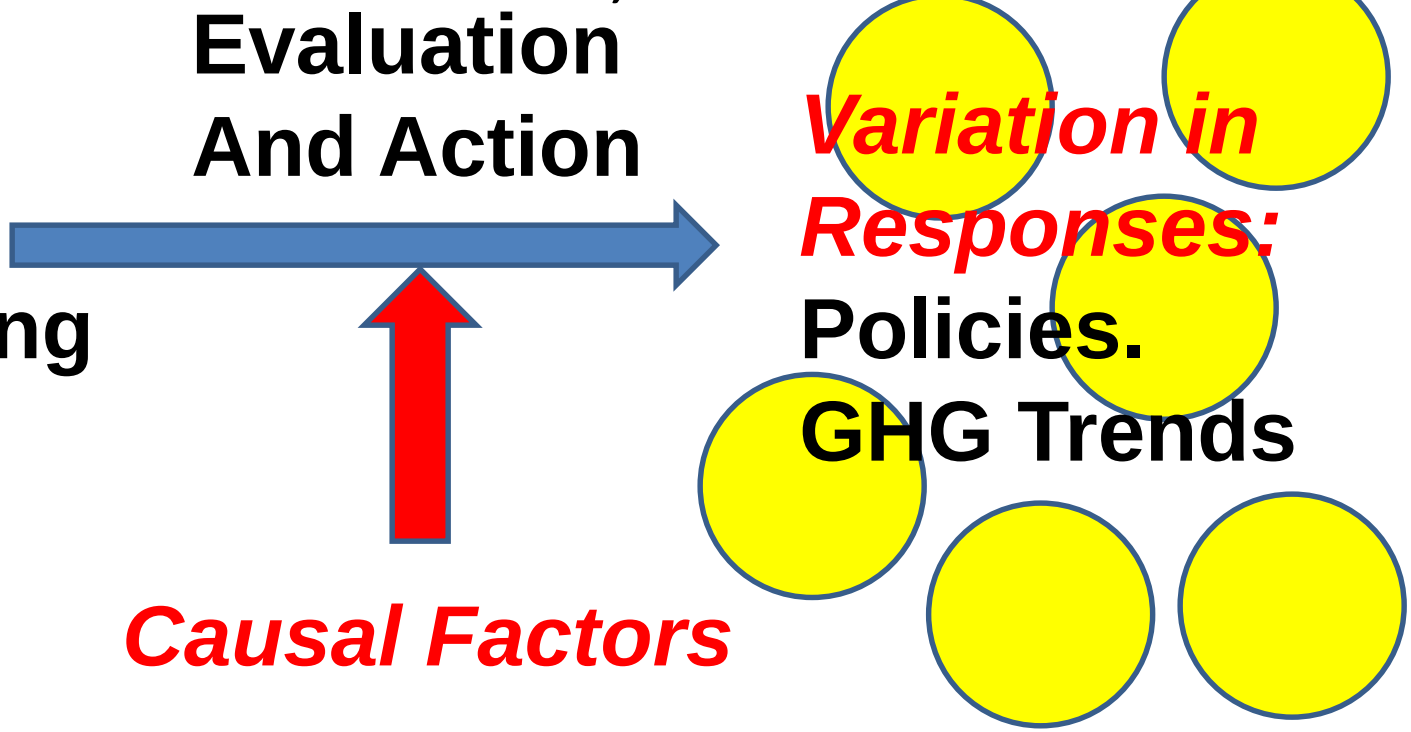
CCPI 2016 • Overall Results • World Map

CLIMATE CHANGE PERFORMANCE index 2016



Our Common Experiment

- Climate change creates global experiment.
- *Why are nations (cases) responding so differently?*
- Due to differences in evaluation and action.
- What are crucial differences; what causes them?



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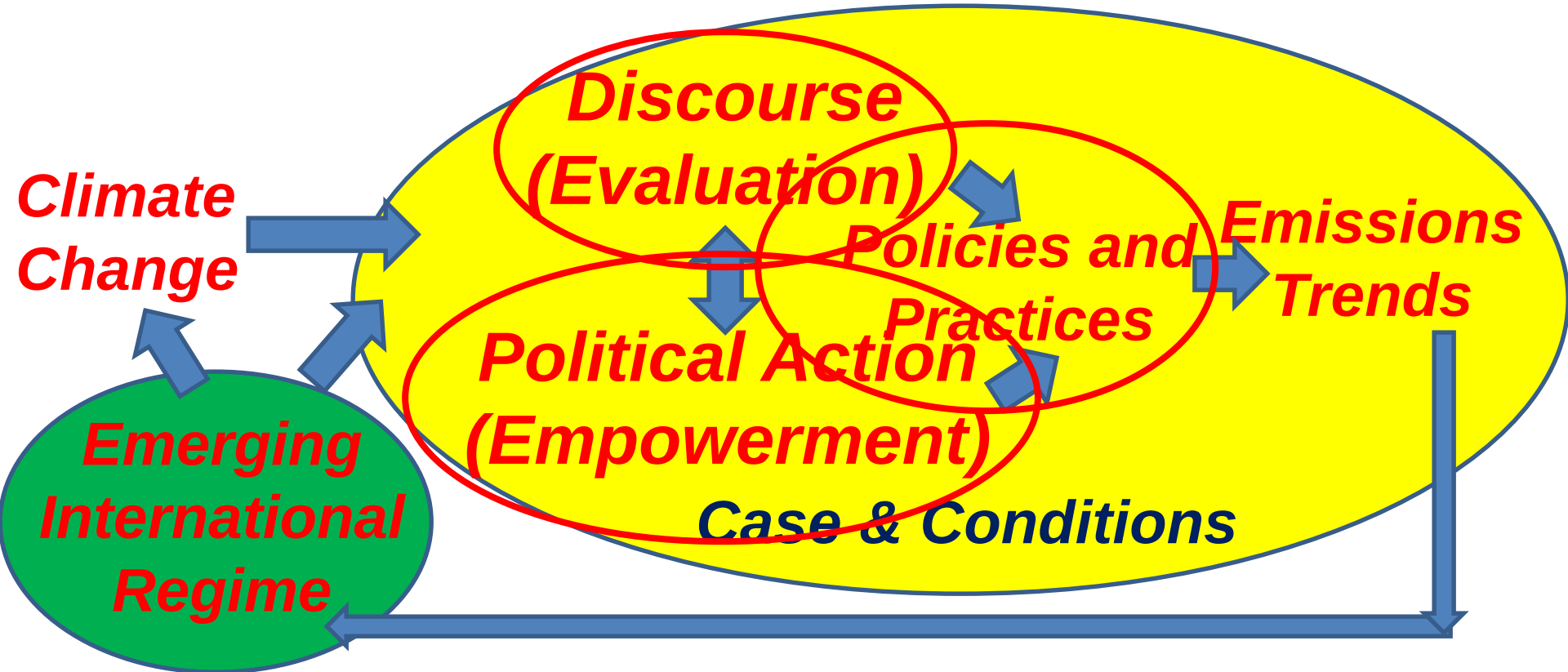

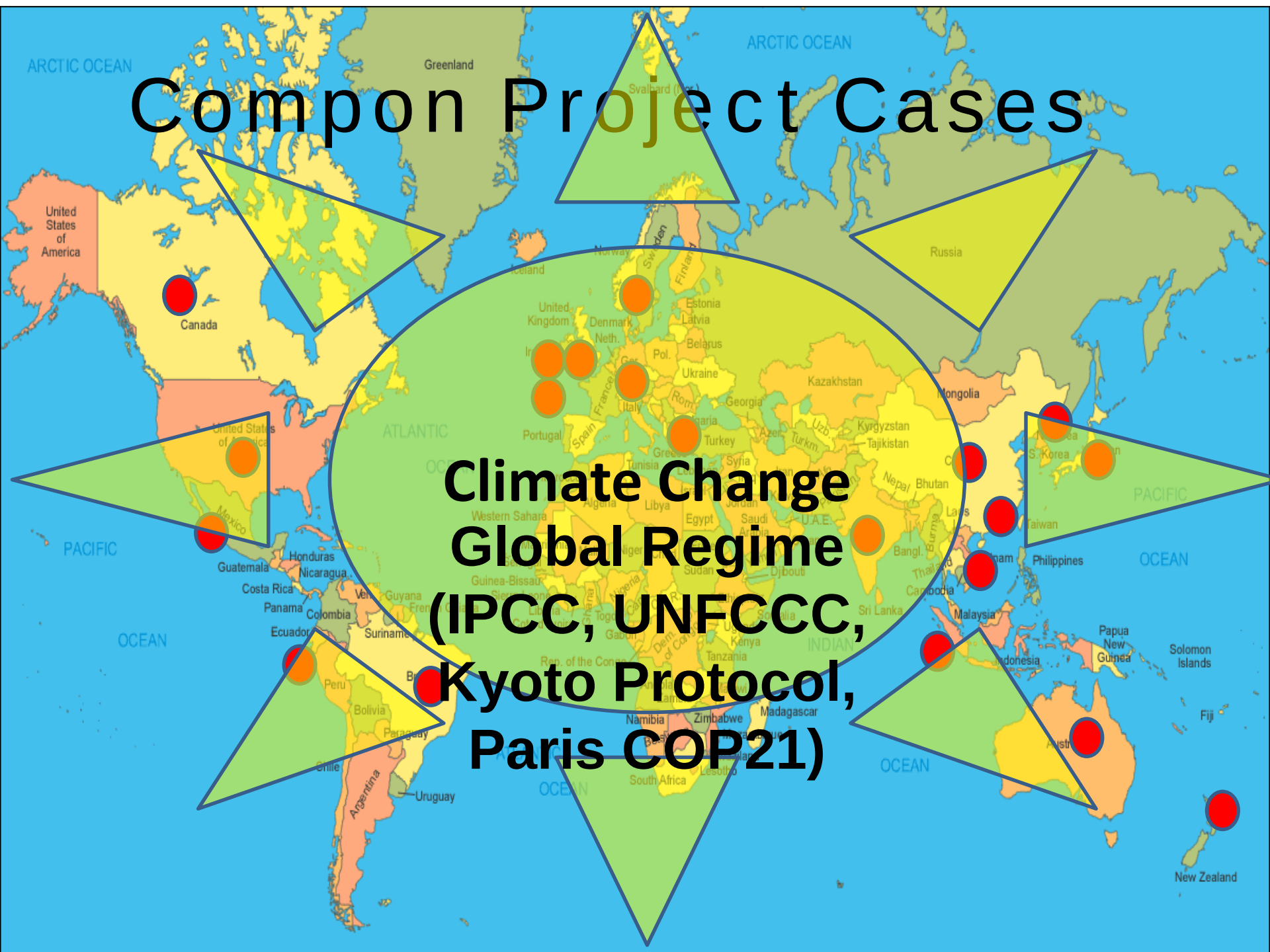
Compon Project Cases
Climate Change Global Regime (IPCC, UNFCCC, Kyoto Protocol, Paris COP21)
ARCTIC OCEAN
Greenland
United States of America
Canada
Russia
Mongolia
PACIFIC
OCEAN
ATLANTIC
INDIAN
Mexico
Guatemala
Honduras
Nicaragua
Costa Rica
Panama
Colombia
Ecuador
Peru
Bolivia
Paraguay
Chile
Argentina
Uruguay
Suriname
Guyana
Venezuela
Brazil
United Kingdom
Ireland
Iceland
Norway
Sweden
Finland
Denmark
Neth.
Estonia
Latvia
Belarus
Pol.
Ukraine
France
Spain
Portugal
Italy
Turkey
Georgia
Kazakhstan
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Tajikistan
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Lebanon
Jordan
Iraq
Iran
Afghanistan
Pakistan
Nepal
Bhutan
India
Bangl.
Myanmar
Thailand
Cambodia
Laos
Vietnam
Sri Lanka
Malaysia
Philippines
Indonesia
Papua New Guinea
Solomon Islands
Fiji
New Zealand
Australia
S. Korea
Taiwan
Japan
Western Sahara
Algeria
Libya
Egypt
Saudi Arabia
U.A.E.
Tunisia
Sudan
Djibouti
Guinea-Bissau
Nigeria
Ghana
Togo
Gabon
Kenya
Tanzania
Rep. of the Congo
Dem. Rep. of Congo
Namibia
Zimbabwe
Madagascar
South Africa
Lesotho

Qualitative Comparative Analysis

- Put together all data
- To understand major causal pathways
- Leading to different outputs and outcomes

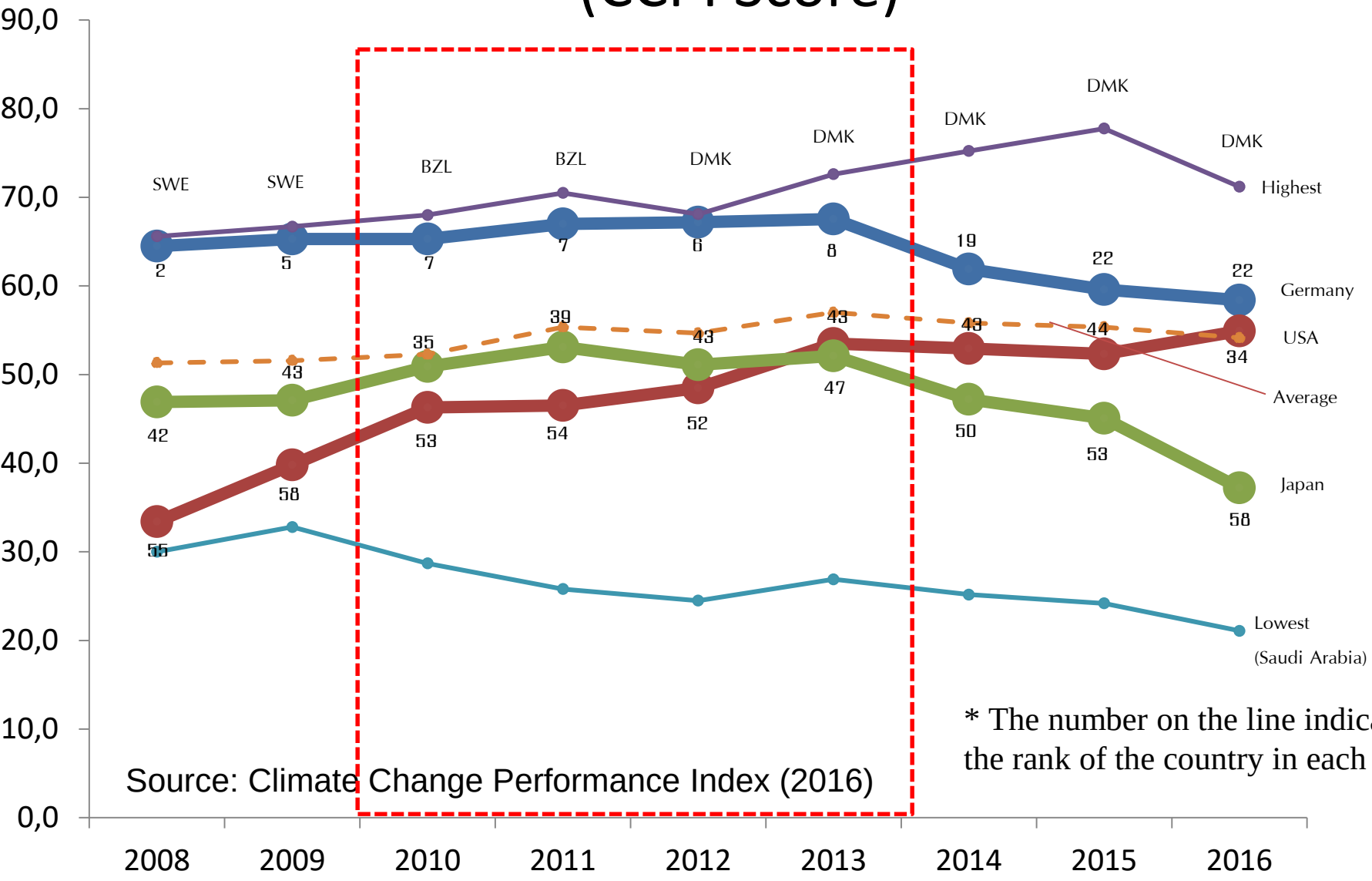
Table 13.2 QCA comparison of three cases

Case	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	Outcome (Δ GHG)
Sweden	+	+	+	+	+	−	+	+	+	?	+	+
Japan	+	−	+	+	+	+	−	−	−	?	+	−
United States	−	+	+	−	−	+	−	−	+	+	−	−

Current Focus: Phase Two (PN)

- Example from comparison of
- Germany, US, Japan

Country Performance in CC (CCPI Score)



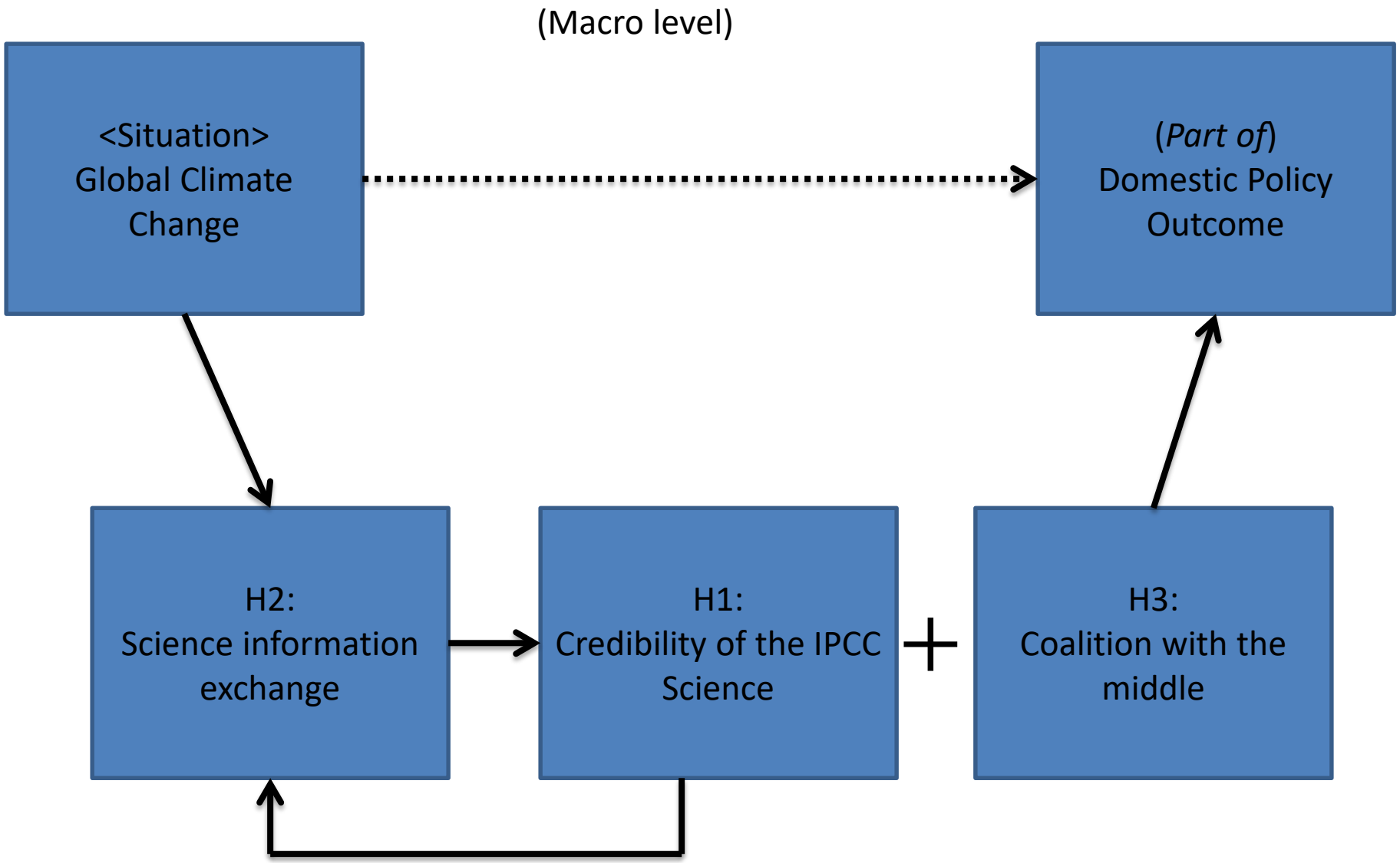
Source: Climate Change Performance Index (2016)

* The number on the line indicates the rank of the country in each year

Modified Hypotheses

- *H1* – IPCC Credibility:
  - *The more the ~~culture~~ actors in the policy domain gives legitimacy to the IPCC-type science, the more a case will mitigate its carbon emissions*
- *H2 – Science information exchange*:
  - *The more actors with different views on IPCC credibility exchange their information, the less polarized their overall view is*
- *H3 – Coalition with the middle*
  - *The groups which can build coalitions with the middle groups can promote their favored policy*

Relationship of the Hypotheses



Data Composition

	DEU	JPN	USA
Survey Period	Aug.2011-Oct.2012	Feb.2012-July 2013	Summer 2010
Response/Sample (Response rate)	51 / 70 (72.9%)	72 / 125 (57.6%)	64 / 100 (64.0%)
Sample Composition by the common boundary (Reputation score ≧2)			
Government (GOV) ◆	3	5	7
Political Party (POL) ▲	5	5	6
Scientific Organization (SCI) ●	14	9	12
Business Association (BIZ) ▲	9	12	18
Corporation (COR) ●	12	7	2
Civil Society Organization (CSO) ●	8	10	16
Other (OTH) ●	0	8	1
SUM	***51***	***56***	***62***

NOTE: The US Survey data was provided by Dana R. Fisher (University of Maryland, and can be download from her HP: http://www.drfisher.umd.edu/)

IPCC-type Scientific Message

- **Reality:** Climate Change is real (WG1)
- **Importance**: Climate change has serious risk (WG2)
- **Demand for action**: Countries should take action (WG3)

H1: IPCC Credibility

5: Strongly agree 3: Neutral 1: Strongly disagree	**DEU**	**JPN**	**USA**	**F (over) Pairwise t-test (under)**
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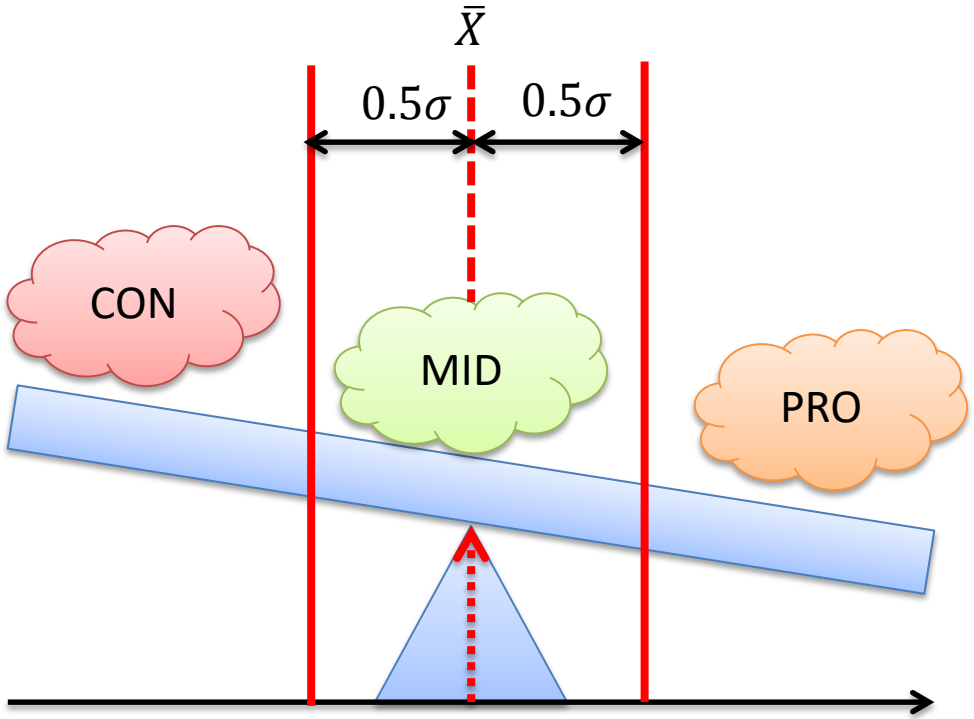
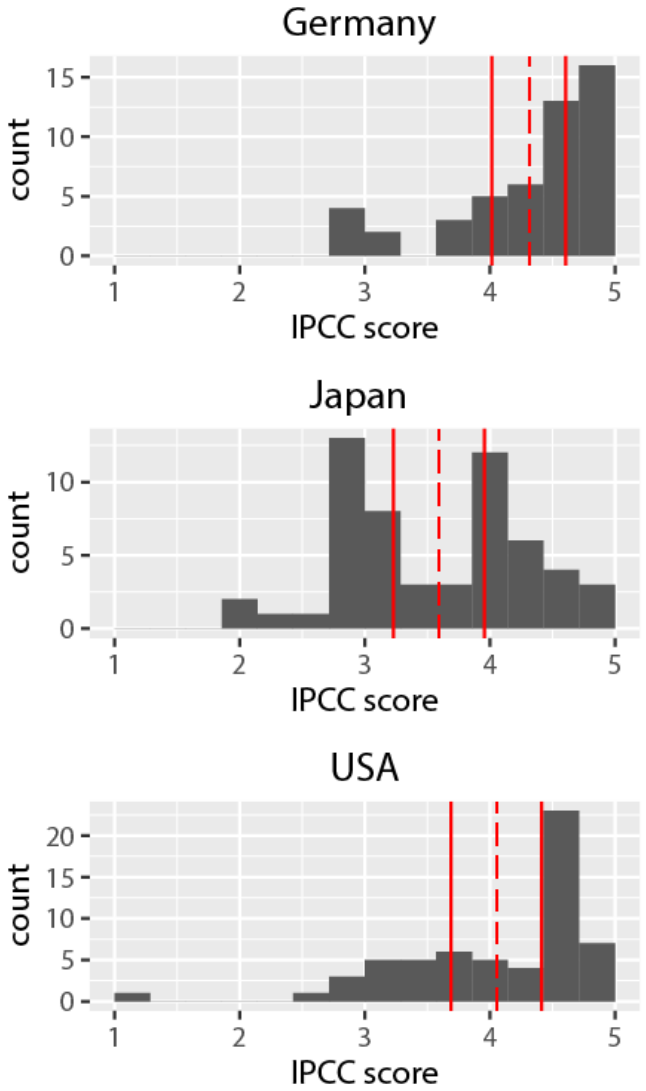
NOTE: The order of Items with (-) was reversed

Given the mean of the IPCC score in the country, which side is powerful?



Mean of IPCC Score
in the country



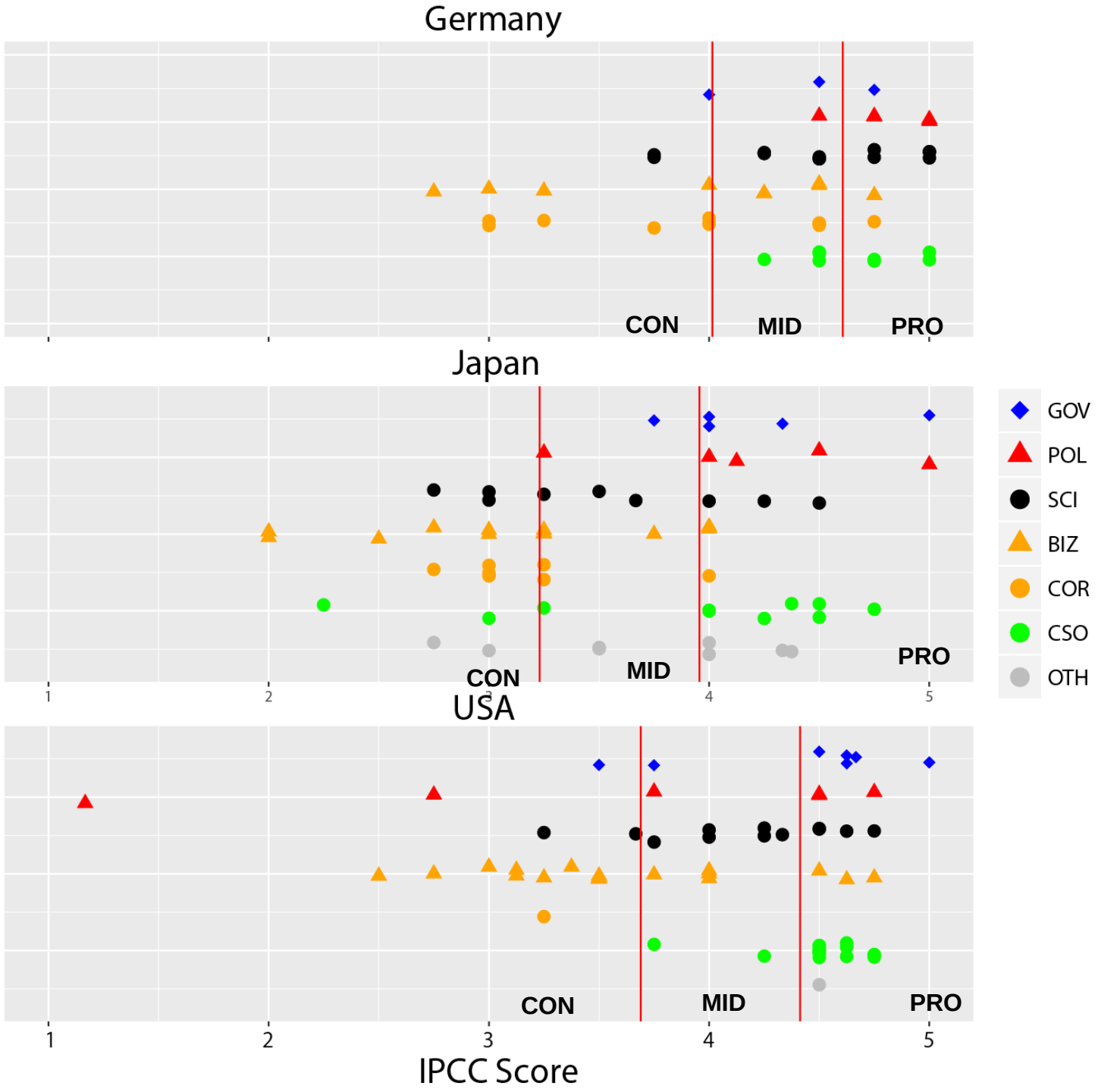
Composition of the actors

DEU	IPCC score cut value	GOV	POL	SCI	BIZ	COR	CSO	OTH
PRO (16)	4.6 < Case	1	4	5	1	1	4	0
MID (19)	4.0≦Case≦4.6	1	1	6	4	3	4	0
CON (14)	Case <4.0	1	0	2	4	7	0	0

USA	IPCC score cut value	GOV	POL	SCI	BIZ	COR	CSO	OTH
PRO (30)	4.4 < Case	5	3	4	3	0	14	1
MID (14)	3.7≦Case≦4.4	1	1	6	4	0	2	0
CON (16)	Case <3.7	1	2	2	10	1	0	0

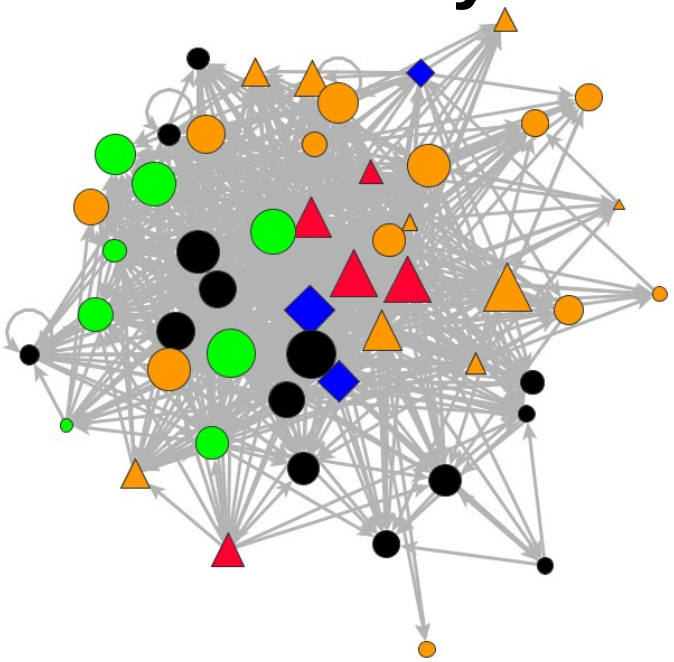
JPN	IPCC score cut value	GOV	POL	SCI	BIZ	COR	CSO	OTH
PRO (25)	4.0 < Case	4	4	**3**	2	1	7	4
MID (14)	3.2≦Case≦4.0	1	1	3	4	2	1	2
CON (17)	Case <3.2	0	0	3	6	4	2	2

Red number: Given the total number of actors of the organization type in the relevant country, the ration belong to that category is significantly low, compare to the average ratio in the three country


Germany
CON
MID
PRO
Japan
CON
MID
PRO
USA
CON
MID
PRO
1
2
3
4
5
IPCC Score
GOV
POL
SCI
BIZ
COR
CSO
OTH

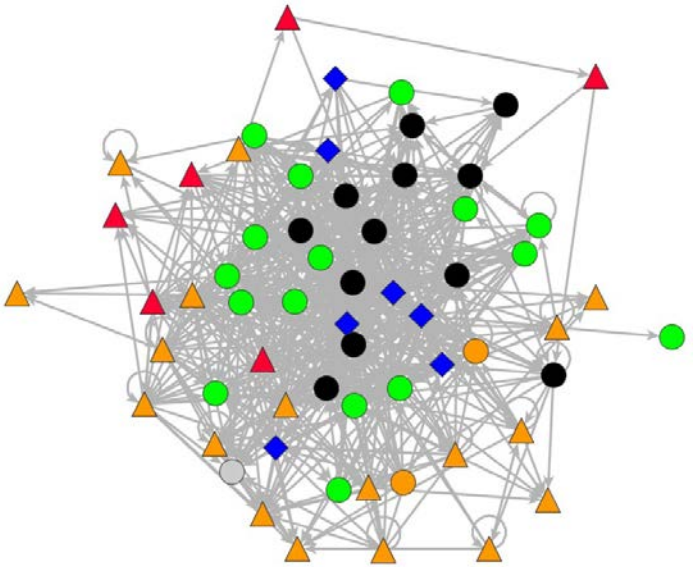
H2: Science Science community's position

Germany

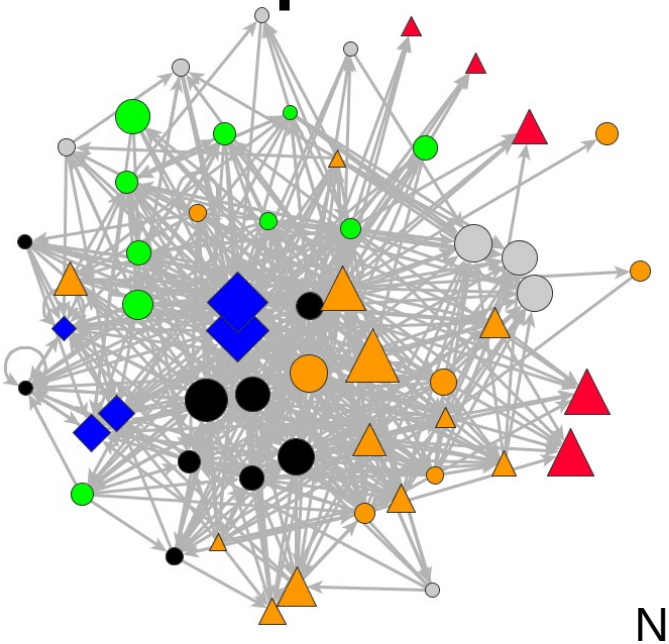


Science Source Network

USA



Japan



▲: POL

●: SCI

▲: BIZ

●: COR

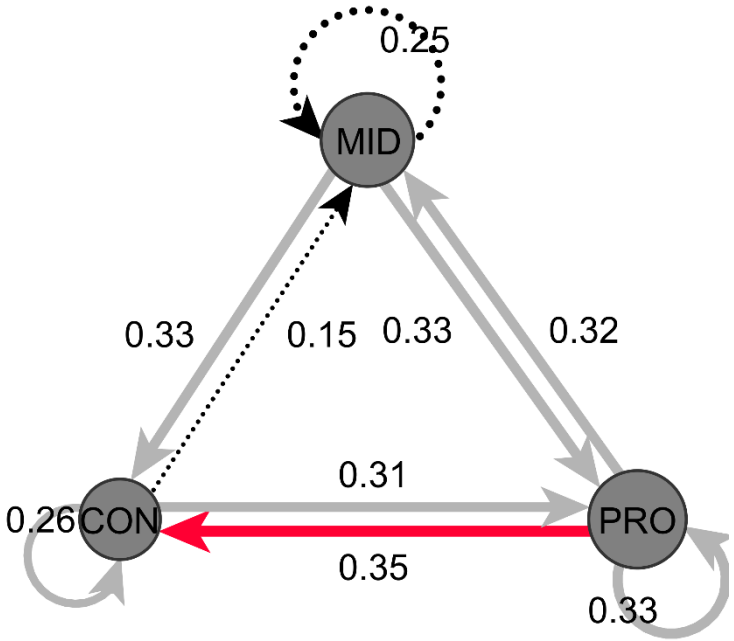
●: CSO

●: OTH

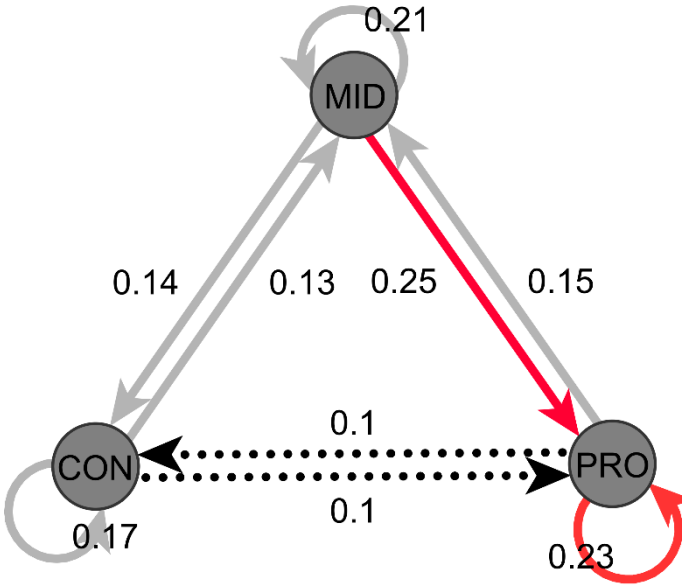
Node size: Reputation Score

H2: Scientific information exchange

Germany

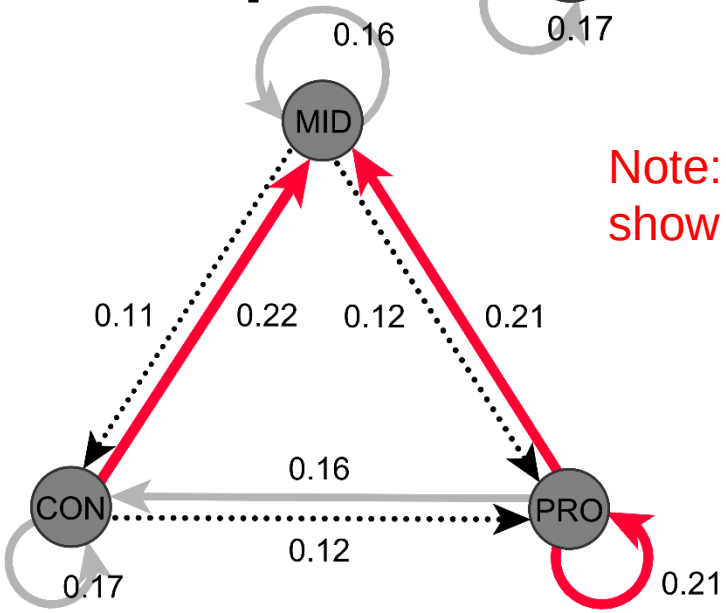


USA



Science Source Network

Japan



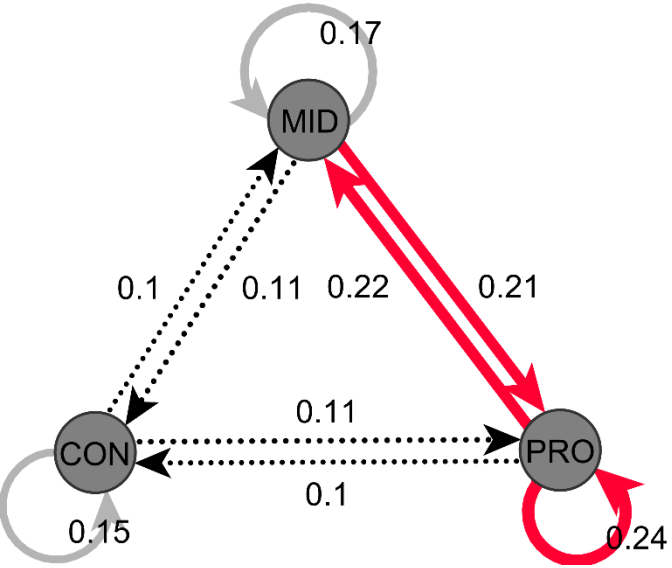
Node size: Outdegree
Line width: Density

Red line: significantly **More**
Black dot: significantly **less** than random distribution

Note: Arrow heads show information flows

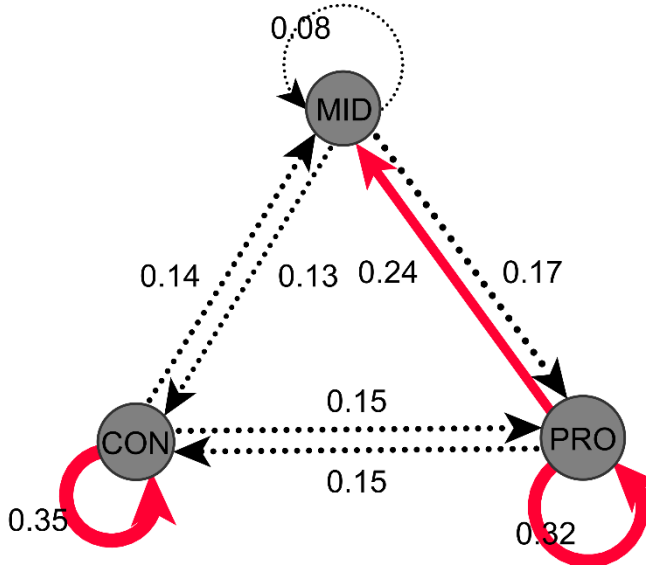
H3: Coalition Building

Germany

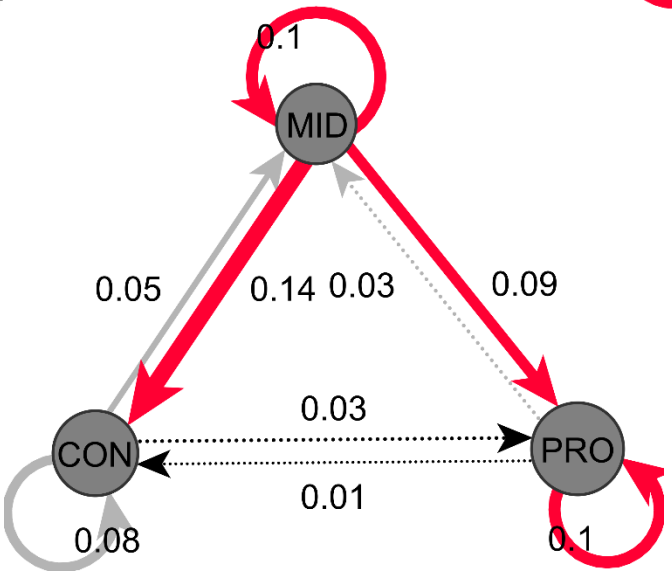


Collaboration Network

USA



Japan



Node size: Outdegree
Line width: Density

Red line: significantly **more**
Black dot: significantly **less** than random distribution (p <.05)

Note: Arrow heads show information flows

- Capacity of Pro actors to establish
- Coalition with Middle actors is associated with
- Germany’s greater success in mitigation.

Data Center

- University of Helsinki, Sociology Department
- Compile and harmonize all data
- Promote cross-case comparisons
- Guide new cases
- Create ways to automate, extend over decades
- Study case change as CC disasters intensify

Reference

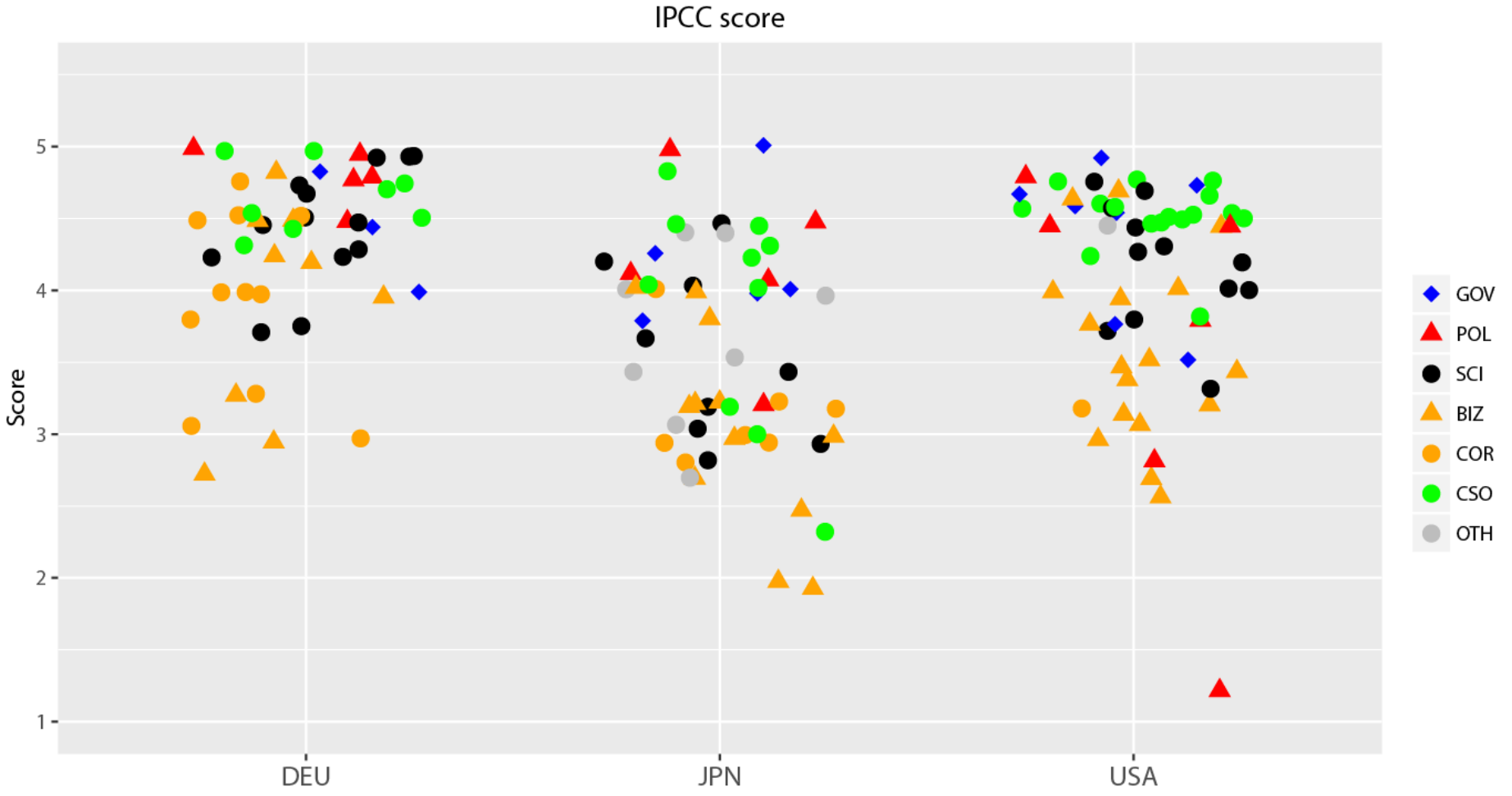
- Burck, Jan, Franziska Marten, and Christoph Bals, 2015, Climate Change Performance Index: Results 2016, Germanwatch (https://germanwatch.org/en/ccpi, accessed on Apr.23, 2016)

Acknowledgements

- The US Survey data was provided by Dana Fisher (http://www.drfisher.umd.edu/)

- USA: US National Science Foundation
- Germany: US National Science Foundation
- Japan: This work was supported by Grant-in-Aid for JSPS Fellows (11J07459 and 15J03089, PI: Keiichi Satoh), and JSPS Grant-in-Aid for Scientific Research (A: 22243036; B: 15H03406, PI: Koichi Hasegawa).

ADDITIONAL MATERIALS


IPCC score
Score
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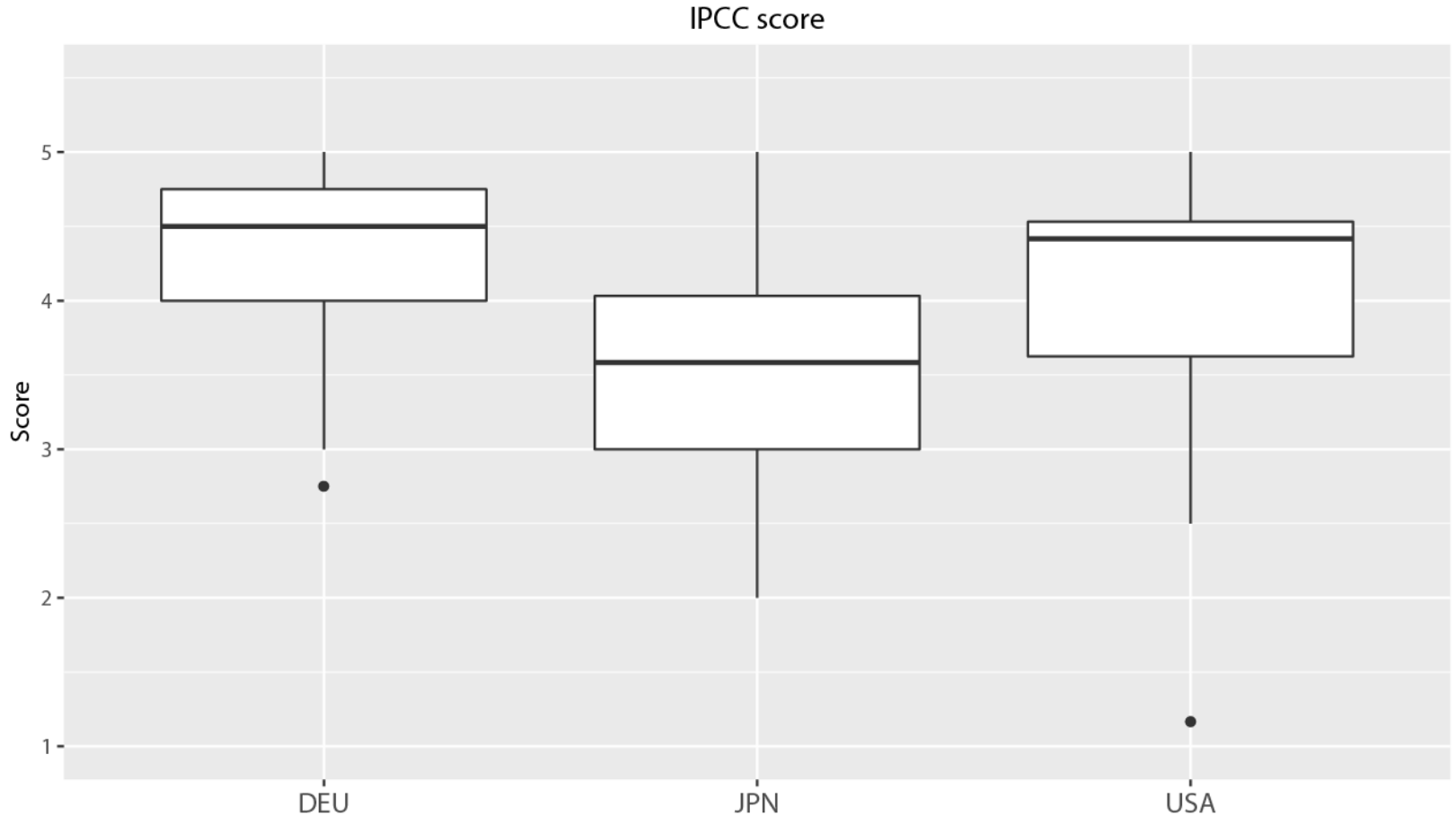
4
3
2
1
DEU
JPN
USA
GOV
POL
SCI
BIZ
COR
CSO
OTH


IPCC score
Score
5
4
3
2
1
DEU
JPN
USA

Compon Data Center

- Case Phase One Data
- Case Phase Two Data
- Ancillary Case Data:
  - Public opinion surveys
  - Demographic, resource, geophysical data
  - Policy instrument data
  - Emissions outcomes trajectories data
- All in comparable form ready for research
- (University of Helsinki)

END

Old Slides

Global Discourse Field:

Data from Phase One, Level 2:

Newspaper Content Analysis

Phase One: Newspaper Content Analysis

- Level 2
- Climate change frames in newspapers (2007-08)
- From inductive coding, compiled data base,
- 17 cases, 31,000 coded newspaper articles
- 142 cross-national comparative “meta-categories”
- 30 synthesis categories derived from these

Methods: Netfield analysis

- Netfield = social network analysis + field theory
  - Set theory: from count data to links to fields
    - Discourse categories at least 1% or 5% of articles by case
    - Cumulative binomial distribution test, $p<0.05$
  - Social network analysis: bridges that connect
    - Structural equivalence as similar profiles of connections
    - Betweenness centrality as shortest paths connecting a network
  - Correspondence analysis: boundaries that divide
    - Correspondence factors measure oppositions in a field
- Software: Excel, UCINET 6, and NetDraw 2.119

Constructing a Global Discourse Field

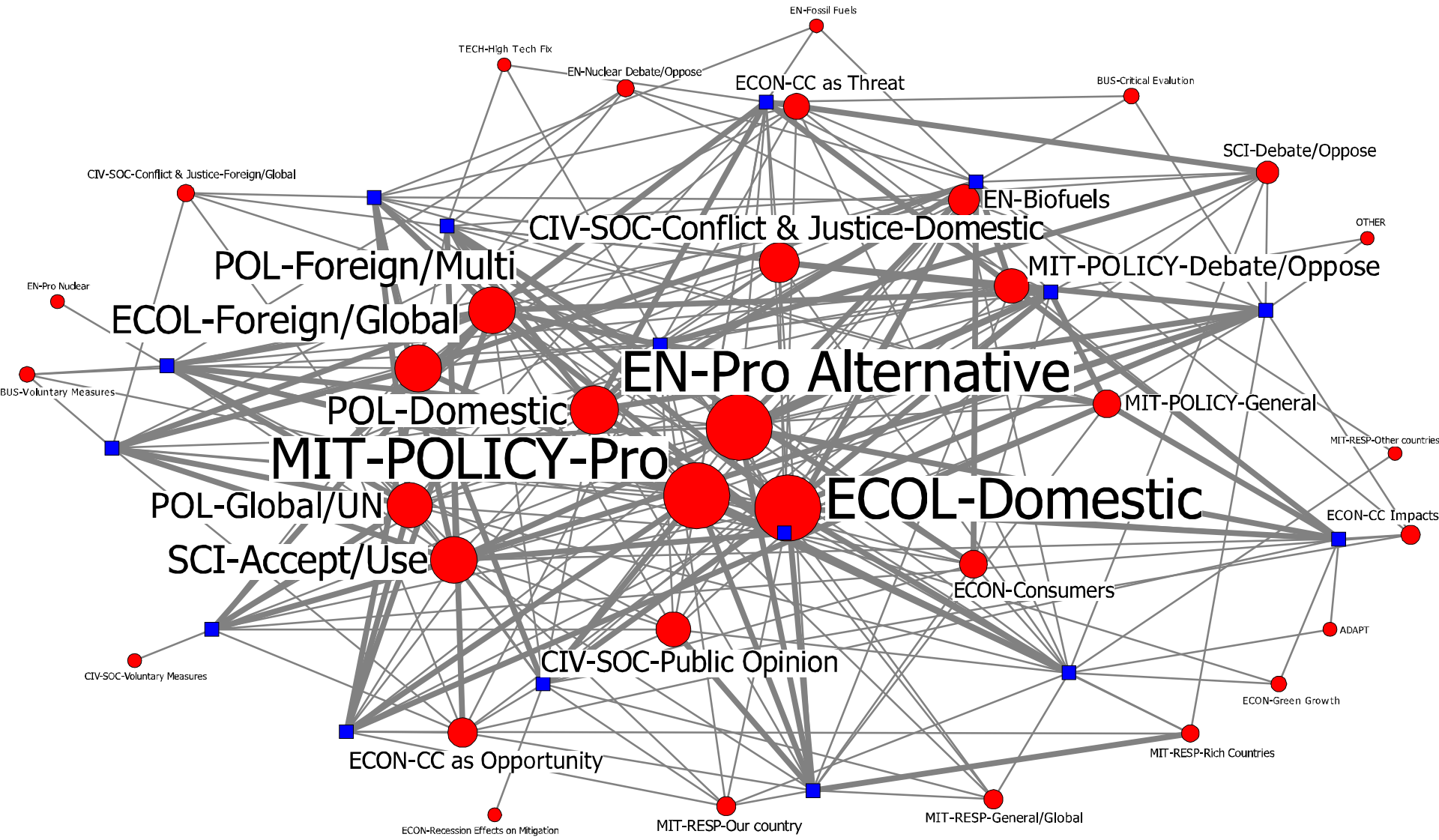
- Coded newspaper articles from 17 cases
  - Number of articles ranges from 75 (U.K.) to 1,701 (New Zealand)
  - Number of coded synthesis categories ranges from 17 (Mexico) to 34 (Brazil, US)
- Methodological challenges
  - How much confidence should we have when comparing these numbers?
  - How to analyze cohesion and conflict in global mitigation discourse?
  - Problems with treating nations as discourse units

Netfield Matrix: 17 Countries by 30 Thematic Categories

Table 1. Binomial Distribution Test, $p<0.05$:
Categories at least *1% or **5% of Case Discourse

Brazil		Canada		China		Germany		Greece		India		Ireland		Japan		Korea		Mexico		New Zealand		Portugal		Sweden		Switzerland		Taiwan		UK		US		Total%	Thematic Category
2.7		0.2		1.3		1.1		0.9		1.5		1.2		1.2										2.0		1.3		8.3	**			1.2		1.2	ADAPT
1.0		0.2				1.1				0.2								3.3	*	2.4				1.0		0.5		0.5				3.3	*	1.2	BUS-Critical Evalution
2.9		4.2	*	1.3		1.1						0.4		5.3	*					0.1		0.4				5.3	*	1.7				0.4		1.2	BUS-Voluntary Measures
3.3	*	2.4		0.6		3.7	*	4.0	*	3.6	*	8.7	**	0.4				10.5	**	1.9		3.2		5.0	*	6.0	*			2.7		1.8		3.4	CIV-SOC-Conflict & Justice-Domestic
1.3		3.1	*	0.9				2.7		0.8		1.2		0.8						0.8		1.6		1.0		5.8	*			4.0		1.0		1.2	CIV-SOC-Conflict & Justice-Foreign/Global
3.6	*	4.4	*	0.4		0.5		1.3		12.5	**	0.4		4.5	*					2.8	*	2.0		2.0		1.6		1.2		6.7	*	2.6		2.4	CIV-SOC-Public Opinion
0.8		1.5		0.3						0.6				0.4								4.5	*			0.2		1.7				0.8		0.5	CIV-SOC-Voluntary Measures
5.6	*	4.9	*	3.4	*	2.1		4.0	*	19.9	**	13.5	**	6.6	*	18.5	**	27.7	**	5.7	*	2.4		7.5	**	6.2	*	10.9	**	12.0	**	2.7		9.2	ECOL-Domestic
4.2	*	3.1	*	7.1	**	13.2	**	4.0	*	0.4		5.8	*	5.8	*					7.0	**	4.5	*	11.6	**	6.6	**			4.0		2.7		4.6	ECOL-Foreign/Global
0.2		2.2		4.7	*	4.2	*	1.8		3.4	*	2.7		0.4		25.5	**					2.0		1.0		2.9	*	2.8		10.7	**	0.5		2.6	ECON-CC as Opportunity
1.9		2.4		1.3		3.2		4.5	*	0.6		1.2		0.4						2.2		0.4		4.5	*	3.5	*	5.9	*	1.3		1.8		1.9	ECON-CC as Threat
1.1								1.8										3.4	*	4.8	*	5.7	*			0.7		5.2	*	1.3		1.2		1.9	ECON-CC Impacts
2.5		1.8		0.5		1.6		0.9		1.7		5.0	*	2.9		8.9	**	1.1		12.6	**	0.8		5.5	*	0.9		0.7		12.0	**	1.0		4.1	ECON-Consumers
1.7		0.2				0.5		0.4		0.8		0.4		0.4		2.6				1.1		0.8		3.0				3.6	*			0.4		0.8	ECON-Green Growth
7.9	**	2.4		0.4		1.1		3.1		0.8		2.5		4.5	*	4.6	*	5.0	*	3.3	*	1.2		2.5		1.3		1.7		1.3		1.6		2.7	EN-Biofuels
1.1		0.7		0.6		1.1		4.5	*			0.2		0.4						2.0		1.2				1.1		0.5				2.1		1.0	EN-Fossil Fuels
4.0	*	2.7		6.0	*	5.3	*	4.9	*	9.9	**	12.0	**	5.3	*			5.1	*	6.1	**	4.0	*	4.0	*	1.6		13.7	**	9.3	**	3.3	*	5.7	EN-Pro Alternative
1.0		0.9		0.3		0.5				0.4				2.1		7.3	**							1.5		0.4		0.7				0.1		0.6	EN-Pro Nuclear
0.4		6.4	*	1.2		3.2				1.7		0.4				13.2	**	2.0		3.0	*	0.4		1.0		1.5		14.7	**	2.7		1.9		2.9	MIT-POLICY-Con
0.6						1.1						3.1	*	4.1	*					16.6	**											12.3	**	4.6	MIT-POLICY-Debate
1.9		2.7		7.4	**			0.4		2.7		6.0	*	0.4										0.5		0.7		11.8	**	2.7		1.1		2.4	MIT-POLICY-Description
0.2		3.8	*	1.1		1.6		1.3				4.1	*					2.1				0.4						1.9						1.0	MIT-POLICY-No details
5.9	*	5.3	*	7.1	**	4.2	*	4.9	*	13.1	**	3.1	*	10.3	**			2.7		2.1		2.4		9.0	**	4.7	*	4.3	*	2.7		3.0	*	4.6	MIT-POLICY-Pro
1.5		2.2		1.3		0.5		4.9	*	0.6										0.1				5.0	*	0.4						0.1		0.7	MIT-RESP-General/Global
1.7		1.5		1.3		3.7	*	0.9		2.1						10.9	**			0.1				4.0	*			0.7				0.1		1.1	MIT-RESP-Our country should do more
1.7				5.6	*	1.1				6.6	**			0.8				3.4	*	0.1				4.0	*	0.5		1.4				1.1		1.8	MIT-RESP-Rich Countries
0.8		1.5		0.3		1.6		1.3				3.7	*					7.9	**							1.1				1.3				1.3	OTHER
7.5	**	15.9	**	1.5		7.4	*	7.1	*	3.8	*	0.6		9.1	**			8.4	**	6.1	**	5.3	*	5.0	*	1.1		1.2		9.3	**	23.5	**	6.7	POL-Domestic
7.7	**	8.4	**	24.5	**	21.6	**	8.5	**	1.3		8.9	**	9.9	**					5.8	*	30.0	**	4.5	*	24.0	**	1.2		5.3	*	7.1	**	9.7	POL-Foreign/Multi
6.3	*	0.9		12.8	**	7.4	*	13.4	**	1.5		4.1	*	17.3	**			2.5		3.6	*	12.6	**	4.0	*	8.9	**	0.9				5.9	*	5.8	POL-Global/UN
10.5	**	1.8		3.9	*	2.6		14.7	**	4.0	*	8.3	**	2.9		8.3	**	8.4	**	1.0		11.3	**			9.1	**	2.1		4.0		0.5		4.8	SCI-Accept/Use
0.6																		3.2	*	3.2	*	0.4										3.1	*	1.2	SCI-Debates
2.7		6.9	**	0.7		1.1		1.8		1.1		2.3						2.4		0.3		0.4		4.5	*	0.7				4.0		5.7	*	1.8	SCI-Deny/Reject
97		95		98		97		98		96		100		96		100		99		95		98		94		99		99		97		94		97	Total%
1		3		4		1		0		3		0		0		2		0		0		0		0		0		0		0		0		0	Non sign. categories%
522		452		1118		190		224		473		517		243		302		888		1701		247		199		549		422		75		731		8853	Total N

Figure 2. Betweenness Centrality: Discourse Categories that Connect the Most Cases

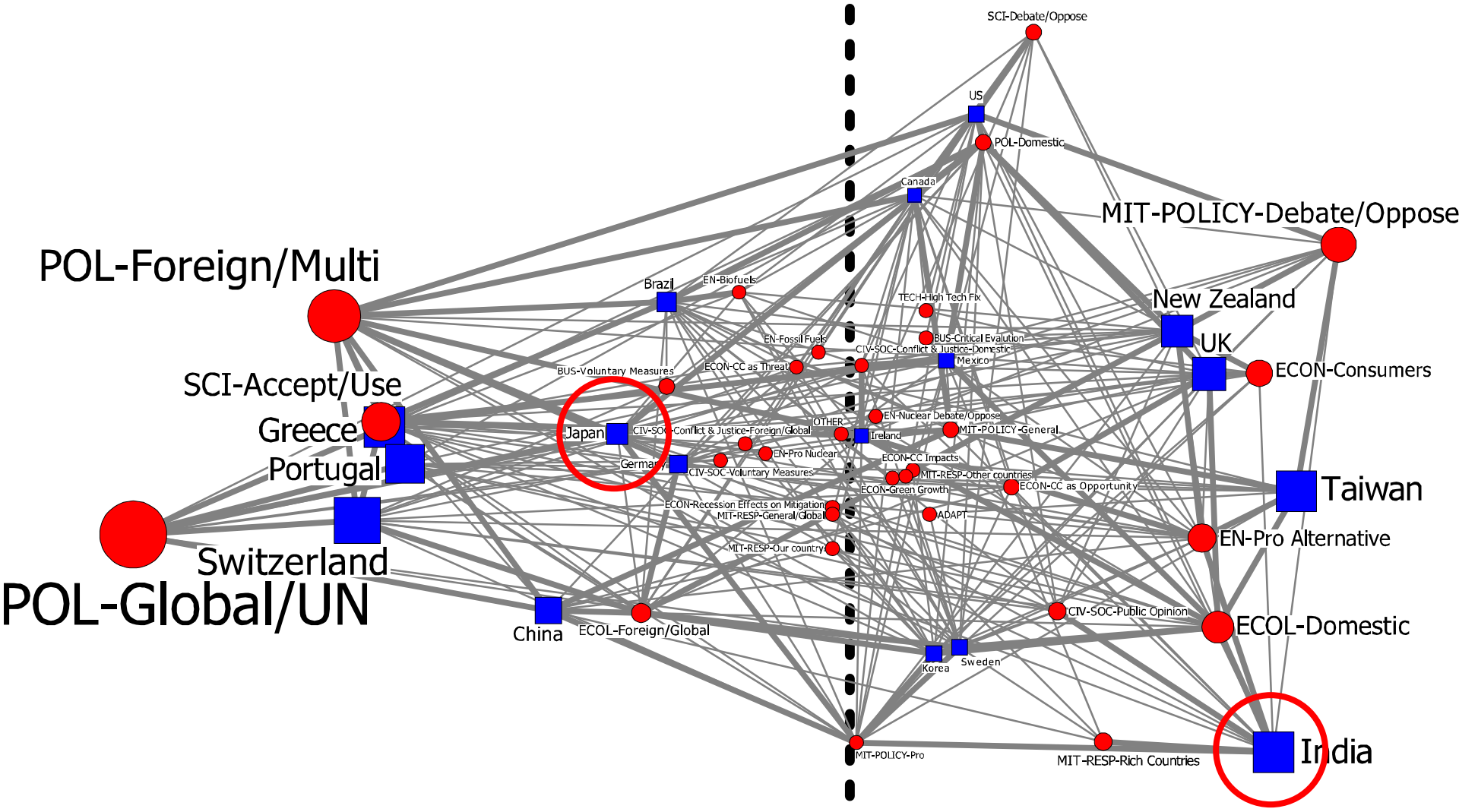


Thick lines=5% and thin lines=1% of discourse, $p<0.05$

Layout by MDS

- Top three, connected to all cases
- “alternative energy,”
- “pro mitigation policy,”
- “domestic ecology”
- Potential bridges in global discourse.
- But stronger or weaker in different cases.
- Must be put in context of major divisions

Figure 3. Correspondence Factor 1: International Versus Domestic Orientation

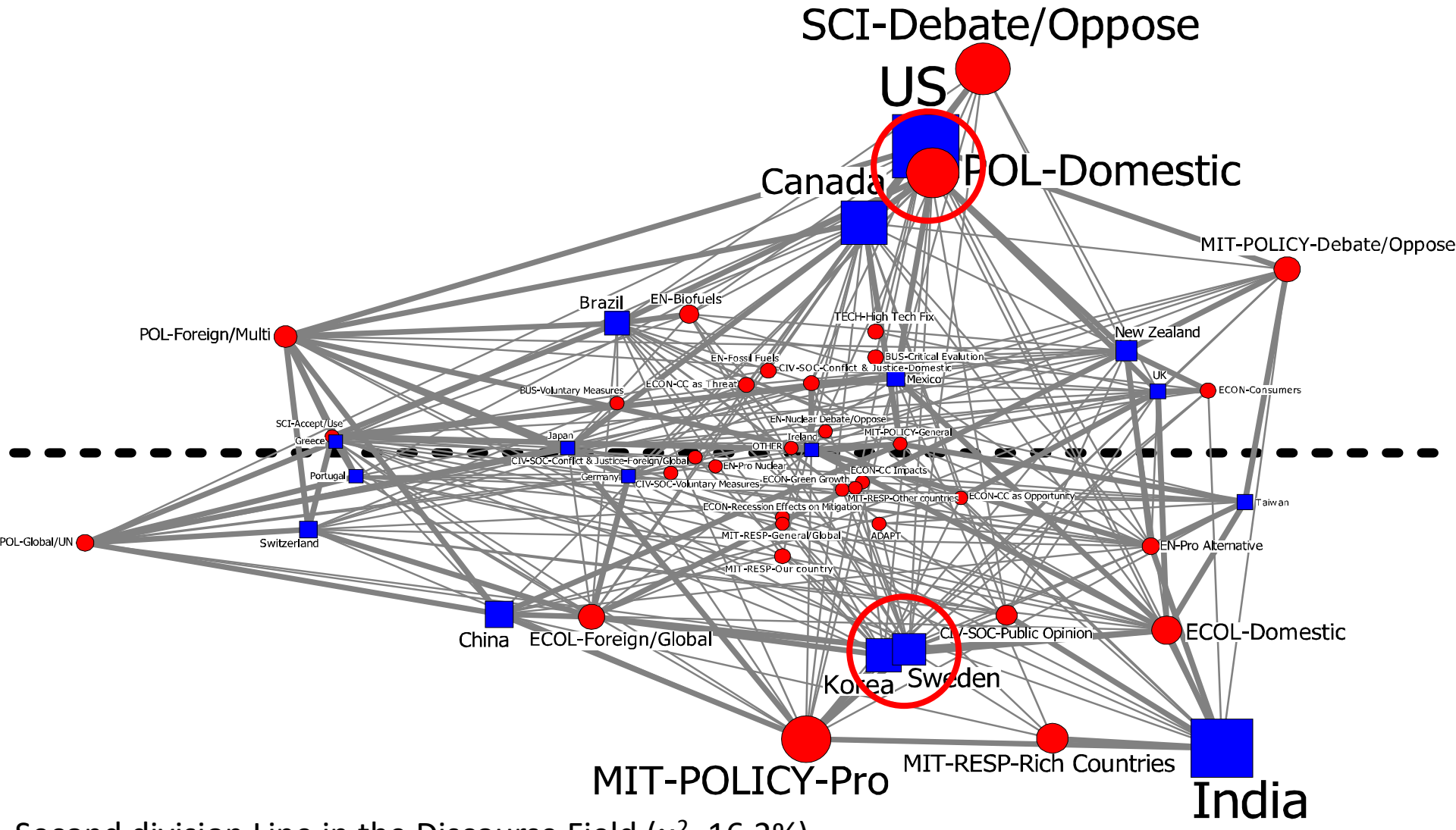


Primary dividing line in the Global Discourse Field (χ^2=21.7%)
Thick lines=5% and thin lines=1% of discourse, p<0.05

Layout by CA

- International pole formed by Switzerland, Portugal and Greece, plus Germany, Japan, Brazil, China.
  - Stresses global UN and multi-lateral EU type climate change policy making processes.
- Domestic pole formed by India and Taiwan, plus UK and New Zealand.
  - Stresses opposition to and debate over mitigation policy, domestic ecological problems from climate change and domestic consumers as the main contributors to emissions.

Figure 4. Correspondence Factor 2: Denial *versus* Responsibility



Second division Line in the Discourse Field (χ^2=16.2%)
Thick lines=5% and thin lines=1% of discourse, p<0.05

Layout by CA

- Denial Pole formed by US and Canada.
  - Biofuels, high tech fixes to allow the carbon economy to continue, concern about mitigation threatening the economy.
- Responsibility Pole led by India, Korea and Sweden, with Germany and China.
  - Implicitly accept the science, search for practical mitigation policies.
  - Split over Concern with Global Ecology or with Domestic Ecology.

Brazil	Canada	China	Germany	Greece	India	Ireland	Japan	Korea	Mexico	New Zealand	Portugal	Sweden	Switzerland	Taiwan	UK	US	Total%	Thematic Category
2.7	0.2	1.3	1.1	0.9	1.5	1.2	1.2					2.0	1.3	8.3 **		1.2	1.2	ADAPT
1.0	0.2		1.1		0.2				3.3 *	2.4		1.0	0.5	0.5		3.3 *	1.2	BUS-Critical Evalution
2.9	4.2 *	1.3	1.1			0.4	5.3 *			0.1	0.4		5.3 *	1.7		0.4	1.2	BUS-Voluntary Measures
3.3 *	2.4	0.6	3.7 *	4.0 *	3.6 *	8.7 **	0.4		10.5 **	1.9	3.2	5.0 *	6.0 *		2.7	1.8	3.4	CIV-SOC-Conflict & Justice-Domestic
1.3	3.1 *	0.9		2.7	0.8	1.2	0.8			0.8	1.6	1.0	5.8 *		4.0	1.0	1.2	CIV-SOC-Conflict & Justice-Foreign/Global
3.6 *	4.4 *	0.4	0.5	1.3	12.5 **	0.4	4.5 *			2.8 *	2.0	2.0	1.6	1.2	6.7 *	2.6	2.4	CIV-SOC-Public Opinion
0.8	1.5	0.3			0.6		0.4				4.5 *		0.2	1.7		0.8	0.5	CIV-SOC-Voluntary Measures
5.6 *	4.9 *	3.4 *	2.1	4.0 *	19.9 **	13.5 **	6.6 *	18.5 **	27.7 **	5.7 *	2.4	7.5 **	6.2 *	10.9 **	12.0 **	2.7	9.2	ECOL-Domestic
4.2 *	3.1 *	7.1 **	13.2 **	4.0 *	0.4	5.8 *	5.8 *			7.0 **	4.5 *	11.6 **	6.6 **		4.0	2.7	4.6	ECOL-Foreign/Global
0.2	2.2	4.7 *	4.2 *	1.8	3.4 *	2.7	0.4	25.5 **			2.0	1.0	2.9 *	2.8	10.7 **	0.5	2.6	ECON-CC as Opportunity
1.9	2.4	1.3	3.2	4.5 *	0.6	1.2	0.4			2.2	0.4	4.5 *	3.5 *	5.9 *	1.3	1.8	1.9	ECON-CC as Threat
1.1				1.8					3.4 *	4.8 *	5.7 *		0.7	5.2 *	1.3	1.2	1.9	ECON-CC Impacts
2.5	1.8	0.5	1.6	0.9	1.7	5.0 *	2.9	8.9 **	1.1	12.6 **	0.8	5.5 *	0.9	0.7	12.0 **	1.0	4.1	ECON-Consumers
1.7	0.2		0.5	0.4	0.8	0.4	0.4	2.6		1.1	0.8	3.0		3.6 *		0.4	0.8	ECON-Green Growth
7.9 **	2.4	0.4	1.1	3.1	0.8	2.5	4.5 *	4.6 *	5.0 *	3.3 *	1.2	2.5	1.3	1.7	1.3	1.6	2.7	EN-Biofuels
1.1	0.7	0.6	1.1	4.5 *		0.2	0.4			2.0	1.2		1.1	0.5		2.1	1.0	EN-Fossil Fuels
4.0 *	2.7	6.0 *	5.3 *	4.9 *	9.9 **	12.0 **	5.3 *		5.1 *	6.1 **	4.0 *	4.0 *	1.6	13.7 **	9.3 **	3.3 *	5.7	EN-Pro Alternative
1.0	0.9	0.3	0.5		0.4		2.1	7.3 **				1.5	0.4	0.7		0.1	0.6	EN-Pro Nuclear
0.4	6.4 *	1.2	3.2		1.7	0.4		13.2 **	2.0	3.0 *	0.4	1.0	1.5	14.7 **	2.7	1.9	2.9	MIT-POLICY-Con
0.6			1.1			3.1 *	4.1 *			16.6 **						12.3 **	4.6	MIT-POLICY-Debate
1.9	2.7	7.4 **		0.4	2.7	6.0 *	0.4					0.5	0.7	11.8 **	2.7	1.1	2.4	MIT-POLICY-Description
0.2	3.8 *	1.1	1.6	1.3		4.1 *			2.1		0.4			1.9			1.0	MIT-POLICY-No details
5.9 *	5.3 *	7.1 **	4.2 *	4.9 *	13.1 **	3.1 *	10.3 **		2.7	2.1	2.4	9.0 **	4.7 *	4.3 *	2.7	3.0 *	4.6	MIT-POLICY-Pro
1.5	2.2	1.3	0.5	4.9 *	0.6					0.1		5.0 *	0.4			0.1	0.7	MIT-RESP-General/Global
1.7	1.5	1.3	3.7 *	0.9	2.1			10.9 **		0.1		4.0 *		0.7		0.1	1.1	MIT-RESP-Our country should do more
1.7		5.6 *	1.1		6.6 **		0.8		3.4 *	0.1		4.0 *	0.5	1.4		1.1	1.8	MIT-RESP-Rich Countries
0.8	1.5	0.3	1.6	1.3		3.7 *			7.9 **				1.1		1.3		1.3	OTHER
7.5 **	15.9 **	1.5	7.4 *	7.1 *	3.8 *	0.6	9.1 **		8.4 **	6.1 **	5.3 *	5.0 *	1.1	1.2	9.3 **	23.5 **	6.7	POL-Domestic
7.7 **	8.4 **	24.5 **	21.6 **	8.5 **	1.3	8.9 **	9.9 **			5.8 *	30.0 **	4.5 *	24.0 **	1.2	5.3 *	7.1 **	9.7	POL-Foreign/Multi
6.3 *	0.9	12.8 **	7.4 *	13.4 **	1.5	4.1 *	17.3 **		2.5	3.6 *	12.6 **	4.0 *	8.9 **	0.9		5.9 *	5.8	POL-Global/UN
10.5 **	1.8	3.9 *	2.6	14.7 **	4.0 *	8.3 **	2.9	8.3 **	8.4 **	1.0	11.3 **		9.1 **	2.1	4.0	0.5	4.8	SCI-Accept/Use
0.6									3.2 *	3.2 *	0.4					3.1 *	1.2	SCI-Debates
2.7	6.9 **	0.7	1.1	1.8	1.1	2.3			2.4	0.3	0.4	4.5 *	0.7		4.0	5.7 *	1.8	SCI-Deny/Reject
97	95	98	97	98	96	100	96	100	99	95	98	94	99	99	97	94	97	Total%
1	3	4	1	0	3	0	0	2	0	0	0	0	0	0	0	0	0	Non sign. categories%
522	452	1118	190	224	473	517	243	302	888	1701	247	199	549	422	75	731	8853	Total N

Four DNA Cases

- Factor 1: International versus domestic
  - International pole–Japan
    - Global UN climate change policy making processes.
  - Domestic pole–India
    - Domestic ecological problems from climate change and responsibility of rich countries to take first steps.
- Factor 2: Denial versus responsibility
  - Denial Pole—US
    - Biofuels, high tech fixes, mitigation threat economy
  - Responsibility Pole–Sweden
    - Implicitly accept the science, concern with global ecology, search for practical mitigation policies.

Table 2. Top Categories from coding of statements using Discourse Network Analyzer (DNA) software (percent of total and percent agree/disagree) 2007-8, newspapers same as Table 1 unless otherwise noted		
India 2008 (36 categories, 292 statements) (replace with Ajiteya's 2007 coding)		Y/N
Environmental change is an evidence for climate change	17.34%	96/04
Alternative energy forms is a solution to climate change	9.23%	100/00
Alternate solutions for adaptation can be effective	6.27%	100/00
Nuclear energy is the appropriate response to climate change	5.90%	87/13
Climate change will create new health problems	5.54%	100/00
Responsibility for creating the scenario of climate change lies with the developed countries	5.54%	80/20
Lifestyle changes are a solution to tackle climate change	4.80%	92/08
Technology cooperation is essential for climate change response	4.06%	100/00
Japan (16 categories, 8200 statements)		
Energy-saving technologies & products should be used to reduce GHG emissions.	13.79%	99/01
Cap and trade / emissions trading system should be used to reduce GHG emissions.	11.35%	78/22
Climate change has adverse impacts on the natural environment.	8.07%	100/00
Government should establish its long-term emission reduction target at least 50% on 2005 level by 2050.	7.77%	91/09
Developing countries, especially newly industrialized economies, should be integrated into Post-Kyoto framework.	7.32%	83/17
Government should establish its med-term emission reduction target at least 15% on 2005 level by 2020.	7.22%	69/31
Carbon tax or subsidies programs should be used to reduce GHG emissions.	5.99%	92/08

Sweden (76 categories, 560 statements)		
Climate change leads to drought and malnutrition	4.83%	100/00
Climate change is changing the eco-system	4.47%	100/00
The market can be induced to solve climate change	4.47%	44/55
Climate smart living is a key to stopping climate change	4.11%	100/00
The developed countries should assume global responsibility for climate change	3.94%	100/00
Climate change leads to changes in extreme weather and natural disasters	3.94%	100/00
Climate change leads to the melting of permafrost and glaciers	3.94%	100/00
Climate change affects Earth's poor	3.76%	100/00
Alternative energy sources and new technologies are a solution to climate problems	3.58%	75/25
United States (20 categories, 1410 statements)		
Cap & Trade is the legislative approach the US should take in addressing climate change.	23%	80/20
Higher auto efficiency standards are necessary in the US to reduce GHG emissions that cause climate change.	13%	73/27
The scientific claims that anthropogenic greenhouse gases contibute to climate change is valid.	9%	58/42
Regulating GHG emissions to protect the environment is more important than protecting the economy.	7%	37/63
Industry should be regulated in the US to decrease GHG emissions that contribute to climate change.	6%	63/37
Increasing alternative energy production (wind, solar, hydro, geo, wave) is the approach the US should use in addressing climate change.	5%	89/11
States should be able to have stricter GHG emissions laws than the federal government.	5%	75/25
The US should not wait for other major emitters to decrease GHG emissions before reducing its own.	5%	48/52

Japan

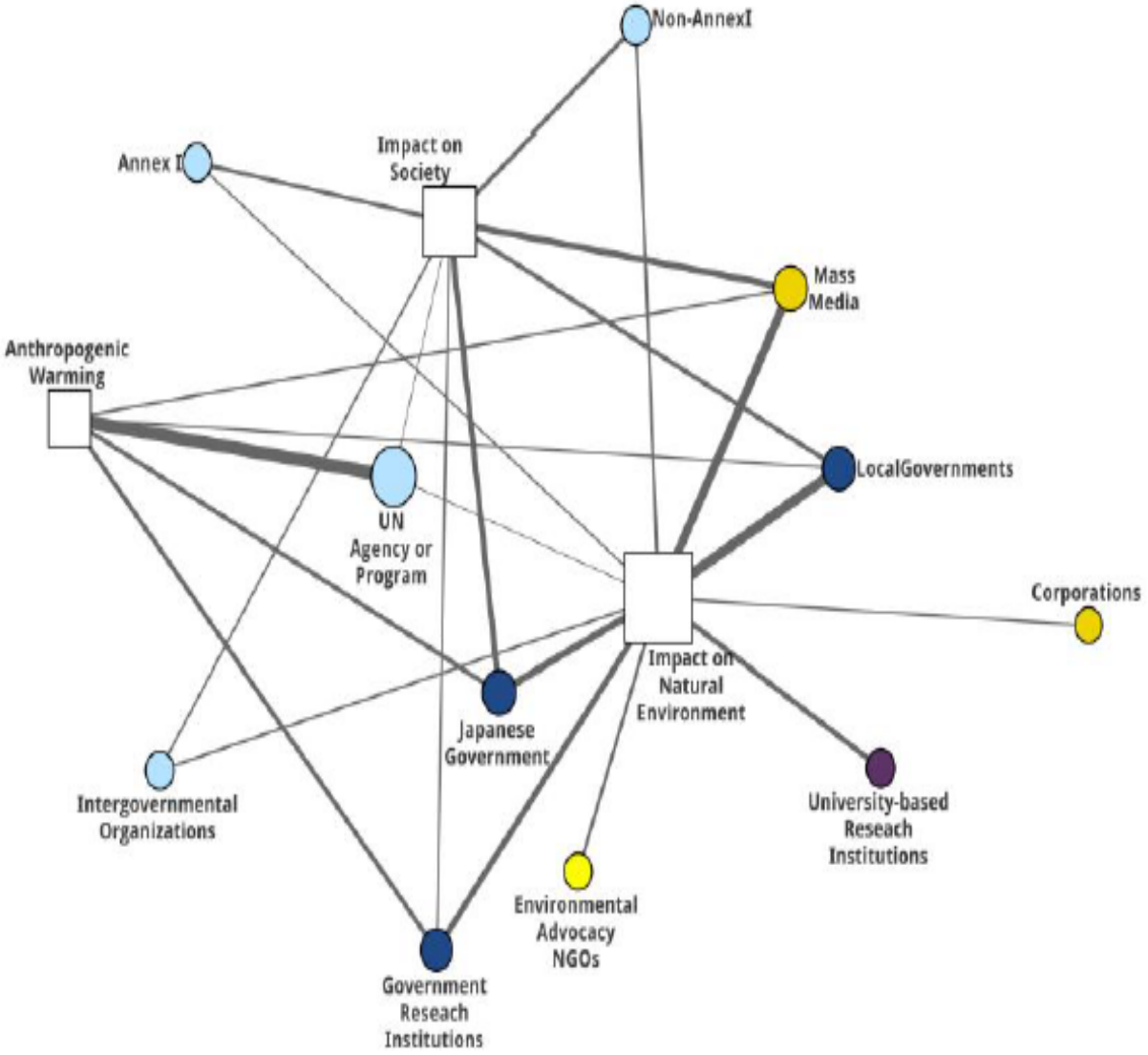


Fig. 7 Agreement Discourse Network of Climate Change Awareness

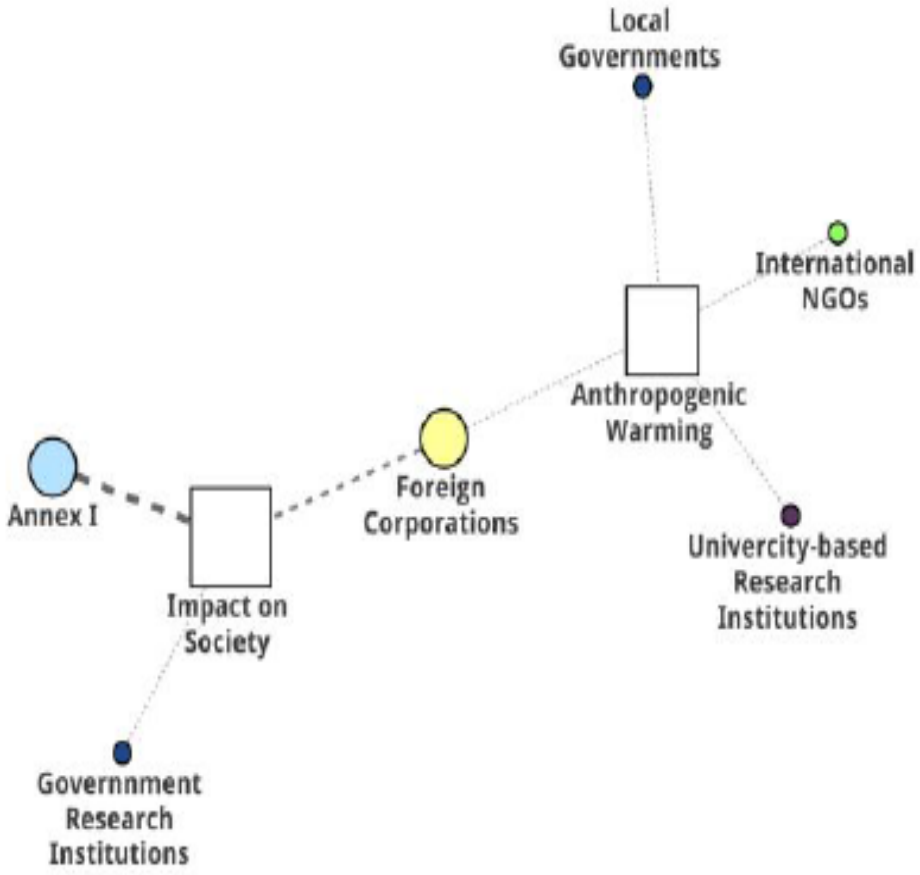


Fig. 8 Disagreement Discourse Network of Climate Change Awareness

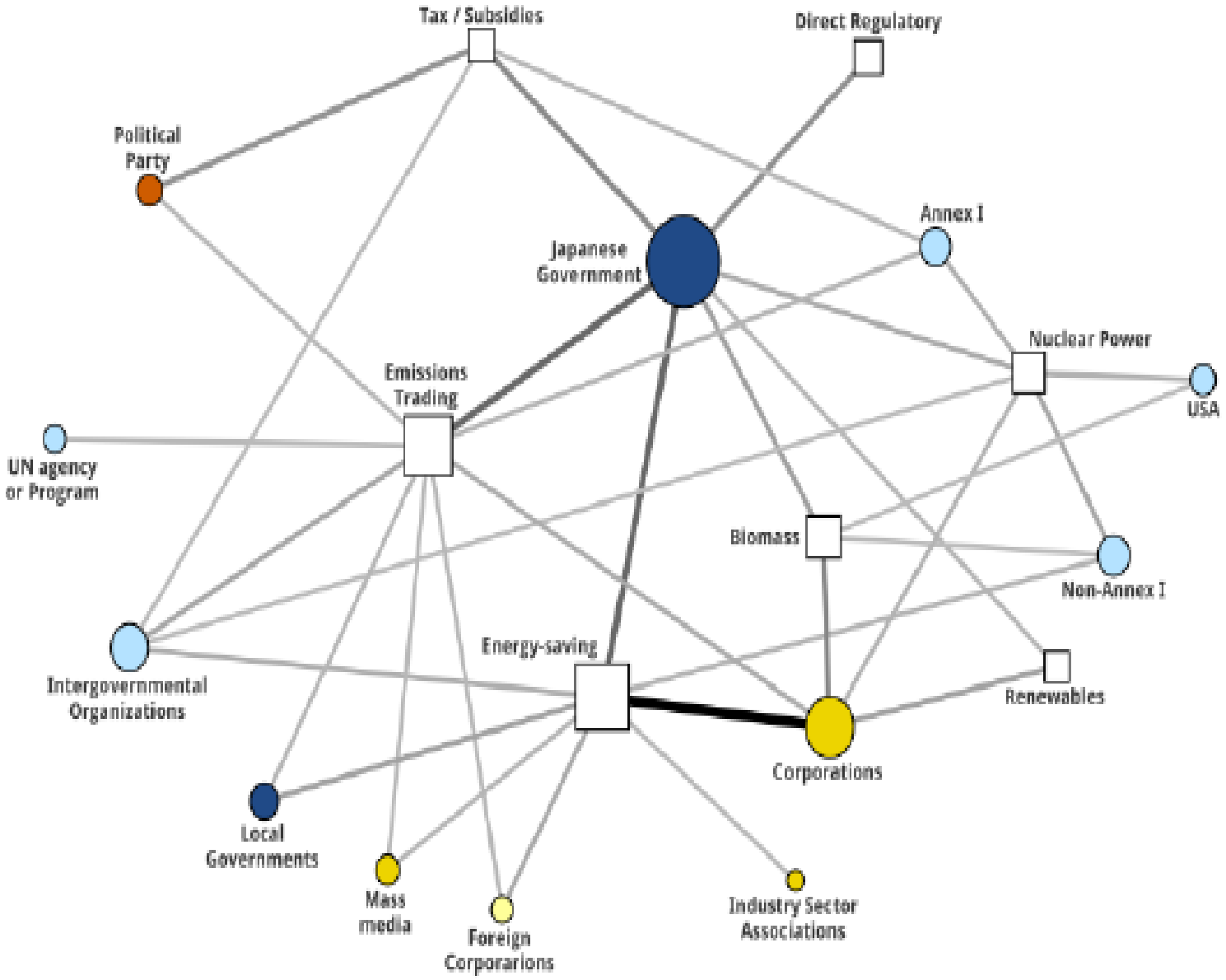


Fig. 9 Agreement Discourse Network of Climate Policy and Actions

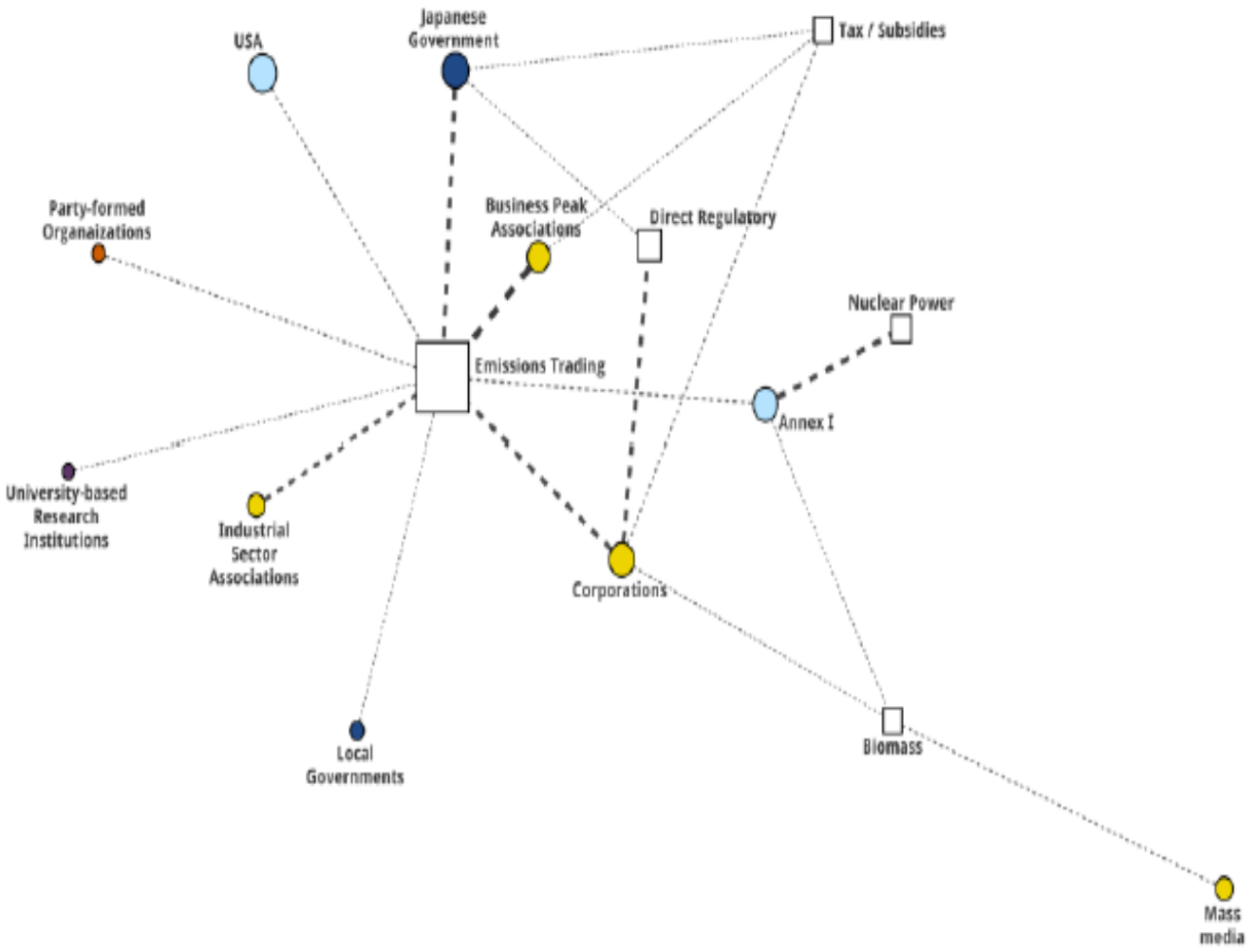
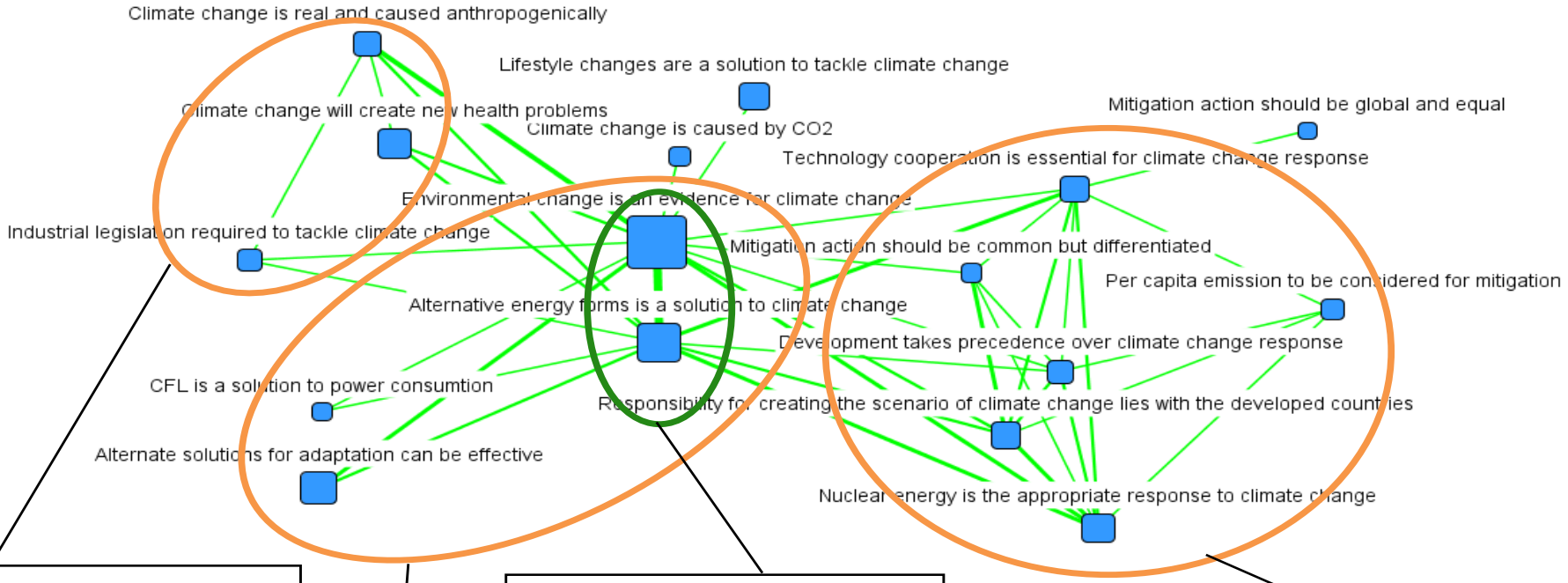


Fig. 10 Disagreement Discourse Network of Climate Policy and Actions

India Agreement Discourse Field (16 top categories, each mentioned 2+ times)



Cluster 1 "Act Now"-- takes climate threat very seriously and urges India to take action first if necessary (TERI & Greenpeace India)

Cluster 2 "Minor adjustment"--Easy technology like CFL and adaptation.

Common Core: All clusters accept that CC is occurring and that alternative energy is a solution. (therefore, all clusters accept the anthropogenic source of CC).

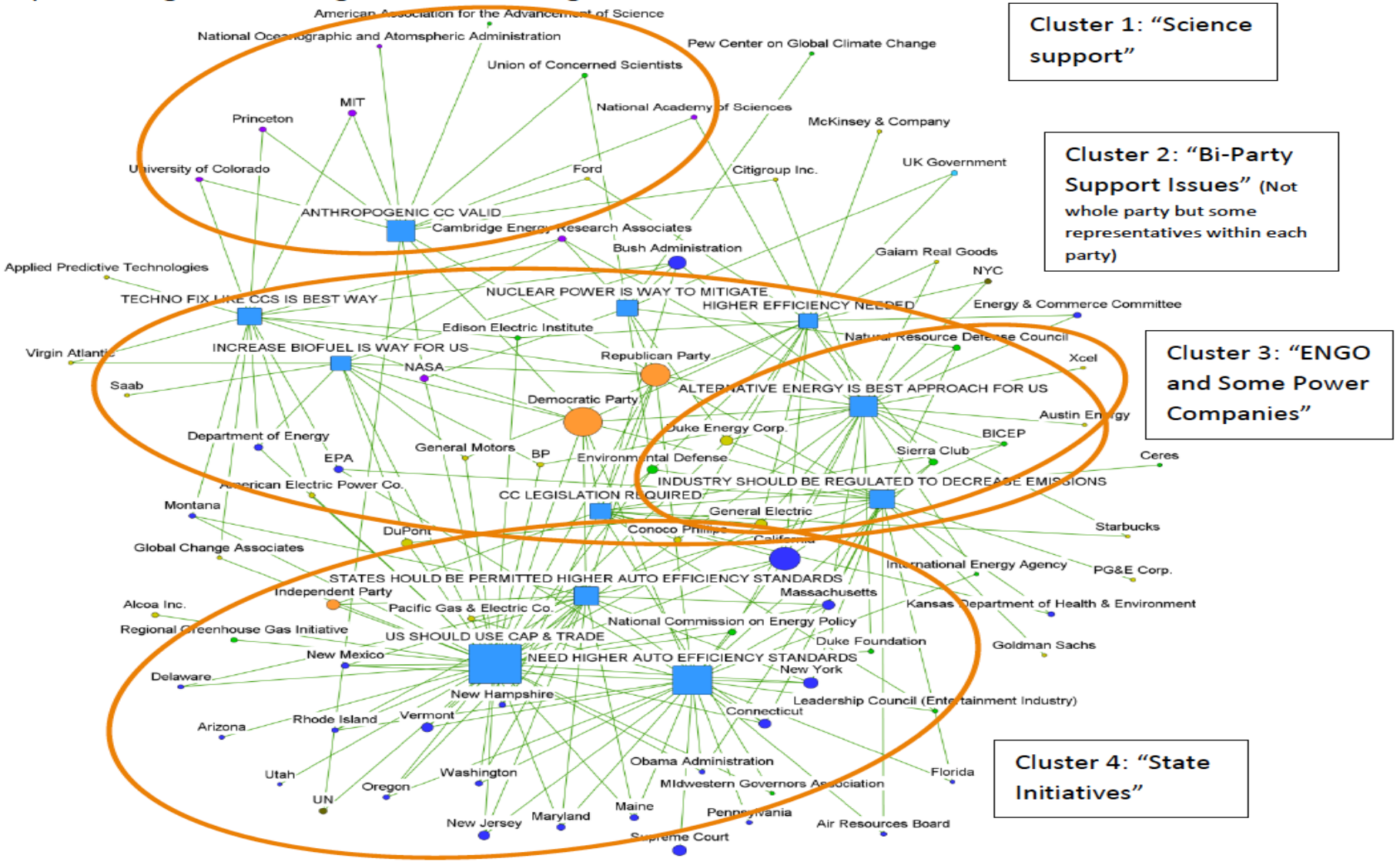
Cluster 3 "Depend on Developed Countries"-- puts the responsibility for mitigation on the developed countries, and urges technocratic fixes such as nuclear power. (Government of India speakers)

US

Articles: 648
Statements: 1410
Organizations: 333
Persons: 368
Categories: 20
Data: Three newspapers, 2007-8 CC keyword articles, 20% sample.

US Agreement Actor-Issue Network:

Top ten categories and organizations that agreed with them.



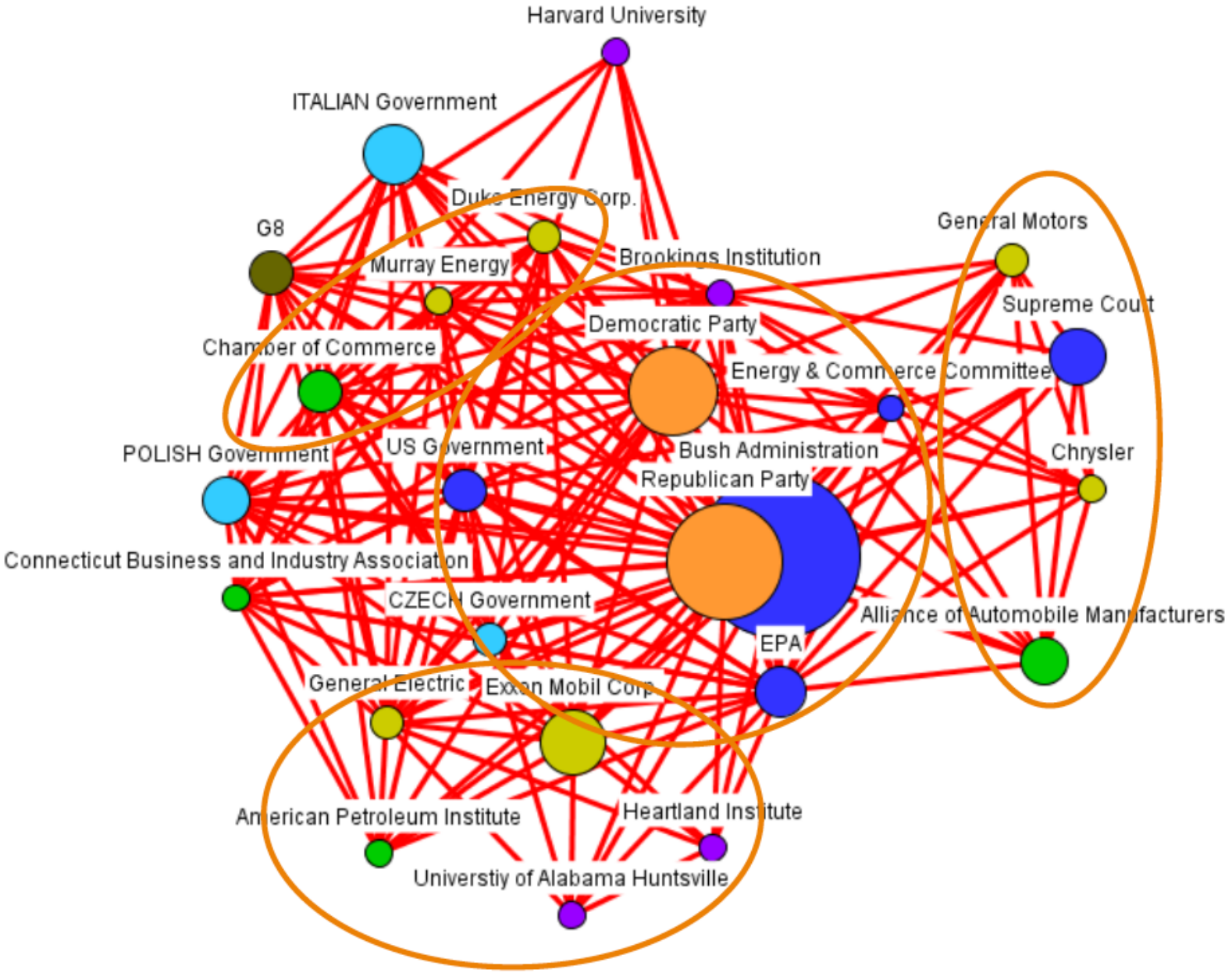
Cluster 1: "Science support"

Cluster 2: "Bi-Party Support Issues" (Not whole party but some representatives within each party)

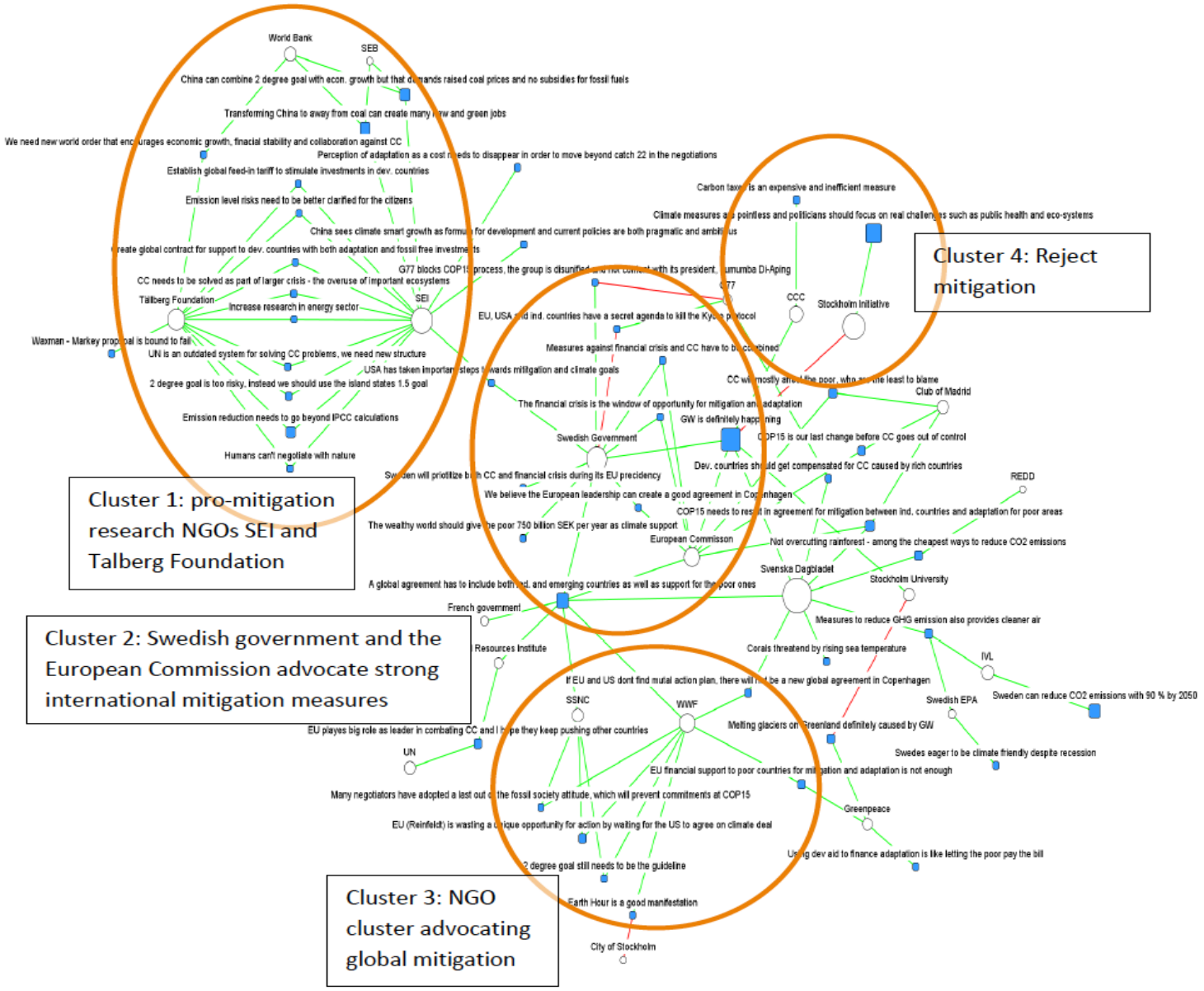
Cluster 3: "ENGO and Some Power Companies"

Cluster 4: "State Initiatives"

US Mitigation Opposition Core: Organizations that disagreed with the top six categories (cited two or more times, links mean both cited in support of same category)



Sweden 2009 Main Actor-Category Field in one conservative newspaper (five small clusters cut)



Explanatory Factors

- Factor 1: International versus domestic
  - International pole–Japan
    - Trying to find global legitimacy
  - Domestic pole–India
    - Colonial history
- Factor 2: Denial versus responsibility
  - Denial Pole—US
    - Political power of Fossil fuel companies
  - Responsibility Pole–Sweden
    - Social democracy institutions

Discussion

- Commonalities reflect widespread concern
  - Domestic ecological impacts, support for mitigation policies, support for alternative energy sources
- Global & domestic factors
  - Location in different global systems
  - Diffusion of UN norms versus US denialism
  - Sensitivity to world economic system

Theoretical Implications

- This global field defined by two main dimensions of “preferences”
- A la Bourdieu field
- The first factor led by countries that stress the UN norms of mitigation and actual mitigation policies shows that some cases accept global norms while others do not. Not strong support ifor global society, norm-diffusion theory (a la John Meyer and students).
- The second factor led by US denial of science and interest in continuing to use fossil fuels and clean up through geo-engineering is closest to the predictions of core capitalist hegemony by global systems theory (a la Wallerstein) but countered by other cases.
- Tension between the predicted effects from different theories
- Combining these two produces a hybrid theory of global field.

Implications for Global Cooperation?

Discussion

Future Goal: Test Hypotheses on Cross-Societal Variation in Mitigation Trajectories

- Global political theory
  - Global polity diffusion theory & expectations
  - Realist national interest theory & expectations
  - Burden sharing expectations
- National level factors (extremely complex)
  - Sensitivity to UN signals (IPCC science. . .)
    - Acceptance of Science (similar in Asia, accept science)
  - Orientations of elite decision-making strata
    - Relation to world politics power game, colonialism
  - Other issues more urgent – clean water, food, politics
    - Geophysical vulnerability to CC disasters
  - Power structure over newspapers
  - Power of fossil fuel interest groups
  - Governance capacity of government

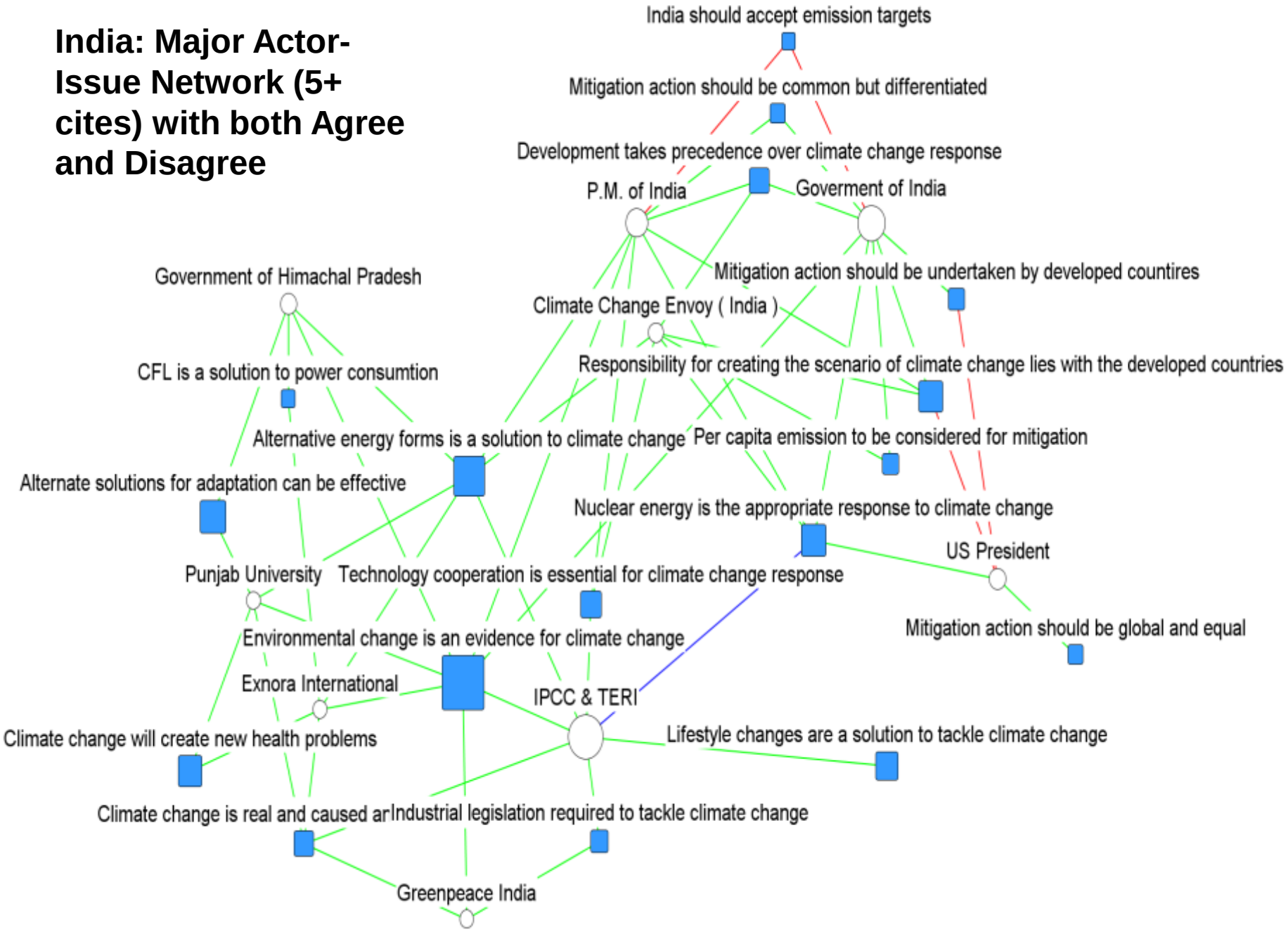
end

Extra slides

Discourse Network Analysis

- Will be presented in many of the papers
- Coded from newspaper articles on climate change
- Current comparison random sample of 2007-2008
- For any statements cited in an article
- Code four variables
- Actor, Institution, Category, Yes/No
- Category: “Climate Change is Human Caused”

India: Major Actor-Issue Network (5+ cites) with both Agree and Disagree



Experimental Design

- ***Research Design:*** *Cross-National Comparison*
  - Quasi-experimental design
  - Internal political processes (outside influence)
  - Placement within many types of global systems
  - 17+ cases of national level politics on CC
  - Background variables→process differences→
  - Outcome variance: policies, emissions trends.
  - Qualitative Comparative Analysis pathways

Methods

- ***Equivalent Data Collection*** in each country (case):

  Phase One: Content analysis

  of national media

  newspapers, national legislative records

  Phase Two: Survey

  of organizations (50-100) in government/society

  engaged in the CC issue and debates

  - Survey Questions:
    - policy stances, policy actions, resources
    - networks of communication, collaboration

Methods 3

- **Phase Three: Test hypotheses**
- on factors causing variation in national GHG trends
- *Three Exemplary Hypotheses:*
  - **Political:** *"the more that coalitions form to advocate a policy on mitigation, the more the government will enact those policies." (Social Learning Group 2001)*
  - **Cultural:** *"the more the culture accepts rational logic of science, the more discourse will favor IPCC-type analysis, leading to stronger support coalitions and increasing probabilities of mitigation"(Jasanoff 2005)*
  - **Social:** *"the more the society provides venues for egalitarian representative stakeholder participation in policy formation, the more will stakeholders favor IPCC-type analysis, leading to stronger support coalitions and increasing probabilities of mitigation" (UNFCCC 1992)*

Compon Project

- Comparing Climate Change Policy Networks
- Ultimate goal is to explain:
  - *What causal factors cause variation*
  - *in national evaluation of and action on CC*
  - *resulting in different national policies on CC and*
  - *national greenhouse gas (GHG) emissions trends*

Phase One: Newspaper Content Analysis

Level 1: CC coverage (1997-2010)

- Percent articles mentioning climate change (CC)
- Percent keyword articles mentioning IPCC

Level 2: CC issues in newspapers (2007-08)

- Society specific categories
  - Top substantive issues (Inductively derived)
  - Specific policy debates (India only)
- Cross-societal comparative “meta-categories”
  - Six frames, scale, other variables
  - 142 meta-cats/37mmcats/11 synthesis cats

L. 3: Discourse networks in newspapers (2007-08)

- Actors (cited in articles) to categories (issues) ANT

Phase Two: Policy Network Analysis

- Develop common network analysis survey instrument
- Different networks, organizational stances, reputation for influence, success in policy participation.
- Define major organizational actors in climate change policy process within society and internationally
- Interview 50 to 100 organizational representatives
- Develop comparisons between networks
- Reveals power structures, mobilization processes, political processes leading to mitigation policy (non) outcomes (emissions trajectories).
- Surveys completed in 12 cases (countries) @ fall, 2014

Project Analytical Stages/Strategies

I. Single Case Analysis

- Phase 1 Levels 1,2,3.
- Phase 2 network analysis

II. Cross-Case Comparison

- Level 2 categories: Frames and meta-categories
- Level 3 DNA comparison

III. Global Field Analysis

- Based on Level 2 and 3 case issue data

IV. Cross-case network analysis

- First example: UK/Germany comparison

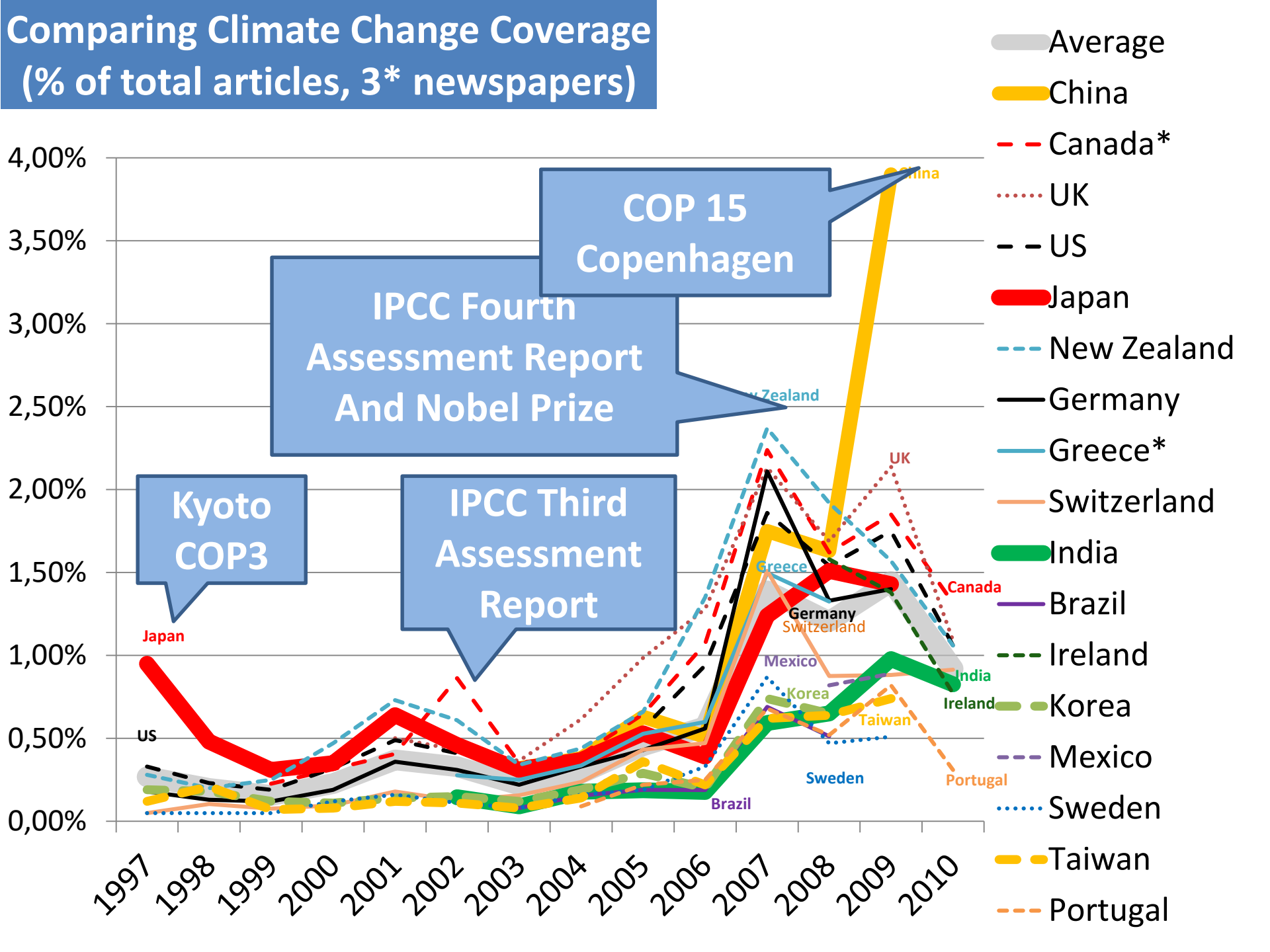
V. Qualitative Comparative Analysis

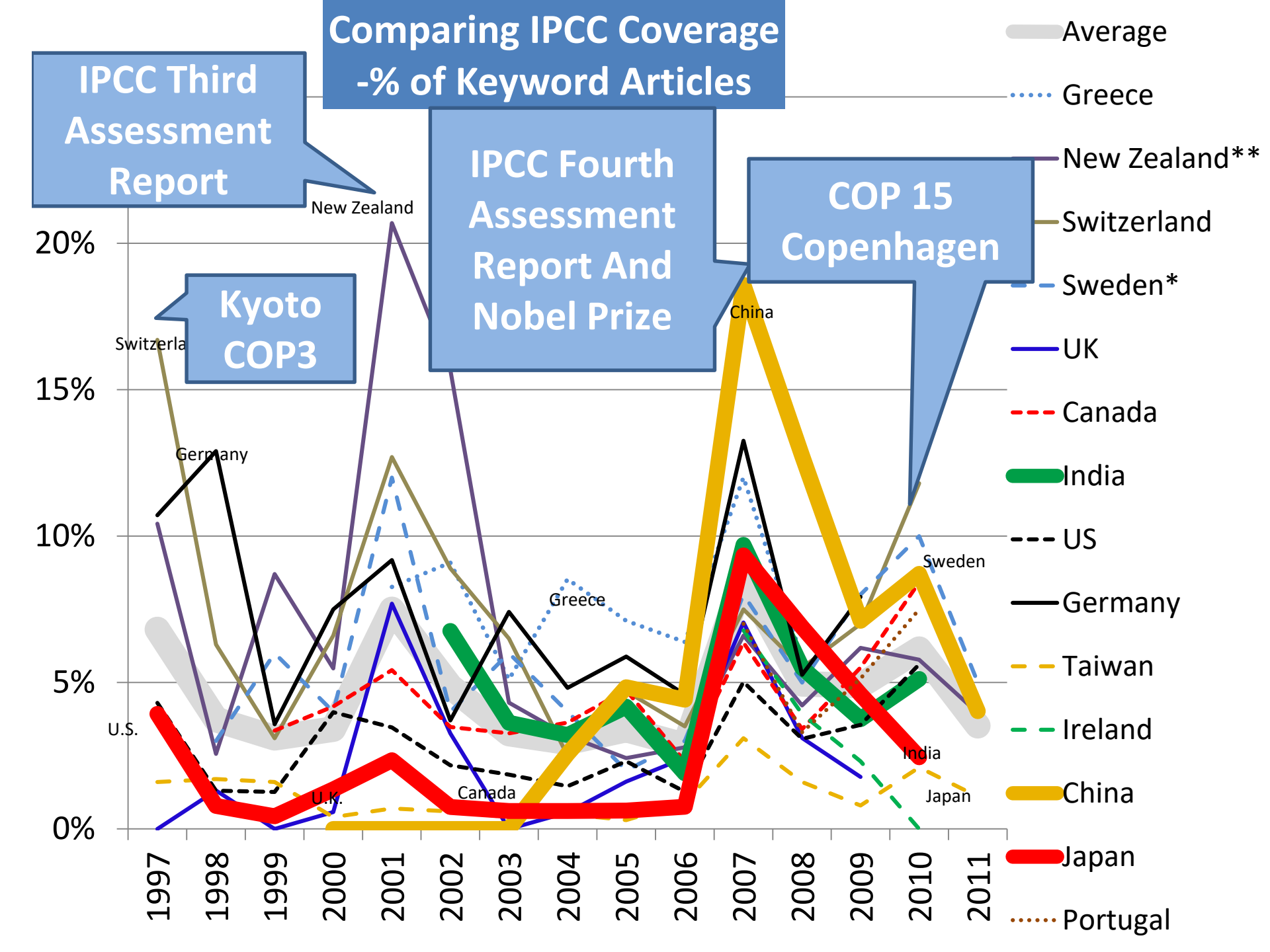
- Testing hypotheses on emissions trajectory pathways

Compon Project

- *COM*paring Climate Change *PO*licy *N*etworks--
- *Conduct cross-societal comparative research on*
- *Societal factors driving:*
  - *Domestic discourse and policy processes on mitigation*
  - *Stances in International Negotiations as contributing to dynamics of those meetings*
  - *Actual emissions trajectories (increase/decrease)*
- *Develop method for continuing into future*

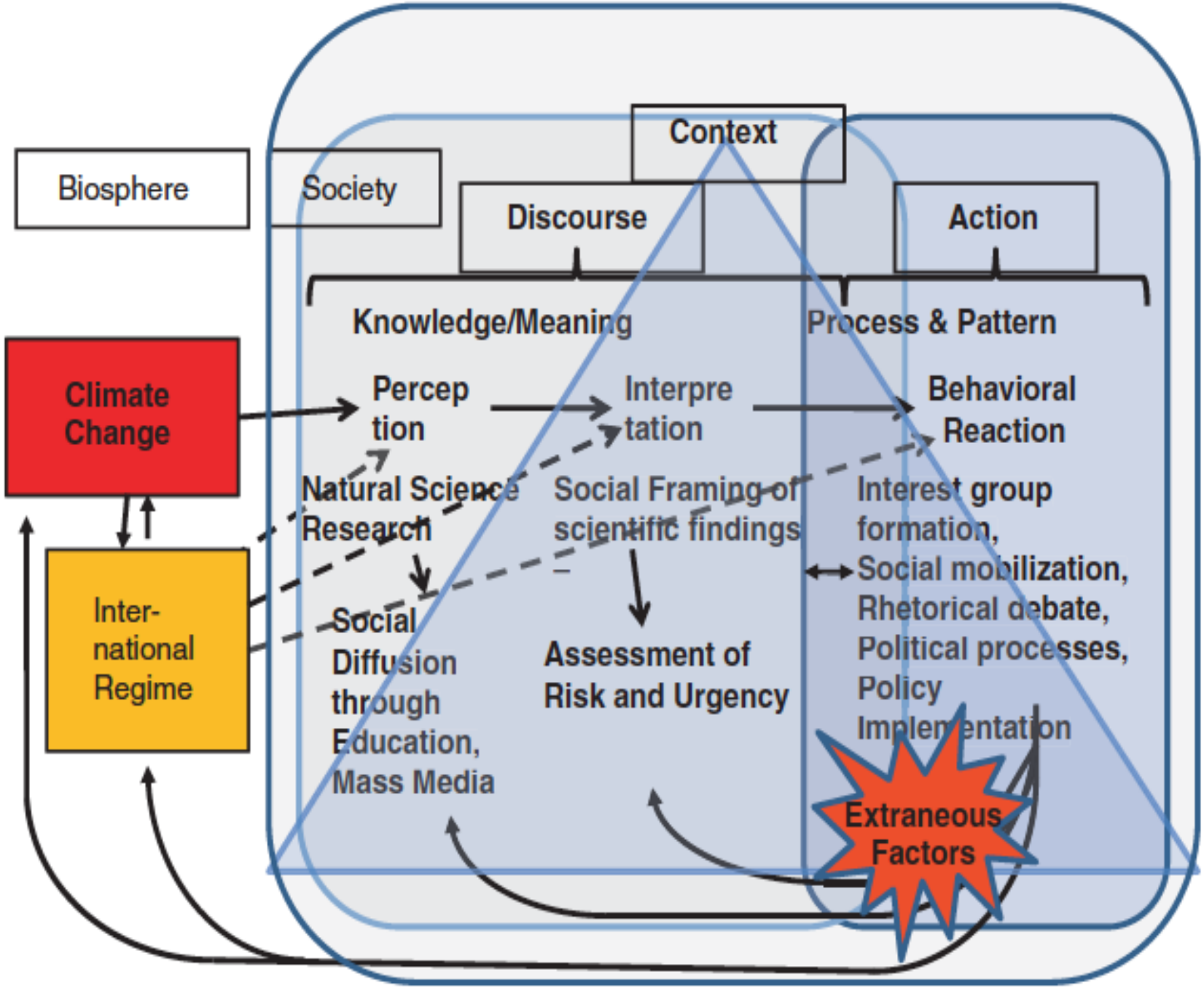
Comparing Climate Change Coverage (% of total articles, 3* newspapers)




Comparing IPCC Coverage
-% of Keyword Articles
IPCC Third Assessment Report
IPCC Fourth Assessment Report And Nobel Prize
COP 15 Copenhagen
Kyoto COP3
20%
15%
10%
5%
0%
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
New Zealand
Switzerla
Germany
China
Sweden
Greece
U.S.
U.K.
Canada
India
Japan
Average
Greece
New Zealand**
Switzerland
Sweden*
UK
Canada
India
US
Germany
Taiwan
Ireland
China
Japan
Portugal

Phase One: Newspaper Discourse Analysis
Level Two: Article Content Analysis
(to be added)

Phase One: Newspaper Discourse Analysis
Level Three: Discourse Network Analysis


Biosphere
Society
Context
Discourse
Action
Knowledge/Meaning
Process & Pattern
Climate Change
Percep tion
Interpre tation
Behavioral Reaction
Natural Science Research
Social Framing of scientific findings
Interest group formation,
Social mobilization,
Rhetorical debate,
Political processes,
Policy Implementation
Inter-national Regime
Social Diffusion through Education, Mass Media
Assessment of Risk and Urgency
Extraneous Factors