Science and the Policy Process

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National Center for Atmospheric Research

Governance and Knowledge Integration at the Science-Policy Interface

Quito, Ecuador

April 8-12, 2013

Goals:

1. Introduce the policy process and how institutions shape the use of science
2. Discuss methods for understanding the policy process
3. Present example from Mexico City

Components of the Policymaking Process

Actors

Institutions

Arenas

Policy Process, Institutions, and Science

Policy Outcome

Policy Process, Institutions, and Science

Policy Outcome

Problem Identification

Policy Process, Institutions, and Science

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Problem Identification

Policy Implementation and Evaluation

Member Reporting Unit	MOU Date	BMP 1	2	3	4	5	6	7	8	9	11	12	13	14	GPCD_ Res	GPCD_ Res+CII	Gal/ Con/ Day
Description *(BMP Conditions or GPCD basis)*																	
Legend																	
Performing																	
Partial																	
Not on Track																	
Not Reporting																	
Exemption / ALAEA																	
Alameda County Water District	9/12/91	◐	●	●	●	●	●	●	●	●	●	◓	◐		87.8	141.6	320.8
Atascadero Mutual Water Co.	6/30/96	◐	◓	●	●	◐	○	●	●	●	⊗	●	◐	●	148.3	175.2	430.5
Bear Valley Community Services District	10/14/93	◓	◓	●	●	◓	◓	◓	◐	◓	●	●	◓	◓	110.5	152.6	291.3
Calaveras Co. Water District, W/Public Works	10/10/91	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Coronado/Imperial Beach Service Area	11/4/91	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Felton Service Area	11/4/91	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Larkfield Service Area	11/4/91	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Los Angeles Service Area	11/4/91	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Monterey Service Area	11/4/91	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Sacramento Service Area	1/1/02	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. American Water - Valley Village/Thousand Oaks Service Area	11/4/91	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
Calif. Water Service Company - Antelope Valley District	9/26/91	○	●	●	●	○	○	●	●	◓	●	●	◓	●	197.6	213.9	766.7
Calif. Water Service Company - Bakersfield	9/26/91	◓	◓	◓	◓	○	○	◓	●	◓	●	●	◓	○	146.4	153.1	629.3
Calif. Water Service Company - Bear Gulch	9/26/91	○	◓	●	●	○	●	◓	●	◓	●	●	◓	◓	191.0	235.3	635.7
Calif. Water Service Company - Chico District	9/26/91	◓	◓	●	○	○	◓	●	●	◓	●	●	◓	◓	147.2	146.0	575.9
Calif. Water Service Company - Dixon	9/26/91	◓	◓	●	●	○	○	◓	●	◓	●	●	◓	◓	133.1	162.9	442.1
Calif. Water Service Company - Dominguez	9/26/91	○	◓	●	●	○	◓	●	●	◓	●	●	◓	◓	113.4	261.2	354.5
Calif. Water Service Company - East Los Angeles	9/26/91	○	●	●	●	○	◓	●	●	◓	●	●	◓	◓	54.4		
Calif. Water Service Company - Hermosa / Redondo	9/26/91	○	●	●	●	○	●	●	●	◓	●	●	◓	◓	94.0	122.4	311.8
Calif. Water Service Company - Kern River Valley District	9/26/91	○	●	●	●	○	○	●	●	◓	●	●	◓	●	212.7	210.7	214.8
Calif. Water Service Company - King City	9/26/91	○	◓	●	●	○	○	●	●	◓	●	●	◓	◓	75.5	129.2	431.3
Calif. Water Service Company - Livermore	9/26/91	○	◓	●	●	○	●	●	●	◓	●	●	◓	◓	152.2	190.8	463.7
Calif. Water Service Company - Los Altos District	9/26/91	○	○	●	●	◓	●	●	●	◓	●	●	◓	◓	173.4	232.0	539.2

Policy Process, Institutions, and Science

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Calif. American Water - Los Angeles Service Area	11/4/91	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗			
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Scientific Information

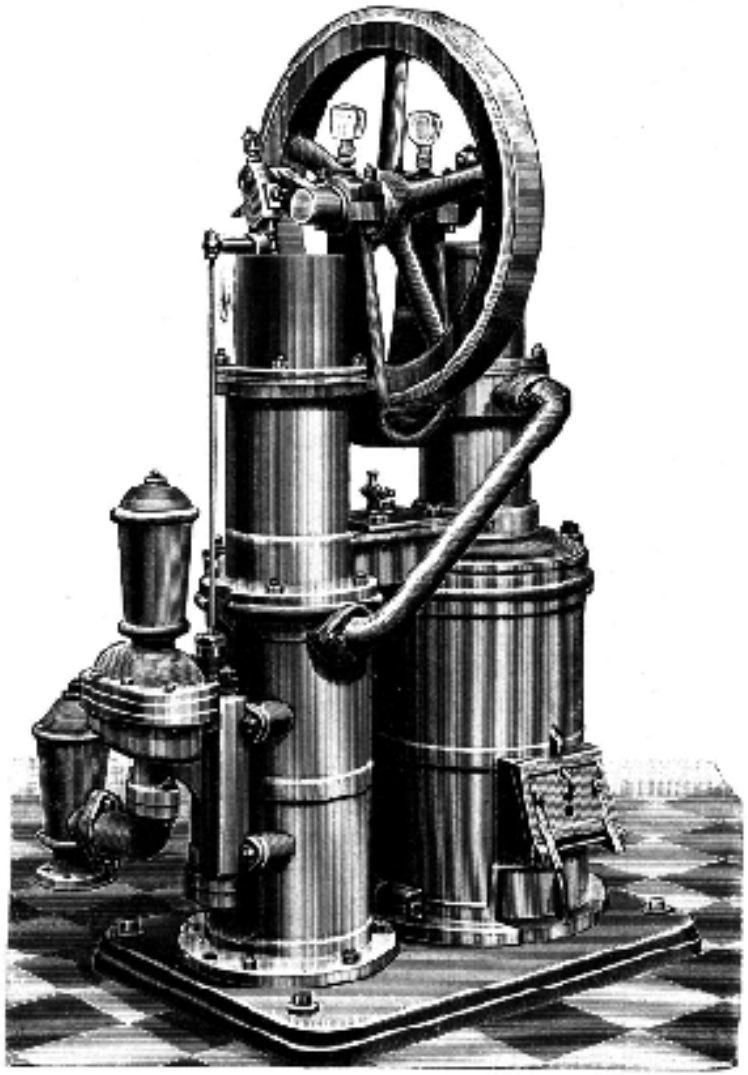
Institutions:

The rights, rules and procedures that structure behavior and decision making outcomes.

Young, Oran. 2002. *The Institutional Dimensions of Environmental Change.* Cambridge, MA: MIT Press.

They are what a society or community uses to make collectively binding decisions, implement these decisions, resolve disputes, and punish rule-breakers.

Rothstein, Bo. 1996. “Political Institutions: An Overview” in *A New Handbook of Political Science.* New York, NY: Oxford University Press.



Institutions:

1. Structural features of decision making that transcend individuals

2. (Relatively) stable over time

3. Able to affect behavior

4. Able to create a shared sense of value and meaning

Peters, B. Guy. 1999. *Institutional Theory in Political Science.* New York: Continuum Publishing.

Policy Process, Institutions, and Science

Voting rules in a legislature

Decision making procedures in international negotiations

Public participation processes in city code revisions

- Institutions help determine:
  - What information is collected
  - What information is used
  - What problems are detected
  - Who participates in policy making
  - When policy making happens
  - How and when policies are evaluated

- Institutions help determine:
  - What information is collected
  - What information is used
  - What problems are detected
  - Who participates in policy making
  - When policy making happens
  - How and when policies are evaluated

- No perfect model…but we construct them

Qualitative Tools for Understanding the Policy Process

Qualitative Tools for Understanding the Policy Process

1. Case Studies
   - "Real world" theory testing
   - Theory building
   - "Clinical" case studies
   - Descriptive

De Vaus. Research Design in Social Research

Example: Testing theory with cases

What effect does a national research program have on local disaster reduction policies?

2. Focus Groups

- Group of individuals (6-12) engaged in a guided discussion on a topic
- Purposively selected
  - Typically don't represent a random segment of the population

Example: Gaining insight into a group's behavior

Where do environmental administrators get their information from and why?

Qualitative Tools for Understanding the Policy Process

3. Interviews
   - Unstructured
   - Semi-structured
   - Structured

Example: Understanding process and authority

How does a disaster agency make decisions about program priorities?

Qualitative Tools for Understanding the Policy Process

4. Observation
   - People
   - Groups
   - “Embedded research” and ethnography
   - More or less participatory

Example: Understanding a culture

What are the underlying norms and motivations in disaster response in Country A?

Qualitative Tools for Understanding the Policy Process

5. Document analysis
   - Content based analysis
   - Coding schemes
   - Can often be quantified

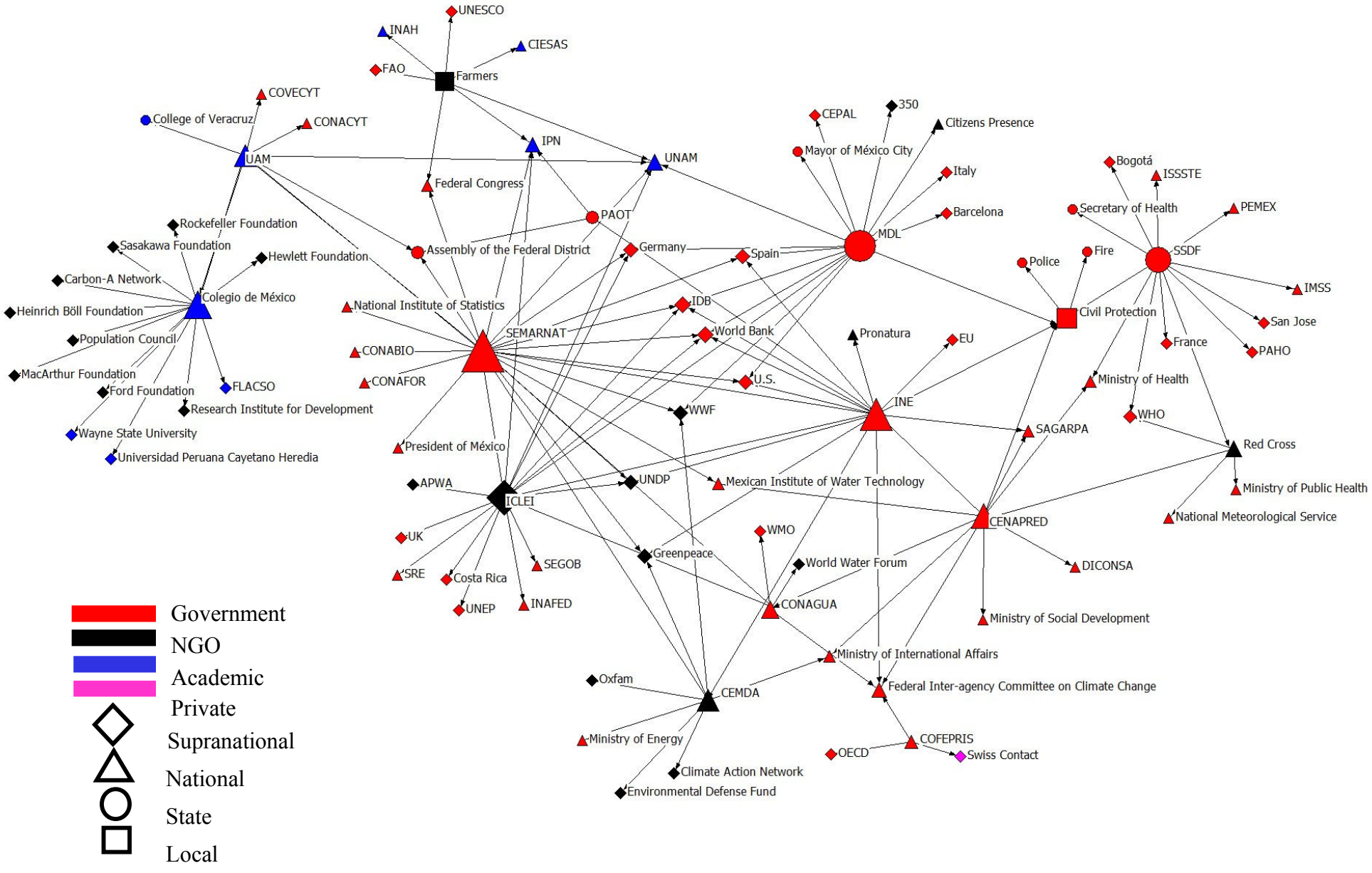
Example: Legal content and treatment of environmental issues

How is scientific uncertainty represented in state-level policies?

Qualitative Tools for Understanding the Policy Process

6. Network analysis
   - Actor relationships
     - Different qualities and characteristics
   - Descriptive and/or analytical

Mexico City


UNESCO
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College of Veracruz
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PAOT
Rockefeller Foundation
Sasakawa Foundation
Hewlett Foundation
Assembly of the Federal District
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Heinrich Böll Foundation
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Research Institute for Development
WWF
Wayne State University
Universidad Peruana Cayetano Heredia
President of México
APWA
UNDP
Mexican Institute of Water Technology
ICLEI
UK
WMO
Greenpeace
SRE
Costa Rica
SEGOB
World Water Forum
UNEP
INAFED
CONAGUA
Oxfam
CEMDA
Ministry of International Affairs
Federal Inter-agency Committee on Climate Change
Ministry of Energy
COFEPRIS
OECD
Swiss Contact
Climate Action Network
Environmental Defense Fund
CEPAL
350
Citizens Presence
Mayor of México City
Italy
Barcelona
MDL
Pronatura
EU
INE
SAGARPA
CENAPRED
DICONSA
Ministry of Social Development
Bogotá
ISSSTE
Secretary of Health
PEMEX
SSDF
Police
Fire
IMSS
Civil Protection
San José
France
PAHO
Ministry of Health
WHO
Red Cross
Ministry of Public Health
National Meteorological Service
Government
NGO
Academic
Private
Supranational
National
State
Local

Qualitative Tools for Understanding the Policy Process

Traditional Criteria for Judging Quantitative Research	Alternative Criteria for Judging Qualitative Research
internal validity	credibility
external validity	transferability
reliability	dependability
objectivity	confirmability

Guba, E.G. and Y.S. Lincoln. 1994

Qualitative Tools for Understanding the Policy Process

1. Credibility
   - Results are credible or believable from the perspective of the participant
2. Transferability
   - Degree to which results can be generalized or transferred; responsibility of producer and user
3. Dependability
   - Account for changing context of the research and how this affects the research
4. Confirmability
   - Degree to which results could be confirmed or corroborated by others
     - Document procedures
     - “Devil’s advocate”
     - Negative instances
     - Data audit

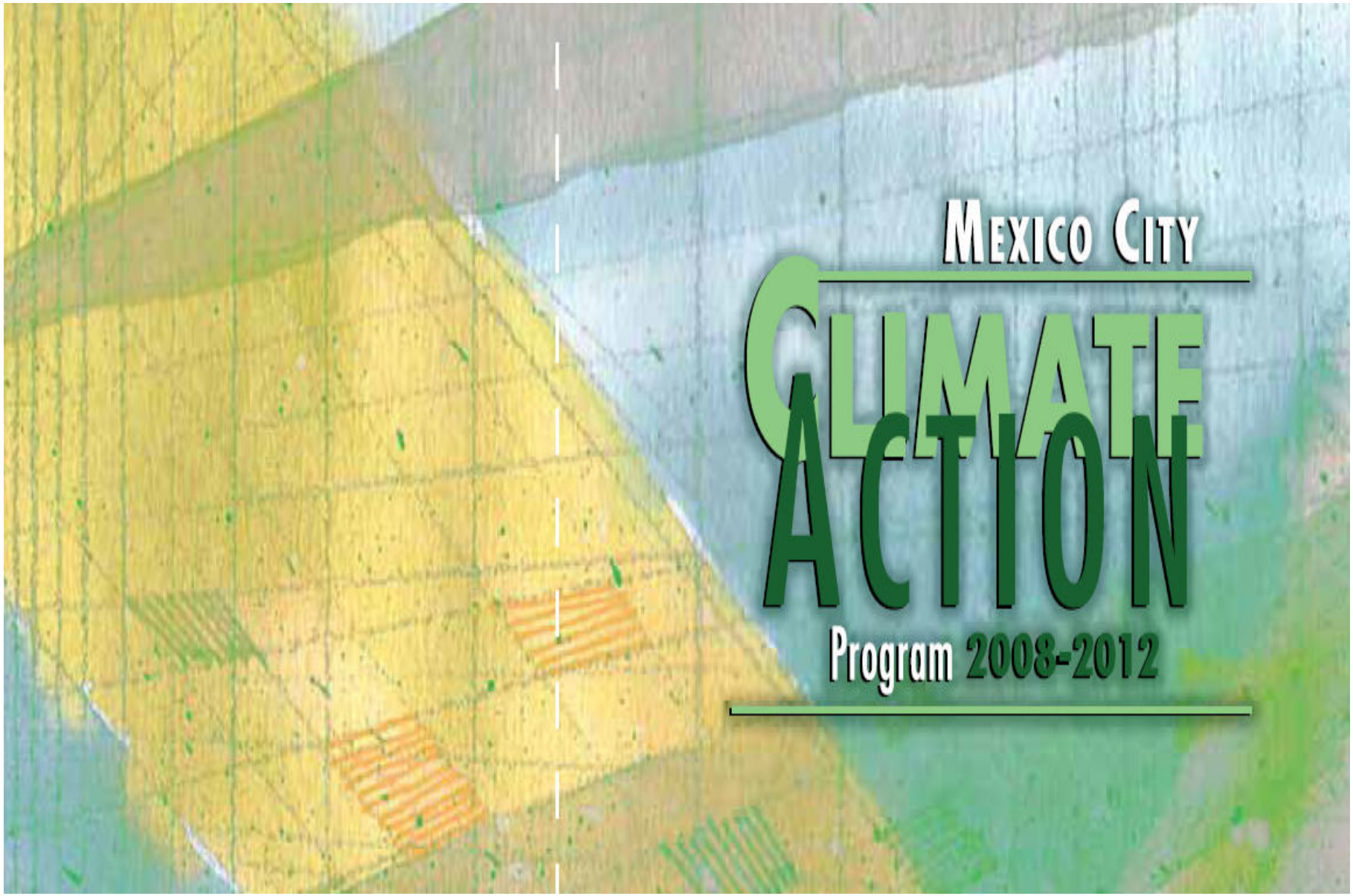
Guba, E.G. and Y.S. Lincoln. 1994

Qualitative Tools for Understanding the Policy Process

Sampling:

- Purposive
  - Tailored to research needs
- Quota
  - Representatives from important groups
- Snowball
  - Recommendations and contacts

Example from Mexico City

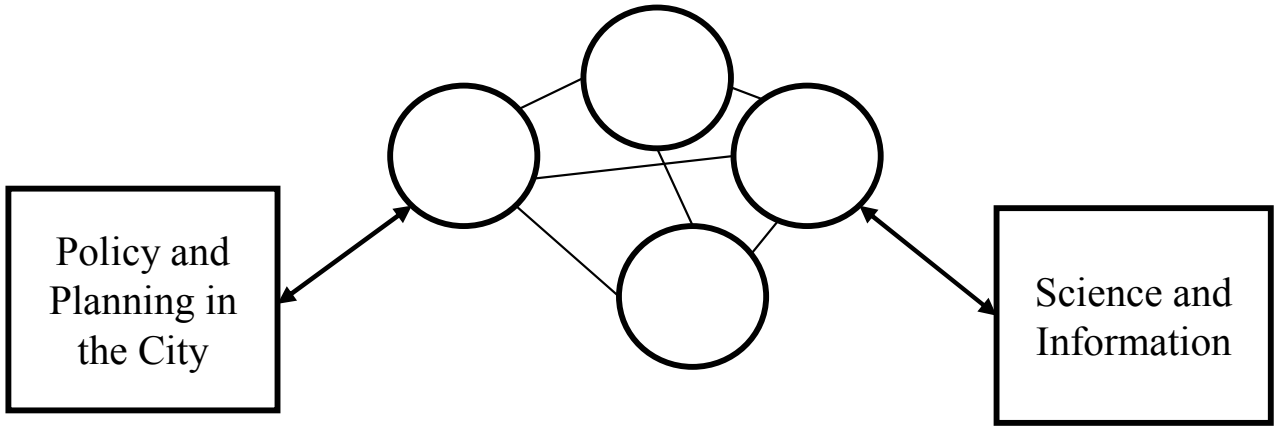


Example from Mexico City

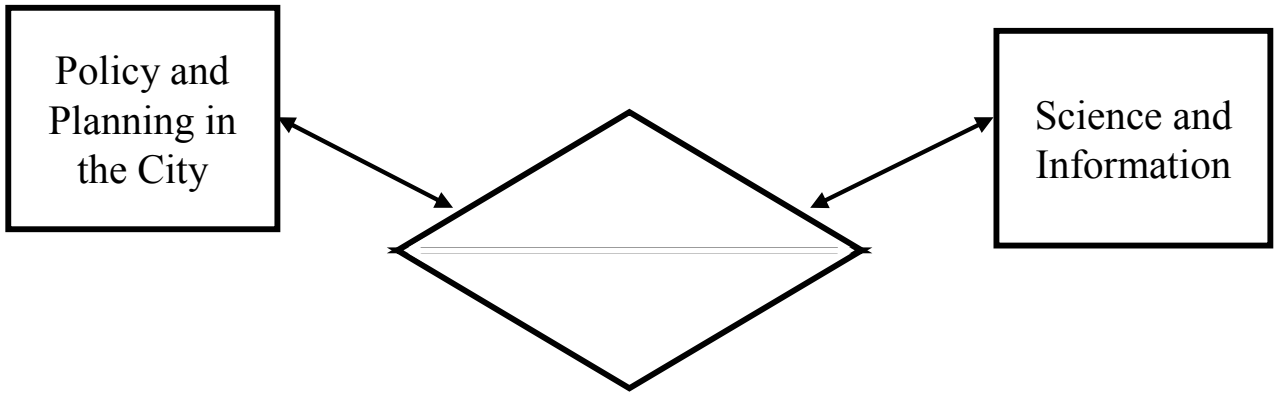
- Interviews with decision makers, planners, NGOs, academics
  - 15 in Mexico City
  - Strategic sampling plus snowball
- Planning and legal documents

Structuring the Science-Policy Interface

Expert Network



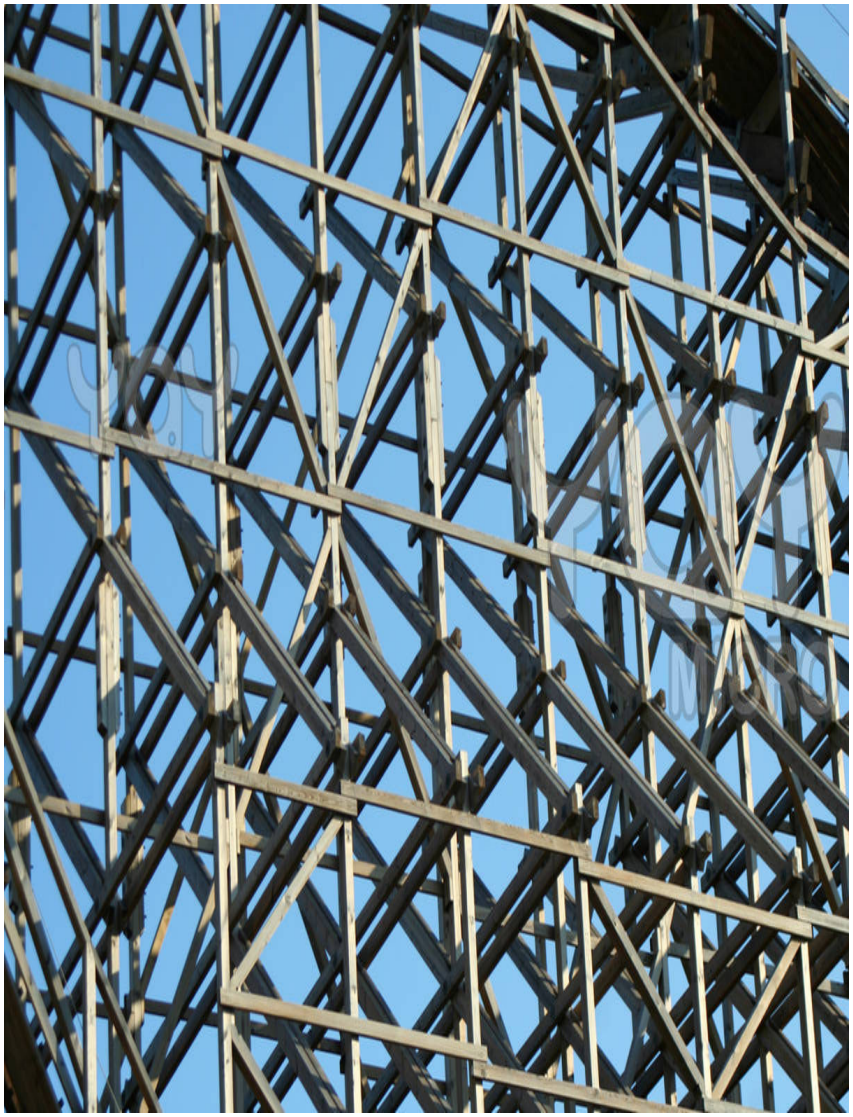
Boundary Organization



Example from Mexico City

- Heavy investment in institutionalization
  - To ensure that the plan's success is not contingent on who is in power

Example from Mexico City



Institutionalization

1. Clear and relevant sources of authority
2. Shared sets of practices and codes of conduct
3. Adequate and reliable funding streams
4. Accountability mechanisms

Example from Mexico City

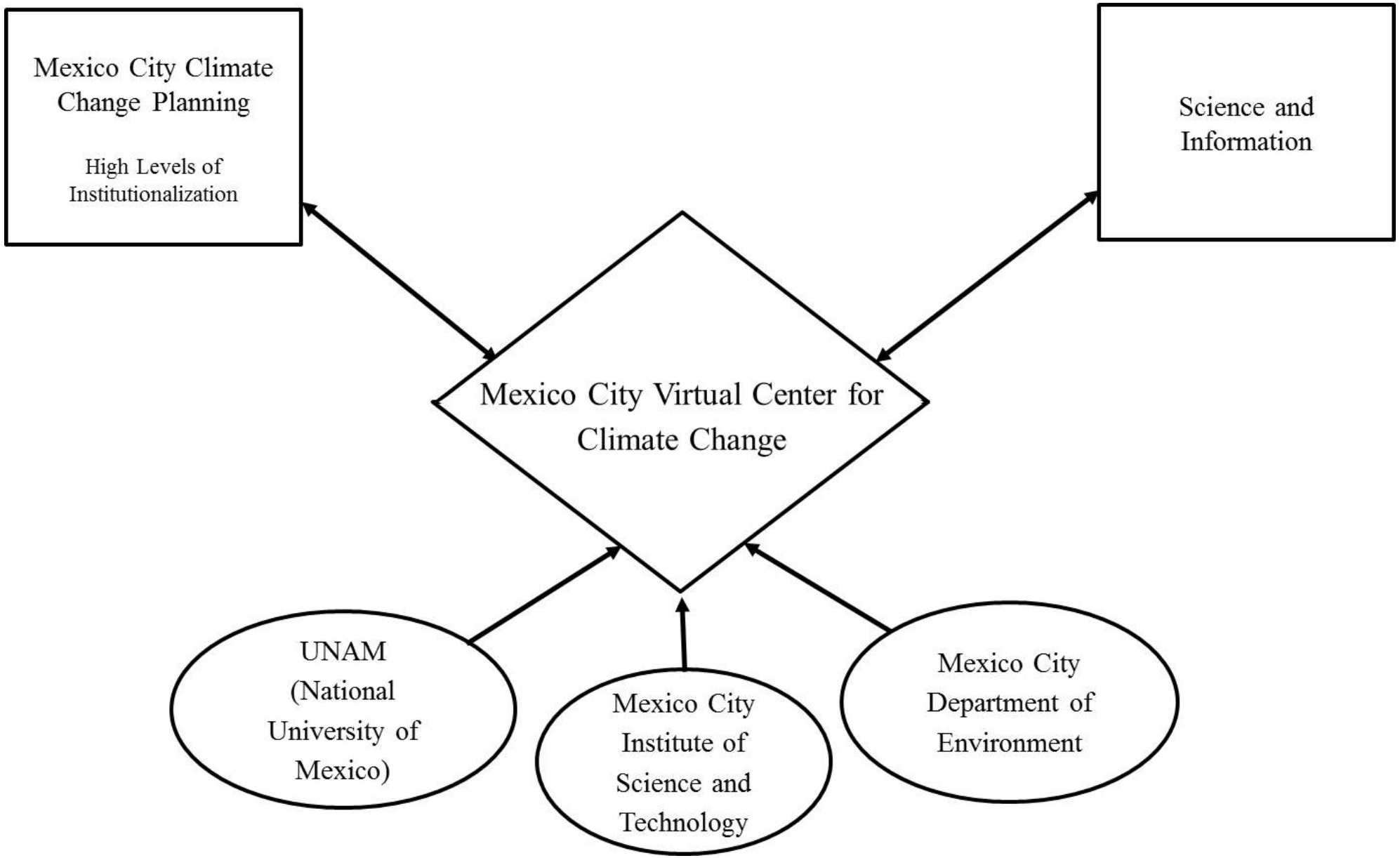
- Heavy investment in institutionalization
  - To ensure that the plan's success is not contingent on who is in power
- Development of the Virtual Center for Climate Change for science-policy interactions

Example from Mexico City

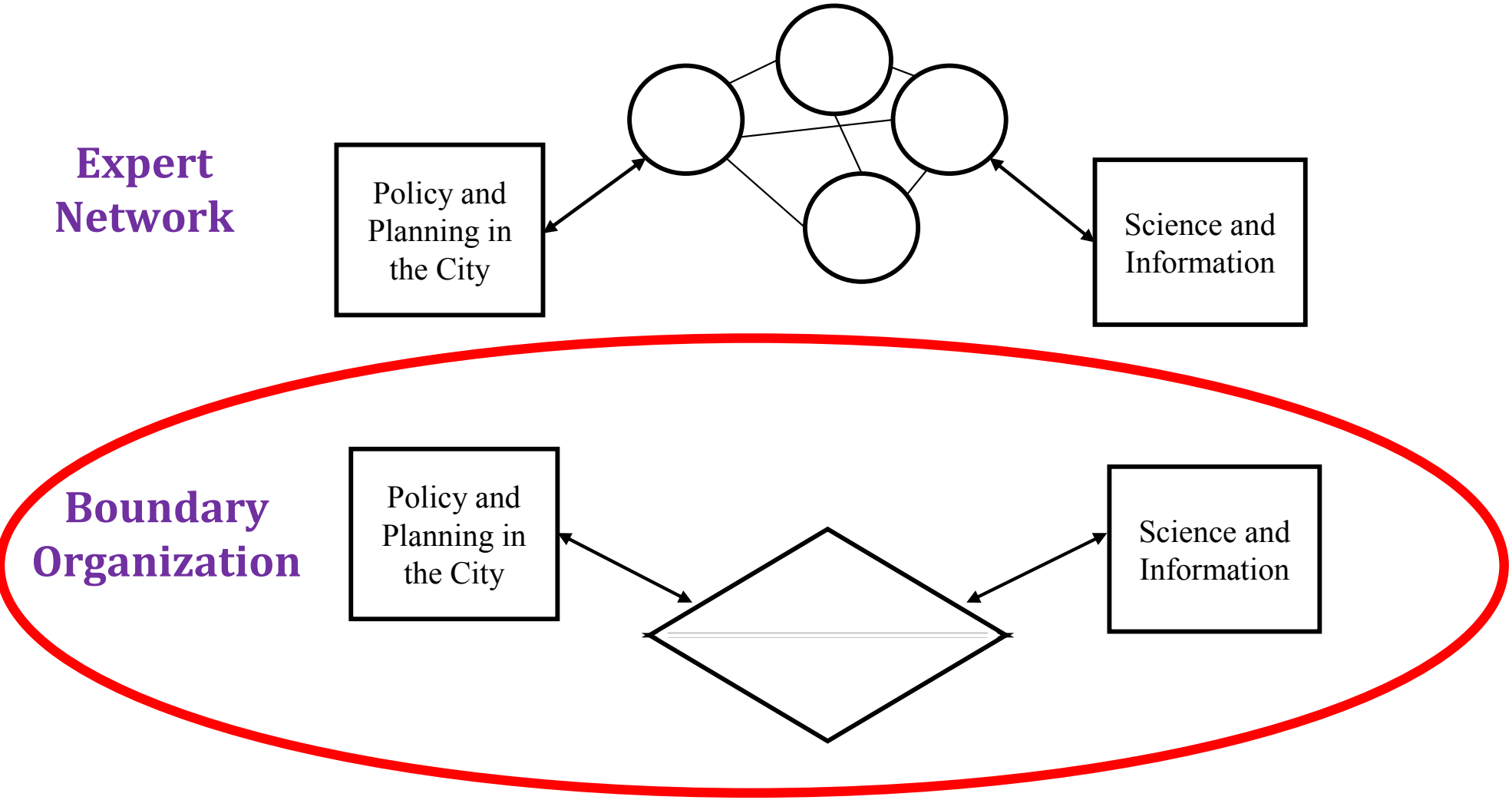
"The most important information we get through the Virtual Center for Climate Change…their work is important because they are experts in the field and the information they provide is very important for developing public policy."

Mexico City official

Example from Mexico City



Structuring the Science-Policy Interface



Example from Mexico City

Insights:

1. Science and policy can interact through different channels
2. The structure of the science-policy relationship is shaped by the institutionalization of the policy area
3. Important tradeoffs between the two models

Goals:

1. Introduce the policy process and how institutions shape the use of science
2. Discuss methods for understanding the policy process
3. Present example from Mexico City

Thank You

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