

# The tangled thread: Fragmentation of biogas governance in Indonesia

Ibnu Budiman

Supervisor: Mattijs Smits

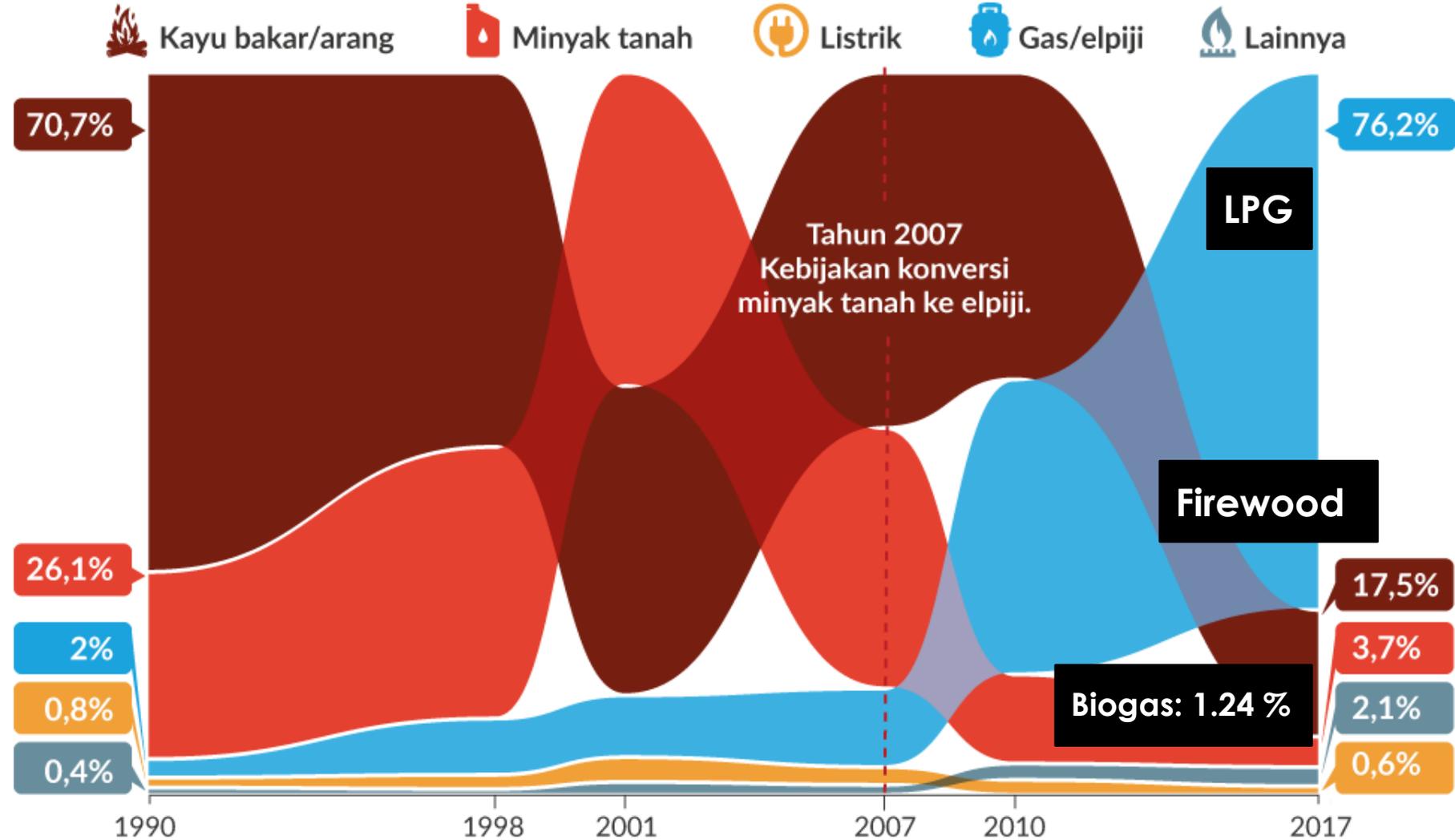


# 1. Intro:



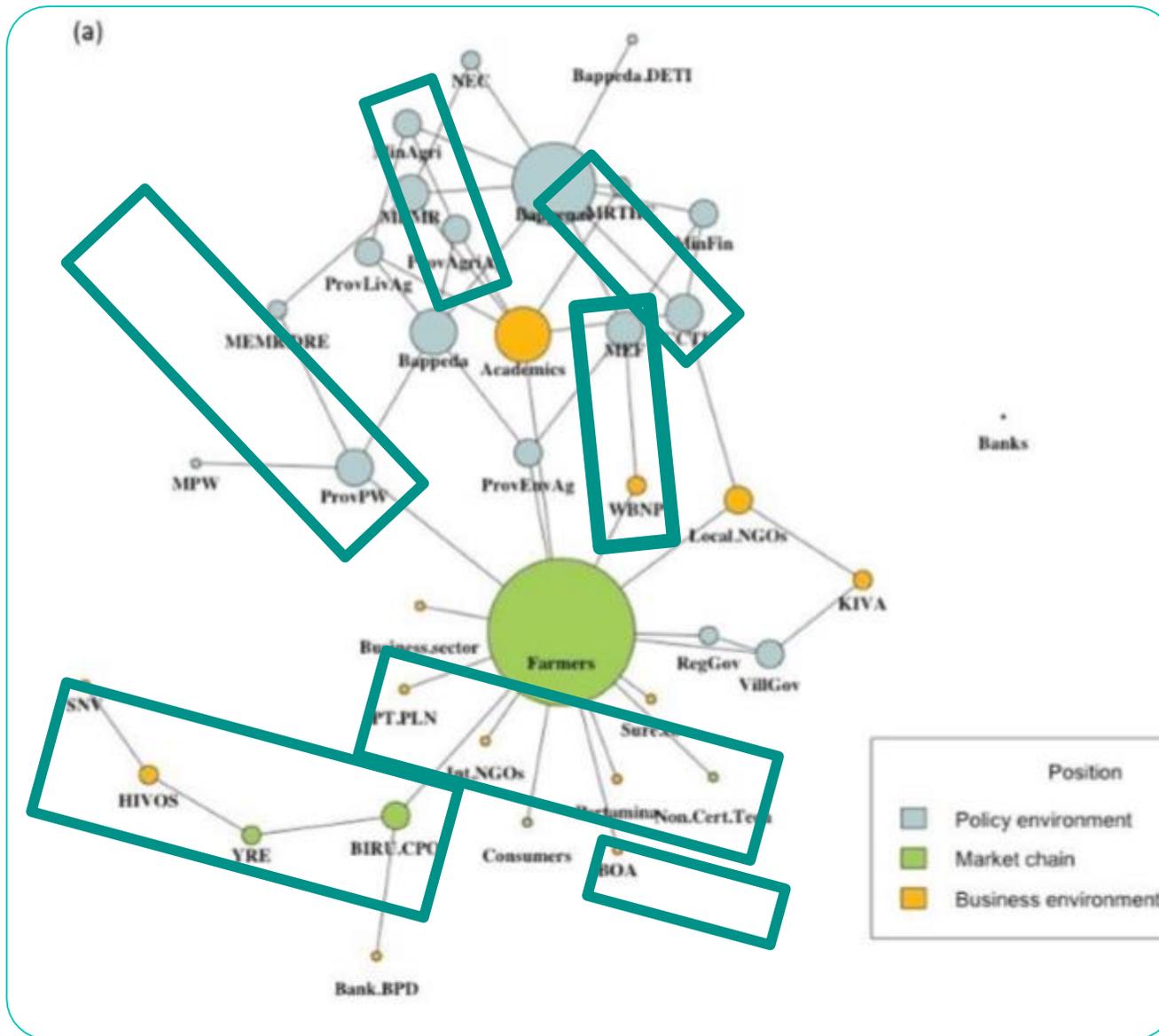
## Household cooking fuels

1990 - 2017



- Persentase rumah tangga yang menggunakan bahan bakar memasak berdasarkan jenisnya.
- Gas/elpiji (elpiji 5,5 kg, elpiji 12 kg, elpiji 3 kg dan gas kota/biogas).
- Kayu bakar (kayu, arang dan briket).

Sumber : Badan Pusat Statistik



Problem:  
multiple barriers to  
dissemination

- Lengthy bureaucratic process to apply for (voluntary) biogas programs
- Time-consuming process of feedstock; low quality of installation
- Social acceptance: Cultural food preferences
- **Several policies + various projects: Fragmented governance structure**

Actors network in biogas programs (Transrisk, 2017)

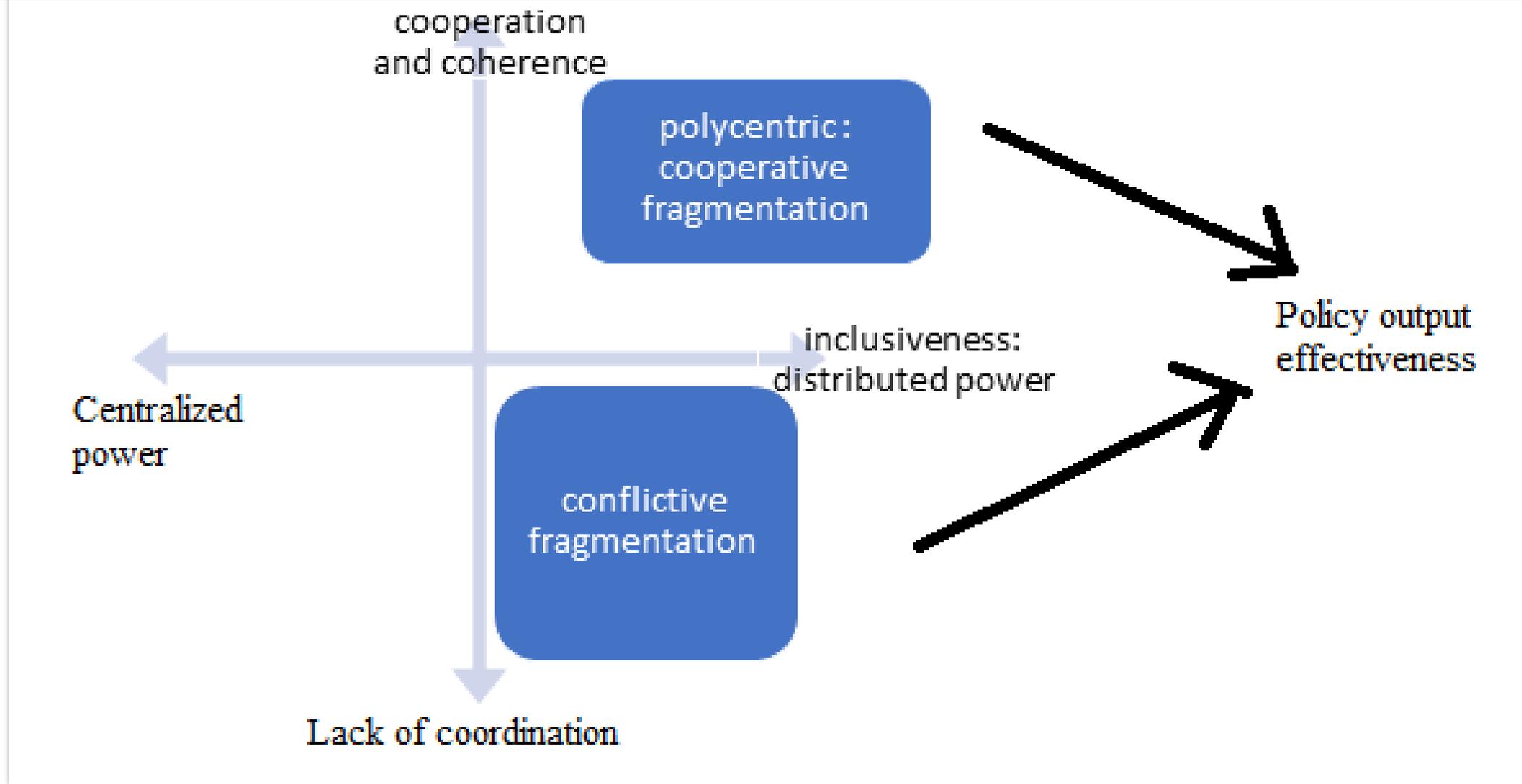
# Research questions

- What are the **governance arrangements, characteristics, and dissemination barrier** of biogas programs in Indonesia?
- How is the **coordination and distribution of power** within fragmented biogas architecture?
- How does the coordination and power distribution within the architecture **affect the dissemination of biodigester and the knowledge transfer**?

*How did the fragmentation of biogas programs in Indonesia affect the dissemination of biodigester and the knowledge transfer, between 2007 to 2017?*

Study population:  
Hivos, Ministry of energy, Ministry of Agriculture,  
Ministry of Environment-Forestry  
Related stakeholders

## 2. The theoretical and conceptual framework



# 3. Toolkit of qualitative method

First phase

Semi-structured interviews  
10-15 informants  
purposive sample

Checkpoint: Data & info assessment,  
need for more?

Second phase

Semi-structured interviews  
supporting informants  
snowball sample

Review of relevant documents

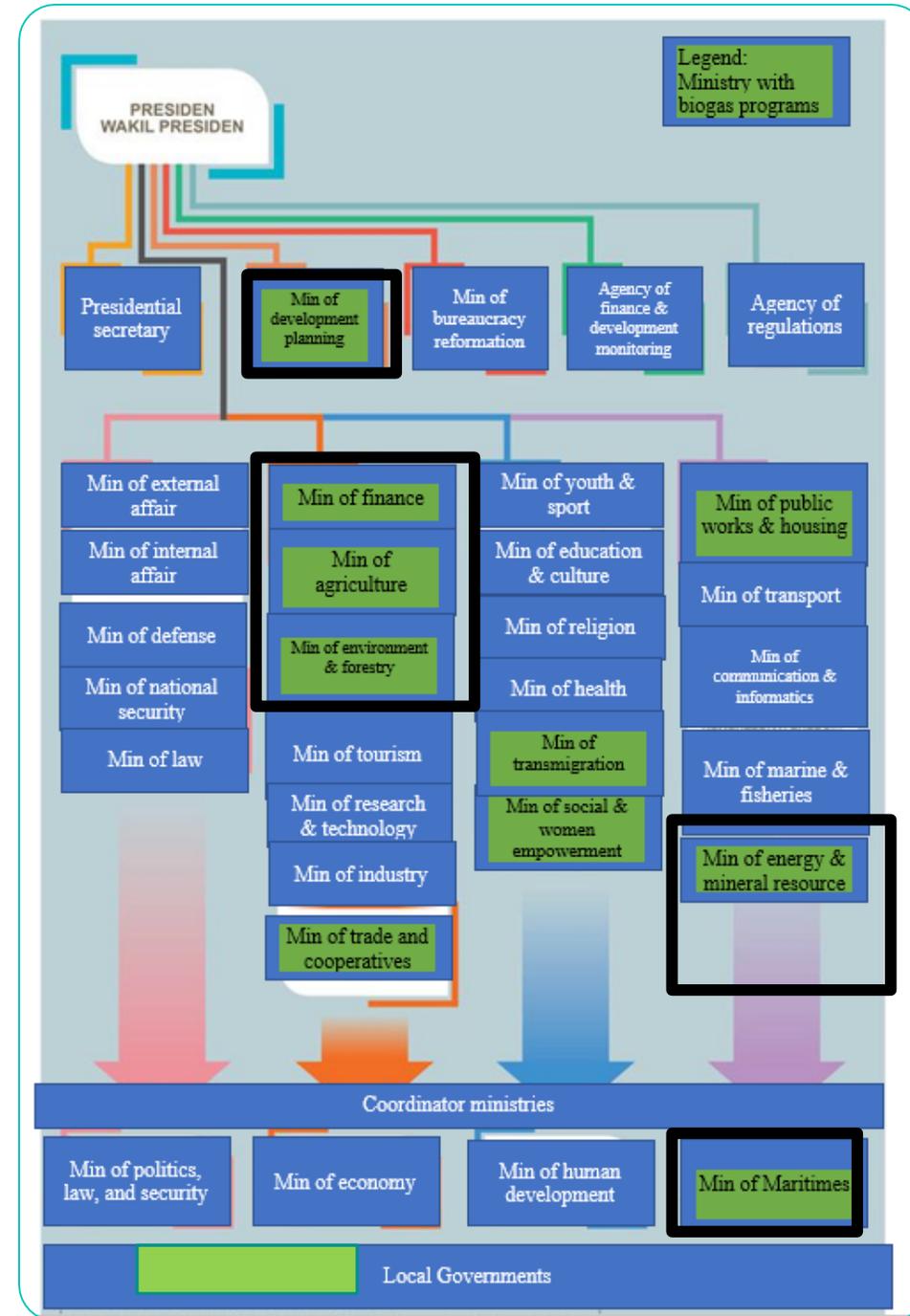
Qualitative analysis

Chapter 4:  
• Governance analysis

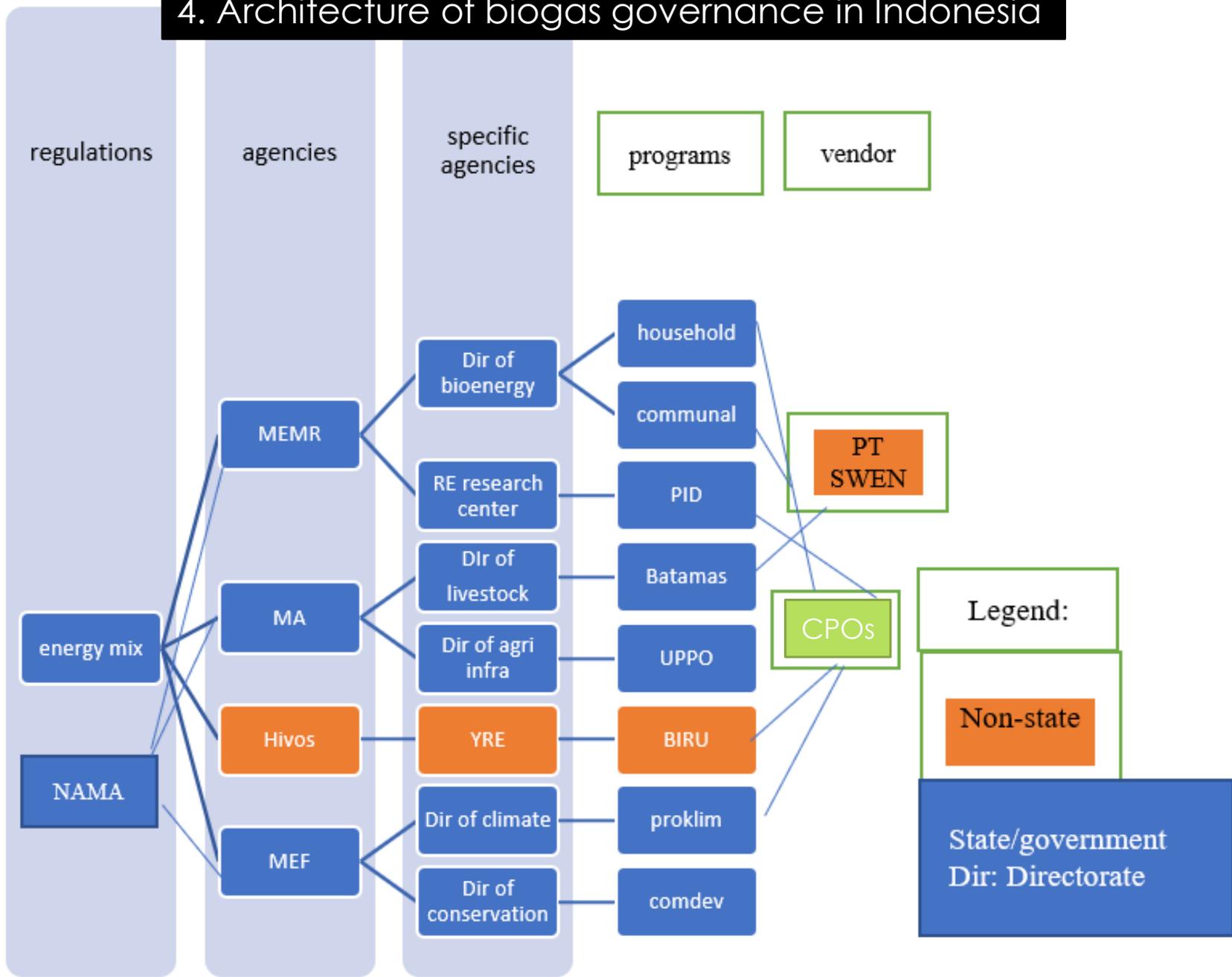
Chapter 5

- Regime analysis
- Policy output analysis

# 4. Biogas-related programs within Indonesian ministerial architectures



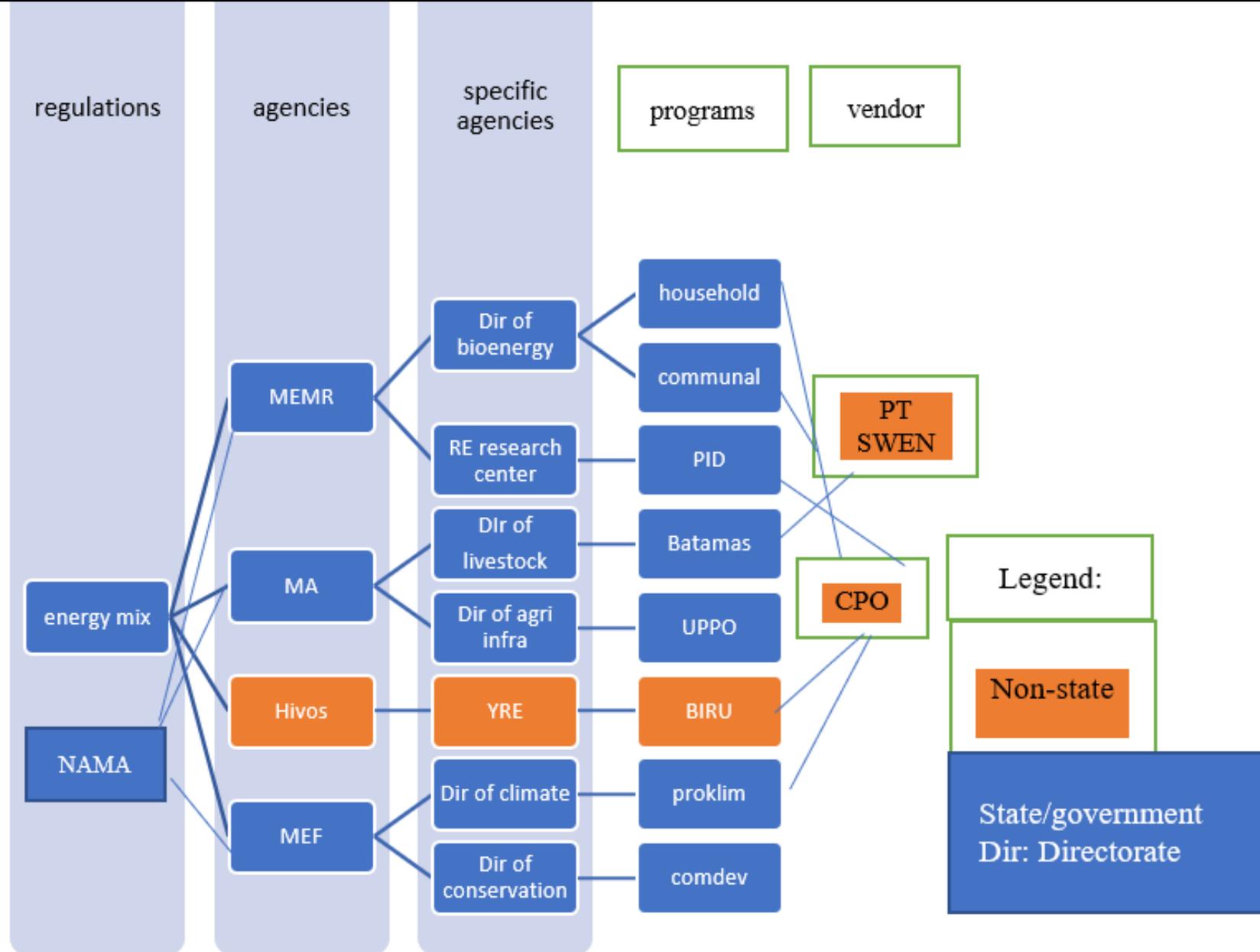
# 4. Architecture of biogas governance in Indonesia



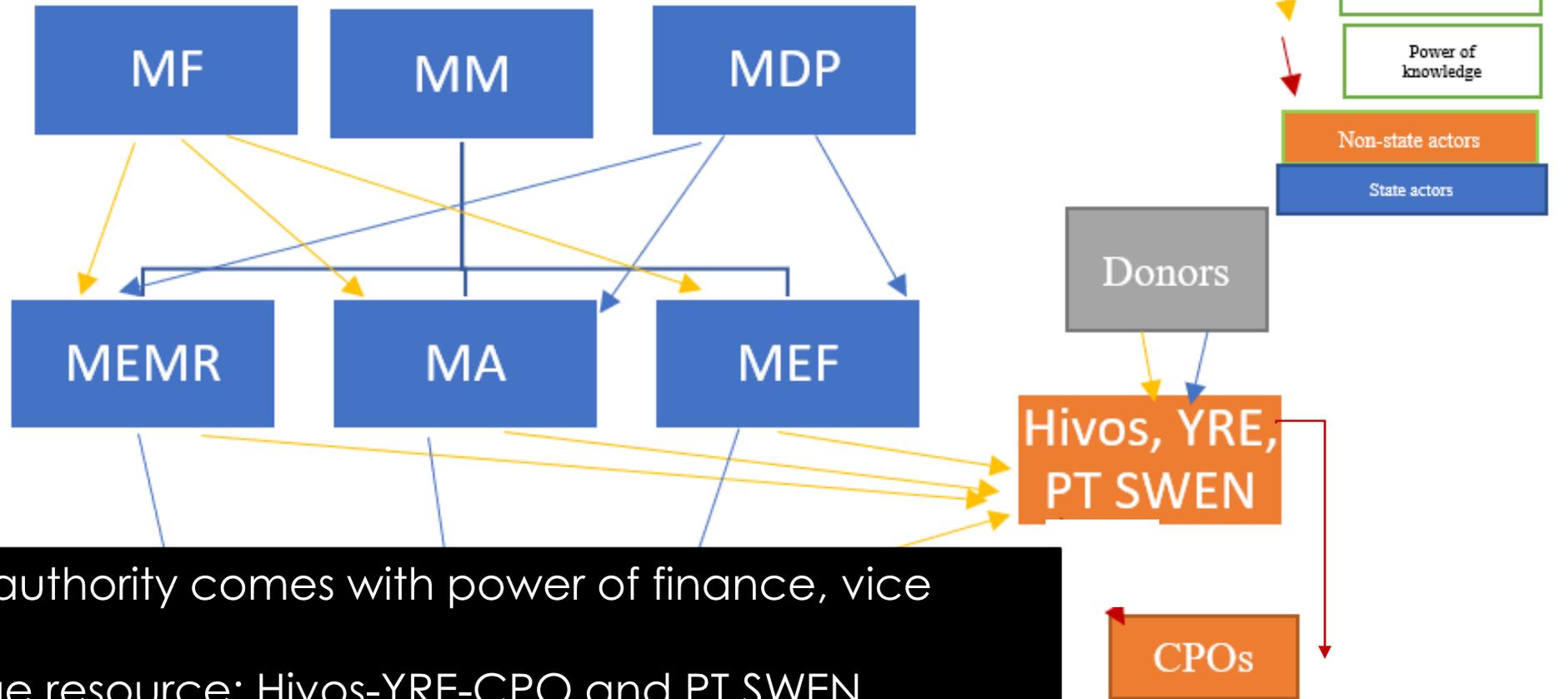
# Characteristics of various biogas programs from different institutions

	Govt programs	BIRU
Partners	Local govt, vendor, (NGO, university)	Govts, local NGO, <b>companies, cooperatives</b>
(Delivery) approach	Grant (full subsidy)	(Semi)-commercial
Funding	Govt, (CSR, community)	<b>Foreign donors, govt, CSR, users, carbon trading</b>
Number of digesters disseminated	12K	<b>22K</b>
The assistance/ information provided	Training	Training, <b>after sale service</b>

# Coordination and distribution of power within biogas regime in Indonesia

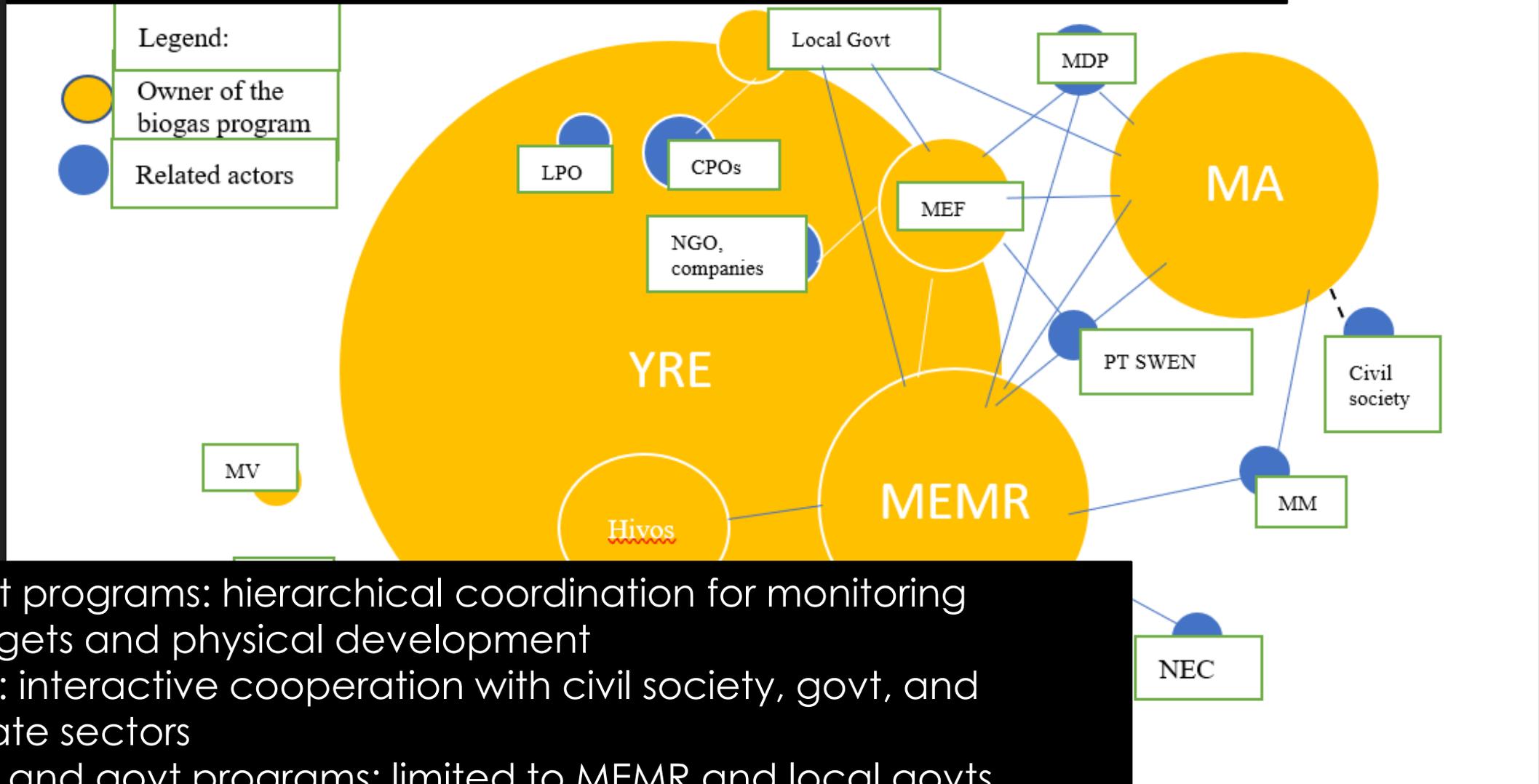


## 5. Distribution of power resources: authority, finance, techno-scientific information



- Power of authority comes with power of finance, vice versa
- Knowledge resource: Hivos-YRE-CPO and PT SWEN
- Distribution of power improves the speed of implementation

## Coordination and cooperation among actors in biogas programs

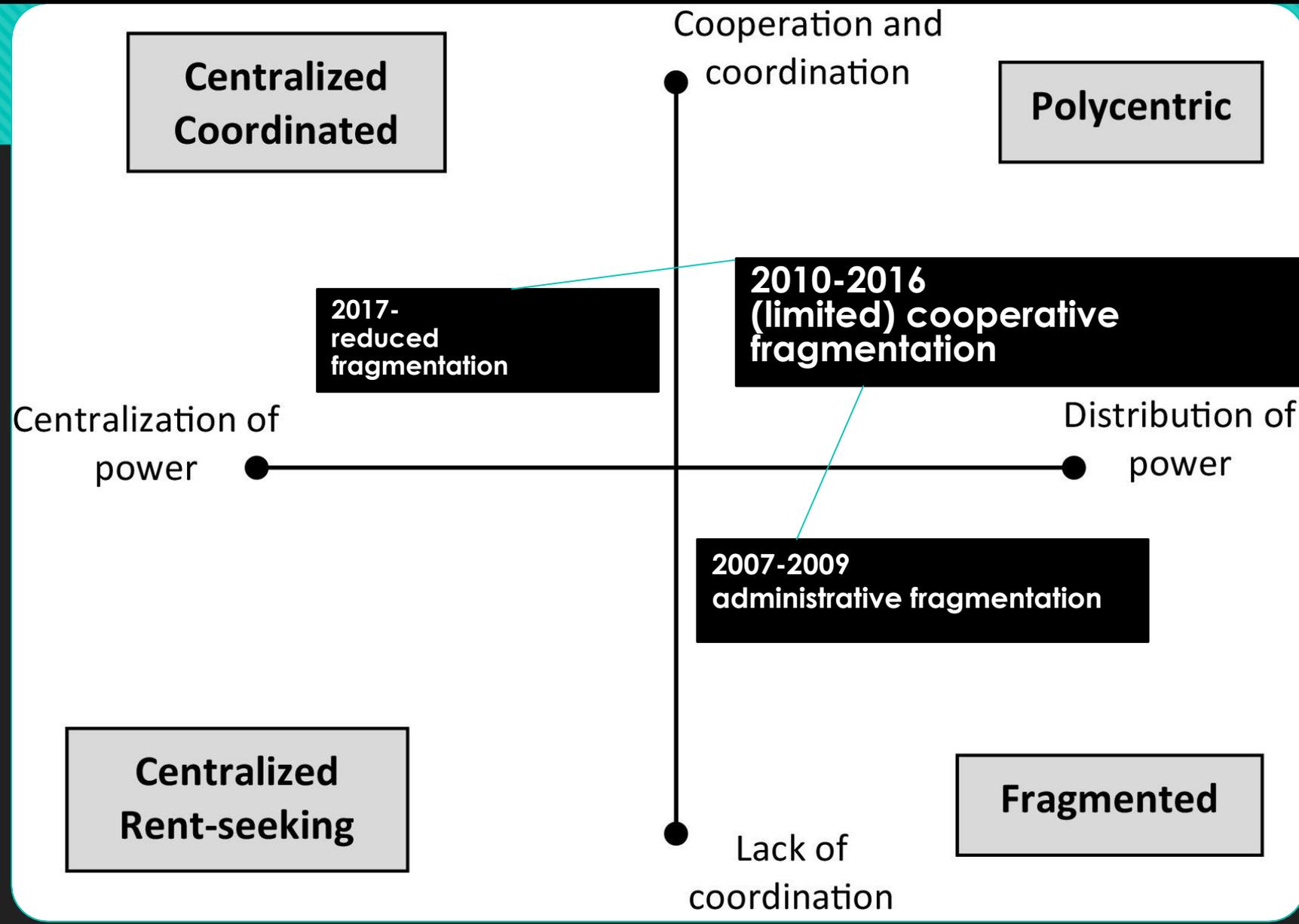


- Govt programs: hierarchical coordination for monitoring budgets and physical development
- BIRU: interactive cooperation with civil society, govt, and private sectors
- BIRU and govt programs: limited to MEMR and local govts

# The degrees of fragmentation in biogas governance, from 2007 to 2017

	2007-2009	2010-2013	2014-2016	2017-now
Architecture configuration	Administrative fragmentation	(Conflicted) fragmentation	(Limited) cooperative fragmentation	Reduced fragmentation
Situation	Various <b>ministries competed for the budget</b> for biogas programs	<b>BIRU</b> cooperated with the MEMR, <b>PT SWEN</b> worked with the MA	<b>BIRU extends the collaboration</b> with other government biogas programs	Government biogas programs are <b>centralized under the MEMR</b>

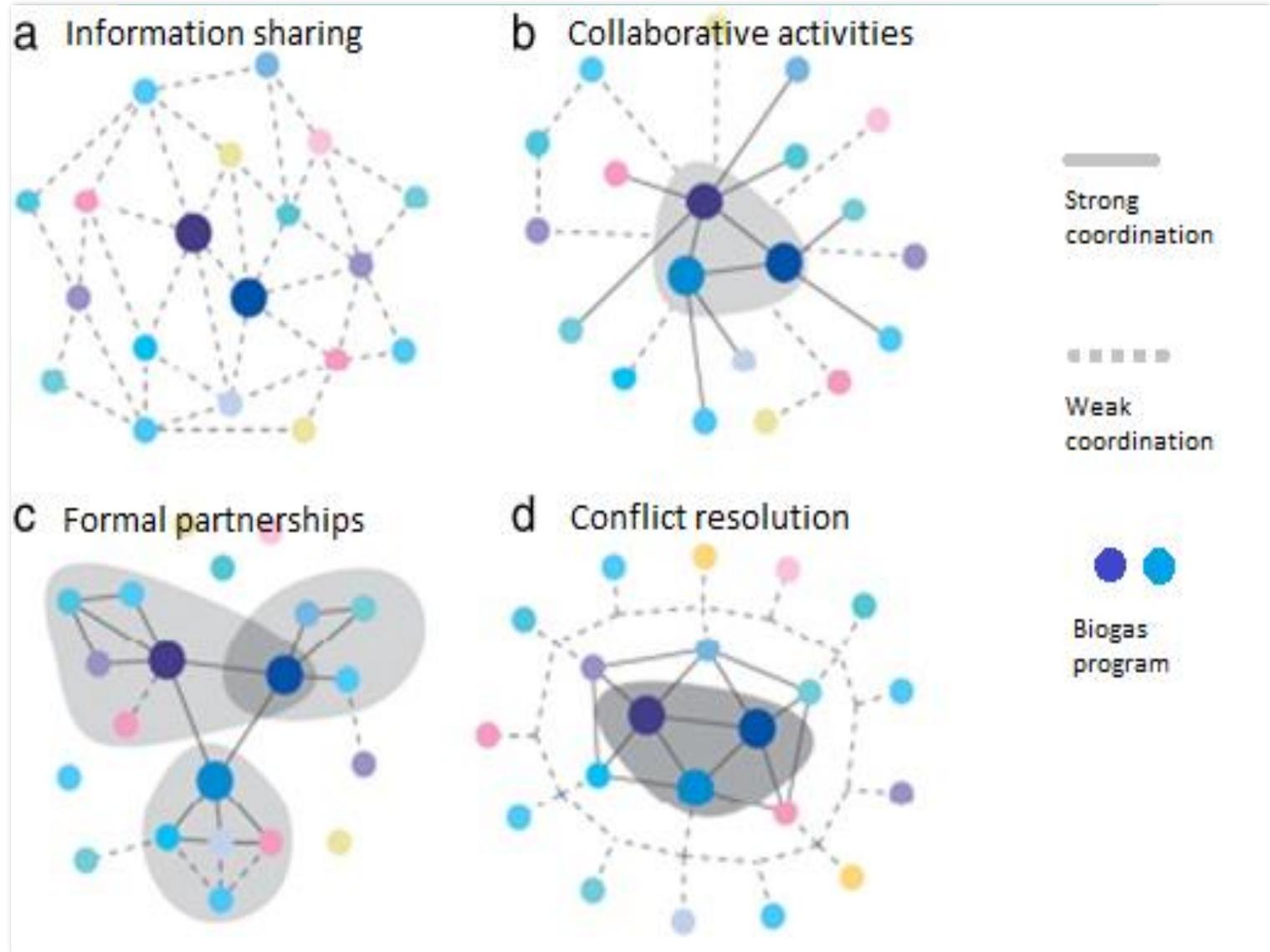
# Change of fragmentation degrees in biogas governance architecture



	Period:	2007-2009	2009-2013	2014-2016	2017
	Configuration :	Administrative fragmentation	Conflictive fragmentation	(Limited) cooperative fragmentation	Reduced fragmentation
<b>Output effectiveness of the regime</b>	The number of dissemination	800*	16,730	<b>37,999</b>	36,032
	The channel for knowledge transfer	Limited training for users	Various types of training exist	Some <b>training</b> was <b>standardized</b>	Not all CPOs comply to training standards



# 6. Discussion



- **Government** biogas programs have **similar governance arrangements and characteristic**, different with NGO biogas program.
- (Distributed power among) institutions within biogas architecture **lacks effective coordination**
- **Cooperative** fragmentation within the architecture **increases** the number of biodigester **dissemination** and **knowledge transfer**

## Conclusion

*The higher degree of cooperation and distribution of power within a governance architecture increases output effectiveness of a regime complex.*

# Recommendations for policymakers

## Short term

- To create an integrated **biogas national plan** that connects different targets; with clear allocation of tasks and functions for different institutions
- To return distribution of power back to the MA, the MEF, and other related-ministries

## Long-term

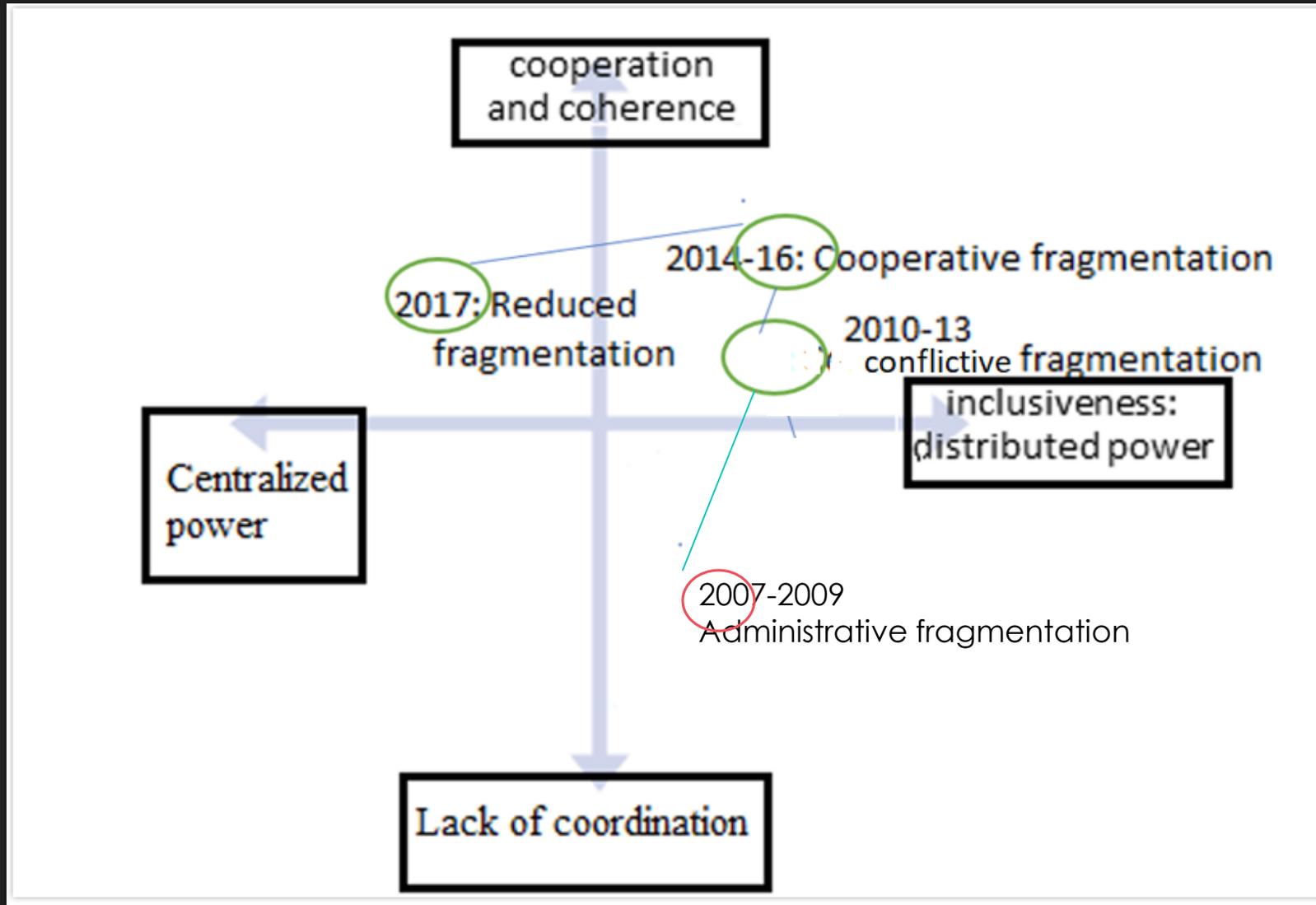
- To increase the **degree of partnership** on policy planning and implementation; including with **local institutions** in the creation of biogas-related institutions/programs
- To **distribute** institutionalized **functions**, responsibilities, authority, and finance across programs
- To adjust the level of decentralization in accordance with the **available personnel capability (knowledge)**
- To have (in)formal **provisions to support coordination and cooperation** across administrative levels and sectors

# Recommendations for further research/project

- Social acceptance to bio digester
- The **comparative study** with biogas policy/governance in other countries, such as China
- **Coordination** between different **policy instruments** related to biogas
- **Agency, power and market function** within regime complex
- The **feasibility** of implementation of **polycentric governance** (for biogas governance architecture); the capacity of stakeholders
- Governing landfill for biogas generator

**Thank you, feedback?**

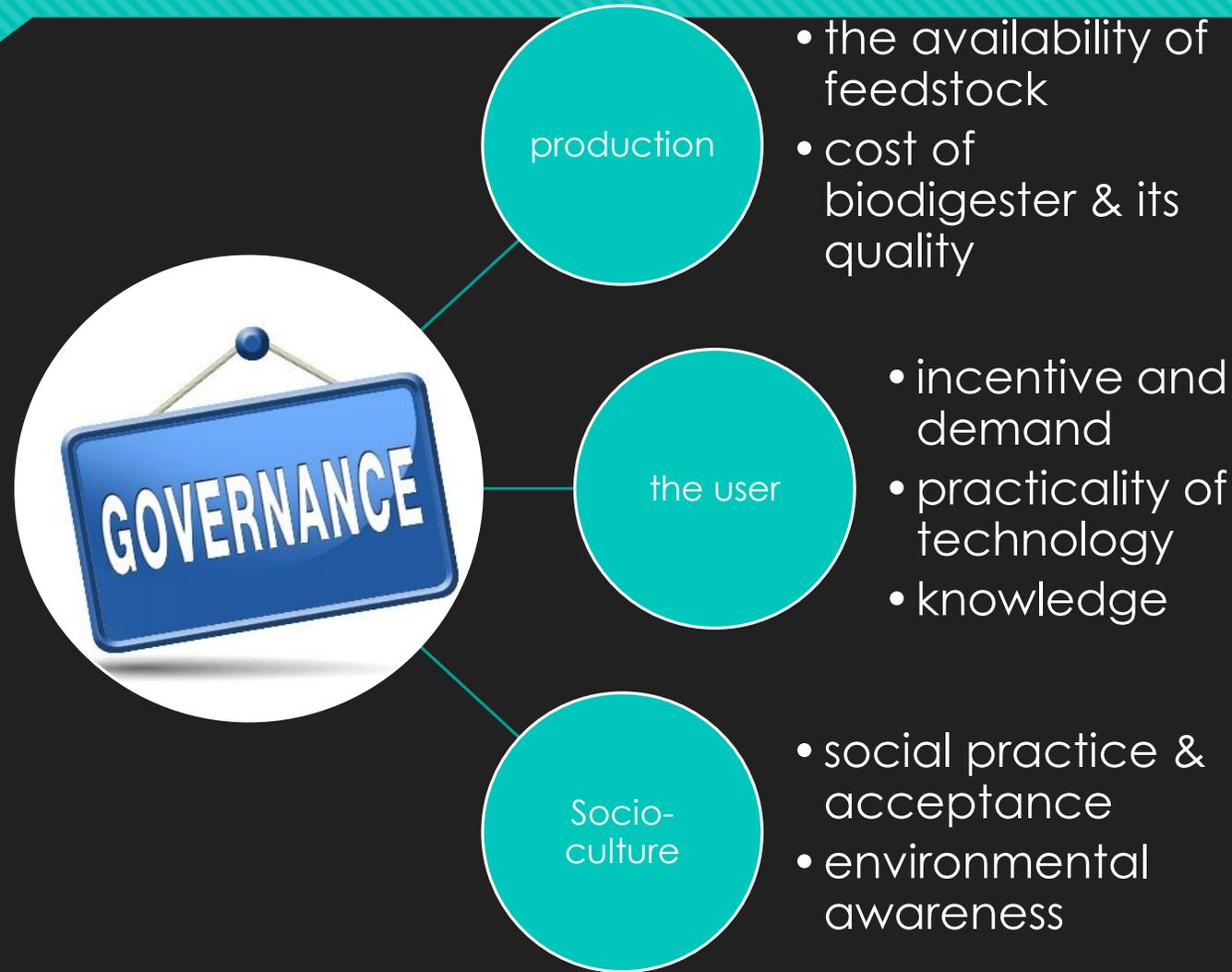
# Periodical changes in the configuration of biogas governance architecture



## 2. The theoretical and conceptual framework

Sub-research question	Themes	Theories
1	Characteristics of programs	Governance arrangement
2	The historical shift of regime or architecture configuration	Fragmentation & Polycentric governance
3	Influence on output performance	Policy effectiveness

# Interconnected barriers to biodigester dissemination



# Dynamics of coordination and distribution of power in biogas governance architectures

	Before	After
<b>Power distribution</b>	<ul style="list-style-type: none"> <li>2007-2014: <b>scattered programs</b> in different institutions</li> <li>2009-2013: <b>BIRU stands alone</b> without the government budget</li> </ul>	<ul style="list-style-type: none"> <li>2014-now: <b>BIRU</b> has collaborated not only with the MEMR, but also with the MA, the MEF, &amp; the local governments</li> <li>2016-now: <b>centralization</b> of governmental biogas programs to be under the <b>MEMR</b></li> </ul>
	2007-2010: Domination of construction ( <b>expertise</b> ) from <b>PT SWEN</b>	2010-now: <b>BIRU has trained about 100 CPOs</b> in ten provinces. Knowledge resources are distributed
<b>Cooperation</b>	<ul style="list-style-type: none"> <li><b>No (clear) cooperation</b> between different biogas <b>targets</b> in the national energy plan, NAMA, and BIRU</li> <li>An <b>integrated framework is absent</b></li> </ul>	
	<ul style="list-style-type: none"> <li><b>Coordination</b> among administrative levels is <b>regulated by the national financial system</b></li> <li>The <b>MEMR and the MEF has coordination with the MA</b> to collect data of biogas dissemination &amp; its potential emission reduction</li> </ul>	<ul style="list-style-type: none"> <li>2016, <b>the MM facilitated coordination</b> among the MEMR, MEF, &amp; MA about biogas programs, <b>yet not resulting clear task allocation</b></li> </ul>
	No creation of government biogas-related institution, but <b>two biogas associations established from non-state actors</b>	From 2014, <b>BIRU has more cooperation with local governments, in mainstreaming biogas programs</b>

# Conclusion

- Almost all governmental biogas programs relatively have the same characteristics, which are scattered in different directorates or sub-institution within the ministry, using the grant approach, cooperate with local government and vendor, and do not have proper training and M&E. There is no effective coordination among these governmental programs. Low degree of coordination results in lack of cooperation to achieve the bigger target for renewable energy and emission reduction. Meanwhile, the NGO program-BIRU utilizes semi-commercial approach; collaborates with multiple government bodies, construction partner organizations, cooperatives, and private sectors (companies and banks); and has standardized training and after sale services.
- Dynamics in power distribution and cooperation within the architecture form periodical shifts of configuration within the regime, from administrative fragmentation in 2007-2009, conflictive fragmentation in 2010-2013, and cooperative fragmentation in 2014-2016 with increasing degree of cooperation within this period. This shift had implication to affect the output of biogas programs. The number of biodigester dissemination and the activity of knowledge transfer increased from 2007 to 2016.
- In 2017, a new centralization policy from the government reduced the power distribution within the architecture. This change contributed to the decline in the number of biodigester dissemination. The fragmentation of biogas programs in Indonesia has affected the number of biodigester dissemination and its knowledge transfer among the stakeholders. At the same time, the centralization also stopped the transformation of biogas governance architecture to move forward to polycentric governance.

# Common barriers for biogas dissemination

Production	Consumption (by the user)	Culture-education in community	Funding	Program management & governance	Policy
Some don't have the <b>cage</b> for cattle, to manage the manures (Eastern Indonesia)	Low <b>demand</b> (for market approach)	Low environmental <b>awareness</b> , lack of campaign	Limited (local) <b>budget</b> for dissemination and M&E	Ineffective program management, lack of <b>institutions</b> (and capable personnel)	No mandatory <b>regulation</b>
The <b>deficit of manures</b> (when farmers have to sell cattle for the economic reason)	No <b>incentive</b>	Lack of social <b>acceptance</b> to manures for energy (in some areas)		<b>Grant</b> approach does not create the sense of belonging by user	Unclear <b>target</b> and implementation plan results in fragmented practices
The high <b>cost of installation</b> not worth the benefits?	Low operational <b>practicality</b>	Social practices in using <b>firewood</b>		Bottlenecks or gap in <b>implementation</b>	Lack of <b>approval</b> from the people's representatives council
Low <b>quality</b> of (some) <b>digesters</b>		Lack of community <b>involvement</b> in the good institutional management		Lack of enforcement of SoP and <b>standards</b>	Not competitive, compared to highly subsidized <b>LPG</b> and electricity price
Limited producer of <b>appliances</b> such as stoves		Lack of knowledge and <b>skill</b> in maintaining the digesters		Lack of <b>monitoring</b> and evaluation (from national team)	Lack of <b>priority</b> to biogas focuses more on (conventional) large-scale energy generation
				Lack of <b>coordination</b> to exchange knowledge, among programs and among farmers group	

# Result: Characteristics of various biogas programs from different institutions

	Regulation		Energy mix target & NAMA							
	Institutions	Hivos	MEMR			MA		MEF		
	Programs	BIRU	DAK/SAF	Communal biogas	Communal (add to text)	Batamas & zero waste	UPPO	Low carbon technology	Conservation area	Proklim
Characteristics	Implementing agencies	YRE	Directorate of Bioenergy	Directorate of Bioenergy	RE research center	Directorate of livestock	Directorate of agriculture infrastructure	Deputy assistant of climate change impact	Directorate of conservation	Directorate of climate change
	Partners	Local NGO, companies, <b>cooperatives</b>	BIRU, companies, local government	Companies, local government, boarding schools	The universities	Companies, local government	Companies, local government	Companies, local government	Companies, local government	Village government
	Funding	Foreign donors, the government, CSR, <b>users</b>	Government budget	Govt budget	Govt budget	Government budget	Government budget	Government budget	Government budget Community, CSR	Govt budget, local initiatives
	Year of program	2009-now	2011-now	2011-now	2005-2017	2007-2013	2008-now	2008-2010	2010-2017	2010-now
	Program approach	<b>Market-based</b>	Grant	Grant	Grant	Grant	Grant	Grant	Grant	Semi grant
Output effectiveness (till 2017)	The number of digesters disseminated	<b>22K</b>	6K	3K	<100	1.5K	<100	No data	<100	1K
	The assistance/information	Pre- training, <b>after sale service</b>	Limited training and money	Limited training and money	Field training	In-house training	No training	Night training	Capacity development training	No training for biogas

# Overview of interviewed stakeholders

Key actors	Programs	National Government	Local government	Private sectors	NGO	Civil society	Academics
Hivos	BIRU		Agriculture agency, Bandung regency	Construction Partner Organization; Yayasan Kontak			su-re.co
		Ministry of Energy and Mineral Resources			YRE	Loan partner organization; Local Farmers cooperative; KPSBU	
Ministry of energy and mineral resources (MEMR)	RE programs	<ul style="list-style-type: none"> <li>Directorate of bioenergy</li> <li>Research center of RE</li> </ul>	Energy agency, west java	PT SWEN	Hivos, YRE		Directorate of research and community development, University of Indonesia,
Ministry of Agriculture (MA)	BATAMAS, UPPO	<ul style="list-style-type: none"> <li>Directorate of livestock</li> <li>Directorate of agriculture infrastructure</li> <li>Task force on climate change in MA</li> </ul>	Agriculture agency, Bandung regency	PT SWEN			Bogor agriculture institute
Ministry of environment and forestry (MEF)	Proklam, comdev in the conservation area	<ul style="list-style-type: none"> <li>Directorate of conservation</li> <li>Directorate of climate change</li> </ul>		PT SWEN			
Across programs	Policy planning and implementation coordination	<ul style="list-style-type: none"> <li>Ministry of Development Planning</li> <li>Ministry of coordinator of Maritimes</li> </ul>					

## 2. Methodology; qualitative

- Research population > Hivos, Ministry of energy, Ministry of Agriculture, and Ministry of Environment & Forestry.
- Data collection: interviews and desk research (formal policy documents, project reports, refereed scientific publications, professional publications, etc.).
- Analysis; transcription, scanning materials, typing up filed notes, the coding process, and interpretation



**Conflictive fragmentation****Polycentric governance****Indicator**

Inclusiveness:  
distributed power

No **partnership** in policy/program's  
planning and implementation

There is partnership in policy/program's  
planning and implementation

Across programs, no distribution of  
institutionalized functions, responsibilities,  
and power

There is **distribution** of institutionalized  
**functions**, responsibilities, and power  
across programs

Across programs, no task division in  
accordance with the available  
**personnel capability**

There is task division among programs, in  
accordance with the available personnel  
capability

Coordination  
and cooperation

There is no national biogas-related policy  
is coordinated/integrated into one single  
piece of the framework (i.e. national  
biogas plan)

There is a national biogas-related policy is  
coordinated/**integrated** into one single  
piece of the **framework** (i.e. national  
biogas plan)

No Formal **provisions to support  
coordination** among organizations  
across administrative levels and sectors–  
cooperation and clear allocation of  
tasks and functions as coherence

There are (in)formal provisions to support  
coordination among organizations across  
administrative levels and sectors–  
cooperation and clear allocation of tasks  
and functions as coherence

No significant involvement of local  
institutions in biogas programs or in the  
creation of biogas-related institutions

There is significant **involvement of local  
institutions** in biogas programs or in the  
creation of biogas-related institutions

**Output effectiveness of the regimes****Indicators**

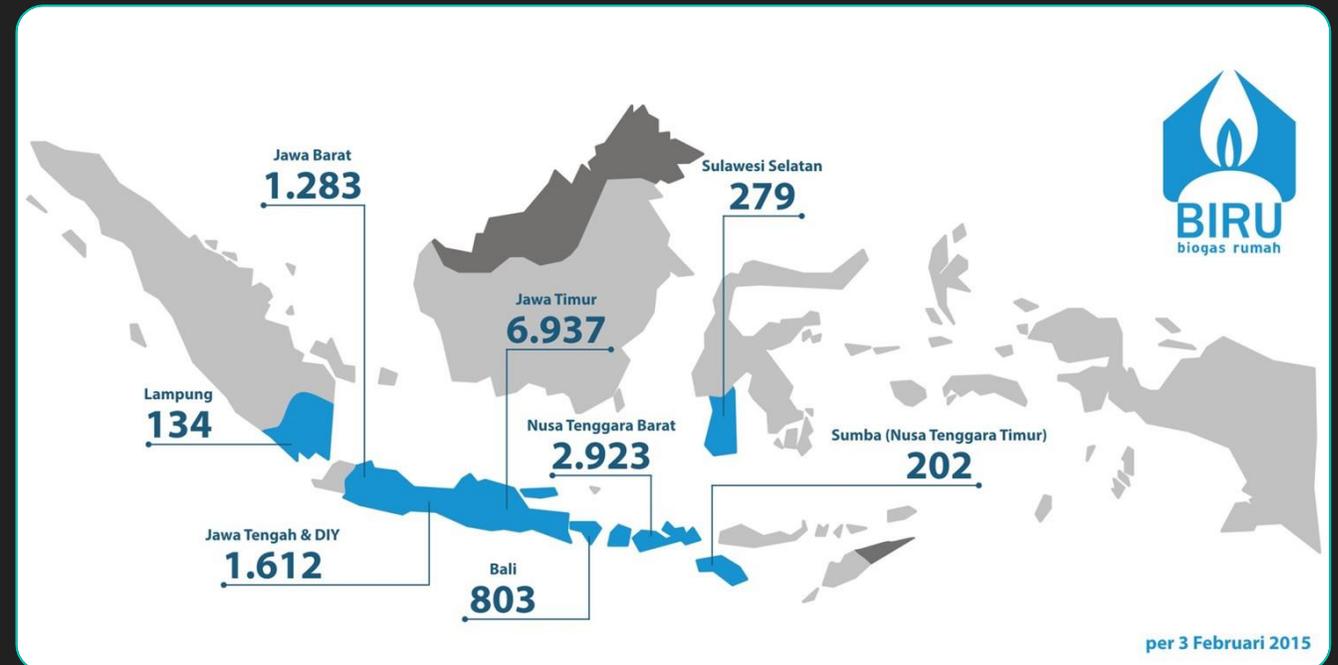
The number of biogas **digesters** disseminated

The amount of information (**trainings**) provided

	<b>(conflictive) fragmentation</b>	<b>(cooperative) polycentric governance</b>
<b>Origin</b>	Debates about <b>interlocking institutions</b>	Polycentric <b>systems for governing problem</b>
<b>Assumptions</b>	<b>Architectures</b> of governance are almost <b>never fully interconnected</b> and integrated	A <b>wide-range distribution of power</b> that fosters a policy to include more people or stakeholders <b>inclusively</b> , performing <b>effective coordination</b>
<b>Normative degree</b>	Some agree that the architecture of climate governance must affirm the value of <b>fragmentation as "diversity"</b>	The diversity of initiatives is the invisible hand of a market of institutions that <b>bring the better distribution of functions and effects.</b>
<b>Typical examples</b>	Transnational governance	Civil society and/or private sectors lead the governance architecture
<b>Criteria</b>	In/(ex)clusiveness and (in)coherence	Distribution of power and effective coordination

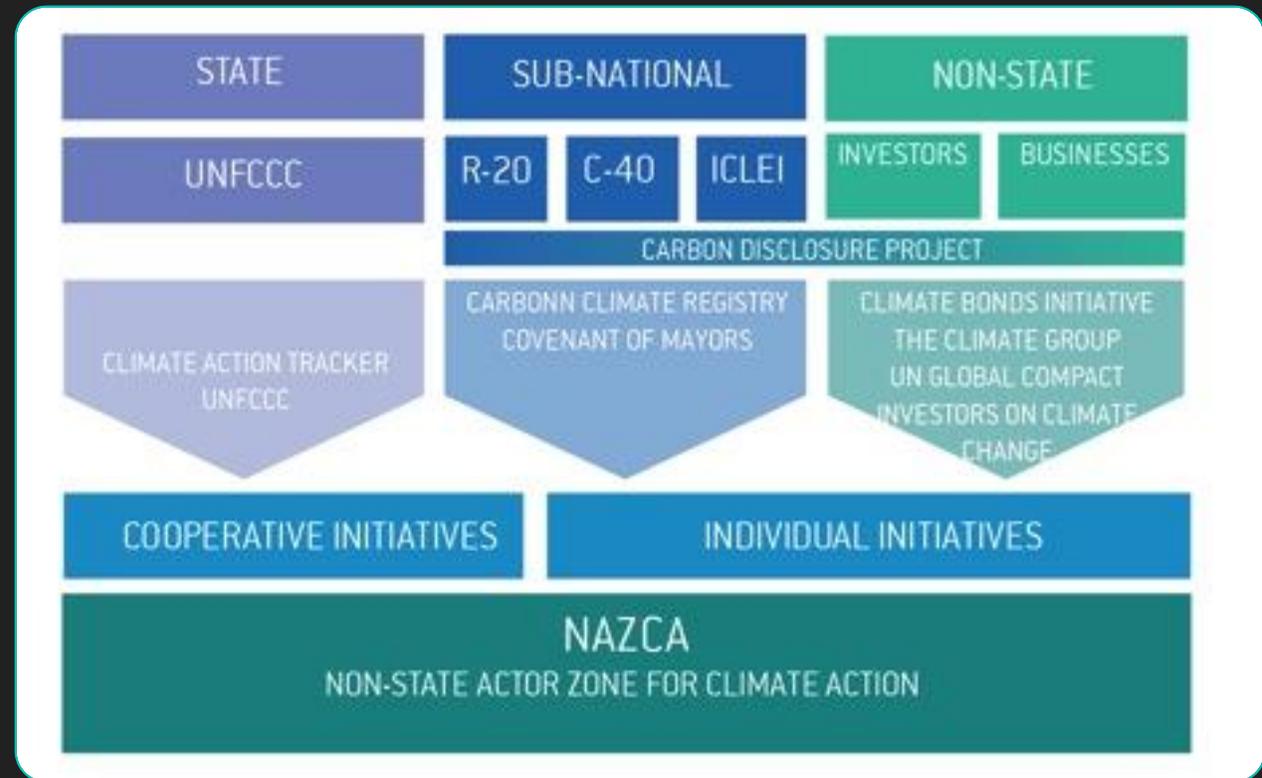
# Decreased degree of the fragmentation is emerging new hierarchy

BIRU's programme is supported by **international financing power, sufficient knowledge resources and professional actors.**



# Influence of non-state actors to move forward

- Influence of **non-state actor** has been leading to **yield progressive climate policy**.
- Marrakech Partnership for Global Climate Action creates the **mechanism for orchestrating role** to facilitate non-state actors, but in Indonesia..?



**In the new hierarchy, non state actor may play the mechanism for orchestrating role to influence state's policy**

State may also rely on non-state actors due to its insufficient personnel, knowledge and organisational capacity

