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# External Regional Benefit of Renewable Energy Project

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Externality of renewable energy project

Possibility and necessity of “translation” between global environmental discourse and local social context.

Citizens’ proactive social movement after Fukushima disaster in 2011 in Japan.

## ◆ Current Status and Challenge

## ◆ A trial for better local acceptance

- Good Practice of Citizen Cooperative
- Local ordinance

## ◆ Concluding Remarks

# Background: Acceptance divide

## General acceptance

- Mitigation of global warming
- Sustainability
- Green economy, Ecological modernization
- Energy shift, Anti-nuclear

## Local acceptance issues

Local economy

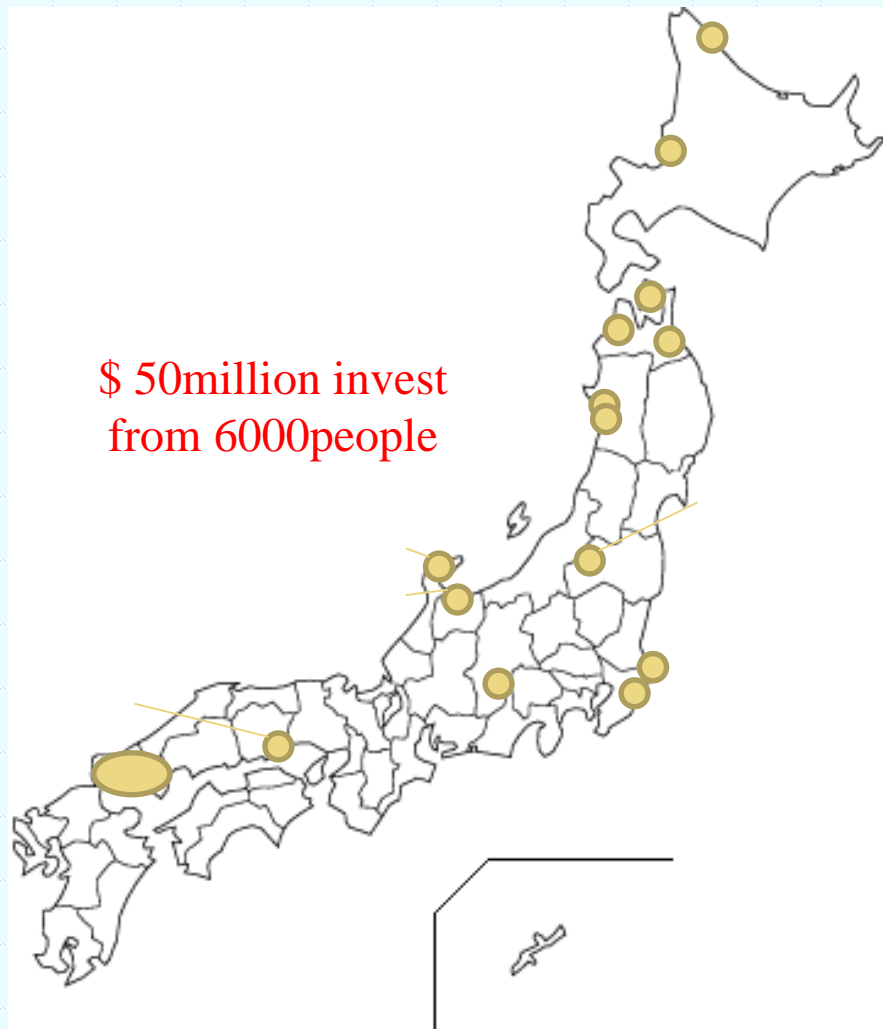
Well-being

Distribution

Procedure



# Local Initiative for renewable energy



Citizen RE projects

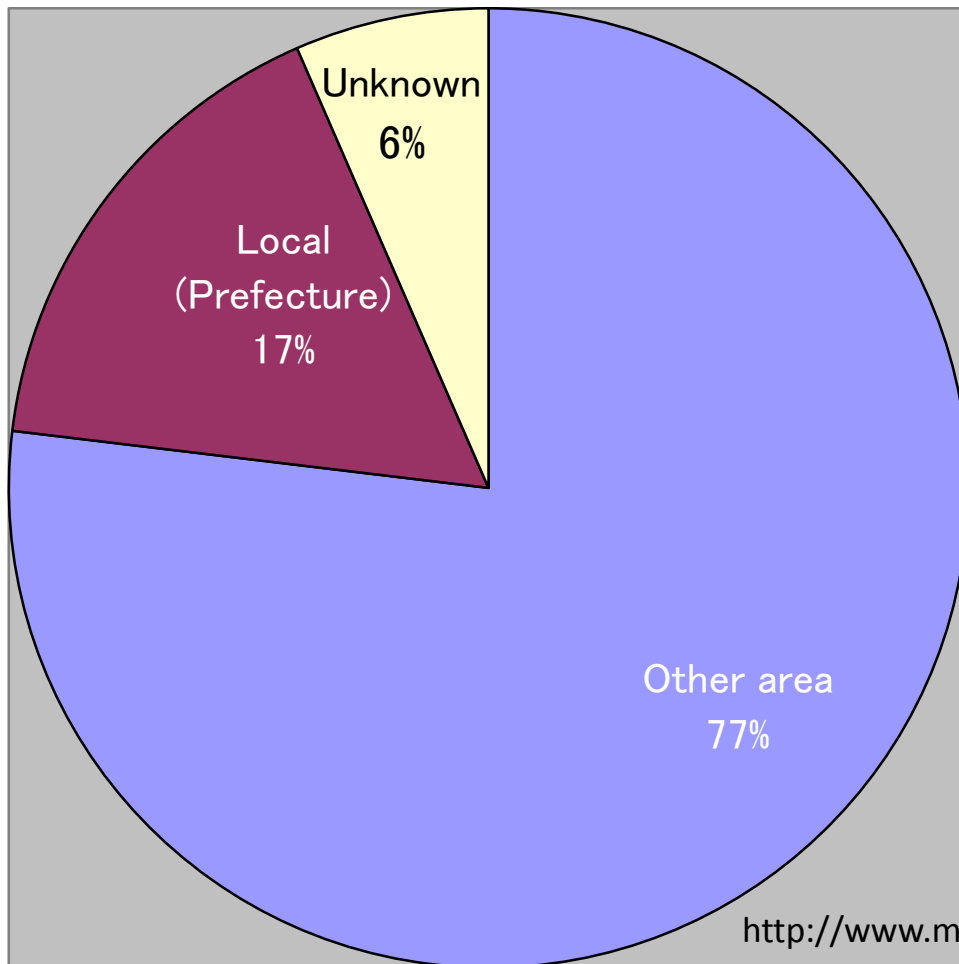


# Protest movement against wind power projects



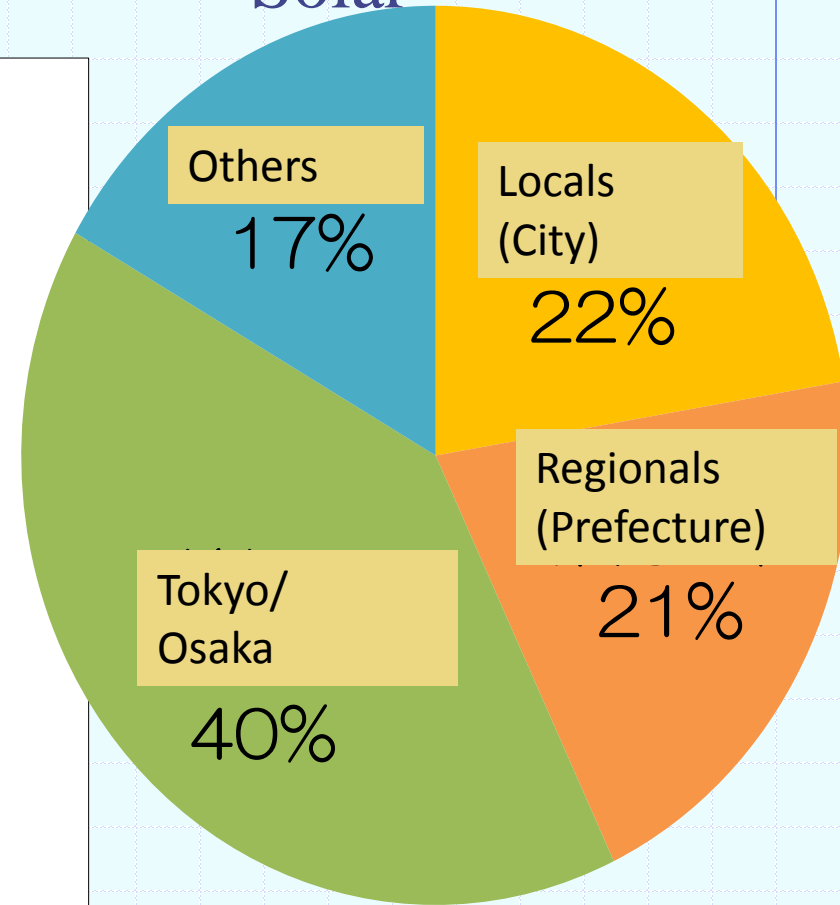
# Ownership of Renewable energy projects (Capacity) of Renewable

## Wind



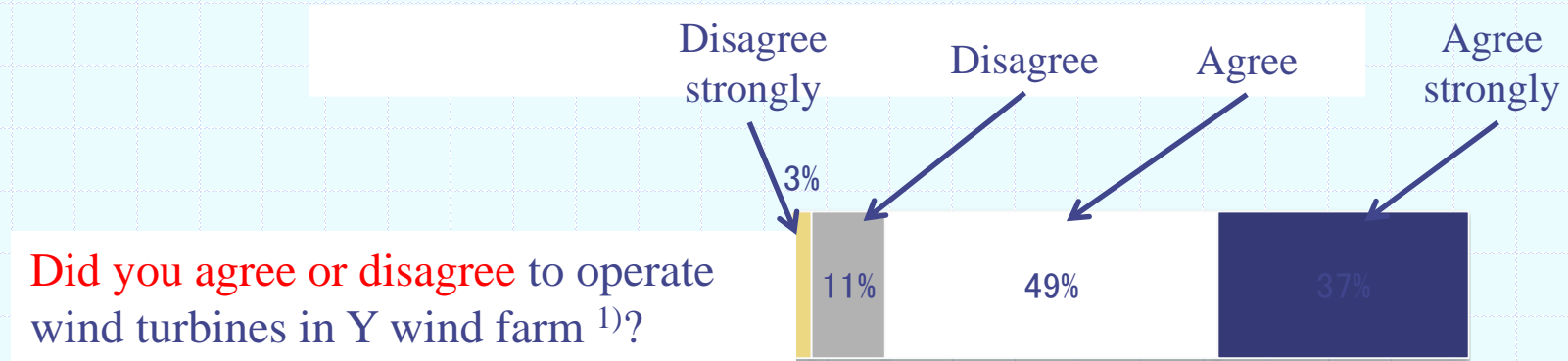
<http://www.maff.go.jp/j/press/shokusan/soumu/pdf/150310-03.pdf>

## Solar



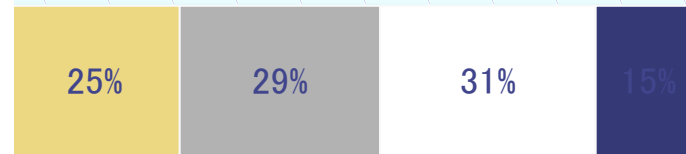
METI, Statistics of Factory Location 2012~2013

# Agree or disagree to wind farm in your local area



<sup>1)</sup>Y wind farm is a wind farm already installed in the survey area.

Do you agree or disagree to a proposal to install **new wind turbines** in your local area?



## Method

- 1001 residents around a wind farm in Japan
- Random sampling from among eligible voters
- response rate is 32%
- Distribute and collect forms by post



# Agree or disagree to wind farm in your local area

		New wind farm				
		Disagree strongly	Disagree	Agree	Agree strongly	Sum
Y wind farm	Disagree strongly	3%(7)	0%(0)	0%(0)	0%(0)	3%(7)
	Disagree	7%(18)	4%(11)	0%(1)	0%(0)	11%(30)
	Agree	10%(28)	18%(48)	20%(55)	0%(1)	49%(132)
	Agree strongly	4%(11)	8%(21)	11%(30)	15%(40)	38%(102)
	Sum	24%(64)	30%(80)	32%(86)	15%(41)	100%(271)

Agree→Agree 46%(126 people)

Agree→Disagree 40%(108 people)

Disagree→Agree 1%(1 people)

Disagree→Disagree 14%(36 people)

►Opportunity to express my opinion

( $t(207)=2.50$ ,  $p<.05$ ) → significant difference

►Redesign the project as requested

( $t(203)=3.45$ ,  $p<.001$ ) → significant difference

## ◆ Current Status and Challenge

### ◆ A trial for better local acceptance

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## ◆ Concluding Remarks

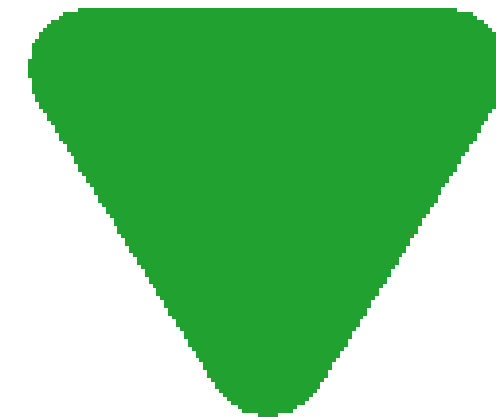
# Structure of social acceptance

## **Socio-political acceptance**

- Of technologies and policies
- By the public
- By key stakeholders
- By policy makers

## **Market acceptance**

- Consumers
- Investors
- Intra-firm



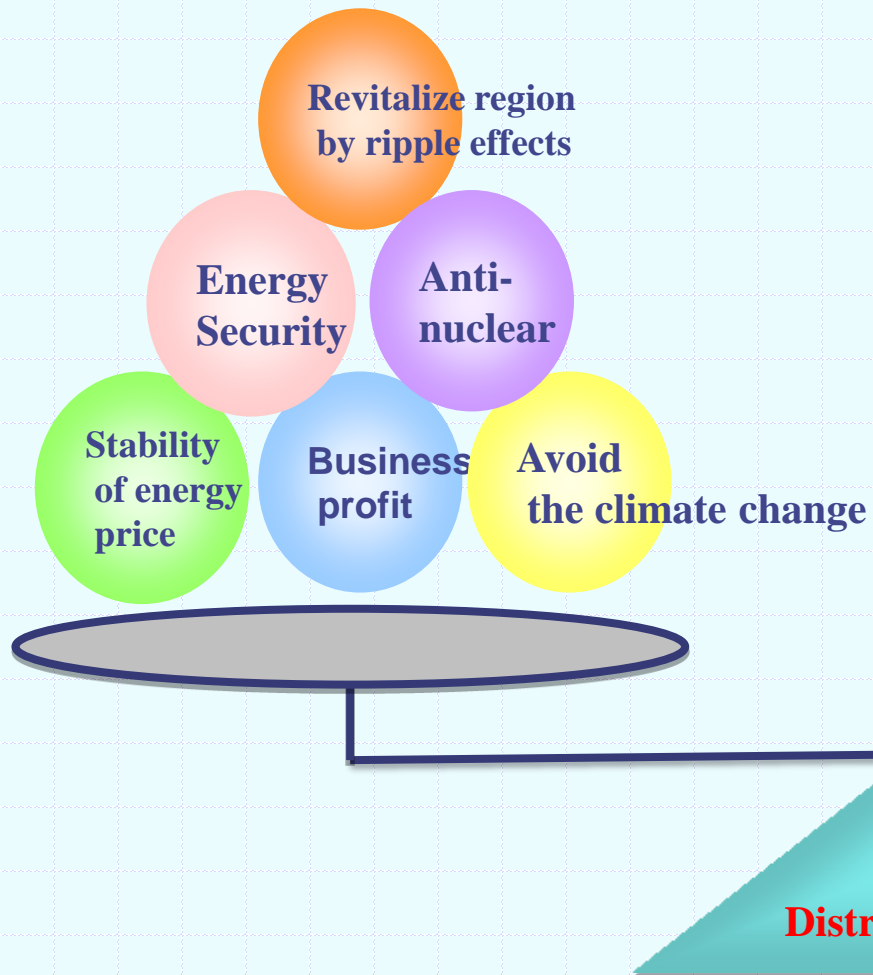
## **Community acceptance**

- Procedural justice
- Distributional justice
- Trust

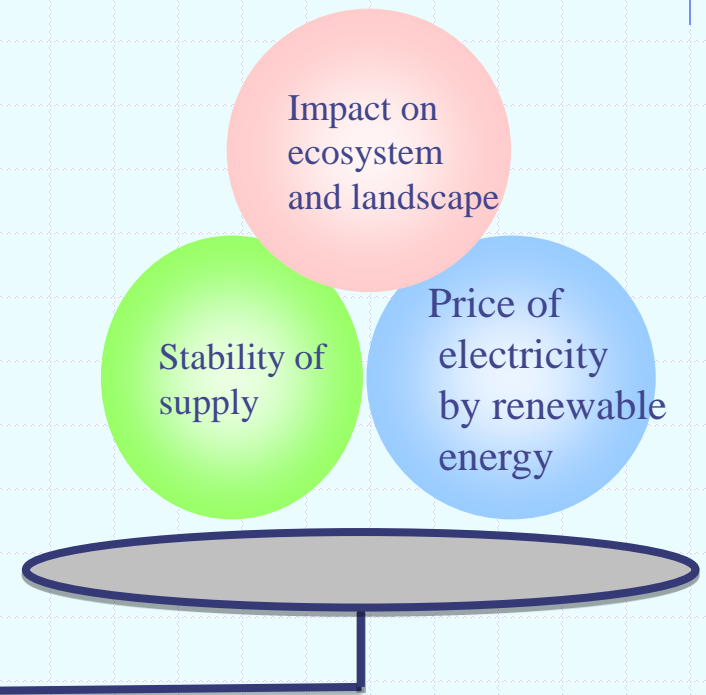
Wüstenhagen et al.(2007), IEA Wind (2011)

# Renewable energy and social consensus

## Positive Impact



## Negative Impact



# Diversity of “Local benefit”

## ◆ Internal Economy/ Direct Effect

- Finance/ Invest
- Tax
- Construction
- Operation
- Maintenance
- Cheaper energy cost

## ◆ External Economy/ Indirect Effect

- Local fund
- Contribution to solve local issues
  - ◆ Biomass and pest animal
  - ◆ Smart meter with Observant Care Services for the Elderly
  - ◆ Small hydro with improving maintenance of agricultural water channel
- Social network / Social exchange to promote
  - ◆ Green-tourism
  - ◆ Local products

# Example of External Benefit:

## Seikatsu(life)-club consumer cooperative

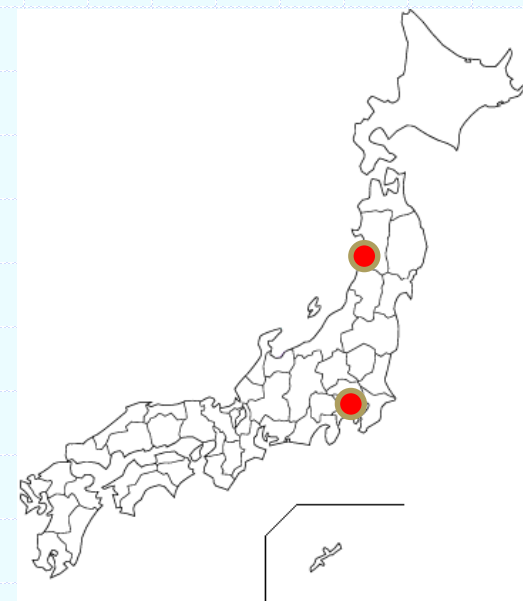
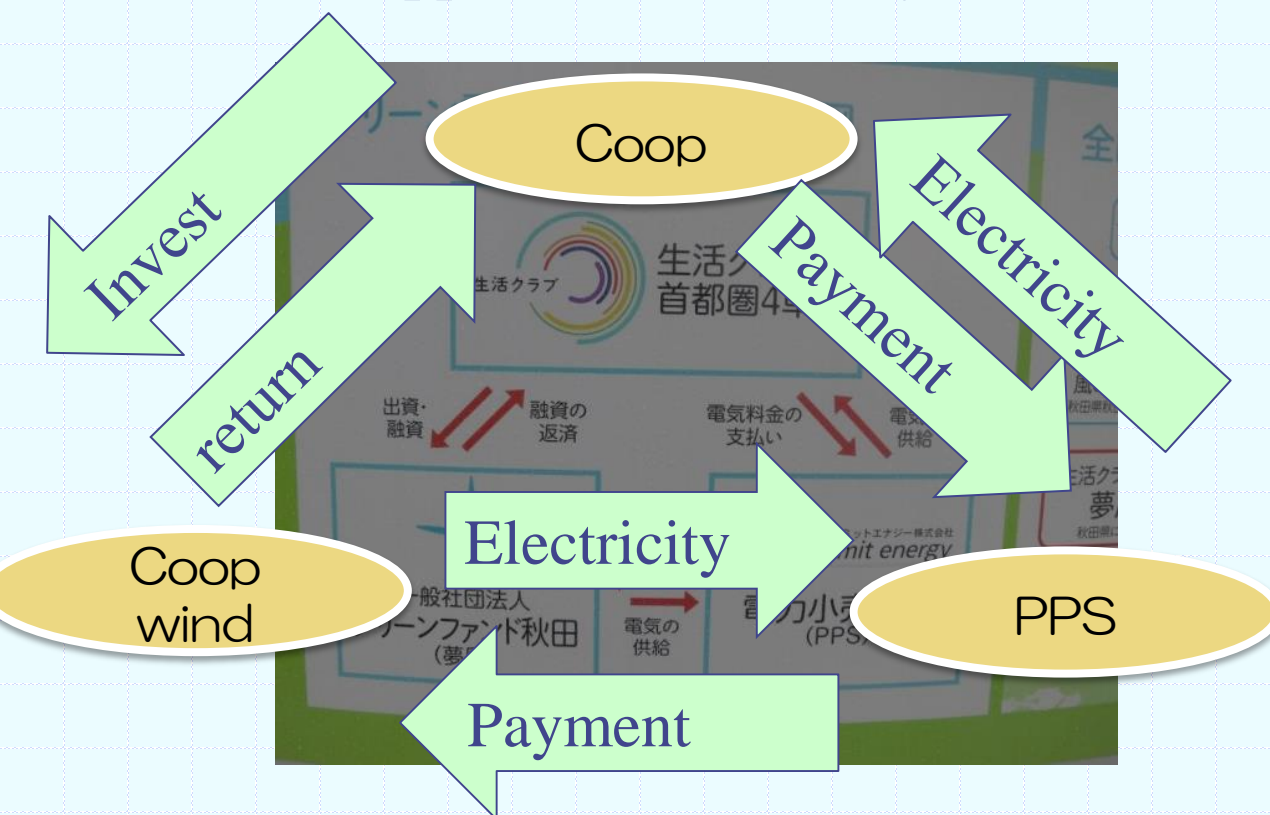
- ◆ Started in 1965 with cooperative purchase of milk
- ◆ Founded as cooperative union in 1968
- ◆ Expanded activities to rice(1970), meat(1976), vegetable(1983)
- ◆ 345,000 members (in 2016)
- ◆ Food, Care, Energy
- ◆ Equal and mutual benefit relation between consumer and farmer(stakeholder)
- ◆ High activity on energy issue since Chernobyl

# Energy policy of Seikatsu-club in 2011

- ◆ Energy efficiency/saving take priority
- ◆ Nuclear free
- ◆ CO2 free
- ◆ Benefit natural environment and local society
- ◆ Transparency
- ◆ “Energy Self consumption” with activating social network of food products
- ◆ Use more renewables as ethical consumer
- ◆ Accountable and responsible for whole lifecycle of energy resources

# Cooperative Wind (2012 Akita)

- ◆ Motivation: Green electricity (Nuclear free, CO2 free)
- ◆ Problem: Lack of local renewable resources
- ◆ Business model
  - Financed by Consumer cooperative in large Tokyo
  - Wind power project sell electricity to power supplier (PPS)
  - Power supplier sell electricity to consumer cooperative





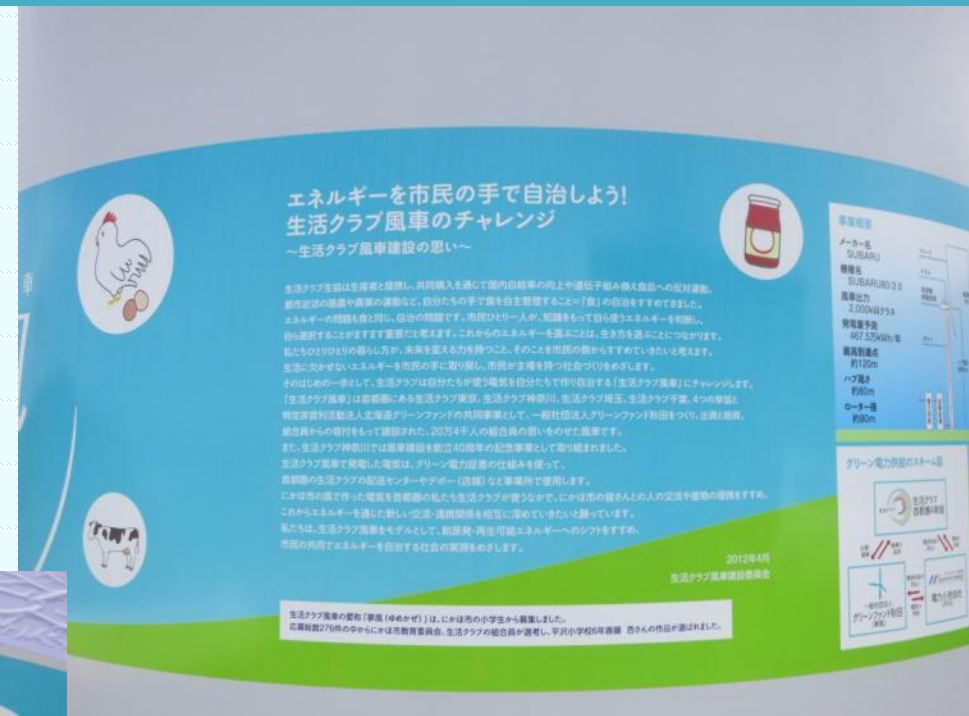




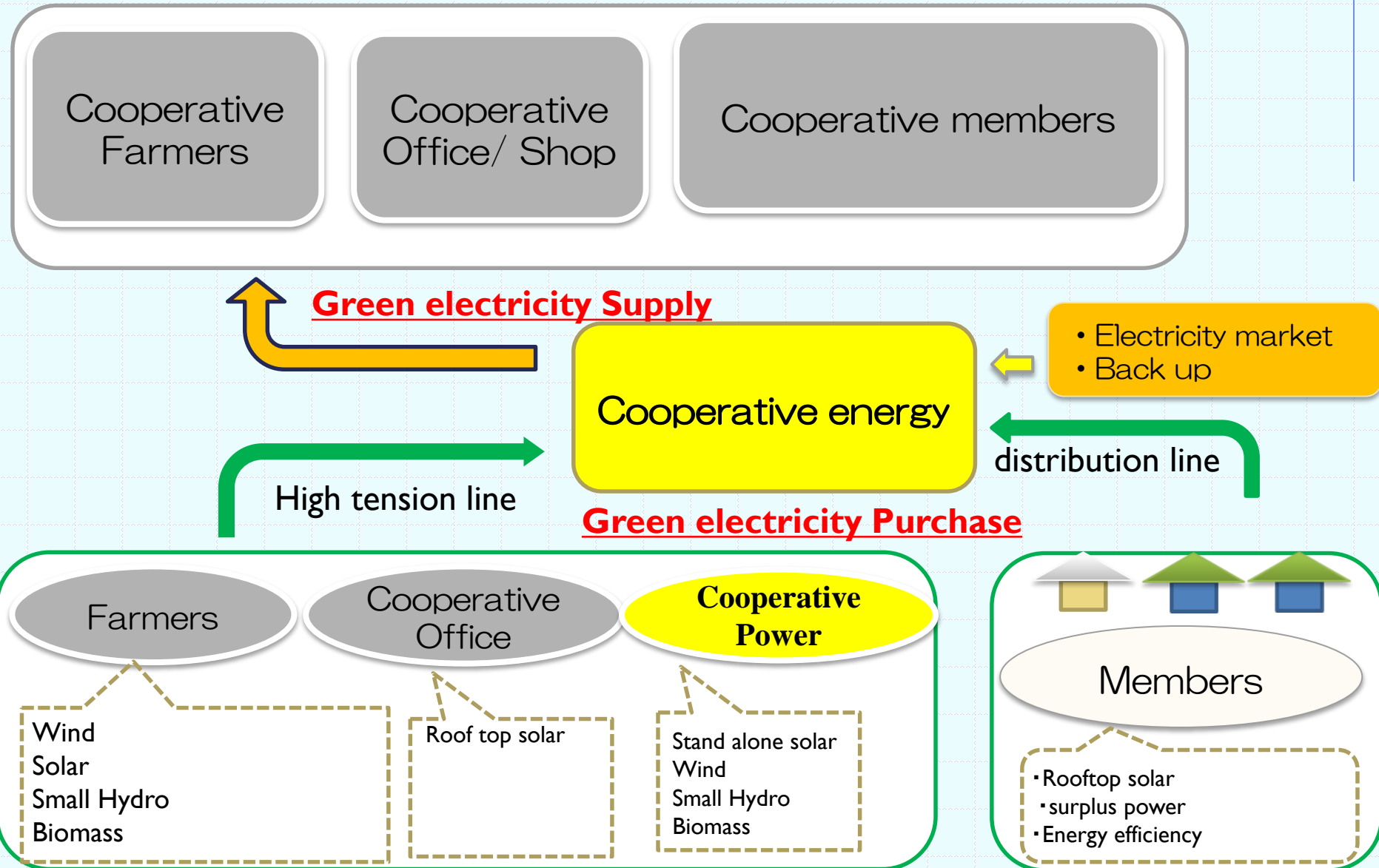


# External benefit of local society

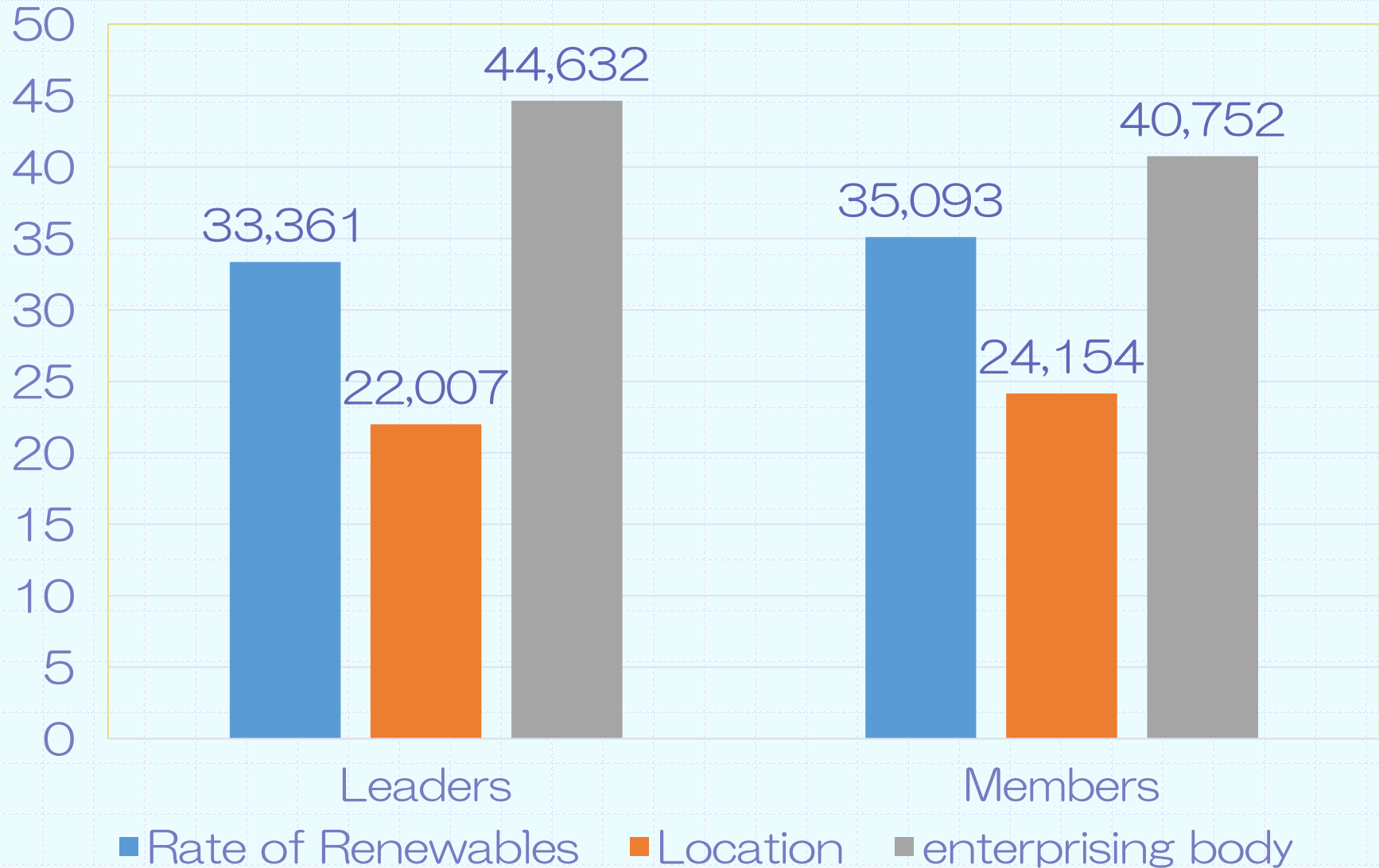
- New social network
- New market for local (agricultural) products
- External economic benefit of 60 mil. JPY (≒€500.000)
- “Something different” (mayor)



# Green PPS of Citizen cooperative(cooperative purchase)



# Important criteria of electricity (conjoint analyses)



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## ◆ Concluding Remarks

## ◆ Definition of local renewable energy resource

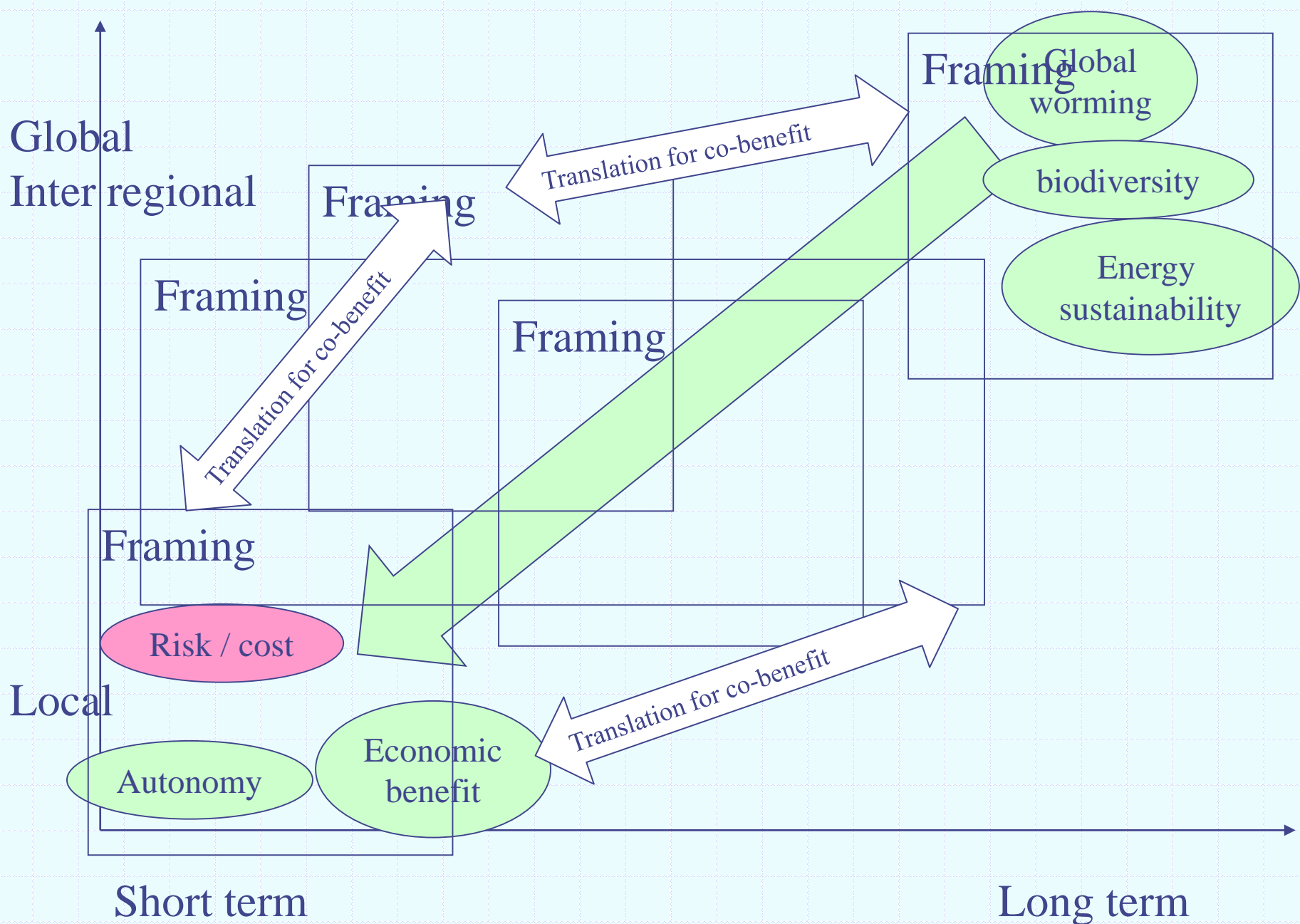
- Local benefit
- Environmental Impact management
- Sustainability
- Transparency, Consensus building process

## ◆ Governance

- Zoning (priority area for renewable energy)
- Social Responsibility/ Good neighbor
  - ◆ Financial participation
  - ◆ Employment
  - ◆ Donation
  - ◆ External benefit
- Adaptive management with monitoring
- Transparency, communication

## ◆ Roll and power of local authority

# Concluding remarks





# Concluding remarks

- ◆ Definition and/or scale of social acceptance
  - “Silence” do not always mean approval
  - Acceptance model(without benefit) to risk-benefit model
  
- ◆ Possibility of community benefit
  - External effects(benefit) as a possible strategy for improving social acceptance
  - Ordinance
  
- ◆ Sustainable development as unintended consequences

# Reference

- ◆ Furuya, Shota and Yasushi Maruyama, 2014, “Capacity building programs for community based project development in Japan” *Presentation paper in World Wind Energy Conference 2014*.
- ◆ Makoto NISHIKIDO et.al., 2014, “Polyvalent Meaning of Community Wind Power Movements: Comparing with Anti-Nuclear Movements in Japan” *Presentation paper in XVIII ISA World Congress of Sociology (July 13-19, 2014)*.
- ◆ MARUYAMA, Yasushi, Makoto NISHIKIDO, Tetsunari IIDA, 2007, “The rise of community wind power in Japan: enhanced acceptance through social innovation” *Energy Policy* 35, 2761-2769
- ◆ Motosu, M., and Maruyama, Y., 2016, “Local acceptance by people with unvoiced opinions living close to a wind farm: A case study from Japan”, *Energy Policy*, 91, 362–370.
- ◆ Wüstenhagen, R., Wolsink, M., & Bürer, M. J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy policy*, 35(5), 2683-2691.
- ◆ IEA Wind Task 28, 2011, “State of the Art-Report”.

# Thank you!



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