

# Pork Barrel Politics with Chinese Characteristics

## Distributive Politics of Renewable Energy Development in China

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SUSTAINABLE BUSINESS

## Chinese Firms Pour Billions Into Green-Energy ‘Tsunami’

Some analysts say outbound investment push is a win for decarbonization, others fear it is simply flooding the West

News

## China achieves milestone in renewable energy transition

Solar energy share tripled from 4.1% in April 2020 to 12.4% in April 2025.

15 per month

The Guardian website navigation bar. It features a dark blue background with the 'The Guardian' logo in white on the right. On the left, there are navigation links for 'Sport', 'Culture', and 'Lifestyle', each in a white box. A yellow circular menu icon is also present. Below the main navigation, there are smaller links for 'Energy' and 'Pollution'.

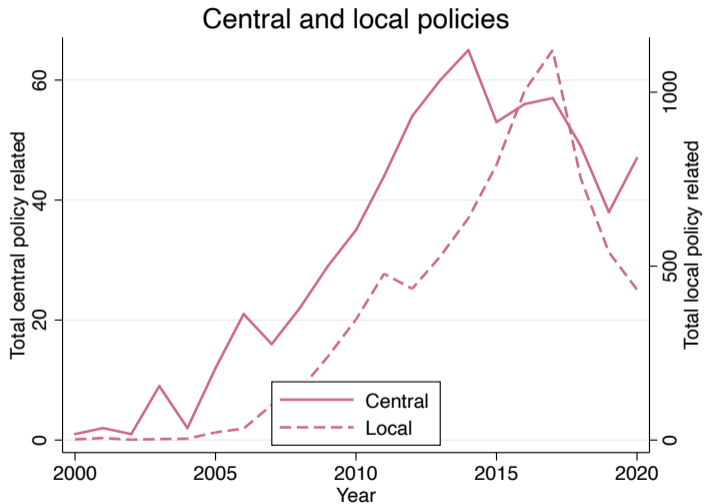
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### China building two-thirds of world's wind and solar projects

Country on track reach 1,200GW of installed wind and solar capacity by end of 2024 - six years ahead of Beijing's target

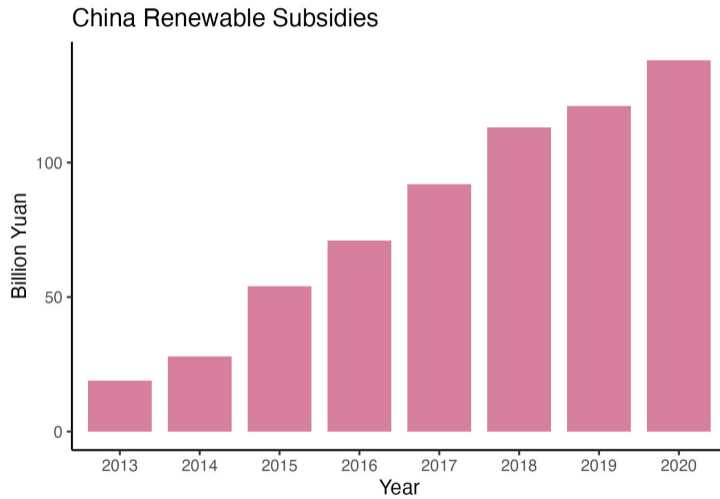


# Industrial Policies of Renewable Energy



Data source: pkulaw.com

# A Billion-Dollar Subsidized Industry



Source: Ministry of Finance

- National Development and Reform Commission (NDRC)
- “Mini-State Council”: Approved **US\$193 billion** in state investments in 2019
- Authority for subsidized renewable project approvals



中华人民共和国国家发展和改革委员会  
National Development and Reform Commission

Former NDRC Director and Vice Premier He Lifeng

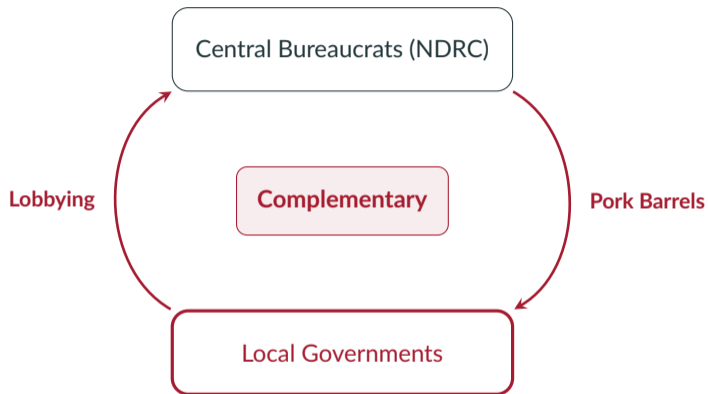
How do **distributive politics** influence renewable energy investment?

- **Pork Barrel Effect:** Hometown counties of central bureaucrats are **5.9 p.p. (66%) more likely** per year to get renewable energy plant approvals than others
- **Lobbying Effect:** 10 % more intergovernmental lobbying expenditure is correlated with 13% larger approved renewable energy project and 2.3 more approved project counts in the province
- **Complementarity:** Intergovernmental lobbying is **four times** more effective in project approvals for hometown counties of central bureaucrats.
- **Subsidy as Incentives:** Favoritism in solar projects ↓ when subsidies ↓.

# Theory

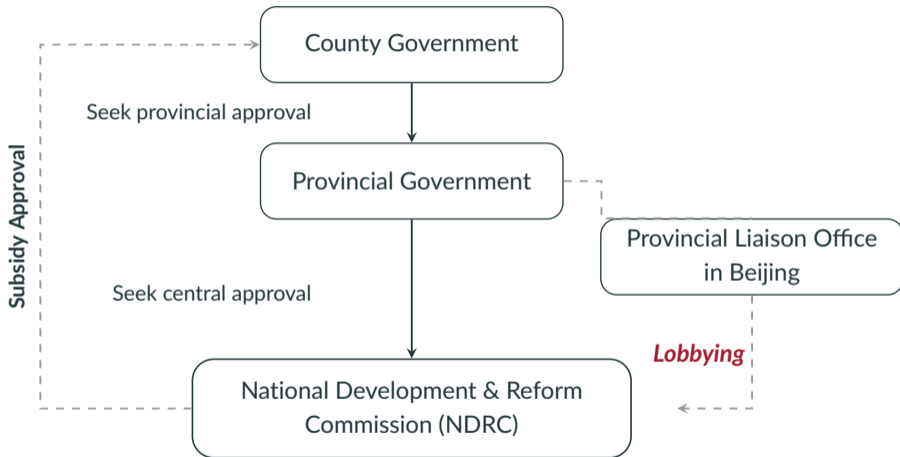
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# Bureaucratic Favoritism



- **Hometown ties** act as an the most visable channel for **pork barrel's** direction.

# Approval Process of Renewable Energy Projects



**Data**

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# 6000+ Subsidized Renewable Energy Plants

Sample: All subsidized plants connected to State Grid in 26 provinces (Approx. 80% population)

新能源云 NEW ENERGY CLOUD

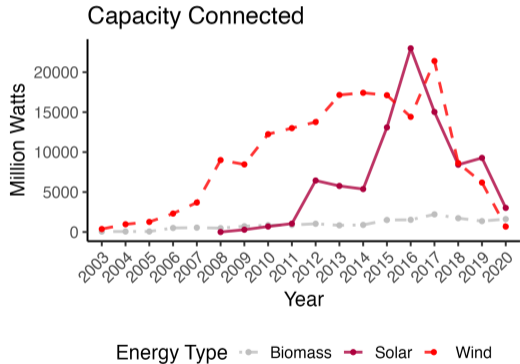
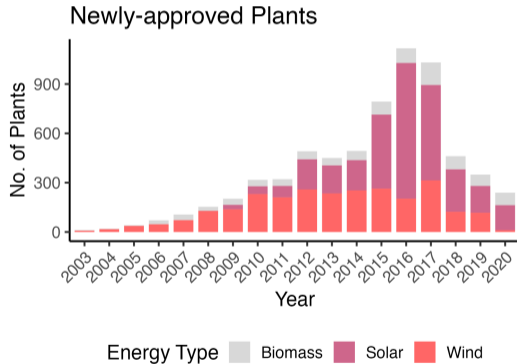
首页 发展概览 资源分布 电价补贴 能源资讯 企业入驻

项目列表:

序号	项目名称	详细地址	能源类型	项目类型	并网规模 (MW)	全部机组并网时间	上网电价 (含税) (元/千瓦时)	列入规模管理年份(年)
1	青岛润莱风...	山东省青岛...	风电	陆上集中式...	20	2020-12-30	0.6	2017
2	武城县三自...	山东省德州...	风电	陆上集中式...	50	2020-12-12	0.57	2018
3	华能新疆吉...	新疆维吾尔...	太阳能发电	集中式光伏	100	2020-12-21	0.4	2020
4	中电建中卫...	宁夏回族自...	风电	陆上集中式...	182	2020-12-29	0.45	2018
5	龙源天津滨...	天津市市辖...	风电	陆上集中式...	37.4	2020-12-13	0.6	2015
6	丝路大成木...	新疆维吾尔...	风电	陆上集中式...	50	2020-12-30	0.49	2016
7	浦城鑫浦现...	福建省南平...	太阳能发电	集中式光伏	19.38	2019-06-30	0.7	2016
8	华电兴化沙...	江苏省泰州...	风电	陆上集中式...	50	2020-12-28	0.6	2017

# Subsidized Renewable Plants

- **Types:** Solar (largest), Wind (2nd), Biomass (3rd)
- **Trends:** Wind grows mid-2000s; Solar surges post-2013; both peak late 2010s



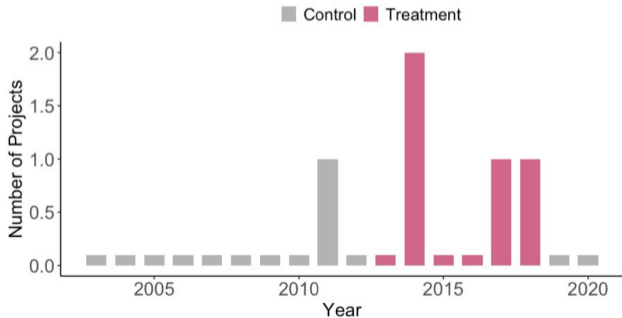
## Illustrative Case: Changli County

- During Liu He's NDRC Deputy Director tenure, Changli received significantly more renewable energy project approvals.
  - **4 projects** in Changli approved
  - Other 6 counties averaged 2.5 projects

### Treatment Example: Changli County



### Number of Renewable Energy Plants in Changli County by Year

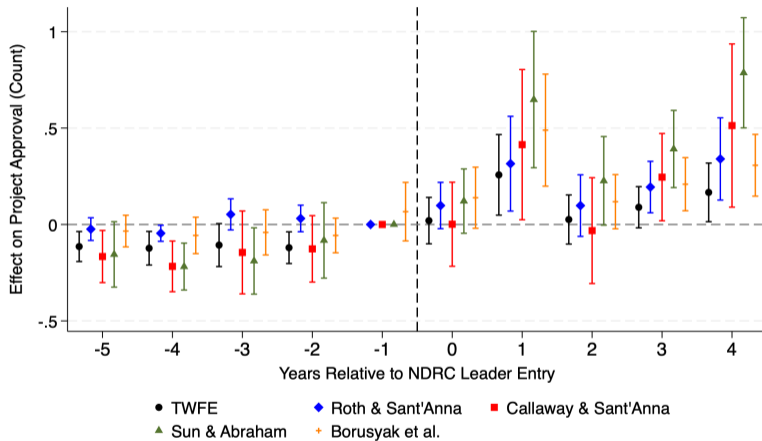


## Pork Barrel for Hometowns: (66%) more likely to get new projects

- **Project Count:** +0.21 projects per year in hometown counties
- **Impact:** With avg. 5.1-year tenure, ~1 extra plant per leader for their hometown

	Plants			Total Installed Capacity (MW)		
	Binary	Binary	Count	Raw	Raw	Logged
NDRC Leader's Hometown	0.047*** (0.017)	0.059*** (0.018)	0.214*** (0.058)	5.392** (2.137)	6.518*** (2.390)	0.220*** (0.072)
County and Year FE	✓	✓	✓	✓	✓	✓
Controls		✓	✓		✓	✓
Observations	40,086	33,793	33,793	40,086	33,793	33,793
Number of Counties	2,227	1,934	1,934	2,227	1,934	1,934
Adjusted $R^2$	0.183	0.189	0.225	0.149	0.151	0.211

# Pork Barrel for Hometowns: Dynamic Effects



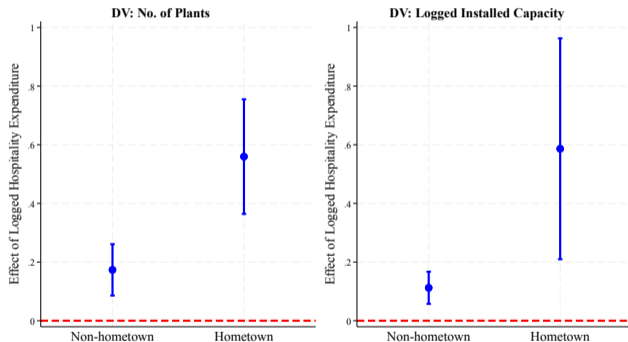
# Lobbying Effect on Renewable Energy Project Approvals

	Plants (Count)		Total Grid Scale (Logged)	
	(1) Full	(2) Full	(3) Logged	(4) Logged
Logged Receptional Lobbying Expenditure	15.019** (5.374)	23.459*** (3.703)	0.732** (0.277)	1.281*** (0.192)
Observations	91	85	91	85
Province and Year FE	✓	✓	✓	✓
Controls		✓		✓
Adjusted $R^2$	0.609	0.661	0.560	0.654
Number of Provinces	17	16	17	16

Standard errors clustered at province level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

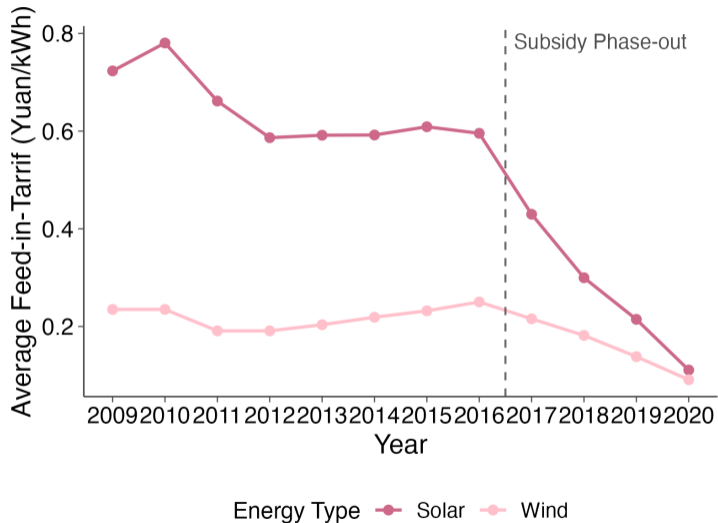
# Complementarity: Lobbying for Pork

- Local lobbying brings more plants, even without hometown ties
- Intergovernmental lobbying is **4× more effective** in hometown counties.

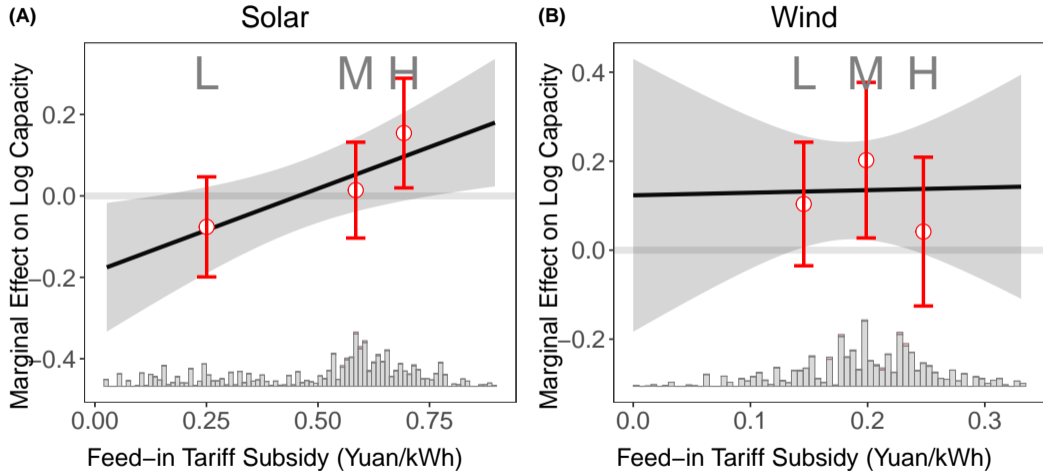


$$Y_{it} = \beta_1(\text{Hometown}_{it} \times \text{Lobbying}_{pt}) + \beta_2\text{Hometown}_{it} + \beta_3\text{Lobbying}_{pt} + \beta_4X_{it} + \lambda_i + \delta_t + \epsilon_{it}.$$

## Subsidy as Incentives: Phasing-out of FIT for Solar



# Subsidy as Incentives: Solar FIT Amplifies Favoritism



- **Distributive Politics in Non-democracy:**
  - Shifts the lobbying focus from politicians to discretionary bureaucrats, from the legislative branch to the executive branch
  - Geographical representation through packing the bureaucracy under single-party authoritarianism
- **Central-Local Dynamics in Industrial Policy**
  - Bottom-up mechanism + top-down mechanism.
  - Complementarity parallel to merit-connection debate

# Thank you!

## Welcome questions and discussion!

### Mechanisms

- Allocative Efficiency (Informational) [result](#) ✗
- Corruption Dismissals (Transactional) [result](#) ✓
- Lobbying Access Point [result](#) ✓

### Alternative Explanations

- Lineage Culture (Ancestral Halls) [result](#) ✗
- Natural Endowment Interaction [result](#) ✗

### Robustness Checks

- Exclude SP Municipalities [result](#)
- Prefectural-Level Hometown [result](#)

### Appendix

- [View Figures in Appendix](#)
- [View Tables in Appendix](#)

## Subsample Analysis

VARIABLES	No SP Municipalities (Plants)	
	(1) Binary	(2) Continuous
NDRC Leader's Hometown	0.0673*** (0.0197)	0.253*** (0.0653)
County and Year FE	✓	✓
Controls	✓	✓
Observations	33,266	33,266
Adjusted $R^2$	0.190	0.227

Robust standard errors in parentheses

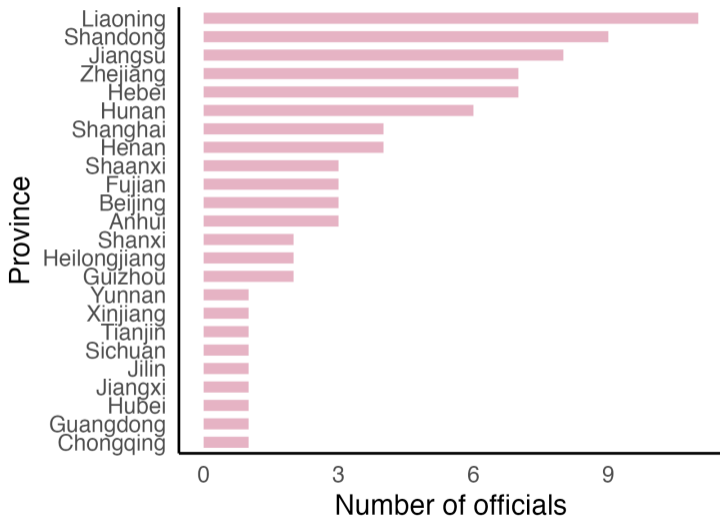
\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

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# Appendix

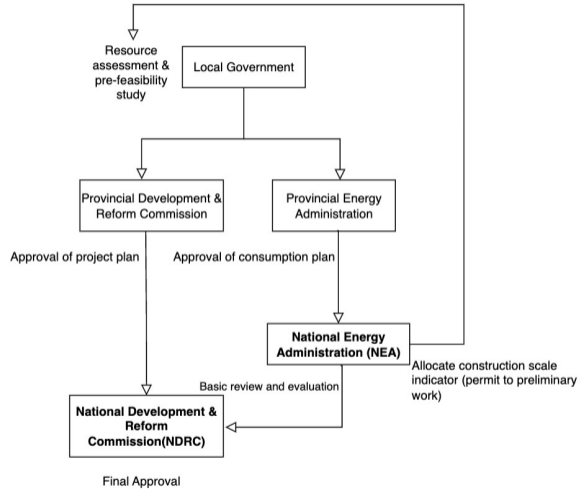
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## Hometown distribution of NDRC Leaders by province



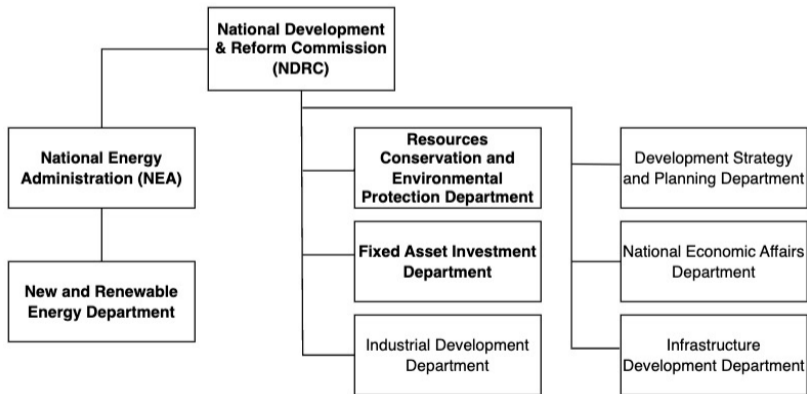
# Bureaucratic Approval of Renewable Energy Projects in China

- **County governments** submit applications
- **Provincial governments** provide endorsements.
- **NDRC/NEA** involved in **construction approval** and **subsidy allocation**.

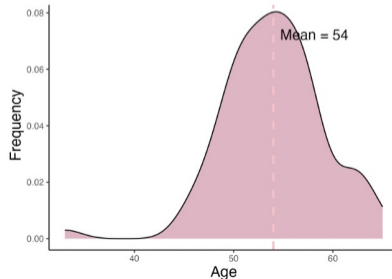
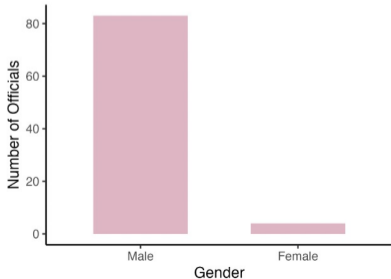
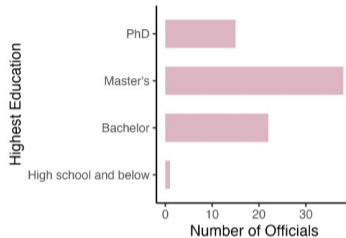
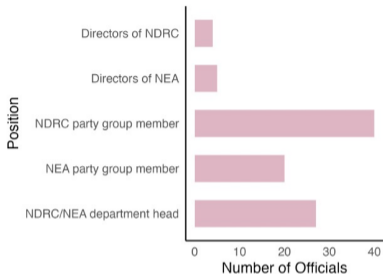


## 8 NDRC Agencies Involved in Energy Project Approvals

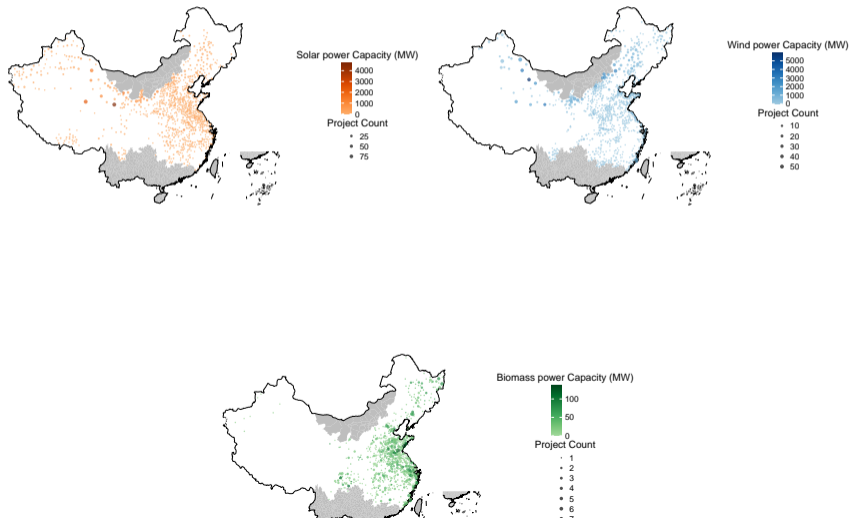
- Includes directors, Party group members, and department heads responsible for energy-related decision-making.



# NDRC Leaders: male, well-educated, career bureaucrats, mid-50s, 5 yrs avg. tenure



# Geographical distribution of renewable energy projects



# Roles of Relevant Agencies in Renewable Energy Project Approval

Agency	Role
New and Renewable Energy Department (NEA)	Plans and formulates policies for hydropower, biomass, and other renewables.
Resources Conservation and Environmental Protection Department (NDRC)	Green development strategy; environmental assessment of proposals.
Fixed Asset Investment Department (NDRC)	Approval of major investment projects; direct review of renewable energy proposals.
Infrastructure Development Department (NDRC)	Technical review of energy and industrial infrastructure projects.
Industrial Development Department (NDRC)	Oversight of industrial ventures; sectoral alignment.
National Economic Affairs Department (NDRC)	Macroeconomic coordination; monitors economic impact of major projects.
Development Strategy and Planning Department (NDRC)	Long-term development planning; indirect influence on project prioritization.

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## Model: Hometown on Renewable Energy Projects

- County-year panel for 2,289 counties (2003–2020).

$$Y_{it} = \beta_0 + \beta_1 \text{Hometown}_{it} + \beta_2 X_{it} + \lambda_i + \delta_t + \epsilon_{it}$$

- $Y_{it}$ : **Binary and count of new projects**; total energy capacity of new plants (MW), and its logarithmic form.
- $\text{Hometown}_{it}$ : County is the ancestral hometown (*jiguan*) of an incumbent NDRC leader (directors, and heads of 7 key agencies) in year  $t$  (e.g., Do et al., 2017; Kung and Zhou, 2021).
  - Hometowns (*jiguan*) from official biographies.
- **Controls ( $X_{it}$ ), Fixed Effects ( $\lambda_i, \delta_t$ ):**
  - $X_{it}$ : Night-time light intensity, daylight hours, mean wind intensity, logged population.
  - $\lambda_i$ : County FEs.     $\delta_t$ : Year FEs.

## Prefectural-level of NDRC Leader's Hometown

	Plants			Energy Capacity (MW)	
	Binary	Binary	Continuous	Raw	Logged
NDRC Leader's Hometown (Prefecture)	0.020** (0.009)	0.032*** (0.011)	0.095*** (0.030)	1.278 (1.156)	0.086** (0.043)
County and Year FE	✓	✓	✓	✓	✓
Controls		✓	✓	✓	✓
Observations	40,086	33,793	33,793	33,793	33,793
Number of Counties	2227	1934	1934	1934	1934
Adj. $R^2$	0.18	0.19	0.21	0.15	0.21

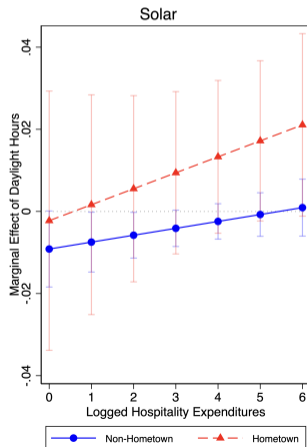
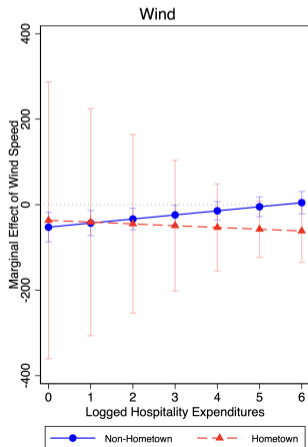
Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

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# Informational vs. Transactional

No improvement in allocative efficiency attributable to hometown ties: additional information transmission not the primary channel



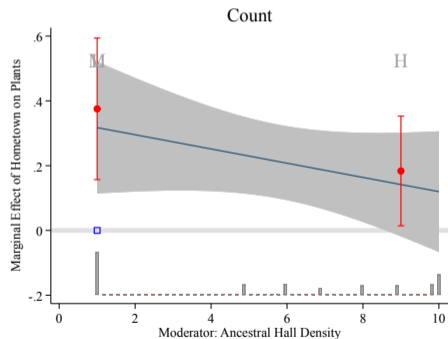
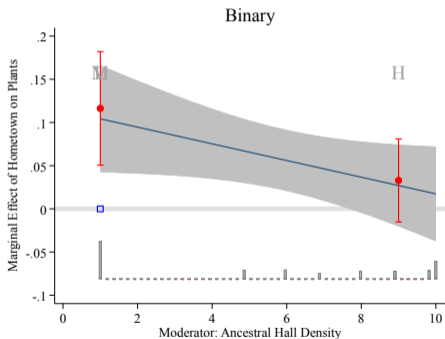
## Informational vs. Transactional

Bureaucrats overseeing larger hometown projects' approval more likely to be dismissed for corruption: consistent with transactional favoritism

	(1)	(2)	(3)
	Dismissed for Misconduct		
Plants (Binary)	1.223 (0.864)		
Plants (Count)		0.020 (0.044)	
Total Installed Capacity (Logged)			0.304* (0.178)
Observations	81	81	81
Controls	YES	YES	YES
Pseudo $R^2$	0.070	0.033	0.090

# Alternative Explanation: Social Preference of Central Bureaucrats

- Examine moderating effect of lineage culture (measured by # of ancestral halls per 10k population).



## Interactive Effect (Natural Endowment)

	(1)	(2)
	Wind (Binary)	Solar (Binary)
NDRC Leader's Hometown $\times$ Wind Speed	-0.0264** (0.0119)	
NDRC Leader's Hometown	0.157** (0.0618)	0.00472 (0.0603)
NDRC Leader's Hometown $\times$ Daylight Hour		1.09e-05 (2.60e-05)
County and Year FE	✓	✓
Controls	✓	✓
Observations	33,793	33,793
Adjusted $R^2$	0.150	0.163

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$