



Community vs. Corporate Wind

Does it Matter Who Develops the Wind
in Big Stone County, MN?

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Does it Matter Who Develops the Wind in Big Stone County, MN?

- Define
 - Corporate wind
 - Community wind
 - Various manifestations
- Review of other studies
 - Economic impact of wind
 - Relative economic impact of community vs. corporate wind
- Economic impact analysis for Big-Stone County



Corporate Wind

- Developed, installed, operated by non-local owners, or by utilities
- Local participation often limited to minor construction role, plus land lease payments
- Often very large in scale (>50 MW)



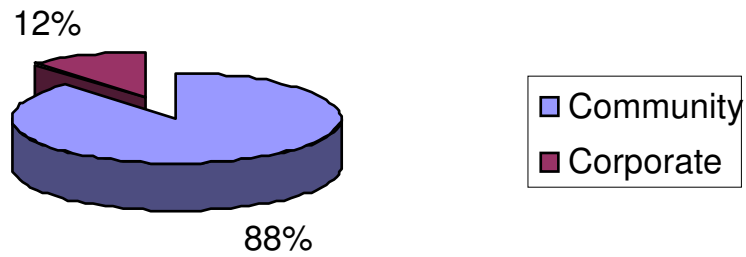
Community Wind

- Local ownership (various forms)
- Generally small-scale (<20 MW)
- May purchase more inputs locally

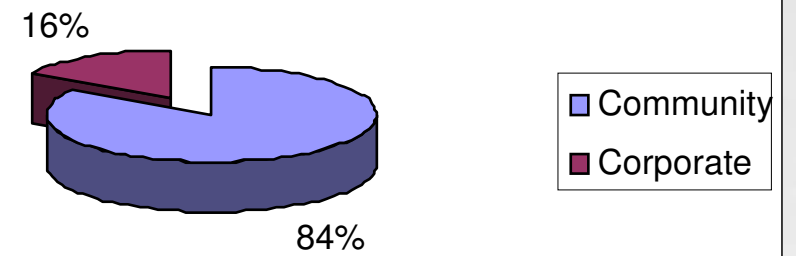


Europe vs. U.S.

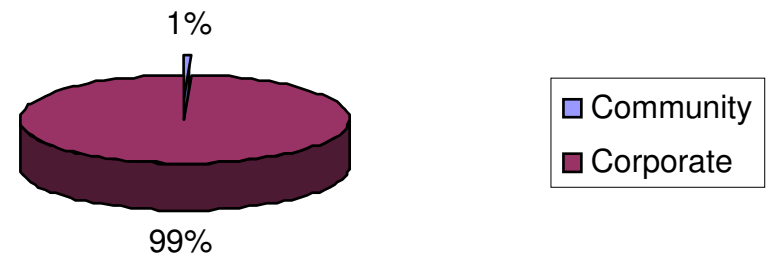
Germany



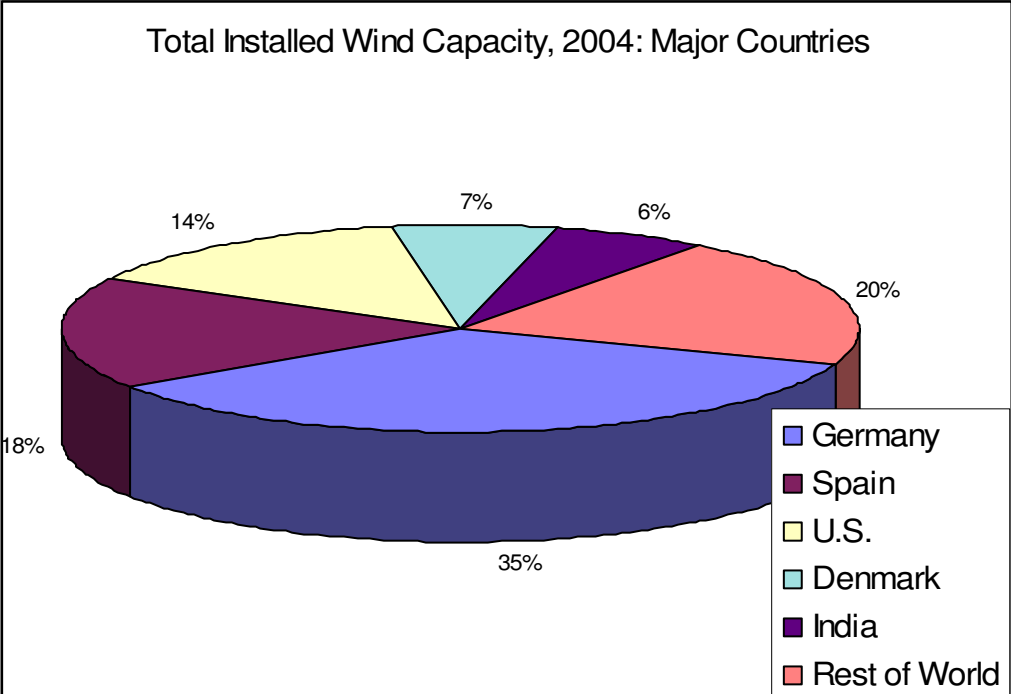
Denmark



U.S.



Installed capacity, major countries



Community wind ownership structures

- Municipal wind
- Behind-the-meter
- Co-operatives
- Multiple-local investors
 - Standard
 - “Flip” structures



Community wind ownership structures:

Municipal

- Schools, cities, counties, EDAs, municipal utilities, etc.
- Power sold to utility (PPA), or displaces imports
- Low-cost financing (“munis”)
- Green attribute saleable
- Lower required IRR
- Difficult to capture the PTC



Community wind ownership structures: Behind-the-meter

- Offset retail purchases
- Savings taxable (unless non-profit)
- No green tags
- No PTC (b/c no arm's length transaction)
- Utility complications
 - Severance charges
 - Stand-by power



Community wind ownership structures:

Co-ops

- RECs limited by “all-requirements contracts”
- No PTCs
- No green tags
- One-member, one-vote
- Patronage dividends



Community wind ownership structures: Standard MLI LLCs

- Capitalized locally
 - Often with additional bank financing
- Sell power to utility (PPA)
- Capture PTC?
 - Requires large tax appetite
 - Requires either
 - Small # of investors (to be considered “active” income), OR
 - “Passive” income to offset w/PTC



Community wind ownership structures: “Flips”

- Local investors do pre-development
 - Permits, studies, feasibility
- Corporate partner buys PTC @ discount
- Ownership “flips” to locals when PTC expires



Question: Does it matter who develops the wind in Big Stone County?

- How to measure?



Impact Analysis

- Input-output modeling captures:
 - Local re-spending coefficients
 - Leakages into
 - Taxes
 - Savings
 - “imports”



I-O Example

- \$1 spent @ local restaurant (donut)
 - \$.15 tip income to waitress
 - \$.20 profit to owner
 - \$.05 taxes
 - \$.60 to replenish inventory
 - \$.10 income to local baker
 - \$.02 taxes
 - \$.48 spent to replenish inventory
 - \$.42 spent on “imported” flour
 - \$.06 spent on propane
 - » \$.02 income to local distributor
 - » \$.04 “imported” propane



Example cont'd: direct income effects

- \$1 spent @ local restaurant (donut)
 - \$.15 tip income to waitress
 - \$.20 profit to owner
 - \$.05 taxes
 - \$.60 to replenish inventory
 - \$.10 income to local baker
 - \$.02 taxes
 - \$.48 spent to replenish inventory
 - \$.42 spent on “imported” flour
 - \$.06 spent on propane
 - » \$.02 income to local distributor
 - » \$.04 “imported” propane



Example cont'd: indirect income effects

- \$.47 income generated (directly)
 - \$.10 saved
 - \$.37 re-spent
 - \$.17 @ Wal-Mart in neighboring town
 - \$.20 on donuts(!)
 - \$.03 tip income for waitress
 - \$.04 profit for owner
 - \$.01 taxes
 - \$.12 replenishing inventory
 - » \$.02 income for baker
 - » \$.096 on imported flour
 - » ...



Impact Example: multipliers

\$1 spending injection caused:

- Round 1: \$.47 income
- Round 2: \$.10 income
- Round 3: \$.02 income
- ...

In this example:

Income multiplier = .59

A \$1 injection causes \$.59 income



Impact analysis: Minnesota IMPLAN Group (data and model)

- County- and state-level input-output tables, showing linkages between sectors
- Best tool available for local economic impact analysis



Impacts of wind development on local economy

- Construction & development spending
- Income streams in operations phase
- O&M spending

Do these impacts differ between community and corporate wind development?



Other studies: Impacts/MW (Operations Phase)

	Grover (2002)	Northwest Economic Associates (2003)		
	Kittitas County, WA (390MW)	Lincoln County, MN (107 MW)	Morrow &Umatilla Counties, OR (25 MW)	Culberson County, TX (30 MW)
Jobs	.14	.29	.24	.36
Wages, Business Income, and Income from Other Sources	\$10,940	\$14,207	\$6,704	\$13,253
State and Local Taxes	N/A	\$4682	\$9,680	\$12,900



Other studies: Impact/MWh (Operations Phase)

Grover (2005)	(A) Corporate	(B) Community	(C) Absolute Difference (B-A)	(D) Percent Difference (C/A)*100
Output	\$138,800	\$161,200	\$22,400	16%
Wages	\$34,900	\$49,500	\$14,600	42%
Jobs	1.2	1.5	.3	25%
Business Income	\$3,200	\$4,900	\$1,700	53%
State & Local Tax Revenues	\$15,700	\$17,000	\$1,300	8%



Other Studies

- Constanti (2004)
- Goldberg, Sinclair, & Milligan (2004)



Other studies: summary

- Construction phase differences are thought to be large
- Most studies do not distinguish impacts of corporate vs. community wind in operations phase (Grover 2005 is a notable exception)
- Some studies (Constanti) don't account for opportunity cost of capital
- Details of methodology are very difficult to reconstruct



Our Example

- 10.5 MW project
 - 5 Suzlon turbines @ 2.1 MW
- \$13.778 m. turn-key cost
- \$440 K. annual O&M
- PPA @ \$33.60/MWh
- Full equity financing (and PTC capture)



Upfront cost estimates

Turbines & Towers (5 Suzlon S88 2.1 mW)	10,250,000
Total Installation Cost	2,500,000
Interconnection	
High Voltage Line Extension	50,000
Meters	30,000
Interconnection	75,000
Interconnection Studies	50,000
Professional Services	
Qualified Wind Developer	500,000
Legal	100,000
Permitting	10,500
Engineering	100,000
Extended Warranty	112,500
Total	13,778,000



O&M Costs

Wind turbine manufacturer service	100,000
Third party service	65,000
Property Insurance	37,500
Liability Insurance	25,000
Land Lease/Easement	25,000
Electricity	5,000
Repair Account	100,000
Professional Services	35,000
Administrative	10,000
Information Services (tel, internet)	7,500
Management Fee	30,000
Total	440,000



Results...

Scenario	Annual Direct, Indirect, and Induced Effect on Value Added	Annual County-Wide Employment Impact
Community Wind (5% opportunity cost of capital)	\$1,259,188	14.5
Community Wind (8% opportunity cost of capital)	\$639,738	8.2
Corporate Wind	\$249,388	4.3



Key assumptions

- Construction and O&M spending patterns identical
- PTC fully captured
- Local capital only
- Simple capital structure
- Fairly low opportunity cost of capital
- PPA @ \$0.336/kWh



Where next?

(Questions?)

