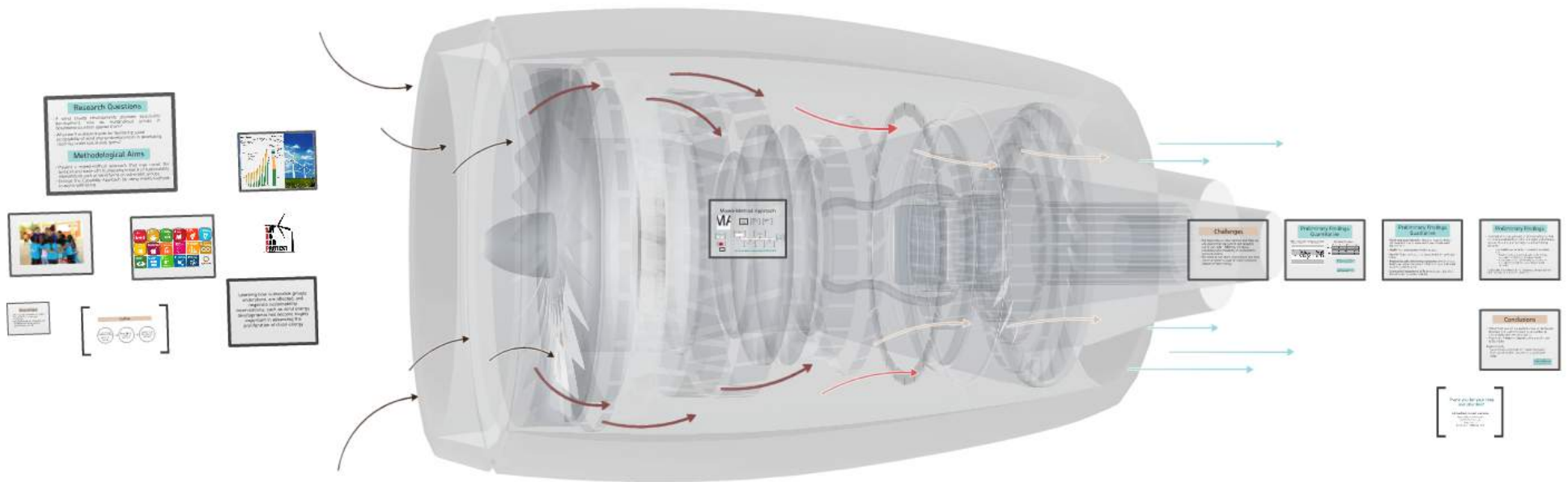


## A Mixed-method Approach to Analyse Well-being Impacts of Wind Energy in Southern Mexico

International Workshop on Poverty, Inequality Dynamics, and Economic Development:  
Tensions and Trade-offs in Mixed Methods Research

Paola Velasco Herrejon and Flavio Comim





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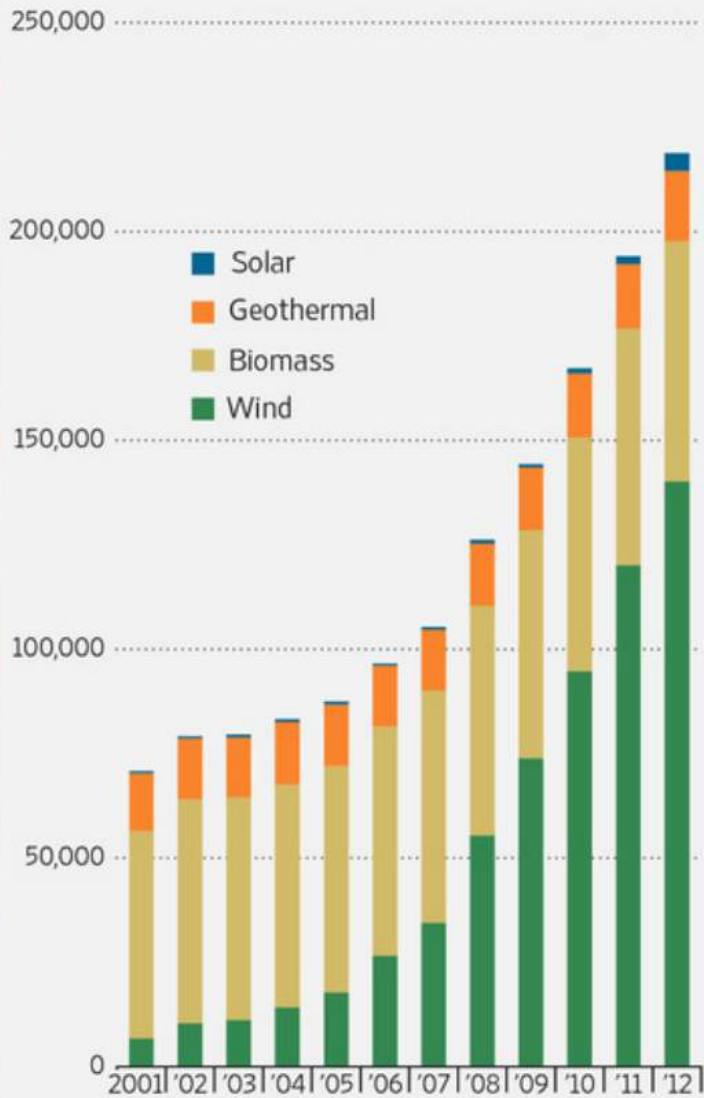
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## Green Growth

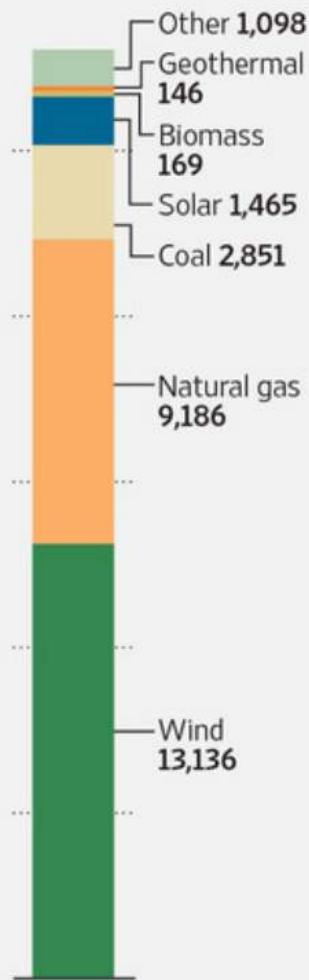
Electricity generation by renewable sources other than hydropower has tripled since 2001, due mostly to increased wind output. Figures are thousand megawatt-hours per year.



Source: Energy Information Administration

## Change in the Air

New generating capacity in the U.S. has included increasingly significant amounts of renewable sources, with wind surpassing natural gas last year (new capacity in megawatts)



The Wall Street Journal





**S**AY

**N**O

**A**ND

**P**ROTEST



# Research Gaps

- Few studies have looked at reasons for opposition in emergent economies.
- Relational dynamics of perceptions of wind farms remain elusive (Devine-Wright 2013).

Learning how vulnerable groups understand, are affected, and negotiate sustainability interventions, such as wind energy developments has become hugely important in advancing the proliferation of clean energy



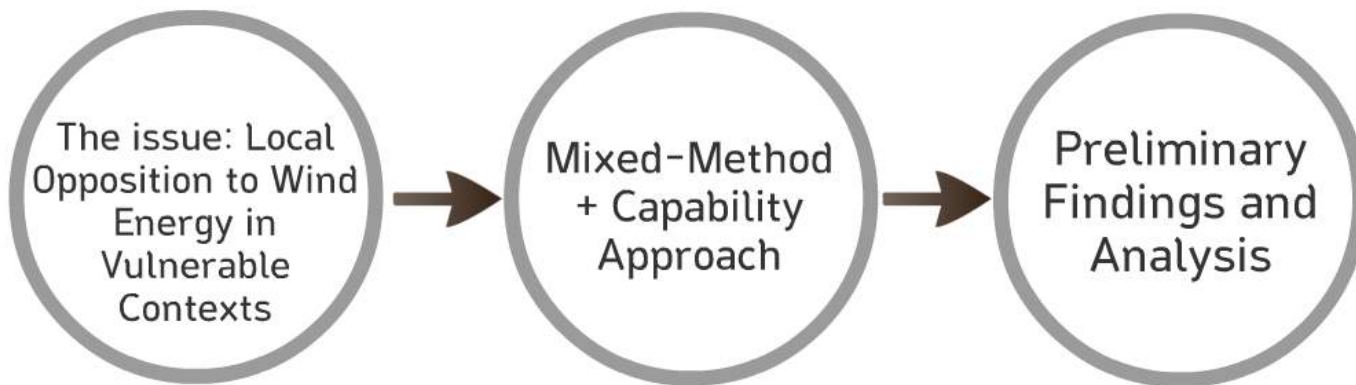
# Research Questions

- If wind energy developments promote sustainable development, why do marginalised groups in developing countries oppose them?
- What are the determinants for facilitating social acceptability of wind energy developments in developing countries under sustainable terms?

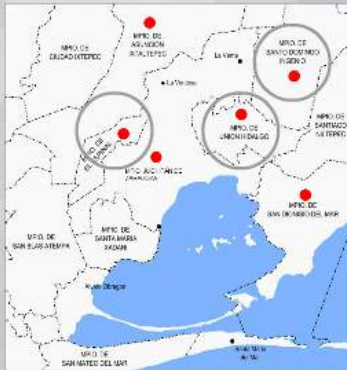
# Methodological Aims

- Present a mixed-method approach that may unveil the tensions and trade-offs in assessing impacts of sustainability interventions such as wind farms on vulnerable groups
- Enlarge the Capability Approach by using mixed-methods to assess well-being

# Outline



# Mixed-Method Approach



**Theoretical Framework**

- What kind of life people within local communities have reason to value
- Whether their conceptions of well-being coincide with the process in which set of farms have been developed, as well as the outcomes of these interactions

**Case Study Approach**  
 (See 1988, 1992, 1999, 2009)

**Mixed Methods Literature**

Most researchers use (1) an understanding of one form, and (2) the nature of data from a secondary and tertiary source, available for the general research community.

The Qualitative Approach can address:

- How to understand the social context and the role of the individual in the social process
- The social structure, subjective well-being, and the psychological state

Also relevant to the study of the relationship between the two types of methods, and the study of the social and economic well-being of the individual, and the role of the individual in the social process.

For example:

- The relationship between the two types of methods is a complex one, and the study of the social and economic well-being of the individual, and the role of the individual in the social process.

**Mixed Methods Literature**

The study method is a research tool approach, also known as sequential integration (Shaffer et al. 2008) where the use of one method is used for the first step in a research project.



The use of mixed methods is a good idea to understand the complexity of the social and economic well-being of the individual, and the role of the individual in the social process. This approach is a good idea to understand the complexity of the social and economic well-being of the individual, and the role of the individual in the social process.

**Semi-Structured Interviews and Focus Groups**

Qualitative research to identify and assess well-being dimensions and indicators

Year	Indicator	Value
2010	Percentage of population with access to electricity	98.5
2010	Percentage of population with access to water supply	98.5
2010	Percentage of population with access to health services	98.5
2010	Percentage of population with access to education	98.5
2010	Percentage of population with access to housing	98.5
2010	Percentage of population with access to employment	98.5
2010	Percentage of population with access to social security	98.5
2010	Percentage of population with access to health insurance	98.5
2010	Percentage of population with access to education	98.5
2010	Percentage of population with access to housing	98.5
2010	Percentage of population with access to employment	98.5
2010	Percentage of population with access to social security	98.5
2010	Percentage of population with access to health insurance	98.5

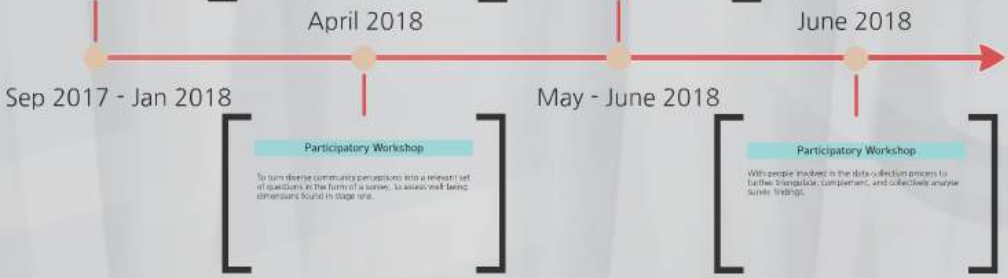
**Questionnaire**

- Closed and open ended questions
- Conducted by local researchers

**557 surveys across the three communities**

**Why Mixed-Methods?**

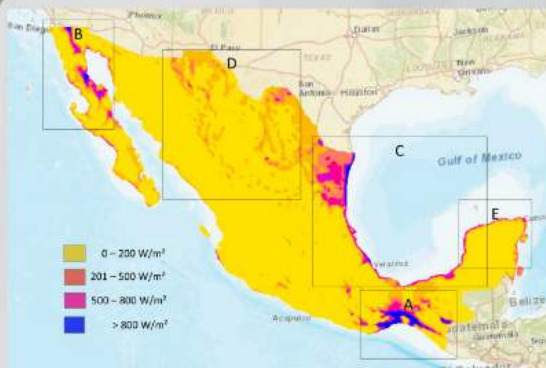
- Understand complex phenomena and increase validity through triangulation
- Generate Evidence
- Explore those people in the community that will be most affected by the intervention, and the role of the individual in the social process



**Qual-quant-qual approach or 'sequential integration' (Shaffer et al. 2008)**

# Case Study: Istmo the Tehuantepec, Mexico

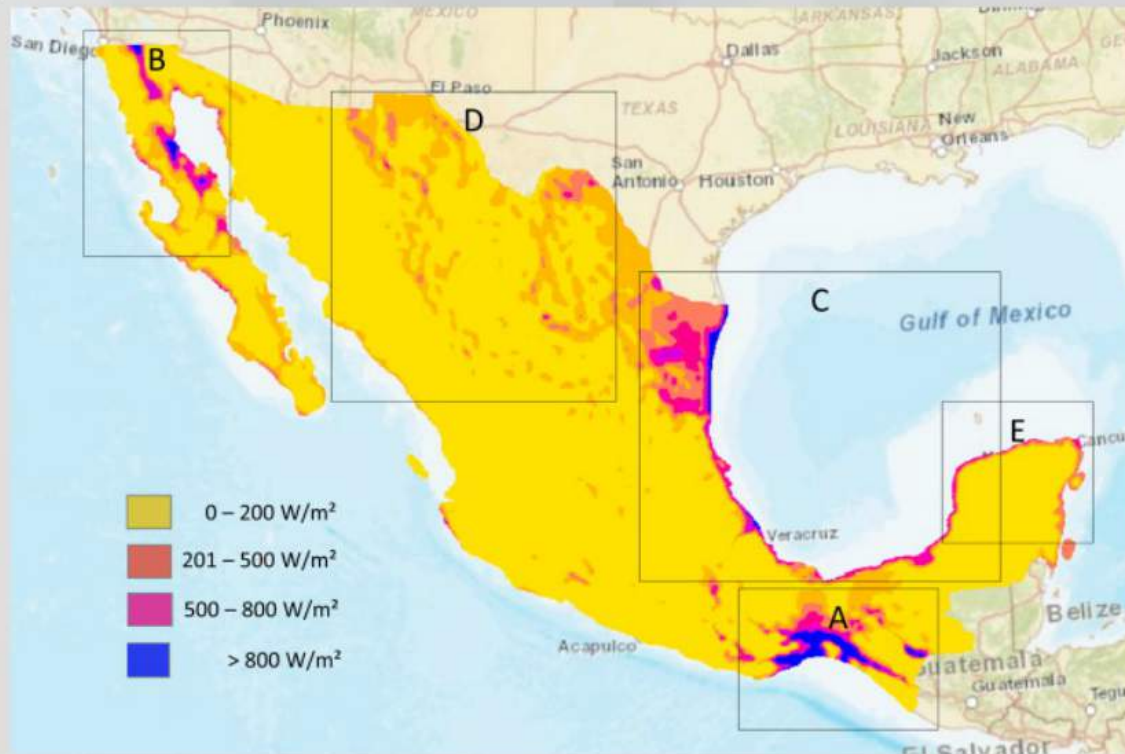
Wind Energy in Mexico



International Energy Companies in the Region



# Wind Energy in Mexico



## International Energy Companies in the Region



# Mareña Renovables

- 400MW = 1,280,000 households



The case of Mexico is therefore a good place to conduct an inquiry to understand how the lives of the poor and marginalised are shaped by the introduction and expansion of sustainability interventions such as wind power in the areas where indigenous populations have lived for more than a thousand years, and to which their livelihoods depend on.



# Theoretical Framework

- What kind of life people within local communities have reason to value
- Whether these conceptions of well-being correlate with the process in which wind farms have been developed, as well as the outcomes of these interventions.

**Capability Approach**  
(Sen 1985, 1992, 1999, 2009)

# Mixed Methods Literature

- Move beyond simplistic and static understandings of well-being, and increase the validity of data through triangulation and iteration, adding credibility to the overall findings (Roelen and Camfield 2013)

The Capability Approach can add to MM

- Identify and weight valuable things people are able to do or be
- To include resources, subjective well-being, rights, and functionings/capabilities.

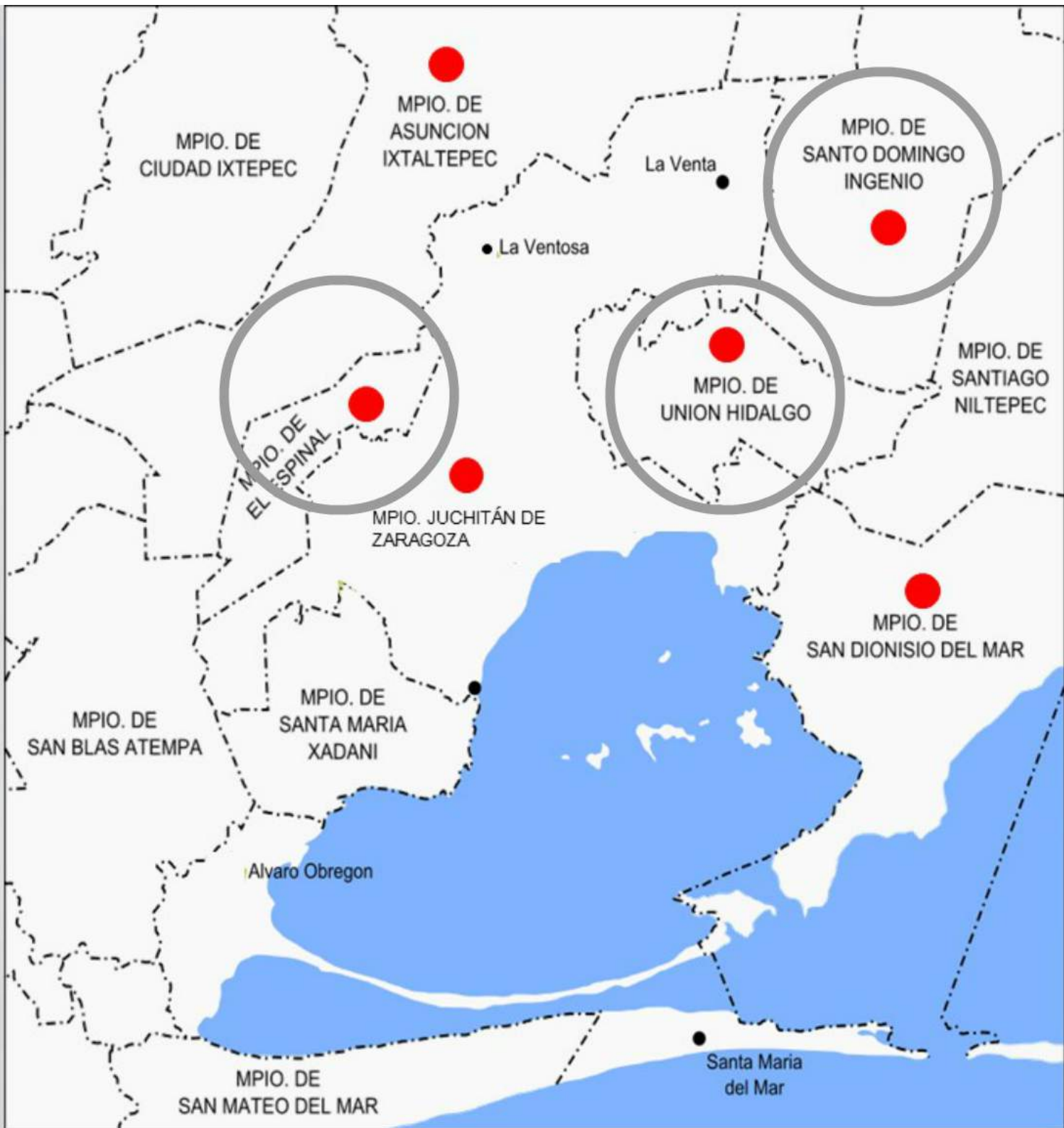
Also it allowed us to engage more people in the conversation through a variety of methods, while enabling a profound, structured, and comparable understanding of what constitutes a meaningful life within three local communities

Our contribution

- This combination furthers theory-based impact evaluations by analysing social aspects of well-being.

# Mixed Methods Literature

The study involved a qual-quant-qual approach, also known as 'sequential integration' (Shaffer et al. 2008) where the output of one method is used for the design of another.



### Semi-Structured Interviews and Focus Groups

Qualitative research to identify and unpack well-being dimensions and indicators

Area	Respondents	Number of participants
People that live near and farm (three communities)	People that live near and farm (three communities)	26
	Owners of and others who farm to do a living (three communities)	14
Community	Local authorities	2
	Local government (three communities)	11
	NGOs and co-operatives (three communities)	3
Patients		5
Total of participants in semi-structured interviews and focus groups		61

### Questionnaire

- Closed and open ended questions
- Conducted by local researchers

557 surveys across the three communities

April 2018

June 2018

Sep 2017 - Jan 2018

May - June 2018

### Participatory Workshop

To turn diverse community perceptions into a relevant set of questions in the form of a survey, to assess well-being dimensions found in stage one.

### Participatory Workshop

With people involved in the data collection process to further triangulate, complement, and collectively analyse survey findings.

Qual-quant-qual approach or 'sequential integration' (Shaffer et al. 2008)

# Semi-Structured Interviews and Focus Groups

Qualitative research to identify and unpack well-being dimensions and indicators

<b>Actor</b>	<b>Respondents</b>	<b>Number of participants</b>
Community	People that live near wind farms (three communities)	30
	Owners of land where wind farms are constructed (three communities)	14
	Agrarian authorities	3
	Local government (three communities)	11
	NGO's and collectives (three communities)	3
Academia		6
<b>Total of participants in semi-structured interviews and focus groups</b>		<b>67</b>

## Participatory Workshop

To turn diverse community perceptions into a relevant set of questions in the form of a survey, to assess well-being dimensions found in stage one.

# Questionnaire

- Closed and open ended questions
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**557 surveys across the three communities**



## Participatory Workshop

With people involved in the data collection process to further triangulate, complement, and collectively analyse survey findings.

# Challenges

- We have only a cross-section and that we are aware that we cannot get causality out of our data - MM may increase credibility and reliability of econometric generalisations.
- We need to run more regressions and test more variables to look at more relational aspects of well-being.

# Preliminary Findings

## Quantitative

Table 1. Taxonomy on 'reasons to value'

Reasons given	Explanation	Indicator	Threshold
No reasons	Empty cell, no reason provided	0	No attempt of justification
Redundant	Simply reasserts what has been claimed: 'it is important because it is important'	1	Failed attempt of justification, but at least it is an attempt
Ultimate cause	Claims that this capability is valuable because all other capabilities depend on it; it implies hierarchical causality without specifying impacts	2	There is a very simple justification that normally overestimates the impact of the capability in question
Instrumental value	Clearly state, it implies that something is important in order to achieve another thing, e.g., health is important for a good job	3	This is one of the category of reasons considered valid by Sen (1999, 2009)
Intrinsic value	Clearly state, it assumes the highest value of a capability due to its intrinsic important (its value is not derived from other conditions)	4	This represents a fundamental category of reason for valuing a capability

Well-being Dimensions

Reasons to value	Family	Health	Education	Job	Money	Noncognitive values	Unable to rank
No reasons	19	25	18	9	8.5	26	85
Redundant	8	8	7	6	13	9	4.7
Ultimate cause	12	31	22	0	8.5	13	3.7
Instrumental value	7	26	41	82	61	26	3.7
Intrinsic value	54	9	11	3	9	26	3

- Importance of family on intrinsic grounds,
- Health as a precondition for other capabilities
- Education and having a job as instrumental
- Money as status or relative prestige

People seem happier the older they are, the more money they have, the higher their social values, and the stronger support and love that they have from their families.

# TABLE 1. TAXONOMY ON REASONS TO VALUE

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# Preliminary Findings

## Qualitative

- **Family and social networks:** Negative impact Individual achievements are not perceived as overall well-being improvement.
- **Health:** Real and assumed health hazards
- **Security:** Negative impact, increased alcoholism and drug usage
- **Relationship with wind energy companies:** Investments in health, education and cultural infrastructure, but through an unaccountable govt.
- **Community Engagement:** Willingness to participate but limited access to decision making.



# Preliminary Findings

- Understanding valued ways of doing and being may increase acceptability of wind energy by undertaking policies that aim at improving valued well-being elements.

Acceptability may be further increased to the extent that:

- Benefit provision is done directly to the affected population (not through the government)
- Advantages are equally distributed among the population to avoid the weakening of social networks.

People value the feeling of being recognised as much as they value improvements on their well-being.

# Conclusions

- Mixed-methods can be useful to face contemporary development challenges such as opposition to sustainability interventions and to
- Overcome limitations natural to the use of cross-section data

## Regarding CA

- Suggested a taxonomy of "reasons to value" that can be further analysed in a qualitative stage

Local acceptability of sustainability interventions such as wind farms in deprived contexts will only be attained through inclusive community engagement that pays particular attention to valued ways of being and doing of the local population, such as access health services, employment, higher education, diversified sources of income, and the strengthening of family ties in the Mexican case.

Local acceptability of sustainability interventions such as wind farms in deprived contexts will only be attained through inclusive community engagement that pays particular attention to valued ways of being and doing of the local population, such as access health services, employment, higher education, diversified sources of income, and the strengthening of family ties in the Mexican case.



**Thank you for your time  
and attention!**

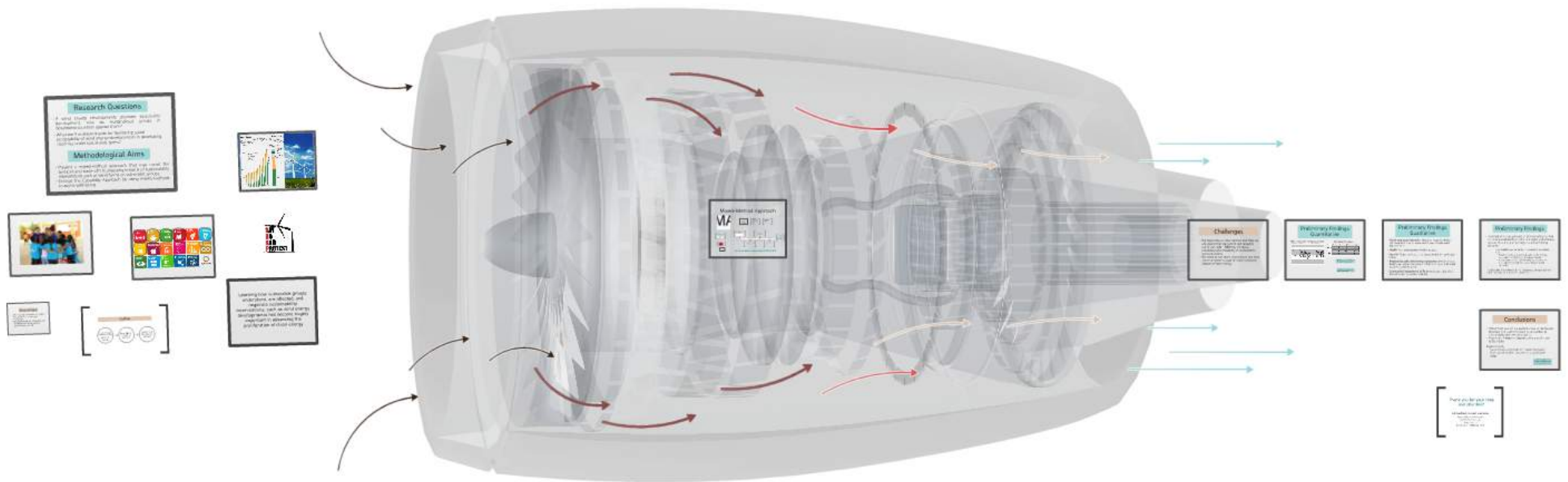
**All feedback is most welcome**

Paola Velasco Herrejón

[pv296@cam.ac.uk](mailto:pv296@cam.ac.uk)

Flavio Comim

[flavio.comim@gmail.com](mailto:flavio.comim@gmail.com)



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