

LIVING WITH FRACKING: WOMEN'S NARRATIVES FROM ZHARRËZ, ALBANIA

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Resilience Strengthening in Albania - RESEAL

Project

UNDP Albania



Living with Fracking: Women's Narratives from Zharrëz, Albania

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WORCESTER POLYTECHNIC INSTITUTE
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ABSTRACT

Zharrëz, Albania is home to Europe's largest onshore oil field. After 67 years of conventional oil drilling, hydraulic fracturing (fracking) is now used in the oil field.

The goal of our project was to document women's experiences with fracking in Zharrëz and produce media and other deliverables to amplify the perspectives of underrepresented people in disaster risk management (DRM). We visited oil wells in fracking zones, speaking with residents about air, water, and soil pollution from oil extraction. We interviewed 20 women and 7 men and conducted participatory activities related to life in fracking zones. We applied 4 theoretical frameworks to understand these experiences. We recommend DRM projects incorporate narrative elicitation activities in future risk assessments.



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We would like to acknowledge all the people and organizations that have supported our work. This project would not be possible without the partnership with UNDP Albania RESEAL. We would specifically like to thank Doreid Petoshati and Gentjan Dema of RESEAL for their dedicated guidance. We would also like to thank Iris Buzi and Auron Peshaj for their guidance on our methods and field work.

From UNDP, we'd like to thank Tatjana Mehillaj for working with us as an interpreter and Ardian for driving us to and from Zharrëz over the course of our fieldwork. A special thanks go to the Administrative Unit and Social Protection Office of Zharrëz and Environmental Association "Zhareza" for helping us recruit participants for interviews and workshops. Finally, thank you to our esteemed professors, Leslie Dodson, Ph.D. and Robert Hersh, M.A. for their continued support and guidance over the semester.



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Section	Primary Author	Editor(s)
Abstract	All	All
Executive Summary	Frunzi, Sheehan	All
Introduction	All	All
Background		
Fier region: Home of Albania's Oil Industry	Sheehan	Darer, Frunzi
What is Fracking?	Sheehan	Darer, Frunzi
Environmental and Community Effects of Fracking	Sheehan, Darer	Darer, Frunzi
Framework for Evaluating Risk Perception of Fracking	Sheehan, Darer	All
Vulnerabilities and Frameworks to Analyze Them	Frunzi	Sheehan
UNDP and IDRA Research and Consulting	All	All
Narrative Elicitation	Darer	Sheehan, Frunzi
Our Approach		
Understand Fracking in Zharrëz	All	All
Explore and apply alternative frameworks that bring marginalized perspectives into Disaster Risk Management processes	All	All
Utilize participatory narrative elicitation activities to understand women's lived experiences with fracking	All	Darer

AUTHORSHIP CONT.

Section	Primary Author	Editor(s)
Findings		
Develop a prototype transmedia collection of women's narratives and a facilitator's manual for narrative elicitation.	Darer, Sheehan	Frunzi
Understanding Fracking Globally and in Zharrëz	Sheehan	All
Site visits	Darer, Frunzi	
Pollution	Sheehan	Darer, Frunzi
Livelihood	Darer, Frunzi	Sheehan
Physical and Mental Health Problems Caused by Fracking are Present in Zharrëz	Frunzi	Darer, Frunzi
Compensation for Damage to Homes	Frunzi	All
Women in Zharrëz Value Domestic Roles	Frunzi	Sheehan
Mini Narratives	Frunzi	All
Narrative Elicitation Workshop	All	All
Frameworks	All	All
Recommendations and Conclusions	All	All

EXECUTIVE SUMMARY

Europe's Largest Onshore Oil Field

The Patos municipality is the center of the oil industry in Albania, with subdivisions including the village of Zharrëz, and hosts the largest onshore oil field in Europe: the Patos-Marinza Oil Field (Métois et al., 2020). Bankers Petroleum has invested heavily in the modernization of existing oil infrastructure and the company introduced fracking to the oil field in 2006.

Fracking is an underground drilling process to extract hydrocarbons, such as crude oil and natural gas. Its process begins with vertical or angled drilling of a well more than 5,000 feet underground to the layer of gas-rich shale. Once the well reaches the hard shale rock formations where hydrocarbons are trapped, horizontal drilling begins and can extend for miles. When this is completed, a perforating gun loaded with explosive charges is sent into the horizontal portion of the well to create small holes in the casing (Denchak, 2022). Fracking fluid- a mixture of water, sand, and other chemicals including methanol, ethylene glycol, and propargyl alcohol- is then injected into the well under extremely high pressure to create fractures in the shale rock formations. The chemicals in fracking fluid are considered hazardous to human health (Denchak, 2022).



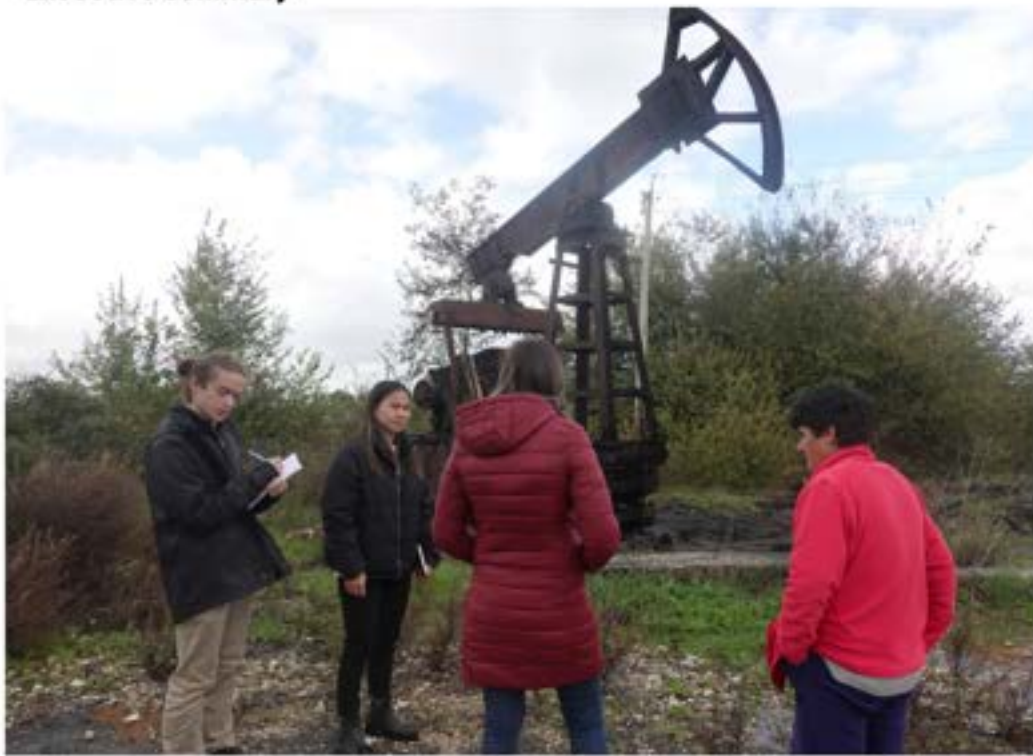
Our Approach

The goal of this project is to understand women's lived experiences with fracking in Zharrëz to amplify under-represented perspectives in the UNDP's Disaster Risk Management planning. We interviewed women who live in Zharrëz and collected narratives about their experience with fracking. We then used four theoretical frameworks to guide our understanding of women's experiences and created a transmedia exhibition of collected narratives. We also created a Narrative Elicitation Guidebook of the narrative elicitation activities for the UNDP, IDRA, and other practitioners interested in new methods of understanding people's experiences with hazards. We also created a Synopsis of Frameworks for

understanding fracking, gender, and environmental justice. We used a variety of methods to achieve the following project objectives:

- Understand fracking in Zharrëz
- Explore and apply alternative frameworks that bring marginalized perspectives into Disaster Risk Management processes
- Utilize participatory narrative elicitation activities to understand women's lived experiences with fracking
- Develop a prototype transmedia collection of women's narratives and a facilitator's manual for narrative elicitation





The team used semi-structured interviews, walking interviews, and narrative elicitation activities to understand women's lived experiences. Semi-structured interviews allowed questions to guide the conversation while giving enough space for participants to reveal factors that were previously unconsidered (Galletta, 2013). The purpose of these interviews was to understand women's experience with fracking, the extent to which they have managed its impacts, and how their identities shaped their experiences. These interviews were conducted in the homes of the women, the administrative building of Zharrëz, or walking through the interviewee's fields. By speaking with them in their homes or on their fields, our team was able to see the effects of fracking externalities firsthand. In addition, the team

conducted 6 site visits to oil deposit wells. In order to deepen our understanding of the narratives and qualitative data we gathered, the team studied frameworks. We found that no singular framework adequately contained the complexity of women's experience with fracking. Instead, the team studied and incorporated four frameworks. Interviews and analyses were informed by Moser's Triple Roles Framework, Fracking Environmental Justice Framework, Intersectionality Approach, and Boudet's Framework for Public Perception (Moser, 2014; Boudet, 2019; Clough, 2018; Walker, et. al., 2019). The frameworks also guided the team's development of participatory methods and analysis of responses by providing themes to examine.



We developed three activities to elicit narratives related to women's experiences with fracking and hosted a workshop with local women from Zharrëz. The purpose of the first activity was to demonstrate diversity and solidarity within the group, asking participants to share something they feel they are good at, something they'd like the team to know about Zharrëz, and something they feel impacts women in their community more than men. The next activity, A Picture is Worth...? utilized techniques from photo-interviewing. The team presented participants with photos relating to risks around fracking, asking them to choose one photo that they related to or had a story about and explain why they chose the photo. The final activity, Paper Storyteller, invited participants to use a piece of paper and a pen to create something that explained their experience with fracking. Both of the last two activities used visual cues to elicit narratives, using photos as prompts and then visuals as self-expression.



Through our interviews, site visits, and workshop, the team found several themes of how fracking affects the lives of women in Zharrëz.

Well and tap water in Zharrëz is unusable

Since 2017, water pollution has made tap water unusable for daily activities such as showering, drinking, cooking, and cleaning. Residents of Zharrëz must buy bottled water, which is an additional financial burden.

Air pollution makes residents feel sick

Every woman we interviewed stated that the smell of oil is strongest in the mornings and evenings. The smell intensifies in the summer and when oil transportation trucks pass, which also causes dust pollution.

Open oil deposit wells contaminate land and soil

Three of the women's fields we visited all had an oil deposit well or open pit within 3 meters (10 feet) of their land or crops. There was a strong smell of oil and oil was overflowing into the agricultural fields. There is major concern that children may fall into the open deposit wells.

Most families are low-or no-income.

22 women we interviewed were unemployed. The women primarily took care of the home, family members, and worked in family-owned fields, if they were physically able.

The primary form of income, if any, is typically a family member's pension, economic aid from social

protection, or remittance from other family members

Agriculture in Zharrëz has been impaired by fracking

The women who owned farmland expressed that most of what is produced agriculturally from family farms is for family consumption. Families then sell any of the excesses. Those with land adjacent to open deposit wells told us that the pits would overflow when it rained and contaminate their farmland. This reduced the available space they had to farm, contaminated soil not being suitable for sowing crops.

The women reported that trying to sell produce and livestock from Zharrëz was difficult.

Many residents say fracking causes physical and mental harm

Seven women we spoke with expressed physical health problems as a result of fracking, most often mentioned being difficulty breathing. Eight residents also mentioned fear and stress in relation to fracking in Zharrëz, in addition to twelve mentions of fear, danger, and extreme anxiety.

Compensation for damage to homes caused by induced seismic activity was seen as largely inadequate

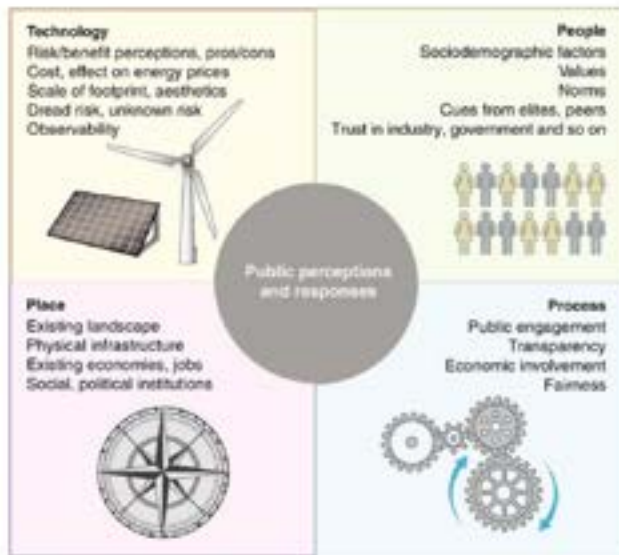
Residents report that tremors due to fracking are no longer occurring in the Zharrëz village. Nevertheless, the devastation they caused is still felt by many today. Every person we talked to, except one, mentioned having damages to their home as a result of the

tremors from 2012-2017. The majority of the women we spoke to believed they were not compensated a fair amount to repair their homes.

Our Findings

Boudet's Framework for Public Perception

There are four factors to understanding public perception around energy technologies: technology, people, place, process in this framework. We found that women believed the risks heavily outweighed the benefits of fracking. The scale of the footprint of the oil operations was very large with high observability. There is a high dread and unknown risk. There was little to no public engagement from women and a believed lack of transparency in decision-making around issues of cleaning up pollution and safety around oil deposit wells. Women reported they did not benefit economically from the fracking operations.



Risk > benefit
High observability
High dread risk

Agricultural
Zharrëz
Administrative
Unit
Environmental
Association
"Zhareza"

- Women, middle-older aged, limited-income
- Family, care for children and home
- Little to very low trust in industry and gov.
- None.

Figure E1 - Modified from Boudet (2019) with our findings.

Four Frameworks Utilized

1. Boudet's Framework for Public Perception
2. Moser's Triple Roles Framework
3. The Intersectionality Approach
4. Fracking Environmental Justice Framework

Moser's Triple Roles Framework

Moser (2014) aimed to show how women often take on multiple roles, more than or equal to the number of roles men take on, yet their contributions are not seen as having the same value of men's contributions. We found that women often took on reproductive and production roles, and men took on production roles, if any.

Intersectionality Approach

Moser (2014) aimed to show how women often take on multiple roles, more than or equal to the number of roles men take on, yet their contributions are not seen as having the same value as men's contributions. We found that women often took on reproductive and production roles, and men took on production roles, if any.

The Fracking Environmental Justice Framework

This framework examines environmental justice with regard to fracking. It separates environmental justice in three categories: Distributive, Procedural, and Recognition (Clough, 2018). We found that those in closest proximity to the wells, as well as elderly and disabled people, were most affected by the risks around fracking. None of the participants felt they benefited from fracking or that they had a recognized voice

Moser's Triple Roles Framework



Figure E2 - Diagram of Moser's Triple Roles Framework with definitions of each role. From Balgah, et. al., 2019, p. 8).

Intersectionality Approach

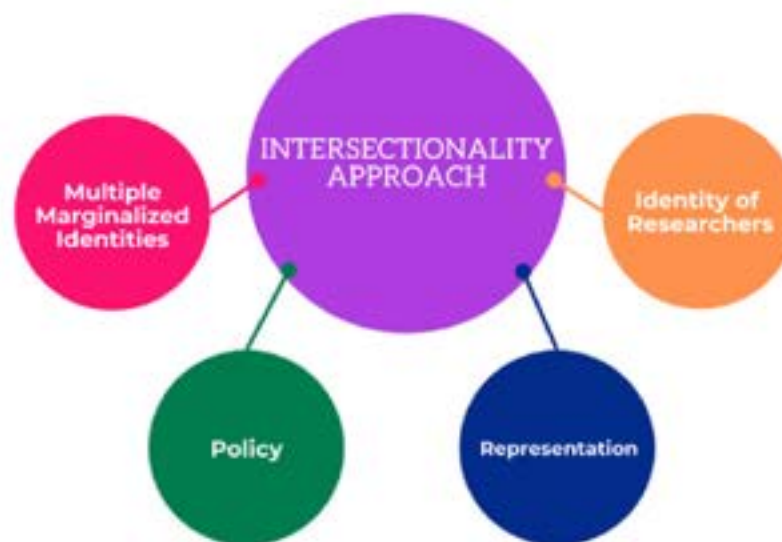


Figure E3 - Graphic depicting facets that contribute to the Intersectionality Approach (own graphic).

The Fracking Environmental Justice Framework

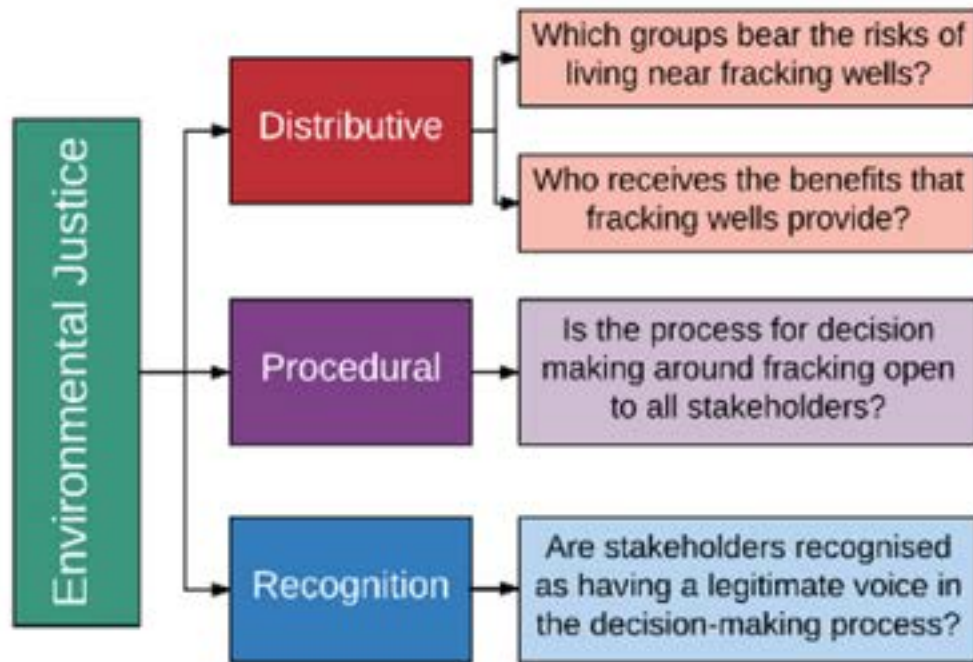


Figure E4 - Environmental justice framework addressing fracking
(Clough, 2018, p. 15).

OUR RECCOMENDATIONS

Use Alternative Frameworks to Understand Women's Experiences

We recommend the use of alternative frameworks to analyze responses in risk assessments and Enhanced Vulnerability and Capability Assessments. We suggest incorporating a combination of frameworks to provide a more nuanced view of women's lived experiences. We suggest using Moser's Triple Roles Framework to understand the gender-based division of household

and community labor; the Intersectional Approach to highlight intersecting social dimensions and marginalizations; the Fracking Environmental Justice to illuminate who is impacted in fracking communities, and Boudet's Framework for Public Perception to understand the common factors of perception of fracking. These frameworks work best when applied to larger groups, rather than individuals, with the exception of Moser's Triple Roles Framework, which can be applied on a family scale.

Facilitate participatory narrative elicitation workshops during disaster risk management fieldwork

Narrative elicitation workshops can successfully engage participants and encourage discussions about heavy topics such as daily risks due to fracking or past



experiences with disaster events. Future recommendations for locations include a private room in a cafe or community center.

Additionally, we found that the group conversations were more successful at eliciting women's perspectives when only women were present, compared to mixed-gender groups, so we recommend that wherever possible, focus groups and participatory narrative elicitation workshops be conducted in single-gender group settings.

Utilize walking interviews and photo-based activities for narrative elicitation

We recommend incorporating walking interviews as a variant of the more commonly used static semi-structured interview structure.

Walking interviews in this context involves participants taking interviewers to locations that hold importance to them as somewhere that they experience increased risk. These visits benefited our work by inspiring new lines of questioning based on the unique risks of the location, as well as opportunities to photograph and document these locations. Similarly, the "Pictures are Worth...?" activity was very effective at prompting discussion regarding the topics they depicted, including pollution



Future recommendations for locations include a private room in a cafe or community center. Additionally, we found that the group conversations were more successful at eliciting women's perspectives when only women were present, compared to mixed-gender groups, so we recommend that wherever possible, focus groups and participatory narrative elicitation workshops be conducted in single-gender group settings.

Use Alternative Frameworks to Understand Women's Experiences

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TABLE OF CONTENTS

I.	Abstract	ii
II.	Acknowledgements	iii
III.	Meet the Team	iv
IV.	Authorship	v
V.	Executive Summary	vii
VI.	Table of Contents	xvii
VII.	List of Figures	xix
VIII.	List of Tables	xx
IV.	Glossary	xxi
1.	Introduction	1
2.	Background	4
	a. Fracking in Albania	5
	i. Fier region: Home to Albania's Oil Industry	5
	ii. Patos-Marinza Oil Field	5
	iii. What is Fracking?	8
	b. Environmental and Community Effects of Fracking	10
	i. Induced Seismic Activity	12
	ii. Soil and Water Resources	14
	iii. Fracking Emissions	15
	iv. Health Impacts	16
	v. Benefits of Fracking in Albania	17
	vi. Risk Perceptions	17
	vii. Attitudes in Already "Fracked" Communities	19
	c. Frameworks to Evaluate Risk Perceptions of Fracking	22
	i. Boudet's Framework for Public Perception	22
	ii. Fracking Environmental Justice	23
	d. Vulnerabilities and Frameworks to Analyze Them	25
	i. Definitions of Vulnerability	25
	A. Spatial Vulnerability	25

	B. Social Vulnerability	25
	ii. Vulnerabilities of Minority Groups	26
	A. Women	26
	B. Intersectional Vulnerability	26
	iii. Frameworks to Analyze Vulnerabilities	28
	A. Moser's Triple Roles Framework	28
	B. Intersectionality Approach	29
	iv. UNDP RESEAL Project	30
	A. Regional Level Project	31
	B. UNDP and IDRA Research and Consulting	32
	C. The Importance of Narratives	33
3.	Our Approach	34
	a. Project Goal	35
	b. Understanding Fracking in Zharrëz	36
	c. Explore and Apply Alternative Frameworks that Bring Marginalized Perspectives into Disaster Risk Management Processes	38
	d. Utilize Participatory Narrative Elicitation Activities to Understand Women's Lived Experiences with Fracking	39
	i. Semi-Structured Interviews	40
	ii. Narrative Elicitation Workshop	41
	A. Warming up with "I'm good at ..."	41
	B. "A picture is Worth ...?" Activity	42
	C. Paper Storyteller Activity	44
	D. Narrative Elicitation Workshop Questionnaire	46
	e. Develop a Prototype Transmedia Collection of Women's Narratives and a Facilitator's Manual for Narrative Elicitation	47
4.	Findings	48
	a. Understanding Fracking in Zharrëz	49
	i. Global Fracking and Marginalized Populations	52
	ii. Zharrëz-Specific Concerns	53
	iii. Livelihoods in Zharrëz	55
	b. Site Visits	56
	c. Pollution	58
	i. Well and Tap Water in Unusable in Zharrëz	58

ii. Air Pollution Makes Residents Feel Sick	59
iii. Open Oil Deposit Wells Contaminate Land and Soil	60
d. Livelihood	61
i. Most Families are Low- or No- Income	61
ii. Agriculture in Zharréz Has Been Impaired by Fracking	62
e. Many Residents Say Fracking Causes Mental and Physical Harm	63
f. Compensation for Damage to Homes Caused by Induced Seismic Activity Was Seen As Largely Inadequate	65
g. Mini Narratives	68
h. Narrative Elicitation Workshop	71
i. "I'm good at..." Icebreaker	72
A. "Tell us something we should know about Zharréz"	73
B. "Tell us something that affects women"	74
ii. "A Picture is Worth ...?" Activity	75
iii. Paper Storyteller Activity	78
iv. Narrative Elicitation Workshop Questionnaire	80
i. Frameworks	81
i. Boudet's Framework for Public Perception	81
ii. Moser's Triple Roles Framework	83
iii. Intersectionality Approach	85
iv. Fracking Environmental Justice Framework	86
j. Limitations	88
5. Recommendations and Conclusions	90
a. Use Alternative Frameworks to Understand Women's Experiences	92
b. Facilitate Participatory Narrative Elicitation Workshops During DRM Field Work	93
c. Utilize Walking Interviews and Photo-Based Activities for Narrative Elicitation	94
6. References	96
Appendix A: Semi-structured Interview Verbal Consent Script	99
Appendix B: Written Consent Form for narrative elicitation workshop	100
Appendix C: Semi-Structured Interview Questions	101

Appendix D: Narrative elicitation workshop Questionnaire	102
Appendix E: Post-Workshop Debrief Interview	103
Appendix F: Collection of Narratives Sample	104
Appendix G: Narrative Elicitation Guidebook Sample	105
Appendix H: Frameworks to Analyze Women's Perspectives Sample	106



LIST OF FIGURES

Figure	Description	Page #
Figure E1	Boudet's Framework for Public Perception modified with our findings	xii
Figure E2	Moser's Triple Roles Framework with definitions of each role	xiii
Figure E3	Graphic depicting facets that contribute to the Intersectionality Approach	xiii
Figure E4	Environmental justice framework addressing fracking	xiv
Figure 1	Map of Fier region	5
Figure 2	The Patos-Marinza active oil field as of 2010	6
Figure 3	Total Production from 1939 to 2021 of the Patos-Marinza Oil Field	7
Figure 4	Summary of the fracking process	8
Figure 5	A jar of wastewater from hydraulic fracturing	9
Figure 6	Diagram depicting main hazards around technological risk in the Fier region from the Technological Risk Assessment Report: National Risk Assessment in Albania	12
Figure 7	A women's home in Zharrëz allegedly damaged by induced seismic activity	13
Figure 8	An open deposit well in Zharrëz	14
Figure 9	A man walks from a fracking site in Saskatchewan, Canada	19
Figure 10	Villagers from Zharrëz in wheelchairs marching to Tirana in 2017	20
Figure 11	Villagers from Zharrëz marching to Tirana in 2017	21
Figure 12	Boudet's Framework for Public Perception	22
Figure 13	Environmental justice framework addressing fracking	23
Figure 14	Diagram of Moser's Triple Roles Framework	28
Figure 15	Intersectionality Approach	29

Figure	Description	Page #
Figure 16	Organizational Chart showing organizations and individuals involved in the RESEAL Fier project	31
Figure 17	Sample photos provided for "A Picture is Worth ...?" activity	43
Figure 18	Examples of Paper Stories for the prompt "Use this piece of paper to describe your experience with the Covid pandemic"	45
Figure 19	The team performing an interview with Daniel Click	
Figure 20	The team performing an interview with Adriatik Colemi	53
Figure 21	Photo of participants during 2017 hunger strike	54
Figure 22	Photo of the only pathway between residential homes and the Bankers Petroleum-sponsored soccer field	63
Figure 23	Photo of some of Figerete Gremi's medications	64
Figure 24	Large crack in Figerete Gremi's bedroom wall, stuffed with rags and paper	65
Figure 25	Homes damaged by 2012-2017 tremors	66
Figure 26	"A Picture is Worth ...?" photos and related responses	77
Figure 27	Samuel demonstrating an example of Paper Storyteller	78
Figure 28	Graphic of Boudet's Framework for Public Perception, with our findings about each category labeled in bullet points outside of the box	81
Figure 29	Chart showing original descriptions of each role and the contextualization of those roles that our team observed in Zharrëz for Moser's Triple Roles Framework	83
Figure 30	Graphic of major facets of the intersectionality Approach	85
Figure 31	Environmental justice framework addressing fracking	86
Figure 32	Diagram depicting main hazards around technological risk in the Fier region from the Technological Risk Assessment Report: National Risk Assessment in Albania	91



LIST OF TABLES

#	Description	Page #
1	Key Informants About Fracking	50
2	Key Informants from Zharréz Administrative Unit	51
3	Women Interviewed Who Were Comfortable With Names Being Shared	57

GLOSSARY

DRM	- Disaster Risk Management
DRR	- Disaster Risk Reduction
EVCA	- Enhanced Vulnerability and Capacity Assessment
IQP	- Interactive Qualifying Project
NGP	- Nongovernmental Organization
RESEAL	- Resilience Strengthening in Albania
UNDP	- United Nations Development Programme
WPI	- Worcester Polytechnic Institute

INTRODUCTION



Post-disaster assessments have highlighted the deficiencies of Albania's disaster risk management on all three levels of civil protection: national, regional, and local (UNDP, 2020, World Bank, 2021). This was exemplified by the response to the 2019 earthquake, which devastated portions of Albania. In that 6.3 magnitude earthquake more than 200,000 people were affected: 51 people died, 913 were injured and approximately 17,000 were displaced from their homes. (UNDP, 2020)

In the aftermath of the earthquake, Albania's central government has sought to improve its disaster response programs. The United Nations Development Programme (UNDP), in partnership with the Albanian government, has been working to strengthen disaster risk management (DRM) at all levels of civil protection through pilot projects at both central and local government levels. As of 2022, the UNDP and its partners have begun working at the regional level of civil

protection. This Worcester Polytechnic Institute (WPI) Interactive Qualifying Project (IQP) focuses on the Fieri region where "technological hazards" are some of the most prevalent hazards in this region (Dhima & Meijer, 2020). Technological hazards are defined as the "result of the anthropogenic impact of the development of society," otherwise the hazards caused directly or indirectly by humans (Republic of Albania et al, 2022). In the Fier region, these hazards are directly connected to crude oil production in the Patos-Marinza oil field, the biggest onshore oil field in Europe. The village of Zharrëz is located on this oil field. This project work focused on the effects of fracking in Zharrëz on women's lives, many of whom experienced a series of seismic tremors from 2012-2017 and who continue to be affected by pollution related to oil and gas development.

The goal of this project was to understand women's lived experiences with fracking in

Zharrëz to support the efforts of the UNDP and its partners' work to improve disaster management across Albania through the inclusion of citizen viewpoints. We chose to amplify the voices and experiences of women, a traditionally underrepresented group. Project objectives were to:

Project Objectives

- 1. Understand fracking in Zharrëz**
- 2. Explore and apply alternative frameworks that bring marginalized perspectives into Disaster Risk Management processes**
- 3. Utilize participatory narrative elicitation activities to understand women's lived experiences with fracking**
- 4. Develop a prototype transmedia collection of women's narratives and a facilitator's manual for narrative elicitation.**

The team created a facilitator's manual named Elicitation Activity Guidebook that includes activities to elicit rich conversations with residents and members of marginalized populations in both group and single-person settings for municipalities and organizations to use in disaster risk management planning. The team created a transmedia collection of narratives that delve into the lived experiences of local women. These participatory methods to elicit narratives can improve disaster risk management processes by amplifying underrepresented perspectives and telling the story of women's lived experiences with fracking. The use of different frameworks can create a more complete understanding of a complex issue.



BACKGROUND



FRACKING IN ALBANIA

FIER REGION: HOME TO ALBANIA'S OIL INDUSTRY

The Disaster Risk Assessment in Albania Consolidated Report states that technological hazards present the highest risk for disasters in the southern coastal region of Fier. (Republic of Albania, et al., 2022). Technological hazards originate from technological or industrial conditions. In the Fier region, one of the main economic sectors is the production, transportation, storage, and trade of oil and hydrocarbon by-products. In the Fier region, this hazard is "mainly connected with the Patos-Marinza oil field" (Republic of Albania, et al., 2022, p. 27).

PATOS-MARINZA OIL FIELD

The Patos-Marinza Oil Field is the largest onshore oil field in Europe (Métois et al., 2020). It occupies 44,000 acres, which is nearly 180 square kilometers, or 68 square miles. It extends from the Patos municipality in the south to Kallm-Bubullime in the North (Likmeta, 2018). The Patos municipality is the center of the oil industry in Albania, with subdivisions including the village of Zharrëz. For many years, the main source of economic activity in this area was the oil-exporting sector. Due to the depletion of employees in this sector caused by increased production in the foreign oil market, there is now a greater economic reliance on the agricultural sector (Municipality of Patos, n.d.).

Figure 1 - Map of Fier region (Bitton, 2022).



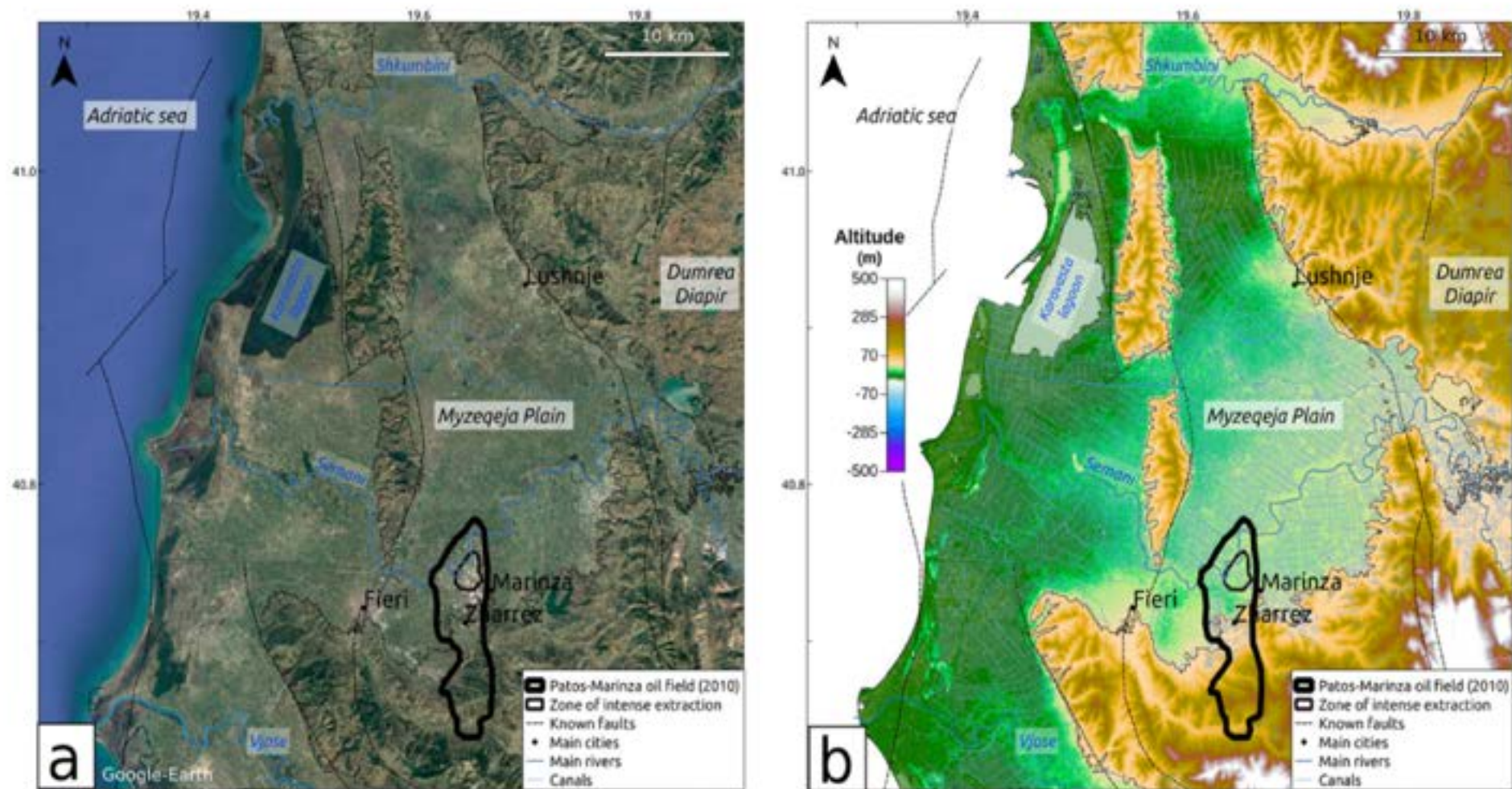


Figure 2 - The Patos-Marinza active oil field outlined in the bold black line, the zone where wells are the densest and extraction activity is most intense outlined in the thin black line (Métois et al., 2020).

The Patos-Marinza Oil Field has been in production since 1939 and is the main source of crude oil in Albania. During the Communist era, total oil production in Albania peaked in 1974 with 2.250.000 tons of oil /year (or 6,165 tons of oil / day equal to 38.408 barrels/day). In these years, the number of employees in the oil industry, which included about 34 companies, was about 25.000 people (Ministry of Infrastructure and Energy, n.d.).

In 2021 the production of crude oil in the Patos Marinëz field was approximately six hundred and ten thousand tons. More than seven million oil barrels are extracted every year (Dhima & Meijer, 2020, Métois et al., 2020). For comparison, the United States produced 11,254 thousand tons of crude oil in 2021 (EIA, 2022).

The company that currently owns the Patos-Marinza oil field, Albpetrol, is an Albanian state-run oil company that is responsible for monitoring Petroleum Agreements with the other companies that operate in the country (Dhima & Meijer, 2020). Bankers Petroleum is originally a Canadian crude oil company that is now under the Chinese ownership of Geo Jade Petroleum. Bankers Petroleum began operations in the Patos-Marinza oil field in In 2004 (Jacobs, 2004). Then in 2011, Bankers Petroleum bought sole exploration rights for the Patos-Marinza field (Likmeta, 2011).

Bankers Petroleum has invested heavily in the modernization of existing oil infrastructure and the company introduced fracking to the oil field in 2006. As of 2018, Bankers Petroleum drilled 733 new wells. Production increased from 600 barrels of oil per day in 2004 to 15,500 barrels of oil per day in 2018. Today, Bankers Petroleum operates 95% of crude oil extraction in Albania (de Lorenzo et al., 2022).

Total Production from 1939 to 2021 of the Patos Marinza Oil Field

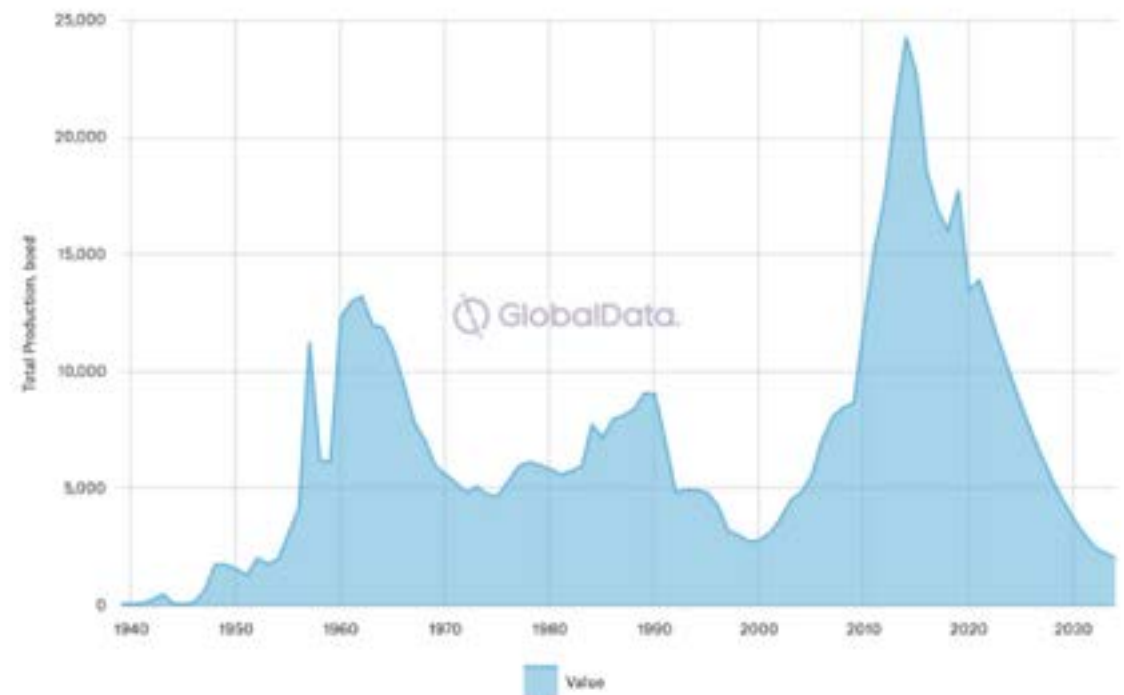


Figure 3 - Total Production from 1939 to 2021 of the Patos Marinza Oil Field (Global Data, 2021).

WHAT IS FRACKING?

Hydraulic fracturing is commonly known as "fracking." Fracking is a term created by shortening the word "fracturing" and has been used for more than 65 years (API, 2017). Fracking is also used by politicians, activists, and journalists to encompass the environmental and social problems associated with the full life cycle impacts of oil and gas drilling (D. Glick, personal communication, November 8, 2022; Denchak, 2022).

Fracking is an underground drilling process to extract hydrocarbons, such as crude oil and natural gas, which are mixtures of hydrocarbons. According to Roa (2012), an expert in energy technologies who serves in an advisory role with RTI International India, fracking vastly increased oil companies' abilities to extract what had previously been unobtainable hydrocarbons through older drilling methods (Roa, 2012). Fracking was first introduced in 1949 by Stanolind Oil in Kansas, USA (Montgomery & Smith, 2010).

Conventional oil drilling entails large oil rigs with drills extracting oil straight from large underground oil pools or reservoirs. The natural pressure from the well is all it takes to pump this oil to the surface (Keystone Energy Tools, n.d). Hydraulic fracturing is a form of "unconventional oil extraction" since the

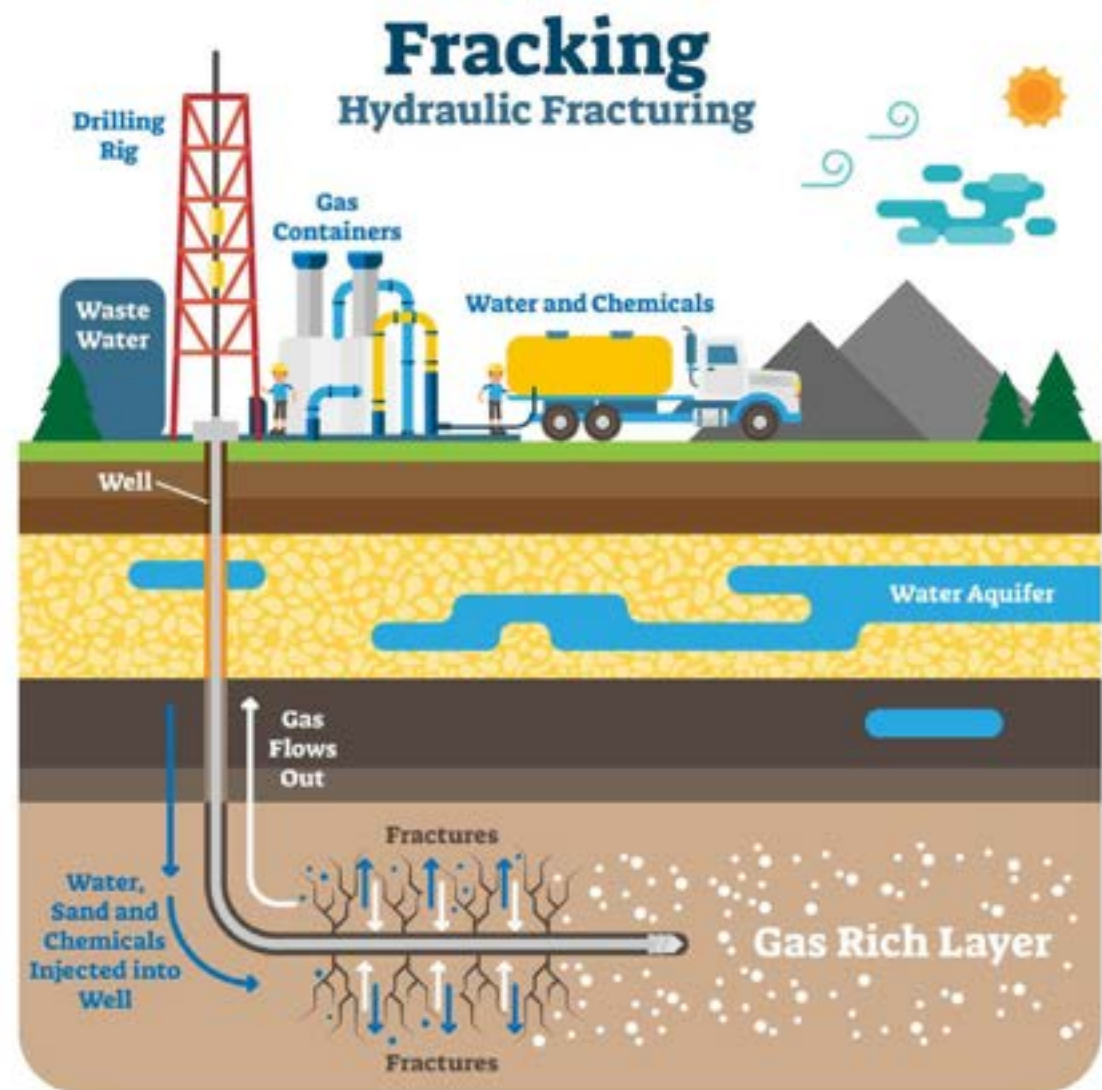


Figure 4 - Summary of the fracking process (Hayes, 2020).

process differs from conventional oil extraction methods (Keystone Energy Tools, n.d). Its process begins with vertical or angled drilling of a well more than 5,000 feet underground to the layer of gas-rich shale. The well is lined with a steel casing to prevent the contamination of nearby groundwater. Once the well reaches the hard shale rock formations where hydrocarbons are trapped, horizontal drilling begins and can extend for miles. When this is completed, a perforating gun loaded with explosive charges is sent into the horizontal portion of the well to create small holes in the casing (Denchak, 2022).

Fracking fluid is then injected into the well under extremely high pressure to create fractures in the shale rock formations. Fracking fluid is a mixture of water, sand, and other chemicals including acids, biocides, methanol, ethylene glycol, and propargyl alcohol. Chemicals such as benzene, toluene, and ethylbenzene have been found in fracking fluid as well (Almaliki et al., 2022). The chemicals in fracking fluid are

considered hazardous to human health (Almaliki et al., 2022; Denchak, 2022).

These fractures allow hydrocarbons to flow into and through the well to the surface where it is collected in tanks before being transported off-site to refining and processing facilities (Denchak, 2022; National Geographic Society, 2022).

Wastewater is a major byproduct of fracking. This wastewater is a mixture of flowback water (water used in the fracking operation), produced water (water that flows after the hydrocarbon is extracted) includes the chemicals in fracking fluid and other naturally occurring contaminants such as radioactive radionuclides including radium-226 and radium-228 (Brown, 2014, Denchak, 2022; Rao, 2012). Wastewater can be disposed of by injecting it into deep underground wells, recycled, or treated (Denchak, 2022). In the case of extraction from the Patos-Marinza oil field, wastewater is either discharged from refineries after treatment into the Gjanica River

or is piped further south to the Viskoka oil field, approximately 10 km south of Zharrëz, where it is injected into wells (S. Dhima, personal communication, December 5, 2022; A. Golemi, personal communication, December 9, 2022; Guri et al., 2013).



Figure 5 - A jar of wastewater from hydraulic fracturing at a recycling site in Midland, Texas (Denchak, 2022).

ENVIRONMENTAL AND COMMUNITY EFFECTS OF FRACKING



Fracking operations impose a number of risks on nearby communities and on larger ecosystems and landscapes. These risks are often called 'negative externalities' that occur when "a polluter makes decisions based only on the direct cost of and profit opportunity from production and does not consider the indirect costs to those harmed by the pollution" (Helbling, 2017, p. 38). Common examples of negative externalities related to fracking processes are air, water, and noise pollution, as well as health impacts such as asthma. In the Technological Risks Report prepared by Dhima and Meijer (2020) for the National Civil Protection Agency of Albania, the main hazards of concern for fracking in the Patos-Marinza oilfield were: fires and explosions from flammable gasses emitted during fracking; air pollution from fracking operations and accidents; and pollution of soil, surface water, and groundwater as a result of oil spills or leaks from oil tanks and pipelines.



INDUCED SEISMIC ACTIVITY

Induced seismicity associated with fracking has been reported in both the United States and the United Kingdom (Jackson et al., 2014). There is evidence of induced seismic activity from both hydraulic fracturing itself and the disposal of wastewater by deep injection. According to Jackson et al., hydraulic fracturing rarely induces earthquakes large enough to be felt by people, but the deep injection of wastewater has caused significantly higher-energy earthquakes, up to 5.7 Mw on the momentum magnitude scale (Jackson et al., 2014).

According to the Technological Risks Report prepared by Dhima and Meijer (2020) for the National Civil Protection Agency of Albania, between 2012 and 2017 tremors were induced by fracking operations in the Patos-Marinza oilfield. Métois et al. (2020) corroborate this, noting surface deformation in the field that has previously been correlated with low-to-medium intensity earthquakes in well-monitored oil and gas fields. However, at the time of the study the Patos-Marinza oilfield had insufficient seismic monitoring equipment to quantitatively confirm that the tremors were induced by fracking operations (Métois et al., 2020).

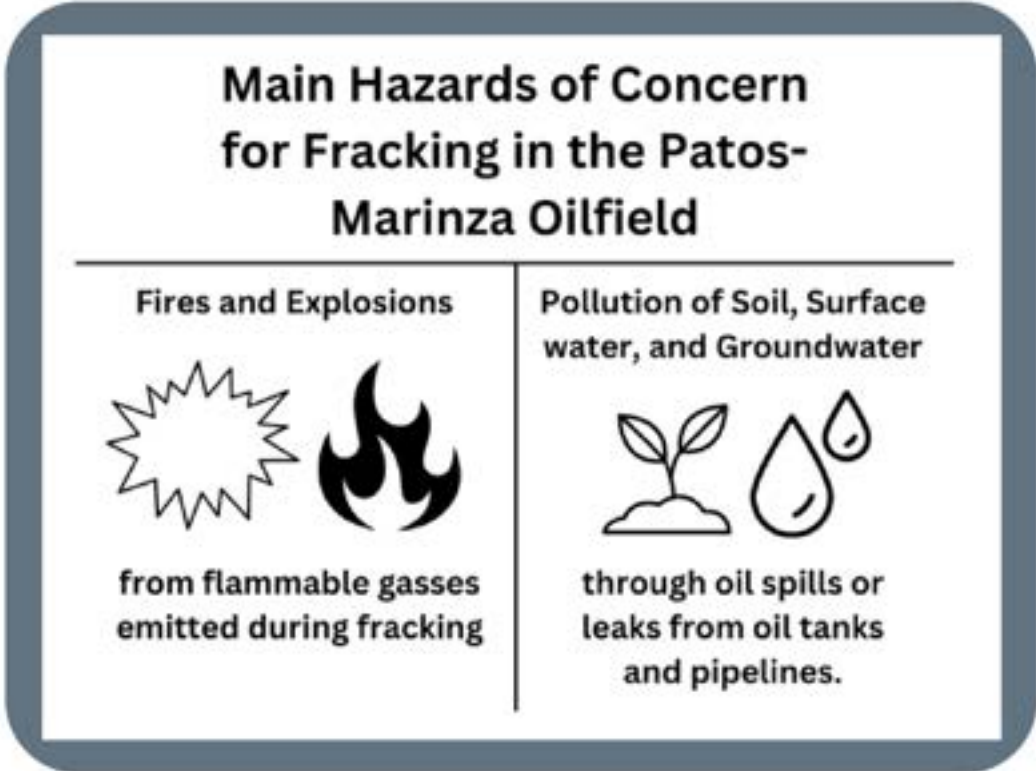


Figure 6 - Diagram depicting main hazards around technological risk in the Fier region from the Technological Risk Assessment Report: National Risk Assessment in Albania (Dhima & Meijer, 2020).



Figure 7 - A women's home in Zharrëz allegedly damaged by induced seismic activity (own photo).

SOIL AND WATER RESOURCES

Fracking can impact soil, surface water, and groundwater through “surface spills, wastewater disposal, and drinking-water contamination through poor well integrity” (Jackson et al., 2014, pg. 327). For example, research on the effects of surface fracking chemical spills in the Kern County sub-basin of California, USA found contamination in shallow groundwater which made it unsuitable for human and agricultural use (Almaliki et al., 2022). Dhima and Meijer (2020) state that defects or cracks in pipelines and oil tanks can also result in the pollution of soil, surface water, and groundwater.

In 2013, a multi-institution group of Albanian and Kosovo scientists assessed the impact of the oil and gas industry on the environment and development in the Fier region. They determined that at the time of the study 4-8 tons of crude was leaking into the environment per day from fracking operations (Guri et al., 2013). According to the study, water used for agricultural irrigation in the region was contaminated with chemicals including oil products, hydrogen sulfide (H₂S), phenols, and phosphates that damaged plants and plants and animals. According to Professor S. Guri, groundwater potable water wells in the region pull from likely have been contaminated by hydrocarbons seeping up through oil wells (Guri et al., 2013).



Figure 8 - An open deposit well in Zharrez with soil contamination

FRACKING EMISSIONS

Air emissions related to fracking raise additional concerns. Particulate matter, CO₂, and nitrogen oxides, volatile organic compounds, and other chemicals are released during the production, processing, and transportation of crude oil, either by standard operation or leaks from locations such as equipment or open waste pits (Jackson et al., 2014). A study performed in Garfield County, Colorado, USA found high concentrations of more than 20 toxic hydrocarbons within 500 ft. (152.4 m) of fracking wells and odor complaints by nearby residents (McKenzie et al. 2012).

According to a 2012 report by researchers from the University of Tirana, 80% of the oil wells in the Marinza oilfield have issues with their hermetic parts resulting in improperly sealed equipment, leading to the emission of gasses such as methane and H₂S into

the atmosphere. Measurements taken at various fracking operation locations in the Marinza oil field found sites where H₂S emissions were at 14-16 ppm, above the 10 ppm emissions standard of oil decanting plants (Topi et al., 2012). In the village of Zharrëz, H₂S levels were measured at twice the atmospheric norm. H₂S can damage the respiratory tract and in the presence of humidity form acids that can significantly damage olive plants and crops in vineyards (Guri et al. 2013). Fracking emissions also contribute to climate change. The burning of natural gas and the operation of wells produce CO₂ and methane, the most prevalent greenhouse gasses. It was estimated that together oil and natural gas extraction activities globally released 81 Mt of methane in 2021 (IEA, 2022). Greenhouse gasses are the leading cause of climate change which has resulted in temperatures rising 1.1 °C globally, leading to numerous negative worldwide impacts (Bednar-Friedl et al., 2022; EPA, 2022).



HEALTH IMPACTS

Many of the chemicals used in fracking operations are immune and cardiovascular systems, known to be damaging to human health, depending on exposure. A review of 944 products used in natural gas operations in the United States found 353 chemicals that could be identified by their Chemical Abstract Service (CAS) numbers. Many of these chemicals "could affect the skin, eyes, and other sensory organs, and the respiratory and gastrointestinal systems... the brain/nervous system... and the kidneys..the endocrine system... and ... could cause cancer and mutations," even in small quantities (Colborn et al., 2011, pg. 1039). Exposure to fracking has been linked with a statistically significant increase in the death rates of the elderly in a study of over 15 million Medicare beneficiaries in the USA between 2001 and 2015 (Li et al., 2022). Outdoor air pollution like that caused by fracking can also increase children's chances of developing asthma as well as exacerbate the effects of asthma (Tzivian, 2011).

A 2015 study performed by Dr. Elida Mataj of the Albanian Institute of Public Health revealed negative health effects on those living in Marinez village located in the Patos-Marinza oilfield. Out of 352 adults surveyed, 77% of respondents had a family member who suffered from asthma, with more severe respiratory issues being reported as well. Other health issues reported included cancers (8.81%) and birth defects in children (11%). An analysis of urine among 8 inhabitants found that regardless of occupation,



gender, or age, phenol levels were roughly twice the standard (Mataj, 2015). Chronic exposure to high levels of phenols is associated with negative health effects including "weight loss, diarrhea, ... and blood and liver effects" (EPA, 2000, p. 1).

Mental health effects are also associated with fracking. A review of psychological research by a multi-institutional group of United States scientists found that fracking has been associated with effects such as increased feelings of fear and anxiety, psychological distress, and sleep disturbances (Hirsch et al., 2018).

BENEFITS OF FRACKING

Researchers, oil company executives, scholars, and economists point out the benefits of fracking (Sovacool, 2014; Christenson et al., 2017; Jackson et al., 2017). In the report "Cornucopia or curse? Reviewing the costs and benefits of shale gas hydraulic fracturing (fracking)" Benjamin K. Sovacool, an energy security, studies, and policy researcher explores the benefits of fracking. Sovacool (2014) states that the use of fracking can "enhance energy security and the availability of energy fuels, lower natural gas prices, offer a cleaner environmental footprint than some other fossil fuels and enable local economic development," (Sovacool, 2014, p. 250).

RISK PERCEPTION

The rapid growth of fracking has generated controversy due to the environmental, health, and quality of life consequences. As a result, there is growing research on how individuals determine risk and influence public perception of fracking (Dokshin, 2021).

Risk perception is defined as "people's judgments and evaluations of hazards they (or their facilities, or environments) are or might be exposed to" (Rohrmann, n.d., p. 2).

Risk perceptions are interpretations of the world, based on experiences and/or beliefs (Rohrmann, n.d.).



In disaster risk management, these perceptions are core influences on behaviors before, during, and after a disaster (Rohrman, n.d.). Risk perception is incorporated into DRM planning and policies through methods such as risk assessment and analysis. Quantitative and qualitative data is collected in attempting to quantify risk by looking at signature elements or basic components (Marshall, 2010).

In other contexts, such as policymaking around fracking and other energy technologies, risk and general perceptions are important because they can "facilitate communication between policymakers, technologists, and the public; provide critical information for anticipating potential public reactions to new technologies and associated events, such as accidents; and inform educational efforts" (Boudet, 2019, p. 446).



ATTITUDES IN ALREADY “FRACKED” COMMUNITIES

There is a lot of research on understanding community perspectives in fracked zones such as Zharrëz, Albania (Haggerty & McBride, 2016; Hirsch et al., 2018). Eaton & Kinchy (2016) studied what “explains this absence of collective action, and what discontented people do when their communities lack the conditions for mobilization,” in Saskatchewan and Pennsylvania (Eaton & Kinchy, 2016, p. 22). This study revealed that participants had criticism for and felt anger and injustice toward the oil and gas industry, but also acknowledged the large economic benefit of the industry in terms of local employment and revenue. The researchers state that this dichotomy created a sense of ambivalence toward the oil industry and possible opposition may be perceived as endangering the future of the community (Eaton & Kinchy, 2016).

Although there may be a lack of collective action in some already fracked communities, there have been many anti-fracking grassroots movements and transnational activism in Europe, including Albania (Kádár, 2014). In 2017 villagers of Zharrëz, Albania protested and went on a two-week hunger strike to stop the fracking activities in Zharrëz and to be granted financial compensation for the induced damages allegedly caused by the fracking activities. More than 40 villagers, only men but women were involved in planning, and organizing a 130-kilometer march into Tirana, Albania. After a four-day sit-in at

the Ministry of Energy, the Government offered a moratorium on fracking, full compensation, and opened a process of arbitration with Bankers Petroleum (Tsimonis et al. 2019).



Figure 9 - A man walks from a fracking site in Saskatchewan, Canada (The Canadian Press, 2013).



Figure 10 - Villagers from Zharrëz marching to Tirana in 2017, some who that were participating in the hunger strike were pushed in wheel chairs. Sign says "Bankers are ruining our lives." (Marsel & Gremza, 2017).



Figure 11 - Villagers from Zharrëz marching to Tirana in 2017 to protest induced seismic activity due to fracking operations (Marsel & Gremza, 2017).

FRAMEWORKS TO EVALUATE RISK

PERCEPTIONS OF FRACKING

There are different approaches researchers have used to understand how risk around fracking is characterized, amplified, and communicated. The relationship between geographic proximity and risk perception and differences in media discourses are examples (Dokshin, 2021; Mattfeldt, 2021).

BOUDET'S FRAMEWORK FOR PUBLIC PERCEPTION

Sociologist Hilary Boudet (2019) created "Boudet's Framework for Public Perception" which categorizes the dominant factors that researchers have identified as influencing public perceptions of new energy technologies into technology, people, place, and process. The framework was developed to identify "broad trends that may facilitate communication between policymakers, technologists, and the public, and support the transition to a more sustainable energy system" (Boudet, 2019, p. 446). As aforementioned, public/risk perception is important in both DRM and public policy. This framework is applicable to understanding influencing factors of risk perception in the context of fracking.

Boudet's Framework for Public Perception

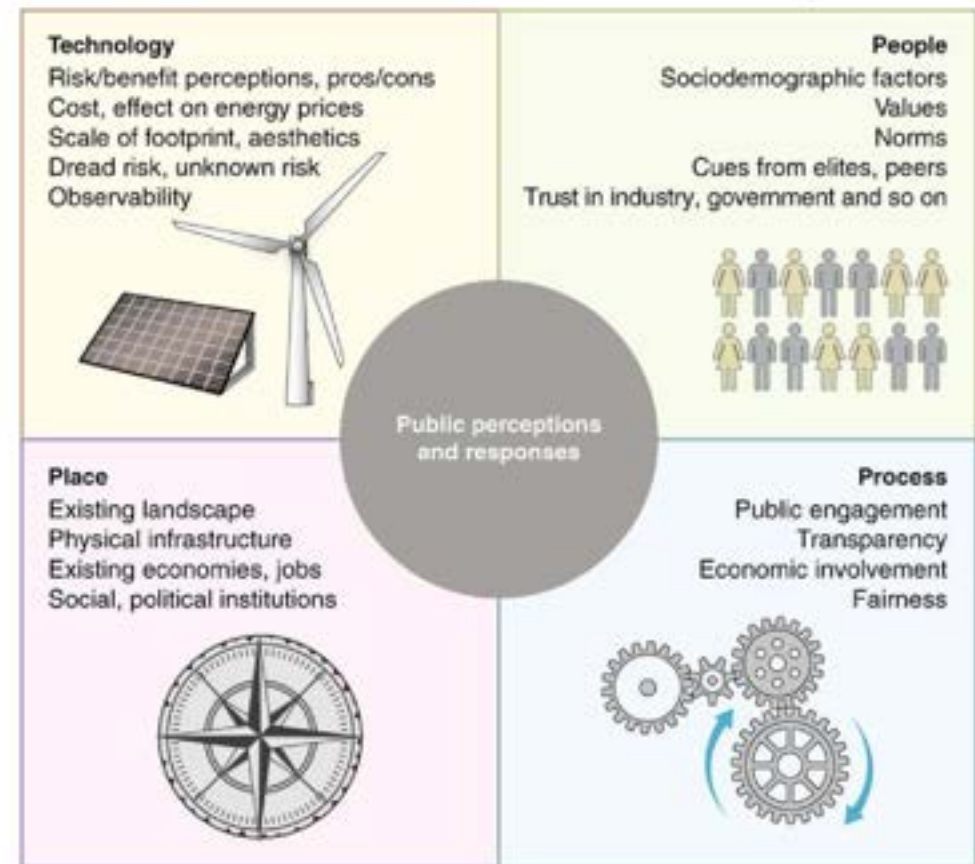


Figure 12 - Boudet's Framework for Public Perception (Boudet, 2019)

Technology encompasses risk-benefit perceptions, cost and the possible effect of the energy technology on energy prices, the scale of the footprint of the proposed technology and its aesthetics, observability, dread risk, and unknown risk when considering energy technology. The People category takes into account sociodemographic factors, cultural values and norms, trust in the industry and government, and the influence of the views of others (media, elites, peers, trusted sources). The characteristics of a Place (existing landscape, physical infrastructure, existing economies, jobs, and social and political institutions) are important in understanding public perception of energy technology. The framework acknowledges that the process of decision-making in terms of public participation and transparency in turn creates higher levels of support for energy technology. If there is a higher level of economic involvement and perceived level of fairness there will be higher

support for energy technology (Boudet, 2019). According to Boudet (2019), previous survey-based studies by other researchers focus on aspects of technology and people. Place- and process-based factors have been incorporated into some of these models but are not yet part of the 'standard' model for these studies (Boudet, 2019). By incorporating all four factors, a more comprehensive model can be used to analyze qualitative data gathered in the project.

treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies," including equal "protection from environmental and health hazards," and equal access to the decision-making processes (2022).

FRACKING ENVIRONMENTAL JUSTICE FRAMEWORK

Much of Boudet's Framework for Public Perception overlaps with environmental justice concepts. According to the United States Environmental Protection Agency (EPA), environmental justice is "the fair

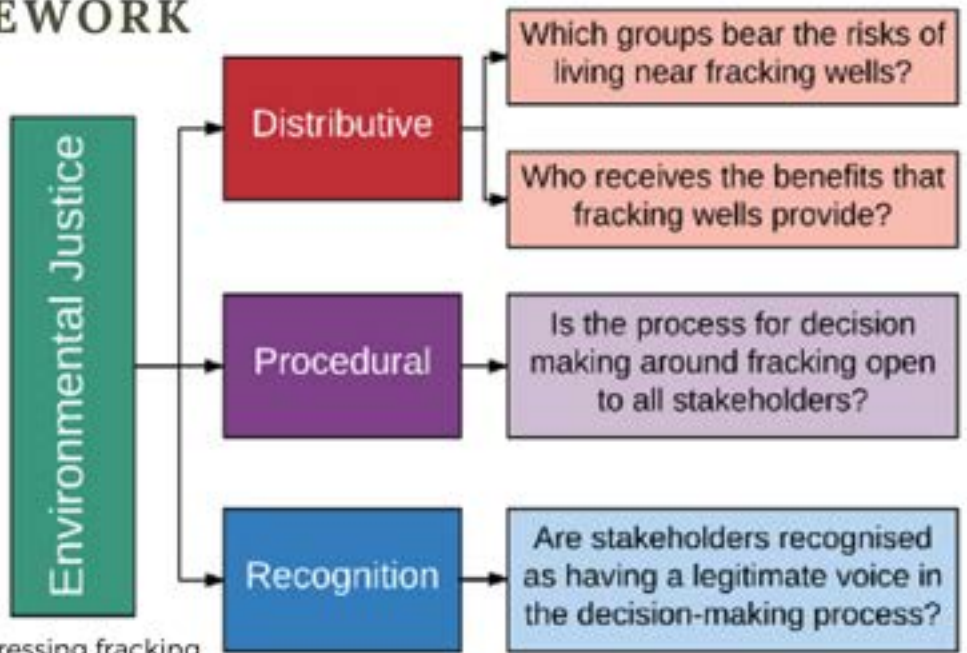


Figure 13 - Environmental justice framework addressing fracking (Clough, 2018, p. 15).

Researchers at the Ada Lovelace Institute, an independent research institute focusing on equitable access to Artificial Intelligence and data, have developed the Fracking Environmental Justice framework to assess environmental justice concerning fracking. (Figure 13) (Clough, 2018). Clough identifies distributive, procedural, and recognition as areas essential to understanding environmental justice with regard to fracking. Distributive environmental justice asks which groups bear the brunt of the risks of living near fracking wells, and who benefits from fracking operations. Procedural environmental justice determines if the processes around fracking decision-making are open to all stakeholders. Recognition environmental justice examines if all stakeholders have a legitimate voice in the decision-making process (Clough, 2018).

The framework is applicable for examining how communities living near fracking sites have been affected by the operations and what power they have over the operational and policy decision-making process. However, the Fracking Environmental Justice framework does not directly address issues related to vulnerability and vulnerable groups, and how that affects who bears the most risk to fracking wells.



VULNERABILITIES AND FRAMEWORKS TO ANALYZE THEM

DEFINITIONS OF VULNERABILITY

Groups that have increased risk to a hazard, such as those posed by the effects of fracking, are referred to as vulnerable groups. The United Nations Office for Disaster Risk Reduction (UNDRR) uses the following definition of vulnerability: "conditions determined by physical, social, economic and environmental factors... which increase the susceptibility of an individual, a community, ... to the impacts of hazards" (Gabel et al. 2022, p. 3). Certain members of a group or certain populations can be vulnerable for a number of reasons, including, but not limited to, location, incapacibilities, and social inequalities.

Spatial vulnerability refers to the risk of exposure due to location, such as being vulnerable to hazards due to home location. Physical vulnerability refers to a person's physical or mental capabilities. Groups such as children, the elderly, and disabled people may be physically vulnerable due to a lack of mobility or dependence on medical devices or caregivers (Heagle and Pacquaio, 2019, Kuran et. al., 2020).

Social vulnerability refers to a lack of access to

information, resources, etc. due to social inequalities (Ebert, et al, 2009). This may include resources being withheld or not available within communities, a sense of mistrust among a community in the person or organization offering aid, or resources provided not being culturally sensitive. It can also be seen in a more informal sense, such as a person or family not having many social connections due to discrimination (Polcarova and Pupikova, 2022). Those who face social vulnerability may also be referred to as a marginalized group.



VULNERABILITIES OF MINORITY GROUPS

Women

Gender can contribute to vulnerability when gender is a basis of discrimination in a society. In the case of Albanian society, women and gender minorities (individuals who do not fit binary gender norms, such as intersex and nonbinary people) are considered more vulnerable than men. While the role of women in Albania has changed dramatically since the fall of communism, many patriarchal expectations remain (Çekrezi & Skura, 2020; O'Malley & Holzinger, 2018; Peshkopia et al, 2018). The Post Disaster Needs Assessment (PDNA, 2020) writes, "Women in Albania continue to face inequalities in access to basic services, such as education, employment, and health care, and participation in decision-making processes," (p. 65). McHenry's (2017) case study of women in Pennsylvania living near the Marcellus Shale fracking zone found that women are more vulnerable to fracking effects. This study states that "[environmental justice literature] also demonstrates that women are often the first to experience and notice environmental harm precisely because of their gendered roles as family caretakers" (p. 88). In addition to health issues that affect all residents in the vicinity, pollution due to fracking has been documented to increase risk of harm to pregnant people. McHenry found that "all participants in my study discussed the ways that



fracking impacts their mothering and their relationships with their children" (p. 87) and that mothers experience increased negative mental health effects due to the impacts fracking and pollution may have on their children.

Intersectional vulnerabilities

Mincyte and Bartkiene (2017) take an intersectional approach to their study of vulnerable rural communities living near fracking sites in Lithuania. Intersectionality refers to a theoretical lens used to analyze overlapping social categories (race, gender, etc.) The authors argue that the effects of fracking on the land, such as soil pollution, are more detrimental to rural communities due to an increase in farming as a source of income. By taking into account the geopolitical history of Lithuania, the authors were able

to understand how intersecting forms of marginalization led to the necessity of the anti-fracking movement there. Finewood and Stroup (2012) also argue that rural areas are vulnerable to effects of fracking, since companies seek expansive areas of land and landowners are often not given complete knowledge of the risks before land use agreements are signed. They also argue that rural areas often hold more vulnerable populations, such as elderly and low-income residents. Another reason they advocate for rural areas as a vulnerable group is that stakeholders in rural land often rely on land and natural resources for income, which is put at risk when fracking operations are nearby. Disabled and/or elderly people are both physically and socially vulnerable to hazards. Their vulnerability is increased and complicated by a number of risk factors: mobility issues; sensory deficits; and dependence on others, devices, or medications. Non-medical needs may include low socioeconomic status, poor living conditions, language barriers, or lack of social support (Heagele and Pacquiao, 2019). As of 2015, 6.2% of Albania's adult population was disabled, and disabled adults are more likely to be affected by poverty (UNDP, 2015). The UNDP's Review of Disability Assessment in Albania found that there are also barriers to disabled Albanians receiving social security benefits, which can create financial insecurity, and increasing their hazard vulnerability (UNDP, 2014).



FRAMEWORKS TO ANALYZE VULNERABILITY

Moser's Triple Roles Framework

Women's vulnerability in Albania can be understood through Caroline Moser's "Triple Roles Framework," which analyzes divisions of labor between men and women across three categories: reproductive, production, and socio-cultural (Balgah, et. al., 2019). Reproductive roles are those that pertain to household and family work, such as childcare, cooking, and cleaning. Production roles relate to family economics, such as farm work or trade. Socio-cultural roles are those that include engaging with the local community, such as through social events or participation in local politics. Balgah (2019) cites Moser's goal to be "to consistently demonstrate the extent to which most women in developing countries often pick up multiple roles simultaneously, as compared to men, who are often less engaged in household activities, but more engaged in production and community - oriented ones." (p. 4)

Moser's Triple Roles Framework highlights the extent to which women often take on multiple roles at once, and that women's contributions to production and socio-cultural roles are often less valued than men's contributions.

Moser's Triple Roles Framework



Figure 14 - Diagram of Moser's Triple Roles Framework with definitions of each role.
From Balgah, et. al., 2019, p. 8)

Intersectionality Approach

Vulnerabilities and minority identities may interact with each other. For example, disabled women may face both gender-based and ability-based vulnerability. According to Gartrell et al., (2020), government officials may have few resources or low motivation to help disabled women, and women with disabilities may be unwilling to accept or trust offered resources due to past discrimination (Gartrell et al., 2020). Kuran et al., (2020) highlights that a given area may be spatially vulnerable to certain hazards, and inhabitants have identities that may make them physically and/or socially vulnerable (Kuran, C. et al., 2020). Mincyte and Bartkiene (2018) examine how those with multiple marginalized identities experience discrimination from a variety of sources, including established institutions such as government. The experiences of these individuals may not be directly attributed to any one identity, as discriminations are interwoven into day-to-day life.

Walker, et. al.'s (2019) description of an intersectionality approach to social dimensions of climate hazards analyzes several factors of intersectionality. The framework analyzes how those with multiple marginalized identities experience situations, how policy is influenced by discriminatory social structures, how those with marginalized identities are publicly represented, and how researchers' identities affect their work. In the Intersectionality Approach, the authors provide questions to guide researchers in understanding the ways in which study participants' identities are impacted by their environment and power structures.

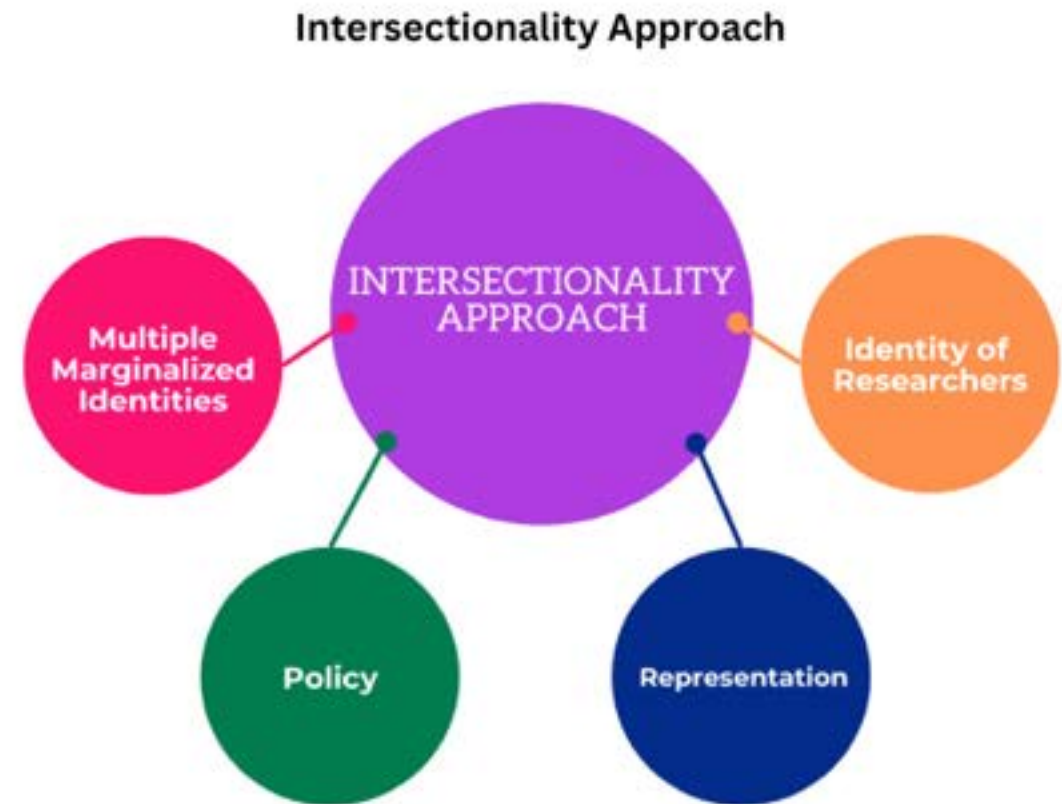


Figure 15 - Graphic depicting facets that contribute to the Intersectionality Approach (own graphic).

UNDP RESEAL PROJECT

Albania's response to recent disasters revealed deficiencies in the nation's disaster response mechanisms, especially the 2019 earthquake. The Post-Disaster Needs Assessment by the Ministry of Civil Protection and disaster risk reduction (DRR) Sector assessment found that the flawed response was influenced by many existing vulnerabilities such as a lack of emergency rooms at local and national levels, limited human resources in the National Civil Protection Agency (NCPA), and lack of training on emergency coordination (Republic of Albania & UNDP, n.d.).

Largely in response to the 2019 earthquake, the United Nations Development Programme (UNDP) Albania began the Resilience Strengthening in Albania (RESEAL) project to support the Government of Albania's efforts to improve its disaster risk management (DRM) system and become a member of the EU Civil Protection Mechanism. The RESEAL project seeks to strengthen the DRM systems at all levels in Albania (UNDP Albania, n.d.). The RESEAL project also supports the implementation of the Sendai Framework. The Sendai Framework for Disaster Risk Reduction 2015-2030 is a global agreement and blueprint to prevent new and reduce existing disaster risk. (UN, 2015). UNDP's work began in 2020 with two pilot interventions at the local and central levels.

- 1. Strengthening the Disaster Risk Reduction framework and capacities at the central level**
- 2. Building Disaster Risk Reduction local level knowledge, planning and organizational capacities for prevention and response to disasters,**
- 3. and supporting critical needs for Disaster Risk Reduction infrastructure (UNDP Albania, n.d.).**

REGIONAL LEVEL PROJECT

With work at both the national and local levels, the UNDP and its partners want to focus on the second level of civil protection: regional.

Albania has 12 political regions, called qarks (Dhima & Meijer, 2020). Based on specific risk criteria, population, and the number of municipalities, the Fieri region was chosen. Figure 16 is an organizational chart showing organizations involved in the RESEAL in Fier project and their relationships.

The Fier region is located in southern Albania and contains six municipalities. As aforementioned, technological hazards are one of the most prevalent risks in the region. The Patos municipality is particularly at risk of this hazard due to the presence of the Patos-Marinza Oilfield.

The total population residing within the Patos municipality is unclear. According to IDRA's

Organizations involved in the RESEAL in Fier project

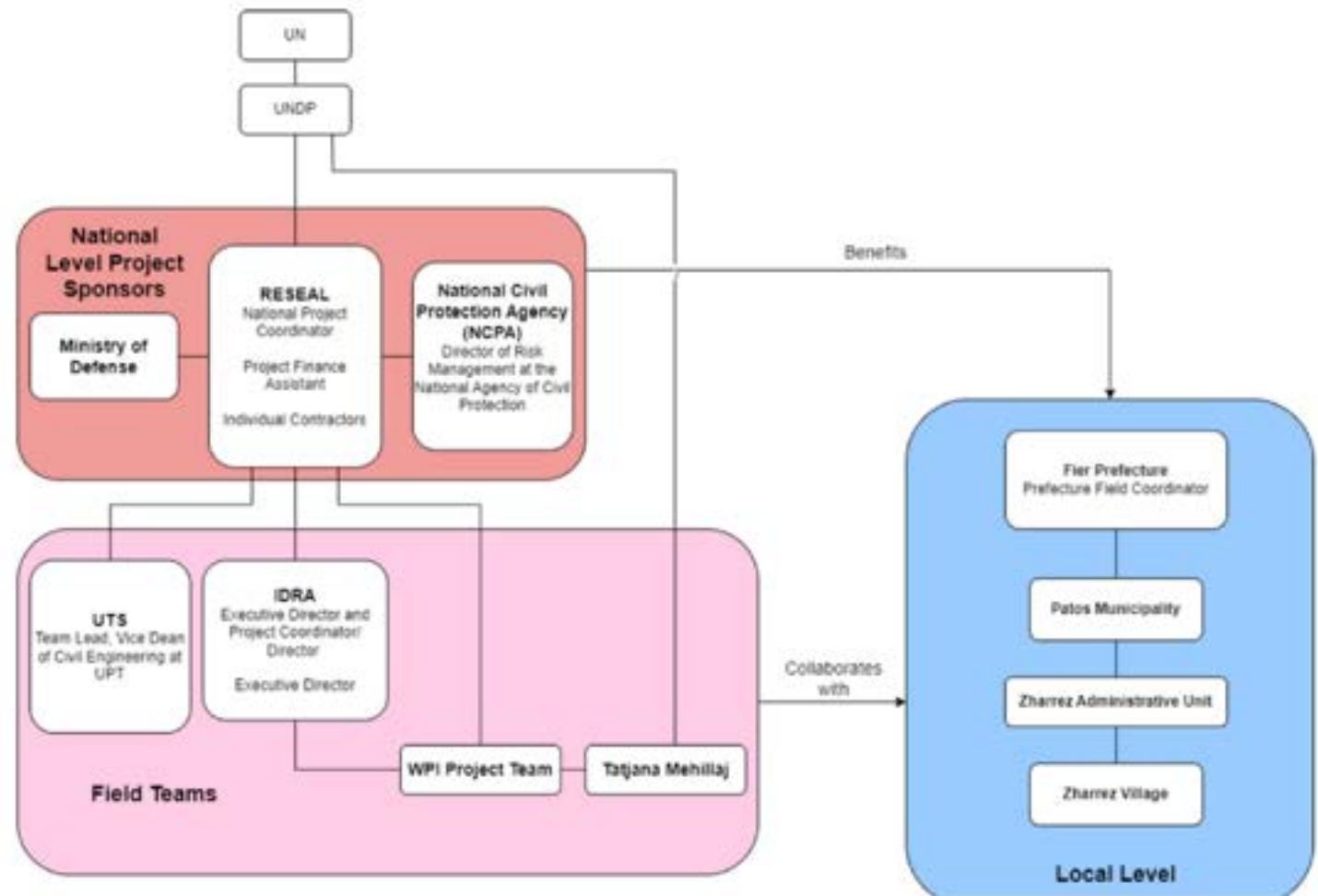


Figure 16 - Organizational Chart showing organizations and individuals involved in the RESEAL Fier project (own graphic).

Technical Proposal for Developing the Disaster Risk Reduction in 6 Municipalities of Fier Quark (Region) (2022)). the civil registry lists the population density of the

Patos Municipality at 518 inhabitants per km² while the 2011 census lists the population density at 278.3 inhabitants per km squared. Roughly 5% of the



population possesses a higher education degree, 30% have completed secondary education, and 65% have a 9-year education. Economic development is split between the Agricultural (80%) and Industries and Services sectors (20%) which includes hydrocarbon extraction (IDRA, 2022).

Our project focuses on the village of Zharrëz within the Zharrëz administrative unit that is part of the Patos municipality. As of November 2022, 8754 people reside within the six villages in the Zharrëz administrative unit consisting of 2578 families, 4533 people identified as male, the other 4215 identifying as female. The population for Zharrëz Village itself was estimated at 3263 people, 1800 being male, and 1463 being female, across 965 families. This data was an estimate due to a lack of specific records at the Zharrëz Administrative Unit (Zharrëz Administrative Unit, personal communication, December 2, 2022).

UNDP AND IDRA RESEARCH AND CONSULTING

In order to complete the Enhanced Vulnerability and Capacity Assessment (EVCA) for the Fier region, the UNDP RESEAL project partnered with IDRA. IDRA is an Albanian-based research and consulting company that has experience with environmental development and local-level plans, as well as experience working with organizations such as GIZ, World Bank, UN Women, and UNDP. IDRA is partnering with the UNDP on the regional level project.

One of IDRA's main objectives in the Fier regional RESEAL project is to conduct and support risk assessments in selected municipalities in accordance with the Sendai Framework which "affirms the need for greater and more meaningful participation by stakeholders such as women, people with disabilities, and other marginalized groups in the disaster planning and implementation process" (Zaidi & Fordham, 2021, p. 3).

The Enhanced Vulnerability and Capability Assessment IDRA is conducting is an assessment using participatory community engagement methods to determine a community's vulnerability to identified risks, and people's capacity to recover from a disaster (IFRC, n.d.).

The theoretical frameworks IDRA intends to utilize revolve around the Sendai Framework or the Disaster Risk Reduction Framework.

Given that the Sendai Framework calls for a greater understanding of, and participation by, women and other marginalized groups in DRM, some researchers advocate for the use of alternative approaches to understanding these perspectives (Zaidi & Fordham, 2021). These approaches can include narratives and the elicitation of life stories.

THE IMPORTANCE OF NARRATIVES

Narrative approach focuses on “ways to understand and then present real-life experiences through the stories of the research participants... [allowing] for a rich description of these experiences and an exploration of the meanings that the participants derive from their experiences.” (Wang & Geale, 2015, p. 195). Narratives have had widespread use in the area of social science particularly by qualitative researchers. Researchers may be interested in narratives for a number of reasons including: an interest in people’s lived experiences, wanting to empower participants, and determining the most important themes in an area of research (Elliot, 2005). Narratives can communicate participant’s stories to a wider audience, amplify voices that may have remained unheard, and provide a deeper understanding of participant’s experiences (Wang & Geale, 2015). Narratives can complement quantitative data by providing emotional context data alone can lack. Humans are not entirely rational beings and as such stories can be as important in persuading or evoking understanding as statistical information. This is

particularly important in fields such as the development of public policy, since “policy decisions are often value-driven and political, not just evidence-based choices.” (Fadlallah et al., 2019, p. 2).



OUR APPROACH



PROJECT GOAL

The goal of this project is to understand women's lived experiences with fracking in Zharrëz to amplify under-represented perspectives in the UNDP's Disaster Risk Management planning. We interviewed women who live in Zharrëz and collected narratives about their experience with fracking. We then used four theoretical frameworks to guide our understanding of women's experiences and created a transmedia exhibition of collected narratives and lived experiences. We also created a Narrative Elicitation Guidebook of the narrative elicitation activities for the UNDP, IDRA and other practitioners interested in new methods of understanding people's experiences with hazards. We also created a Synopsis of Frameworks fracking, gender, and environmental justice.

We used a variety of methods to achieve the following project objectives:

- Understand fracking in Zharrëz
- Explore and apply alternative frameworks that bring marginalized perspectives into Disaster Risk Management processes
- Utilize participatory narrative elicitation activities to understand women's lived experiences with fracking
- Develop a prototype transmedia collection of women's narratives and a facilitator's manual for narrative elicitation.

UNDERSTAND FRACKING IN ZHARRËZ

The team pursued a deep understanding of the effects of fracking in the village of Zharrëz and around the Patos-Marinza oilfield to understand its impacts on people and the environment. This set a foundation for an understanding of the externalities caused by fracking and how fracking affects women's perceptions of risk. Methods include archival research, key informant interviews, site visits, and photo documentation.

The team used archival research to investigate how fracking has impacted Zharrëz recently and historically. The team also conducted key informant interviews with technological risk expert Professor Starvi Dhima; environmental journalist Daniel Glick; the head of the local Nongovernmental Organization (NGO) Environmental Association "Zhareza" Quani Rredhi; Adriatik Golemi a freelance journalist, activist, member of Environmental Association "Zhareza", and former Bankers Petroleum Petroleum employee; Saimir, another member of Environmental Association "Zhareza"; and the representative of the administrative unit of social protection in Zharrëz.

Environmental Association "Zhareza" is a non-governmental environmental organization that focuses on protecting the local ecosystem. The organization was founded in 2017 amidst the "strikes and protests that the residents of the Naftemabaytse field held against the oil company Bankers Petroleum Petroleum" to stop the fracking operations inducing seismic activity, which is referred to by residents as the tremors or shaking. Since 2017, the Zharrëza Association has sought to represent the people of Zharrëz and raise attention to the problems related to fracking in the Patos-Marinëza area, such as the pollution of the Gjanica River (Environmental Association "Zhareza", n.d.).

The team conducted site visits at active wells, open deposit wells, and locations impacted by pollution, such as a local stream and the local family's fields. These sites were identified by key informants, interviewees, and our own exploration of Zharrëz. The team photographed and took videos of these sites.

While in Zharrëz, the team documented their observations using field notebooks, interview notes, audio recordings of interviews, and photographs of site visits and interviewees.

These methods supported our understanding of fracking and its myriad effects on Zharrëz citizens. This information informed our interviews and our activities, as well as the construction of the narrative collection.





EXPLORE AND APPLY ALTERNATIVE FRAMEWORKS THAT BRING MARGINALIZED PERSPECTIVES INTO DISASTER RISK MANAGEMENT PROCESSES

The team found that no singular framework adequately contained the complexity of women's experience with fracking. Instead, the team studied and incorporated four frameworks to deepen their understanding of women's experiences of fracking in Zharrëz. Interviews and analyses were informed by Moser's Triple Roles Framework, Fracking Environmental Justice Framework, Intersectionality Approach, and Boudet's Framework for Public Perception (Moser, 2014; Boudet, 2019; Clough, 2018; Walker, et. al., 2019). The frameworks also guided the team's development of participatory methods and analysis of responses by providing themes to examine.

UTILIZE PARTICIPATORY NARRATIVE ELICITATION ACTIVITIES TO UNDERSTAND WOMEN'S LIVED EXPERIENCES WITH FRACKING

The team used semi-structured interviews, walking interviews, and narrative elicitation activities to understand women's lived experiences.

We performed key informant interviews with the administrative unit of social protection and Environmental Association "Zhareza" to identify and meet local women. Our sampling strategy included women who had seismic damages to their homes or who were identified by social protection to be most in need.

The team worked with Tatjana Mehillaj, the project local field coordinator for the UNDP working in the Fieri region, who acted as our primary translator. Tatjana Mehillaj is currently an environmental technician at the UNDP and has her degree in civil law. We also worked with Melanie Doka, an interpreter who has a degree in social work and is currently associated with the Center for Bridging Communities in Tirana.



We met with Tatjana Mehillaj prior to interviews and activities to discuss questions and the information the team hoped to gain. She played an active role as a member of the research team, and she brought her own expertise to the process.

Semi-Structured Interviews

Semi-structured interviews allowed questions to guide the conversation while giving enough space for participants to reveal factors that were previously unconsidered (Galletta, 2013). The purpose of these interviews was to understand women's experience with fracking, the extent to which they have managed its impacts, and how their identities shaped their experiences. Interviewees were given a short verbal description of our project and gave verbal consent before the team asked questions. These interviews were recorded, photo-documented, and the team took handwritten notes.

These interviews were conducted in the homes of the women, the administrative building of Zharrëz, or walking through the interviewee's fields. By speaking with them in their homes or on their fields, our team was able to see the effects of fracking externalities firsthand.



Narrative Elicitation Workshop

We developed three activities to elicit narratives related to women's experiences with fracking. We hosted a workshop with local women from Zharrëz who were invited by the social protection agency and Environmental Association "Zhareza."

Warming up with "I'm good at..."

The workshop opened with a series of questions about life in Zharrëz. The starter game was adapted from "I'm good at..." from Compass: Manual for Human Rights Education with Young People (Council of Europe, 2015, p. 347). The purpose was to demonstrate diversity and solidarity within the group. We invited respondents to answer by going around the group, giving each participant an opportunity to answer each prompt question. This activity was used as a way to prompt lighthearted discussion and create an inviting atmosphere before delving into more serious topics. To begin, we asked everyone to repeat the prompt "Hi my name is ____ and I'm good at..." and share one by one. The second prompt was "tell us something you would like us to know about Zharrëz." The third prompt was "tell us something that you feel impacts women in your community."



“A Picture Is Worth ... ?” Activity

This activity is a form of group photo-interviewing and was adapted from “Using Photo-Interviewing as a Tool for Research and Evaluation (Dempsey & Tucker, 1994).” Photo-interviewing “yields richer data than that usually obtained from verbal interviewing procedures alone...photographs trigger recall and focus...enabling an in-depth look at intended as well as unintended aspects” (p. 56). Photographs also act as both stimuli and verifiers of perception (Dempsey & Tucker, 1994).

Using the process of photo-interviewing from Dempsey & Tucker (1994), the team first identified major concerns shared by the community from initial interviews with affected women and key informants prior to the narrative elicitation workshop. The team then prepared photos we took ourselves or from online sources. The photos represented environmental and dust pollution, damage to homes, negative effects on agriculture, and



concerns about health impacts caused by the pollution we took ourselves from online sources. We then printed them out to take up at least half a page to ensure the photos were clear and visible.

Figure 17 shows the photos we provided to the group. Copies of each picture were distributed around the table. We then asked participants to choose a photo they would like to talk about, such as one they had a personal experience to share or they may have strong feelings about. In a roundtable-style, we asked each participant to share why they picked that photograph, what it meant to them, how it made them feel, or anything else they would like to share.



de Lorenzo et al. (2022)



An oil deposit well in Zharrëz (own photo)



Processing tanks, truck, and discarded oil derricks (own photo)



A_lis_A (n.d.).



Kote, K. (2020).



UNDP Uzbekistan. (2022).

Figure 17 - Sample photos provided for "A Picture is Worth ...?" activity.

Paper Storyteller Activity

The Paper Storyteller activity followed the "A Picture Is Worth ... ?" activity. This activity involved passing out a blank piece of paper and pen to each participant before giving them the prompt "Use this piece of paper to describe your experience with the oil and gas industry." We told participants they were free to do whatever they wished with the paper for a short time. One member of our team demonstrated his response to that prompt as one example of how a participant might respond, focusing on the environmental effects of fracking. Each participant had 5 minutes much time to manipulate the paper, draw on it, or use it for any purpose she wanted. This activity was based on one developed by WPI Professor Leslie Dodson who rehearsed this activity with the team using the prompt "Use this piece of paper to describe your experience with the Covid

pandemic" (personal communication, November 2, 2022). Table 2 shows examples of stories created by the student team and professors in response to that prompt question.

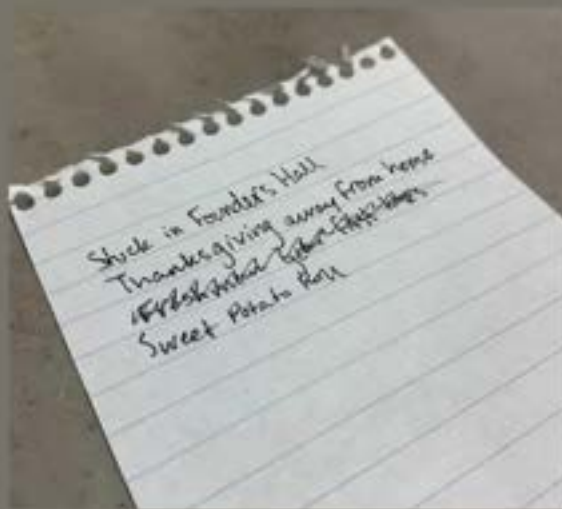
The woman had approximately 5 minutes to complete the activity

after which we facilitated a discussion by asking each participant to describe what they created and why. The team took handwritten notes as well as an audio recording of the discussion. During this time, we did not ask any questions during the discussion to encourage free sharing.

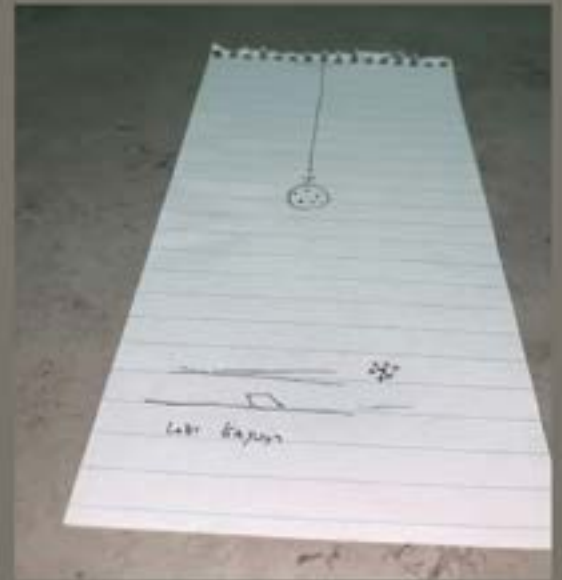




a.



b.



e.



c.



d.

Figure 18 - Examples of Paper Stories for the prompt "Use this piece of paper to describe your experience with the Covid pandemic." Papers created by a) Alexandra Sheehan, b) Sara Frunzi, c) Professor Robert Hersh, d) Professor Leslie Dodson, e) Samuel Darer (own photos).

Narrative Elicitation Workshop Questionnaire

At the conclusion of the narrative elicitation workshop, we asked participants if they had anything they would like to share about the workshop with facilitators. We handed out a brief paper-based questionnaire. We wanted to encourage honest feedback, so we told participants that they were not required to disclose their names. The narrative elicitation workshop questionnaire, listed in Appendix D, asked:

1. Did you enjoy the activities in the workshop? Which was your favorite (beginning game, pictures, paper game)?
2. Did you feel that you got a chance to say everything you wanted to?
3. If we were to do these activities again, what would you change?
4. Would you be willing to do a follow-up interview, yes or no? If yes, what is your name and how can we contact you (phone number, email)? What dates are you available out of these: November 24, December 1, December 2

A version of the questionnaire translated into Albanian was provided to participants.

DEVELOP A PROTOTYPE TRANSMEDIA COLLECTION OF WOMEN'S NARRATIVES AND A FACILITATOR'S MANUAL FOR NARRATIVE ELICITATION

The goal of the narrative elicitation workshop was to understand participants' lived experiences with fracking through alternative approaches to those that IDRA and UNDP currently use. We designed and developed a suite of resources for our sponsors and other practitioners interested in the stories of the women we met, using the activities we designed, and applying the frameworks we selected.

Interviews and activities were used to create a prototype transmedia exhibition of constructed narratives. The exhibition features audio clips from our field work and a photograph and text-based booklet of profiles. The narratives were a combination of a passage describing a person's story and photos of activities performed by

participants, participants' own photographs representing their experiences, and photographs our team takes of the environment in Zharréz. The collection of narratives is provided in Appendix F.

We also created a guidebook for the activities our team developed and adapted. The guidebook will supplement and inform participatory techniques and can be used by municipalities, the UNDP, or IDRA in the future for DRM planning or projects. The narrative elicitation guidebook is provided in Appendix G.

We applied four different frameworks and developed a synopsis of alternative gender and environmental justice frameworks. A guidebook of the frameworks we used is provided in Appendix H.



FINDINGS



UNDERSTAND FRACKING IN ZHARRËZ

Understanding local experiences and perspectives is a necessity for bottom-up decision-making and information gathering, which is what IDRA will do when conducting the EVCA. Bottom-up decision-making is democratic, involving, and consultative style of decision-making in which individual participation is valued rather than only higher authority figures.

Our team conducted 4 key informant interviews and one group interview with experts to better understand the oil and gas industry in Zharrëz and globally. We studied reports and newspaper articles on communities on and near the Patos-Marinza oil fields that revealed the extent of pollution and indications of negative health effects. This provided us with an understanding of past, current, and potential, future issues around fracking.



TABLE 1. KEY INFORMANTS ABOUT FRACKING

Name	Title	Certification	Topics
Daniel Glick	Independent investigative journalist for more than 20 years	Numerous articles and reports on local and global effects of fracking	Fracking and marginalized populations
Quani Rredhi	Head of the NGO Environmental Association "Zhareza"	Led 2017 hunger strike, resident of Zharrëz	2017 hunger strike, water, air and land pollution, 2012-2017 tremors
Adriatik Golemi	Activist, TV Apollon journalist, member of Environmental Association "Zhareza"	Former Bankers Petroleum Community Relations and PR manager (2015 - 2019), experience in the oil industry for 20+ years	2012-2017 tremors, the current state of Bankers Petroleum operations

TABLE 2. KEY INFORMANTS FROM ZHARRËZ ADMINISTRATIVE UNIT

Name	Title	Topics
Gramos Çepele	Head of Social Protection	How the social protection system works, pensions
Lindita Pepa	Agricultural Specialist	Soil and air pollution effects on agriculture

GLOBAL FRACKING AND MARGINALIZED POPULATIONS

Daniel Glick has produced numerous articles and reports on the consequences of fracking globally. Glick identified air and water pollution as the two most prevalent concerns. Air pollution is associated with the numerous pollutants fracking operations emit. Water pollution includes the leakage of chemicals used in fracking as run-off or from oil deposit wells into the drinking water or streams.

Glick also stated that oftentimes drilling for oil extraction occurs where people have already settled. Furthermore, "vulnerable people have been historically targeted" for the development of fracking. Vulnerable people are more likely to "live near or close to" oil extraction operations because these communities are viewed as "less likely to fight back."

There are also "strong industry-political dimensions of fracking" according to Glick. This suggests that politics and fracking are closely tied and heavily influenced by one another. As a result, public opinion may not hold much value in decision-making. This can create a sense of "powerlessness" in the community which can discourage action against the oil industry.



Figure 19 - The team performing an interview with Daniel Glick, Independent investigative journalist (own photo).

ZHARRËZ-SPECIFIC CONCERNS

Air and water pollution are present in Zharrëz according to members of the NGO Environmental Association "Zhareza" Quani Rredhi and Saimir. Both spoke to us about the water supply that became contaminated in early 2017 which began with "red mud coming out of wells" instead of clean water. The mud had a strong smell of oil and was unsafe and unusable. This allegedly was a result of the tremors in which oil in the deposit wells infiltrated the groundwater causing contamination. The red mud is no longer present, but five years later the tap water is still contaminated and undrinkable.



Figure 20- The team performing an interview with Adriatik Golemi, Activist, TV Apollon journalist, member of Environmental Association "Zhareza" (own photo).

Residents of Zharrëz pay for bottled water themselves for all daily activities such as drinking, bathing, and cooking. In terms of air pollution, Rredhi and Saimir stated that the trucks that transport oil drive on unpaved dirt roads and generate dust. The dust negatively affects nearby agriculture by lessening the productivity of the crops. Rredhi also noted that farmers struggle to sell crops at markets because they are perceived as "dirty and polluted."



Figure 21 - Photo of participants during 2017 hunger strike (2016 Dec 22). Inhabitants Zharrëz on Hunger Strike against Oil Drilling, exit news.

"WE WON THE BATTLE,
BUT NOT THE WAR"

-Quani Rredhi, Head of the NGO Environmental Association "Zhareza" describing the 2017 hunger strike against induced seismic activity

Adriatik Golemi and Rredhi spoke about the tremors and subsequent 2017 hunger strike against induced seismic activity in Bankers Petroleum operations. Golemi stated the multi-year period was a result of wastewater injection into the disposal wells. The 2017 hunger strike, which was a protest by men from Zharrëz in response to the tremors, was "very difficult... we were under intense government pressure to end it" according to Golemi. Women participated in efforts for general change, but not the strike.

After 2017, residents reported the stoppage of tremors. Despite this, there are still concerns and fears about the existing environmental pollution present. Samir and Rredhi described numerous instances where they would raise an issue with Bankers Petroleum, Albpetrol, or government institutions with little to no resolutions. Samir and Rredhi expressed their feelings of injustice, frustration, and powerlessness. In spite of these feelings, they say that they're committed to doing what they believe the government and other institutions have not: "raising the voice of the locals."



LIVELIHOODS IN ZHARRËZ

Through a group interview with two individuals, Gramos Çepele and Lindita Pepa from the Zharrëz Administrative Unit, we learned that many residents in Zharrëz have pensions or receive social assistance through the social protection system. Social assistance is in the form of economic/monetary assistance and is a financial safety net. Gramos Çepele, the head of social protection, explained that anyone can apply, such as families, people with disabilities, and people experiencing financial hardship. Çepele also explained the process for applying.

Lindita Pepa, the agricultural specialist, spoke about the negative consequences on agriculture from fracking. Pepa noted that agriculture is the primary livelihood in Zharrëz. She stated that the air emissions from oil extraction cause a chemical reaction with a type of chemical used by farmers on crops. A form of treatment is often sprayed directly on crops to fight the humidity, so bacteria won't grow to cause damage. However, the chemical reaction causes the death of crops or renders them crops unsafe to sell or consume. Therefore, there is a decrease in usable crop production. Pepa explained that Bankers Petroleum gifted white plastic greenhouses to some farmers to combat this problem, but she did not state how many. Valbona noted that there is oil runoff in the channels of many agriculture fields. This pollution has the potential to contaminate crops and the soil and potentially cause diseases.



SITE VISITS

Over the course of 8 days, our team conducted site visits to 6 oil deposit wells in Zharrëz, a stream in Zharrëz that is visibly polluted with oil runoff, and agricultural fields owned by interviewees located directly near fracking operations. We found that directly viewing locations can add important context to information received and encourage new lines of questioning.



Fiqerete Gremi. Elderly woman with household damages and multiple illnesses



Sofie Senko. Elderly woman with household damages and multiple illnesses



Meruhe Toska. Breast cancer survivor.



Hamite Asllani. Elderly woman living with extended family.



Donika Asllani. Single mother working as a sanitation worker at Zharrëz Administrative Unit



Nexhmie Asllani. Single mother caring for ill young son.



Dhoksie Belulaj. Older woman taking care of her disabled daughter.



Manuela Belulaj. Mute woman who has problems breathing.



Zariko Hoxha. Older women who cannot see well.



Beruzë. Disabled, elderly woman taking care of her disabled daughter.



Zana. Adult woman whose home was destroyed by 2012-2017 tremors.



Lefteri Kothere. Mother who works in her fields.

TABLE 3. WOMEN INTERVIEWED WHO WERE COMFORTABLE WITH NAMES BEING SHARED

POLLUTION



WELL AND TAP WATER IN ZHARRËZ IS UNUSABLE

Water pollution makes tap water unusable for daily activities such as showering, drinking, cooking, and cleaning. It is described as having a dark hue and smelling of oil. Even women who have their own wells on their property, such as Nexhmie and Beruzë, must buy bottled water since their water is also contaminated. Buying bottled water is an additional financial burden. Donika Aslloni, a single mother, said that it cost her approximately 3,000 ALL per month to buy bottled water, approximately equal to the monthly government aid she receives.

"WATER IS VERY EXPENSIVE FOR ME."

-Donika Asllani

AIR POLLUTION MAKES RESIDENTS FEEL SICK

"EVERY TIME THE TRUCKS PASS BY
OUR HOMES, WE FEEL SUFFOCATED."

– *Nexhime Asllani*

"THE SMELL OF OIL IS SO STRONG IN
THE SUMMER WE HAVE TO SHUT THE
WINDOWS COMPLETELY AND
SOMETIMES STAY AT OUR
NEIGHBOR'S HOME"

– *Lefteri Kothere*

All of the women we interviewed in semi-structured interviews stated that the smell of oil is strongest in the mornings and evenings. The smell intensifies in the summer and when oil transportation trucks pass, which also causes dust pollution.

Fiperete Gremi, an elderly woman, explained that she went to the hospital for lung problems. She believes the smell and pollution in the air were the causes of this health issue.

"THE SMELL WAS SO HORRIBLE I FELT
LIKE VOMITING AND WOULD NOT
WANT TO GO OUTSIDE."

– *Sofie Senko*

OPEN OIL DEPOSIT WELLS CONTAMINATE LAND AND SOIL

Out of the three women's fields we visited (Nexhime, Lefteri, and Fiqerete), all had an oil deposit well or open pit within 3 meters (10 feet) of their land or crops. There was a strong smell of oil that was unmistakable even from standing further away. In the oil deposit well near Fiqerete's land, there was trash and litter on top of the thick oil that was spilling out of the pit. There were no safety measures to rope or block the areas off at all three oil deposit wells. Despite numerous appeals and complaints from each woman to Bankers and Albpetrol to make the area safer, no action has been taken.



LIVELIHOOD

MOST FAMILIES ARE LOW-OR NO-INCOME

Of the 16 women and seven men we interviewed, only one, Donika Aslloni, was currently employed in the formal sector. She works as a sanitation worker at the Zharrëz administrative unit building. The other 22 interviewees were unemployed, the women primarily taking care of the home, family members, and worked in family owned fields, if they were physically able.

The primary form of income for five of the families we interviewed was from social protection payments for disability and or retirement pensions. Nexhmie, a 40 year old mother of three sons who is separated from her husband, used to get financial support for living in poverty.

She no longer receives support since two of her working-age sons live in Italy. Likewise, Sofie Senko has a son living in Italy that has a leg injury and his own family. Even though he does not send back remittances, Sofie said she is expected to receive support from him which affects her ability to receive aid from the social protection system.

Some women, including Zana, Merushe Toska, and Beruzë, have grown children who live with them who help provide financial and other forms of family support. Nexhmie's husband who lives abroad, who she is separated from, infrequently provides financial assistance.

AGRICULTURE IN ZHARRËZ HAS BEEN IMPAIRED BY FRACKING

All the families we talked to own some amount of agricultural land for family use. Families produce olives, wheat, beans, corn, persimmons, pomegranates, tangerines, and feed for cattle on farms in Zharrëz. Most of what they produced was for family consumption, but families would sell any excess of their harvests. Some of the women we talked to raised chickens and we observed turkeys and sheep being raised as well. Those with land adjacent to open deposit wells told us that the pits would overflow when it rained and contaminate their farmland. This reduced the available space they had to farm, contaminated soil not being suitable for sowing crops, and negatively affected crop yields.



The women reported that trying to sell produce and livestock from Zharrëz was difficult. One woman explained that if people knew the product was from Zharrëz they would not buy it. She felt ashamed she had to lie and say she raised her chickens at her mother-in-law's home, otherwise she couldn't sell them.

MANY RESIDENTS SAY FRACKING CAUSES PHYSICAL AND MENTAL HARM

Seven women we spoke with expressed physical health problems as a result of fracking, most often mentioned being difficulty breathing. This difficulty was increased during the summer, when oil tanks are heated for the winter, and when oil transport trucks drive by their homes. Disabled people with mobility problems, such as Beruzë and her daughter, also had complications moving around the village due to tar-like oil being present, fear of falling into pits, and changing infrastructure.

Though not directly related to the fracking process, Bankers Petroleum built a soccer field next to the Zharrëz Administrative Unit and in front of residents' home but left the walkway between the fence around the field and residents' houses cramped and unpaved. This causes significant difficulty for disabled residents, such as Beruzë and her daughter, to leave their homes.



Figure 22 - Photo of the only pathway between residential homes and the Bankers Petroleum-sponsored soccer field (own photo).

"I WOULD GO OUTSIDE AND BE
TERRIFIED. I COULD BARELY
SLEEP AT NIGHT."

– *Sofie Senko*

Eight residents also mentioned fear and stress in relation to fracking in Zharrëz, in addition to twelve mentions of fear, danger, and "feeling horrible" in the workshop. This anxiety was often compounded with financial stress of being a low-income home, the damages to agriculture due to fracking, and unresolved household damages. One woman's son was diagnosed with post-traumatic stress disorder related to the smell and tremors, and many others expressed fear at the thought of tremors starting again.



Figure 23 - Photo of some of Fiqerete Gremi's medications (own photo).

"WE WERE AFRAID WHEN THE
SHAKING HAPPENED. THAT'S WHY I
GOT SICK."

– *Fiqerete Gremi*

COMPENSATION FOR DAMAGE TO HOMES CAUSED BY INDUCED SEISMIC ACTIVITY WAS SEEN AS LARGELY INADEQUATE

Residents report that tremors due to fracking are no longer occurring in the Zharrëz village. Nevertheless, the devastation they caused is still felt by many today. Every person we talked to, except one, mentioned having damages to their home as a result of the tremors from 2012-2017. Others had varying degrees of damage to their homes ranging from small cracks in the exterior of their homes, to total house or roof collapse, to wide cracks still present in the walls and ceilings of their homes. 15 of 16 people we interviewed received some compensation but were not able to fix all of the damage with the money they were given. One person, Zana, reported that she received full compensation. She says she was "lucky" because her entire house collapsed and that is the only reason, she got the money. With the compensation, her sons built a villa for their new home in Zharrëz. On the other end of the spectrum, Leteri says she has received no compensation at all. Her roof collapsed and she had to take out a loan from a bank to fix it herself, costing approximately three million ALL/ \$27,000 USD.



Figure 24 - Large crack in Fiqerete Gremi's bedroom wall, stuffed with rags and paper (own photo).

Of those residents who received inadequate compensation (15 of our sample group), all still have damage to their homes. Fiqerete Gremi spent her direct compensation valued at 300,000 Lek, or \$3000 USD, on medication instead of fixing the cracks in her walls and ceilings. She said she could not afford both medication and home repairs. Furthermore, she said that the compensation was not sufficient to fix the damage to her home, so she decided to use it for medication instead.

Beruzë's family uses their money from damage compensation to fix what little they can, needing to repaint and re-plaster the exterior of their house every month because they do not have to fix the cracks permanently. Sofie Senko's roof fell in due to the induced seismic tremors that destroyed the three rooms in her home. She was only compensated 200,000 Lek, approximately \$2000 USD. Since then, she has needed to take out a loan for appx. 3,000,000 ALL/\$27,000 USD and has only been able to fix two rooms.

Figure 25 - Unfinished room in Sofie Senko's home after her roof collapsed in 2012-2017 tremors (left)
 Fiqerete Gremi's bedroom with large cracks in the walls and ceiling (middle)
 Crack in the concrete floor of Beruzë's livingroom (right) (own photos).



Figere Gremi is a 60 year-old woman who has lived in Zharrëz for 38 years. She has large cracks on her walls and ceilings throughout her house from the 2012-2017 tremors and stuffs the cracks with paper and rags to keep the rats and frogs out. When it rains, the roof leaks into her bedroom and she must continually remove buckets of water, so they don't overflow. Zj. Gremi suffers from four serious illnesses and takes several expensive medications to manage them.

She says that she did not use the little money she was given as compensation for damages to her house from fracking-related tremors because she needed money for her medicines, which are not covered by insurance. She says, "what is reimbursed is not good for me. What works is more expensive." Gremi said she had none of these problems before fracking started.

She says she often has to go to the hospital for her lungs when the pungent smell of oil gets bad in the summer.



Nexhmie is a 40 year-old single mother who lives in Zharrëz with her youngest son. Her seven year-old son has had lung and liver illnesses since before he was born, as was shown on his ultrasounds. Nexhmie says her son's doctor asked where they live, and said, "when I say we live in Zharrëz, he understands." When oil-carrying trucks pass her house, as they often do, she tells her son to cover his mouth, nose, and eyes, even when indoors, so he doesn't get sicker. Currently, she is saving money so he can get a lung operation in Tirana.

Nexhmie also owns a small plot of land nearby where she grows olives. Less than three meters from her crops, however, is an oil deposit well and pump.

She does not grow enough olives to sell, and that the pollution has caused her production to go down further, she says. She says she never would have planted the trees if she had known that the oil would reduce her production. Often, she needs to take her son with her when she is in the fields and cannot bring him to her mother's home in a nearby, less-polluted village.



"WHEN I BRING MY SON WITH ME, I TELL HIM TO STAY AWAY. I AM AFRAID HE WILL FALL AND DIE."



Leteri Kothere is a 48 year-old woman who has lived in Zharrëz for 20 years and cares for her household of six people. Her mother-in-law, who lives with her, is blind and says she is more sensitive to smells than an average person. Because of this, Leteri must close all of the windows and doors in the summer when the smell of oil is more pungent. There are multiple huge oil tanks close to her home, so when it is especially bad, her family does not stay in the house. Instead, they move to a family member's home or a hotel for days at a time every summer.

Leteri is unemployed but farms olives, beans, corn, and grains for her family to eat. She says runoff from the drilling site just beyond her field contaminates drainage channels and makes the land unfertile. The soil treatment to make sure her crops still grow becomes more expensive and labor-intensive each year. As a result, her crop yield has been decreasing over the years. Leteri lives with perpetual uncertainty about her farm yield.



NARRATIVE ELICITATION WORKSHOP

We ran a narrative elicitation workshop session with 11 participants who reside full-time in Zharrëz. Attendees were all middle aged to elderly women. Health status varied, including women who were healthy, disabled, or had multiple medical conditions. The women had been contacted by staff in the Zharrëz social protection office or Environmental Association "Zhareza." They were selected due to their high levels of vulnerability or having been affected by fracking operations, including the tremors and pollution. Nine of these women were unemployed, primarily acting as home and family caretakers and working small scale family agricultural land. The one-and-a-half-hour session took place at a conference room in the administrative unit building in Zharrëz.



We staged the workshop to explore women's experiences of living in a fracking zone. Our activities were developed and staged to first create a sense of comfort with us and to then cultivate a willingness to share personal viewpoints and experiences about living with the imposed risk of fracking. We began the workshop with the "I'm good at..." icebreaker before continuing with "A Picture Is Worth?" and Paper Storyteller activities.

"I'M GOOD AT..." ICEBREAKER

This icebreaker was intended to introduce the researchers and attendees to each other, generate a lighthearted conversation showing diversity and solidarity within the group, and create a warm inviting atmosphere before moving onto more serious topics. The first prompt of the icebreaker was "Hello my name is ___ and I'm good at ___." Everyone participated, starting with the research team and the translator, then moving around the table in a round-robin fashion. Women mentioned cooking, making desserts, taking care of their children and or grandchildren, and farming. We found that this first prompt was successful in creating an inviting atmosphere and promoting light-hearted discussion.



"TELL US SOMETHING WE SHOULD KNOW ABOUT ZHARRĒZ"

"This pollution is a disease."

"I cannot open the window. The machine that is working there is generating a lot of pollution"

"Our village was the most impacted from the shaking. We feel we were not fairly compensated for what we suffered."

"We have the right for a clean environment. We have the right to have this clean environment for our kids. And we don't want the effects and impacts of the industry to be felt at our house and to our families!"

In the second prompt, we again had a round-robin session where the women answered the question: "Tell us something you would like us to know about Zharrëz." The prompt was intended to change the power dynamic by allowing the "expert" attendees to educate the researchers. Pollution was a major topic.

The women seemed to feel very comfortable taking the role of experts and informing us of the situation surrounding Zharrëz. In particular, empowering them to choose what to inform the research team seemed effective in providing us with rich detail, showcasing how prominent the effects of pollution were in Zharrëz since that is often what the women choose to tell us about.

"TELL US SOMETHING THAT AFFECTS WOMEN"

"I am particularly concerned about the amount of compensation I received for my home that was destroyed. I should have been taken care of; I am an old lady taking care of people with disabilities. I cannot afford this situation."

We used this short answer, round-robin technique for a third question to generate deeper more specific concerns before moving on to other activities. We asked the women attendees to "Tell us something that you feel especially affects women in your community." Compensation was the most frequently mentioned topic, alongside mentions of damaged or destroyed homes. Compensation was referred to in some way in eight of the nine responses.

Our intention with these short straightforward prompts and round-robin responses was to slowly ease into more substantive topics and to bring attention to their perspectives and opinions. We were struck by the extent to which women immediately began addressing their fears and grievances with fracking. We surmise that these responses indicated that women felt comfortable talking about the fracking issue.

"the process to get compensation was not fair."

"Sickness, it is more impacting women"

A PICTURE IS WORTH...?

In preparation for this activity, we made three copies of each of the six photos that major themes we identified in site visits and in interviews with women and key informants: water pollution, land pollution, home damages from tremors, air pollution, health effects, and agricultural impacts respectively. We equally distributed the photos so each woman could see each photo.

After the photos were distributed, we asked participants to choose a photo near them they had a personal experience with or had strong feelings towards. From there, participants held up the photo they chose and spoke about it, in no particular order.

Three women mentioned fear when they viewed photos of the open deposit wells and the tremors that occurred between 2012-2017.





The intention of the "A Picture Is Worth ... ?" activity was for discussion to happen in a roundtable-style, with participants picking a particular photograph to discuss. Instead, women animatedly discussed the photographs in a patchwork-style, verbally jumping in to describe their thoughts on a photo, occasionally interjecting while others were speaking or talking over one another. The conversation was very lively with laughter at some points and seemed to engage the participants, as it was not uncommon for them to comment on what other women were saying.



The "A Picture is Worth ... ?" activity provided a rich level of detail, much like the photo-interviewing technique it was based off of as described by Dempsey & Tucker (1994). The narrative elicitation workshop showed that the use of photos to elicit information can be as effective in group settings as it is in individual ones.



"How can I afford to take all this amount of medication?"



"This reminds me of the shaking of the earth. We had experience with homes that got destroyed."

"The trucks pass on the dirt road near our home. It absolutely suffocates us. This is very bad for my son."



"The work the companies are doing is next to our homes. They need to consider safety."



Figure 26 - "A Picture is Worth ... ?"
photos and related responses

PAPER STORYTELLER

While the "A Picture Is Worth ... ?" activity generated discussion based on visuals provided to participants, the idea of participants creating their own visuals as a way to see what they consider to be important seemed compelling to the research team. The Paper Storyteller activity was designed to do this, having the women create their own visuals about their experience with the oil and gas industry in Zharrëz to use as an aid in describing their emotions, perspectives, and stories.

All participants were provided with a blank piece of paper and a pen. We asked women to individually "Use this piece of paper to represent your experience, your emotions, or any story you have about the oil industry here." One member of our team demonstrated his response to that prompt as one example of how a participant might respond. Participants were given 5 minutes to work on their papers. We then asked the 11 participants to share their paper stories in a round-table fashion.





"Every time I go to work [to the petrol pits] I feel the smell."



"Just don't go [near the open deposit well] because I don't want you to get stuck."

"There is a lot of pollution that goes in the stream."

Environmental pollution was the only topic of discussion. Women drew images of homes, the stream, their kids, and representation of the fracking industry including oil tanks and natural gas flare stacks. The women shared experiences of the smell of oil, views on how contamination of the environment was occurring, and concerns that children would fall into polluted areas such as the stream or open wells.

The story-sharing session lasted 13 minutes. The atmosphere in the room was far livelier and more convivial than we expected and women appeared to feel comfortable sharing their experiences. Some participants continued to add to their paper as others talked.

At the end of the activity, we asked "If there was anything anybody did not get a chance to say that they wanted to, please feel free to share it with us now." One woman replied by saying "We can speak about our problems day and night, they never end."

NARRATIVE ELICITATION WORKSHOP QUESTIONNAIRE

After the activities, we asked participants to fill out a paper assessing our workshop.

We found substantial willingness to participate in follow-up interviews. Ten out of 11 women responded that they were available for a follow-up interview, although only nine provided names and seven provided contact information in the form of a phone number. We reached out to these women and completed follow up interviews with seven of them.

"I liked all the conversation with the ladies."

"I would invite every woman in the community to come"

"with pictures you can show more than with words, like pollution and lack of cleanings."

#1: Did you enjoy the activities in the workshop?

#2: Which was your favorite (starting game, pictures, paper game)?

#3: "Did you feel that you got a chance to say everything you wanted to?"

#4: "If we were to do these activities again, what would you change?"

#5: Would you be willing to do a follow-up interview, yes or no? If yes, what is your name and how can we contact you (phone number, email)? What dates are you available out of these? " with three dates listed.

FRAMEWORKS

BOUDET'S FRAMEWORK FOR PUBLIC PERCEPTION

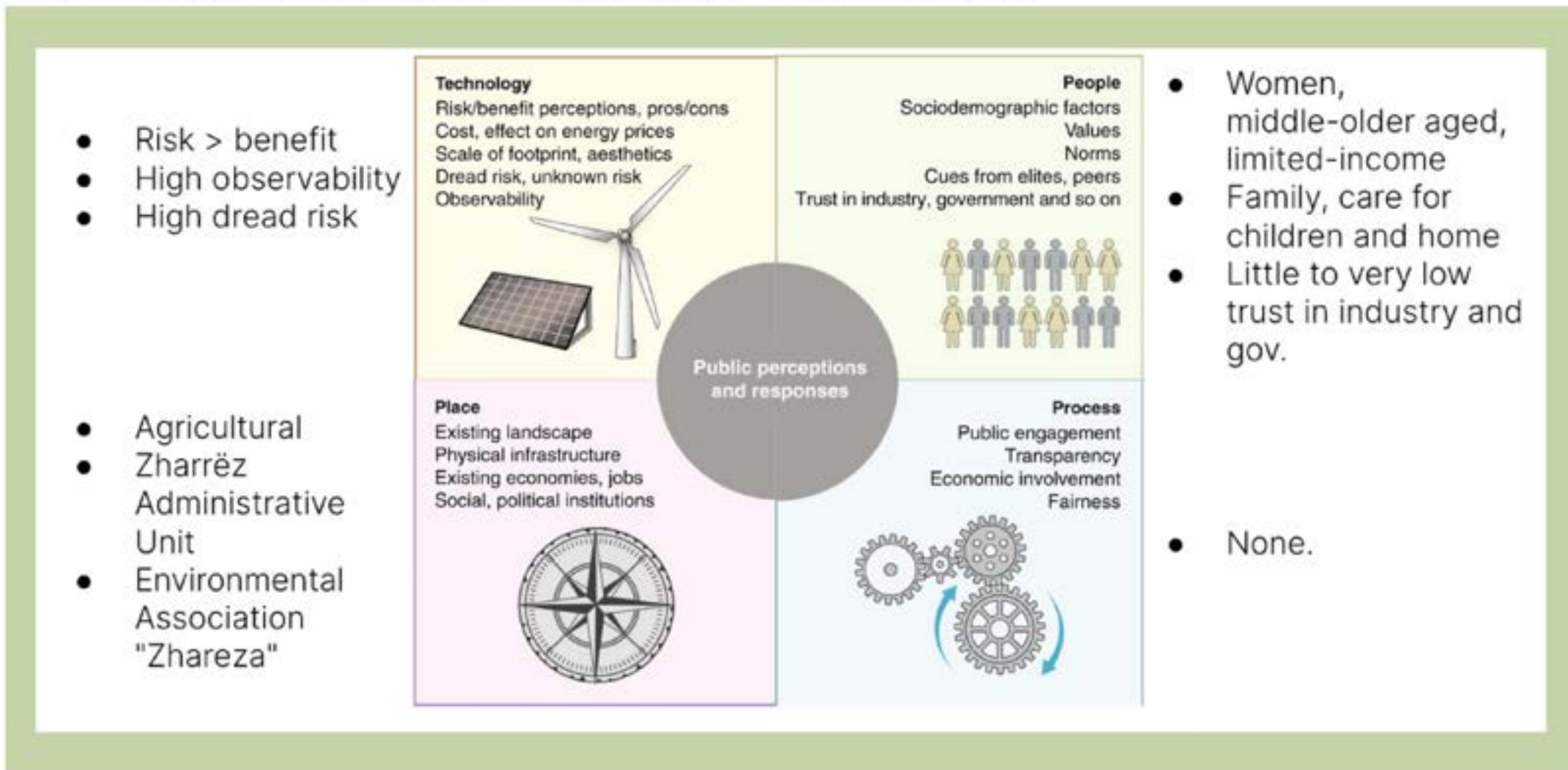


Figure 28 - Graphic of Boudet's Framework for Public Perception, with our findings about each category labeled in bullet points outside of the box

In using this framework, we analyzed responses by each factor.

For the Technology factor, we found that women believed the risks heavily outweighed the benefits of fracking. Many interviewees did not see any benefits and only focused on current risks, such as health and the environment. The scale of the footprint of the oil operations was very large with high observability. There is a high dread and unknown risk, with many participants fearing fatal consequences for themselves and their children. There was also concern over the risk it poses to future generations.

For the People factor, the women interviewed were women, middle-older aged, and had limited-to-no-income. They placed a high value on family, maintaining the household, and caring for children. Women expressed little to very low trust in the oil industry and government.

For the Place factor, Zharrëz has an agricultural landscape with the existing economy heavily reliant on agriculture. The women did not know anyone who worked in the oil field. There is a social institution NGO Environmental Association "Zhareza" and the Zharrëz Administrative Unit as existing social and political institutions.

For the Process factor, there was little to no public engagement from women. They believed there is a lack of transparency in decision-making around issues of cleaning up pollution and safety around oil deposit wells which were unfair. Women did not benefit economically from the fracking operations.

MOSER'S TRIPLE ROLES FRAMEWORK

Moser's's Triple Roles Framework seeks to guide understanding of the division of labor in households by describing three roles adults in a household can fulfill: reproductive, production, and socio-cultural (Moser, 2014). Moser aimed to show how women often take on multiple roles, more than or equal to the number of roles men take on, yet their contributions are not seen as having the same value of men's contributions.

Reproductive Roles

<p style="text-align: center; font-weight: bold; margin: 0;">Moser Definition</p> <p style="margin: 0;">Childbearing and caring as well as domestic tasks that support the household's wellbeing (e.g. cooking, cleaning, fetching water, washing, and attending to the sick and elderly members.</p>	<p style="text-align: center; font-weight: bold; margin: 0;">Moser Conceptualization</p> <p style="margin: 0;">These responsibilities are rarely considered 'real work,' are rarely paid, and are performed primarily by women and children</p>	<p style="text-align: center; font-weight: bold; margin: 0;">Our Findings</p> <p style="margin: 0;">Women in Zharrez often took on reproductive roles primarily.</p>
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Production Roles

<p style="text-align: center; font-weight: bold; margin: 0;">Moser Definition</p> <p style="margin: 0;">Activities that produce goods and services for consumption or trade (growing crops for sale or household consumption).</p>	<p style="text-align: center; font-weight: bold; margin: 0;">Moser Conceptualization</p> <p style="margin: 0;">Both men and women can be involved in these activities. However, women often carry out these roles alongside their reproductive roles in a household farm or home garden, which makes their contributions less visible and less valued than men's productive work.</p>	<p style="text-align: center; font-weight: bold; margin: 0;">Our Findings</p> <p style="margin: 0;">Women in Zharrez often take on production roles in addition to reproductive roles by tending to fields.</p>
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Socio-Cultural Roles

<p style="text-align: center; font-weight: bold; margin: 0;">Moser Definition</p> <p style="margin: 0;">Socio-cultural roles are mainly community work, such as social events, activities, community resource management, and/or participating in groups or farmer organizations.</p>	<p style="text-align: center; font-weight: bold; margin: 0;">Moser Conceptualization</p> <p style="margin: 0;">These activities are often voluntary. Men tend to participate more often in political affairs of the community (e.g., serving as a chair of the farmers' association), whereas women contribute their time for free for a social good (cleaning school backyard)</p>	<p style="text-align: center; font-weight: bold; margin: 0;">Our Findings</p> <p style="margin: 0;">There seem to be less socio-cultural and community roles available in Zharrez. Only one participant said they were involved in local politics and none mentioned community groups. We did not obtain enough information to determine if men in Zharrez took on socio-cultural roles.</p>
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Figure 29 - Chart showing original descriptions of each role and the contextualization of those roles that our team observed in Zharrez

Women in Zharrëz exhibit reproductive roles through caring for their homes, children, and disabled family members. Of the eleven women who attended the narrative elicitation workshop, eight of them described a reproductive role, such as “taking care of my kids” and “making Revani”, in the “I’m good at...” icebreaker. An additional five of eight women we interviewed, who were not in the narrative elicitation workshop, also described reproductive roles in interviews.

Based on our interviews, most households are fully unemployed, but sustain themselves via produce from their fields and/or a family member’s pension or social security payments. Three women in the workshop and six women in interviews described having production roles in the household by working in their fields. Only three women we talked to were traditionally employed; all others either received pension or social security or lived off of their fields. Of the seven men we spoke with, six were unemployed and two of those were receiving pension or social assistance that supported their families. Everyone we talked to said that they don’t routinely sell their produce at markets, but only sold when they had extra.

We were not able to observe or discern opportunities for socio-cultural roles in Zharrëz, although one woman, Donika, said she was involved in municipality meetings that were held related to issues surrounding the oil industry. Among men, we did not have enough data to get a complete picture of their community roles.

The primary purpose of Moser’s Framework is to bring to light the difference in roles men and women play in their homes and community. We found that nine of twenty women and two of seven men had overlapping reproductive and production roles in their homes. Of these, two women were single mothers and four had husbands who were deceased or not present in the household. All of these women took on the entirety of their family’s housework, childwork, and farming.

“All of us here, we can’t avoid our households, we don’t have pay except those who have retirement or compensation, all of us are at home caring for our elderlies and our kids and our families”

INTERSECTIONALITY APPROACH

The intersectionality approach (Walker, et. al., 2019) focuses on the different ways people with multiple marginalized identities experience situations; how policy is shaped by social categories; how people of differing social categories are represented; and how the identities of researchers impact their work. We used this analytic lens when speaking to women who had differing identities as well as multiple overlapping identities. For example, we talked to single mothers and full families, disabled and elderly women, young women, women in poverty, and women who were close to and far from oil sites. In order to understand how experiences differed, we started each interview with the same questions, then diverged to learn more about individuals' stories.

We found that many of the women we talked to had similar stories, regardless of differing identities. For example, all women we spoke with expressed concerns about air pollution. The largest differences were in those who were disabled or had a disabled family member, those who lived or worked closer to oil wells, and single-parent households.

All those who lived or worked closer to pollution also were ill themselves or had a family member in their home who was disabled. All those who were disabled also cited more problems with money than those were not, since they needed to spend money on medications. Those who live or work closer to an oil well also all said that they still experience problems relating to the oil and gas industry, while those who do not did not list any current challenges they have now that the tremors have stopped.

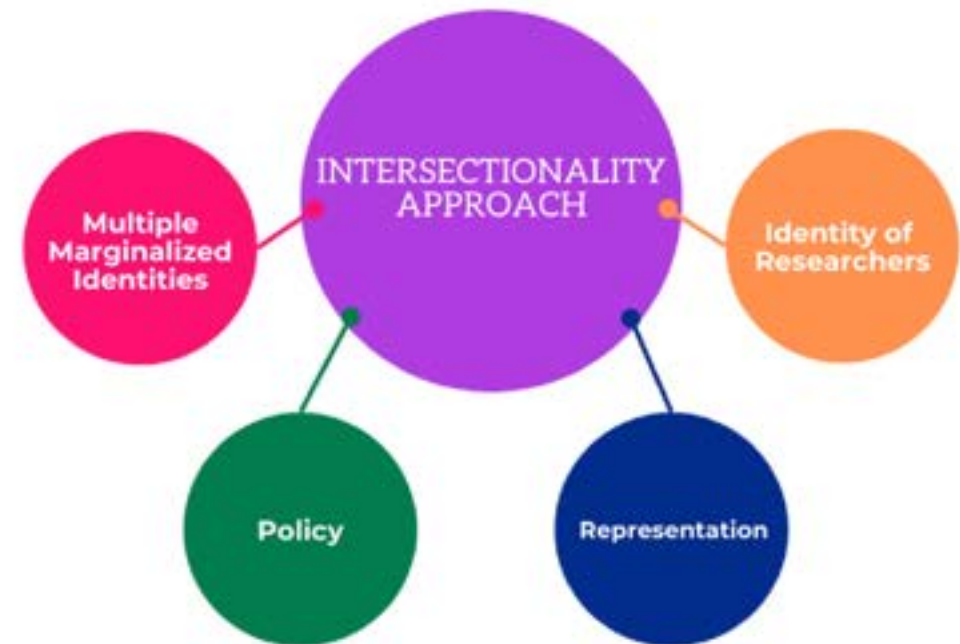


Figure 30 - Graphic of major facets of the Intersectionality Approach (own graphic).

FRACKING ENVIRONMENTAL JUSTICE FRAMEWORK

The Fracking Environmental Justice Framework breaks down the impacts of fracking on communities and their ability to contribute to decision-making processes into three categories, distributive, procedural, and recognition. We used these categories to examine how women were impacted by fracking as well as their ability to voice and resolve issues related to fracking. This framework lacks specific categories for examining the roles vulnerabilities and vulnerable groups play with regards to fracking environmental justice. When examining qualitative data and women's narratives through the lens of distributive fracking environmental justice, several at risk groups emerge. The first group was the entire village of Zharrëz.

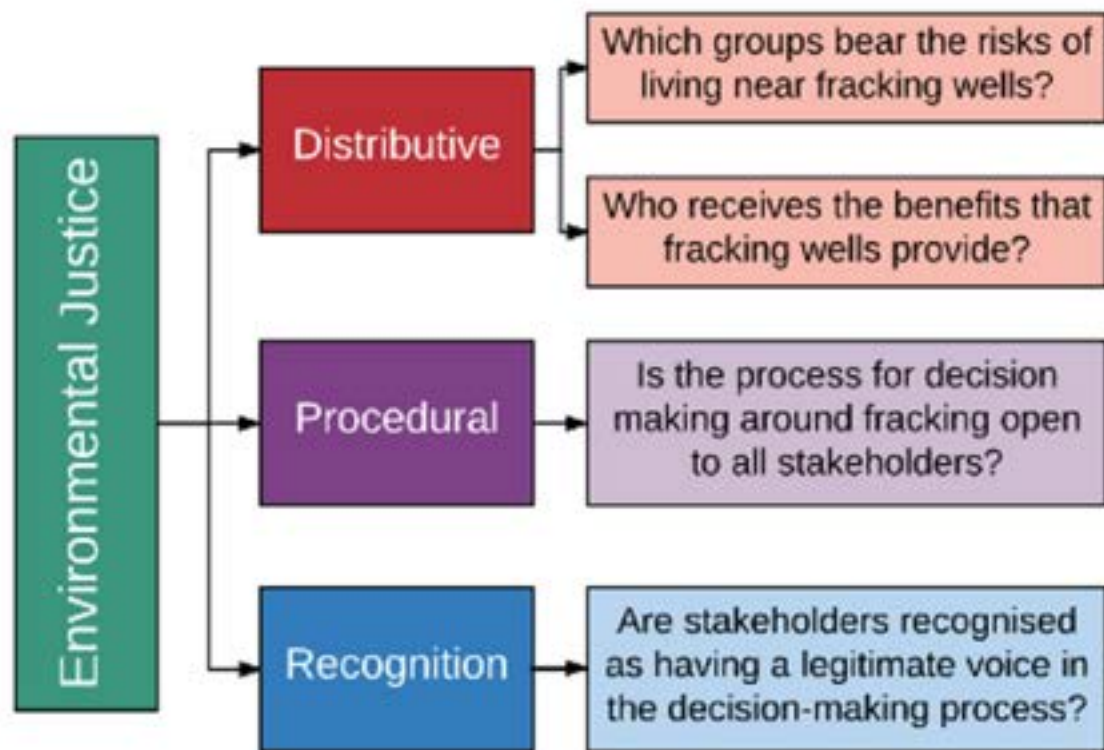


Figure 31 - Environmental justice framework addressing fracking
(Clough, 2018, p. 15)

Women who live in close proximity to fracking operations, such as separation tanks and open deposit wells, seemed to be impacted more by issues such as the intense smell and dust pollution from passing trucks. If their fields were adjacent to open wells, they often also faced additional financial difficulties as hydrocarbon contamination negatively affected their ability to farm. Young children and elderly women both appeared more likely to experience negative health effects. Single mothers, having to already pay to maintain their household, provide an education and necessities were financially vulnerable before the additional cost of medical care for their children.

The second half of distributive environmental justice asks who benefits from the fracking operations. Through discussions with the administrative unit staff, we heard that Bankers Petroleum had made investments contributing to the construction of sports fields, a new administrative unit building, and would co-invest with farmers. However, of all the women we talked to only one, Zana, felt satisfied with compensation received for her damaged home. The rest of the women did not express that they felt they benefited from the fracking operations.

With regards to procedural environmental justice, we did not receive enough information to determine if any particular groups were not involved. Only one woman, Donika, mentioned being involved in municipality meetings that tried to raise concerns around fracking. It is unclear if the other women's lack of involvement was due to a lack of interest, information, or other factors.

Regarding recognition environmental justice, 6 residents expressed to us that they had issues resolving pollution and safety complaints about visible pollution and open deposit wells with the petroleum companies Bankers Petroleum and Albpetrol. The last major change that occurred regarding fracking, the ceasing of the tremors in 2017, was after the 2017 hunger strike. According to the women, since then little has changed regarding the pollution and safety in Zharrëz. This suggests a disproportionate amount of effort is required by the community for their concerns to be heard and acted upon.

LIMITATIONS

Due to an inability to secure formal permission from the Vlore Prefecture, we were not able to interview healthcare workers in Zharrëz. Although we had informal authorization, the head doctor we met declined to participate without formal permission from the Vlorë prefecture. Our team was also unable to interview Bankers and Albpetrol despite multiple requests.

Furthermore, recent demographic and census data was difficult to access. The administrative unit of Zharrëz only had statistical estimates as to the demographic data for Zharrëz village. Such data is available on a national level, according to the administrative unit, but there is no access to it on short notice at a more local level. Livelihood data was also not available.

One of the largest barriers we had to deal with was the language barrier. All interviews and activities required a translator, and the delay in our understanding made conversations flow less naturally. This was particularly noticeable in the activity session, when our highly-skilled translator had to interrupt women's explanations to explain to us what they were saying. We understand that using an interpreter to perform qualitative research can bring the validity of the results into question over a number of points, such as if interpreters understand what the researcher was asking before translating or if responses were summarized or modified by the interpreter (Squires, 2009).

We encountered some women who were not interested in sharing their experiences with us because they said they had given interviews previously and seen nothing change. In the Paper Storyteller activity, specifically, the example papers the team member presented focused on the environmental effects of fracking and may have influenced the way participants responded on their own papers.

Regarding framework implementation, each framework had benefits and limitations. Boudet's framework can be useful as a risk perception framework since its goal is to understand perception. Since it does not capture why the factors influence perception, using it in conjunction with other frameworks is important. Boudet's framework also does not give the weight of each factor. For instance, it is not clear if the Technology factor may have a greater influence on perception than the People factor.

One limitation of the Triple Roles Framework is that it does not account for intersectional identities, women in poverty or women of a racial/ethnic minority. Applying the intersectional approach benefits from a deeper understanding of local politics than we were able to obtain. At times, someone from the social protection agency joined us during interviews, and the team failed to understand how that may make people from differing social identities feel. While it helped the team to find people to interview, several times it led to a tense atmosphere during conversations about compensation for household damages.

For the Fracking Environmental Justice Framework, we found this framework focuses more on who is affected rather than why, which may make it less applicable to natural hazards. When applied to other risks, we are unsure if this framework will provide additional utility over existing DRM frameworks.

RECOMMENDATIONS AND CONCLUSION



RECOMMENDATIONS AND CONCLUSION

Main Hazards of Concern for Fracking in the Patos-Marinza Oilfield

Fires and Explosions



from flammable gasses emitted during fracking

Pollution of Soil, Surface water, and Groundwater



through oil spills or leaks from oil tanks and pipelines.

According to Dhima and Meijer (2020), the main hazards of concern for fracking in the Patos-Marinza oilfield were: fires and explosions from flammable gasses emitted during fracking, air pollution from fracking operations, and accidents, pollution of soil, surface water, and groundwater as a result of oil spills or leaks from oil tanks and pipelines (Dhima and Meijer, 2020).

Figure 32 - Diagram depicting main hazards around technological risk in the Fier region from the Technological Risk Assessment Report: National Risk Assessment in Albania (own graphic).

UTILIZE WALKING INTERVIEWS AND PHOTO-BASED ACTIVITIES FOR NARRATIVE ELICITATION

Our approaches to collecting and analyzing women's experiences as qualitative data may be useful to IDRA and UNDP in future DRM work as additional tools for risk assessments and EVCAs. These approaches differ from conventional qualitative and quantitative DRM methods. These alternative approaches can be used alone or in conjunction with conventional methods.

We recommend incorporating walking interviews as a variant of the more commonly used static semi-structured interview structure. Walking interviews in this context involve participants taking interviewers to locations that hold importance to them as somewhere that they experience increased risk. In our interviews, we visited three

women's agricultural fields that have oil wells nearby. These visits benefited our work by inspiring new lines of questioning based on unique risks of the location, as well as opportunities to photograph and document these locations.

Similarly, the "Pictures are Worth...?" activity was very effective at prompting discussion regarding the topics they depicted, including pollution. Future EVCAs can benefit from incorporating narrative elicitation activities into group interviews, particularly photo-based elicitation activities.



FACILITATE PARTICIPATORY NARRATIVE ELICITATION WORKSHOPS DURING DRM FIELD WORK



Participatory narrative elicitation workshops can successfully engage participants and encourage discussions about heavy topics such as daily risks due to fracking or past experiences with disaster events.

A recommendation for future workshops would be to hold them in neutral locations rather than in a government building. Due to some women not feeling comfortable in the social protection office, less women participated than could have been possible. Future recommendations for locations include a private room of a cafe or community center.

Additionally, we found that the group conversations were more successful at eliciting women's perspectives when only women were present, compared to mixed-gender groups, so we recommend that wherever possible, focus groups and participatory narrative elicitation workshops be conducted in single-gender group settings.

USE ALTERNATIVE FRAMEWORKS TO UNDERSTAND WOMEN'S EXPERIENCES

We recommend the use of alternative frameworks to analyze responses in risk assessments and EVCAs. We suggest incorporating a combination of frameworks to provide a more nuanced view of women's lived experiences. We suggest using Moser's Triple Roles Framework to understand the gender-based division of household and community labor; the Intersectional Approach to highlight intersecting social dimensions and marginalizations; the Fracking Environmental Justice to illuminate who is impacted in fracking communities; and Boudet's Framework for Public Perception to understand the common factors of perception to fracking. These frameworks work best when applied to larger groups, rather than individuals, with the exception of

Moser's's Triple Roles Framework, which can be applied on a family scale.

We recommend future EVCAs utilize Moser's's Triple Roles Framework in combination with the Intersectionality Approach to understand the common roles in the broader community as well as marginalized communities within that population to demonstrate how roles differ between participants with different identities. For example, we would recommend categorizing roles in accordance with Moser's's Triple Roles Framework for an entire community. Then, we recommend comparing role data from the whole community against data of participants with a marginalized identity (i.e., having a disabled

member of the household, single-parent households, racial/ethnic minorities, etc.) This may reveal details such as how participants spend their time and help in identifying those who may be at more risk of the negative effects of hazards.

We recommend the use of The Fracking Environmental Justice framework to identify and clearly document groups affected by fracking and barriers to stakeholders contributing to the decision-making process.

We suggest using Boudet's Framework for Public Perception to frame interview questions to capture the four aspects identified by the framework (people, place, technology, and process). This

framework demonstrates how different factors can influence and interact to form an individual or public perception.

This framework can be utilized when assessing technological risk.

as opposed to natural risk, since it was originally intended for energy technologies. The four factors identified by the framework can be adapted to other hazards and to varying sample sizes.



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All photos without a citation were by Samuel Darer, Sara Frunzi, and Alexandria Sheehan.

APPENDIX A: SEMI-STRUCTURED INTERVIEW VERBAL CONSENT SCRIPT

Hello, my name is _____. I am a student at Worcester Polytechnic Institute in Massachusetts. I am working with the UNDP on a project regarding current work being done with vulnerable groups in Fier regarding hazards and disasters. Would you be willing to answer a few questions?

Participation Form and Statement of Rights

We are students at Worcester Polytechnic Institute in Worcester, Massachusetts. We are conducting a research project on behalf of the United Nations Development Programme (UNDP) to understand people's experiences with hazards in Fier. As part of this project, we are conducting a series of interviews with key individuals. We have asked you to participate because we believe you have unique knowledge of these issues that will be valuable to the project.

Before we begin, we would like to thank you for taking the time to participate in the interview which will last about

_____. Your participation is entirely voluntary. You may refuse to discuss any question or terminate the interview at any time. With your permission, we would like to record the interview. The tapes, notes, and subsequent transcripts of the interview will be kept confidential and will be accessible by only the members of the team and our immediate faculty advisors.

Your name will not be used in any subsequent report or publication without your permission. If you consent to be interviewed at this time, we would ask that you indicate your agreement below.

I agree to participate in the interview.

Interviewee Signature Date _____

Interviewee Name _____

Please initial for permission to use photos and recordings.

Interviewee Initials _____

Please sign if you are comfortable participating in group semi-structured interviews where only your first name is shared.

Interviewee Signature Date _____

Interviewer Signature Date _____

APPENDIX B: WRITTEN CONSENT FORM FOR NARRATIVE ELICITATION WORKSHOP

APPENDIX C: SEMI-STRUCTURED INTERVIEW QUESTIONS

[Participants will have already filled out the informed consent in Appendix C or given verbal consent]

1. How long have you lived in Zharrëz?
 - a. How old are you?
2. What do you do for a living?
 - a. What's that like?
 - b. How much education have you received?
3. What is your role in your household?
 - a. Who do you live with?
 - b. Are you married?
4. What are the biggest needs of women in your community?
5. What concerns do you have about oil and gas? Or benefits?
 - a. Has anything been done to make improvements on these concerns?
6. What are some of the changes you've seen in your community regarding oil extraction?
7. [Extraction equipment, if topic comes up] What do you know about this equipment? What does it do?
 - a. Are there any concerns around it? How have these concerns changed over time?
 - b. Is there anything you wish you knew about the equipment?
8. Do you know people who work in the oil fields? What has their experience working there been like?
9. We heard that there was a protest here against oil extraction in 2017/a number of years ago. Could you tell us about that?
10. Is there anything you'd like to say that you did not get a chance to say?

APPENDIX D: NARRATIVE ELICITATION WORKSHOP QUESTIONNAIRE

1. Did you enjoy the activities in the workshop? Which was your favorite (beginning game, pictures, paper game)?

2. Did you feel that you got a chance to say everything you wanted to?

3. If we were to do these activities again, what would you change?

1. Would you be willing to do a follow-up interview, yes or no? If yes, what is your name and how can we contact you (phone number, email)?

What dates are you available out of these?: November 24, December 1, December 2

APPENDIX E: POST-WORKSHOP DEBRIEF INTERVIEW

[Participants will have already filled out the informed consent in Appendix C or given verbal consent]

1. In what ways has the oil and gas industry impacted your life?
2. How do your household responsibilities change during times of stress?
3. Could you tell me more about [detail from Photo Prompt or Paper Stories]?
4. What difficulties do you still have as a result of the oil and gas industry?
 - a. What support have you been offered?

APPENDIX F: EXCERPT FROM COLLECTION OF NARRATIVES

Women's Experiences with Fracking in Zharrez, Albania

A COLLECTION OF
NARRATIVES

DOCUMENTED BY:
SAMUEL DARER, SARA FRUNZI, ALEXANDRIA SHEEHAN



Fiqerete Gremi

Fiqerete Gremi is 60 years old and has lived in Zharrez for 38 years. She and her husband raised 2 daughters and 1 son in Zharrez. Her children have all moved out now.

Fiqerete takes many expensive medications every day for heart, lung, and intestinal illnesses. Her father loaned the couple money to pay for her medicine, and in return her husband helps her father with farming, which means he is sometimes gone for long periods of time, leaving Gremi on her own.

When she was younger, Fiqerete grew fruit to sell. Now, she is sick and the pollution in her backyard makes her illnesses worse.

"I CANNOT DO IT ANYMORE, I DON'T HAVE THE POWER."



There is an abandoned, uncovered oil deposit pit in Fiqerete's backyard. The ooze pit is right next to her persimmon trees and the bad smell from the pit means Fiqerete can no longer work in her field. The smell of the oil is so bad, she had to go to the hospital last summer because she couldn't breathe.



**FIQERETE STUFFS
THE CRACKS WITH
NEWSPAPERS AND
RAGS TO KEEP THE
RATS AND FROGS
OUT.**

Between 2012-2017, tremors shook the Zharrez community day and night as a result of fracking by Bankers Petroleum. The Gremi house was hit particularly hard and still has wide cracks in the walls and ceiling.

Fiqerete has to keep buckets around the house because water leaks in when it rains. During heavy rain, she has to constantly empty the buckets, which is difficult for her because she has breathing problems and bone pain.

Fiqerete received compensation from the government for damages from the tremors. Because she hired a lawyer, she was able to collect a payment that was 600% higher than what the government initially offered.

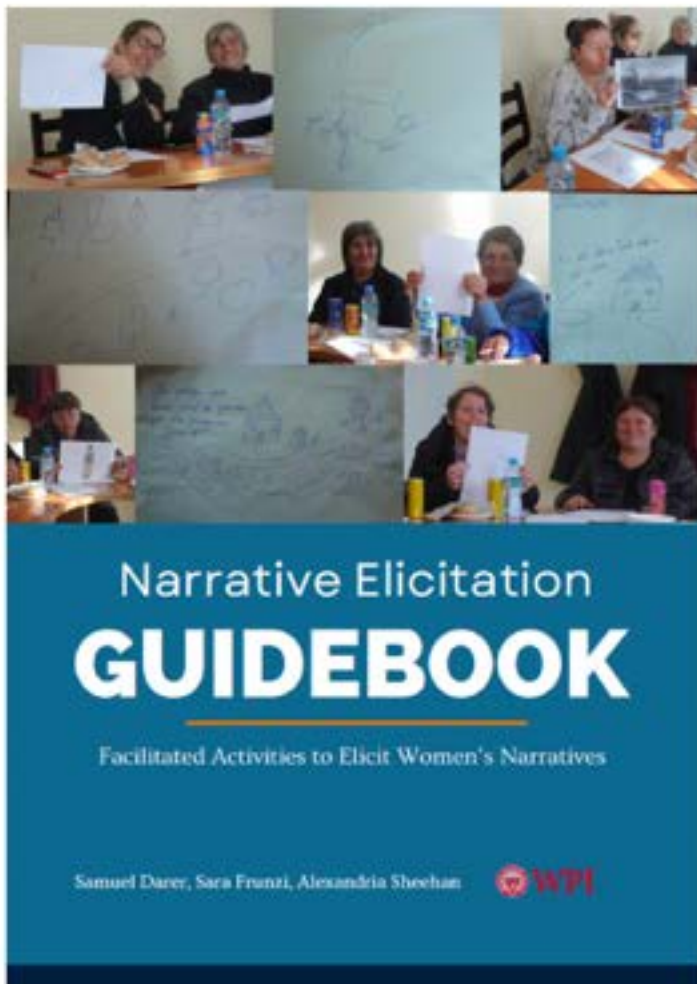
It still wasn't enough money to repair her home, and she needed to use the money for her medicines, because they were not covered by insurance.

**"What is reimbursed is not good for me.
The medicine that works is more
expensive."**

**"I WISH FOR A GOOD HOUSE, A
PLACE TO STAY AND NOT
BE RAINED ON."**



APPENDIX G: EXCERPT FROM NARRATIVE ELICITATION GUIDEBOOK



This guidebook was created with the WPI IQP project "Living with Fracking: Women's Narratives from Zharrez." by Samuel Darer, Sara Frunzi, and Alexandria Sheehan.

Professor Robert Hersh and Professor Leslie Dodson were advisors on this project. These activities were informed by Professor Hersh's and Professor Dodson's expertise in environmental risk research and transmedia action research.

December 2022



"I'm good at..."

This icebreaker activity is useful for a group meeting for the first time, or for when new members join a group. The prompt question generates responses that show diversity and solidarity. It prompts lighthearted discussion and creates an inviting atmosphere before moving into more serious topics. This activity can be a standalone activity, or it can be connected to additional prompts. See page 2.



Activity components and/or materials

- A room/area where participants can form a circle.
- Participants can stand or sit for this activity.

Instructions

1. Ask everyone to stand or sit in a circle.
2. Invite someone (anyone) to begin and say something they are good at by answering the first prompt: "Hi my name is ..., and I'm good at..."
3. Go around the circle. Every participant responds one by one.
4. After everyone has responded, move to the next prompt or lead a discussion about the responses.

FRAMEWORKS TO ANALYZE WOMEN'S PERSPECTIVES

*LIVING WITH FRACKING: WOMEN'S
NARRATIVES FROM Zharrëz*

13 DECEMBER 2022

WRITTEN BY: SAMUEL DARER, SARA
FRUNZI, ALEX SHEEHAN

ADVISED BY: PROFESSORS LESLIE
DODSON AND ROBERT HERSH



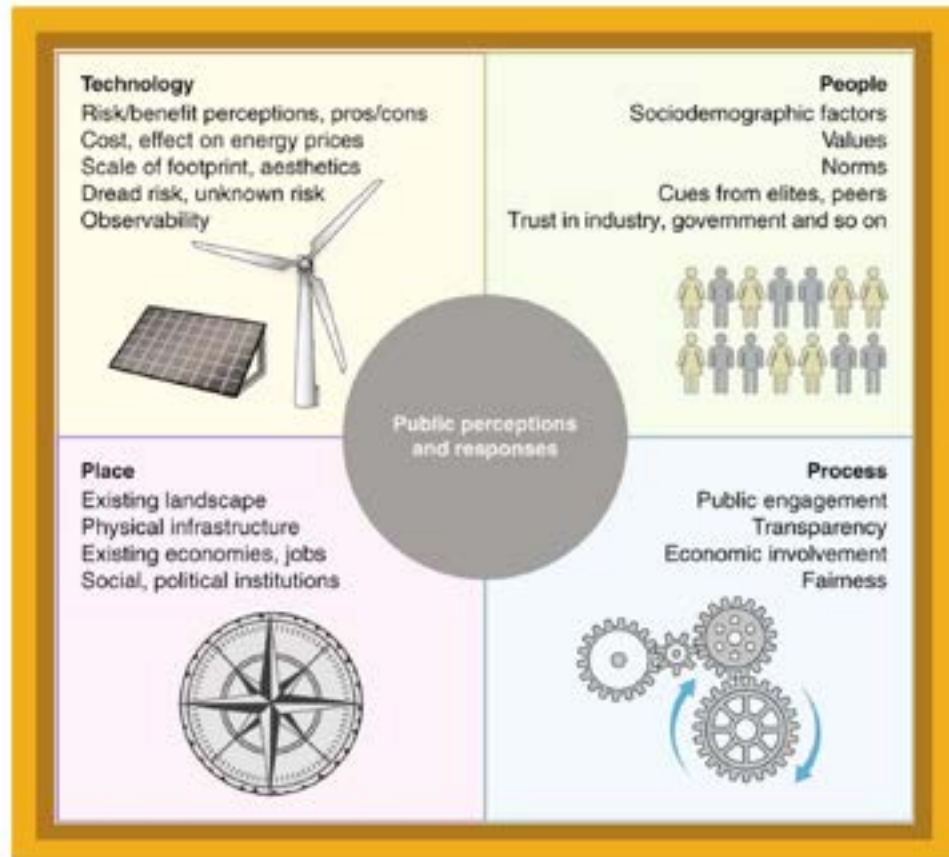
Boudet's Framework for Public Perception

Moser's Triple Roles Framework

Intersectionality Framework

Fracking Environmental Justice Framework

Boudet's Framework for Public Perception



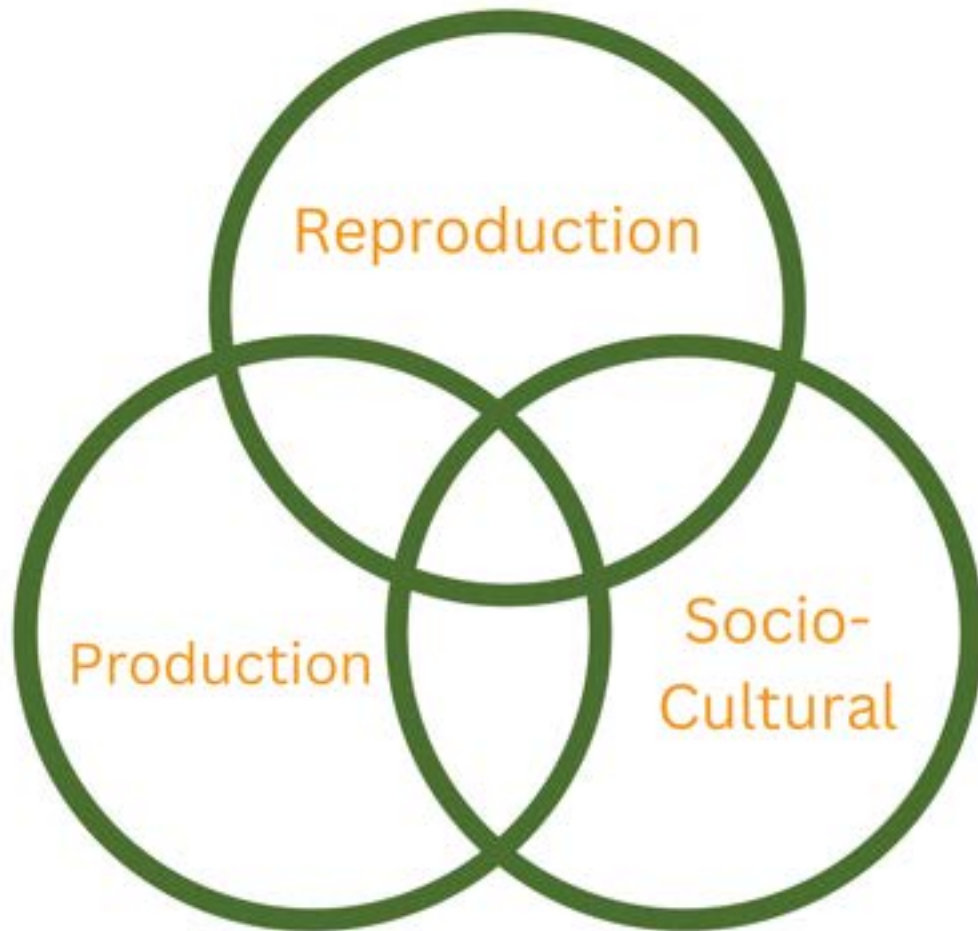
Boudet, H. S. (2019, May 27). Public perceptions of and responses to New Energy Technologies. *Nature News*, 4(1), 446–455. <https://doi.org/10.1038/s41560-019-0399-x>

This framework categorizes the main factors researchers have identified as influencing public perceptions of new energy technologies into Technology, People, Place, and Process.

Technology largely encompasses the perceived risks and benefits of new energy technology, including footprint, effects on energy prices, and aesthetics. The People category looks at how perceptions are influenced by sociodemographic factors, cultural values and norms, trust in institutions, and the views of other people. Place examines how perceptions are influenced by the existing landscape, economies, jobs, and institutions as well as physical infrastructure. Public perceptions and response to technology are also influenced by the process of implementation's transparency and perceived fairness, the degree of public engagement, and the degree of economic involvement of stakeholders.

This framework does not address how much impact each factor has. It is best used to identify factors for framing research or interview questions around.

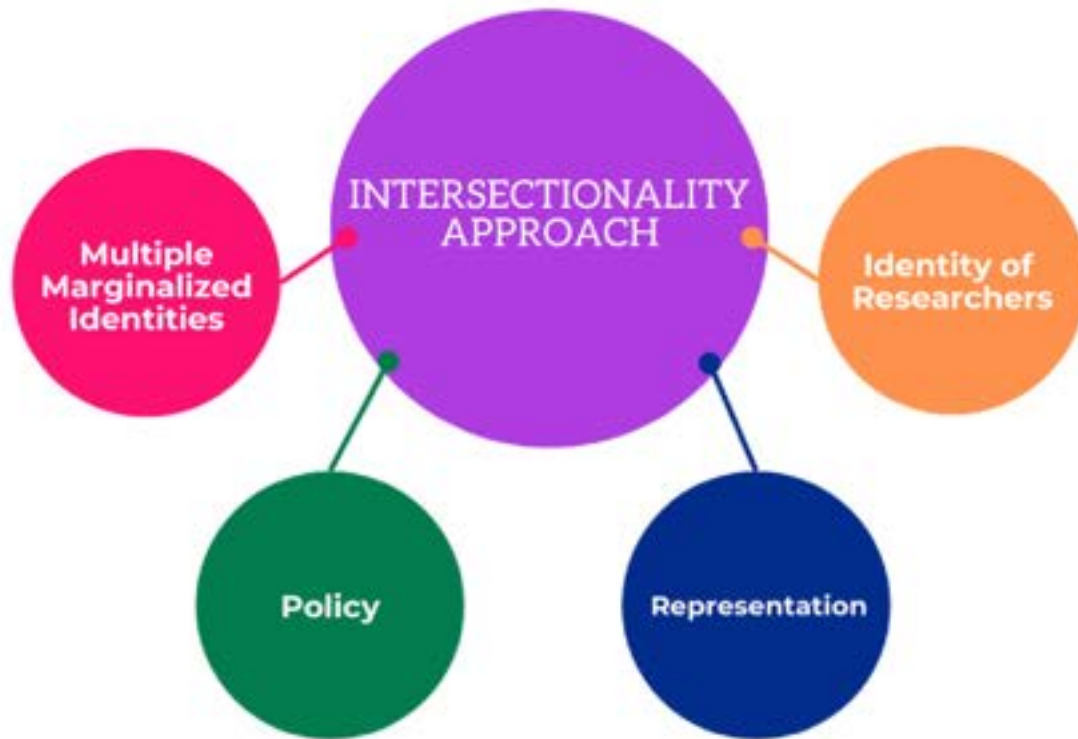
Moser's Triple Roles Framework



This framework examines women's overlapping roles and how those change when women's work burdens are increased due to development programmes. It analyzes divisions of labor between men and women across three categories: reproductive, production, and socio-cultural. Reproductive roles are those that pertain to household and family work, such as childcare, cooking, and cleaning. Production roles relate to family economics, such as farm work or trade. Socio-cultural roles are those that include engaging with the local community, such as through social events or participation in local politics.

The framework highlights the extent to which women often take on multiple roles at once, and that women's contributions are often less valued than those of men.

Intersectionality Framework

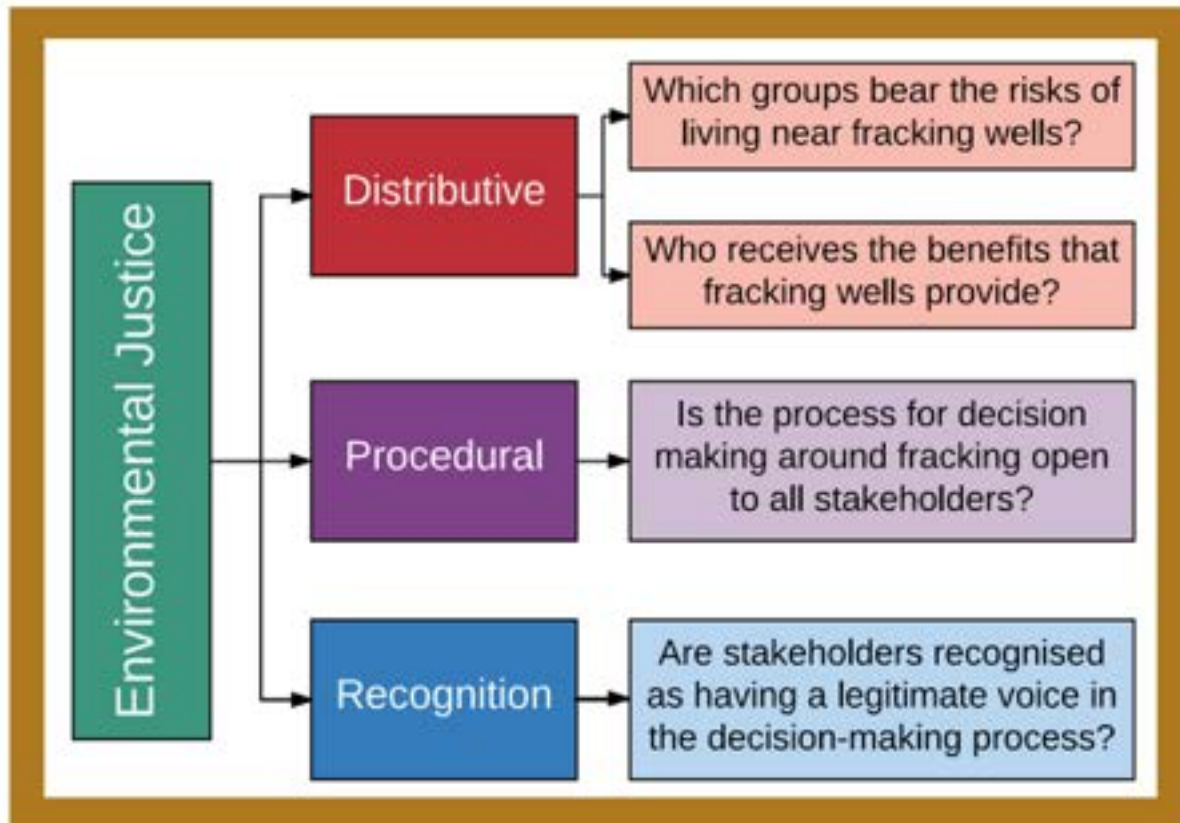


Walker, H.M., Culham, A., Fletcher, A.J., and Reed, M.G. (2019). Social dimensions of climate hazards in rural communities of the global North: An intersectionality framework. *Journal of Rural Studies*. 72, 1-10. <https://doi.org/10.1016/j.jrurstud.2019.09.012>

People's exposure to risk and vulnerabilities are not one dimensional. An intersectional approach involves examining how multiple factors, including vulnerabilities, identities, existing policy, and access to representation overlap and interact resulting in the experiences and difficulties people face in day-to-day life.

This framework investigates the social dimensions of climate hazards through several factors of intersectionality. The factors include: Social Categories (gender, race, age, etc.) that are non-exclusive; Power Relationships (sexism, racism, etc.) that can operate together and influence what knowledge and experiences are available along with access to resources; Learning Process that can help individuals or groups overcome social barriers; and the research's own identity and assumptions that could influence their view of the inequalities present in the study.

Fracking Environmental Justice Framework



This framework focuses on examining environmental justice with regards to fracking. It separates environmental justice in 3 categories. The first is distributive, to which it asks the questions “Which groups bear the risks of living near fracking wells?” and “Who receives the benefits that fracking wells provide?” The second is procedural, to which it asks “Is the process for decision making around fracking open to all stakeholders?” The third is recognition, to which it asks “Are stakeholders recognized as having a legitimate voice in the decision-making process?”

This framework does not directly address issues related to vulnerability and vulnerable groups, and how that affects who bears the most risk to fracking wells.

Additional Resources

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