

**Effects of Degraded
Environmental Conditions on
Women Empowerment in
Slums of Four Cities of India,
Bangladesh, and Pakistan**

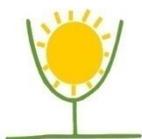
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Empowering Pakistani Women for Growth & Prosperity: From Evidence to Policy

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Making Growth Work for Women

To examine how **different aspects of economic growth**, and the social processes and infrastructure that typically accompany economic growth, **affect women's economic empowerment in the Global South.**



Conceptual Model

- **Economic growth** → **women's economic empowerment, but...**
 - differs across places
 - for women in different economic or social circumstances
 - growth enhanced in some places and
 - inhibited in others because of different initial conditions, including historically and geographically specific sociopolitical structures.



Slums and Environmental Degradation

- **Slums are often considered a symptom of environmental degradation**
 - degraded land and natural resources in rural areas combined with industrialization in urban areas induce **rural-urban migration which leads to slum formation** and expansion

- **Slums are also considered cause of environmental degradation**
 - With little assistance, inadequate facilities in slums (e.g. water and sanitation) result into degraded and **unhealthy living and poor environmental conditions**

Whether we consider slums as symptom or direct cause of environmental degradation, **urban poor living in them face the highest risk** and are first to experience negative effects of **both extreme climate events and environmental deterioration** particularly due to extreme poverty, their hazardous locations, poor housing quality, and their socio-economic and political position in the society



Degraded Environment and Women Empowerment in Slums

- **Urbanization and Economic Growth exacerbate inequalities that manifest in outcomes most noticeably for women**
- **Environmental shocks and hazards impact women's resilience – more likely to experience shelter deprivation, income loss, increased gender-based violence, health impacts**
- **Inadequate basic services lead to extra burden on women for household chores (e.g. lack of running water)**



Our Definition

We particularly focused on climate induced disasters and poverty-related environmental degradation at the household and slum level to study these impacts comparatively across four South Asian cities in three nations.

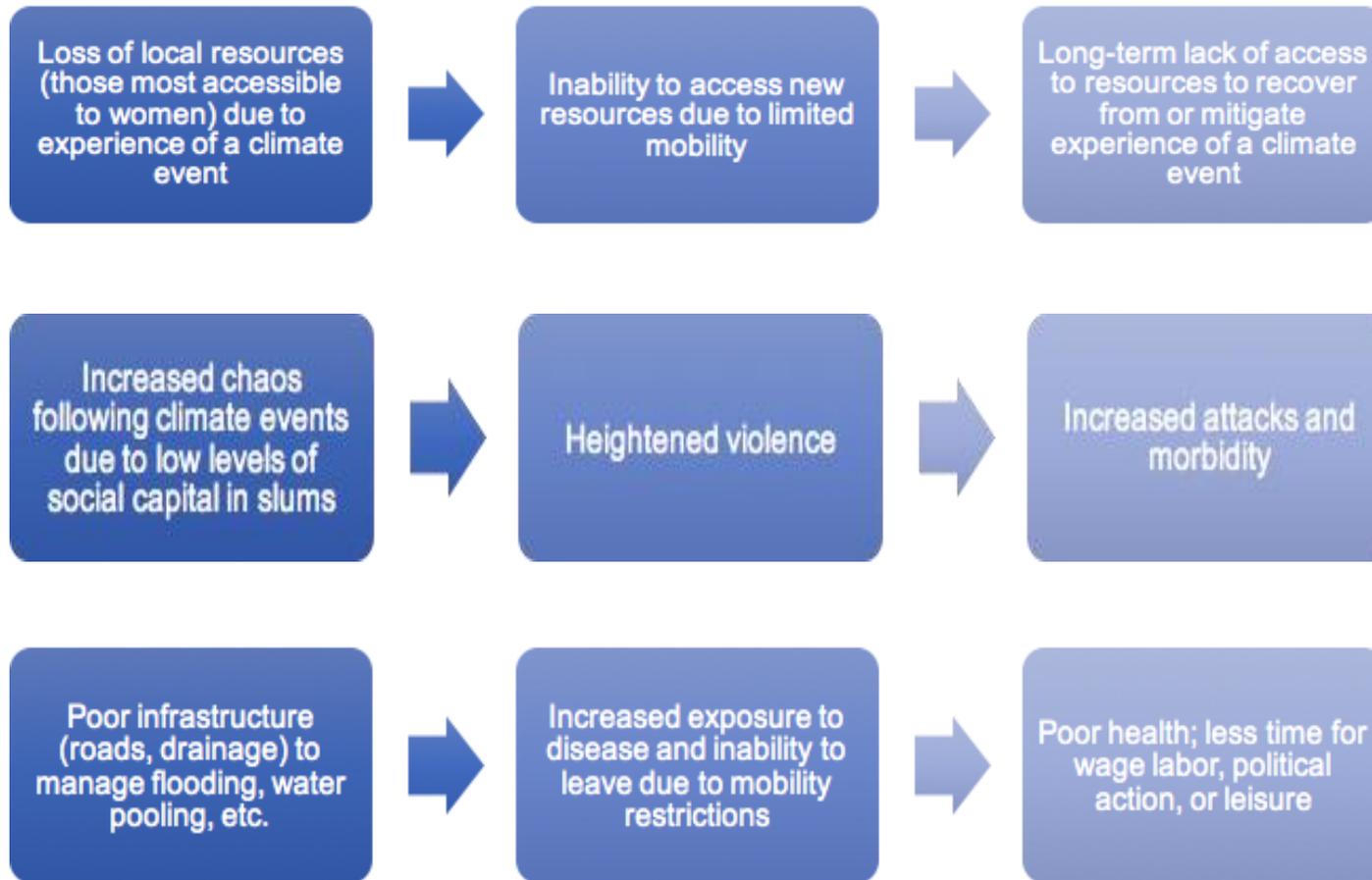


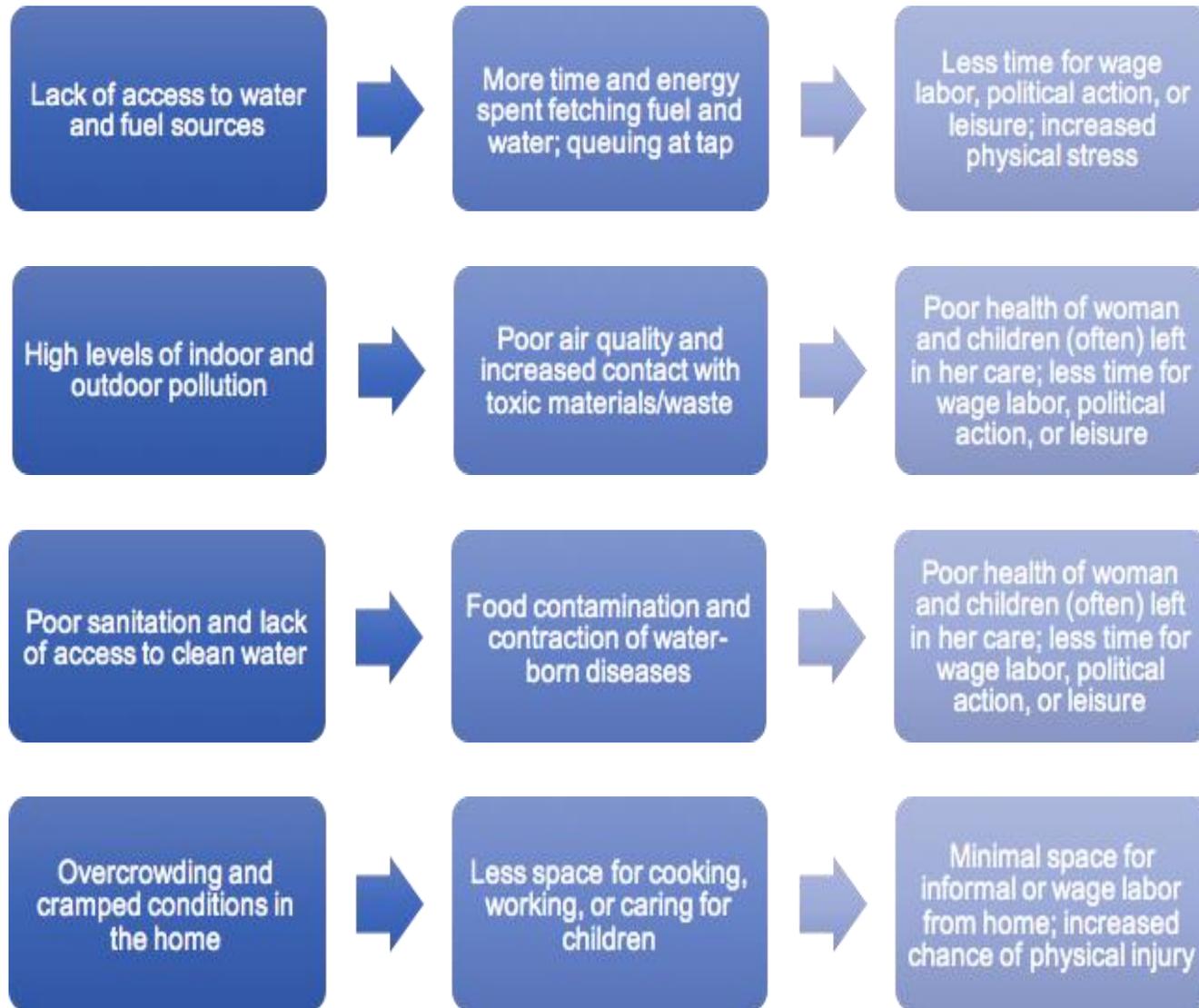
Research Questions

- **To what extent does environmental degradation due to urbanization and economic growth impact women's empowerment in South Asian slums?**
 - Do women in South Asian slums experience lower levels of empowerment due to their increased vulnerability to climate change?
 - Do women in South Asian slums experience lower levels of empowerment due to poverty-related environmental degradation at the household, neighborhood, and city level?



Hypothesized Pathways to Disempowerment





Case Study Context: Twelve Slums from Four Cities

India		
Ghazipur Slum	Tughlakabad Slum	Hanuman Camp Slum
		
Slum is located in East Delhi near a garbage dump and landfill site.	Slum is located south of Delhi on a steep slope; the surrounding area is used for open defecation and garbage disposal.	Slum is located in Central Dheli adjacent to an open city drain.

Bangladesh		
Keranijang Slum	Jhutt Patti Tong Basti	Sattala Basti
		
Slum is located in the West City of Dhaka which falls at the low-lying area of the confluence of the Buriganga River and the Shittalakhya River.	Slum is located in northern part of Dhaka in Pallabai neighborhood without access to potable water for consumption.	Slum is located in the Banani neighborhood in Dhaka North City Corporation with proximity to the Banani-Gulshan Lake where garbage, sewage, and flood waters accumulate.

Pakistan		
Basti Esayan	Gao Shalla Slum	Altat Colony
		
Slum is located in Lahore behind a major paper and pulp industry factory which emits hazardous waste.	Slum is located in Lahore on the brink of the River Ravi, making it highly susceptible to flooding.	Slum is located near the Ranger's Headquarters in Lahore close to a ring road, garbage dumping site, and open city drain.

Chora Stop Slum	Akram Gill Colony	Mera Jaffar Slum
		
Slum is located in E-12 sector in Islamabad and formed on a steep slope beside a garbage dumping site.	Slum is located in the H-9 sector of Islamabad near a high voltage power line and a major highway.	Slum is located in the G-12 sector of Islamabad close to a major highway and garbage dumping site.



Data Collection

- **Quantitative Data:**

- Multistage stratified random sampling strategy
- Slums selection on uniform criterion including the requirement for each slum to be non-notified, larger than 400 households, geographically dispersed, and prone to an environmental hazard
- Household Surveys for 300 Households in each city representing 12 slums
- Total Sample Size: 1200 households with ~50% women respondents in Pakistan and Bangladesh slums and ~65% women respondents in India slums
- Questions included climate change vulnerability, poverty-related environmental degradation, and women empowerment
- Questions pertained to households as well as individual respondents
- A structured questionnaire was used to conduct household survey in selected slums

- **Qualitative Data:**

- 25 Key informant interviews in each city
- 3 women and 2 men from each of the three slums in a city were interviewed totaling 15 per city
- 10 experts that included individuals from government, non-governmental organizations, and academia were also interviewed in each city



Data Analysis

- **We proposed a novel index named Women Empowerment in Slums Index (WESI)**
 - The index measures both **resource** and **agency** for women
 - Particular measures of Resources include factors in several domains such as economic (e.g. employment status and income), socio-cultural (e.g. education), political (e.g. awareness of legal rights against violence), self-care (e.g. access to health facilities)
 - Particular measures of Agency include factors such as economic (e.g. spending decision-making), socio-cultural (e.g. mobility and time use), political (e.g. voter, civic engagement), self-care (e.g. preventive care, violence reporting)
 - Each measure was weighted equally and used to construct empowerment score using Alkaire method.



Modified Empowerment in Slums Index

- We also created a similar index named Empowerment in Slums Index (ESI) using all the measures except women specific measures (e.g. domestic violence) for both men and women
- Purpose of ESI was to compare men and women from same slums to discern whether women are particularly more vulnerable to climate change and environment degradation compared to men from the same slums.



Methods

- Using **empowerment scores** calculated for WESI for women and ESI for both men and women **were used as dependent variables in a regression framework**
- Used **vulnerability and exposure to climate events and environmental degradation** and living condition factors **were used as independent variables** for regression modeling



Key Findings

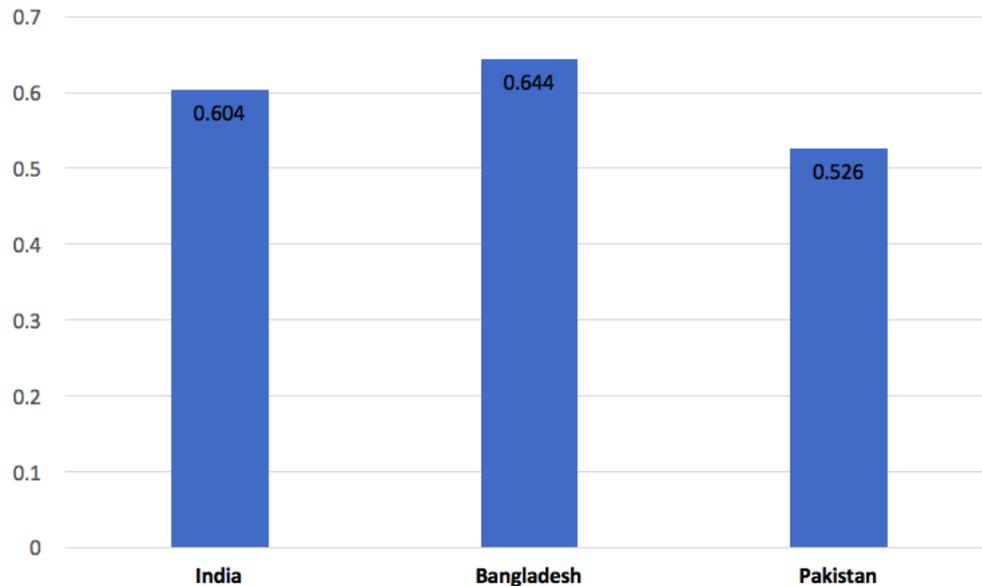
Several environmental conditions demonstrate statistically significant associations with women's empowerment.....

These effects differed by country



Key Findings: Overview

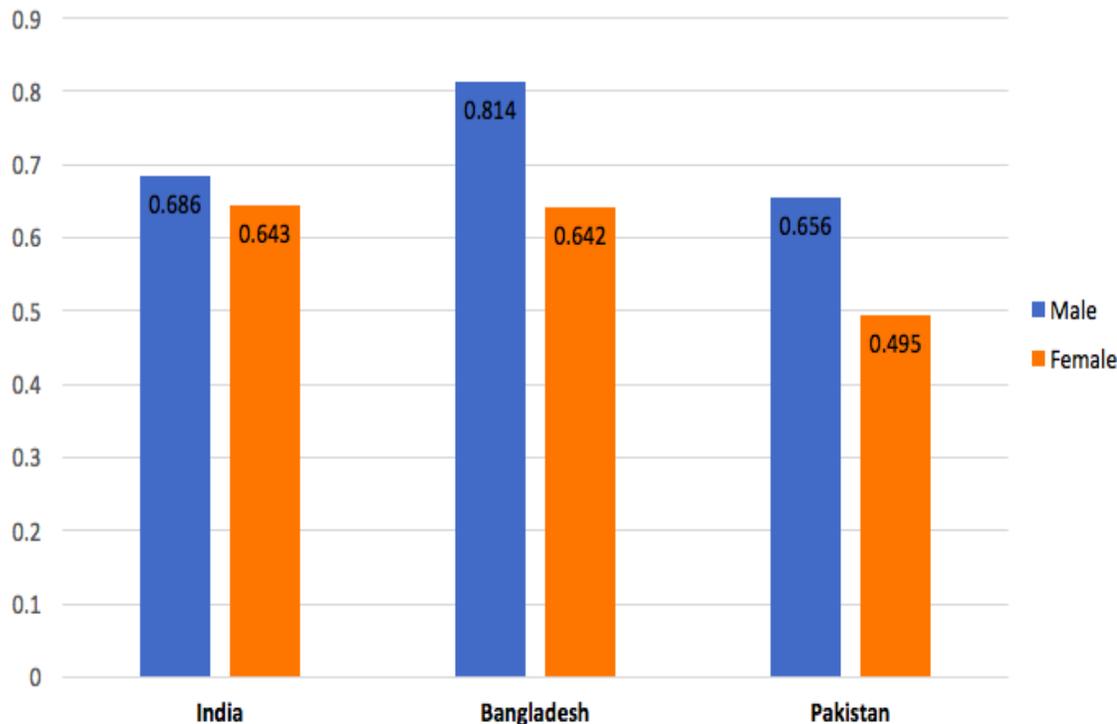
Women Empowerment Slum Index



- **Women in slums of Pakistan had the lowest average empowerment score compared in three countries studied**
- **Although our sample is not nationally representative, it may be indicative of comparatively lower empowerment for Pakistani women in slums**



Key Findings: Overview



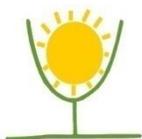
- **Empowerment in Slums Index provides a better understanding of women's empowerment.**
- **It is clear that women in all three countries have lower empowerment scores compared to their men counterpart in the same slums**
- **However, gender gap is wider in both Bangladesh and Pakistan**
- **Pakistan has the lowest scores for both men and women compared to their counterparts in other two countries (this is indicative since our sample is not nationally representative)**



Women's Empowerment and Degradation

- Experience of heatwave and torrential rain were negatively impacting women's empowerment
- Poverty-related environmental degradation such as lack of access to toilet, lack of drainage, and unpaved street were negatively associated with women's empowerment
- Compared to New Delhi, both Lahore and Islamabad showed lower empowerment for women whereas Dhaka had higher empowerment scores

	All Three Countries (1)	India (2)	Bangladesh (3)	Pakistan (4)
Heatwave	-0.029** (0.006)	-0.025 (0.036)	0.00 (0.015)	-0.017 (0.023)
Torrential rain	-0.042 (0.028)	-0.102** (0.015)	-0.001 (0.024)	-0.019 (0.048)
Flood	0.014 (0.012)	0.019 (0.022)		-0.054 (0.055)
Residence less than 2yrs	-0.048*** (0.008)	-0.054 (0.036)	-0.033* (0.008)	-0.031** (0.008)
Street with dirt	-0.017 (0.024)	0.013 (0.027)	-0.1 (0.035)	0.028 (0.02)
Lack of toilet	-0.031** (0.006)	-0.042* (0.011)	-0.051* (0.017)	-0.039 (0.024)
Lack of drain system	-0.037 (0.031)	-0.109** (0.018)	-0.021 (0.03)	-0.02 (0.015)
Constant	0.695*** (0.026)	0.764*** (0.011)	0.769*** (0.015)	0.52*** (0.016)
Fixed Effects of Cities (New Delhi is the reference category)				
Dhaka	0.068** (0.018)			
Islamabad	-0.132*** (0.017)			
Lahore	-0.103*** (0.016)			
Sample Size	600	171	138	291
R-squared	0.2351	0.2090	0.2757	0.0278
Ad R-squared	0.2175	0.1750	0.2426	0.0037
Cluster	city	slum	slum	slum



Empowerment and Degradation

- Women had lower empower score compared to men, all other things being equal
- Many of the climate change vulnerabilities were particularly impacting women but were not affecting men from the same slums (e.g. torrential rain in India)
- Many of the climate change event experiences were particularly negative for women but not affecting men in the same way (e.g. heatwave in Pakistan)
- Lack of access to toilet and drainage system, and unpaved streets negatively impact empowerment scores for both men and women but more to women in some cases (lack of drainage had additional negative impact for women in Indian slums and lack of waste management facilities had additional negative impact for women in Pakistani slums)

	All three countries (5)	India (6)	Bangladesh (7)	Pakistan (8)
Age	0.001*** (0.000)	-	-	0.001*** (0.000)
Married	-	0.042* (0.024)	0.092*** (0.033)	-
Women	-0.090*** (0.0143)	-	0.136*** (0.044)	-0.204*** (0.025)
Heatwave	-	-	-	0.186*** (0.046)
Torrential rain	-	-	-	-
Flood	-	-	-	-
Rented house	0.030*** (0.009)	-	-	-
Residence less than 2yrs	-	-	-	-
Street with dirt or brick	-	0.067*** (0.024)	-0.040** (0.017)	-
Brick/soil street	-	0.010 (0.016)	-	-
No permanent structure	-	-0.056*** (0.024)	-	-0.032** (0.013)
Overcrowded house	-	-0.033** (0.014)	-	-
Poor air circulation	-	0.030* (0.016)	-	-
Lack of toilet	0.061*** (0.018)	-	-0.039** (0.019)	-
Lack of drain system	-0.022** (0.010)	-	-	-0.079*** (0.016)
No waste facility	-	-	-	0.025* (0.014)
Unsafe water	-	0.048** (0.021)	-	-0.038*** (0.010)
Constant	0.663 (0.015)	0.658 (0.030)	0.711 (0.037)	0.649 (0.020)

Interaction effects for Women				
Married	-	-	-0.168*** (0.045)	
Heatwave	-	-	-0.103*** (0.056)	
Torrential Rain	-0.042*** (0.014)	-0.110*** (0.025)	-	
Rented House	-	-.046* (0.026)	-	
Residence less than 2yrs	-0.066*** (0.016)	-0.067** (0.028)	-0.058*** (0.019)	
Street with dirt or brick	-0.045*** (0.013)	-	-0.146*** (0.026)	
Brick/soil street	-0.069*** (0.016)	-	-0.103*** (0.025)	0.038* (0.022)
No Permanent Structure	-	0.057* (0.030)	-0.039* (0.021)	-
Poor air circulation	0.045*** (0.013)	-	-	0.081*** (0.029)
Lack of toilet	0.041** (0.016)	-	-	-
Lack of drain system	-	-0.037* (0.020)	-	0.131*** (0.028)
No Waste Facility	-	-	-	-0.045** (0.018)
Sample Size	1137	275	268	594
Adj. R-squared	0.39	0.21	0.49	0.30



Planning and Policy Implications

- Women are particularly vulnerable to climate change events and environmental degradation in urban slums
- Improved housing and neighborhood conditions and improved basic services are important for women empowerment
- Gender gap and inequality are high in slums of Bangladesh and Pakistan that could be bridged with socio-economic interventions



Planning and Policy Implications cont..

- Challenging systemic conditions such as the failure of governance to provide security and infrastructure in slums and informal settlements which results in divergent impacts across national and political contexts
- Livelihood of slum residents is increasingly under threat – particular attention on slums – especially women – in resilient urban growth and development strategies





Discussion

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Thank You



- In India, women's level of disempowerment was associated with experience of torrential rain in terms of climate change as was lack of toilets and drainage systems in addition to overcrowding in the home related to poverty conditions in slums



- **In Bangladesh, street condition (dirt roads) showed significant associations with women's disempowerment with regards to climate change vulnerability, but none of the poverty-related variables were associated with lower levels of women's empowerment**



- In Pakistan, climate change vulnerability as represented by brick or soil street construction material was associated with higher levels of empowerment. Poverty related environmental conditions such as poor air circulation, overcrowded housing, and lack of waste facilities had statistically significant associations with women's disempowerment in Pakistan.**

