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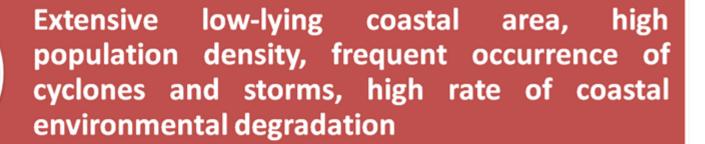
#### **Dynamics of Human-environment Interface** Values towards the environment Responsibility for the protection, maintenance and Sensitivity development of environment Human-Realization of **Environment** Personal attitudes associated risks with the environment Interaction

#### Climate Change Vulnerability Index 2009 / 2010



Source: Climate Change Vulnerability Index (CCVI), released on 03/09/2009 by global risks consultancy, Maplecroft.







Direct dependence of people on natural resource bases of coastal ecosystems



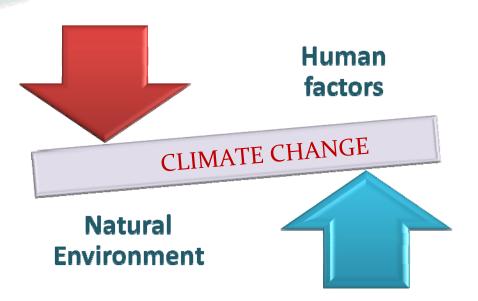
Rise in sea level could result in major physical/material/financial and other kinds of losses



# Climate change and human behaviour

According to Levin (1951),

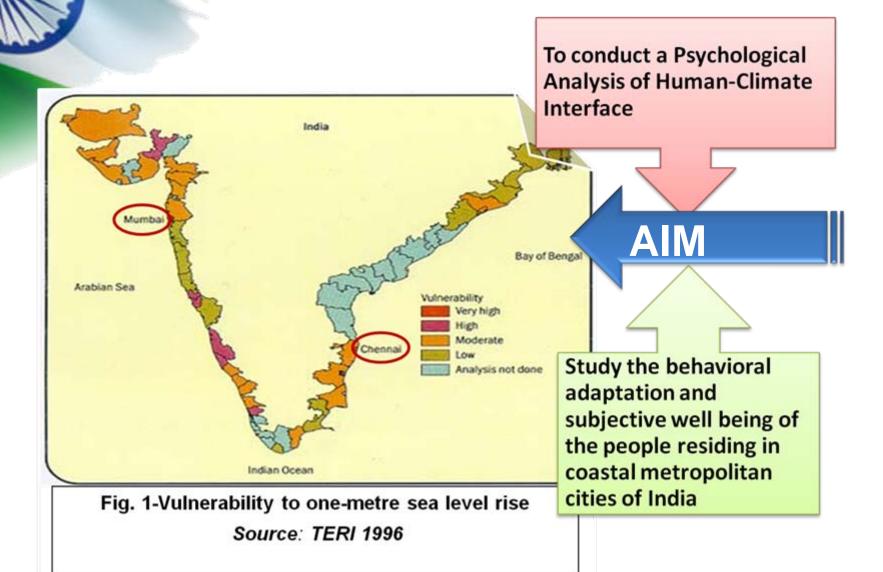
$$B = f(P X E) i.e.$$



Behaviour is a function of person, environment and interaction between the two.

- Any change in the environment brings changes in a person's behaviour as well
- Predominant cause of climate change is the result of human behaviour.
- -The solutions are also rooted in human behavior.

## Proposed study



# **Objectives**

To assess the cognitive, conative and affective dimensions of human-climate interface with a focus on perceived climate stress

To assess the level of environmental resilience/ subjective well being in regard to changing climate

To identify the behavioral coping strategies practiced by people to combat the adversities of changing climate

Proposal of an awareness generation plan for the sample sites

#### **Central idea**



What motivates people to have proenvironmental behaviours



What restricts their actions



What are the things that people find stressful relating to climate change



What are the cognitive-affective-conative dimensions of human-climate interface



How have people reacted to climate change in the past and adapted to newly occurred changes



What is the level of preparedness of people to meet future challenges associated with climate change

ADDRESSING PSYCHOLOGICAL DIMENSIONS SUCH AS ABOVE



Quantitative assessment using Climate Change Perception Inventory (CCPI).

- Understanding the perceptions and level of awareness of people
- To study the Action and reactions in the changing climate scenario

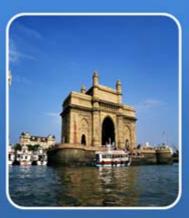
Quantitative assessment through environmental resilience/SWB scale  To assess the level of psychological and physical endurance and Subjective Well Being (SWB)

Qualitative techniques like structured interview

 To gain insight into the current coping styles from behavioral perspective



#### Proposed study sites



#### **MUMBAI**

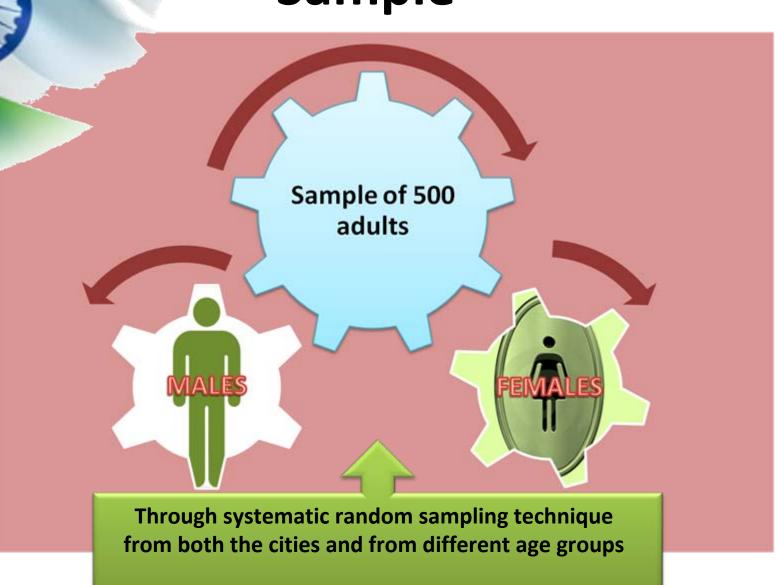
- Highly vulnerable to climate hazards
- "Stress bundle" composed of population, projected sea-level rise, and economic stresses converge to create some particularly problematic issues for Mumbai



#### **CHENNAI**

- Comes under the "Cyclonic Zone" where the possibility of frequent cyclones is very high
- Hazard Prone Areas within the CMA could become more frequent or extreme under climate change





# Human-climate interface and climate stress: Veraval, India





#### SAMPLING

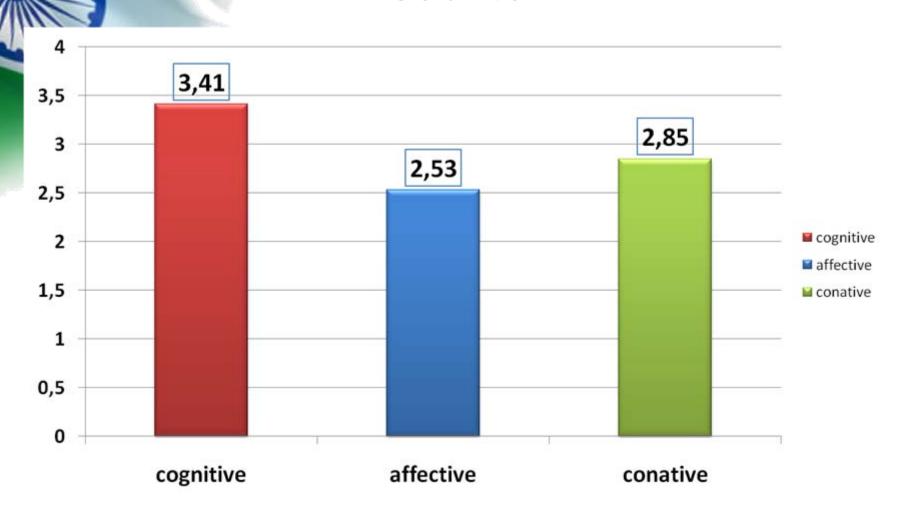
A sample of 31 adults, both males and females (age 18 years and above) was taken from Veraval from different age groups based on the willingness of respondents to cooperate for the study.

#### TOOLS AND TECHNIQUES

A sub-section of CCPI was administered consisting of 4 point Likert type response format with 18 items., categorized in cognitive, affective and conative dimensions.

# COGNITIVE The earth is getting warmer and warmer every day AFFECTIVE I am frustrated that not enough is being done to reduce the impact/ mitigate the climate change CONATIVE I am confident that individual efforts will be able to slow down impact of climate change

#### Results



**Scale Averages on the three dimensions** 

# Cognitive level analysis

Category	STATEMENT	AGREEMENT	DISAGREEMENT	SCALE AVG.
	1) The earth is getting warmer and warmer every day	96.76%	3.22%	3.84
	2) Global warming is/will pose risk to our nation's resources/people	96.75%	3.22%	3.74
	3) More evidence is needed to claim that global warming is caused due to vehicle and fossil fuels	67.73%	29.02%	2.83
	4) Climate change has started creating environmental crises such as earthquake in our			
COGNITIVE	country.	67.73%	29.03%	3.23
MEAN		82.24%	16.12%	3.41

# Affective level analysis

			AGREEMENT	DISAGREEMENT	SCALE AVG.
Category		STATEMENT			
	1)	I am frustrated that not enough is being done to			
		reduce the impact/ mitigate the climate change	90.31%	9.67%	3.52
	2)	I am positive that we are doing the right things to			
		address the severity of climate change	58.05%	41.92%	2.45
	3)	I am not really bothered about climate change	16.12%	83.86%	1.65
	4)	Issue of climate change is a myth and it has never			
		made me upset as it is just to frighten the public.	12.90%	80.64%	1.48
	5)	It frightens me to think that we are heading towards			
		ice age.	54.83%	38.71%	2.79
-	6)	There is nothing much to worry as climate change is			
		only the problem of developed nations. (US/UK)	29.03%	67.73%	1.87
	_				
	7)	When I think of the ways big developed nations are			
		using electricity and energy, I get frustrated and			
7.		angry.	77.41%	22.57%	3.16
	8)	There is a need for more stringent environmental			
		laws to control human induced global warming	77.41%	22.57%	3.32
MEAN			<b>52.01%</b>	45.96%	2.53

# **Conative level analysis**

STATEMENT	AGREEMENT	DISAGREEMENT	SCALE AVG.
1) I am confident that individual			
efforts will be able to slow down			
impact of climate change	87.09%	13%	3.26
2) It is primarily the Government which			
is responsible to do something about			
checking global warming	38.71%	61.28%	2.29
3) Policy for public transport should be			
compulsory for			
institutions/organizations for their			
students/employees to control traffic			
and pollution.	74.19%	25.80%	3.13
4) I would like to initiate a campaign for			
car pooling and walking for shorter			
distances or use of public transport	87.09%	12.89%	3.39
5) There are not much Govt.non govt.			
institutions in my city to create			
awareness in public about			
environmentally healthy life style.	77.41%	22.57%	3.19
6) I generally forget to switch off light			
and fan/AC after using.	22.57%	77.41%	1.87
	64.51%	35.49%	2.85
	<ol> <li>I am confident that individual efforts will be able to slow down impact of climate change</li> <li>It is primarily the Government which is responsible to do something about checking global warming</li> <li>Policy for public transport should be compulsory for institutions/organizations for their students/employees to control traffic and pollution.</li> <li>I would like to initiate a campaign for car pooling and walking for shorter distances or use of public transport</li> <li>There are not much Govt.non govt. institutions in my city to create awareness in public about environmentally healthy life style.</li> <li>I generally forget to switch off light</li> </ol>	1) I am confident that individual efforts will be able to slow down impact of climate change 87.09%  2) It is primarily the Government which is responsible to do something about checking global warming 38.71%  3) Policy for public transport should be compulsory for institutions/organizations for their students/employees to control traffic and pollution. 74.19%  4) I would like to initiate a campaign for car pooling and walking for shorter distances or use of public transport 87.09%  5) There are not much Govt.non govt. institutions in my city to create awareness in public about environmentally healthy life style. 77.41%  6) I generally forget to switch off light and fan/AC after using. 22.57%	1) I am confident that individual efforts will be able to slow down impact of climate change 87.09% 13%  2) It is primarily the Government which is responsible to do something about checking global warming 38.71% 61.28%  3) Policy for public transport should be compulsory for institutions/organizations for their students/employees to control traffic and pollution. 74.19% 25.80%  4) I would like to initiate a campaign for car pooling and walking for shorter distances or use of public transport 87.09% 12.89%  5) There are not much Govt.non govt. institutions in my city to create awareness in public about environmentally healthy life style. 77.41% 22.57%  6) I generally forget to switch off light and fan/AC after using. 22.57% 77.41%

### **Coping with the Changing Climate:**

#### People's Perceptions

#### Coping capacities to climate change

- Agreement-25.8%
- Disagreement-74.2%

City having any of its own adapting strategy to cope with changing climate

- Agreement-10.3%
- Disagreement-89.6%

Best measure to be the most effective in coping with the changing climate

 53.6% respondents rated a combination of individual approach, institutional measures taken by government together with voluntary/NGO services as the best measure

### **Qualitative Information**



**PLANTATION** 

SAVING ENERGY



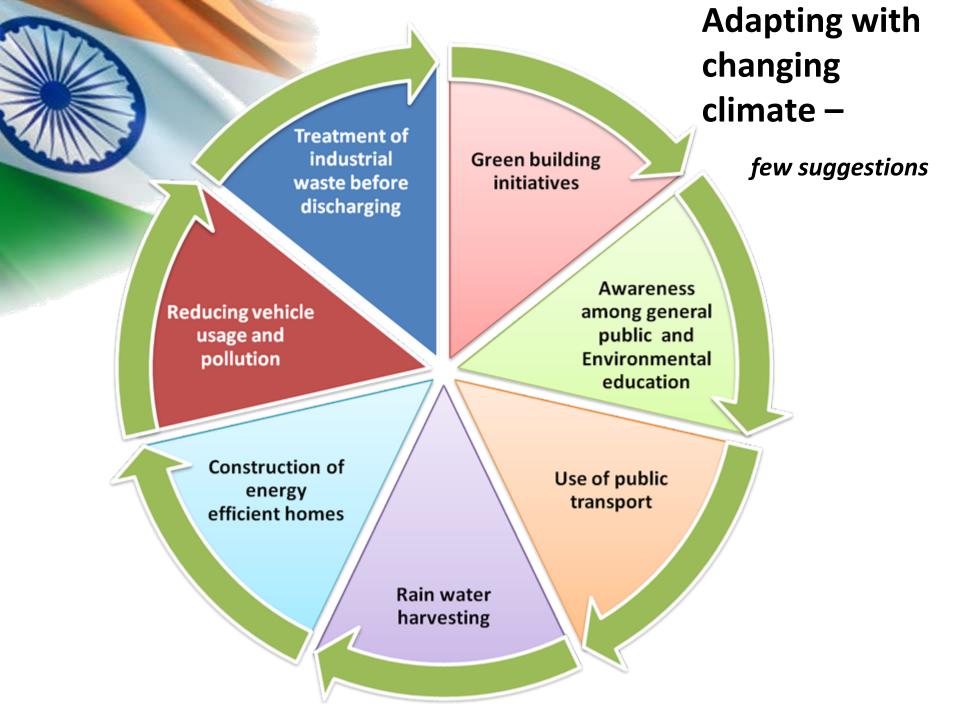
The best ways/means by which the respondents found themselves capable of coping/adapting to climate stress













#### Discussion

- Respondents of the study site were cognitively aware about various dimensions of changing climate.
- Cognitive awareness would let people avoid taking up activities that perpetuate the problems of climate change further.
- Cognitive awareness forms the basis for people being emotionally concerned about the whole issue.



Significant level of emotional concern about climate stress found.

- Recognition of responsibilities and actions of developing nations.
- Identification of anthropogenic activities as the major contributors to changing climate.
- Action-based behaviour or conative index rated second highest by the respondents.
- Absolute faith placed in the power of individual efforts.

#### Conclusion

A substantially good level of human understanding about changing climate has been found among the respondents.

- However, their ability to perceive the magnitude of global risk and to modify their consumption patterns in consequent to that is relatively limited.
- Ample general awareness about the occurring phenomenon of climate change and related impacts but relatively less emotional concern for the issue although the respondents have expressed pro-environment based action behaviour intentions.



- Mere cognitive awareness cannot solve problems alone .
- People need to know what difference can be brought by switching over from this 'wanting change' to 'working for change'.



# Ways ahead...

To study two coastal metropolitan cities, Mumbai and Chennai with extended behavioural dimensions and methodology to recognize the climate stressors and behavioural coping measures.

 To provide an understanding of mindset of people, the level of awareness and also what are their actions and reactions in the changing climate scenario.

