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COMMUNITY PERSPECTIVE OF CLIMATE POLICY IMPLEMENTATION FAILURES IN THE MOUNTAIN REGIONS OF PAKISTAN: CHALLENGES AND STRATEGIES

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ABSTRACT

The northern mountainous region of Pakistan is environmentally prone region with respect to natural disasters as well as climate change. The region under study comprises of three districts of Gilgit--Baltistan. Agriculture is the most important occupation of the inhabitants but due to climate change with regard to increasing temperature it is being enormously affected**.** The survey was designed such that people were asked about their knowledge on existing policies and the implementation status in their locality. Surprisingly, the response of the people was positive and a high majority was well aware about these policies. Highest positive responses pertaining to water storage facilities, law enforcement for water storage in region, integrated water resource management, strengthening of current hydrological systems and promotion of public awareness regarding climate change were obtained from Gilgit and Nagar district i.e. 43% and 40%, respectively. Forestry, ecosystem and biodiversity conservation policies were also investigated. Half of the respondents (50%) of Rondu district witnessed the construction of forest belt and slope stabilization as per policy clauses. Regarding biodiversity policy, the respondents pointed out the lack of professional leadership specifically in district Skardu i.e. only 4% population showed positive responses. A total of 17% (58 out of 341) population has a positive perception for climate policy implementation in Gilgit Baltistan. The residents of Hunza district are much depressed about health policy implementation in their district. There are multiple challenges faced in the execution of policies that include economic, environmental, social, legal, political and technical hindrances in the Gilgit-Baltistan area that comprised of failures of the policy implementation. However, further research is required on each sector to assist policymakers to reformulate these policies in a more effective manner. At sectoral level, more data is needed to work precisely on the communal matters as well as the state of environment

Keywords: Policy, Climate Change, Resources, Strategies, Pakistan.

INTRODUCTION

South Asia, a thickly populated and an environmentally prone region to the natural disasters is highly affected by climate change (UNEP, 2003; Mirza, 2011). This region suffers from multiple issues that include low economic growth, decline agricultural productivity, food scarcity, limited livelihood sources and subsequent poverty. These challenges lead to over exploitation of natural resources due to over population and unsustainable economic development (Sivakumar and Stefanski, 2010). The countries in South Asia have agriculture as the most common income generating option that is highly affected by climate anomalies (Howden *et al.,* 2007). The past two decades not only show a net increase of 1-3ºC in temperature regime but also repeated events of heat waves (Cruz *et al.,* 2007).

The last few years for Pakistan were also stressful with respect to natural disasters, declining economic growth, and environmental problems after several events of extreme climate change such as intense heat waves, melting of glaciers, cyclone, landslides, floods, droughts etc (Khattak *et al.,* 2013; Iqbal and Arif, 2010). It has been reported that around 60% of the population of Pakistan is well aware of the consequences of climate change (Saifullah et al., 2013). The drastic reduction in flow of the river Indus have compromised the agricultural productivity over which around 70% of the population depends (Tahir *et al.,* 2011)

In real sense however, the people of developing world do not apprehend the climate change and environmental issues because of the progressing but unsustainable economies and their higher reliance on natural resources and ecosystem making the environment more vulnerable with low resilience and less ability to cope with the climate shocks (Wingqvist *et al.,* 2012).

The under developed countries although, have legal and policy frameworks with respect to climate change but they mostly fail to implement those existing policies as they compromise environment over economy (OECD, 2007; Adil *et al.,* 2006). Besides many technical and financial deprivation, the importance of environmental governance is

a real need of today's time specifically in developing countries like Pakistan but before this, research gaps should be filled to identify the challenges in failure of environmental policy implementation in the most affected part of the country i.e. mountainous regions. Further, the climate change triggers the interprovincial conflicts in Pakistan that involve conflicts over natural resources and over burden the population in urban centers due to mass migration to get better opportunities and resources (Akram *et al.*, 2011). The conditions are worst for the inhabitants of remote northern areas and are distressed by climate irregularities which require extensive work on the implementation of existing policies on climate change and environmental resources. The present research aims to identify key issues of policy failures in northern mountainous regions of Pakistan and the challenges faced to implement policies and the strategies to overcome failure.

Methodology

The Study area

Gilgit Baltistan (GB) is located at the north eastern side of Pakistan with an astonishing mountainous landscape that covers an area of 72496 km^2 in 14 districts. The mountain valleys have diverse ecosystem and are not always resilient to the natural calamities. This region is more prone to natural disasters and affected by climate change consequences. The inahbiatants of this area are highly dependent on natural resources and select their livelihood accordingly i.e. agriculture, livestock and to some extent on tourism.

Sampling

A total of 400 individuals were selected for the study with the help of formula presented by Yamane *et al.*, (1967). On the basis of 95% confidence level, this formula helps out to extract suitable sample size from population

$$n = \frac{\mathrm{N}}{1 + \mathrm{N}\,(e)^2}$$

$$n = \frac{1{,}800{,}000}{1 + 1{,}800{,}000\,(0.05)^2}$$

$$n = 399.91 \simeq 400$$

Where, n = sample size; N = population size; and e = desired level of precision (at 95% e = 0.05).

From these randomly selected 400 individuals from 14 districts of GB, only those were considered for the present study who had a prior knowledge of climate change (n=371) and policies (n=341). Focus group discussions and reconnaissance survey was conducted to identify the issues of environmental policy failures and their perspective for each policy in their locality.

RESULT AND DISCUSSION

Failure of Policy implementation in the community's viewpoint

Climate change has affected the lives of individuals and is self-confessed by the residents of Gilgit Baltistan (Table 1). In the focused group discussions and surveys, people were asked about their knowledge on existing policies and the implementation status in their locality. Surprisingly, these mountain dwellers are mostly aware (80-90%) of the existing policies and the main clauses. Least responses were received from Kharmang district for each statement regarding water conservation and management facilities in their area. Maximum water storage facilities, law enforcement for water storage in region, integrated water resource management, strengthening of current hydrological systems, and promotion of public awareness regarding climate change are observed in Gilgit and Nagar district i.e. 43% and 40%, respectively (Table 2a).

Crop damage prevention program and natural barrier promotion can be seen in district Ghanche i.e. 46% but very little agricultural policies are implemented or followed in Hunza, Rondu and Shigar districts. These districts show lack in integrated pest management and new feedstock technology suitable with changing climates.

Forestry, ecosystem and biodiversity conservation policies were discussed during group discussion. Forest fire prediction is important for early evacuation and protects the society which is only observed in few districts as shared by respondents in the interviews. Half of the respondents (50%) of Rondu district witnessed the construction of forest belt and slope stabilization as per policy clauses. For biodiversity policy, the respondents pointed out the lack of professional leadership specifically in district Skardu i.e. only 4% population show positive responses. Gilgit residents (43%) had noticed better implementation on policies (Table 2b).

Gilgit and Yasin valley residents verified the activities of disaster management sector that is working on policies and instigate those with the maximum confirmation of glacial lake monitoring, warning systems and

evacuation plans. Risk mapping for natural disasters is not well-developed, lack of dam break studies and non-resilient infrastructure are lacking in policy implementation observed in district Ghanche and Skardu.

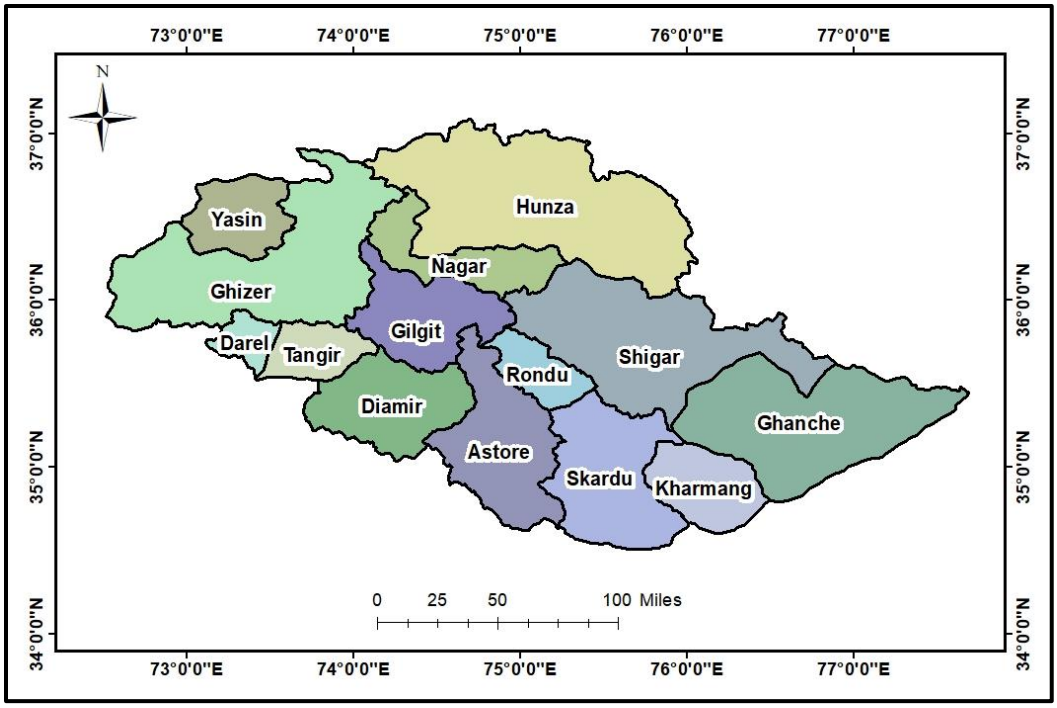

Fig. 1 Study area map of Gilgit Baltistan.

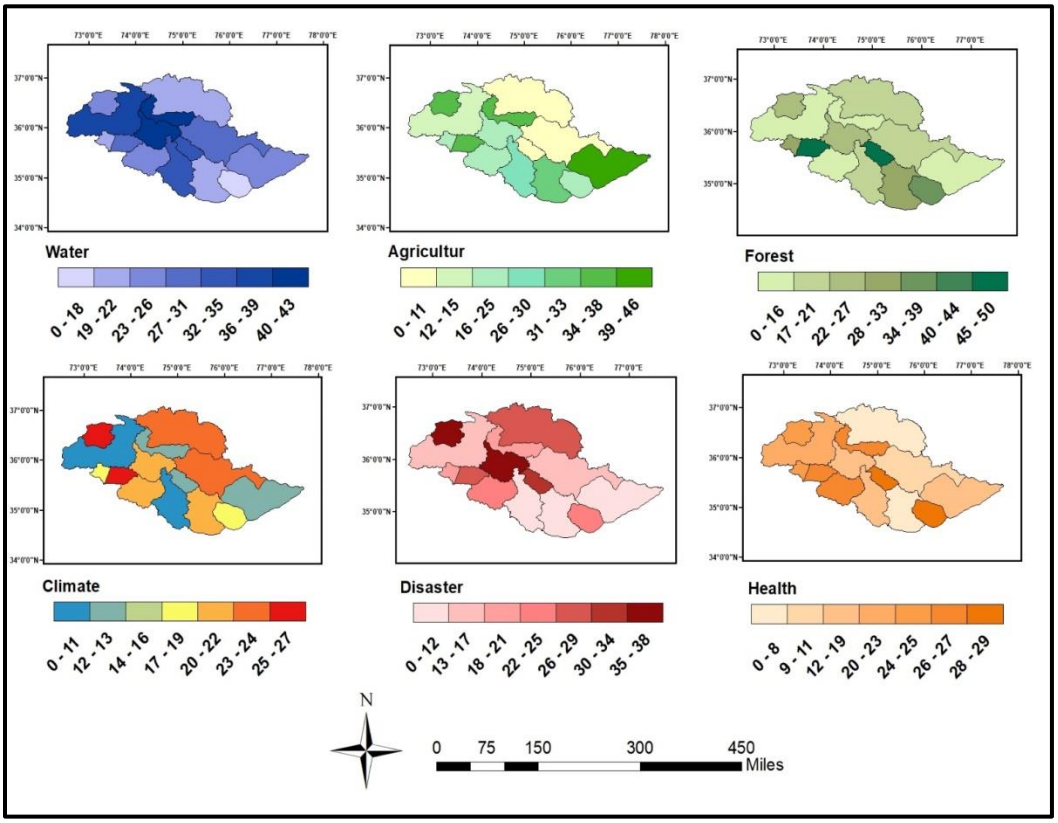

Fig.2. Percentage of positive responses towards policy implementation in GB (%).

Table 1. Climate change knowledge of respondents.

Climate change knowledge							
Districts	Term climate change			Climate change impacts human lives		Knowledge about Climate policies	
	Sample size	N	%	N	%	N	%
Astore	36	35	97.2	33	91.7	30	83.3
Darel	32	30	93.8	26	81.3	28	87.5
Diamer	38	35	92.1	33	86.8	34	89.5
Ghanche	29	25	86.2	21	72.4	24	82.8
Ghizer	30	28	93.3	23	76.7	26	86.7
Gilgit	26	25	96.2	22	84.6	21	80.8
Hunza	34	33	97.1	30	88.2	32	94.1
Kharmang	30	27	90.0	24	80.0	28	93.3
Nagar	35	32	91.4	31	88.6	30	85.7
Rondu	21	20	95.2	16	76.2	18	85.7
Shigar	31	28	90.3	22	71.0	27	87.1
Skardu	28	26	92.9	15	53.6	24	85.7
Tangir	15	12	80.0	13	86.7	11	73.3
Yasin	15	10	66.7	8	53.3	8	53.3
Total	400	366	91.5	317	79.3	341	85.3

Table 2a. Public perception on policy implementation (Water, Agricultural and Forest).

Public perception on policy implementation (Following policies are implementing successfully)							
Districts	Sample size	Water policy		Agriculture policy		Forest policy	
		N	%	N	%	N	%
Astore	30	10	33	9	30	6	20
Darel	28	6	21	7	25	8	29
Diamer	34	8	24	8	24	5	15
Ghanche	24	6	25	11	46	3	13
Ghizer	26	10	38	4	15	4	15
Gilgit	21	9	43	5	24	5	24
Hunza	32	6	19	3	9	6	19
Kharmang	28	4	14	7	25	10	36
Nagar	30	12	40	11	37	3	10
Rondu	18	6	33	2	11	9	50
Shigar	27	8	30	3	11	5	19
Skardu	24	5	21	8	33	7	29
Tangir	11	3	27	4	36	5	45
Yasin	8	2	25	3	38	2	25
Total	341	95	28	85	25	78	23

Table 2b. Public perception on policy implementation (Biodiversity, Disaster, Health and Climate Change).

Public perception on policy implementation (Following policies are implementing successfully)									
Districts	Sample size	Biodiversity conservation policy		Disaster policy		Human health policy		Climate change policy	
		N	%	N	%	N	%	N	%
Astore	30	6	20	3	10	5	17	3	10
Darel	28	5	18	5	18	7	25	5	18
Diamer	34	4	12	7	21	9	26	7	21
Ghanche	24	3	13	2	8	4	17	3	13
Ghizer	26	10	38	4	15	6	23	2	8
Gilgit	21	9	43	8	38	4	19	4	19
Hunza	32	5	16	9	28	2	6	7	22
Kharmang	28	8	29	7	25	8	29	5	18
Nagar	30	7	23	5	17	8	27	4	13
Rondu	18	4	22	6	33	5	28	2	11
Shigar	27	3	11	4	15	3	11	6	22
Skardu	24	1	4	2	8	2	8	5	21
Tangir	11	2	18	3	27	3	27	3	27
Yasin	8	1	13	3	38	2	25	2	25
Total	341	68	20	68	20	68	20	58	17

The residents of Hunza district are much depressed about health policy implementation in their district and only 6% confirmed the positive views representing the issue of rural areas and deprived communities. Similar can be observed from Shigar and Skardu districts where less than 10% people have positive perception about health facilities as per policy. The residents of a small district Rondu showed maximum satisfaction in this sector mainly due to this newly formed district with less population. They have good quality medication and healthcare services. The main points of health policies were discussed with the respondents to have their views on disease outbreak monitoring system in their locality, health assessment of vulnerable groups and public campaigns on awareness regarding climate induced health issues.

A total of 17% (58 out of 341) population has a positive perception for climate policy implementation in Gilgit Baltistan. Out of which, minimum residents were belonged to district Ghizer i.e. 8% and maximum from Tangir i.e. 27% followed by Yasin (25%). The clauses discussed in survey about climate change were about all the sectors that are covered in National Climate Change Policy 2012. The residents are experiencing more intense and frequent event of extreme weathers from last decade and are not satisfied with the working of Federal and provincial governments.

Challenges and Factors influencing policy failure

There are multiple challenges faced in the execution of policies that include economic, environmental, social, legal, political and technical hindrances in the northern mountain areas of Pakistan.

The economic reasons of policy failures in developing world found in literature is the prioritization of economy over environmental benefits and the situation is not different in Pakistan (Pelletier, 2010; Akgün *et al.,* 2011). The environmental sustainability is compromised over low level economic development and impacts can easily be seen in Asia and Africa (Beeson, 2010; Jabbour *et al.,* 2012; Liu, 2012; Phelan *et al.,* 2012; Wright and Nyberg, 2014). In Pakistan, the issues of water, air and soil pollution are lingering because of non cooperation of industrial sector with the environmental authorities and therefore, economic boost in the country is far behind.

The other factor that affect climate change policy failure in Pakistan is the vulnerable conditions of environment that can be consider as barrier described by by Ooi, (2009), Shiferaw *et al.,* (2009) and Beça and Santos, (2010). Many interviewees also discussed that the agricultural land is converted to barren land and degraded due to prevailing environmental and climatological conditions.

There exists the attitudes of people that also hinder, in accomplishment of policy as their behaviors are off-putting towards adopting the sustainable options. It has been noticed that social resistance to change is a barrier in fulfillment of policies. Not only society's actions are the reason of policy failure but also the technical limitations like un-affordability and inaccessibility to the latest technology are few other factors of not achieving the sustainability. The respondents also shared their views on decline of agricultural due to lack of access to modern technology, least marketing of tourism and unavailability of good feedstock technology that would be helpful otherwise in up gradation of livelihood sources in mountain regions.

The absence of relevant laws, strict enforcement and compliance are noticed by many authors across the world (Jabbour *et al.,* 2012; Chidumayo and Gumbo, 2013; Wright and Nyberg, 2014; Upham *et al.,* 2014). The people of northern areas are not satisfied with the legal authorities and their cases remain pending for years. The non-compliance of environmental pollution discharges from industries is again an example of legal failures in the environmental sustainability.

When environment is not given a top priority, poor environmental governance always exacerbate environmental problems. The environmental issues are not discussed at government level that requires active involvement of public and private sector, stakeholders, industries and institutions in the process of decision making and policy execution. With these participations, the policy implementation is an impossible task that can be observed in Pakistan.

Strategies

The first stage of building strategies for policy implementation in Pakistan is to develop policy tracking system that requires the establishment of new departments within the ministries that monitor the stages of policy execution and can be named as *delivery units* as mentioned by Hudson (2019). These units should be worked to perform monitoring of priority clauses of policy and keep track of them by analyzing the performance of relevant department on the basis of data provided.

The next task of the delivery units is to solve the issues and challenges in failing of the policy implementation, identify the causes and find out the needs of departments to address the problems to respective body. The last step of such units must be the assessment of progress of each department involve in this process to keep track of all the stages that include prioritization of issues, budget assessment, data quality assessment, target achievements, engage active stakeholders and construct the effective interactions and communication strategy. Moreover, these delivery units should work independently irrespective of political or other influences.

The next best strategy in these circumstances would be to support the implementation process which is another crucial task that could be achieve by assessing the existing conditions, the needs of departments and working on future aspects. This step can be divided into few categories to get better results i.e. to manage and regulate the performance, problem solving, capacity building and review of policy that are discussed below.

In Pakistan, the major issue of policy failure as discussed earlier is the vague approach towards regulation of policy. To support implementation process, first step is to manage the performance by the respective authorities and asses their own working procedures. The authorities could identify the risk factors, challenges and key operations in a particular set of time to achieve target.

Problem-solving would be the subsequent strategy to lessen the failure issues by focusing on identification of key problems in major targets. Once the challenges have been detected, the technical, legal and research support could be provided to the policy executors. comprised of failures of the policy implementation in mountain regions of Pakistan but further research is required on each sector to assist policymakers and the community in struggling failure issues. At sectoral level, more data is needed to work precisely on the communal matters as well as the state of environment

After solving the problem, the focus should be on how to build capacity that include the competencies and skills that would be beneficial for future challenges of policy execution and accomplishment. This strategy will work on few approaches i.e. to train, to disseminate information, to guide the others, introduce and utilize the project management skills and other skills would be great for capacity building. The approach has already been used to find out how to make change happen that was informed to the WHO Europe's health system (Hunter *et al.,* 2018; WHO 2016, 2018).

Review of policy implementation must be another action that covers the short and long term reviews of each of the existing policy about what has already achieved and what was the target for a particular time. The use of research actions must be deployed for evaluation of collective efforts. The achievements must be demonstrated and cost benefits analysis must be distributed over time.

Further research

The present study is a baseline research comprised of failures of the policy implementation in mountain regions of Pakistan but further research is required on each sector to assist policymakers and the community in struggling failure issues. At sectoral level, more data is needed to work precisely on the communal matters as well as the state of environment. Also, to analyze the situation of individuals can be helpful in identification of context specific reason of failure. This kind of research will be an initiative in exploring the complications in devising and executing environmental and socioeconomic policies. Lifecycle assessment and inventory for pollution, frequency and intensity of natural disasters, water demand for each sector, biodiversity losses research would be great for setting up goals in policy execution. All these analyzes would be highly recommended to work on the betterment of society and fully implement on existing policy with more reforms specifically for the ones that are already marginalized and tolerate the harsh weathers and rugged terrain in the mountain regions of Pakistan.

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