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**STRENGTHENING RESPONSES TO
CLIMATE VARIABILITY IN SOUTH ASIA**
Discussion paper: Pakistan

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April 2013

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Executive summary

Drawing on field research and consultations with policymakers, practitioners and academics, this case study looks at the dimensions of local resilience and the reasons for vulnerability and non-adaptation in two districts, Thatta and Badin, in Sindh province. Thatta is a coastal area exposed to environmental risks such as coastal intrusion and floods. The environmental risks in Badin are predominantly linked to extreme and unpredictable rainfall patterns, storm surges and cyclones. As well as the different environmental risks, Badin provides a more urban study site in contrast with more rural Thatta to give a balance of peri-urban and rural perspectives.

In order to understand local resilience, the case study aims to address two key questions:

1. What are the root causes of vulnerability (to climate and conflict risks)?
2. How can external adaptation interventions (by the state or international institutions) address these root causes of vulnerability?

Findings from this study point to the following as key priority areas to build resilience:

- Changing people's attitude towards the benefits of education, and improving the quality and quantity of education provision;
- Inclusion of governance challenges in adaptation and disaster risk reduction programming to ensure effective implementation of donor-financed climate change projects;
- Prioritising activities that not only build resilience but also reinforce the social contract, as they provide a cost-effective way to improve fractious relationships between citizens and local government in fragile contexts.

This study is one of a series of regional studies which aim to present evidence of the interactions between environmental, social, political and economic risks at the local level in Bangladesh, India, Nepal and Pakistan.

‘The bottom line is that it doesn’t matter what the cause is, the reality is no one is acting with any foresight about the fact that Sindh is only 5 metres above sea level.’

(Official from Irrigation Department, Sindh)

1. Introduction

This case study looks at the dimensions of local resilience and the reasons for vulnerability and non-adaptation in two flood affected districts, Badin and Thatta, in Pakistan’s Sindh province in the southeast. The study aims to understand how fragility affects climate change adaptation and examines the consequences of climate change and climate-related interventions in these districts. It further seeks to identify obstacles to and opportunities for interventions to build resilience to interlinked environmental and security risks.

Climate change impacts will inevitably be experienced at the local level and, as a result, responses which address these local impacts will be the most effective. However, desk research in preparation for this project revealed that the large majority of policies on adaptation are made at the capital city or headquarters level. Furthermore, there is little empirical evidence of local-level experiences of the impacts of climate change, taking into account existing peace and security challenges faced in fragile contexts, available to inform top-down approaches.

In order to understand local resilience, the first question which this case study aims to address is: **what are the root causes of vulnerability (to climate and conflict risks)?** For this, we first looked at the nature of the environmental risks faced and their interaction with existing dimensions of peace and security at the household and village level. The second central question of this paper is: **how can external adaptation interventions (by the state or international institutions) address these root causes of vulnerability?**

This study is one of a series of regional snapshots, which aim to present current empirical examples and qualitative evidence of the interactions between environmental, social, political and economic risks at the local level in Bangladesh, India, Nepal and Pakistan. The research is part of a small-scale pilot project. It is therefore beyond the scope of this paper to provide a comprehensive national survey or in-depth analysis of climate data. Some of the views expressed will be contested, contradicted and contentious, but the research methodology aimed to ensure that as broad a range of views as possible could be collected, so that those developing adaptation responses could have a deeper understanding of the

complexities around perceptions and realities. It is intended that further analysis will build on these reflections as part of a necessary discussion on adaptation and resilience in conflict-affected contexts. A summary of key findings from across the four case studies and policy recommendations can be found in the separate executive summary.

2. Background and context

Pakistan is the seventh most populous country in the world, with 47 percent of its population dependent on agriculture.¹ According to the United Nations Development Programme (UNDP), Pakistan is the third most vulnerable country in the world to floods.² In 2010, Pakistan experienced extreme rainfall that resulted in the generation of unprecedented flood peaks in Swat, Kabul and Indus rivers, affecting the entire country. At the time, the National Disaster Management Authority (NDMA) estimated that the floods had affected 78 districts and approximately 20 million people, with over 1,980 reported deaths and nearly 2,946 people injured.³ The 2010 floods were concentrated along main rivers and caused by overflow of river banks and breaches of embankments. The following year in August 2011, severe flooding after torrential monsoon rains hit Sindh and Balochistan, affecting 9.6 million people, killing 520 and causing injuries to more than 1,180.⁴ Despite the climate and environmental challenges Pakistan faces, the budgetary allocation towards climate change does not match or reflect the severity of the threat. The national budgetary allocation for 2012–2013 towards climate change vis-à-vis the defence sector amounted to PKR 135 million⁵ (about €1.07 million) and PKR 545 million (€4.32 million) respectively. This reveals the primacy given to military defence rather than socio-economic threats posed by climate change.

Pakistan's 18th constitutional amendment, signed into law in 2010, aimed to decentralise administrative, financial and political power from the federal to provincial governments. For instance, under the 18th Amendment, environmental protection, which was initially included under the concurrent list of the constitution, became a provincial subject. The 18th Amendment also brought about the dissolution of the Ministry of Environment and the creation of a new Ministry of Climate Change. With the devolution of power, the responsibility to legislate on and regulate the environment rests with the respective provincial governments. However, except for Punjab, the other provinces have not enacted new environment legislation after the 18th Amendment. In addition, there are concerns regarding the ability of provincial officials to take on the new responsibilities and mandates.

1 Commonwealth Network (2012). *The Commonwealth yearbook 2012*. Pakistan country profile. Cambridge. Available at http://www.commonwealth-of-nations.org/xstandard/pakistan_country_profile.pdf

2 United Nations Development Programme (UNDP) (2004). *Reducing disaster risk: A challenge for development: A global report*. Available at <http://www.un.org/special-rep/ohrlts/ldc/Global-Reports/UNDP%20Reducing%20Disaster%20Risk.pdf>

3 Asian Development Bank (ADB) and World Bank (2012). *2011 Pakistan floods: Preliminary damage and needs assessment*. Available at http://gfdrr.org/sites/gfdrr.org/files/Pakistan_Floods_2011_DNA_Report.pdf

4 Ibid.

5 €1 = 126 Pakistani rupees (PKR) as at 29th March 2013.

This field study was carried out in the two districts of Badin and Thatta, located in the southern-most province of Sindh in Pakistan. Sindh regularly experiences a host of climate-related disasters, which include floods, cyclones and droughts.⁶ Sindh was worst affected by both the 2010 and 2011 floods. In the case of the 2010 floods, Sindh ranked the worst among the provinces in terms of estimated damages incurred by housing infrastructure, health facilities, education facilities, irrigation and flood protection, agriculture, livestock and fisheries, the private sector and industry.⁷

Although the 2011 floods were significantly lower in intensity and duration than the 2010 floods, in terms of their economic impact, especially in Sindh, its effects were as devastating. The precipitation in parts of Sindh during the months of August and September 2011 was estimated to be 270 percent above normal rainfall patterns. Combined with Sindh's low-lying and flat terrain, the continued heavy rains caused significant damages. In 2010, the total flood damage in Sindh was estimated at PKR 370 billion (€2.9 billion), amounting to 8.4 percent of estimated provincial gross domestic product (GDP); in comparison, the 2011 floods resulted in damages estimated at PKR 311 billion (€2.4 billion), or 6.1 percent of provincial GDP.⁸

Sindh is one of the most multi-ethnic provinces and its capital, Karachi, is a hotbed for ethnic, political and sectarian violence.⁹ Ethnic polarisation in Sindh is considered serious because of the presence of large ethnic groups and their clash of interests. For instance, tensions exist between Mohajirs and Sindhis, who make up the majority of community respondents for this study. Mohajirs are an Urdu speaking community, who migrated from India during partition and over time have dominated business and politics. Sindhis felt threatened by the growing influence and success of the Mohajirs, who were seen as a non-assimilationist, urban and privileged minority in Sindh.¹⁰ In the first two decades since the creation of Pakistan, Sindhi-Mohajir conflict remained low-key. The initial tensions between them were over the question of language. The declaration of Urdu as the official language of Pakistan in 1952 was perceived by the Sindhis as favouring the native Urdu speaking Mohajirs. Tensions also flared in the 1970s, when Zulfikar Ali Bhutto, an ethnic Sindhi and founder of the Pakistan People's Party (PPP), came

6 A. Nawaz Khan (2010). 'Climate change adaptation and disaster risk reduction in Pakistan', in R. Shaw et al (eds.), *Climate change adaptation and disaster risk reduction: An Asian perspective*. Emerald Group Publishing Limited. pp.97-215.

7 ADB and World Bank (2010). *Pakistan floods 2010: Preliminary damage and needs assessment*. Available at http://www.gfdrr.org/sites/gfdrr.org/files/publication/Pakistan_DNA.pdf

8 ADB and World Bank (2012). Op. cit.

9 For example, see news article: 'Sectarian violence: "16 killed in Karachi during last week,"' *The Express Tribune*, 31st December 2012. Available at <http://tribune.com.pk/story/487015/sectarian-violence-16-killed-in-karachi-during-last-week/>

10 Pakistan Institute of Legislative Development and Transparency (2011). *Ethnic conflict in Sindh*. Background Paper. Pakistan.

to power and instituted quotas for Sindhis. This limited the access of the Mohajirs to government jobs, educational seats and development benefits. At present, the Sindhi-Mohajir conflict seems to have been mitigated when compared with its former severity, but there is potential for the resurgence of violence between the two communities.¹¹

11 Ibid.

3. Methodology

Definitions

Climate risks are conceptualised as the product of exposure, sensitivity and adaptive capacity.

Exposure: ‘The nature and degree to which a system is exposed to significant climate variations.’

Sensitivity: ‘... the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli.’

Adaptive capacity: ‘The ability of a system to adjust to climate change to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.’¹²

The study opts to supplement the Intergovernmental Panel on Climate Change (IPCC) definition of adaptive capacity to take account of broader social issues. As such, we adopt the term “resilience”. The concept of resilience lacks a universally accepted and precise definition. However, for this project, we adopt a framework for resilience which is based on a broad conceptualisation of the term and which also draws on the principles of resilience to conflict.¹³

We define resilience as: ‘The ability of countries, communities and households to anticipate, adapt to and/or recover from the effects of potentially hazardous occurrences (natural disasters, economic instability, conflict) in a manner that protects livelihoods, accelerates and sustains recovery, and supports economic and social development.’¹⁴

When looking at exposure and sensitivity, this research does not aim to distinguish between climate change and environmental change, but rather looks at the two together. Only weather-related events – for example, storms, floods, drought, temperature extremes, extreme events and changing rainfall patterns – are incorporated.

¹² Intergovernmental Panel on Climate Change (IPCC) (2001). *Climate change 2001: Impacts, adaptation and vulnerability*. Annex B: Glossary of terms. pp.981-996. Available at <http://www.ipcc.ch/ipccreports/tar/wg2/>

¹³ See: D. Smith (2004). *The Joint Utstein study of peacebuilding*. Evaluation Report 1/2004. Oslo: Norwegian Ministry of Foreign Affairs.

¹⁴ Interagency Resilience Working Group (2012). *The characteristics of resilience building: A discussion paper*. Available at <http://community.eldis.org/?233@a.5ad4406d!enclosure=.5ad4406e&ad=1>

This study is looking at responses to climate variability which can build resilience to combined climate and conflict risks. It is worth noting here that it is violent and armed conflict that we are interested in preventing. **Conflict** occurs when two or more parties believe that their interests are incompatible, express hostile attitudes or take actions that damage the other's ability to pursue its interests. "Violence" is often used interchangeably with "conflict", but violence is only one means among many that parties might choose to address a given conflict. Non-violent conflict is a normal part of development and human interaction. When violence erupts, however, a profound breakdown in social relationships occurs that will have destructive effects. Armed conflict takes this even further, when violence is organised and sustained over a period of time.

Conflict sensitivity is defined in this project as the capacity of an organisation or individual to:

- Understand the context in which it operates;
- Understand the interaction between its operations and the (conflict) context; and
- Act upon the understanding of this interaction in order to avoid negative impacts and maximise positive impacts on the (conflict) context and the intervention.¹⁵

Site selection

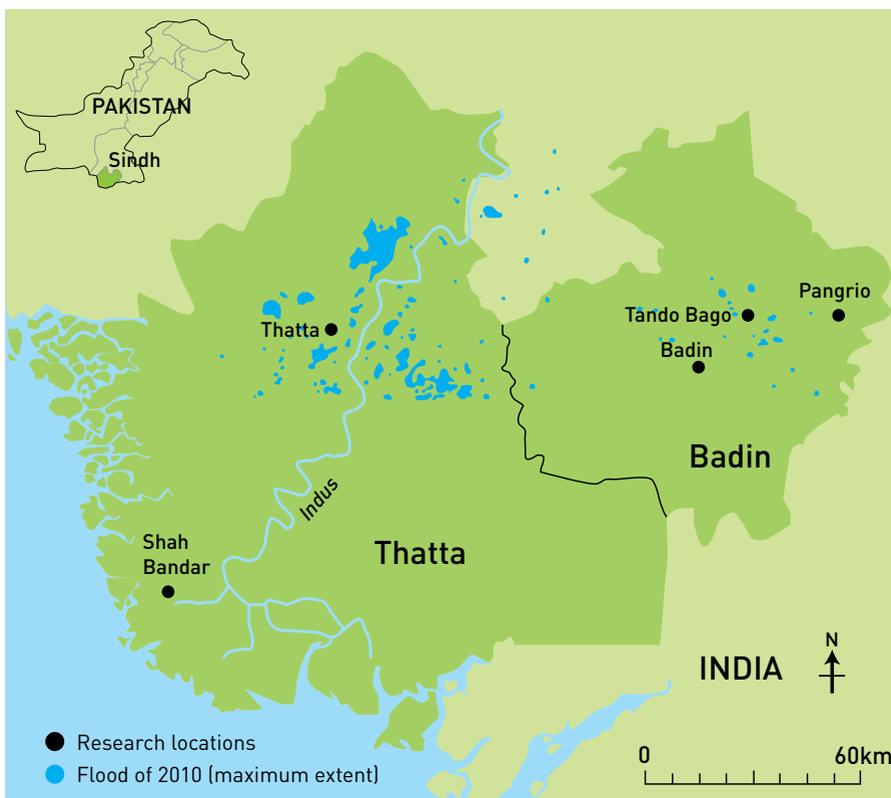
Thatta district is spread over 17,355 square kilometres in Sindh, Pakistan. The population of Thatta district was estimated in 2008 at 1.469 million, of whom 778,000 were male and 691,000 were female. Thatta was selected as a study site because of its coastal location and exposure and sensitivity to environmental risks, namely coastal intrusion and the floods in 2010 and 2011.

Badin district is almost one third the geographical size of Thatta, at 6,726 square kilometres, but far more populated. According to the 1998 census, it had a total population of 1.136 million. The urban population (excluding slum-dwelling communities) constitutes 16.5 percent of the total, whereas the rest of the population is living in rural areas or urban slums. The environmental risks in Badin are predominantly linked to extreme and unpredictable rainfall patterns, storm surges and cyclones. As well as the different environmental risks, Badin provides a more urban study site compared with the more rural Thatta, thus giving a balance of peri-urban and rural perspectives.

¹⁵ Conflict Sensitivity Consortium [2003]. *Conflict-sensitive approaches to development, humanitarian assistance and peacebuilding: A resource pack*. Available at <http://www.conflictsensitivity.org/publications/conflict-sensitive-approaches-development-humanitarian-assistance-and-peacebuilding-res>

Administratively, districts are subdivided into *tehsils* (*talukas* or sub-districts). These talukas include 55 Union Councils, 7,200 villages and over 190,000 households, with an average size of 6.5 persons per household. In Thatta, seven talukas are governed by their respective Taluka Municipal Administration (TMA), while the 55 Union Councils of the seven talukas are governed by the Union Council Administration (UCA).

Case study area: Thatta and Badin



Data collection and analysis

Data collection methodology drew on grounded theory (GT) and elements of structured focused comparison (SFC). Given the small-n and comparative nature of the study, grounded theory alone would not have been suitable to build a theory based on such a small and diverse sample size. However, since the first aim of the

research was to understand the dimensions of resilience and the implications of climate change and conflict, aspects of the GT approach offered an effective way to conceptualise what was going on. The broad survey questions were designed to be sufficiently open to capture what specific issues were being faced at the local level, what the main challenges faced by the participants were and how they were trying to solve these challenges.

The interviews were structured and questions were loosely focused around the independent variables (climate and environmental change events, the political context and external interventions). However, they were sufficiently open to also capture other factors outside of these which could play a significant role in affecting resilience as well.

The study adopts an analytical framework for resilience which aims to understand the root causes of vulnerability to complex risks, as identified by respondents in the field research. The framework thus integrates a livelihoods approach and disaster risk reduction approach. Moreover, given the focus on fragile contexts, it draws heavily on the peacebuilding frameworks¹⁶ which identify the foundations for peace and security.

The field research is based on key informant interviews and focus group discussions with 168 respondents¹⁷ from women's groups, natural resource user groups, the business sector, local media, local line ministries and beneficiaries of local development projects. The research team visited five villages in the Badin and Thatta¹⁸ districts from 6th to 24th December 2011 and from 5th to 14th March 2012.

To supplement the field research, a desk review of national policies was conducted and an additional 16 experts from non-governmental organisations (NGOs) and international institutions were interviewed in Islamabad between 14th and 19th March 2012. Based on these findings, we identify facets of national and external interventions which have affected, or have the potential to affect, community resilience to climate and conflict risks. The final section of this case study identifies key actors and priority areas of engagement to effectively strengthen resilience to climate variability, while doing no harm to peace and security.

¹⁶ D. Smith (2004). *Op. cit.*

¹⁷ Some 41 respondents were female. All efforts were made to ensure that different socio-economic, age, ethnic and religious perspectives were also covered in our selection of respondents.

¹⁸ The villages visited were Keti Bander, Shah Bander, Chuhar Jamali and Badin.

4. What are the climate and environmental change related risks faced by communities?

Storms

In the North Arabian Sea, the ocean reaches its warmest temperatures in the month of May, causing intense storms and rainfall. The cyclones generated in the Arabian Sea normally move in the west-north-westerly direction. The pattern of emergence of cyclones is changing and the coastal areas of Pakistan are facing an intense frequency of storms. A cyclone that appeared on 12th May 1999 changed its direction and hit the coastal area of Badin. In June 2007, although two tropical cyclonic storms, Gonu and Yemyin, hit the Balochistan coast, devastating effects were felt all along the Sindh coast. More recently, on 6th June 2010, the tropical cyclone Phet landed on the coast of Oman and lost its intensity. It moved clockwise, causing heavy rains on the coast of Pakistan's Balochistan province in the southwest. The rain-bearing winds then moved along the coastline towards Karachi and brought 100 millimetres of rainfall to Karachi before landing south of Thatta district.

Floods

The two sources of floods in Sindh – riverine and torrential floods – mostly occur during the monsoons between July and August. Riverine floods are often predictable and therefore responses can be planned, whereas torrential floods are more sudden and therefore afford less time to respond. They are also more intense due to the sudden cloud burst, although they occur less frequently. The catchment area of these floods is in Balochistan, which is connected to Sindh through the Khirthar range.

In July 2010, Balochistan experienced heavy rainfall and the huge influx of water hit the eastern boarder of Sindh, causing devastating damage and affecting approximately 1.4 million people. This unprecedented flood even destroyed the flood protection network of the Right Bank Outfall Drain (RBOD) and the Main Nara Valley Drain canal. The flood exposed the weaknesses of unplanned drainage projects by the Water and Power Development Authority of the government of Pakistan. Although government efforts were substantial, they were still considered to be reactionary rather than precautionary. Before the construction of development projects to channel and store water, the natural drainage system in Sindh worked well and carried torrential flood waters into the Indus River. The construction of the Sukkur and Kotri barrages changed the course of the natural drainage system.

Moreover, the construction of the RBOD, which was initially designed to drain effluent from four districts of Sindh, is doing the opposite due to poor engineering and unplanned construction.

In July 2011, Pakistan experienced below normal monsoon rains. However, in August and September, a strong weather system entered the areas of Sindh from the Indian states of Rajasthan and Gujarat, gaining strength and causing heavy downpours in the southern part of the country. The four weeks of continuous rain created an unprecedented flood situation in Sindh. According to estimates, the total volume of water received in Sindh during the four weeks was above 37 million acre-feet.¹⁹

While the rainfall was exceptional, all respondents in our research acknowledged that the outflow drainage systems are a major causal factor of floods. Moreover, they will continue to be so in the face of climate change, which is likely to see increased and more intense rainfall (see Box 1).

Box 1: The role of the Left Bank Outfall Drain in flooding

The Left Bank Outfall Drain (LBOD) is the largest irrigation project carried out by the government of Pakistan and funded by the World Bank. The project started in 1986 and 85 percent of it was completed by 1999. The rest of the project is still being carried out by the National Drainage Programme (NDP) through smaller projects known as the Right Bank Outfall Drainage (RBOD) project and the Kadhan Pateji Outfall Drain (KPOD).²⁰ The project is designed to control water logging and to drain saline water from the plains and the Badin district in Sindh into the Arabian Sea. It is one of the most controversial projects in the history of development in Pakistan. Due to numerous gaps in community consultation, its design and implementation, the project has been responsible for causing serious socio-economic and environmental impacts in the region. Major technical flaws have been identified in the LBOD. The LBOD canal was designed to collect saline water from the ground and drain it into the sea; however, in practice, it is doing the reverse, allowing sea water to intrude through canals. It was built against the contour of the land and as such prevents the flow of sewage and industrial effluent into the sea, instead washing it inland and affecting groundwater quality as well as causing contamination. This water is still used by communities for agriculture and domestic purposes, despite being severely polluted.

¹⁹ Obtained from the website www.Pakmet.com.pk

²⁰ 'Left Bank Outfall Drain', *Pakistan Today*, 18th May 2012. Available at <http://www.pakistantoday.com.pk/2012/05/18/comment/editors-mail/left-bank-outfall-drain/>

The majority of community respondents in our study identified the LBOD and RBOD as the most significant cause of their vulnerability to environmental change. This perception was backed by expert key informants, who identified the LBOD and RBOD as unfit for purpose. In Badin, the 1999 cyclone hit 41 kilometres of the LBOD canal, which because of its low capacity was unable to withstand pressure and split in numerous places. These breaches resulted in degradation of arable land and contamination of groundwater, causing massive damage and displacement of lives, livelihoods and livestock. During the 2003 floods, the drains swelled beyond capacity and resulted in overflows.²¹ Similarly, in 2008 and 2011, the outfall drains were unable to cope with the extra water flow from heavy rainfall and contributed to devastating floods. The drains prevented the excess water from entering the river and the flooding was caused by the lateral flows in Sindh.

According to a respondent from the Irrigation Department: 'Rainfall is not unprecedented in Sindh and it has been increasing for the past five years, but no plans have been put in place to increase the capacity of the drainage system.' Local communities in Badin complain that had the LBOD not existed, cyclone-related losses could have been minimised and groundwater would not get contaminated.

Community members involved in this study were highly aware of the observable impacts of the LBOD and RBOD, and were very resentful of this. Many claimed that they 'are now against the government', citing the LBOD and RBOD as the main reason.

The major issues underlying the failure of the project are political influence and appointments, along with the lack of stakeholder consultation. Local oversight was ignored and the project was implemented without stakeholder consultation and without critical aspects of the project being communicated, such as design and risks, implications and benefits. Communities in the region are against the government and resentful of the project. According to an Irrigation Department official: 'The whole system (LBOD) was put in place by politically appointed people rather than technical people. In the whole department, there is only one technical person and the rest are political appointments of two landlords.'

The government of Pakistan has admitted that the RBOD has been dumping saline/agricultural wastewaters into the drainage system. As a result, it has come up with a plan – RBOD-II – to divert the contaminated waters of the RBOD to the sea through a new drainage system. According to expert respondents, this six-year project has latent flaws – most notably the fact that for a 3-kilometre

²¹ 'Revisiting the LBOD issue', *Dawn.com*, 6th October 2011.
Available at <http://x.dawn.com/2011/10/06/revisiting-the-lbod-issue/>

stretch, the RBOD-II will share its banks with the Indus River, increasing the chances of the contaminated waters flowing into the Indus.

Until drainage infrastructure in Pakistan can cope with current rainfall trends, disaster risk reduction activities will largely only help to manage and respond to disasters, but not to prevent or mitigate them. International development activities which focus on flood prevention and disaster management only address symptoms and not the social and political causes of flood risk.

During the field survey, it was observed that a 25-kilometre coastal belt (from sea to land) of Badin has been lost due to water. With this long history, it is surprising that there is no early warning system for floods in Sindh. According to key informants from the Irrigation Department, government expenditure on flood warning systems would incur less than spending on the repair of damaged infrastructure and the rehabilitation of affected communities. Employees of the Irrigation Department also communicated the importance of road infrastructure in obstructing the flow of flash floods. However, in Badin district, recently constructed roads by the National Highway Authority or the Provincial Highway Department have had inadequate cross drainage provision.

Drought

There is also a cycle of drought and heavy rain of 200 millimetres every four years. The frequency of droughts has increased in recent years. The drought spell usually occurred in five out of 10 years, but has now started occurring in three out of 10 years. The worst drought spell which the project area experienced was from 1997 to 2000, during which there were severe losses to agricultural production. This exposed the serious shortcomings of the country's water sector. The drought conditions were also responsible for the emergence of deadly diseases, malnourishment, school drop-outs and the involuntary migration of people. The drought conditions further aggravated the problems of sea water intrusion in the project area, loss of pastures, and depletion and deterioration of groundwater reservoirs.

5. What are the pre-existing social, political and economic risks faced?

Sindh faces multiple internal security risks linked to social, political and economic factors across all tiers of its society which determine how power is distributed and used. Some of these risks date back to the creation of Pakistan in 1947, which was mobilised on the basis of religion and whereby its political structure took a military stand primarily due to the insecurity arising out of the disputed Kashmir region. Since then, for almost half of its existence, Pakistan has remained under military rule, with the president wielding enormous power over the country.

Political risks

Governance in Pakistan is stratified along different formal tiers such as federal and provincial, each with their different remits; but it is also stratified along informal structures, such as landlords and religious leaders.

A number of key informants from international institutions cited the lack of clarity over governance roles and remits as a significant challenge to working in Pakistan.

In 2010, political restructuring was carried out under the 18th Amendment of the constitution, which led to the decentralisation of numerous functions, including social welfare and essential facilities from federal to provincial authorities. The restructuring mandated the establishment of local governments in the provinces; however, the capacity of provincial governments to assume effective regulatory authority in these areas is a source of concern. Other concerns arise from the lack of clarity on how provincial authorities will be constituted and regarding which administrative and financial authorities will be delegated to them.²² The balance of power and allocation of resources between the provincial²³ and the federal government has especially been a source of conflict in Pakistan. The relatively centralised and non-elected political structure enabled the ruling elite (mostly feudal lords) to play a dominant role over the national and provincial policies.²⁴ This marginalisation resulted in communities²⁵

22 M. Hussain and R.U. Kokab (2012). 'Eighteenth amendment in the constitution of Pakistan: Success and controversies', *Asian Social Science*, Vol. 8, No. 1. Available at www.ccsenet.org/journal/index.php/ass/article/view/11145

23 Provinces are regions established around linguistic groups.

24 N. Ram and A.H. Ansari (2011). 'Income patterns and determinants of rural poverty in two districts of Sindh', *Australian Journal of Business and Management Research*, Vol. 1, No. 7. Available at http://www.ajbmr.com/articlepdf/ajbmr_17_18i1n7a5.pdf

25 'Pakistan is an ethnically complex country, with numerous variables to ethnic identity that include religion, language, region, race and caste'. Cohen, S.P. (2004). *The idea of Pakistan*. Washington DC: The Brookings Institution.

mobilising along ethnic and linguistic lines to seek power through insurgent movements.²⁶

There was consensus among key informants and community respondents (with the exception of feudal landlords) that federal governance reach in the provinces is weak. Under the 18th Amendment of the constitution, the provinces are given increased financial allocations, but no other technical support. Our study in Sindh shows that the provinces do not have sufficient capacity to take on all these new responsibilities. For example, there is no guidance or information on how to plan and prioritise or on whether to cooperate over province borders on state-wide issues such as education and pollution. According to one bureaucratic key informant at the provincial level, ‘the federal government is suspected by provincial authorities of a plan to sideline them, and the political parties that compose provisional power structures are in favour of tighter links with local authorities’. Local government ranks, in turn, are also faced with loyalty obligations towards tribal and feudal networks. Significant power is held by landlords (*vadairas*). One key informant suggested that local feudal leaders exploit this rivalry between the federal and provincial level to obtain concessions for their local constituencies.

Informal governance structures and processes play a dominant role in most of the decision-making processes at the local level in Pakistan. Historical and cultural traditions, complemented by the absence of solid state institutions, has meant that access to and control of power at the local level is in the hands of a few *vadairas* or feudal lords in the case of Sindh. In both Badin and Thatta, the provincial government representatives, i.e. Members of Provincial Assembly (MPA), are also the local landowning elites. In Thatta, the *vadairas*/MPAs own 10,000 acres of land. Thus, households living and/or working on a landlord’s land would be disinclined to vote against their landlord’s political party at election time, as their lives and livelihoods are also in the hands of this individual. Local people living on this land stated that their livelihoods are entirely dependent on remaining in favour with the landlords; as a result, local people are reluctant to question, challenge or demand rights from their landlords.

Respondents explained that at election time, the government distributes government land (often barren, unproductive land or floodplains which are vital buffers against coastal intrusion) to the local community. According to a number of respondents, the *Vadaira*’s decision of who is to receive the plots is often biased. According to a local *Hafiz* (religious elder), the situation of landownership undermines community resilience, because marginalised communities do not wish

26 K. Adeney (2007). ‘Democracy and federalism in Pakistan’, in He, B. et al (eds.), *Federalism in Asia*. Cheltenham: Edward Elgar. pp.101-123.

to speak out against their landlords over resource allocation for fear of losing their homes and their livelihood. This trend of acceptance of elite power in terms of land is also reflected in the judiciary and legislature. For example, when people have disputes, they prefer to go to their landlords rather than the court of justice, so as not to be perceived as disrespectful.

Economic risks

Sindh agriculture's contribution to GDP is 23 percent, with the major products being rice (42 percent), sugarcane (31 percent), cotton (23 percent) and wheat (15 percent), along with marine fish (70 percent) and livestock (28 percent).

According to key informants from the local Irrigation Department, agricultural production in Sindh has been affected by a shortage of irrigation infrastructure and fresh water, decreasing arable land mass, water logging, and salinity which results in low yields.²⁷ In 1998, over nine million hectares of land were affected by water logging and six million hectares by salinity in the Punjab and Sindh provinces. The national economy shows an increasing incidence of poverty, with 32.6 percent of the population still living below the poverty line; the high level of rural landlessness (over 20 percent of those engaged in agriculture) contributes to this.²⁸

A number of community respondents commented that a small percentage of citizens controlling large areas of arable land has resulted in fewer resources for the remaining population to share. Young people interviewed noted that jobs are becoming increasingly limited as there is a quota system in public sector jobs in Sindh. A number of respondents reported that jobs were allocated to individuals on the basis of political affiliation and influence, rather than on merit. This has created situations where parents are not interested in educating their children. There was a general perception among the respondents in this study that it is better to only have basic skills and take up a small business than to go to school and pursue an education. According to one official, 'the problem now is the continued employment of unskilled high-level people – political appointments who don't have technical knowledge or incentive'.

27 A. Salman (2009). *Decentralization in Pakistan: Lessons and challenges*. Available at <http://ssrn.com/abstract=2051887>

28 Population Council (undated). *Population, socio-economic and development profile of Pakistan*. Available at www.pap.org.pk/population/pdf/population.pdf

Social risks

Social cleavages were frequently identified by key informants and community respondents alike. The influence of respondents' perceptions of different groups was particularly evident to the research teams. Feudal culture is stronger in Sindh than in Pakistan's other three provinces. A large proportion of the rural population, both men and women, work as labourers for agricultural landowners or *vadairas*.

The way in which access to natural resources, such as land and water, is governed is predicated on feudal power structures which favour higher status Muslims from the Sindh province over other identity groups, such as Hindus and ethnic Punjabi or Pashtun migrants. Bonded labour is illegal but widespread, and workers remain indebted to their landlords for generations. Accordingly, some respondents noted that displaced households have not returned to their area of origin out of fear that their landlord would force them to either account for crops destroyed by the flooding or to return money given to them for seeds. Respondents who were displaced explained that faced with the prospect of being forced to return to their work as bonded labourers, they have sought alternative livelihoods near their home areas.

Tribal and religious differences are also pronounced in Sindh.²⁹ The village elders in Thatta noted that conflicts over canal water arise more in inland areas than in coastal regions. As a reason, they cited 'better harmony among people' when there is better water supply in coastal areas. This view was also reflected in coastal villages, but the reason given was different: different groups within coastal communities are more uniformly blighted by poor water access, whereas inland communities can access fresh water if they have the financial and political capital.

29 Tribal groups in Sindh include the Malkani, Abasi, Chandio, Jokhio, Jatt and Malhar.

6. What are the likely new and future vulnerabilities?

When asked about changes that would make their lives better, the respondents showed a strong trend of **low aspirations for a change** in lifestyle. One key informant put this down to traditional systems of living and tribal affiliations which supported preservation of the status quo. It was notable that respondents who did express demands for a better life were those who had previously been beneficiaries of humanitarian aid projects in the flood-affected sites. These respondents did not speak of their own agency for change, but rather expressed an idea that they were waiting for external actors (although not the state) to do so. People's expectations of aid agencies rather than of the state in addressing governance and service delivery gaps could be problematic if they grow.

A significant majority of respondents cited **water supply** as a future risk to their lives and livelihoods. According to government respondents, piped water is available to only 20 to 25 percent of households in the study districts. In the rural coastal areas visited, hand pumps, wells and ponds were used equally as a source of drinking water outside the housing units. In more remote areas, people also share water from a well that has been dug. Since both Badin and Thatta are at the tail end of the Indus River system, these districts receive the poorest quality fresh water due to inadequate discharge of water into the river barrage upstream. According to local NGOs, and our own tests, the quality of water is harmful from a public health point of view. This issue is already a source of interprovincial and even intra-provincial conflict, because upper-riparian communities (both within Sindh and across the provincial border in Punjab) are using and polluting the water, thus fuelling grievances among the downstream Sindhis. Local district government provided water supply lines to many villages, but these schemes are largely non-functional. The existing irrigation system put in place through government water development projects is seen by local community as a "curse". Unregulated overexploitation of groundwater has rendered low levels, which are highly saline due to sea water intrusion. Respondents explained that they have no other option but to drink this hard water. One *Hafiz* stated that people cannot complain, because the parties responsible for over-extraction of water are also the landowners and the political representatives of the aggrieved parties.

7. Are there observable constituent factors of resilience in this context?

Box 2: A historical perspective

In the 1700s, Shah Bandar was a large port city, with a thriving economy based around ship building and the docks. However, in time, the main estuary dried up due to siltation and most dockworkers moved inland to become farmers and fishermen. Many families migrated to Karachi. Shah Bandar is now hundreds of metres inland, yet shifting coastlines and increasing salinity are threatening the viability of the predominantly agricultural livelihoods of its present inhabitants. According to a local historian, this historical view shows that people adapted once before by moving and making a wholesale shift in livelihoods from ship building to fishing and farming. Therefore, they can adapt again. The local historian believes that initiatives to build resilience but keep people in situ risk ignoring the fact that ‘throughout history, people, particularly on the constantly shifting coastline of southern Pakistan, have always moved to adapt to the capricious waters of the Indus and the sea’.

Based on our interviews at the community and capital city level, the following processes and mechanisms emerged as having a positive impact on some of the underlying risks identified above.

Watan cards

The *Watan* card scheme is a cash transfer scheme launched by the government of Pakistan to compensate families directly affected by the 2010 floods. The idea was to issue debit cards carrying compensation money, with a future transfer to be made depending on need and criteria. However, the scheme faces several technical and administrative difficulties on the ground, including: delays in getting access to money; monitoring and follow-up problems as a result of black marketing and irregularities in the beneficiaries list; and, most importantly, lack of facilitation, training and information on the scheme. In Sindh, we were informed that in the first year of the scheme, the most vulnerable of the groups (such as female-headed households) were not issued with *Watan* cards as they did not possess an identification (ID) card, which was a requirement. According to a key informant from the donor community, the local government’s capacity and problem of communicating information have been the biggest obstacles to the execution of the scheme. The high profile of the initiative has meant that any pitfalls and

teething problems have resulted in significant negative discourse in the media and among more educated citizens. However, positives identified by beneficiaries are that the *Watan* card has necessitated the need for ID cards, which is a tangible sign of building state-citizen relationships. Nevertheless, community members in Thatta noted that there was some confusion among the villages between the *Watan* card and other cash transfer schemes run by other development agencies which bypassed the national initiative. This has caused some duplication of resources going to the most politically connected and educated community members, who are informed enough to tap into these resources.

Pakistan Poverty Alleviation Fund (PPAF)

The PPAF was set up in 2000 to enhance the access of low-income communities to socio-economic services. It is a type of private, not-for-profit, limited company, which aims to reach the poor communities through the NGOs and community-based organisations (CBOs). In addition to the government of Pakistan, the World Bank is the major contributor to the PPAF project. To begin with, the PPAF has signed agreements with five partner organisations (POs) to disburse PKR 5 billion (€39.63 million) over the next five years. The five POs are: the Taraqee Trust, Quetta (Balochistan); the Agha Khan Rural Support Programme (AKRSP), Gilgit (Northern Areas); the National Rural Support Organisation (NRSP), Islamabad (Federal Area); the Family Planning Association of Pakistan (FPAP), Lahore (Punjab); and the Kashf Foundation, Lahore (Punjab). The benefits of the project are to be targeted directly at the poor through: income generation opportunities; improved community physical infrastructure in the underserved areas; and greater economic integration of women. Keeping in mind the positive impact of micro-credit on the poverty level of the country, it is suggested that the PPAF may extend its outreach through its participatory organisations to all the poverty clusters across the country.

8. What are the gender dimensions of climate risk and resilience?

When asked about their priorities, particularly in the face of further flood risks in the future, male respondents said their greatest needs were food, cash and shelter, while women said they needed food, healthcare services and household items. Both men and women identified housing and livelihood support as priority recovery needs. Livelihood support is not a straightforward issue due to the continued practice of bonded labour in many parts of Sindh. In some Muslim communities, women spend most of their days behind *pardah*, engaged in domestic work or handicrafts such as embroidery, which they sell for income. In poorer, rural farming communities, or in different tribal communities, women work in the fields for an average of 12 to 18 hours every day.

Respondents also noted that children are less likely to go to school, instead being expected to support with income generation work when crops are poor. As a result, children's education levels are diminishing. This anecdotal evidence is supported by national statistics, which show a steady decline in school attendance rates.

Even though both male and female respondents noted an increase in waterborne health problems – such as skin infections, diarrhoea, thyroid problems, and kidney and eye infections – social barriers prevent women from visiting male doctors and there were no female doctors. No villages visited had access to mother-child healthcare facilities, either because none exist in the local vicinity or because facilities are too far away or ill-equipped. However, in one study site, a mobile female health unit would visit women and children in the villages in Thatta as part of a polio eradication project.

9. How do climate events affect resilience factors?

The project area is vulnerable to cyclones, intense floods and drought, which further depreciate the amount of natural resources available in the area. Key informants and respondents from the farming community noted that the floods have changed the quality and location of arable land. The flood induced changes have caused increased competition over land for habitation and farming. They have also increased poverty and ethnic divisions, challenging the fragile stability of the communities in our study area. These conflicts over vegetation and fauna in turn have a knock-on effect on the resilience of the broader ecosystem.

Conflicts over vegetation, pastures and grazing land

Abnormalities in rainfall pattern are responsible for the loss of vegetation cover in the coastal areas. The invasive species *Prosopis juliflora* is now predominant. The *Acacia senegal* and *Lohiro* tree species are under stress or threatened, as they are required to meet the urban as well as industrial demand for firewood and charcoal. The extensive deforestation of indigenous species to meet the demand for wood for domestic and commercial purposes has led to the impoverishment of the only resource for which the rural poor did not have to pay. This has created local conflicts between local people and the owners of charcoal kilns over access to and use of wood.

The loss of vegetation cover has an adverse impact on the environment in the form of desertification, land erosion, and the consequent increase in heat capacity of the soil as well as aridity of the atmosphere. The net result of urban demand is therefore impoverishment of resources and perpetuation of poverty, making the poor poorer. This supports the hypothesis that poverty per se is not a problem of the coastal area of the underdeveloped regions; it is the impoverishment of resources that is the cause of conflict.³⁰

Another risk to resilience directly related to climate change is the loss of grazing areas and pastures. These grazing lands mostly belong to the wealthier landlords or influential tribes. Land previously used for grazing has either been diverted by landlords to agricultural use or has become degraded due to lack of water or sea encroachment. Moreover, in the rural communities where livestock is an important source of earning, income from livestock is declining. During the summer, people from the water deficient Thar area mostly come to Badin to graze

³⁰ Interview with Dr Mirza Anshad Ali Beg, former Director General, Pakistan Council for Scientific and Industrial Research, Karachi.

their animals. This tradition has been practised for a long time. However, due to limited vegetation cover, the natives of Badin no longer allow Thari people to graze on their land. According to community respondents from Badin, these conflicts are affecting their income and weakening the status of the local communities.

Conflicts over fauna species

The coastal area of Sindh is an important wintering ground for migratory birds, as it provides a series of waterways and wetlands. These migratory birds are a source of attraction for tourism, providing limited if not substantial benefit in terms of poverty alleviation for the local population.

Climate change abnormalities responsible for the destruction of vegetation cover, along with fragmentation and degradation of natural habitats such as forests, rangelands and the freshwater and marine ecosystem have resulted in a sharp decline in the number of these migratory birds. In addition, there is a strong tradition of hunting in Pakistan, whereby illegal hunting is organised by informal facilitators for landlords and the powerful political elements. These landlords make their land available for hunting at a certain hidden cost. The facilitator arranges the logistics and welfare of the hunter without receiving permission or by bypassing the laws of the Sindh Wildlife Department. The latter department has full authority to control hunting sports and to restrain poaching of wild birds and animals for trade purposes. However, the control by the local authorities of illegal poaching and hunting is ineffective, especially against influential personalities who support this traditional game.³¹ The conflict between conservationists and officials remains unresolved, with the former having little influence over the latter, who have political backing.

Conflict in the fishing sector

The effects of climate change are directly and indirectly impacting on Pakistan's fisheries sector. One of the significant problems is the low discharge in the Indus River, which used to recharge the deltaic region. This region serves as a breeding ground for fish and other marine life. The deltaic region is also badly affected by aquatic pollution. The loss of fertile agricultural land has compelled communities to change their profession from agriculture to fisheries. This has resulted in the overharvesting of fisheries. It has been reported that the total production of fish in

³¹ Ibid.

Sindh declined from 72.9 percent in 1975–1976 to 68.2 percent in 2002–2003.³² Due to the overharvesting of fish, many species have become extinct or are at the verge of extinction, including the famous Palla fish.

Because of the abrupt environmental change and water scarcity, fertile agricultural land is decreasing and limited areas are available as pastures. Respondents from the Jatt community, traditionally involved in agriculture and livestock, explained that they have therefore been forced to take up fishing as their prime profession. Most of the people from the Jatt communities are untrained but are increasingly becoming the biggest competitors to local fishermen. Local fishermen warned that the Jatt use harmful, illegal nets (locally called *katra* or *gujo*) that have an extremely low mesh size, allowing them to catch the tiniest of fish. Respondents also stated that there is no alternative to fishing for them and that they do not engage in any savings scheme: ‘If there is a good catch, then we might earn a big amount, but if the catch is bad, we have nothing.’ There were no regular investment or saving schemes at the community level; as a result, the money during the good catch seasons was not being invested to cover lower income spells when catches were poor. One fisherman noted: ‘We don’t think about the future, we live in the present.’

Table: Climate change impacts and their implications for conflict drivers

Climate/Environmental change impacts	Implications for existing conflict drivers/risks to peace
Floods and storms affect the quality and viability of land for shelter and farming	<ul style="list-style-type: none"> • Wealthy individuals who can afford equipment to dig irrigation channels and bore holes claim water for agriculture and domestic use • Poor farmers become more dependent on landlords for day work and access to water • Political representatives have more power to offer natural resources in return for political favour • Social hierarchy divisions are reinforced • Grievances/frustration towards political representatives are reinforced • The social contract is eroded, as a result of which people seek alternatives (military, extreme religious groups)

³² M.P. Wasim (2007). ‘Issues, growth and instability of inland fish production in Sindh (Pakistan): Spatial-temporal analysis’, *Pakistan Economic and Social Review*, Vol. 45, No. 2, pp.203-230.

<p>Crop failures</p> <p>Increased dependence on fishing</p>	<ul style="list-style-type: none"> • Food insecurity, change in diets causing health problems • Resentment of (and violence related to) external intervention • Increased unemployment – especially among young men, some of whom turn to criminality
<p>Increased natural disasters causing more deaths and injury</p>	<ul style="list-style-type: none"> • Loss of assets in natural disasters • Reduced access to health and education • Military (navy) intervention in disaster response where local government capacity is weak (leading to a risk of increased support for military) • Reduced per capita income due to deaths and injury within households (especially of men)
<p>Natural disasters disrupt traditional land rights</p> <p>Changes in supply of and access to water</p>	<ul style="list-style-type: none"> • Rights to land or compensation are allocated on the basis of ethnic, religious or caste lines, or political allegiance • Rights to reserve land are granted as political favours (particularly around upcoming elections) • Existing tensions are fuelled over access to and quality of water for downstream users (between state and across state borders)
<p>Health problems rise due to salination of drinking water and the food chain, and because of the pollution of drinking water due to poor flood drainage systems</p>	<ul style="list-style-type: none"> • Increased pressure on urban centres as a result of rural-urban migration • Decreased livelihood options; more children work rather than go to school • Falling literacy levels trap the next generation into unskilled labour, with no hope of better prospects; lack of hope can be hijacked by criminal or opposition groups

10. How does the national political context affect resilience?

Low level of attention to climate change

Based on our key informant interviews with international institutions and government officials in Karachi and Islamabad, the governing hierarchy is not sufficiently interested in understanding what climate change really means to national development priorities. According to one NGO respondent: ‘Under these circumstances, there is no clear opportunity for climate compatible job creation.’

The move towards decentralisation and provincial autonomy

Following the 18th Amendment of the constitution in April 2011, several ambiguities and overlaps have arisen with respect to power and responsibilities between the federal and the provincial governments. According to NGO and civil society respondents, the devolving of the environmental issue to the provinces has been problematic. For instance, respondents gave numerous examples of shortcomings in the provincial government’s capacity and willingness to independently implement environmental policies, especially relating to international conventions and funds.

In an attempt to address these shortcomings, the government is creating new institutions and processes are becoming institutionalised. International and national level environmental policy functions were assigned to the National Disaster Management Division, which was thereafter renamed the Ministry of Climate Change. Another ministry has also been created – the Interprovincial Coordination Ministry, responsible for the promotion of interprovincial coordination and uniformity of approach with regard to socio-economic policy issues to formulate policies for common national concern. Key informants from the local government ministries stated that these processes and institutions provide an important opportunity to address the country’s critical socio-economic security issues, but that their impact will only become clear over time. Two respondents noted that this timeframe may not be compatible with the political flux anticipated around Pakistan’s forthcoming national elections in March 2013.

Controversies over the allocation and use of water

The way in which water is allocated at the national level has a significant impact on local resilience. These decisions are based on historical trans-boundary agreements between India and Pakistan – namely, the World Bank facilitated Indus Water

Treaty, signed in 1960 by Pakistan and India. Under the treaty, Pakistan was given the right to use the waters of western rivers (Chanab, Jehlam and Indus), while India was given the right to use the waters of eastern rivers (Bias, Sutlaj and Ravi).

At the local level, issues regarding the water supply between Sindh and Punjab interact with perceptions of national government mismanagement of water infrastructure. In 1945, a committee composed of chief engineers of Punjab and Sindh devised the Sindh-Punjab Agreement. This agreement stipulated that a hydrological regime could not be changed upstream without the consent and approval of the lower riparian. Water issues between India and Pakistan are especially pronounced in Sindh, given its border with Indian Punjab. Tensions among the lower riparian erupted when Punjab constructed a link canal – called the Bambanwala-Ravi-Bedian-Depalpur (BRBD) link canal – in the 1950s without the consent and approval of Sindh.

The local people of Sindh argued that the construction of Guddu and Kotri Barrage, which were within the purview of the Indus Water Treaty, was done without the consent of Sindh. The government of Pakistan knew the severity of the issue but did little to resolve the water-related issues in the country. The only positive outcome was the Indus Water Accord of 1991, a national treaty of Pakistan, which came into force, albeit without extensive consultations with provincial governments. According to the accord, the total water available in the system was estimated to be 114.35 million acre-feet (MAF) below rim stations. It was allocated at 55.95 MAF for Punjab, 48.76 MAF for Sindh, 5.78 MAF for Khyber Pakhtunkhwa (KPK), and 3.87 MAF for Balochistan. However, under the accord, only 10 MAF were allowed to be discharged into the sea downstream at Kotri Barrage. But a 10 MAF downstream discharge is insufficient to recharge the Indus Delta. According to a technical expert at the International Union for Conservation of Nature (IUCN), for adequate recharge the water discharge at downstream Kotri should be 20 MAF. Despite the existence of the accord, local people in Sindh feel that they are not receiving their due share.

Respondents mentioned frequent local protests and interprovincial violent conflicts over water between Punjab and Sindh. Landowners in Thatta stated that there are more *vadairas* from Punjab than Sindh represented in the main national assembly and that, as a result, Punjabi landlords have more power over decisions made by the central government. The view that agriculture in Punjab is seen as a higher priority for national government than in Sindh was reflected in both the key informant interviews in Islamabad and the interviews with experts and bureaucrats in Sindh. According to one farmer: ‘Agricultural livelihoods in Thatta are a low political priority for national government.’

Fishermen stated that they have also taken their local protest to Karachi and Hyderabad. The collective action has been mobilised through NGOs such as the Fisherfolk Forum. Respondents noted that conflicts were more militant before 1999, although they are still ongoing.

Taxation

Another grievance felt by the poor is the fact that there is no agricultural tax on land; as a result, landlords are not directly taxed for their large holdings or agricultural yield. Instead, respondents contend that taxes are levied against the rest of the population, the majority of them landless, who work for the landlords and face heavy economic burdens due to taxes levied on goods such as food and phone cards. Community respondents perceived that these are regressive taxes felt mostly by the poor rather than the landowners, and they raised concerns about the lack of justice regarding this situation.

11. How do external interventions affect resilience factors?

Various manifestations of climate change have prompted the government to take some steps towards addressing the issue. In 2010, a taskforce was set up to report on climate change impacts. In addition, a strategy framework for climate change – the **National Climate Change Policy (NCCP)** – is in the process of finalisation.³³ Although regarded as a positive step taken by the government, the NCCP has been criticised on several grounds. The most significant flaw identified by experts – including the Sustainable Development Policy Institute (SDPI), a think tank working with the National Taskforce on Climate Change – is the lack of an institutional setup for the implementation of the various policy measures outlined by the NCCP for climate change adaptation and mitigation. SDPI also alleges that the NCCP has been framed without stakeholder consultation. Moreover, under the current political transition, it claims that there is disorder and confusion with regard to the different issues, including environmental protection, being handed over to provincial governments and that this has implications for the policy's implementation.³⁴

In the study area, **over-intensive farming** is responsible for widespread degradation of fertile land. According to one respondent, by law, every individual can cultivate 33 percent of the land and the rest should be left for forest cover or remain uncultivated. However, bigger landlords cultivate 100 percent of the land to maximise profits and thus overuse the water supply. The existing law was designed to prevent water logging, but it is not being implemented and no one is being penalised. Fertile agricultural land has become barren, leading to involuntary displacement of people. Denuding of vegetation cover aggravates the process of desertification, thus contributing to the loss of natural resources. Overexploitation of already dwindling natural resources is resulting in the degradation of soil, water and vegetation. Impoverishment of resources leading to environmental degradation is both a cause and a consequence of rural poverty. The problem is both caused by and impacting on agricultural activities. As such, adaptation activities which aim to sustain agricultural livelihoods will not be sustainable in a changing climate and could, in fact, undermine community resilience.

33 'National policy on climate change to be approved: Pakistan minister', *Climate Himalaya*, 13th September 2012. Available at <http://chimalaya.org/2012/09/13/national-policy-on-climate-change-to-be-approved-pakistan-minister/>

34 'Effects of climate change on Thatta and Badin', *Envirocivil.com*, 25th January 2012. Available at <http://envirocivil.com/climate/effects-of-climate-change-on-thatta-and-badin/>

Inappropriate construction of embankments

According to a number of key informants, embankment strengthening projects are no good, as they contain the water (rather than allow disbursement), thus causing salinity and water logging. Without banks or with expandable banks, experts and village leaders agreed that there would be better water flow. Hydrology experts agreed that this is necessary to allow for the recharging of the delta, allowing for silt deposits to recreate lost land.

The Indus delta, with an intricate network of rivulets and creeks, shrunk after the construction of embankments and was restricted to two small channels – Turshian and Khobar. In the past, the fresh water would flow into the creeks during periods of massive floods, inundating the deltaic zone. The observed salinity range of 35 parts per thousand (ppt) suggests that adequate interaction of the sea water with the fresh water was taking place to effect the much needed dilution. However, a reduction in the freshwater stream flow is responsible for salinity intrusion from the sea. Landowners now face losing their land to the sea and are receiving no compensation from the government. The insurance system for natural resources is virtually non-existent in Pakistan. This is especially problematic for smallholder landowners, who noted that they have very few alternative assets to sustain their livelihoods.

Humanitarian aid

In both Badin and Thatta, a large number of respondents repeatedly pointed out that after the 2010 and 2011 floods, the relief packages were only made available in the geographic locations with easiest access for the aid agencies, namely sites located close to existing roads. This excluded communities who were equally or more affected by the floods in more remote areas. Respondents noted that this discrimination often inadvertently reflected religious and ethnic lines of marginalisation, since Hindu, Punjabi and Pashtun households tended to live away from the majority Sindhi villages, often on poorer quality land.

While community members in other country studies for this project were often reluctant to comment on specific aid projects, especially if they were beneficiaries, it was notable that this was not the case in Sindh. The strength of feeling against certain interventions which were perceived to fuel political divisions, ethnic rivalries and corruption over resources was made clear to the research team. When asked in broad terms what changes would make donor interventions more responsive to their priorities, one female respondent stated: ‘The best thing for us is if all these people would leave us alone. We don’t want any more projects

or donations.’ Respondents listed agencies working under the Sindh project support – the Norwegian Refugee Council (NRC), the United Nations Children’s Fund (UNICEF), the UN Refugee Agency (UNHCR) and Oxfam – but there was agreement that ‘nothing is useful’.

One respondent noted: ‘Most international NGOs were intervening directly, but they don’t have any idea. They go by the roads and see some people who are displaced by roads, so they were given aid as most accessible. Most remote areas aren’t even known by international NGOs, as they are far from the road.’ Another respondent gave an example of an international NGO project which provided funding for water provision in communities living on sand dunes. However, the lack of consideration for the religion of the beneficiaries (the majority of whom were non-Muslim) caused conflict between the Muslims and non-Muslims in Kalohi, near the Indian border, in the Badin district.

Key informants from three different development agencies working on flood relief in Sindh highlighted the lack of coordination in distributing relief packages, resulting in an unevenness of aid delivery. The beneficiaries were often the same households in the same communities, while other villages were not identified as beneficiaries of any of the numerous international aid responses. Development workers interviewed explained that these decisions were often informed by local staff, who might reflect social and cultural prejudices in the work, prioritising their own tribes. The observed presence of thousands of displaced people still living in tents along the floodplains also suggests that the building of long-term resilience is not being prioritised, with the focus only on relief distribution.

12. What are the constraints on effective governance at the local level?

The key obstacles to resilience in Pakistan, as identified by this research, are political. This includes the poorly linked federal and provincial governance systems, the elite capture of resources, the politicisation of technical roles, and the nature and practice of foreign aid delivery. Politicisation or political constraints in all of these areas have resulted in a widening gap between the rich and the poor, with poor people becoming more marginalised.

Disconnect and confusion between local and national government

Governance in Pakistan is not just stratified along tiers of government, but also along different governance mechanisms: formal mechanisms include federal and provincial government; informal mechanisms include landlords and religious leaders. Under federal law, all international actors must work through the federal government via federal line ministries. However, for actors working at the local level in the provinces, the federal government's reach is often weak; as a result, they have to work with provincial or informal government or governance providers. Federal and provincial government structures are not linked and in fact often have duplicate roles and remits. This poses a challenge not only for international actors working in Pakistan who are required to work through the government, but also for citizens for whom lines of accountability and responsibility are unclear.

In Pakistan, where state building is hugely critical to peace and resilience to prolonged insecurity, international aid bypassing the state can be destabilising because it takes away from the state the chance to manage core services which underline the social contract. However, working with the national government is in reality challenging and it is often bypassed in the interest of timely delivery of aid. A World Bank funded project with the government of Pakistan – the aforementioned *Watan* card initiative – is a case in point. The cash transfer scheme was granted on the basis of recipients having a national ID card and was introduced to compensate families directly affected by the 2010 floods. In the implementation of this scheme, weak local government capacity meant that donors bypassed local administrative structures and instead used the state recommended banks. In addition, other cash transfer projects did not go through the *Watan* scheme, thus creating multiple parallel channels for credit. This can be confusing as well as destabilising if certain communities receive more than one credit transfer, while other communities are excluded from one or all schemes.

Under the 18th Amendment, the provinces were given increased financial allocations, but no other support. Our research in Sindh shows that the provinces do not have sufficient capacity to take on all of these new responsibilities. For example, there is no guidance or information on how to plan and prioritise or on whether to cooperate over province borders on state-wide issues such as education and pollution. As Anten et al outline: ‘The federal government is suspected by provincial authorities of a plan to sideline them, and the political parties that compose provincial power structures are in favour of tighter links with local authorities. But local government ranks in turn are also faced with loyalty obligations towards tribal and feudal networks. They may therefore use the apparent rivalry between the federal and the provincial level to obtain concessions for their local constituencies.’³⁵

Elite capture of resources

Since the federal government’s reach in the provinces is weak, significant power is held by the *vadairas*. In both study districts, the provincial government representatives (Members of Provincial Assembly) were also the local landowning elites. Thus, households living and/or working on a landlord’s land would be disinclined to vote against their landlord’s political party at election time in order to remain in their favour. Moreover, community resilience is undermined because marginalised communities do not wish to speak out against their *Vadaira* over resource allocation for fear of losing their homes and their livelihoods. When people have disputes, they prefer to go to their *Vadaira* rather than the court of justice, as bypassing the *Vadaira* would be perceived as disrespectful.

Farm workers interviewed in our study attributed significant responsibility for the devastating effects of the floods of 2010 and 2011 to the actions of richer landlords, who intentionally breached the flood protection embankments to protect their own agricultural land. According to one respondent: ‘These political elements also influence the decisions and planning of the Water and Power Development Authority in their favour.’ A number of respondents stated that this increases the perceived asymmetry of power relations. Community members also observed that they are witnessing increased unrest and social stress among the coastal communities.

35 L. Anten, I. Briscoe and M. Mezzera [2012]. *The political economy of state-building in situations of fragility and conflict: From analysis to strategy – A synthesis paper based on studies of Afghanistan, Democratic Republic of Congo, Guatemala, Kosovo and Pakistan*. The Hague: Netherlands Institute of International Relations ‘Clingendael’. p.24.

Similarly, wealthier landlords also have major influence over provincial government departments, such as irrigation. In one example from our survey, an irrigation official was called upon to settle a dispute between two neighbouring farmers. He went to visit the site but on arrival received a phone call from the local political leader who was highly aggrieved that the irrigation official had visited the site without the landlord's permission. Despite being a government employee and well within his remit, the irrigation official had to bend to the political leader's demand and leave the site as it was.

Building climate-sensitive alternative livelihood options

Economic opportunity was identified by the majority of respondents (71 percent) as the key dimension of resilience. However, in our study sites, opportunities were highly restricted by social, economic and political barriers. There were examples of small-scale shifts by farmers from growing paddy to growing sunflowers (the sunflower plant thrived in the flood affected areas and had actually helped the farmers to overcome the loss of their previous rice fields). However, with a large proportion of the most vulnerable working as day labourers, or even bonded labourers, such examples are of little use since these people have no decision-making power over cropping. Nor do they have access to credit to fund any change in behaviour. It is critical that such social dynamics and the broader political economy are understood in the design and planning of such programmes (see Box 3).

The non-governmental sector working in these areas also offers alternative livelihood opportunities. For example, one programme visited sought to build community resilience by supporting market linking, working with small and family businesses, as well as working with the bigger private sector entities such as insurance and business chambers. Beneficiaries noted that programmes like these helped to create economic opportunities which were previously non-existent in the community, hence contributing to building resilience.

Box 3: Political economy of alternative livelihoods (sugarcane)

Sugarcane was identified as an alternative livelihood option, supported by a number of NGOs in the province. Sugarcane is harvested during four months of the year (November to March) and is highly water intensive. Respondents in Badin explained that the sugar industry is controlled by the mafia, who own the major sugar mills in the country and set sugar prices. Respondents described the pressure on farmers when mafia-run cartels refuse to buy sugar crops, forcing poor farmers to reduce prices and sell at below market rates for fear of the crop spoiling. The sugar mafia are also in control of the water resources –

diverting water to sugarcane fields and factories instead of agricultural fields. In times of drought, when water is limited, sugar plantations are prioritised over agricultural fields. Sugar mafia sometimes include MPAs, Members of National Assembly (MNAs) and landlords and can therefore be very powerful.

Respondents also communicated challenges associated with increased salinity. Sea-water intrusion has increased following the removal of mangroves, which acted as buffers for industrial sugarcane production.

Community members in Tando Bago in the Badin district also spoke of their water supply being contaminated by industrial pollution from a major sugar factory in upstream Nawab Shah, pointing to the major adverse knock-on effects on farming, food and health. Respondents explained that they know who owns the sugar mills. However, these are the same individuals who own the land on which the affected community live and work, so they cannot do or say anything. One respondent noted: 'We can't even change political affiliation as the landlord controls our livelihood.'

Politicisation of technical roles and resource access

Bureaucratic appointments to provincial departments such as irrigation, food and agricultural ministries are also often political, with non-technical personnel appointed for important technical positions. As well as being problematic in terms of elite capture of key jobs, this also leads to deficient technical knowledge and capacity within departments, along with ill-informed decision-making processes. For example, according to one key informant, the Provincial Department of Irrigation and Power in Sindh only has two technical experts. The rest of the staff are political appointees of the two most powerful local *vadairas*. The strongest example of how this poses a significant risk to resilience is the government-built, technically deficient LBOD (see Box 1), which was intended to prevent salt water intrusion into the water system but instead did the reverse.

Migration

Continuous and uninterrupted degradation of natural resources is pushing the ever-growing population to urban centres for livelihood purposes. However, these urban centres are not equipped to absorb the influx of people, thus resulting in conflicts in the study area. The mass migration of the rural population to urban centres is creating urban slums and consequent law and order problems as well as social unrest among the indigenous population of urban centres. Karachi is one such case in point.

Elections

Local socio-economic conditions in the research area had been exploited to inform the electoral promises of the leaders of those areas whenever there were local elections. According to the respondents, landlessness, poverty, joblessness and lack of livelihood options had been taken up as key electoral issues, with promises to provide better options in each of these regards. However, the handouts (often pieces of land) made during election time sometimes did not materialise. In instances where plots of land were handed out, they were usually not arable or were highly vulnerable to environmental changes. In our study district, land from the Indus drainage basin was portioned out for votes, despite the entrenched historical knowledge that there should be no habitation on river drainage basins. This system is not environmentally sustainable. It also fuels tribal grievances, as the process of land allocation lacks transparency and tends to occur along tribal lines.

13. How can resilience be strengthened?

Based on the responses of the respondents in Badin and Thatta, as well as the key informants in Karachi and Islamabad, the following suggestions emerged as priority areas for addressing the root causes of vulnerability and non-adaptation.

Incentivise education

A small percentage of citizens controlling large areas of arable land means that there are fewer resources for the remaining population to share. Traders outlined that they are not interested in educating their children, as they know there are no jobs for them to move into. Literacy is less than 10 percent in Sindh. Young people also noted that jobs are limited. The quota system in Sindh is designed to allocate 60 percent of jobs to rural populations and 40 percent to urban populations. In reality, however, these allocations are made mostly on the basis of political and tribal affiliation/influence rather than merit. As a result, some parents are not interested in educating their children. A father of two sons in Shah Bandar village explained: ‘There are no benefits from education, and no space to move forward.’ In our study site, landlords actively restrict young boys working on their land from further education to ensure that they maintain their workforce.

Female education in Sindh is also very limited. After adolescence, girls are not permitted to continue in education and instead are engaged in domestic activities or agriculture. To this end, there is a general perception in towns like Shah Bandar that it is better to only have basic skills and to take up a small business. However, small and traditional family-owned businesses also face increased risks posed by environmental vulnerability. Places like Shah Bandar are increasingly bearing the brunt of rising sea levels and salinity increases causing a decrease in fresh water. This has led people to change their business behaviour from freshwater fishing to catching prawns and crabs. In most coastal places, farming is being replaced by sea water fishing, as arable land is turning saline due to sea water encroachment. Traditional fishermen have no alternative to fishing, but are increasingly facing pressure as more and more people are turning to fishing from farming.

Ensure conflict-sensitive migration

People are moving from vulnerable coastal areas to urban hubs and, according to our research, this movement of people is likely to continue. The Foresight Report on Migration and Global Environmental Change (2011) also highlighted the importance of planned and facilitated migration as one of its key actions for

building long-term resilience to climate change. It underlines the importance of migration inclusive policy approaches and adaptation planning that builds resilience, while recognising both the risks and benefits inherent in migration.³⁶ The report states that, for some, migration offers opportunities of livelihood transformation from a relatively poor to a better-off society, wherein ‘the resultant increase in remittances and social networks is likely to strengthen livelihoods for those in source communities, providing a greater opportunity for those who stay behind’. The report concludes that ‘migration in the face of global environmental change may not be just part of the “problem” but can also be part of the solution’.

Implement resilience policies and interventions in ways that improve governance

Having faced the consecutive disastrous floods in Sindh, the government of Pakistan and the international community working in Sindh have developed significant experience of responding to natural disasters and disasters brought about by climate variability and maladaptation. However, according to a significant majority of community respondents, international development activities which focus on flood prevention and disaster management only address symptoms and not the social and political causes of flood risk. All respondents in our research acknowledged that the outflow drainage systems are a major cause of floods and will continue to be so in the face of climate change, which is likely to result in increased and more intense rainfall. Until drainage infrastructure in Pakistan can cope with current rainfall trends, disaster risk reduction activities will largely only help to manage and respond to disasters, but not to prevent or mitigate them.

These disasters have also led the government and aid agencies to respond through innovative ideas such as *Watan* cards and cash transfers. While community responses to standalone disaster risk reduction interventions were predominantly negative, responses to saving schemes and governance projects were more positive. One measure for promoting community resilience and stability could be to focus climate adaptation and resilience funds on broader governance issues. A critical gap identified by key informants from local NGOs was the poor capacity of the local government system to cope with political influence and to respond quickly and efficiently to the imminent consequences of climate variability and changes. Another shortcoming was in relation to promoting development which builds livelihoods and assets – for example, social protection schemes, alternative livelihoods, livelihood skills, training and education – rather than technical climate fixes and disaster responses.

³⁶ Foresight and Government Office for Science (2011). *Migration and global environmental change: Future challenges and opportunities*. Final project report. London. Available at <http://www.bis.gov.uk/assets/foresight/docs/migration/11-1116-migration-and-global-environmental-change.pdf>

Address governance challenges (corruption, confusion of roles and low capacity)

Donor and development agency respondents working in post-flood Sindh identified the fact that the Pakistan government and aid agencies were not able to effectively implement their projects due to corruption, role and jurisdiction confusion between different governance systems. They also pointed to the poor understanding of local governance systems comprising formal and informal actors and mechanisms.

Respondents claimed that the government is corrupt, but added that civil society (NGOs) can be equally corrupt. Bilateral donors explained that they try to work around these problems by operating through international NGOs (INGOs). However, in doing so, they are aware that they are failing to build local capacity and to support local business and the local economy. They explained that although this directly contradicts long-term development objectives and sustainability, working through international contractors was the only way to ensure financial transparency and accountability. Representatives from INGOs explained this in terms of needing to show transparent and accountable procurement spends to donors; nevertheless, they also acknowledged that this resulted in an opportunity cost in terms of building resilience through supporting local economies.

Incentivise joint programming of development aid

Respondents highlighted practices where networking and planning within and among organisations (although on an individual and personality-led basis) have helped NGOs to operate in the spaces they want. For example, one organisation wanted to work in agriculture to build resilience by planting mangroves, but could not convince the local community members of the project's benefits. The local community instead communicated their need for a health programme, as it would strengthen their resilience to climate-related stressors by allowing them to diversify their livelihoods. Planting mangroves, in their opinion, would take some time to stop sea water intrusion but would not resolve the problems of drainage.

In this particular local context, the organisation managed to successfully implement its programme of planting mangroves by also introducing a health programme through links with another organisation working on health. The community was able to get what it wanted; at the same time, they were also eager to participate in the agriculture programme as their immediate need (health) had now been met.

Improve sensitivity around staffing and community engagement

Provinces have a very strong sense of identity, culture and tribal relationships. As a result, people from one area might mistrust those from another. Community respondents explained that hiring “local” people – that is, those of Pakistani nationality – does not necessarily mean that an individual with knowledge of one province will understand the context, cultural nuances and dynamics of another. Project beneficiaries in Badin and Thatta complained that activities were not suited to their cultural context, given the inappropriate hiring practices in development organisations. Given the strong social, ethnic and clan ties, this can result in frustration and mistrust, slowing down the implementation and response process and at times resulting in conflict. If the hiring process takes into account these social dynamics, there is less likelihood of risks and a greater chance of creating peace opportunities.

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