

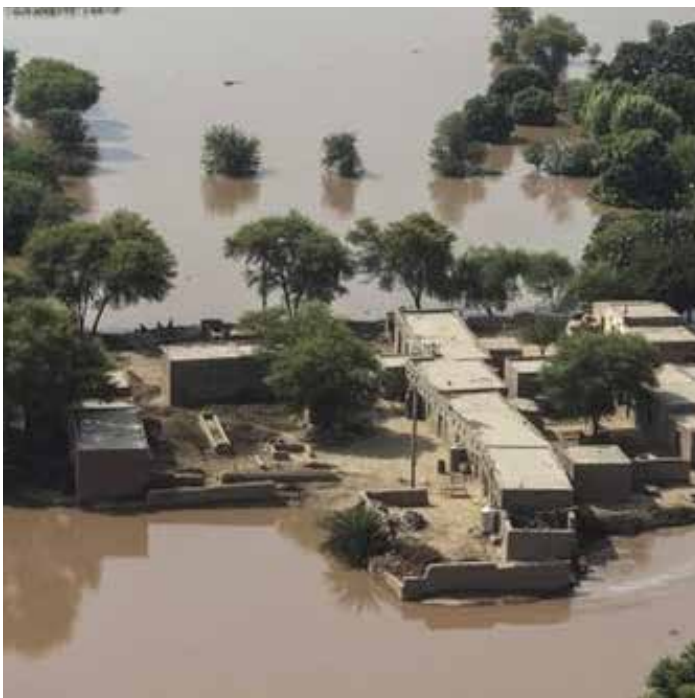


## Floods, Droughts, Water Scarcity & Climate Change The only option is construction of new dams

By Shakeel Ramay

Besides the loss of lives, assets, property, livestock, crops and erosion of land, floods cause huge displacements impacting the national economy. History of floods in Pakistan is very old. 2010 floods had no precedent in history in terms of magnitude, human displacement, destruction and economic losses. They caused almost 2 million to displace and a loss of \$10 billion. Hundreds of schools and health facilities were destroyed and 1/5th of the country is estimated to be inundated. Women suffered the most severe brunt of these floods, as 500,000 women were reportedly in dire need of medical and maternity assistance at that time.

The country was just struggling to come out of the crisis that it was again hit by the same catastrophe in the preceding years. 2011



floods again caused a huge devastating impact and increased the existing miseries of the victims. About five million people were affected and 1.7 million acres of land came under water. The flood also caused damage to almost 1.2 million houses along with schools and health facilities. Similarly, 2012 floods further aggravated the situation and increased the losses on all fronts, including economic, social, environmental, human, livelihoods, etc.

Now, once again the country is confronted with this disaster in 2014. Flooding that started during the first week of September, is now spreading across the country. The Punjab is the worst hit along with Azad and Jammu Kashmir and Gilgit-Baltistan. About 280 people had died and 465 have been reportedly injured so far. Further, the loss of people's assets and houses has been shown in Table-<sup>1</sup>.

<sup>1</sup> <http://www.ndma.gov.pk/new/Documents/sitrep-22-9-14.pdf>

Table-1: Losses due to Flood in Punjab (till date of 22-09-2014)

FAISALABAD DIVISION														
1	Faisalabad	14	31	10	0	3,495	11	0	0	0	0	0	847,598	0
2	Jhang	10	0	20,500	413	814,047	0	24	6	5,052	120,000	120,000	414,250	31,432
3	Chiniot	8	0	1,769	148	130,000	0	10	5	0	35,367	13,710	328,379	38,698
4	Toba Tek Singh	3	0	37	58	23,852	1	8	0	0	14,834	14,834	449,820	2,979
	<b>Total</b>	<b>35</b>	<b>31</b>	<b>22,316</b>	<b>619</b>	<b>971,394</b>	<b>12</b>	<b>42</b>	<b>11</b>	<b>5,052</b>	<b>170,201</b>	<b>148,544</b>	<b>2,040,047</b>	<b>73,107</b>
LAHORE DIVISION														
5	Rahilly	28	88	45	0	11,030	0	0	0	0	0	0	302,590	0
6	Rasool	17	34	36	0	0	0	23	0	0	0	0	447,860	0
7	Rohiwar	13	47	55	182	100,300	0	13	6	145	237,500	1461	797,426	11,599
8	Ranana Sahib	4	21	0	0	14,456	0	6	0	0	0	731	186,930	0
	<b>Total</b>	<b>62</b>	<b>170</b>	<b>136</b>	<b>182</b>	<b>125,786</b>	<b>0</b>	<b>42</b>	<b>6</b>	<b>145</b>	<b>237,500</b>	<b>2,192</b>	<b>1,734,806</b>	<b>11,599</b>
SAHIWAL DIVISION														
9	Rahial	0	0	36	56	11,586	0	15	0	0	1,529	146	340,220	1,472
10	Raia	8	57	3,206	227	14,546	9	12	0	0	271	271	528,286	1,070
11	Pakpattan	1	2	8	0	0	0	18	0	0	0	0	241,462	0
	<b>Total</b>	<b>9</b>	<b>59</b>	<b>3,250</b>	<b>283</b>	<b>26132</b>	<b>9</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>1,800</b>	<b>417</b>	<b>1,109,968</b>	<b>2,542</b>
MULTAN DIVISION														
12	Multan	21	0	0	121	11,859	1	23	15	25,708	89,194	156,113	531,175	45,139
13	Rhanial	2	8	974	79	57,965	0	13	4	1,385	39,093	51,970	409,999	11,265
14	Rodhan	0	0	0	2	32	0	9	0	0	0	0	225,560	0
15	Rahi	3	0	0	0	58	0	14	0	0	0	0	308,263	0
	<b>Total</b>	<b>26</b>	<b>8</b>	<b>974</b>	<b>202</b>	<b>171,914</b>	<b>1</b>	<b>59</b>	<b>19</b>	<b>27,093</b>	<b>128,287</b>	<b>208,083</b>	<b>1,474,997</b>	<b>56,404</b>
D.G.KHAN DIVISION														
16	Rahhan	0	0	0	0	0	0	0	0	0	0	0	834,020	0
17	Rahah	0	0	0	0	0	0	0	0	0	0	0	780,340	1,967
18	Muzaffargarh	8	17	845	402	202,118	0	34	18	14,934	42,991	44,424	1,186,650	44,033
19	Rahnan	0	0	0	0	10000	0	11	0	0	13,632	13,632	580,440	4,006
	<b>Total</b>	<b>8</b>	<b>17</b>	<b>845</b>	<b>402</b>	<b>212,118</b>	<b>0</b>	<b>46</b>	<b>18</b>	<b>14,934</b>	<b>56,623</b>	<b>58,056</b>	<b>3,381,450</b>	<b>50,006</b>
BAHAWALPUR DIVISION														
20	Rahial	0	75	2,505	61	49,196	0	16	9	794	35,808	36349	672695	13139
21	Rahial Rhan	3	1	0	35	35,587	0	20	20	4,177	150,782	51,526	1,003,053	9,769
22	Rahialnaga	1	3	1	0	20,883	0	14	0	0	0	0	646,840	0
	<b>Total</b>	<b>4</b>	<b>79</b>	<b>2,506</b>	<b>96</b>	<b>105,666</b>	<b>0</b>	<b>50</b>	<b>29</b>	<b>4,971</b>	<b>186,590</b>	<b>87,875</b>	<b>2,322,588</b>	<b>22,908</b>

## Summary of losses

Ser	Damages	Deaths	Injured	Houses Damaged	Villages Affected	Crops Affected (Acres)	Cattle Perished	Relief Camps Est	Relief Camps Operational	Pers. in Relief Camps	Estimated Population Affected	Persons Evacuated	Livestock Vaccination	Patients Treated
1.	Flood Damages	184	247	38,004	3,087	2,280,812	1,228	303	90	52,195	1,705,531	588,458	8,575,426	360,616
2.	Rain Damages	96	218	3,481	366	128,677	139	154	0	0	30,362	29,614	8,402,533	11,494
	<b>GRAND TOTAL</b>	<b>280</b>	<b>465</b>	<b>41,485</b>	<b>3,453</b>	<b>2,409,489</b>	<b>1,367</b>	<b>457</b>	<b>90</b>	<b>52,195</b>	<b>1,735,893</b>	<b>618,072</b>	<b>16,977,959</b>	<b>372,110</b>

In Azad & Jammu Kashmir, heavy losses took place. About 64 people had been died and 129 injured in addition to livelihood and other losses, as shown below in Table-2.

**Table-2: Losses due to Flood in Kashmir (till date of 22-09-2014)**

Ser	Districts	Deaths	Injured	Houses Damaged		Villages Affected	Persons Affected	Area Affected (Acres)	Crop Area Affected (Acres)	Cattle Perished	Shops	Water Mills	Relief Camps	Pers. In Camp
				Partially	Fully									
1	Neelum	-	2	60	40	7	460	-	-	180	47	21	-	-
2	Muzaffarabad	-	-	70	19	14	509	-	-	-	40	1	-	-
3	Hattian	-	19	260	65	18	1,885	38	28	60	13	5	-	-
4	Bagh	2	9	272	430	15	2,334	2,300	1,200	47	65	-	1	100
5	Haveli	29	60	1,995	529	87	14,494	1,669	-	550	22	40	-	-
6	Rawalakot	6	-	570	200	10	4,190	-	-	-	-	-	-	-
7	Sudhnoti	14	17	1,231	234	20	8,851	-	-	-	56	-	-	-
8	Kotli	8	15	990	740	6	8,000	-	820	196	-	4	-	-
9	Mirpur	2	6	305	26	5	2,161	-	-	793	2	-	-	-
10	Bhimber	3	1	528	399	5	4,095	-	-	50	-	-	-	-
<b>TOTAL</b>		<b>64</b>	<b>129</b>	<b>6,281</b>	<b>2,682</b>	<b>187</b>	<b>46,979</b>	<b>4,007</b>	<b>2,048</b>	<b>1,876</b>	<b>245</b>	<b>71</b>	<b>1</b>	<b>100</b>

At the same time, drought is another phenomenon that has been forcing the people of Thar to abandon their lands for the last many months. Hundreds of people, including children and women had died and many more displaced. Malnutrition, poor quality of life, and unhygienic water are prevailing realities in Thar. Water availability is the most critical problem due to low rains and lack of water supply infrastructure there. Being an arid region, it has low rain intensity, frequency, and availability.

Poor governance has further aggravated the situation. Investment in water infrastructure has been an issue since the creation of Pakistan. Poor planning and ignorance in development planning has been the fate of Thar since the ages. Only at the times of severe drought, the government becomes active and announces big plans and funds for development, but after their visit they forget the promises.

Apart from Thar region, Pakistan has a history of droughts. The drought spell from 1998 to 2002 in Balochistan and Sindh compelled millions of people to migrate and displace. As a result, people lost their livestock and livelihoods. The persistent droughts, which were already prone to food insecurity, further exacerbated the state of food security.

Scientific community and IPCC clearly pointed out that floods and droughts are a common phenomenon in Pakistan. They occur frequently causing huge losses every time. Despite this, incumbent governments always looked for short-term solutions and mostly took reactionary measures rather than precautionary measures and long-term comprehensive planning. Long-term planning is the need of hour, as it has been warned by IPCC that frequency and intensity of water related disasters will increase in Pakistan due to climate change in future.

Alongside floods and droughts, per capita availability of water is also an impending challenge. Water availability index presents a grave situation. Per capita water availability has reduced to 1000

cubic meter, which is high water stress category. It is expected to decrease further due to increase in population and climate change impact.

Climate change will impact all dimensions of water availability, quality, frequency of disasters, etc. Pakistan lies in one of the most vulnerable regions to climate change. Himalayan glaciers are under threat of fast melting and disappearance. Rapid melting of glaciers will introduce two types of problems, i.e, floods in short-term, and droughts and water scarcity in long-term. Being an agriculture country, it would be extremely difficult to cope with such types of challenge.

High prevalence of floods, droughts, water scarcity and on top of that the climate change demands that Pakistan must look for a viable solution to avoid losses and strengthen its economy, livelihoods and wellbeing of people. New dams is one of the most viable solution to these problems. Pakistan's water storage capacity is only 30 days, which is not sufficient. In contrary, India has a storage capacity of 120-222 days whereas US, Australia, South Africa, and Egypt have the storage capacity of 900, 600, 500, and 1000 days respectively.

Pakistan is blessed with huge potentials to build water storage bodies, but is wasting its precious natural resources. Dams will not only help manage floods, droughts and water scarcity but also help overcome the energy crisis. Unfortunately, the issue of dams has been extremely politicized whereas it is a matter of economic and human security. Now, the political wisdom is required to solve this issue. The current situation and trends show that if the government continues to ignore the building of new dams, Pakistan will face grave consequences.

Nutshell of the whole argument is that Pakistan needs dams; it is no more an option or chip of political bargain. Otherwise floods and droughts will continue to play havoc with national economy, livelihoods, infrastructure, and human security. ●

## Climate Finance Governance: Architecture and Challenges

By Masooma M. Hassan

With increasing awareness level about its impact and consequences among the policy makers around the globe, climate change is quickly becoming a development priority. To meet this humongous challenge, countries are taking initiatives to reduce their greenhouse gases emissions through mitigation and/or through adaptation. However, the associated costs of both the interventions are very high specifically for the highly vulnerable countries such as Pakistan. This scenario, climate finance offers a lucrative incentive for them to embrace the climate resilient development.

The idea of a global climate finance was presented in climate change summit in Copenhagen in 2009 where the developed nations pledged for \$100 billion per year for a 'new and additional funding' for climate change to the developing countries from 2020 onward. This is considered separate from existing official development assistance. What is a real challenge for the governance of finance is adaptation assistance. In case of climate resilient development, it is really difficult to clearly delineate the former from the development aid: where these two basically aim at serving the same development objectives.

Thus far, the mitigation interventions have attracted the major chunk of investment. In 2012, it was 94 % of the total climate finance invested in renewables, sustainable transport, agriculture and forestry, land use and livestock management sectors. Private sector alone has invested 62% in major renewable energy, energy efficiency interventions, and sustainable transport projects. REDD + financing is considerably low while data is largely unavailable for Clean Development Mechanism (CDM) project investors.

Adaptation activities received only 6 % of the total climate finance in 2012. The major sectors included water supply and management, agriculture, livestock and fishing, forestry, land use management, and natural resources management. This amount is extremely low when compared with the estimated adaptation needs of developing countries-\$75-100 billion a year (WB, 2009a) or \$44-166 billion a year (UNFCCC, 2008). This is mostly channeled through the Global Environment Facility (GEF) directly or through dedicated adaptation funds, which the GEF administers such as the Least Developed Countries Fund, and the Special Climate Change fund; or channeled through the World Bank-led Cli-

mate Investment Funds; or Adaptation Fund (AF). AF is financed through a levy on international carbon market transactions and currently has suffered badly when the international carbon price collapsed. GEF is one of the largest public projects funder, but it has received criticism from the developing countries for its dominance by the developed countries.

The Green Climate Fund (GCF) is the newest actor in multi-lateral climate finance, which is created as an independent organization with a board having an equal representation of developing and developed countries. Head-quartered in South Korea, GCF focuses on both mitigation and adaptation with a gender-sensitive approach in its funding. However, resource mobilization is one of the major challenges and point of controversy between developed and developing countries<sup>1</sup>. The landscape is currently dominated by bilateral aid agencies and international development institutions whereby each implementing their own terms and condition and reporting requirement to the fund recipients<sup>2</sup>.

The special national funds are another way to secure direct access to climate finance without going to international institution. Many countries have already set it up such as Bangladesh or in the process to do so. Pakistan is currently evaluating either to go for fund or a facility- Funds hold finance in its own account having first accessed source of finance while a facility holds

no funds but matches projects with source of finance<sup>3</sup>.

This multi-actor and channel architecture poses many governance challenges. WRI (2014) has identified some major technical, political and capacity challenges including insufficient institutional arrangement- ambiguity in the roles of actors and responsible ministries; inconsistent markers, indicators to characterize financial data; insufficient technical processes, and systems to identify and record climate finance expenditures; limited knowledge on NGOs' contribution; lack of transparency and predictability on the part of development partners; and limited usage of developing countries' national system by development partners.

At the global level, our efforts to reach an action-oriented agreement to reduce the GHG emissions have failed. That means the cost of 'no-action' will be mounting up and so are the climate change mitigation and adaptation costs. A dedicated and reliable climate financing is only possible through realizing the real dangers of climate change on humanity. ●

### AT A GLANCE (2012 data)

Total finance: \$ 359 billion  
Private sector investment: 62%  
Public investment: 38%  
Mitigation investment: 94%  
Adaptation investment: 6%  
Flow to developing countries= \$ 182 billion or 51%

### Financing Channels:

- Government agencies and ministries (making up 38-49%),
- UN institutions (7%),
- NGOs (7-13%),
- Non-UN multilateral entities (12-15%).

Source: CPI, 2013

<sup>1</sup> ODI, 2013

<sup>2</sup> Climate Policy Initiative, 2013

<sup>3</sup> vivid Economics, 2013

## Climate Change and Crime: the Case of Pakistan

By Muhammad Abdul Rahman

There is a general perception that climate change has devastating impact, however several studies show that this changing climate phenomenon do have some positive impacts as well that are regionally and geographically different. In case of Pakistan, the impacts are negative for sure. According to IPCC’s 5th assessment report, Pakistan is a serious victim to global warming where the temperature will rise in next 50 to 100 years. In this background, climate change is a threat to the dream of having sustainable summers in Pakistan especially for individual/household.

Being an agrarian economy, climate change has always been seen from the lens of agriculture by the policy makers. There is a rich literature that has established links between climate change, food security, nutrition security, social-economic security, etc. But, there is another dimension that has drawn the attention of researchers, i.e. the climate change and the crime.

A recent study conducted in the US by Matthew Ranson<sup>1</sup> of Harvard Kennedy School warned that there will be incremental rise in violent crimes by the end of the 21st century as a result of climate change. The study titled Crime, Weather, and Climate Change unveiled this under acknowledged phenomenon.

Secondary sources of data for the last 50 years (1960-2009) were

used for future projection. The indicators utilized were; monthly crime statistics of various forms, temperature and precipitation data. Semi-parametric bin estimation method was used to carry out the analysis. The results are quite shocking. Using different climatic scenarios, the results revealed that the United States will experience rise in the incidents of murders (35,000), 216,000 cases of rape, 1.6 million aggrieved assaults, 2.4 million simple assaults, 409,000, 3.1 million burglaries, 3.8 million cases of larceny, and 1.4 million cases of vehicle theft.

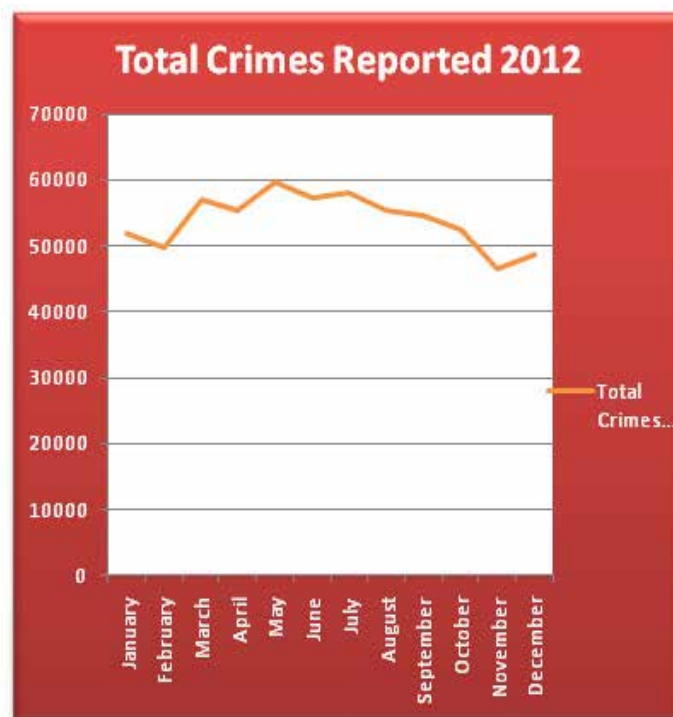
Unfortunately, no such study is available in Pakistan’s context. Research work related to climate change carried out here mostly focus on agriculture and its allied links. The socio-cultural impact of climate change has failed to draw the attention of researchers as well as of policy makers. Another dilemma is the lack of support from the government institutions regarding the availability of data. For instance, Pakistan Meteorological Department supplies data on a price that is unaffordable by a researcher or even by some of the research institutes whereas in developed nations, the case is altogether different.

Now coming back to warming and crime in Pakistan’s context, the data available for year 2012 on crimes (all types including murder, kidnapping, burglary, robbery, cattle theft and others) clearly shows an increase in rate and occurrence of crimes as warmer months of the year start. The data has been taken from Pakistan Bureau of Statistics.

Table 1: Total Crimes Reported in 2012

Year	Total Crimes Reported
January	51858
February	49820
March	57124
April	55390
May	59579
June	57225
July	58132
August	55516
September	54594
October	52500
November	46395
December	48767

Graph 1: Crimes During 2012

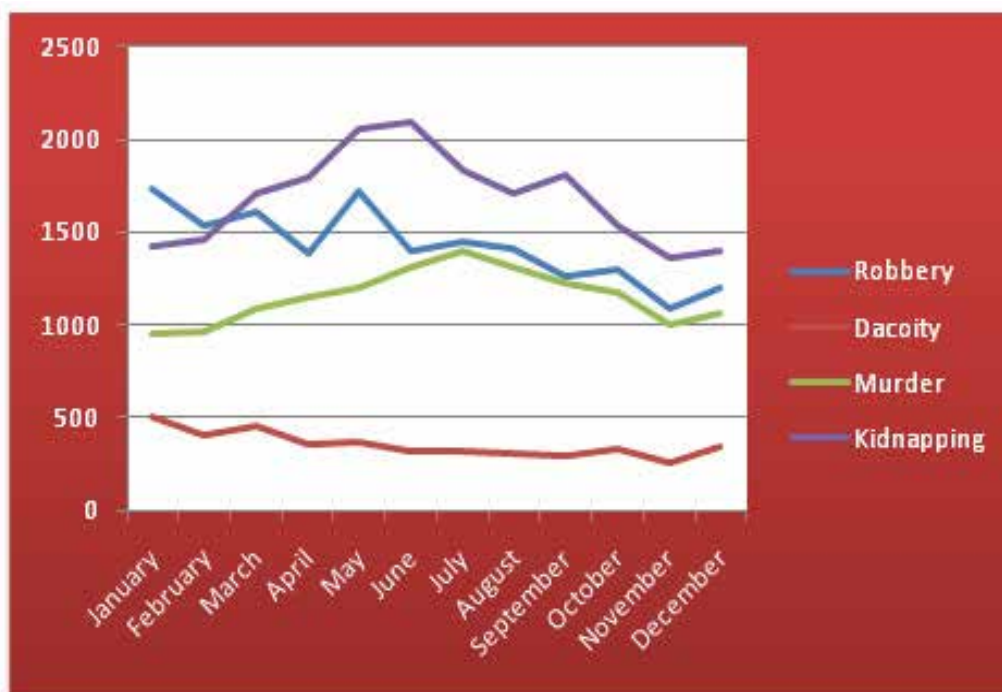


<sup>1</sup> Ranson, M. 2012. Crime, Weather, and Climate Change. M-RCBG Associate Working Paper Series | No. 8, Harvard Kennedy School, Cambridge, MA, United States.

After segregating the available data according to the types of crime, an interesting fact that comes up on the floor is that only dacoity shows negative impact with increase warming. This can be seen in table and graph 2 below. There may be several reasons behind this fact. One may speculate this in terms of vacant houses in summers as more people prefer to stay out of the home in open or cooler places like parks, picnic spots, etc. This creates more chance for the thieves and burglars to break into a vacant house and do their job on which their livelihood depends (on a lighter note).

As far as murders are concerned, they can be linked with the warming both theoretically and empirically. There are several theories that suggest that external conditions directly affect the human judgment patterns. A research conducted by Baron and Bell<sup>2</sup> during 1976 proved that ambient temperatures distress aggression. They allocated male subjects to receive a positive or negative evaluation from a confederate. After this, these subjects were provided with the opportunity to retaliate with an electric shock. After the shock was given, they found that retaliation was higher by the people who were in the room with relatively high temperature (92-95 F). There are certain other links and supporting theories to justify the relationship between climate change and occurrence of crime, however scope of this article does not allow me to mention all of them.

**Graph 2: Graphical Representation of Different Crimes**



**Table 2: Different Forms of Crime Reported During 2010**

Year	Robbery	Dacoity	Murder	Kidnapping
January	1738	508	949	1426
February	1532	411	965	1455
March	1609	452	1088	1715
April	1380	357	1148	1799
May	1717	369	1202	2059
June	1403	315	1316	2100
July	1446	314	1404	1830
August	1407	303	1307	1709
September	1256	294	1220	1808
October	1303	333	1180	1535
November	1087	255	998	1357
December	1203	348	1069	1401

It is evident that warming do affects the crime rate in case of Pakistan; but, it requires more hardcore and scientific research to build the missing links. Future projections regarding temperature for Pakistan are not satisfactory. Estimations show that there will be an increase of 4.13oC by 2080 in summer temperature of Pakistan, which is in accordance with the global trends as presented by IPCC<sup>3</sup>. Due attention of all the stakeholders is required for this dimension of climate change. ●

<sup>2</sup> Baron, R. and P. Bell. 1976. Aggression and Heat: The Influence of Ambient Temperature, Negative Affect, and a Cooling Drink on Physical Aggression." *Journal of Personality and Social Psychology* 33(3): 245-255.

<sup>3</sup> Sheikh, M. M. Global Warming In the Context of Pakistan: Major Concerns and Remedial Strategies. Paper no. 287, Symposium on "Changing Environmental Pattern and its impact with Special Focus on Pakistan".

## Climate Change and Textile Sector of Pakistan



**By Muhammad Adnan**

**A**griculture sector is supposed to be highly vulnerable to climate change. During the past 3-4 years, cotton crop among others is the major crop which was damaged due to heavy floods. Pakistan is the 4th largest grower of cotton after USA, China and India and 3rd largest consumer of cotton. According to Economic Survey of Pakistan 2013-14, cotton has a share of 1.4 per cent in GDP and 6.7 per cent in agriculture value addition. It is an important source of raw material for the textile industry. The economic activities in the country are influenced significantly by the textile sector, as the sector directly contributes to the domestic production, financial services and foreign exchange earnings amounting to 8 per cent of GDP.

Cotton is the lifeline of Pakistan's textile market, and it's time to examine the vulnerabilities of cotton crop and the textile industry to climate change. During the past few years, a number of factors contributed to fall in cotton yield. The cotton production has decreased due to rise in temperature, floods, unpredictable rainfall pattern, etc. Textile sector is entirely dependent on the cotton crop, that's why it suffered due to heavy floods in 2010-12. The Economic Survey of Pakistan 2010-11 shows that the cotton prices had a sharp increase from October 2010 (Rs 7,150 per maund) to March 2011 (Rs12,500 per maund) on the pretext of both supply and demand factors. In fact, the 2010-12 floods made

a substantial negative effect on the economy of Pakistan with lasting long-term impact.

The loss of cotton produce compelled the local textile industry to rely on cotton import in order to run their businesses in a smooth way. Around two million cotton bales were destroyed by the floods due to which cotton had to be exported on higher prices. This also increased the overall import bill of Pakistan during 2010-2012.

Owing to lack of proper studies on the impact of climate change on textile markets in Pakistan, data regarding lower, middle and upper level farmers of cotton crops affected because of climate change is not available. Studies are also not available on the adaptive capacity of these farmers regarding their response to climate change.

The lower and middle level producers/exporters of textile products are also being affected due to climate change and this question is yet to be answered that whether these producers/exporters have the capacity to import raw cotton in order to complete their export orders? The livelihood of huge population is also associated with the textile sector and again no proper evidence/research is available on how much livelihood of daily wage workers associated with the textile sector is affected due to climate change. A large chunk of women is associated with the cotton picking as well as the manufacturing of textile products, so it is also needed to assess the economic losses incurred upon these female workers. ●

## An inclusive foreign policy -- a key to peace and development in the region

By Mome Saleem

The emergence of new actors and formation of new governments in the countries neighbouring Pakistan, including India, Iran, and Afghanistan, heralds a new wave change in the regional security landscape. Amidst this change, Pakistan's internal and external political and security situation is ringing alarm bells.

Since the one and a half decades, China has been making efforts in consolidating its position at global level thus hinting towards a change in the world order while establishing and strengthening new and existing partnerships. New platforms such as Shanghai Cooperation Organization (SCO) have also been formed in this connection. Despite strong opposition from the US, Japan and some regional countries, China is going all out to strengthen its diplomatic and business ties in South Asia.

Similarly, Iran, with its new government led by Prime Minister Hossein Mousavi, is all set to reorient its relations with the world and offered a package of proposals to the G5 +1 related to nuclear and other issues. Though, the US is not reportedly in favour of giving any relaxation to Iran and committed to continuing its policy of unilateral pressure and sanctions to make Iran give up its nuclear energy programme, Russia insisted on resolving the Iranian nuclear issue through dialogue. In this perspective, it's a priority agenda for Iran to expand its relations with the West and to get economic benefit out of its renewed relations with the world powers.

Indian democracy, on the other hand, is changing its posture, as the election of Rashtriya Swayamsevak Sangh (RSS) activist Narendra Modi as prime minister exposes the undercurrents in Indian polity towards its neighbouring countries in general and South Asia in particular. However, the new government's policies aim at bringing about a rapprochement with China. The recent visit of Chinese President Xi Jinping's visit to India with the pledge to invest \$20 billion projects in next five years is a step towards strengthening China's position in the region. Nonetheless, the world is a little bit shaky and skeptical about the election of Modi contrary to his public impression that he is more inclined towards peace and prosperity in the region.

RSS leader Ajit Doval's appointment as the National Security Advisor (NSA) has raised the eyebrows of many as, he is famous for his staunch views on Pak-India relations. Furthermore, VK Singh's inclusion in one of the important ministries has also increased the concerns of different stakeholders.

Another major development in the regional security landscape is the departure of the US and NATO forces from Afghanistan

by the end of 2014. This has revived the interests of old players in the country besides a temptation for the new ones. The newly-elected President of Afghanistan Ashraf Ghani is least inclined towards Pakistan in terms of bilateral relations, and instead he is interested in cementing ties with India and the West. India is actively engaged in enhancing its influence in Afghanistan after the withdrawal of NATO and US forces from there. Recently, Indian Foreign Secretary met Mr Hamid Karazi, and Mr Abdullah Abdullah, the current Afghan prime minister, and discussed with them the issues related to investment, security of Indian Council Generals, and training of Afghan military. India is already providing weapons to Afghan security agencies.

This new regional order demands a serious analysis of the emerging challenges in order to prepare the future foreign policy. In order for a country to be prepared externally it is pertinent to have control over internal affairs. Obama administration also highlighted the need for strengthening internal socio-economic systems to retain the country's status globally. In this regard, the preparedness of Pakistan for this new world order is the first and foremost challenge. To begin with, the bleak situation of peace and stability within the country jeopardizes its position at all fronts.

In addition, the absence of foreign minister creates a vacuum in planning, monitoring and executing the policies that are prudent for Pakistan's bilateral and multilateral relations at this point of time. Although, the prime minister and his advisors are substituting the role, it hinders progress on day-to-day important affairs. As a first step to cope with these challenges, Pakistan needs a permanent foreign minister.

Keeping in view the present face of Pakistan's foreign policy, there is a need to start a discourse in order to develop a new foreign policy with new direction, partnerships and the ability to cope with the current challenges amicably. As discussed above, the regional dynamics are changing and new realities are emerging. After a long-time, Afghanistan has a non-Pashtun president. Apart from the leadership's inclination towards India, Afghanistan will also be a big recipient of Indian aid in coming years, which will increase its dependence on India. Pakistan is already facing problems on its western border, which may increase in future. Moreover, tension is on the rise between Sunni and Shia states. Saudi Arabia and Iran have divergent views on Syria, which are very open and known to everyone. Saudi Arabia also showed serious concerns over Iran's deal with G5+1, and its position is very close to Israel.

Pakistan is becoming the victim of this changing dynamics despite facing issues of foreign involvement in domestic affairs like

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**Indian democracy, on the other hand, is changing its posture, as the election of Rashtriya Swayamsevak Sangh (RSS) activist Narendra Modi as prime minister exposes the undercurrents in Indian polity towards its neighbouring countries in general and South Asia in particular. However, the new government's policies aim at bringing about a rapprochement with China**



## China's Role in World Economy

China's engagement in international affairs is largely driven by its economic interests, as it has signed free trade agreements with 11 countries and international bodies, including Pakistan and ASEAN, and is negotiating free trade agreements with Australia, and India

**By Zareen Khan**

Increasingly, China is supposed to be the greater emerging economy in the world today that has managed to grapple with the other developing economies through its policies of non-interference in the neighbouring countries, and soft relations with the world. It is completely a new niche adopted so far in the world history of development on the one hand, while on the other an interesting phenomenon for the researchers to study as to how a nation that brought about a socialist revolution on its land had failed to sustain it, and after less than half of a century it had to revert to its opposite ideology.

By the end of the 90s, China had become a market economy as called by some of the Chinese scholars, the great transformation of economy. Since then, it has been following the policy of engaging itself with the global community to build trade and economic relations. It was the time when Deng Xiaoping, the then Chair-



Deng Xiaoping

man of Central Advisory Commission of Communist Party, initiated decentralization and privatization reforms in order to end the decades old alienation of the country from the outer world. Initially, agricultural lands were de-collectivized and People's communes were turned into private plots. Economy was opened to international trade while creating special economic zones to attract foreign investments. Provinces were empowered to incentivize growth in private sector and the Shanghai Stock Exchange was reopened. Reductions in tariffs, trade barriers, and regulations were the later steps to attract foreign investments and increase the net exports. Since 2005, the government had adopted more of the capitalist policies.

China's engagement in international affairs is largely driven by its economic interests, as it has signed free trade agreements with 11 countries and international bodies, including Pakistan and ASEAN, and is negotiating free trade agreements with Australia, and India. China invests heavily in resource-rich developing countries to obtain energy and non-energy resources in order to sustain its economic growth. Besides, it has made substantial investments in Africa and has built long-term trade partnerships there in order to ensure its energy security. While China holds 4.8 per cent share of the world's oil production, it can only fulfil less than half of its domestic oil needs.

Consequently, it has built partnerships with oil-rich African countries in order to utilize the continent's untapped natural resources. Such partnerships are mutually beneficial since China has provided substantial financial assistance to its African partners and has practiced a policy of non-interference in their domestic affairs, unlike the US and EU. Additionally the development loans provided by China are often cheaper than those offered by World Bank, creating an added incentive for developing countries to build partnerships with China.

Similarly, China's economic stability is also vested in the stability of the developed world. Hong Kong is the largest recipient of Chinese exports, followed by the United States, European Union, ASEAN, Japan and South Korea. China's interest in global economic stability is further solidified by the \$3.95 trillion that China holds in foreign exchange reserves and the significant investments China's state owned enterprises have made across the globe. This validates the hypothesis that China is the stabilizer of the world economy and is in the center of the global economic triangle that connects resources to consumers. ●

<sup>1</sup> <http://fta.mofcom.gov.cn/english/index.shtml>

<sup>2</sup> <http://www.rba.gov.au/publications/rdp/2010/pdf/rdp2010-08.pdf>

<sup>3</sup> [http://www.voltairenet.org/IMG/pdf/China\\_and\\_Africa\\_s\\_Natural\\_Resources.pdf](http://www.voltairenet.org/IMG/pdf/China_and_Africa_s_Natural_Resources.pdf)

<sup>4</sup> Ibid

<sup>5</sup> <http://www.cfr.org/china/expanding-china-africa-oil-ties/p9557#p5>

<sup>6</sup> <http://www.lse.ac.uk/IDEAS/publications/reports/pdf/SR012/breslin.pdf>

## Water, Food and energy Nexus

By Shakeel Ramay

A minute study divulges the nexus between water, food and energy, the very basic needs of living organisms. Human history narrates that civilizations appeared on those areas where water was available and accessible. That's why, most of the initial settlements and cities were developed along the river lines. The UN considers access to safe drinking water and sanitation a basic need (MDG, 2000)<sup>1</sup>. Similarly, food is the basic element for survival. Its insecurity causes poverty and creates bad impact on health. In developing and least developed countries, access to food and absorption of food are the most pressing issues. Parallel to two major necessities, energy is the prerequisite for economic development, which is needed to sustain an improved lifestyle. Throughout the world, its demand is increasing day by day to improve the overall standards of life putting pressure on the available resources.

### Current status

Present state of water, food, and energy is alarming, as the world is facing problems to manage them in an efficient manner. Water is becoming a scarce commodity in Asia and Africa with ever increasing trends. Only 2.5 per cent of water in the world is available for consumption whereas the remaining 97.5 per cent is ocean water. Per capita availability of water at global level is decreasing. The situation is getting worse with increasing population, demand of water in other sectors and impact of climate change. It is estimated that about 97 per cent of available freshwater is stored underground or in the form of ice while the planet has only three per cent water available for all purposes<sup>2</sup>. At present, major use of water is in agriculture sector, i.e. 70 per cent of all available freshwater. This is followed by energy sector, which consumes 20 per cent and the third largest is the domestic use of water, i.e. only 10 per cent<sup>3</sup>.

Similarly, food insecurity has been an area of concern since long. According to World Food Organization (WFO), about 842 million people in the world are facing chronic hunger, undernourishment, and lack of access to healthy food. The number has decreased compared to the previous year, i.e. 862 million, but it is still very high<sup>4</sup>. It is more chronic in developing and least developed countries like India, Pakistan, Bangladesh, Sub Saharan Africa, etc.

On the other hand, energy is another area of prime importance for sustainable development. Prior to the modern forms of energy

**Table:1 Three high water consuming sectors**

Sector	Water
Agriculture	70 %
Industry	20%
Domestic	10%

**Global demand of cereals and meat will increase by 50 and 42 per cent respectively by 2025. This will require a substantial additional amount of water and energy to produce that amount of food. As predicted by WWDR in 2012, the demand of water will increase by 19 per cent by the year 2050**

use, human or animal energy was used to extract and transport water and food production, processing and transportation. The increase in the consumption of energy can also be attributed to huge subsidies provided to consumer by the government. International Energy Association (IEA) estimates that the fossil fuel subsidies have increased almost 30 per cent from US\$ 523 billion in 2011. However, at the same time about 1.3 billion people do not have access to electricity. Energy intensity exhibited a decline from 7.9 Thousand British Thermal Unit (TBTU) in 2005 to 7.2 TBTU in 2012, but it is still quite high.

### Future Scenario

Demand and supply gap of water, food and energy will be widened in future due to multiple reasons and interaction among these areas. It is projected that world population will be 8 billion in 2030 from 7 billion today and it will increase to 9 billion in 2050<sup>5</sup>. Moreover, the urban population will increase 50 per cent more than present times. At present, the world has 24 megacities with a population of more than 10 million. It is estimated that China and India will lead the process of urbanization. At present, China constitutes 46 per cent and India 30 per cent of urbanization trend which is likely to increase to 73 per cent and 55 per cent respectively by 2050<sup>6</sup>. At the same time, the economic growth will be more rapid in emerging economies, about 6.7 per cent, which will further complicate the situation<sup>7</sup>.

These factors will contribute to increase in the demand of water, food and energy in coming years. Global demand of cereals and meat will increase by 50 and 42 per cent respectively by 2025. This will require a substantial additional amount of water and energy to produce that amount of food. As predicted by WWDR in 2012, the demand of water will increase by 19 per cent by 2050. Agriculture and food consume almost 30 percent of energy (IEA, 2013, WEF, 2011).

In order to meet the increasing demand of food, there would be a need for 70-100 per cent increase in the production of food. Globally 10 per cent more food will be needed (20 per cent in developing countries and 30 per cent in Latin American countries)<sup>8</sup>.

The other dimension of the problem is that there would be increased demand for energy and water to produce food with limited water and energy supply. On top of that climate change will limit the choices to use the form of energy and worsen the situation of water availability and quality. Energy demand will also increase in future to sustain the lifestyle and emerging needs of emerging middle class across the world. More energy would be required for desalinization, pumping, supply of water and production, processing, and transportation of food.

### Water Food and Energy Nexus

Water, food and energy have a strong linkage from the beginning however, the rising population and lifestyle brought these sectors under limelight. Natural or human made changes in one sector impact the other two or one of the remaining two sectors. The three sectors are dependent on each other in processes and consumption. The linkages are very complex as water is used directly and indirectly in energy production. Hydropower is direct energy product and water is also used in the extraction, refining, production and cooling during fossil energy production. Water is also used indirectly in the production of bio-fuels.

Energy is used in pumping, supplying, desalinization of water, irrigation etc. Water and energy both are used in production of food in different forms and at different stages e.g. irrigation, cleaning, processing, production fertilizers, pesticides, transportation of food etc.<sup>9</sup>.

The whole discussion shows that these three sectors are highly integrated and decision or action in one sector will impact the other. Increasing in demand in sector, directly or indirectly, affect the planning, policy and implementation in other sectors. Furthermore, demand of these will increase in future due to similar factors like population, urbanization, economic growth, emerging middle class and improving lifestyle etc. Problems would also be similar like climate change, scarcity and higher integration among these. This inter-connectedness shows a strong nexus among all these factors and therefore it should be treated as nexus rather than independent entities or sectors.

Therefore, we need a uniform, comprehensive and integrated approach to manage these resources and to meet their demand in future. Multiple instruments and strategies could be devised to tackle the issue but the key and the most important is the attainment of *Efficiency and Need Based Allocations* across all sectors. ●

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## An inclusive foreign policy -- a key to peace and development in the region

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terrorism and sectarian violence. Therefore, we need a foreign policy which can address our issues and lead us toward a safe, peaceful and secure future. In today's world, we cannot detach ourselves from the world and become successful, hence cooperation is the prerequisite.

The government should take all stakeholders onboard especially the security agencies, security experts, media and civil society to devise a comprehensive foreign policy. The distinction between

friends and foes should also be observed while letting countries interfere in the internal affairs. Most importantly, the government must pursue its interest very actively, rather aggressively, and foreign missions should be given a pre-defined mandate under certain parameters. It's time to take corrective measures otherwise time is running out for a nation to be proud of its past values and traditions. ●

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<sup>1</sup> UNDP: Millennium Development Goals, Goal 7: Ensure environmental sustainability

<sup>2</sup> <http://www.unwater.org/statistics.html>

<sup>3</sup> *ibid*

<sup>4</sup> The State of Food Insecurity in the World 2013 The multiple dimensions of food security, Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP)

<sup>5</sup> United Nations, UN World Population Prospects, 2008, revision

<sup>6</sup> UN Habitat, State of the World's Cities, 2008/2009, 2009

<sup>7</sup> World Bank, World Economic Prospects, 2010: Fiscal Headwinds and Recovery, 2010

<sup>8</sup> Bruinsma J. (2009): The resource outlook to 2050, paper presented at the expert meeting on "How to feed the world in 2050", 24-26 June 2009

<sup>9</sup> Bruce Lankford, FRIDAY 24 FEBRUARY 2012, The water-food-energy-land nexus; types and typologies, Water-food-energy nexus: Challenges & opportunities INSTITUTION OF CIVIL ENGINEERS, ICE, LONDON University of East Anglia Water Security and ICID seminar, [http://www.uea.ac.uk/c/document\\_library/get\\_file?uuid=4e0573a6-0f39-43f3-bba1-1d57733931c7&groupId=40159](http://www.uea.ac.uk/c/document_library/get_file?uuid=4e0573a6-0f39-43f3-bba1-1d57733931c7&groupId=40159)

## Tragedy at DIK Sugar Mills Site- Green Industry A Priority Need

**On the day of incident, a girl while walking over the wooden board to cross the effluent pool/stream fainted/slipped and fell into the pool due to toxic vapours.**

**By Dr Mahmood A. Khwaja  
and Asad Raza Shah**

The incident took place on May 2, 2014 around 1700 hours at Basti Plova, Ramak, Tehsil Parova, Dera Ismail Khan, about 6 kilometer away from Chashma Sugar Mill & Ethanol Distillery, Ramak and Tandlian-Wala Sugar Mill, Miran. At least nine people (including two females) lost their lives and 11 sustained injuries in the incident. Both the sugar mills started operation between 2004–2006, but the production was closed down (at the end of the season) in March 2014. Ethanol distillery started operation early this year, but was closed the same day the tragic incident happened.

Disregarding the environmental legislation “Prohibition of Certain Discharges or Emissions,” the Ramak sugar mill and the Ethanol distillery (when in operation) discharge their untreated effluents into the nearby stream (barsati nalah) through an open drain (about two kilometer in length), whereas the Miran sugar mill (when in operation) discharges the untreated effluents directly into the same stream. However, the place of incident is located three kilometer away from the untreated effluents entry points. At the time of incident, both the drain and the stream were not in full flow but there were pools of effluents (of different sizes) here and there, both in the drain as well as in the stream. From time to time, there have been reports of people getting feet injuries at the very spot and also one reported incident of cattle falling into the effluent pool, containing/ emitting hazardous chemicals of most unbearable foul odor. Part of the stream (dry/low water level) is a daily routine walking path for villagers & others to go and after work return from the nearby agricultural farms/ fields. Plain even/uneven wooden boards are placed over these effluent pools of different size/depth for passing over by the people.

On the day of incident, a girl while walking over the wooden board to cross the effluent pool/stream fainted/slipped and fell into the pool due to toxic vapours. Her mother and another woman jumped into the pool to save her, but the two themselves seem immediately affected by the toxic vapours. They struggled to get out of the pool and started shouting for help. Those who followed met the same fate, resulting nine persons losing their lives and eleven had to be admitted to hospital due to injuries.

Hazardousness and toxicity of effluents/emissions from sugar mills and ethanol distillery are well established. Most prominent among these are extremely foul and most unbearable distillery wastes, sulfur dioxide (manufactured by burning sulfur) often used for clarification of sugarcane juice and hydrogen sulfide, resulting from bacterial action on sulfur/sulfur compounds in anaerobic condition (absence of oxygen). Both gases are water

soluble and the very high temperature would enhance their emission along with other volatile chemicals present in the effluents. Both gases are heavier than air, hence would accumulate over the ground/water surface in a closed, dry low water level shallow well like area/situation. Faintness/death could be due to swallowing of toxic effluent and/or both with the inhalation of these gases and absence/lack of oxygen due anaerobic conditions caused by very high biological oxygen demand (BOD) effluents.

The wide and open area around the incident spot makes investigation for the cause of deaths perplexing but there could be such effluent pools/ditches having the closed well like conditions/situation. It is very heartening that DG, EPA, KPK, with his team had already visited the site for on the spot observations/discussion. We look forward to environmental protection agency (EPA),KPK report/findings of this most unfortunate incident with loss of precious lives, to bring to justice to those responsible for the tragedy and the grant of due compensation to the affected families/individuals.

Every industry (be of sugar or some other product) in the country is fully responsible for pre-treating its releases (effluents to land/water bodies & emissions to air) at source before it reaches at the factory boundary exit point, prior to flowing into the factory drain, if any. EPAs are fully responsible to implement environmental legislation to safeguard public/workers safety & health and protect the environment. However, industries need not to be closed down or banned and the industrial progress & growth be continued in the country, which is most essential for economic growth and poverty reduction. What is most important and desirable is our industry turning into green industry, with adequate investment in pollution control measures to avoid any such accidents in future.

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