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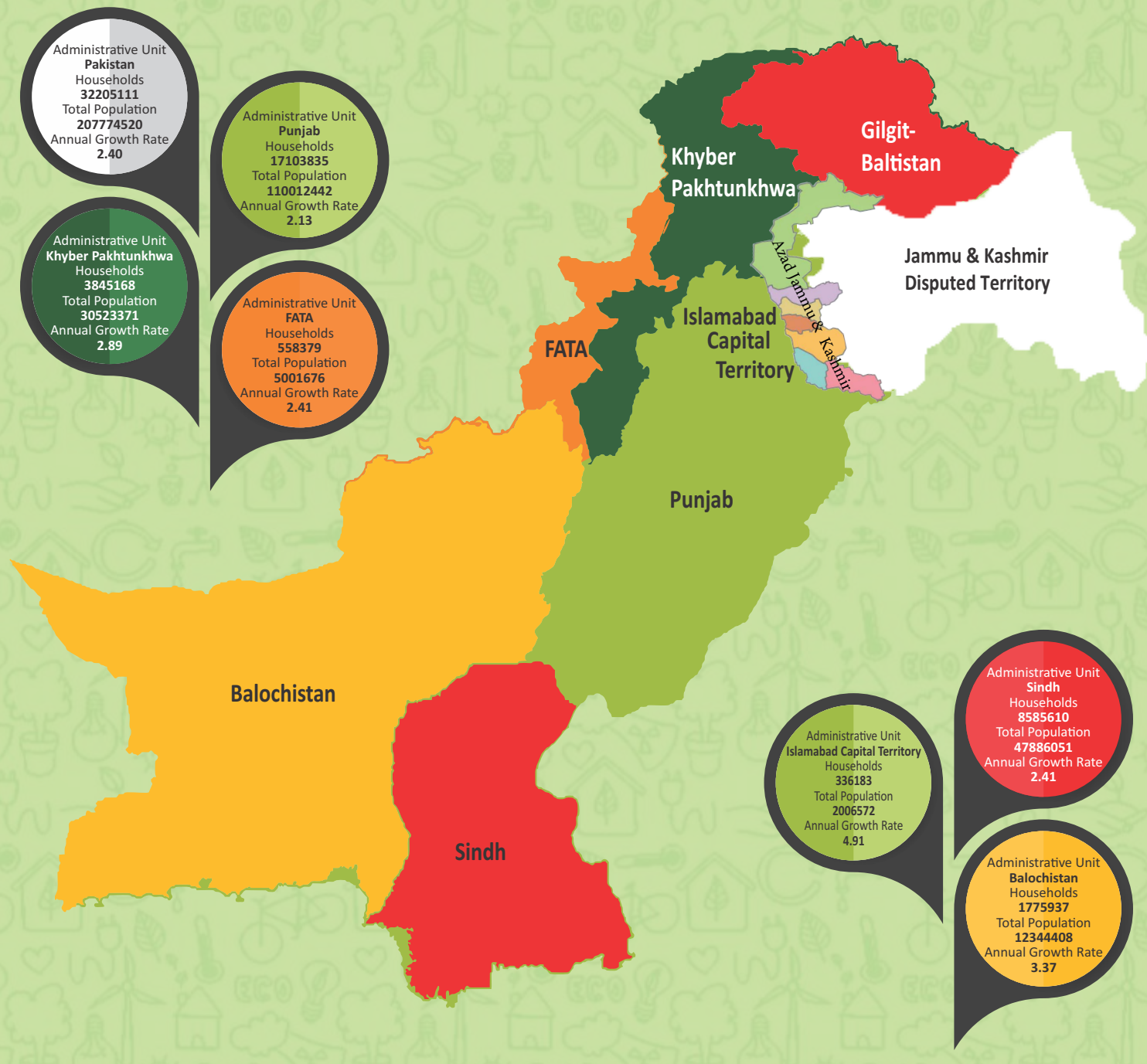

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Pakistan Census 2017: Social Policy Implications

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Finally, Pakistan has done it. The census 2017 preliminary findings are out. Debate on the quality of data and provincial complaints is picking up. Less has, however, been said and written on the policy implications of the new numbers. This note attempts to draw some major social policy implications of changing socioeconomic and demographic structures as coming from new census. For the ease of readers, we provide a brief background of census undertaken so far.

Census is an important tool in shaping the socio-economic dynamics of a country. Information, caught precisely, in statistics is irreplaceable in social strategy analysis, improvement planning, social and financial programme administration, income generation, and organizing national issues for basic leadership with respect to budgetary distributions along with other factors. Accordingly, census without any doubt is the most essential strategy instrument for any demographic dispensation that has confidence in monetary development and social improvement planning.

In most developing countries, including Pakistan, the bulk of population falls outside formal system of social protection and development programmes. Hence, census plays an integrative role too by providing bases for the inclusion of these vulnerable segments of society into national programmes by mentioning them in quantifiable data. Looking back, our policymakers have been driving the economy by utilizing a 19-year-old back view of 1998 informational collection criterion whereas the demographic and social landscape of Pakistan has completely changed over the last two decades.

Rapid urbanization, population displacement due to security operations, natural disasters and the rising number of youth has had a tremendous impact on settlement patterns. The direct implications of new census would be for resource distribution and electoral politics. But, Pakistan has also lost out on the opportunity of maximizing on its much talked about 'Youth Bulge'. The demographic transition of Pakistan is an unrecorded, and un-tabulated phenomenon, thus the policy making in this regard is a function of ad hocism. Census shall contribute to more concrete policy driven by evidence.

Apart from policy making, an important dimension of the census is that the entire concept of representative democracy is based on it. The census ensures that each community gets the right number of representatives in government. It's a must for equitable distribution of funds. It should be disclosed as to how many people have been included in a block.
The unaccounted for population growth in Pakistan becomes even more problematic because of security situation. The policy makers of Pakistan are clueless about the Afghan, Bihari, Bengali, and Burmese, to name a few communities now living permanently in Pakistan. The rise of religious seminaries and the students coming there from Middle East, Africa and even Europe are also not formally accounted for or recorded. The Afghan refugees will be counted in the exercise, but many are not registered as refugees.

It is obvious that for political reforms as well, the nation needs the most recent population information. Without this, the Election Commission can't make arrangements for the delimitation of constituent electorate and seat quota in parliament, nor would it be able to manage different issues required for reinforcing a comprehensive democracy.

While a portion of the wide shapes of Pakistan's changing demography is as of now apparent, it will be essential to perceive how quick population development and a high rate of urbanization may have affected social, monetary and political undercurrents. Presently, after 19 years, it is assessed to have developed to more than 200m, making Pakistan edge nearer to the difficult position of the fifth most crowded nation. Significantly, inward movement, rural mobility, and dislodged people because of interior clash in the 2017 enumeration check are probably going to adjust the ethnic, social and monetary scene of various areas consequently affecting the future political course.

On account of these components, this census is probably going to fortify the recognition that the development of population in all the four provinces and different locales is not even. It is obvious that the population has been developing significantly quicker in a few locales not really as a result of high birth rates, but also because of versatility from provincial to urban zones.

Pakistan is one of the fastest urbanizing nations in South Asia and that the greater part the nation's populace might live in urban territories. Huge scale versatility of the provincial populace is the central point behind urban development. Since the last census conducted, urban populace is anticipated to be no less than 60%. As indicated by one examination, the urban regions represent around 80% of the nation's GDP and all the nation's tax incomes. Urban poverty rates are just about one-portion of country's rural destitution.
For the most part, the urbanization rate might be significantly speedier in the Punjab, however internal movement and convergence from the contention ranges in the northwest has caused a substantially more prominent increment of population in urban Sindh. For instance, Karachi, which is the nation's fundamental monetary hub, has seen an expected increment of 8.8% in its population for the most part in the

light of the monstrous flood of transients as of late.

However, the enumeration will likewise bring up issues about the move in populace proportions over the regions. Does the Punjab still appreciates a 54% offer in the nation's general population? Comparative inquiries emerge on account of Khyber Pakhtunkhwa which has seen the greatest relocation of populace constrained by activist savagery and progressive military operations.

The other very touchy issue is the imaginable change in the ethnic adjustment inside the territories especially on account of Sindh and Balochistan with the nearness of huge migrant populaces. These adjustments in the statistic adjust will likewise require a reallocation of seats in parliament and returning to the NFC grant. That may ignite another political debate among the areas.

Another antagonistic issue is that this radical statistic move on account of the rising urban populace is not completely reflected in our current political structure, as the portrayal of rustic zones remains disproportionally high. While the census may help in giving a more reasonable financial photo of the nation, it can likewise open another political Pandora's box. While a more populated Sindh may request a more noteworthy offer of assets and portrayal in parliament, the territory is probably going to confront a similar request from its own particular urban focuses. Every one of these issues must be handled agreeably for the further fortifying of our government fair framework. The statistics is the fundamental severe pill to direct that change.

Brief History of Census in Pakistan

Article 51(5) of the Constitution of Pakistan 1973 delineates: "The seats in the National Assembly should be apportioned to every Province, the Federally Administration Tribal Areas (FATA) and the Federal Capital on the premise of population as per the last census evaluation formally published". Furthermore, this Constitution gives a commitment of leading census registration after every 10 years.

The accounts of history uncovers that the first census after the freedom of the nation was held in 1951. The second was worked in 1961 while the third in 1972 rather than 1971 inferable from political turmoil and war with India. The fourth population census was planned to be directed in March 1981 and the fifth one was expected in 1991 yet could be held in 1998. Sixth census, which was due in 2008, had been hampering since 1998; in this way, at present enumeration was held in April 2017 on the orders of the Supreme Court of Pakistan.

Appropriately, the seats of National Assembly are dispersed on the basis of population. Any central of provincial seat of university is given to the young as per the number of inhabitants in their city. Indeed, the "share" for enlistment to the government occupations is given under the quantity of population through census. Also, socio-economic factors are likewise required and they are checked in enumeration.

It implies that from educational foundation to political field and from social life to conservative procedures, population is important to be tallied under the procedure of statistics. Currently, the Punjab has 183 seats in the National Assembly (148 general, 35 women) out of 342. Sindh secures 75 (61 general, 14 women), Khyber Pakhtunkhwa (KP) has 43 (35 general, 8 women), Balochistan has 17 (14 general, 3 women), FATA has 12, and Federal Capital has 2 while 10 seats are for non-Muslims.

Politics of Census

Like other national issues, the census has always been turned into a politically antagonistic issue in this nation causing rehashed deferments. It was likely on the intercession of the Supreme Court that constrained the experts to satisfy this commitment. The recent census is conducted in Pakistan after a gap of almost two decades. This is not the first occasion when a statistics has been deferred. Already, the census led in 1972 was initially due in 1971, yet because of war with India and partition of East Pakistan, enumeration was deferred for a year. Absence of accessibility of budgetary assets, troublesome security situation in the country, deficient security staff at transfer to do the movement, are few of real issues featured by the legislatures while postponing the enumeration action.

The most compelling reason for this postponement is the malevolence on the part of the then government to continue with the census, as they are keener on keeping up the existing political conditions. A statistics proclaiming accurate populace of the nation, clarifying the statistic move from provincial to urban parts of the nation could turn out to be a distinct advantage, as seats designated in the National Assembly will be concocted by the new information.

The new population figures would likewise change the work share designated to areas in government occupations. What's more, the allotment of money related assets to areas would also be influenced, not to overlook that the National Finance Commission (NFC) Award, has dependably remained a noteworthy reason for discoed between the regions.

The results show an increase of 57% in the total population (excluding Azad Kashmir, and Gilgit-Baltistan) of the country in the last 19 years, and as per enumeration of the 'population census 2017' comes about, the aggregate populace of Pakistan stayed 207,774,520 by the end of June 2017 as compared to 132,362,279 back in 1998. The patterns of urbanization in Pakistan according to the temporary consequences of the census are given beneath:

Provisional Summary Results of 6th Population and Housing Census-2017			
Administrative Unit	**Households (in million)**	**Total Population (in million)**	**1998-2017 Average Annual Growth Rate**
Pakistan	32.20	207.77	2.40
Khyber Pakhtunkhwa	3.84	30.52	2.89
FATA	0.55	5.00	2.41
Punjab	17.10	110.01	2.13
Sindh	8.58	47.88	2.41
Balochistan	1.77	12.34	3.37
Islamabad Capital Territory (ICT)	0.33	2.00	4.91

Census – 2017 Pakistan								
Administrative units	**Households (in million)**	**Population-2017 (in million)**				**Population 1998 (in million)**	**Sex ratio 2017**	**1998-2017 Average Annual Growth Rate**
		Male	**Female**	**Transgender**	**Total Population**			
PAKISTAN	**322.50**	**106.44**	**101.31**	**0.10**	**207.77**	**132.35**	**105.07**	**2.40**
Rural	20.01	67.30	64.88	0.002	132.18	86.85	103.72	2.23
Urban	12.19	39.14	36.42	0.007	75.58	45.49	107.47	2.70
KHYBER PAKHTUNKHWA	**3.84**	**15.46**	**15.05**	**0.0009**	**30.52**	**17.74**	**102.74**	**2.89**
Rural	3.10	12.49	12.29	0.0002	24.79	14.45	101.60	2.87
Urban	0.74	2.97	2.75	0.0006	5.72	3.28	107.83	2.96
FATA	**0.55**	**2.55**	**2.44**	**0.000027**	**5.001**	**3.17**	**104.54**	**2.41**
Rural	0.54	2.48	2.37	0.000027	4.85	3.09	104.37	2.41
Urban	0.016	0.074	0.67	0	0.14	0.08	110.39	2.70
PUNJAB	**17.10**	**55.95**	**54.04**	**0.006**	**110.01**	**73.62**	**103.54**	**2.13**
Rural	10.71	35.19	34.42	0.002	69.62	49.49	102.25	1.81
Urban	6.38	20.76	19.62	0.004	40.38	24.13	105.81	2.74
SINDH	**8.58**	**242.92**	**22.95**	**0.002**	**47.88**	**30.43**	**108.58**	**2.41**
Rural	4.18	11.91	11.05	0.0003	22.97	14.74	107.80	2.36
Urban	4.39	13.00	11.90	0.002	24.91	15.69	109.31	2.46
BALOCHISTAN	**1.77**	**6.48**	**58.60**	**0.0001**	**12.34**	**6.56**	**110.63**	**3.37**
Rural	1.30	4.69	42.53	0.00004	8.94	4.79	110.27	3.33
Urban	0.47	1.79	16.07	0.000069	3.40	1.76	111.59	3.49
ICT	**0.33**	**1.05**	**95.07**	**0.000133**	**2.006**	**0.80**	**111.04**	**4.91**
Rural	0.16	0.51	47.58	0.000052	0.99	0.27	108.41	6.95
Urban	0.17	0.53	47.48	0.000084	1.01	0.52	113.68	3.48

It is important to note here that urban share of populace was increased from 28.30% recorded in 1981 to 36.4% in 2017. Among the provinces, Sindh is the most urbanized territory where 52.02% people live in urban ranges. On the whole, in accordance to the provincial results, Pakistan houses 106.45m males, 101.31m females and 10,418 transgender. An increment in the urban-provincial proportion has been seen in all authoritative units with exception of Islamabad, which in any case remains the second most urbanized unit of the nation.

Near 36.4% of Pakistanis live in urban ranges, the provincial results uncover. Balochistan, the least urbanized, has encountered the fastest average yearly development rate since 1998 of 3.37%. Punjab's yearly growth rate remained the slowest at 2.13%, marginally below the national average of 2.4%. The provincial outcomes eliminate information from Gilgit-Baltistan and Azad Jammu and Kashmir, which is probably going to be incorporated into the final report. Thus, the evaluation is probably going to have vital ramifications for the coming elections, as electorate bodies are relied upon to must be redrawn as indicated by the recently arranged results.

estimates put by different world bodies and organization like the World Bank, which estimated the population of Pakistan in 2017 to be around 193.2m.

Consequently, policies were formulated on tenuous grounds by keeping in view the short-term goals and were devoid of long-term structural and institutional reforms. Qualitative and quantitative information about dominating occupations that is evidently lost from the survey, will go far in distinguishing work, aptitude gaps, farm sizes and types, rural action, crops efficiency, and number of individuals occupied with cultivation, and other businesses, including web-based start-up companies. This has implications for skill development and enhancement programmes.

Population focuses would then be able to be gathered to coordinate administrative units. In fact, the evaluation information gathering is not organized to coordinate the administrative units in education sector. Now, as the latest census revealed, the population has ballooned to 207.8; more resources has to be allocated to education sector to fulfil the impending education divide in various localities of the country, which is already suffering due to poor planning, social constraints and gender gaps.

Admin Unit	Population (mill.)			Urban Share %		
	1981	**1998**	**2017**	**1981**	**1998**	**2017**
Pakistan	84.25	132.35	207.77	28.30	32.52	36.38
KP	11.06	17.74	30.52	15.06	16.87	18.77
FATA	2.20	3.18	5.00		2.69	2.84
PUNJAB	47.29	73.62	110.01	27.60	31.27	36.71
SINDH	19.03	30.44	47.89	43.32	48.75	52.02
BALOCHISTAN	4.33	6.57	12.34	15.62	23.89	27.55
ISLAMABAD	0.34	0.81	2.00	60.06	65.72	50.58

Census 2017: Implications for Social Sector Policies

Although the economic growth has smoothly increased during the last four years to reach 5.28% in 2016-17 (which is the highest in 10 years); yet a substantial increase in the population carries wider implications for all domains of social policy, i.e. education policy, health and nutrition policy, job creation and poverty reduction policies, agricultural policies to reduce food insecurity. A brief description is provided below:

Education Sector

Public expenditure on Education in Pakistan as percentage to GDP stood at 2.3% in FY 2016. With these allocations, the total number of enrolments at national level during 2015-16 stood at 46.223 million. Similarly, the total number of institutes stood at 252.8 thousands during 2015-16. However, the expenditures and enrolment trends were based on nebulous figures of 1998 census and policies were improvised keeping in view the above census or the

Health and Nutrition sector

Similarly, the current census also carry an unequivocal message for the reforms in the health and nutrition sector which also succumbed to poor planning and shabby policy implementations due to absence of exact population figures. In 2015, Pakistan was ranked 149th out of 179 countries on the WHO world maternal mortality rate index. According to the World Health Organization (WHO), Pakistan ranks at 122 out of 190 countries in terms of health care standards.

Likewise, mental incapacity remained unchecked which is an intense national issue. A huge number of individuals are experiencing anxiety, depression and other mental conditions. Subsequently, it is basic that physical as well as 'mental incapacity' should have been there in the 6th census. Information on number of specialists, nursing staff, prescriptions, medicinal gear and neurotic lab offices at Tehsil and district doctor's facilities is vital for deciding

capacity with respect to wellbeing conveyance to serve our provincial populaces.

Additionally, information should likewise be gathered on qualified elective medicine experts. Looking at the situation, mere allocation of Rs 145.97 billion for a population of nearly 210 million will prove insufficient and will exacerbate the health conditions of the people. The government urgently need to mobilize all the resources for the betterment of health infrastructure and to review and expand various health priority programmes, including Cancer Treatment, Aids Prevention and Malaria Control Programmes, Prime Minister's Health Programme, Expansion of Immunization Programme and polio eradication. The per capita health budget immediately goes down which is also true for patients-doctor and beds-patients ratio.

Employment sector

Census results also carry wider influence for employment opportunities. Pakistan has been unable to harness its demographic dividend (its majority youth population). Early estimates and policy frameworks for job creation did not reflect the exact population and the youth bulge of Pakistan. However, the current census has provided reliable data on population, its growth and migration trends in different regions/ areas, employment, urban/rural population, male-female ratio, Afghan refugees, etc.

Likewise, a critical snippet that has been eliminated could be utilized in gathering alongside scholastic capabilities as to what abilities and trainings that the respondents have in their field of study. This will be imperative for deciding the mechanical gaps in the national abilities stock, for example, data, correspondence and innovation aptitudes, administration and authority abilities that is fundamental for training programmes for the youth falling between the years 15-25, particularly for women.

Statistics neglects to catch information on the dropout rate of recent school-going children. The figure most cited is 24 million, which is obsolete and underestimated. Policy communities have to devise pragmatic policies for reducing unemployment by considering all the aforementioned statistics unveiled by census. The national population census also acts as eye opener for respective provinces to mobilize all the resources and improve revenue collection methods in order to enhance its ability to provide employment opportunities in tandem with private sector.

Poverty reduction and social security nets

Poverty reduction and expansion of social safety nets is another area of intervention in tandem with current census results. Currently, during the current fiscal year 2016-17, Rs 1,017.5 billion expenditures have been made in 17 pro-poor sectors through the Medium Term Expenditure Framework (MTEF) sectors. However, these strategies have failed to lower poverty in Pakistan.

An increase in population is not concomitant with betterment in living standards of the people of Pakistan. This was mainly due to absence of sound statistics (population, rural/urban divide, provincial distribution of population) regarding various policy options for the provision of basic amenities like water and infrastructure, electricity, clean, and safe drinking water; all of which play a central role in poverty reduction.

Although, Pakistan Poverty Alleviation Fund (PPAF) is contributing a large amount of funds throughout Pakistan through various interventions; yet the tangible results were missing. Now, census results have exposed the vulnerability of poverty reduction strategies among the power corridors. The government have to expand its social security nets by encouraging social welfare schemes, by expanding cash transfer programmes and provision of loans on flexible conditions. These schemes must prominently target the increasing population of KP and Baluchistan where people are without a kernel of hope regarding their future and are living in dilapidated conditions.

The government must play an active and vibrant role by eliminating all the necessary hurdles for achieving goals envisaged under various social policy programmes. The recent census places the Pakistan as the fifth most populous country in the world bypassing Brazil. Policy communities must be cognizant of the wider implications if the ballooning population is not mainstreamed and necessary environment is not provided for the provision of basic amenities and employment opportunities. Population increase is a time ticking bombing which can explode at any moment if proper national strategies and plans are not devised to harness their potential. Current census results can help the policy makers in making equitable decisions for balanced economic planning, in delineating just courses for developmental regimes and adequate mobilization of government revenues for achieving all the social policy goals; lest it will be too late to intervene and crises will start brewing.

Note on Data Quality Issues

However, one must be careful in drawing implications for multiple reasons. First and foremost Under-numeration complaints from Sindh and FATA are challenging the credibility of numbers. As per many experts, some of the results, for example enumeration of Karachi, are hard to explain. Also, hard to explain is the KP share to population surging at 1.3pc as the provinces has witnessed highest out-migration

.

The United Nations Statistics Division ascertains that utilization of 'OCR imaging' sets aside to two per cent of the

aggregate cost of the enumeration and requires less staff for information analysis (Ahmed 2017). In any case, the OCR isn't as precise as the Optical Mark Recognition (OMR) innovation utilized for information accumulation in the 1998 statistics for which administrators, hence, required to check all data physically before changing over them into machine-readable configuration thus taking a lot of time and manpower.

Enumerators could have been connected to the National Database Registration Authority (NADRA) framework. The Punjab Information Technology Board (PITB) was eager to give the technical support in such a manner. The proposal was, however, dropped as no accord could be come to on it. It was contended that the acquisition of these tablets would be costly and tedious and surrounded by worries of transparency and credibility. Phrases like 'insufficient time to acquire these gadgets' don't offer a good reason explain the costs in terms of skeptics on accuracy of numbers.

The prohibition of the occupants (refugees or non-refugees) living in evacuee towns from the enumeration likewise broke the rule of universality. Monitors in all areas reported issues including listing of transgender people, and people with inabilities. Also, enumerators ought to be better trained to be able to differentiate between literacy and education. Huge numbers of them mixed education with literacy rate, with an understanding that individuals who were literate yet had not receive any formal education or went to school, were viewed as illiterate. Also, in almost all regions, observers said that 'obsolete geographic maps' constituted as a major issue in the evaluation process of census.

Similarly, questions are arising on shifting of data to original census block if the household was living in present block less than six months as the original form does not ask any information on period living in present area. Last moment changes in definition of 'urban area" leaving many peri-urban areas counted un-urban also played it part in underestimating urban population of the country. This is creating distortions in many policies like property tax, urban service delivery which are based on rural-urban divide.

Conclusion

Population development assumes a determinant part in the improvement procedure of a nation. Expanding population raise the reliance proportion and puts weight on basic education and training, wellbeing framework and sustenance supply, likewise decreasing per capita income of the country. In any case, women's training can help lessen the population development because it would build mindfulness about their obligation towards children and risk factors concerning wellbeing.

As part of the policy implication, a steady change in wellbeing and education pointers alongside successful population welfare programmes, the blooming population growth shown in the census results, can be controlled. We do have hard figures on how the wellbeing division in Pakistan is woefully underfunded when contrasted with peer economies.

Pakistan must get more imaginative with how it touches base with new numbers. The wellbeing division ought to be subsidized in view of its needs, not its apparent utility. A crazy surge in population and appropriation of specialists should be tended to and contemplated over. Taking a gander at the immensity of the issues in this part and the miniscule spending plan apportioned to it just implies that they have an extremely feeble anteroom. The education spending should be separated in view of a strong training strategy with designation crosswise over different training levels. Household dependency ratio also takes a jump amid new numbers.

Finally, for exact position on these issues and anomalies pertaining to data quality and validation, one has to wait for census verification and the disaggregated data, which are not available at this point of time. A Post Evaluation Survey [PES] is strongly needed and recommended to independently verify the findings of the survey.

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China's growing role in South Asia – What does it mean for US-Pakistan relations?

Dr Vaqar Ahmed

In the recent past, Pakistan's closeness with China in the backdrop of growing cooperation on One Belt One Road Initiative in general and China-Pakistan Economic Corridor (CPEC) in particular is being perceived across the world as a 'broader economic expansionism' of China. Especially in the US and India, this growth and development-led activity is being dovetailed with strategic interests of China in the region. With the deepening of cooperation between China and Pakistan, analysts have taken different angles of what this may mean for the US and India, and Pakistan's relations with both.

From Pakistan's perspective, one would like to believe that the US-Pakistan relations should be independent of China-Pakistan ties. At the same time, one would also like to believe that there should be convergence across the vision for the region which China, Pakistan and the US may have.

Let us start by first acknowledging some assumptions that will naturally put limits to our analysis here. First, in this piece we are more interested to study China's growing 'economic role' in the region and what it means for Pakistan and its friends, including the US.

Our second assumption is that current non-economic predicaments which China's economic expansion is facing in the region are short-term phenomenon and with the help of China's financial power or other factors it will eventually smoothen these issues. Among other issues we are referring to: a) the ongoing China-India standoff in Doklam plateau claimed by Indian ally Bhutan, b) reservations and uprising led by trade and labour unions in some South Asian countries against increasing commercial presence of China; something which was seen more vividly in case of China-Sri Lanka port deal, and c) India's growing unease over China's development of Gwadar port in the Arabian Sea.

One of the reasons we believe that this short-term impasse is due to the rise of new and better regional forums driven by geo-economics rather than purely geopolitical interests. Among others, they include: Shanghai Cooperation Organization (SCO), Association of Brazil, Russia, India, China and South Africa (BRICS) countries, and the Eurasian Economic Union (EEU). In the case of India, Pakistan and Iran, the emergence of these forums has diminished the importance of Economic Cooperation Organization (ECO) and South Asian Association for Regional Cooperation (SAARC), at least for the time being.

With these assumptions, let's first start with China's economic presence in South Asia. We look at this economic presence in terms of a) China's trade with South Asia, and b) China's investment flows with South Asia. While China remains a low key export destination for most South Asian economies (see Pakistan's case in Table 1), given their weak competiveness vis-à-vis China, however a significant part of raw material and machinery that goes into domestic production and exports of South Asian economies in fact is imported from China (see Pakistan's case in Table 2). As regards, exports from South Asian countries including Pakistan, US and EU remain the dominant buyers given that they have provided comfortable market access. In the case of sourcing foreign direct investment from abroad, US remains a leading investment partner of South Asia. It also remains an important element in the stability of balance of payments of these countries with higher levels of remittances arriving from US in comparison to China. The role of US in the International Monetary Fund (IMF) is at times also requested by some South Asian countries.

Table: 1 Exports by Pakistan (Million US Dollar)

Country	2016	2017 (P)
China	1905	1622
EU	7072	7288
USA	3717	3681

Source: State Bank of Pakistan P: Provisional

Table 2: Imports of Pakistan (Million US Dollar)

Country	FY 2016	FY 2017
China	8824	10531
EU	5601	6334
USA	1480	2102

Source: State Bank of Pakistan

A key question now emerges, i.e. contrary to the data, the common perception in several Central and South Asian countries points towards increasing economic role of China in their economies. This perhaps cannot be explained through trade or investment flows, but through infrastructure assistance provided by China to the region. This assistance in road, rail, ports and aviation connectivity or even in the energy sectors and now fiber optics could usually take the form of concessional loans and are therefore accounted as part of external debt or other project financing mechanism. Even in the case of Pakistan, debt now owed to China is perhaps a key argument put forward by those who may like to see a cautious approach in the bilateral relations. However, many argue that the US direct support and its support via IMF and other multilateral institutions came with strings. The conditionalities which come now with China's Asian

Infrastructure Investment Bank (AIIB) and Export-Import (EXIM) Bank of China may be less stringent. Furthermore, these are not strictly to be paid by the government. For example, in energy sector projects under CPEC, the consumers will pay a relatively higher tariff for consuming the electricity from Chinese supported generation plants. This may mean higher unit costs for consumers at least in the short to medium term.

While talks about a possible National Trade Corridor (NTC) in Pakistan, supported by China had been around since 1999, these never saw the light of day until the time US and India really started getting closer in strategic terms. Traditionally, the US kept a balance between its interactions with India and Pakistan which was important for optics in both countries. In September 2014, this balance clearly tilted in favour of India. Prime Minister Modi's visit to the White House and the statements thereafter were analyzed in the Indian press and many believed that while the US and Pakistan only had a transactional relationship, the relationship between US and India was much deeper and would soon become more strategic.

In January 2015, during President's Obama's visit to New Delhi, US and India renewed the defense framework agreement, something which motivated Pakistan's Army Chief to visit Beijing sooner than later. In April 2015, Chinese government also realized the importance of expediting its commitments to Pakistan and President Xi Jingping visited Pakistan and several initiatives are signed between both countries (including CPEC). The pressure for Pakistan to become closer to China didn't diminish here.

After the Uri incident in 2016, Prime Minister Modi made public statements to isolate Pakistan at the international level. India backed out from a Heads of States SAARC meeting, planned to take place in October 2016 in Islamabad and also convinced Afghanistan and Bangladesh not to visit Islamabad. The SAARC Summit was called off bringing significant diplomatic embarrassment to Pakistan. In December 2016, Times of India carried a feature on how this strategy of isolating Pakistan was finally working. The feature was titled “Why US President Barack Obama didn't visit Pakistan during his tenure?” Prime Minister Modi maintained an anti-Pakistan rhetoric at the BRICS summit in 2016 and accused Pakistan of supporting terrorism – something which both China and Russia refused to mention in the summit declaration.

While it may take a different sitting to see why China and Russia continue to see Pakistan as an ally when it comes to the future of stability in the region, it is however necessary to mention Russia's increasing economic interest in Pakistan and to put scale-up investment in infrastructure development. A meeting between the then Prime Minister Nawaz Sharif and Russian President Vladimir Putin at the SCO Summit in January 2017 took stock of joint military exercises between the two countries and first-ever Russia-Pakistan consultation on Central and South Asia regional issues. The next month, in Feburary 2017, a high level delegation from Russia committed $ 2 billion for the North-South gas pipeline in Pakistan apart from expressing interest in several future energy programmes. Russia has also viewed CPEC investment as a key instrument which can link Pakistan with several Central Asian economies – something which Government of Tajikistan has been demanding from Pakistan. The above mentioned in fact shows how fast US and India's expanding relationship made China, Russia and Pakistan to strengthen cooperation.

US will remain important for future peace in the region and sustainability of CPEC led economic growth in Pakistan. The official position of the US government has so far been that CPEC will be good for the development of Pakistan and the region. As the early harvest projects under CPEC now come to completion and with commissioning of new energy plants, Pakistan needs to focus on how it could better provide benefits of CPEC to the neighbors in turn improving its regional ties, connectivity and economic interdependencies. US can certainly help forge post-CPEC agreements with Afghanistan and India.

A more regionally relevant Pakistan will also be in the US interest and will have greater confidence in engaging with in US supported mechanisms for regional stability including Quadrilateral Coordination Group for Afghanistan.

Finally, the world will need to see Pakistan as the fifth largest population in the world. As growth is sustained, US and EU companies will gain market and find domestic demand in Pakistan a source of profit, with more US companies getting future orders. The US and Pakistan must work together in rebranding of bilateral relationship through business to business, higher education, social sector cooperation ties. Unfortunately not a lot of thinking is being done on these aspects of US-Pakistan relationship. Whenever the current US administration talks about Pakistan it is usually about the progress on anti-terrorism efforts, which is certainly important but should not be at the cost of all those interests which both countries have shared during the past 70 years of relationship.

One of the key questions left unanswered here is if China can play a role in bringing US and Pakistan together? An answer in affirmative will require that visions of both China and US about the region converge and both are ready to help Pakistan without any preconditions. China can also help Pakistan and other smaller economies of South Asia through the recently proposed BRICS plus approach which could provide a more strengthened platform for South-South cooperation.

Cyber Warfare

Brig. (Retd) Mohammad Yasin

Some agencies blamed the United States as the culprit in the cyber-attacks when hundreds of thousands computers in more than 150 countries were hit by the ransom-ware attack

Future war will certainly be the cyber war. An adversary rich in cyber warfare, technology will win the war without taking it to the battlefield. Defence systems and economic centres of the victim will be rendered ineffective. Are we prepared and ready to successfully meet cyber-attacks targeting our defence systems and economic centres? In cyber warfare, the Information and Communication Technologies (ICTs) are used to disrupt the activities of a state or organization by attacking its information systems devised for strategic or military purposes. Such strategies would disable websites, channels of communication, weapon systems, economic and financial institutions and command and control capability.

What will happen in case the enemy launches a successful cyber-attack targeting the defence forces?

- Computer networks and communication channels will be disabled.
- Missiles will either fail to take off or will hit victim's own positions.
- All information and data will be deleted.
- The most serious set back will be the disablement of the command and control system. Army echelons, air force units, and naval ships will either be out of communication with their control headquarters or they will receive harmful messages.
- Cipher and decipher systems will not function.
- According to Brad Smith, Microsoft's President and Chief Legal Officer, "any cyber- attack is an equivalent scenario with conventional weapons would be the US military having some of its Tomahawk missiles stolen".
- Nuclear control systems will be disabled.

The recent unprecedented cyber-attacks, as reported by the electronic and print media, wreaked global havoc. The following were some of the outcomes:

- A large number of hospitals of Britain's National Health Service had to close down their activities, scrap serious operations and divert ambulances. The attacks used ransom-ware which locks users' files unless they pay the designated ransom to the attackers within a specified period.
- In India and Russia, Microsoft's older Windows operating systems were badly hit.
- Documents of US National Security agency were hit by malware.
- French car maker Renault was forced to stop production at sites in France and in some other countries.

In the recent past, there have been a number of severe cyber attacks. Katia Moskvitch (Engineering and Technology Journal, UK, April 2017) narrates the following incidents that happened in the recent past:

- A steel plant in Germany failed to shut down properly, resulting in damages worth millions of euros. Malware inserted into the control system was blamed for the incident.
- In the United States, a hydraulic dam malfunctioned following a hacking attack.

The source of ruins according to Microsoft President Brad Smith was the code developed by the US National Security Agency. It was leaked as part of document dump. The US blamed Russia for the episode.

The recent incidents of cyber attacks ought to be a wake up call for all governments. Codes like the above can fall into wrong hands. But, what measures are needed to forestall a catastrophe which can be caused by an enemy country. The experts say that a mechanism on the lines of nuclear disarmament ought to be negotiated under the auspices of the United Nations.

According to Martin Courtney (Engineering and Technology Journal, UK, April 2017), "the US reportedly considered using a cyber offensive against Qaddafi's regime in Libya ahead of air strikes, but refrained, fearing it would set a precedent for other countries. It also fell shy of using cyber warfare to prevent Pakistan's radar systems detecting helicopters carrying US Special Forces on the hunt for Osama Bin Laden for the same reason.

The current scenario demands preparations for preventing cyber warfare or state-sponsored cyber attacks. This is especially so for Pakistan for obvious reasons. The international law of armed conflict covers cyberspace, but who will force an enemy to abide by the law. As they say, "every thing is fair in love and war". Therefore, it is essential that top risks should be identified and preparations be made to meet such an exigency. It must be remembered that cyber attacks are cheaper to launch and hard to detect. In most cases, it is even impossible to track the source. Islamic State (IS) and other terrorist organizations can launch cyber attacks.

Preparations to prevent cyber attacks may involve the following measures (this is by no means an exhaustive list):

- Developing a comprehensive legislation covering individual and state sponsored cyber-attacks / Cyber Warfare (Although we have laws on cyber-crimes, but they do not cover organized cyber-attacks and state-sponsored attacks.)
- Developing cyber security policy (This will include the required strategy with goals, objectives, systems, organizations and responsibilities.)
- Building a cyber-workforce (A full-time workforce involving all stakeholders from the armed forces and civil organizations needs to be raised and trained.)
- Intelligence sharing and intra-agency coordination (This is an important aspect in preparation and prevention of cyber-attacks. In the 1971 war with India, there was hardly any coordination between the army and the navy, which resulted in avoidable losses.

Acquiring capability to prevent cyber attacks is indeed need of the hour, but we must also develop capability to launch cyber attacks. This will be an effective "deterrence". We can build alliances and partnerships with friendly countries, but self–sustaining ability in this field is an inescapable need.

Changing Scenarios in Agriculture Sector: Time to Act

Asif Javed

The question as to why the agriculture sector is being overlooked for the past may years and who is responsible for it needs a serious attention of the government at a time when the agriculture share to GDP ratio is on the decline causing stagnation in overall production of major crops. Most of the people term it negligence and lack of will on the part of the successive governments to devise and implement an effective policy in this regard.

According to Economic Survey of Pakistan, the share of agriculture to GDP was 22% in 2010 which has declined to 19.5% in 2017. Total cultivated area has also decreased from 23.9% in 2010 to 22.7% in 2016. This decline on the one hand is bringing down the economic activities and employment opportunities while on the other it may lead to the severe food crisis Pakistan may fac in coming years. During the current fiscal, food imports have also increased by 18% as compared to previous fiscal. The World Food Programme (WFP) has already warned of Pakistan bout Prevalence of Undernourishment among 18% of the entire population, which is moderately high as per Global Hunger Map Threshold. The challenges that agriculture sector is facing are immense ranging from poor policies and their implementation to pest diseases and their control. Unfortunately, agriculture research is a neglected area and no sufficient allocations are made in the budget to conduct new research in the sector. Water shortages, uncertain pattern of rainfall and floods are some other impediments in the growth of agriculture sector. Average surface water availability for crops has decreased by 2.3%, so the crops like sugarcane, which is heavily dependent on water, are drastically affected. In 2014, sugarcane production was 67,640 thousand tones which declined to 65,482 thousand tones in 2016. Wheat and cotton production also declined during the same period, which highlights the plight of agriculture sector. Similarly, unavailability of basic inputs such as improved seed also affect production levels. Economic survey states that distribution of improved seeds decreased in 2016 as compared to 2015. The production of tractors also reduced during the same time period. In the absence of these basic requirements, we cannot expect the agriculture sector to thrive much. Climate change is also a biggest challenge to farm productivity, as major crops get affected due to rising temperatures and uncertain rainfall patterns. This uncertainty of rainfall also impacts the water availability for crops. Numerous studies show that climate change has severe consequences for major crops, including wheat, rice, sugarcane, and maize. Besides, it also harms rural livelihood. Crop diseases reduce the agriculture output and productivity. Recently, rice grain discoloration is emerging as serious threat to rice production. This disease affects the shape and size of the grain and eventually reduces the yield. The funds allocation to mitigate climate change effects under Public

Sector Development Program is less in the current fiscal year, i.e. Rs 815 million as compared to Rs1027 million allocated in 2016-17.

Livestock, a sub sector of agriculture, is responsible for 58.3% of the value added in agriculture sector of Pakistan. Animal diseases like Foot and Mouth Disease (FMD) is among the major disease that affects the livestock sector whereas several other diseases also broke out from time to time. Ineffective vaccination programmes, lack of quality vaccines, lack of quarantine check at the entry and exit of animals at farm are some of the factors that hinder the control of FMD in Pakistan. The government should facilitate the farmers while giving an easy access to basic inputs of agriculture with an increase in development spending for agriculture. Food security situation requires immediate action from the government, which can be improved by developing effective food security strategy and increasing the allocation for food security in budget. Advance molecular techniques are required to implement along with efficient management practices to mitigate the crop losses especially for rice. Provision of quality seeds is vital in increasing the productivity of major crops, which ultimately improves the food security situation in the country.

Vaccine production and quality control in connection with vaccines and veterinary drugs can promote the livestock sector. Public private partnership can be helpful in establishing the laboratories for the production of quality vaccine. There is a need to pay more attention towards climate change effects and the government should provide enough funds to mitigate the adverse effects of climate change on agriculture. Ample supply of water is essential which can only be possible if the government plans to construct water reservoirs. Capacity building of research institutions is essential, which can be promoted through public and private partnership.

20th Sustainable Development Conference

Seventy Years of Development: The Way Forward

The Sustainable Development Policy Institute (SDPI) is organizing its Twentieth Sustainable Development Conference (SDC) from 5 - 7 December 2017 in Islamabad, Pakistan. This year's overarching theme of the SDC is 'Seventy Years of Development: The Way Forward'.

Overarching Theme

This SDC is being organized in the spirit to celebrate and mark Pakistan's 70 years and SDPI's silver jubilee. For any nation, these milestones represent a journey and present its people with an opportunity to reflect back on what was achieved and what is still required.

There will be three streams under the overarching theme:

Stream 1: Pakistan has turned 70 in 2017. SDC aims to congregate key stakeholders, national and international, to reflect on peace and development promises made and what has been achieved so far. Academicians, development practitioners, and development partners who are working in/on South Asia to take a futuristic approach are being invited and suggest a "way forward" for development.

Stream 2: Given that it will be 25 years of SDPI, the SDC would therefore touch upon the role of think tanks (TTs) towards sustainable development. The speakers from like-minded organizations around the world would not only share the role of TTs in bridging policy research gaps but also their role in getting those policies implemented.

Stream 3: Conference Sub-themes: It will look at socio-economic development, SDGs, social justice, women empowerment, minority rights, art and culture, climate change, REDD+, information technology, energy, etc.

Updates of the Twentieth Sustainable Development Conference may be viewed at www.sdpi.org/sdc.php

Thematic Programme

Regional Milestones Beyond 70: The Journey Continues

1. Opening Plenary: Development Beyond 70 and the Way Forward
2. Pakistan at 100 – Panel Organisers: Mr Enrique Blanco Armas, Dr Vaqar Ahmed and Mr Ahad Nazir

Peace and Security

3. Peace and Security in South Asia: The Way Forward
4. Challenges of Moving from Diversity to Pluralism
5. Political Economy of South Asia: Stories from Pakistan, India and Bangladesh
6. Art as Resistance against the Political Tyranny in South Asia

Role of China in Regional Development

7. Financing and Financial Integration of China Pakistan Economic Corridor (CPEC)
8. CPEC and Pakistan's Youth

Holding the SDGs Promise

9. Youth Exclusion and Horizontal Inequalities in the Context of SDGs
10. Priority Actions for the SDGs and Leave No One Behind Agenda
11. Structural Inequalities in South Asia: Issues, Challenges and Policy Solutions
12. Integrated Context Analysis on Food Insecurity and Natural Hazards
13. Transforming Higher Education Systems in South Asia: A Journey of 70 Years
14. Information and Telecommunications Journey in Pakistan: Future Directions
15. Session on Health and SDGs
16. Way forward to Smart Cities in Pakistan
17. Overcoming Barriers to Improve the Efficiency of Social Protection Programmes in Pakistan

Gender Equality

18. Violence against Women (VAW) and Women's Access to Justice
19. Promoting Gender Equality: Icons of Feminism and in Pakistan
20. Feminist Agenda from Beijing Platform for Action (BPfA) 1995 to the Sustainable Development Goals 2015: A Step Forward or Two Steps Back?

Role of Think Tanks in Sustainable Development

21. Independent Think Tanks: Myth or Reality

Combating Environmental Challenges and Climate Change

22. REDD+ for Sustainable Management of Forests and Societies
23. Migration, Water Management and Climate Change in Glacier River Basin and Semi-arid Regions in Pakistan: Key Linkages and Policy Options
24. Towards a Resilient Future: Adapting to Climate Change in Pakistan
25. Water Stewardship and Research Initiatives in Pakistan
26. Climate Change Driven Migration and Regional/Global Security
27. Understanding El-Niño and its Impacts on Pakistan

Strengthening Economy and Trade

28. Economic Growth and Regional Integration in Central and South Asia
29. Emerging Methods in Policy Engagements and Public Private Dialogue
30. Designing Better Federal and Provincial Tax Reforms
31. Improving Data Foresight for Economic Policy-Making

SD-EXPO Podium Discussions

(Sessions are being finalized on Sustainable Development EXPO - Ministry of Climate Change, Federal Board of Investment and other SD-EXPO partners)

Journalism Awards

Closing Plenary: H.U. Beg Memorial Lecture

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Human tragedy in Myanmar

'Ethnic Cleansing' for demanding citizenship rights is more of a tyranny

Shafqat Munir

Almost 64% Rohingya community from Myanmar has so far reached the Bangladeshi refugee camps, as the worst kind of violence turning to 'ethnic cleansing' forced them to leave their homes. About 40% of them reached the camps during the last one month until 23rd of September 2017. At the moment, Bangladesh hosts 700,000 out of 1,100,000 Rohingya population. Those who reached the refugee camps survived but exhausted, hungry and traumatized. The journey by boats had not been easy; and more of it, they had to pay exorbitant amounts to boatmen by skipping meals and other needs.

The United Nations plans to extend its US $77 million appeal to an upward level based on more than double the number of refugees they had expected earlier. The refugees are in dire need to humanitarian assistance. UNHCR, in its 2015 update, says that Asia and the Pacific is home to 7.7 million people of concern: they include 3.5 million refugees, 1.9 million internally displaced people (IDPs), and 1.4 million stateless people. A majority of the refugees originate from Afghanistan and Myanmar. Every 10th stateless person lives in Myanmar and hails from Rohingya community.

The world's largest group of stateless people lives in Myanmar's Rakhaine State known as 'Rohingyas' but the Myanmar government acknowledges them as 'Muslims' whose ancestors came from Bangladesh. Back in 1982, the Myanmar government under a legislation denied citizenship to 140,000 Rohingyas after the 2012 violence and added to the tally of an estimated 1.09 million people who lack citizenship in Myanmar. However, due to growing global pressure, Myanmar authorities granted citizenship to over 200 people and their children under a pilot project a couple of years back.

The fundamental root cause of the Rohingya crisis is denial of citizenship to 1.1 million people on the land where they have been living since generations. The 2012 violence and the continued repression of these stateless people forced them to flee for protection and search for livelihood. Hundreds of thousands of Rohingya Muslims, the most persecuted community in the world, are facing crackdown, burning and killing by the Myanmar Army inside their villages in Rakhaine. Situation inside their camps at Cox's Bazaar, Bangladesh's bordering district with Myanmar, is the worst example of loot, plunder, rape and killing. Since October 2016 violence, the recent military crackdown came after Royingya's nascent militant group attacked a military checkpost killing dozens of soldiers. This sparked cleaning operation by the military, which ravaged villages burning them down and killings over a thousand of innocent people from Rohingya community.

Before the recent wave of violence and reportedly the attack by Rohingya militants against the army and then the army's bloodiest crackdown, there has been a ray of hope for weak peace building efforts in the troubled western Rakhaine state through different channels. But, with the emergence of Rohingya militant group - Arakan Rohingya Salvation Army (ARSA) which appeared for the first time when it attacked security forces in October 2016, the conflict has taken a new turn. The Rohingya militant group second time attacked 25 police posts, killing over a dozen, in August 2017. This sparked clashes between the militant group and the government troops who in a crackdown started a sort of 'ethnic cleansing' of Rohingya Muslims by burning their homes and markets, killing over a thousand people and forcing hundreds of thousands to flee to bordering district of Bangladesh.

The ARSA defended their attacks against security forces as legitimate to force the Myanmar government to uphold the rights of Rohingya, who, since decades, have been stateless, denied the citizenship rights, restricted to remain in displacement camps. They are not allowed to move in the Rakhaine state or elsewhere in Myanmar.

According to Myanmar authorities, the militant group want to carve out an 'Islamic state' within the state of Myanmar. The Rohingya villagers say security forces, police and anti-Muslim mobs comprising Budhists, have ruined their villages, burnt their homes, killed their loved ones and now the survivors have no shelter, no food and non-food items. While the Myanmar government denied these charges saying their troops have mostly targeted what they call 'the insurgents'. The government terms ARSA a group of 'extremist terrorists'.

The government even blamed aid agencies to siding with what it calls the militants. As an evidence, the government claims that the energy biscuits provided by the World Food Programme (WFP) were recovered from the training camps run by the alleged extremist groups. The United Nations High Commissioner for Human Rights Zeid Ra'an Al Hussein says such allegations are irresponsible and only serve to spread fear and further violence. Amid these baseless allegations, the Myanmar authorities have literally blocked the humanitarian operation in the troubled areas and hence the WFP is unable to distribute food and cash to the Rohingya community. The other aid agencies had also been forced to pull out of the Rakhaine state.

Amid this growing humanitarian crisis, there is a dire need to ensure a conducive, socio-economically viable and protective environment in Myanmar's Rakhaine state so that the stateless Rohingya people, mostly the Muslims might get citizenship, live in peace and undertake their livelihood for survival.

There are two levels of actions. In the short-term, those who are at the camps should be provided with humanitarian assistance and protection while those who are trapped in the waters and detention centres should be rescued and later provided with humanitarian assistance. In the long run, they need either a status of migrant/asylee in the countries where they disembarked from the boats as free citizens or they are repatriated to their original place where they should not be prosecuted do not feel insecure or live in fear of being persecuted or killed, and finally citizenship is given to these stateless people. The root causes of inequality, poverty, and loss of livelihood should be addressed and protection to stateless people need to be ensured if the world bodies want a permanent solution of the crisis. -

(Note: The author had earlier served as humanitarian policy advisor in Myanmar.)

Pakistan's Public Debt and Debt Mismanagement

Syed Shujaat Ahmed

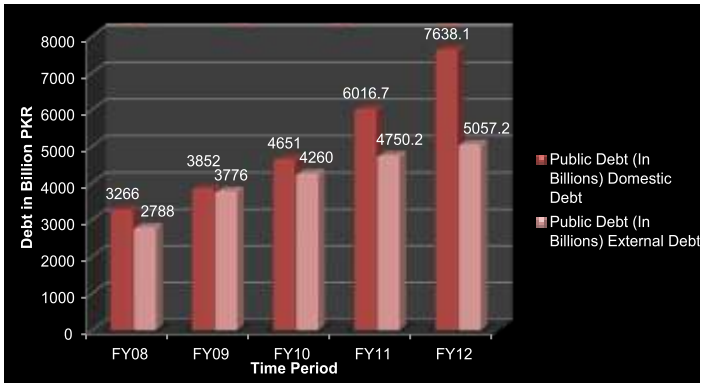

Figure-1: Public Debt in PPP Government

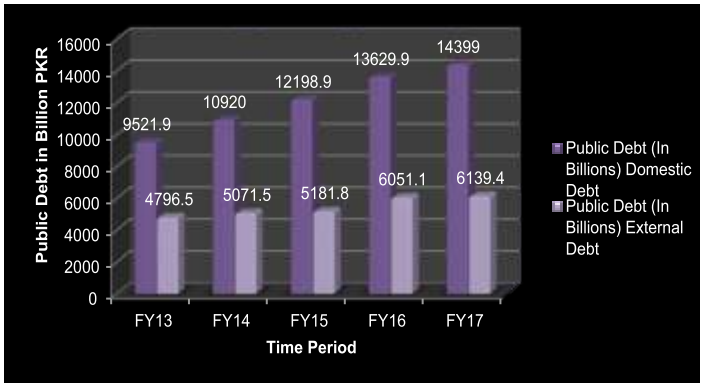

Figure-2: Public Debt in PML (N) Government

The issue of heavy debts being tackled by the developing countries is one of the major challenges of 21st century. It is considered one of the key sources of government income. In the case of Pakistan, the number has increased from Rs 12695.3 billion in 2012-13 to Rs 20538.4 billion in 2016-17.

Pakistan's public debt picture seems to be not very encouraging in terms of numbers. Since 2008, debt to GDP ratio has been on the rise. This rise has been more in the case of domestic debt which grew over the period more frequently in comparison to external debt. During 2008-12, domestic debt grew by 32.4% while it was 43.8% during 2013-17. On the other hand, external debt grew by 27.18% during 2008-12, and 19.8% during 2013-17.

This rise in debt was to finance fiscal deficit. Financing here was termed important as it was done in the form of external loans to supplement the domestic resources required to accelerate the pace of economic development and make positive contributions in developing infrastructure base. Further these borrowings were also used for financing of projects of national importance, budgetary and balance of payments support, earthquakes and floods, rehabilitation assistance, and import of urea and crude oils.

Besides the budgetary and balance of payments support, these loans were used to build external support for protection against exchange rate volatility and absorption of external shocks. Another purpose of these loans was to build external buffers to protect against exchange rate volatility and absorb external shocks.

As far as debt servicing is concerned, an increase was witnessed from fiscal 2008-09 to 2015-16 with majority of the revenue share pushed towards it. It was during 2008-09 due to global financial crisis, which caused depreciation of rupee resulting in high amount (PKR 807.8 billion). During 2010-11, due to stable dollar to rupee parity against Rs 872.9 billion, Pakistan paid Rs 852.2 billion. From fiscal 2011-12 to 2015-16 percentage of revenue (going towards debt servicing) fluctuated in between 35% and 40% of the revenue. In 2011-12, Pakistan utilized 39.9% of the total revenue (Rs 1,024 billion) to pay back which by 2015-16 is found to be 36% (Rs 1,599 billion).

Pakistan has to fund the current fiscal deficit comparatively more via domestic borrowing with declining external borrowing. This domestic borrowing has thus created negative impact on local domestic financial sectors. Over the period, there is an increase in domestic borrowing by the government; this thus led to depletion of finances for private sector. This depletion of financial resources impacted the small and medium enterprises badly which found it difficult to obtain capital from banks. Similarly, a study by Akram (2011) pointed out that the government domestic debt held by banks also resulted in low mobilization of deposits to fund private sector projects. Thus lack of mobilization of resources did reduce the investment to some extent.

Study by Khan and Gill (2009) pointed out that public borrowing caused crowding-out effect due to scarcity of funds in the system. Owing to excessive liquidity in this case, this argument of crowding out weakens, i.e. public borrowing from domestic sources other than the State Bank does not appear to exert any deterrence on private investment by creating funds crisis. There are also studies showing that debt influenced in the past investment, manufacturing sector and other key economic variables. This influence of debt thus resulted in low GDP growth.

As there are studies showing both positive and negative impact of debt, it can be concluded that the case is mostly of debt mismanagement. Debt management in Pakistan is mainly looked after by the Ministry of Finance where dealing with the implementation, monitoring and record keeping is done by the Economic Affairs Division (EAD)

whereas finance division looks after policy making related to debt, State Bank of Pakistan, Debt Policy Coordination Office and Central Directorate of National Saving. Thus looking at one issue by different divisions also results in mismanagement. This mismanagement itself influenced the economy inversely. The inverse impacts are there in the form of high debt-servicing cost which is leading to decreased expenditure on development due to pressure on managing finances.

To manage public debt, there are few proposals which should be implemented. First there is a need for effective fiscal reforms strategy. This strategy should focus on debt sustainability indicators while stressing for reduction in associated interest rate risks over its obligations.

Thus to achieve the objectives of debt management, there is a need to take into consideration structural reforms to immediately boost growth. Some other key fiscal policy tools in this regard include: Tax reforms being as tax is important source of revenue to finance development expenditures and public goods. There is a need to broaden the tax base by bringing more taxpayers with taxable income in the tax net. To increase tax base, there is a need to bring tax harmonization in the culture. Provinces are also required to increase their tax base. To increase the tax base, provinces should take into consideration the problem of double taxation, which is currently being faced by taxpayers moving or trading from one province to the other. There is also a need to bring in performance based reward system in Federal Board of Revenue (FBR) with the focus on human resource management by capacity building of tax officials. Similarly, in reforming tax system, tax body should come up with comprehensive tax collection system with minimum time to file.

Second, the government should effectively manage its expenditures with focus on priority areas having capacity to generate employment and improve overall economic outlook. Similarly, there is a need to avoid unplanned and un-productive expenditures, which are politically-motivated. To control expenditure side, the Ministry of Finance should prioritize and investigate duplication of projects and projects with excessive use of monetary resources. There is also a need for the government to remove un-targeted subsidies that are being rewarded to inefficient sectors. The government should incentivize investors by providing improved business and investment climate.

Third, the government should not part ways with the Fiscal Responsibility and Debt Limitation (FRDL) and limits defined in it. It should follow a stringent debt management strategy and moderate fiscal resources effectively. It should also take into consideration parliament before any amendment in FRDL Act. Efforts should be made to retire debts having expensive servicing requirements at the earliest.

Call to support developing world for sound chemicals' management

Dr Mahmood A.Khwaja, SDPI senior adviser, Chemicals and Sustainable Industrial Development emphasized the need for expediting support to developing countries, through capacity building, technical assistance and technology transfer for sound chemicals' (including mercury) management so as to safeguard public health.He was speaking at the first Conference of Parties (COP 1) on behalf of Zero Mercury Working Group (ZMWG) and Sustainable Development Policy Institute (SDPI), in Geneva on September 28, 2017. Over 1,500 delegates from 152 countries (including two Presidents and several ministers/vice-ministers for environment) participated in the conference.

First Conference of Parties

SDPI senior advisor Dr Mahmood A.Khwaja (inset) speaks at the first Conference of Parties, in Geneva, on September 28.

Water Quality Impact on Public Health and Assessment of Pakistan National Drinking Water Quality Standards

Anum Aslam and Dr Mahmood A. Khwaja

The quality of water, which varies according to its intended use, is assessed by evaluating its physical, chemical, biological and radiological characteristics (WHO 2006). World Health Organization (WHO) defines "safe-drinking water" as the water that does not represent any significant risk to health over the lifetime of its consumption, including different sensitivities that may occur between life stages. Drinking water quality has been debated throughout the world due to its increasing demand for human consumption and also due to the detrimental effects of increased urbanization and industrialization. Direct discharge of domestic waste, industrial effluents, agricultural runs off, leakages from septic tanks and poor management of farm wastes are considered as the main water pollution sources. Being the most drinking fluid, water is believed to be the major source of transmitting diseases (Ullah et al. 2014). According to WHO, 80% of human diseases are reported to occur due to the biological contamination of water in the developing countries (Sulehria et al. 2013). The situation in developed countries is not serious as 95% of the population has access to clean drinking water (Nabeela et al. 2014).

In Pakistan, access to safe drinking water is one of the major public health problems as the country is facing water quality and quantity issues, being documented in various studies. A large proportion of drinking water, almost 70%, comes from ground water aquifers within the country (Butt and Khair 2014). Bacteriological contamination, toxic metals like arsenic, iron, cadmium, nickel, pesticides and in some areas nitrates and fluorides are major threats to water quality within the country (Azizullah et al. 2011). Along with man-made activities, bad living conditions, including poor sanitation and natural disasters coupled with mismanagement frequently contaminate drinking water in Pakistan (Nabeela et al. 2014). Unfortunately, little attention is paid to drinking water quality issues within the country as the water supply agencies primarily focus on the quantity rather than the quality of drinking water. Moreover, weak institutional arrangement, lack of well-equipped laboratories & periodic water quality monitoring, and the absence of a legal framework for drinking water quality issues have aggravated the situation (Hayder et al. 2009).

Health impact of deteriorating drinking water quality:

Water borne diseases are of either microbial or chemical origin. Consuming unsafe drinking water poses greater risk of water borne diseases among general public. Small children having more drive to explore and play have closer contact with ground and little appreciation of hygiene. Hence, they are more likely to come in contact with excreta & contaminated mud, the primary sources of diarrheal diseases and intestinal parasites as well as other pathogens (Hunter et al. 2013). According to WHO, globally there are four billion cases of diarrhea each year and many other illnesses due to lack of access to clean water (Butt and Khair 2014). In 2006, around 4.5 million cases of diarrhea were reported in Pakistan, 14% of which were children under the age of 5 years (Nabeela et al. 2014).

Like microbial contamination, chemical contamination also poses serious health risks to infants and children health, hence making them susceptible to various diseases (WHO 2011).

Nitrate can interfere with the ability of the blood to carry oxygen to vital tissues of the body in infants of six months old or younger, causing methemoglobinemia, or "blue baby syndrome" (Woolverton 2015). High levels of nitrates can also be the cause of increased risk of respiratory tract infections and goiter development in children (Azizullah et al. 2011).

Heavy metals chronic toxicity from drinking water exposure pathway includes a wide range of adverse health effects. Nearly all organs are involved, mostly central nervous system, cardiovascular, hematopoietic, gastrointestinal and renal system (Ferrante et al., 2014). Among children, arsenic toxicity is found to be the cause of neurological impairment and intellectual dysfunctionality (Naujokas et al. 2013). Exposure to arsenic-contaminated drinking water during pregnancy is associated with reduced birth weight, and infant mortality (Smith and Steinmaus 2009). Long-term daily intakes of copper below recommended requirements can lead to anemia, neutropenia and bone demineralization in malnourished children (Ferrante et al. 2014). The adverse health effects from exposure to lead via drinking water are well-documented in children and adults. Mercury is primarily distributed through drinking water in the kidneys and brain and readily transferred to the fetus via the placenta. For this reason mercury could be responsible for birth defects and miscarriages (Ferrante et al. 2014). Various studies have reported the incidence of dental and skeletal fluorosis among children and the root cause of these diseases have found to be the excess amount of fluoride in drinking water (Mohsin et al. 2014). The prevalence of dental fluorosis was found to be 53.33 % in a reported study samples and most cases were of mild category. In Manga Mandi, an area near Lahore, 124 children were found to be suffering from skeletal fluorosis due to high fluoride content

in their drinking water. Similarly, it was found by another study conducted in Kalalanwala near Lahore that more than 400 people were having bone diseases with majority of children (72% patients were under 15 years of age). High concentration of fluoride in drinking water was traced as the reason of these numerous cases of bone diseases in the studied area (Azizullah et al. 2011).

Mortality data of children for water borne diseases:

Diarrhea is the second leading cause of death in children under the age of five years. Although it is a preventable and treatable disease, however, due to unsafe drinking water, lack of personal hygiene and poor sanitation as well as malnutrition, it kills around 760,000 children every year in developing and third world countries (WHO 2013). UNICEF child mortality data shows that about half of under-five year children deaths occur in five countries: India, Nigeria, Democratic Republic of the Congo (DRC), Pakistan and China. Of the 783 million people worldwide without improved drinking water, there are 119 million in China; 97 million in India; 66 million in Nigeria; 36 million in DRC; and 15 million in Pakistan (UNICE 2013).

In Pakistan, microbial contamination in drinking water has been highlighted as a major cause of illness and deaths among people. Intermittent water supply is common in urban areas and outbreak of gastroenteritis and other water borne diseases have become a normal feature (Hayder et al., 2009). It has been estimated that 30% of all diseases and 40% of all deaths are due to poor water quality particularly fecal contamination within country. 20-40% of beds in Pakistani hospitals are occupied by patients suffering from waterborne diseases including cholera, diarrhea, dysentery, hepatitis, typhoid etc., (Nabeela et al. 2014). Acording to one report, water-linked diseases in Pakistan cause national income losses of Rs 25-28 billion annually which is approximately 0.6-1.44 % of the country's GDP (Tahir at al. 2010).

Pakistan drinking water quality strategy:

In 1999, the need to establish standards and guidelines for quality drinking water was strongly advocated. In 2002, the Pakistan Standards Institute compiled the preliminary standards for quality drinking water. In 2004, Pakistan Council of Research in Water Resources (PCRWR) prepared a report related to water quality in Pakistan with recommendations for establishing standards. In a national workshop, jointly organized by Ministry of Health, Government of Pakistan and World Health Organization (WHO), the standards implemented in Pakistan for quality control of drinking water were reviewed, updated in accordance with the quality standards of WHO and finalized (Pak-EPA 2008).

In September 2009, the federal cabinet of Pakistan approved the National Drinking Water Policy for addressing the key issues and challenges in the provision of safe drinking water to the people. The overall goal of the policy was to ensure safe drinking water to the entire population at an affordable cost in an equitable, efficient and sufficient manner and to ensure reduction in the incidence of mortality and morbidity caused by water borne diseases. It was notified in the policy that the federal government would be responsible for developing special action plans for the un-served and under-served areas, brackish zones for areas prone to natural calamities like floods, drought and earthquakes, as well as those areas where women have to walk more than 0.5 km to have an access to safe drinking water. It was also notified that Pakistan's first safe drinking water act would be made and enacted while declaring the safe drinking water as fundamental human right. Cost-effective technology was to be deployed in this regard to utilize the local government resources optimally. The Ministry of Environment, Pakistan Council of Research in Water Resources (PCRWR) and Pakistan Standards and Quality Control Authority (PSQCA) were held responsible for the dissemination of information to all stakeholders regarding the Pakistan National Standards for Drinking Water (Government of Pakistan 2009).

Pakistan and some selected Asian countries' drinking water quality standards

A selected drinking water quality priority parameters of public health concern are taken into account in the foregoing pages for assessing them comparatively in the context of Pakistan with a few other Asian countries. The selected Asian countries include India, Sri Lanka, Nepal, China, Japan, Korea, Malaysia, Indonesia, Philippines and Vietnam. WHO standards are also included for comparison. The selected concerned parameters' guideline values in the 10 countries, along with WHO standards, are given in Table 1 to 3. It is desired to assess the current status of Pakistan National Drinking Water Quality Standards are stringent or relaxed in comparison to other selected Asian countries and if these are consistent with WHO drinking water quality standards.

As described in Table 1 (Physical Parameters) for total hardness as CaCO3, Pakistan has high standard value (500 mg/l) compare to WHO and is same for Nepal and Malaysia. Indonesia has the lowest value (170 mg/l). China's value is lower than Pakistan (450 mg/l). For Total Dissolved Solids (TDS), Pakistan standard value is same as that of WHO (1000 mg/l) and China, Nepal and Malaysia (Table 1). Four Asian countries have TDS standard value half that of WHO. For pH, except Japan (5.8 – 8.5), all the Asian countries (Table 1), including Pakistan have WHO standard value (6.5 – 8.5).

For arsenic (As), Pakistan, Nepal, Korea, Indonesia, Singapore, Philippines and Vietnam have higher value (0.05 mg/l) compare to WHO (Table 2A), whereas, other 5Asian

countries (including China & India) follow the guideline value of WHO (0.01 mg/l). For cadmium (Cd), Pakistan standard value (0.01 mg/l) and 3 other Asian countries (including China) is quite high as compare to WHO (0.003 mg/l). India, Sri Lanka, Nepal, Malaysia and Philippines standard value for cadmium is similar to that of WHO. Indonesia has the highest guideline value of 0.1 mg/l among all other selected countries (Table 2A). Pakistan and all other countries (except Indonesia & Vietnam) have same standard value (0.05 mg/l) for chromium as recommended by WHO. For chloride (Cl) Singapor has the lowest standard value among all the selected Asian countries (Tables 2A), Pakistan and other seven Asian countries follow the WHO recommended value of 250 mg/l. Japan has slightly low value, compare to WHO standard for chloride. For copper (Cu) Pakistan standard is same as that of WHO (2mg/l). The other Asian countries have much lower values (1.0 mg/l), India and Indonesia have much lower values, 0.05 and 0.5 mg/l, respectively.

Pakistan standard value (0.05 mg/l) for cyanide (CN) and 4 other Asian countries (including China & India) is lower than WHO (0.07 mg/l), whereas 3 Asian countries standard value for CN is even lesser (0.01 mg/l) than these 4 countries (Table 2B). Nepal & Philippines standard value for CN is same as WHO. Pakistan, Nepal and WHO has same standard value for (1.5 mg/l) for fluoride (F). Six Asian countries standard value for fluoride are lower than WHO, Japan standard value being the lowest (0.8 mg/l). In case of lead (Pb), Pakistan shares the standard value (0.05 mg/l) as that of Korea, Indonesia, Singapore and Vietnam which high as compare to that of (0.01 mg/l) India, Sri Lanka, Nepal, China, Japan, Malaysia and WHO. Philippines has the highest standard value (1.01 mg/l) among all the selected Asian countries (Table 2B). In case of mercury (Hg), Pakistan has same standard value (0.001 mg/l) as that of six

Table 1: Drinking water quality Physical Parameters (Aslam, 2016)

Parameters	Standard Values For Asian Countries												
	Pakistan	India	Sri Lanka	Nepal	China	Japan	Korea	Malaysia	Indonesia	Singapore	Philippines	Vietnam	WHO
Physical Parameters													
Total hardness as $CaCO_3$ (mg/l)	< 500	Max. 200	Max. 250	Max. 500	450	-------	-------	500	170	-------	Max. 300	-------	100-300
TDS (mg/l)	< 1000	Max. 500	Max. 500	Max. 1000	1000	-------	-------	1000	500	-------	Max. 500	-------	< 1000
pH	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	5.8-8.6	-------	-------	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5

Table 2A: Drinking water quality chemical parameters (Aslam 2016)

Parameters	Standard Values For Asian Countries												
	Pakistan	India	Sri Lanka	Nepal	China	Japan	Korea	Malaysia	Indonesia	Singapore	Philippines	Vietnam	WHO
Chemical Parameters													
(mg/l)													
Arsenic (As)	≤ 0.05	Max. 0.01	0.01	Max. 0.05	0.01	0.01	50 µg/l (0.05 mg/l)	0.01	0.05	0.05	Max. 0.05	0.05	0.01
Cadmium (Cd)	0.01	Max. 0.003	0.003	Max. 0.003	0.005	0.01	5 µg/l (0.005mg/)	0.003	0.1	0.01	Max. 0.003	0.01	0.003
Chromium (Cr)	≤ 0.05	Max. 0.05	0.05	Max. 0.05	0.05	0.05	50 µg/l (0.05 mg/l)	0.05	-------	0.05	Max. 0.05	-------	0.05
Chloride (Cl)	< 250	Max. 250	250	Max. 250	250	200	-------	250	250	0.05	Max. 250	-------	250
Copper (Cu)	2	Max. 0.05	1	Max. 1	1	1	-------	1	0.5	-------	1	1	2

Table 2B: Drinking water quality chemical parameters (Aslam, 2016)

Parameters	Standard Values For Asian Countries												
	Pakistan	India	Sri Lanka	Nepal	China	Japan	Korea	Malaysia	Indonesia	Singapore	Philippines	Vietnam	WHO
Chemical Parameters (continued)													
(mg/l)													
Cyanide (CN)	≤ 0.05	Max. 0.05	0.05	Max. 0.07	0.05	0.01	Not Detected	-------	0.05	0.01	Max.0.07	0.01	0.07
Fluoride (F)	≤ 1.5	Max. 1	1	0.5-1.5	1	0.8	-------	-------	1	2	Max. 1	2	1.5
Lead (Pb)	≤ 0.05	Max. 0.01	0.01	Max. 0.01	0.01	0.01	50 µg/l (0.05 mg/l)	0.01	0.05	0.05	Max. 1.01	0.05	0.01
Mercury (Hg)	≤ 0.001	Max. 0.001	0.001	Max. 0.001	-------	0.0005	Not Detected	0.001	0.001	1	Max. 0.001	-------	0.006
Nitrate (NO_3)	≤ 50	45	50	Max. 50	10	10	-------	10	Not Detected	45	Max. 50	45	50
Nitrite (NO_2)	≤ 3	-------	3	-------	-------	10	-------	-------	Not Detected	0.005	Max. 3	-------	3

other Asian countries (Table 2B) which lower than that of WHO (0.006 mg/l). Japan and Singapore has the lowest (0.0005 mg/l) and the highest (1.0 mg/l) standard value, for mercury in drinking water. Four Asian countries (including Pakistan) have the same standard value for nitrate (NO3) as that of WHO (50 mg/l). China, Korea & Japan standard value (10 mg/l) for nitrate are lower than these four countries and WHO. 45 mg/l is the standard value for nitrate in India & Vietnam. WHO, Pakistan, Sri Lanka & Philippines (Table 2B) standard value for nitrite (NO2) in drinking water is 3 mg/l whereas Singapore has the lowest (0.005 mg/l) and Japan has the highest value (10 mg/l). For bacterial parameters in drinking water, all selected countries follow the same guidelines as set by world health organization (WHO).

Conclusion and Recommendations

For most of the parameters, Pakistan follows the standards set by WHO (Pak-EPA, 2008 and The Gazette of Pakistan 2010). However, for a few parameters some values are lower (cyanide & mercury) and for others higher (lead, arsenic, cadmium & total hardness) compare to WHO (Table 1 & 2). Over all the comparison of drinking water quality standards between Pakistan and 11 selected Asian countries shows mixed trends of lower and higher standard values for drinking water quality. Only for one parameter (chromium), all selected Asian countries (Table 2A) follow WHO standard value (0.05 mg/l). None of the Pakistan drinking water quality standards, described in Table 1 & 2, appears to be the highest or lowest compare to the other selected 11 Asian countries.

The health effects of microbial and chemical contamination of drinking water have been highlighted and reported in many studies and it is direly needed that drinking water quality is addressed on priority to safe guard public health, especially of children. Pakistan needs to review and revise its drinking water quality standards, especially for total hardness, lead, cadmium and arsenic which are higher than the WHO drinking water quality standards. The alarming high levels of arsenic and fluoride contents in drinking water for general public consumption need immediate attention towards raising public awareness, especially in the rural areas and reduction of the same, employing all available treatment technologies, including introduction, promotion and support to household water treatment systems HWTSs (khwaja et al. 2011). Pakistan should also consider and include additional parameters like pesticides, phenolic compounds, sulfates and other hazardous aromatic hydrocarbons (PAHs), to NDWQSs.

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Why small landholders are more vulnerable to floods?

Ahmed Awais Khaver

The poor and relatively small landholders are the ultimate losers whenever the country is hit by recurring floods and heavy rains. The influential landowners with large land holdings, however remain all-time safe partly because of their influence in bureaucracy at local level and partly because of having access to power corridors or representation in national and provincial assemblies. Though media has reported many a times about such unfortunate maneuverings at the time of dyke breaches, nothing concrete has ever been done in this regard. On the other hand, the small landholders have rather lesser access to both land and water, which increases their vulnerability to floods and decreases their livelihood options. These inequalities and the small farmers' compromised role in this system is in fact the continuity of a legacy which we have inherited from our colonial masters. The bureaucratic regime, which leaves the small landholders to the mercy of devastation and catastrophe, is still intact in Pakistan. In the subcontinent, the British brought with themselves the idea of great market expansion. The Punjab excelled in agriculture under the British administration. It was due to railways and roads, introduction of newer types of seed, restoration of peace and above all huge irrigation networks (canals and barrages). These networks and rise of agriculture compelled some commentators to term the British era as “hydraulic regime”. The British evinced much interest in the venture of introducing canals to the Punjab due to varying factors such as promotion of agricultural development to increase the revenue base and enlist the popular support.

In order to achieve these objectives, the British administration awarded the so-called chiefs or high castes (with large land grants) that had helped the British conquer the Punjab. This step achieved both: increase in agricultural output and consequent revenue collection through these newly-appointed chiefs. Canalization provided the perfect solution. The chiefs and high caste loyalists were awarded big lands and that too at the head reaches of canals and water courses that the British had constructed. The loyalists of one degree lower were settled at the centers of canals whereas the poor ones and least loyal languished at the tail ends of the canals where water levels fluctuated and sometimes completely halted. In doing so, the British had provided their loyalists greater access to both land (large holdings) and water (positioning at heads of canals) which enhanced their influence manifold. These allocations show that both land and water inequalities go hand in hand. The British had created social stratification that haunts Pakistan even today. Large land owners gained tremendous autonomy and influence over the land and the tenants/ farmers residing over there. This influence was gained through economic prosperity via large land holdings irrigated by canals, and was eventually molded into political power. The small landholders had to request the large landowners to have an access to water or to let them work on their fertile fields and live on them thus becoming subservient to landlords' whim and wishes. In 1951 provincial elections in the Punjab, 80 per cent seats were won by large landowners; a glimpse of their political clout over their large land holdings. After a decade of effectively avoiding discourse on land reforms, the large landowners had to relent to co-opt bureaucracy and military into the status quo. The first wave of land reforms came in Ayub regime whereas the second in Bhutto's tenure. Both the waves tried to put ceilings on the maximum amount of land. The results of these reforms were abysmal owing largely to individuals not declaring their holdings and multiple exemptions. These reforms had a very minimal effect on the large land owners' economic and political clout.

The inequities (regarding access to land and water) instilled by the British were later protected by the influential stakeholders after partition. Pakistan today faces issues regarding water distribution between small and large farm owners. Even today during floods, Pakistan's modus operandi is to save irrigation structures such as barrages; and we have inherited this practice from the British colonial masters. For that purpose, embankments are blown up, which cause most of the destruction. Usually the embankments are blown on the right side of the river and eventually the water falls back into the river downstream. The water released after breaching is not drained and becomes a cesspool of disease and misery. Once floods hit the country, big landowners and feudals sitting in parliament use their influence to divert the floodwaters to save their own lands. Ultimately, the small farmers are the losers. The systemic weaknesses instilled by the British and carried forward by the Pakistani bureaucracy expose the poor, powerless and small farmers to the extreme consequences of floods. The colonial rulers were least receptive or sensitive towards small farmers and their livelihood needs. The British, in their social engineering process of canalization, exposed the small farmers at the low lying tail end of the canals command to disadvantage in case of floods. Similarly, in case of breaching the embankment, the big landowners influence the government officials and cause breaches where small farmers/ low lying at the tail end of canal command suffer the most. There is a directly proportional effect of inequitable distribution of land and water on vulnerability to floods.

Recommendations:

The overall scenario stresses upon the need for articulated, well thought out and an actionable land reforms policy. Pakistan has already tried to implement land reforms twice but failed. Now, the need arises of learning from those past mistakes and devising a better and viable strategy which must aim to lessen the land holdings disparity among different classes. Secondly, flood management institutions specifically those dealing with breechings should be held accountable for their actions so that influence from large landowners is minimized. Thirdly, water allocation should be more equitable so that small landholders also have a shot at economic prosperity. The tail ends of canals and waterways should be ensured necessary supply of water. This write-up is the part of a programme titled: Pathways to Resilience in Semi-Arid Economies. The programme aims to explore institutional vulnerabilities of Pakistan’s water governance sector.