

IN THE SUPREME COURT OF PAKISTAN
(ORIGINAL JURISDICTION)

PRESENT: MR. JUSTICE MIAN SAQIB NISAR, HCJ
MR. JUSTICE UMAR ATA BANDIAL
MR. JUSTICE IJAZ UL AHSAN
MR. JUSTICE MUNIB AKHTAR

CONSTITUTION PETITION NO.57 OF 2016
(Under Article 184(3) of the Constitution)

AND

C.M.A.NO.681-K OF 2018 IN CONST.P.NO.57 OF 2016
(Application for amendment of petition)

AND

C.R.P.NO.440 OF 2016 IN C.M.A.NO.5135 OF 2016 IN C.R.P.142 OF 2015 IN CONST.P.NO.104 OF 2011
(On review of this Court's order dated 24.8.2016 passed in C.M.A.No.5135/2016)

AND

CONSTITUTION PETITION NO.24 OF 2018
(Under Article 184(3) of the Constitution)

AND

HUMAN RIGHTS CASE NO.30998-S OF 2018
(Regarding shortage of water supply in Karachi)

AND

HUMAN RIGHTS CASE NO.50363-P OF 2010
(In the matter regarding acute shortage of water supply in Karachi)

AND

CONSTITUTION PETITION NO.37 OF 2018
(Under Article 184(3) of the Constitution)

AND

CONSTITUTION PETITION NO.38 OF 2018
(Under Article 184(3) of the Constitution)

Const.P.57/2016:	Barrister Zafarullah Khan Vs. Federation of Pakistan etc.
C.M.A.681-K/2018:	CMA for amendment in Constitution Petition
C.R.P.440/2016:	Engineers Study Forum (Regd.), through its President Mian Fazal Ahmad Vs. Federation of Pakistan, etc.
Const.P.24/2018:	Agha Qasim Raza Vs. Federation of Pakistan through Secretary Ministry of Water Islamabad and others

- H.R.C.50363-P/10: Application by Malik Abdul Latif Khokhar
- Const.P.37/2018: Rana Ilamuddin Ghazi Vs. Federation of Pakistan, through Secretary Cabinet Division, Islamabad and others
- Const.P.38/2018: Sutlej Ravi Water Forum through its Chairman Zia Shahid Vs. Federation of Pakistan through Secretary Interior, Government of Pakistan, Islamabad.

In attendance:

- For the petitioner(s)/
applicant(s): Barrister Zafarullah Khan, ASC
(In Const.P.57/2016)
- Nemo
(In Const.P.24/2018)
- Nemo
(In Const.P.37/2018)
- Nemo
(In C.R.P.440/2016)
- Dr. Khalid Ranjha, Sr. ASC
(In Const.P.38/2018)
- Malik Abdul Latif Khokhar, ASC
(In H.R.C.50363-P/2010)
- Nemo
(In C.M.A.5788/2018)
- For Federation: Mr. Khalid Jawed Khan, Attorney General for Pakistan
Syed Nayyar Abbas Rizvi, Addl.A.G.P.
Assisted by: Barrister Asad Rahim Khan
- For Provinces: Mr. Razzaq A. Mirza, Addl.A.G. Punjab
Ms. Sehar Chaudhry, Law Officer, Irrigation, Punjab
- Mr. Shehryar Qazi, Addl.A.G. Sindh
Mr. Jamal Mustafa Syed, Secy. Irrigation, Sindh
Mr. Khalid Mehmood, M.D. KWSB, Sindh
- Mr. Ayaz Swati, Addl.A.G. Balochistan
- Barrister Qasim Wadood, Addl.A.G. KPK
- For LJCP: Dr. Muhammad Rahim Awan, Secretary
- On Court's call: Mr. Shams-ul-Mulk, ex-Chairman WAPDA
Mr. Zafar Mehmood, ex-Chairman WAPDA
Mr. Mujeeb-ur-Rehman Pirzada, ASC
- On Court's notice:**
- For M/o Planning &
Development: Mr. Shoaib Ahmed Siddiqui, Secretary
Mr. Naseer Ahmed Jillani, Sr. Chief (Water)
Mr. Arshad Ali, Joint Secretary

For M/o Water Resources:	Mr. Shumail Ahmed Khawaja, Secretary Syed Muhammad Mehar Ali Shah, Joint Secretary/Commissioner Indus Water
For M/o Finance:	Mr. Arif Ahmed Khan, Secretary
For M/o Climate Change:	Mr. Yousaf Naseem Khokhar, Secretary
For WAPDA:	Lt. Gen. (R) Muzammil Hussain, Chairman Mr. M. Babar, Deputy Director Mr. Shahzad Asif, Director
Date of hearing:	4.7.2018

ORDER

MIAN SAQIB NISAR, CJ.- None could have highlighted the importance of water more eloquently than the British poet W. H. Auden in his poem titled 'First Things First':-

*“Grateful, I slept till a morning that would not say
How much it believed of what I said the storm had said
But quietly drew my attention to what had been done
—So many cubic metres the more in my cistern
Against a leonine summer—, putting first things first:
Thousands have lived without love, not one without water.”*

The significance of water encompasses all, and therefore so does the problem of water scarcity, both nationally and globally. The dire water shortage has led to the recognition of a right to water itself, for can there be any life at all without water? All living organisms on this planet are dependent on water for their survival. More than 60% of the human body itself comprises of water. It is well-known that human beings can survive longer without food than without water, subject to varying weather conditions. Animals, plants and even the smallest of organisms require water. The absence of water is one of the primary reasons why, even if a planetary body were to have an atmosphere, there would be no life. Water governs plant growth, and animal and human settlement. It is

around large rivers and associated water bodies such as the Nile and Indus rivers, and in Mesopotamia (*constituted by the Euphrates and Tigris*), that ancient civilizations were established. Water is used for and in things, without count, including domestic purposes, irrigation, power generation and transport. Allah (SWT) has highlighted the significance of water in the Holy Quran as under:-

“Did the disbelievers not observe that the heavens and the earth were closed, then We opened them? And We created from water every living thing. Would they still not believe?” (21:30)

“Allah has created every moving creature from water. So, some of them move on their bellies; and some of them move on two legs, and some of them move on four. Allah creates what He wills. Surely, Allah is powerful over everything.” (24:45)

The foregoing verse has been explained by Muhammad Asad in “The Message of the Quran” as under:-

“39. The statement that God “made out of water every living thing” expresses most concisely a truth that is nowadays universally accepted by science. It has a threefold meaning: (1) Water – and, specifically, the sea – was the environment within which the prototype of all living matter originated; (2) among all the innumerable – existing or conceivable – liquids, only water has the peculiar properties necessary for the emergence and development of life; and (3) the protoplasm, which is the physical basis of every living cell – whether in plants or in animals – and represents the only form of matter in which the phenomena of life are manifested, consists overwhelmingly of water and is, thus, utterly dependent on it. Read together with the preceding statement, which alludes to the unitary origin of the physical universe, the

emergence of life from and within an equally unitary element points to the existence of a unitary plan underlying all creation and, hence, to the existence and oneness of the Creator.”

Unfortunately, man has started to take this blessing for granted and rarely thinks of conserving it. Water is often misused or used negligently and extravagantly. Allah (SWT) has warned human beings in the following words:-

“And We sent down water from the sky in due measure, then We lodged it in the earth, and of course, We are able to take it away.” (23:18)

“Say: Tell me, Should your water vanish into the earth, who will bring you a flowing (stream of) water?” (68:30)

Life changes substantially when man does not have access to water at his convenience for even one day. The Old Kingdom of Ancient Egypt (*approximately 4200 years ago*) and the Maya Civilization (*250 – 900 AD in Mexico*) collapsed due to droughts that resulted in little or no food or water. More recently, many countries such as Somalia, Venezuela and Kenya have also witnessed extreme weather conditions brought on by drought that ultimately affected plants, animals and humans alike with no water to drink or grow food. The lack of water can paralyze and mark the death of a people; therefore, water is essential for survival. Water is life and life is water.

2. For the last several decades, there has been reference to the right to clean water, as stemming from the right to life enshrined in the Constitution as a fundamental right. On a national level, various judgments including those reported as **General Secretary, West Pakistan Salt Miners Labour Union (CBA) Khewra, Jhelum Vs. The**

Director, Industries and Mineral Development, Punjab, Lahore (1994 SCMR 2061), Suo Motu Case No.10 of 2010 (Contamination of Water of Mancher Lake due to Disposal Effluent from MNV Drain now converted into RBPOD) (2011 SCMR 73) and Shahab Utso Vs. Government of Sindh through Chief Secretary and other (2017 SCMR 732) robustly discuss how clean and safe drinking water is necessary for the existence of life, and that contaminated and polluted water poses a threat to human existence. The oft-quoted words of Saleem Akhtar, J. in the case of Ms. Shehla Zia and others Vs. WAPDA (PLD 1994 SC 693), where the immediate context was regarding the hazards of electromagnetic fields, are equally germane here:-

“Article 9 of the Constitution provides that no person shall be deprived of life or liberty save in accordance with law. The word ‘life’ is very significant as it covers all facets of human existence. The word ‘life’ has not been defined in the Constitution but it does not mean nor can it be restricted only to the vegetative or animal life or mere existence from conception to death. Life includes all such amenities and facilities which a person born in a free country, is entitled to enjoy with dignity, legally and constitutionally.”

Therefore water is a resource to which everyone is entitled, is indispensable to those who wish to lead a dignified life, and forms the basis of many other rights including the right to life, health and quality of life. It is a fundamental right that emanates from the right to life enshrined in Article 9 of the Constitution of the Islamic Republic of Pakistan, 1973 (*the Constitution*). In the global context, numerous international resolutions, conventions, and declarations also highlight the importance of water. The most apt description is the following extract from General Comment No.15 (2002): The Right to Water (Articles 11 and

12 of the International Covenant on Economic, Social and Cultural Rights) (adopted at the 29th Session of the Committee on Economic, Social and Cultural Rights, on 20 January 2003 contained in Document E/C.12/2002/11), to which we fully subscribe:-

“Water is a limited natural resource and a public good fundamental for life and health. The human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights.”

3. All economies of the world are dependent upon water as a resource for the livelihood of its people and for their sustained development. In the case of Pakistan, being an agrarian economy, the importance of water can never be overstated, particularly when it relies upon a single source, i.e. the Indus Rivers and its tributaries, to cater to almost all of its water requirements. Pakistan is now facing a water crisis. As per the National Water Policy of Pakistan, our per capita surface water availability has declined from 5,260 cubic meters per year in 1951 to approximately 1,000 cubic meters in 2016. According to the World Resources Institute in its report titled ‘Ranking the World’s Most Water-Stressed Countries in 2040’, Pakistan is at number 23 out of the top 33 water-stressed countries in 2040. The Pakistan Council of Research in Water Resources has opined that Pakistan may run dry by 2025 if the present conditions continue. They assert that Pakistan touched the ‘water stress line’ in 1990, and crossed the ‘water scarcity line’ in 2005, and that relatively little has been done to improve the supply or use of water. This indicates that it is pertinent that Pakistan immediately begin to adopt measures to solve the problems that contribute to water scarcity. Though the issue of alleviating water shortage is essentially within the realm of the executive, as mentioned

above the right to water forms part of the fundamental right to life and thus must be guaranteed to the citizens of Pakistan. As the custodians of the Constitution, the judiciary must ensure that such right is enforced, particularly considering the grim and precarious situation that Pakistan is in at the moment. Hence, the Supreme Court of Pakistan decided to act upon this issue immediately by exercising its power under Article 184(3) of the Constitution which culminated in the short order of even date in which the instant matter was disposed of in the following terms:-

- "1. That the need for water reservoirs is not only expedient but also *sine qua non* for the survival of the people and economy of Pakistan. All those present in the Court including officials of the various departments and experts on the subject are unanimous in this regard. They are also unanimous on the point that according to the decision of the Council of Common Interest the Diamer Bhasha Dam and pursuant to the approval of the ECNEC both the said and Mohmand Dam must be built on urgent basis by the Federal Government and in this regard there is no dispute or discord of any nature amongst the Provinces;
2. That right to life is a fundamental right and without water there can be no existence of life. The establishment of water reservoirs is therefore not a question of just quality of life rather the very existence thereof. Therefore, in terms of the provisions of Article 184(3) of the Constitution read with Article 9 and as guardians of the fundamental rights of the people of Pakistan, this Court has the jurisdiction to issue necessary directions to the Government for the practical enforcement of the primordial right to life. Accordingly, we direct the Federal and Provincial Governments, WAPDA and all the Executive Authorities in Pakistan who are responsible or have nexus/connection with the building of the afore-said dams and all matters connected thereto, to take all necessary steps for the commencement of construction and early completion of these dams. A comprehensive report in this regard with detailed timelines and milestones shall be

submitted to this Court within a period of three weeks by the Committee formed herein below;

3. For the construction of these dams and also for oversight of execution of their works, we hereby constitute an Implementation Committee headed by the Chairman WAPDA and for the time being comprising experts and officials of the Federal and KPK Governments including the following persons:
 - (i) Additional Secretary (Budget), Finance Division, Federal Government;
 - (ii) Joint Secretary, Water Resources Division, Federal Government;
 - (iii) Joint Secretary, PM Office (to be nominated by Secretary to PM);
 - (iv) Senior Chief (Water), Planning Division, Federal Government;
 - (v) Chief Secretary Gilgit-Baltistan;
 - (vi) Senior Member Board of Revenue, KPK
 - (vii) Additional Chief Secretary (Development), KPK;
 - (viii) The Committee can co-opt any members/ experts.
4. Under the provisions of Article 78 of the Constitution, any funds deposited in the Public Account of the Federation can be dedicated for a specified project or purpose. We therefore direct the establishment of an account, for the time being in the name of the Registrar of the Supreme Court of Pakistan, for collecting funds donated by the people of Pakistan for the construction and establishment of the aforementioned dams;
5. In the foregoing behalf we accordingly appeal to the Nation for making its contributions, whether in the shape of foreign currency or in Pakistani rupees, directly to the said account. The funds in the said account shall be utilized solely for the construction and establishment of the aforementioned dams and shall for the time being be operated under the orders of this Court on the recommendations of the Implementation

Committee. It is made clear that the funds in this account shall not under any circumstance or for any reason be diverted or utilized for any purpose other than the construction of the afore-noted dams. For avoidance of doubt it is directed that no questions shall be asked by any authority or department including, but not limited to the tax authorities, relating to the source of funds contributed to the afore-noted account. The utilization of the said funds shall be subject to audit as per directions of this Court."

4. For the purposes of historical and geographical context, known for being the largest contiguous irrigation system of the world, the Indus Rivers system spans over a total area of 20 million hectares out of which Pakistan covers 52% in terms of its distribution (*the remaining is covered by Afghanistan, China and India*). The Indus Rivers comprise of the Indus, Jhelum, Chenab, Beas, Ravi and Sutlej and their water comes into the lower riparian Pakistan from the upper riparian India. These rivers have glaciated headwaters and snowfields that, combined with monsoon runoff and groundwater aquifers, form the major sources of water for Pakistan. Water suspension by India occurred soon after Partition which ultimately led to the signing of the Indus Water Treaty (*the Treaty*) between the two countries in 1960. Amongst other things, the Treaty:- (i) allocated the eastern rivers of Ravi, Sutlej and Beas to India (*Article II*) and the western rivers of Sindh, Chenab and Jhelum to Pakistan (*Article III*); (ii) gave both countries the right of conditional usage of water of each other's rivers provided that such usage did not lower the quantity of and natural flow of the river(s) of the other country (*Article IV*); (iii) provided for a transition period, i.e. 01.04.1960 to 31.03.1970 (*extendable, but not beyond 31.03.1973*) during which Pakistan was to receive the waters of the eastern rivers for unrestricted use and India was required to limit its withdrawals for agricultural use, limit abstractions for storages and make deliveries to

Pakistan from the eastern rivers (*Article II*); and (iv) allowed Pakistan to construct and bring into operation a system of works which would accomplish the replacement, from the western rivers and other sources of water supplies for irrigation canals in Pakistan which on 15th August 1947 were dependent on water supply from the eastern rivers [*Article IV(1)*].

5. Over the years, water disputes arose between the two countries on account of India attempting to build several dams including Salal Dam, Wullar Barrage/Tulbul Navigational Project, Baglihar Dam, Kishenganga Dam, Nimoo Bazgo and Chutak Dams, with Pakistan objecting to them broadly on the premise that the construction of such dams adversely affected the flow of the various Indus Rivers on which they are situated. In the meantime, Pakistan only built two major dams, i.e. Mangla and Tarbela dams in 1967 and 1976 respectively. Although according to the International Commission on Large Dams the total number of dams and reservoirs in Pakistan over the height of 15 meters have increased to 164, unfortunately, no other major dam has been built by Pakistan on the western rivers since then. This has resulted in low storage capacity which is one of the major causes of water shortage, particularly in a country such as Pakistan where rainfall is seasonal. While it is true that India as the upper riparian state has an obligation not to inflict unreasonable harm on the lower riparian state Pakistan, the responsibility of the latter regarding optimal water management is often ignored and overlooked. It must not be forgotten that the Treaty is about **shared** water resources and so is the concept of upper and lower riparian states and their rights and **responsibilities**. Furthermore, Pakistan has ratified the International Covenant on Economic, Social and Cultural Rights in 2008, and according to Articles 11 and 12 thereof, Pakistan is

required to better manage its territorial water resources in order to secure the right to water of its citizens.

6. Pakistan’s storage capacity relative to other arid countries is very low considering the average annual flow as depicted in the chart below produced by the International Commission on Large Dams:-

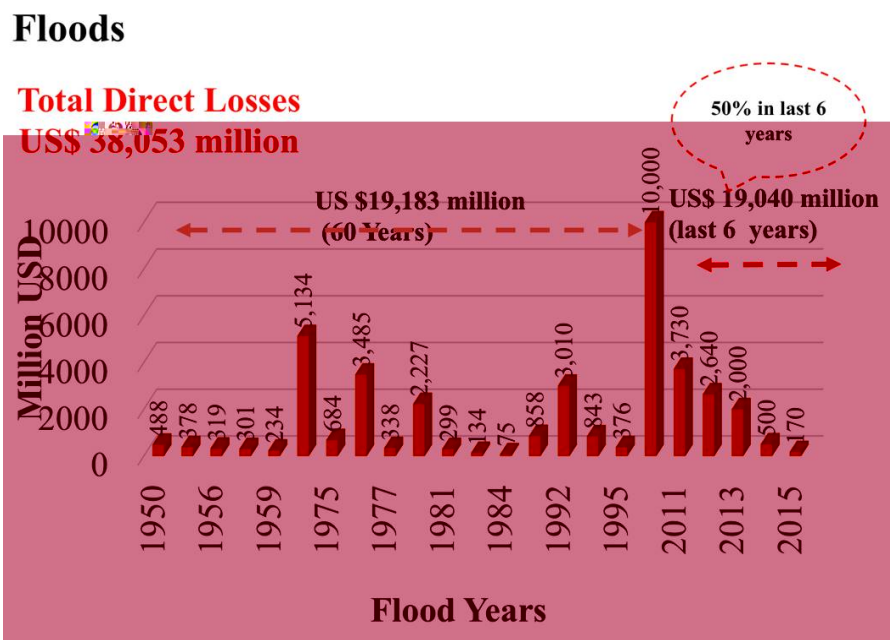
River Basins	Average Annual Flow (maf)	Usable Storage (maf)	% Storage
Colorado	12	59.62	497
Nile	47	132	281
Sutlej, Beas and Ravi	32	11.32	35
Indus Basin	145	13.86	10
World Average	20,000	8,000	40

According to the presentation of the Ministry of Water Resources, Government of Pakistan given in Court, the respective storage capacity of the three main reservoirs in Pakistan, i.e., Tarbela, Mangla and Chashma, located on the western rivers is as under:-

Reservoir	Live Storage (maf)		Loss/Gain	
	(Original)	(Present)	(maf)	(%)
Tarbela	9.68	6.17	-3.51	-36
Mangla	5.34	7.41	+2.07	+39
Chashma	0.72	0.28	-0.44	-61
Total	15.74	13.86	-1.88	-12

With an average flow of water of 137 million acre feet (*maf*), a present live storage of 13.86 maf gives Pakistan a percentage storage capacity of approximately 10.12% which roughly corresponds to the figure of 10% given in the previous table. According to Syed Muhammad Mehar Ali Shah, Joint Secretary Ministry of Water Resources and the Commissioner Indus Water, the economic value of 1 maf of water is

approximately USD 500 million and post-Tarbela, Pakistan is wasting an average amount of 29 maf every year which totals a whopping cost of USD 14.5 billion per year. Furthermore, the shortage of dams results in greater flooding and over the years, Pakistan has incurred total direct losses of USD 38,053 million from 1950 to 2015, with 50% of it being incurred in the recent years as shown below:-



These figures serve as a warning to every Pakistani citizen, particularly the members of the executive (*Federal and Provincial*), within whose ambit the issue of water falls, about the severity of the shortage of water storage capacity in Pakistan. As per Syed Muhammad Mehar Ali Shah the optimum storage capacity for Pakistan is about 23 to 25 maf. Accordingly we require an increase of *at least* 10 to 12 maf of storage from our present live storage of 13.86 maf as mentioned above. It is pertinent to note that this is without taking into account the continuous reduction in water storage capacity that occurs due to sedimentation in existing dam reservoirs. By way of illustration, the reservoir at Tarbela has lost approximately 36% of its live storage capacity due to sedimentation, from the original live storage capacity of 9.68 to the present live storage capacity of 6.17 maf as indicated in the table immediately above. Thus

these issues also need to be taken into consideration. Therefore increasing our water storage capacity by building new storage facilities including dams and reservoirs is imperative and the need of the hour.

7. When we talk about viable storage solutions, reference is often made to Kalabagh Dam. This dam was to be built on the Indus River with a live storage capacity of 6.1 maf. The idea of Kalabgha Dam goes as far back as August 1956, when a preliminary feasibility report was prepared by an American consultant, according to which the project was found to be technically and economically feasible. Then in 1966, another preliminary feasibility report was prepared by an American consultant for the World Bank. Subsequently in 1975, a Pakistani consultant, namely Associated Consulting Engineers (ACE)¹ in association with Harza Engineering Company of USA, prepared a feasibility report which the World Bank appraised in 1980. In 1983, a final Planning Report was prepared by Kalabagh Consultants (*a consortium of five national and international consultants retained by the World Bank*) which also found the project to be technically and economically feasible. Several panels of experts, both international and local, reviewed the Planning Report and reached the same conclusion as regards the project's technical and economic feasibility. Thereafter in 1988, the project was ready for invitation to tender. Despite the fact that this dam could significantly redress the water and electricity needs of the country, there has been great resistance against its construction in the past. However, there is evidence to suggest that many of the fears and misgivings held by various people are misconceived and not well-founded, being based on certain preconceived premises and presumptions. Particularly, we find that many of the concerns raised would not in themselves be remedied by resisting the construction of Kalabagh Dam, but through strict

¹ ACE's website states that the following steps have been taken with respect to Kalabagh Dam: survey and investigations, pre-feasibility/feasibility studies, detailed design and tender documents.

adherence to the terms agreed upon by all the Provinces in the Water Apportionment Accord, 1991 in letter and spirit, i.e. to distribute water to the Provinces in accordance with their respective shares provided therein. All the Provinces must honour this agreement. Accordingly, considerable headway in political concerns about the Kalabagh Dam project was made in the 1990s by the Council of Common Interests (CCI), the highest executive forum under the Constitution for recording concurrence of the federating units of matters involving their common interest. Nevertheless, imperceptible vested interests have managed to block progress in implementation. In 2013 the learned Lahore High Court, whilst seized of resulting executive lethargy in the matter in the case of **Syed Feroze Shah Gillani Vs. Federation of Pakistan** (PLD 2013 Lah 659), had passed the following order:-

“1. Senior Joint Secretary (CCI) of the Ministry of Inter-Provincial Coordination, Government of Pakistan has apprised the Court of two decisions by the Council of Common Interest ("CCI") regarding the Kalabagh Dam project. The first is dated 16-9-1991 when express approval for construction of Kalabgah Dam multipurpose project was given. Thereafter, on 9-5-1998 the CCI re-visited the project when the Natural Water Resources Development Program (NWRDP) headed by the Ministry of Water and Power was directed to prepare for detractors a document explaining the issues involved in the construction of Kalabagh Dam and addressing political and technical concerns about it. It was also directed that supplementary projects in support of the Kalabagh Dam be prepared to mitigate its effect. Neither the said decisions nor the project have thereafter received much attention of the Federal Government. On behalf of the petitioner, it is pointed out that a technical study undertaken in 2004 by representatives of all four Provinces has endorsed and approved the feasibility of Kalabagh Dam.

2-A. In the circumstances and for detailed reasons to follow, the Federal government is directed that in the performance of its duty under Article 154 of the Constitution, it shall in letter and spirit take steps to implement the decisions of the CCI dated 16-9-1991 and 9-5-1998 regarding Kalabagh Dam.

3. Bona fide steps by the Federal Government in the foregoing behalf are necessary so that the fate of the project is not sealed on the basis of presumptions and surmises when in the light of the material on record the project is admittedly feasible both technically and economically. It is therefore directed that whilst implementing the afore-noted CCI decisions the Federal government shall faithfully strive to explore and devise an administrative framework and safeguards that allay the apprehensions, political or otherwise, nurtured by concerned quarters about the Kalabagh Dam project.”

We observe with great dismay that no progress has been made in this regard. Unfortunately, we have been apprised by various stakeholders including Mr. Shams-ul-Mulk, ex-Chairman WAPDA and an eminent expert and scholar in the field of water resources and power, that at present all the Provinces of Pakistan still entertain apprehensions on this front. We must iterate that dams, particularly those that are large in size and magnitude, are **national** projects to be carried out for the **collective benefit** of the whole nation and not for the advantage of one specific group of persons at the cost of another. The importance of dams increases manifold when countries face near drought-like circumstances. While it is part of human nature to have differences with each other, right now Pakistan needs the people to put aside minor differences or suspicions for the **common good**. No doubt Pakistan is a Federation comprising of Provinces and Acceding Territories, but the needs of Pakistan and its citizens as a whole supersede those of any one person or

group of persons. The precarious, highly vulnerable and fragile situation of water insecurity in Pakistan is aggravated by climate change which was never anticipated earlier. The present conditions in Pakistan demand that its citizens put the nation's needs at the forefront. Therefore the Court beckons **all** Pakistani citizens to honour **public interest** and the **common good** and strive harder to work towards forging unanimity with respect to the construction of Kalabagh Dam. The four brothers must bury their perceived differences and put their heads together earnestly and sincerely to ensure water security for the prosperity of Pakistan and our future generations. Let it not be said that we failed them.

8. In the meantime, there is still need to ensure that immediate steps are taken to address the problem of water insecurity on account of deficient and also diminishing water storage capacity in the country. In this context when asked as to what is Pakistan's next best option for which steps can be taken as soon as possible, Mr. Shams-ul-Mulk and other stakeholders categorically called for the speedy construction of **any** other dam. They unanimously agree, along with the consent of all the Provinces of Pakistan, that Diamer-Bhasha and Mohmand Dams are projects that are ready for implementation immediately. According to the Ministry of Water Resources, CCI approved the construction of Diamer-Bhasha Dam on 18.07.2010; the Executive Committee of the National Economic Council (ECNEC) approved the PC-1 for land acquisition and resettlement for the said dam on 02.03.2015, and PC-1 for the dam along with the financing plan was approved by ECNEC on 17.04.2018. ECNEC has also issued its approval for Mohmand Dam. Syed Muhammad Mehar Ali Shah stated that the storage capacities of the Diamer-Bhasha and Mohmand Dams are 6.4 and 0.7 maf respectively, rendering a total increase in storage capacity of 7.1 maf. Therefore considering all of the above, we find that the construction of these two dams would be an

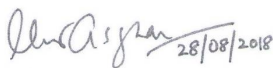
excellent start for efforts to resolve the issue of water shortage and insecurity in Pakistan. However at the cost of repetition we cannot stress this enough, that this process needs to be started straightaway for as Pakistan becomes drier, the costs (*both direct and opportunity costs*) associated therewith increase with every passing minute and that too at alarming rates. Accordingly, we direct the Federal and Provincial Governments, WAPDA and all the Executive Authorities in Pakistan who are responsible or have nexus/connection with the building of the aforesaid dams and all matters connected thereto, to take all necessary steps for the commencement of construction and early completion of these dams.

9. According to the information received from the Chairman, WAPDA, the cost estimate for Diamer-Bhasha and Mohmand Dams are as follows:-

COST ESTIMATE OF DBD	
LAND ACQUISITION & RESETTLEMENT	= Rs 160 billion
DAM	= Rs 474 billion
POWER GENERATION	= Rs 505 billion
(without Interest During Construction (IDC))	
Total = Rs 1,139 billion	
(Excluding IDC of approx. Rs 300 bn)	
Amount already paid by Federal Govt	= Rs 86 billion
Amount Required	= Rs 1,053 billion

COST ESTIMATE OF MOHMAND	
DAM	= Rs 114 billion
POWER GENERATION FACILITY	= Rs 195 billion
Total = Rs 309 billion	
Amount already paid by Federal Govt:	= Nil
Amount Required:	= Rs 309 billion

SUMMARY	
(DBD & MOHMAND)	
Total Amount Required:	= Rs 1,362 billion
	(Plus IDC of approx. Rs 300 bn)
	= Rs 1,662 billion

 28/08/2018

Naveed Asghar Chaudhry
General Manager Finance (Power)
WAPDA

He urged the Supreme Court to direct uninterrupted flow of funds and full support of the Federal Government.

10. Needless to say that construction of the Diamer-Bhasha and Mohmand Dams is a national cause. They are to be built for the benefit of the citizens of Pakistan who undeniably have a stake therein. They should be able to contribute to this national project which will not only instill in them a sense of ownership and belonging, but also inculcate in the Executive a sense of responsibility, accountability and obligation towards the citizens. This 'pennies from many' model can go a long way (*financially and otherwise*) in contributing to this national developmental project which should, as far as possible, be completed with local resources. To pre-empt the concerns of skeptics, reference is made to the Grand Ethiopian Renaissance Dam (*GERD*) which is stated to be the largest dam in Africa. The construction of GERD began in 2011 for which revenue was earned through different fundraising schemes including bond sales, athletic events and lottery draws. As of today GERD is approximately 60% complete and is expected to be completed with domestic funds only. Drawing on this example and with the intention of aiming high, the Supreme Court has taken the initiative to establish the 'Supreme Court of Pakistan Diamer-Bhasha and Mohmand Dams Fund' *vide* short order of even date, whereby people from all walks of life were encouraged to contribute showing their resolve to this project.

11. We never realized and were surely overwhelmed by the huge public response in the form of generous donations for this national cause and the nation's confidence reposed in and respect extended to the Supreme Court of Pakistan. The trust placed by the public became manifest as their contributions were made with the clear expectation that the Supreme Court shall control disbursements of funds to ensure that these are applied judiciously and economically towards the project.

Therefore we are inclined to establish a Fund Disbursement Committee in order to ensure that the amounts deposited in the fund are utilized solely for the purposes of the project, and are not misused, misapplied or misappropriated. The said Committee shall comprise of experts of high integrity and repute drawn from various relevant professions to supervise and oversee all the steps taken towards implementation of the development project. The Committee shall discharge the duties assigned to it as a trustee. Monies shall only be released from the Fund account as reimbursements to the Government of Pakistan at the brick and mortar stage of the project rather than as direct payments to consultants or contractors and/or executing agencies. These payments shall be made after the corresponding bills/payment certificates and the works carried out have been strictly verified and approved by the Committee and a release order is issued by the Registrar of this Court. Till verification and disbursement by such Committee, the monies in the Fund shall be invested in some profit-bearing scheme so that the amount collected does not lose its value over time due to inflation. In order to honour the nation's trust, the entire process shall be under oversight of two monitoring judges of this Court to be appointed by the Chief Justice of Pakistan specifically for this project. The accounts of the Funds shall be audited by the Auditor General of Pakistan biannually and his report shall be displayed on the website of the Supreme Court of Pakistan. The members of the Committee shall be paid an honorarium as approved by the monitoring judges of this Court.

To safeguard the trust reposed by the public in the Fund, it is directed that the contribution(s) thereto shall enjoy tax free status. For this purpose the Federal Board of Revenue, the Government of Pakistan and the Provincial Governments shall issue such notifications, instructions and orders that ensure that both the contributors to the

Fund and the amounts they have deposited therein enjoy complete exemption from tax or scrutiny (*unless there are reasonable grounds to believe that such contributions represent the proceeds of crime*). We are certain that with their unbreakable resolve, generosity, and strong will to make a better Pakistan for themselves and generations to come, the Pakistani nation will be able to build the two aforementioned dams. Drawing upon the words of W. H. Auden, it is such cisterns that will help us combat those leonine summers because as a nation we will not be able to survive without water.

12. However the struggle and effort by state and society to rectify the issue of water shortage and insecurity should not be limited to the construction of more dams and reservoirs. We must be cognizant of numerous other causes of water shortage. We aim to broadly identify these hereinbelow. First, is the erratic flow of the western rivers. Most of the Indus waters come from the snow and ice melt from the high mountain headwaters and monsoon rains. The variation in the melting of snow and the rainfall over the various seasons leads to erratic supply of water in the rivers. This issue has intensified over the years, and will continue to do so, because of climate change resulting in more extreme episodes of excess flow and shortage.

Secondly, there is an increasing gap in supply and demand of water. According to the Provisional Summary Results of the 6th Population and Housing Census-2017 conducted by the Pakistan Bureau of Statistics, Pakistan's population has an annual growth rate of 2.40%. As per the Census-2017, the total population of Pakistan is 207,774,520 in 2017. However, the 'World Population Prospects: The 2017 Revision, Key Findings & Advance Tables' produced by the United Nations, Department of Economic and Social Affairs, Population Division in 2017

provides that such figure is expected to rise to 244,248,000 by 2030, 306,940,000 by 2050 and 351,943,000 by 2100. This increase will not only occur in rural but urban areas as well resulting in an increase in the demand for water for domestic, industrial and agricultural usage.

Thirdly, there is the phenomenon of unsustainable use of groundwater. Due to the increase in the demand for water the number of tube wells has also increased, be it for industrial, agricultural or domestic use. Particularly with respect to agriculture, farmers have started to pump groundwater due to the unpredictability associated with canal water supplies. As per the Report on Water Problems (Issues & Solutions) by Mr. Zafar Mahmood, Former Chairman, WAPDA (June, 2018), the contribution of groundwater to irrigated agriculture has doubled in the last 40 years, i.e. from 25.6 to 50.2 maf. Furthermore, most private groundwater exploitation remains unmonitored and unregulated. This has resulted in groundwater depletion because water is being pumped out of the ground faster than it is replenished, thereby draining our aquifers.

Fourthly, unfortunately Pakistan has a poor irrigation infrastructure. It also lacks adequate surface drainage which diverts or ensures the orderly removal of excess water from the surface of the land through constructed drains or improved natural channels, along with the requisite modelling of land. Furthermore, substantial amounts of water are wasted due to insufficient canal lining. For sake of illustration, as pointed out in Mr. Zafar Mahmood's report, out of an average annual inflow (1976-2015) of 145 maf, 101 maf is diverted to canals out of which 40 maf is lost during conveyance resulting in an availability of only 61 maf; out of the 40 maf lost, 4 maf is due to evaporation and 36 maf is lost through percolation (*20 maf in saline areas and 16 maf in sweet water areas*).

Fifthly, our soil suffers from salinization. The water diverted from the Indus River to the canal system for irrigation brings in more salts than those that flow out to the sea resulting in a net addition of salts stored in the Indus Basin. A portion of these salts accumulates in the irrigated land and its underlying aquifers. This phenomenon negatively affects the total supply of water.

The sixth is the improper disposal of waste. Many industrial and municipal estates in Pakistan lack adequate facilities for the treatment of waste. Such untreated waste, when left unmonitored, contaminates the groundwater when it seeps into the aquifers, causing various water-borne diseases.

Seventhly, there is unregulated growing of crops. The crop-growing pattern in Pakistan does not correspond to its water situation. Most of the farmers continue to grow water-intensive crops including wheat, cotton, rice, sugarcane, oil seed and banana with water requirements higher than that of other crops.

Finally, Pakistan's coastal areas suffer from sea-water intrusion. Reduction in the inflow of the Indus Rivers due to various factors including climate change and deforestation results in the movement of sea water into fresh water aquifers contaminating them which reduces the amount of sweet groundwater available for consumption.

13. The aforementioned issues are all pressing ones and also need to be tackled alongside the increase in water storage capacity. We propose certain steps that should be taken to address the issue of water scarcity. The first is improvement of infrastructure and equipment. Pakistan needs to employ methods to efficiently use its freshwater sources in order to ensure a sustainable water supply. Methods of water conservation such as zero tillage, precision land levelling, bed and furrow

planting, and efficient irrigation systems including sprinkler and drop irrigation systems would go a long way in reducing water wastage. Adequate drainage systems to control salinity would help control soil salinization. Canal lining would also substantially reduce water seepage. Regulation is required in various areas. For example, the kinds of crops that are grown in Pakistan should be regulated, perhaps with a shift in focus from water-intensive crops to crops that do not require a lot of water, e.g. cool season legumes. Dry farming can also be introduced and promoted.

Secondly, groundwater extraction for all types of use, namely, industrial, commercial and agricultural must also be regulated. Timely monitoring via metering should be adopted. However, private groundwater extraction for domestic use in the urban areas should be done away with entirely, with the municipal authorities being the only provider of water. Then there should be regulations pertaining to waste treatment. All industrial and municipal entities should be required to treat their wastewater before disposal. Recycled water can then be used for toilet flushing, industrial processes, irrigation and recharging the groundwater.

Thirdly, and importantly, water pricing for every use should be rationalised. Water should be priced to reflect the true cost of providing water for various purposes. This will encourage more responsible use of water and have the effect of reducing water wastage and increasing water supply.

Fourthly, to encourage responsible use of water, efforts should be made to reduce its quantity that is unaccounted-for. This can be done by installation of meters for the Indus River System Authority to monitor.

Fifthly, there should be active environmental upgradation. Forestation would not only help protect groundwater sources but also reduce the impact of climate change.

Sixthly, the practice of rainwater harvesting should be adopted. Rainwater should be collected from hard surfaces such as roofs and stored for on-site reuse for various purposes. In rural areas, it can be used for irrigation, whereas in urban areas, it can be used to wash cars, water gardens and even flush toilets. Rainwater harvesting would reduce the strain on the water supply.

Seventhly, there should be capacity building of the various concerned organizations including the Ministry of Water Resources, Government of Pakistan, Pakistan Commissioner for Indus Waters, Water and Power Development Authority, Indus River System Authority, and Pakistan Council of Research in Water Resources. With greater amount of cooperation and coordination between them, the problem of water shortage can be resolved more swiftly through concerted efforts.

Finally, the public should be educated in water issues and conservation techniques and methods of efficient use of water through awareness campaigns. The verses from the Holy Quran mentioned earlier in this opinion tell us to follow a balanced way of life and refrain from excessive and extravagant use of earth's resources, particularly water. Abdullah bin Amr narrated that the Holy Prophet (PBUH) passed by Sa'd when he was performing ablution and is reported to have said:-

“What is this extravagance? Can there be any extravagance in ablution? Yes, even if you are on the bank of a flowing river.” (Sunan Ibn-e-Maja, Hadith No.425)

Certain practical conservation techniques include simple sustainable home living methods such as closing taps when water is not needed, avoiding the use of hose pipes to wash cars or water plants, and taking short showers instead of long baths, etc. To this end, awareness can be inculcated immediately through print and electronic (*including social*) media. As a long-term measure, awareness about water conservation should be imparted in school so as to change the mindset of our future generations.

14. The aforementioned remedial measures are not intended to be exhaustive. It is an attempt to broadly illustrate the minimum that is expected of Government, both Federal and Provincial, and the relevant organizations to curb the menace of water shortage in the short and long run. Perhaps as a starting point the Federal and Provincial Governments should begin adopting and implementing the National Water Policy of Pakistan on an immediate basis. Together as a nation, we can bring Pakistan out of this bleak situation. Let us realize the worth of water and put first things first before it is too late.

CHIEF JUSTICE

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Islamabad, the
4th of July, 2018
Approved for Reporting
Waqas Naseer/*