



Asia  
Pacific

# ASPACNEWS

QUARTERLY NEWSLETTER OF FIDIC  
ASIA PACIFIC

ISSUE 5 | September 2023



## INSIDE STORIES

- FAP Annual Conference 2023
  - Bespoke Head Contract Obligations
  - Effects of Climate Change
  - Future Leaders
  - FAP History
- and more....



@FIDIC\_Aspac



FIDIC ASPAC



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# EDITORIAL

Welcome to the season of collective professional events - starting with the FIDIC Congress in September at Singapore and followed by FAP's own event in November at Bangkok, after a pandemic-enforced gap of four years, since the last grand conference in New Delhi in July 2019.

This issue contains writeups on both the forth coming events and encourages readers to join and contribute to these important professional opportunities.



**Amitabha Ghoshal**  
*Chairperson-Editorial Board*

Your editorial board decided to prepare a record of the history of ASPAC, and its partner for early years, the TCDPAP with the encouragement from ESCAP - and entrusted the task on to Mr.Yoshi Yamashita from Japan, who had a very long association with the ASPAC in different capacities. Mr.Yoshi Yamashita prepared a comprehensive record of the development and produced a document that the board considered valuable enough to maintain and circulate as an independent compilation, to all MAs and their members. This issue of the Newsletter gives a brief introduction to this document as an advanced communication which will be followed up by the compiled document.

Climate change and its adverse effects have forced the entire world to find out the remedial measures as a compelling priority. The effect on the countries in our region have been quite considerable and we have compiled some of the reports received from various MAs for greater awareness.

We are happy to find progressive improvement in communication from our MAs. We urge the MAs, who have not yet joined the bandwagon of participants to come forward and make this Newsletter an effective platform for interaction between all MAs.

Warm Regards,

A handwritten signature in black ink, appearing to read 'Amitabha Ghoshal'.

Amitabha Ghoshal

Chairman, Editorial Board



# PRESIDENT'S MESSAGE ON 110TH ANNIVERSARY OF FIDIC

I am delighted to know that FIDIC is celebrating 110 th anniversary . On behalf of MAs of ASPAC and on my behalf, I wish to convey our congratulations on this great milestone . ASPAC has 22 Member countries covering the Asia and Pacific Regions. FIDIC has rich history of making remarkable contribution to the consulting engineering profession. Its commitment to integrity, diversity is indeed noteworthy.



**Sudhir Dhawan**  
*President of FIDIC Asia Pacific*

FIDIC is always ready to address global challenges the latest one being the 'Impact of Climate Change'. FIDIC has developed " Climate Charter "which is expected to guide consulting engineers around the world. A few years back , FIDIC encouraged Future Leaders to actively participate in its activities by forming Future Leaders Group . As a consequence of that many MAs have set up independent committee of Future leaders. FIDIC collaborates with many global bodies like multilateral development banks. All these banks follow FIDIC conditions of contract which is indeed of help to the profession . Since last year FIDIC has joined hands with WWF to jointly work on developing guidelines for consulting engineers to promote engineering solutions which will help in reducing impact of climate change .

My best wishes to FIDIC for the future.



President, FIDIC Asia Pacific



# ASPAC HISTORY

## 1. Introduction

Because of my long involvement with FIDIC and ASPAC, and to thank for their kind support for raising my capacity as a competent international consulting engineer, I felt obliged to accept the request for writing ASPAC History. Fortunately, the Association of Japanese Consulting Engineers (AJCE), consolidated with the Engineering and Consulting Firms Association, Japan (ECFAJ) in 2016, keeps considerable amount of data on ASPAC activities in its archive. Though it is not possible to report all the past ASPAC activities in

detail, however, brief summary of its major activities such as the agenda and minutes of ASPAC meetings, name of participants, and theme of ASPAC conferences may help readers to grasp a trend of ASPAC activities in chronological order. I do hope that the summary of ASPAC activities will be shared and carried over by FIDIC Asia and Pacific members hereafter, young professionals in particular.



**Yoshi Yamashita** | Senior Adviser,  
Engineering and Consulting Firms  
Association, Japan (ECFAJ)

## 2. Establishment of ASPAC

ASPAC was established at the FIDIC Conference in Copenhagen, 9th June 1979. Five MAs from Asia and Pacific participated in its founding: Australia, Singapore, New Zealand, Japan, and Hong Kong. Dr. Peter Miller (Australia) was appointed as the first ASPAC chairman.

Thanks to the effort of FIDIC president at the time, Mr. H.C.Frijink (Finland), an informal regional group of FIDIC Member associations in the Far East and the Pacific was established. The group took the name ASPAC. Non-FIDIC associations were invited to take part in ASPAC Meetings. One particular objective of the group was to help engineers in non-FIDIC countries in the region to form new associations, or to strengthen existing associations.

Reference: "Consulting Engineers 1913-1988, FIDIC over 75 years".

## 3. ASPAC Activities

ASPAC activities are summarized from Oct 1977 - the first informal meeting for preparation of establishment of APAC to Feb 2023 - Online FAP Boar Meeting, based on the data available in the AJCE archive, and that of ECFAJ (after Sept 2016). Some of the missing data need to be supplemented by those who have relevant information. Past AJCE Newsletters were valuable source of information regarding early stage of ASPAC activities. As the volume of information is large, this article focuses on the main issues raised in ASPAC Meetings, ASPAC Executive Committee Meeting (ECM), and ASPAC General Assembly Meeting (GAM) such that it will facilitate readers to grasp mainstream of activities.

Refer to the attached "Summary of ASPAC Activities" for details.



### **3.1 ASPAC Meetings, ECM, ASPAC GAM**

Since its establishment, ASPAC meetings were held twice a year from 1979 to 1987, once a year from 1988 to 2000 in Asian countries.

In Sept 2000, ASPAC Meeting was held during FIDIC Hawaii Conference. It was a milestone in the history of ASPAC as the Operational Rules of ASPAC was approved after which ASPAC GAM became the decision-making platform. Election of ECMs formerly started in this conference.

From Sept 2000 to Sept 2018, ASPAC GAMs were held during the FIDIC conference.

At the ASPAC GAM, Dubai, Sept 2015, it was decided that ASPAC conference will be held in Asia and Pacific countries when FIDIC conference is held in non-ASPAC region.

Since ASPAC GAM, Sept 2021, name of ASPAC and Executive Committee has changed to FIDIC Asia and Pacific (FAP) and Board to comply with the revision of Statute and By-laws of FIDIC.

### **3.2 Major Issues Raised in ASPAC Activities**

Throughout the history of ASPAC, major issues are summarized in the followings.

1) Promotion and Retention of Membership

2) Promotion of CE industry and Job Opportunities

Technology Transfer, Information Exchange, Collaboration among ASPAC MAs, Member Directory, Collaboration with Other Sectors, Collaboration with ADB.

3) Capacity Development/ Building

Training Program, Seminar, Conference, Training Center, FIDIC Conditions of Contract, Adjudicator, Dispute Board, Contract Management, FIDIC Accreditation.

4) Business Practice

Selection of Consultant (QBS, QCBS), ISO (9000, 14000), Risk and Liability, Construction Law, Professional Indemnity Insurance, Digital Transformation.

5) Advocacy and publicity: ASPAC newsletter, ASPAC Awards, FLF Awards.

6) Succession

Appointment of ASPAC Chair, EC Members, Working Committee Members, and Young Professionals.

7) Operation and Management

Permanent secretariat, FIDIC regional office in ASPAC.

ASPAC Constitution and By-laws (or Operational Rules).

### **3.3 Collaboration between ASPAC and TCDPAP**

In Oct. 1999 at Kuala Lumpur, ASPAC and Technical Consultancy Development Program in Asia and Pacific (TCDPAP)\* started collaboration to promote CE industry in Asia and Pacific region. TCDPAP was established and financed by the Economic and Social Commission for Asia and the Pacific (ESCAP) in 1990s after which it was supported by Consultancy Development Center (India) for a while.

ASPAC participated in TCDPAP conference since Oct. 1999 whose main activity was to hold annual conference in TCDPAP member countries. ASPAC supported the activities of TCDPAP, however, collaboration between both parties came to a natural end after March 2014, ASPAC/TCDPAP conference in Bali.



## \* Objectives of TCDPAP

To promote better utilization of local consultants in national and regional projects in the ESCAP region through establishing, developing and continuously updating an information system and programmes; and disseminating such information to end-users in a timely and orderly manner, and to develop, introduce and popularize schemes to enhance local consultancy capabilities through policy measures, institutional arrangements and training programmes in the approaches and methodology of providing consultancy services.

\* **Reference:** Selected Issues in Fields of Activity of the Common and Its Regional Institutions as well as Reports of Regional Intergovernmental Bodies - Item 7 of the provisional agenda- TCDPAP, April 1992, Beijing

## 4. ASPAC Chairman

From 1970s to 1990s, a term of ASPAC chair was not fixed. At the ASPAC GAM in Sept 2000, it was limited to 3 years in accordance with newly established ASPAC Operational Rules.

List of ASPAC Chairs

Name	Term	Name	Term
Dr. Peter Miller (Australia)	1979-1987	Kok King Ming (Singapore)	2003-2006
Steven Gentry (New Zealand)	1987-1988	Akihiko Hirotsu (Japan)	2006-2009
Takeo Morimura (Japan)	1988-1991	Dennis Sheehan (Australia)	2009-2012
Rockey Wong (Malaysia)	1991-1994	Hoig Kang (Korea)	2012-2015
Pandri Prabono (Indonesia)	1994-1997	Liu Luobing (China)	2015-2018
Rockey Wong (Malaysia)	1997-1999	Irawan Koesoemo (Indonesia)	2018-2021
Richard Kell (Australia)	1999-2000	Sudhir Dhawan (India)	2021-2024
Dr. Yumio Ishii (Japan)	2001-2003		

## 5. Concluding Remarks

As explained in the preceding section, there are many ASPAC challenges. Most of the issues seem common since establishment of ASPAC and maybe similar in the future. As the world economy and infrastructure needs of people have been changing quickly, we must swiftly and wisely change our business practices, or we will be kicked off by new players. However, I am certain that we are at the front of challenges as the trusted and honest players.

The historical record of FAP's events and significant milestones will be presented in a separate publication.



# GET REGISTERED FOR THE EVENT OF THE YEAR



**Conference  
Website**

<https://fidicasiapacific2023bangkok.com>





## FIDIC ASIA PACIFIC 2023 BANGKOK

<https://fidicasiapacific2023bangkok.com>


## Engineering towards Net Zero

26 - 28 November 2023  
at Millennium Hilton Bangkok Hotel

Dear international colleagues and friends in construction-related industry across Asia Pacific and around the world, this year we have been blessed with a comeback we deserve, to literally and technically join hands again in working together towards the rebirth of the construction and engineering industry. This time we envision net zero as we grow. From academics to Practitioners and professionals, service providers and suppliers, to employers and regulators, among all stakeholders in every business and organization, as well as individuals, the COVID-19 pandemic has hindered us for several years from proceeding the normal walks of life as we know of.



Its consequences affect our FIDIC Asia Pacific Conference organization as much, causing repeated delays and cancellations over the passing years. Not until now did we find the pleasure to announce the coming of FIDIC Asia Pacific Conference 2023 to take place at Millennium Hilton Hotel in Bangkok, Thailand, during November 26-28, 2023, under the theme "Engineering Towards Net Zero." It is high time we were to gather and catch up among colleagues and friends on the auspicious night of Loy Krathong floating candles Festival at the riverfront of the spectacular Chao Phraya River in Bangkok. The Festival means to many South East Asian countries; we have longed for the upcoming FIDIC Asia Pacific Conference 2023 as much this year. The conference venue and the city also look to welcome participants' families and friends to enjoy their vibrant holiday during the conference. They are sure to enjoy quality time with the participants and even on their own for next door to the hotel is situated Iconsiam, a largest shopping complex in Asia and iconic landmark of Bangkok with superb river view and fulfilled pastime for locals and visitors

With the economic rebound this year in generally all walks of life, FIDIC Asia Pacific Conference 2023 under the theme "Engineering Towards Net Zero" is looking forward to welcoming your participation in the sessions and visit to Bangkok, during November 26-28 this year. Come enjoy meeting, for success, and sharing, for happiness.

Sponsor of the Seminar





# FIDIC ANNUAL CONFERENCE



The 2023 FIDIC Annual Global Infrastructure Conference taking place from 10-12 September in Singapore is an opportune and pivotal moment for the international construction industry, as it prepares to plan, develop and deliver the strategies and solutions the world needs to deliver the infrastructure that will build economic and social prosperity and improve people's lives.

The conference theme, Infrastructure – there's no time to lose: Sustainable global (and local) strategies to build a better world, will stress the urgency of the need to invest in infrastructure in a sustainable way at a local and national level that brings stakeholders together around a common aim of improving the global environment that we all depend on.

As ever, FIDIC will assemble a high-profile line-up of leading expert speakers from a range of influential organisations to speak at the conference, which will also bring together the world's premier engineers and other stakeholders from the global construction and infrastructure sector. Leading global speakers will address the key issues the industry faces and offer their insights to an international audience.

FIDIC's flagship annual event will be one of the most important international gatherings for the industry held in 2023, with the conference expected to attract many hundreds of infrastructure, engineering and construction professionals from around the world to discuss and debate the key issues and drivers for the industry.



# INTRODUCING A NEW MEMBER TO FAP BOARD



**HUANG**

**XIGONG**

We are pleased to introduce Mr. Huang Xigong, the newly appointed member of the FIDIC Asia Pacific Board, representing China National Association of Engineering Consulting (CNAEC). Mr. Xigong brings a wealth of expertise to his role, holding a Bachelor's degree in Civil Engineering from Southwest JiaoTong University, China, and possessing comprehensive training in Project Management & Construction Supervision.

With an impressive 39-year professional journey, Mr. Xigong has assumed pivotal roles as a Civil Engineer, Construction Manager, owner's Project Manager, and Consultant across a diverse array of domestic and international infrastructure and industrial projects. Currently serving as the Chief Expert (International Business) within the China Civil Engineering Construction Corporation Group, his extensive experience underscores his prominence in the industry.

He has a strong grasp of the international consulting practice with the governance of FIDIC and the differences with the common Chinese practice.

As we welcome Mr. Huang Xigong to our board, we eagerly anticipate that his insights and experience will be invaluable assets, enriching our Board's endeavors.



## MEET THE EDITORIAL BOARD



**Amitabha Ghoshal**  
India



**Sudhir Dhawan**  
India



**Samarjit Chatterjee**  
India



**Thakur Sharma**  
Nepal



**Noppadol Jaisue**  
Thailand



**Dilini Gamage**  
Sri Lanka



**Patrick John R. Ramos**  
Philippines





A detailed map of Asia and the Pacific region, showing various countries and territories. The map includes labels for major cities like Beijing, Shanghai, Tokyo, and Sydney, as well as geographical features like the Indian Ocean and the Bay of Bengal. The text 'GET TO KNOW MEMBER ASSOCIATIONS OF FIDIC ASIA PACIFIC' is overlaid on the map in large, bold, black letters.

# GET TO KNOW MEMBER ASSOCIATIONS OF FIDIC ASIA PACIFIC





## INDIA

### CONSULTING ENGINEERS ASSOCIATION OF INDIA

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Vasant Kunj, New Delhi 110070

Ph: 9871166102

E: [ceai.ceai@gmail.com](mailto:ceai.ceai@gmail.com),

Web: [www.ceai.org.in](http://www.ceai.org.in)



Consulting Engineers Association of India (CEAI) is the apex body of Consulting Engineers in India having membership of organisations as well as individuals. The membership represents large, medium and small consultancy companies/ organisations both in the private and public sector and eminent individual consultants. EPC organisations are also members of CEAI since they have specialists in planning, design engineering, apart from construction management.

CEAI is the Indian Member Association of FIDIC.

CEAI was incorporated in 1996, with the merger of two leading national associations Association of Consulting Engineers (India)

- CEAI promotes the interest and works to enhance the status of the consulting engineering profession in India
- CEAI advocates global networking and co-operation
- CEAI's activities include:
  - Quality development of Consultants.
  - Productivity enhancement.
  - Promotion of ethical practices.
  - Facilitation and interaction with government and other authorities/ bodies to streamline and improve the system of engagement of consultants.

Regional Centres in Jaipur, Hyderabad, Kolkata and Mumbai to broad base activities.

#### Aims and Objectives

- Promote the professional interest and establish the rights and privileges of the status of consulting engineering profession in India.
- Represent the consulting engineering profession within India and abroad. Connect the members locally and globally.
- Disseminate among the members information on all matters pertaining to engineering, especially knowledge and information related to consulting engineering profession by way of holding Conferences, Seminars, courses, workshops, Field/ site visits etc, and thus assist in continuing education for the professional development of members.
- Act as the principal champion for consulting engineering profession through constantly informing and educating the public and lawmakers about key engineering issues and making it possible to have the voice of the professional heard by the policy makers.



<b>Aims and Objectives</b>	Promote adopting of equitable forms of contracts and other documents used in consulting engineering practice.
<b>Vision</b>	To represent, promote and enhance the status of consulting engineers in India as an honoured and dignified profession for nation building and propagate Indian engineering consultancy globally.
<b>Mission</b>	<ul style="list-style-type: none"> <li>Promote interests of the consulting engineering professional nationally and internationally</li> <li>Promote sustainable, safe and sound engineering practices</li> <li>Upgrade engineering knowledge and skill</li> <li>Propagate code of professional ethics, safety, health and environment</li> </ul>
<b>Values</b>	<ul style="list-style-type: none"> <li>Commitment with tenacity to high ethical values, integrity, professionalism and achieving technical excellence and inclusive development.</li> </ul>
<b>Code of Ethics</b>	<ul style="list-style-type: none"> <li>CEAI has adopted code of Ethics, to which all members must abide. It is not just for the quality of the jobs they work on, but for the safety and well-being of the public at large.</li> <li>CEAI is the profession's most respected voice on the practice of ethical engineering.</li> <li>The code specifies the responsibilities of Consulting Engineers towards the society as well as the profession, to refrain from performing services unless competent to do so, to act in the legitimate interest of client, to be impartial, to maintain ethical relations with other consultants.</li> </ul>

## OFFICE BEARERS

Designation	Name	Associated Firm
<b>PPRESIDENT</b>	Mr. Rama Shanker Sharma	Sugam Technocrats Pvt Ltd
<b>VICE PRESIDENT</b>	Mr. Vishwas Jain	Consulting Engineers Group Ltd
<b>VICE PRESIDENT</b>	Mr. J Venkata Lakshmi Narayana	Aarvee Associates Architects, Engineers & Consultants Pvt. Ltd.
<b>SECRETARY</b>	Mr. Navneet Sharma	Lion Engineering Consultants Pvt Ltd
<b>TREASURER</b>	Mr. Girish Chandra Mishra	Saviram Engineering Consultants Pvt Ltd



## EVENTS FROM LAST QUARTER

<b>Nepal</b> <i>Society of Consulting Architectural and Engineering Firms</i>	<ul style="list-style-type: none"> <li>• Training on Design of Green Buildings</li> <li>• Talk Program on "Introduction of Disaster Prevention in Japan"</li> </ul>
<b>New Zealand</b> <i>The Association of Consulting and Engineering New Zealand Incorporated</i>	<b>Webinars</b> <ul style="list-style-type: none"> <li>• ACE New Zealand Annual General Meeting 2023</li> <li>• How to make the most of 1st meetings with potential clients</li> <li>• Protect your business from cybercrime</li> <li>• What strategy is and isn't</li> <li>• Healthy thinking techniques for thriving in times of uncertainty and change</li> <li>• ACE Breakfast Three Waters with Heather Shotter</li> <li>• 4day Week with Andrew Barnes</li> <li>• Two critical skills for thriving in times of uncertainty and change</li> </ul>
<b>Malaysia</b> <i>The Association of Consulting Engineers Malaysia</i>	<ul style="list-style-type: none"> <li>• webinar series site supervision course discipline module: electrical</li> <li>• Luncheon webinar, theme: construction site supervisor</li> <li>• Special webinar: how to attain professional Engineer status</li> <li>• webinar series: Audit &amp; management the real world possibilities</li> <li>• webinar series: Water Service Management</li> </ul>
<b>Singapore</b> <i>The Association of Consulting Engineers Singapore</i>	<ul style="list-style-type: none"> <li>• Autodesk-ACES Workshop: Exploring Structural BIM to Analysis Workflows &amp; Model Automation Procedures</li> <li>• Webinar: Transformation &amp; The Future</li> <li>• ACES-Winston Training: New Age Booster Pump Technology</li> <li>• ACES-Trox Training: Type of ACMV Systems</li> </ul>
<b>Philippines</b> <i>Council of Engineering Consultants of the Philippines</i>	<ul style="list-style-type: none"> <li>• Shortlisted for FIDIC Member Association Excellence Awards for 2023</li> <li>• Recipient of Award of Merit (2023 FIDIC Project Awards): Post-Earthquake Damage Assessment of a UNESCO World Heritage City in Northern Philippines</li> <li>• Recipient of Award of Merit (2023 FIDIC Project Awards): Cebu Cordova Link Expressway (CCLEX) (Philippines)</li> <li>• Election of New CECOPHIL Board of Directors and Officers (2024-2026)</li> <li>• Honor Lecture: Impact of Climate Change on Susceptibility and Resilience in Central Taiwan</li> <li>• Presentation on 3D Reality Capture for Construction Management and Supervision</li> <li>• Presentation on Digital Project Management</li> <li>• Presentation on Earthquake Engineering</li> </ul>
<b>China</b> <i>China National Association of Engineering Consultants</i>	<ul style="list-style-type: none"> <li>• Training workshops national wide in China in May and June, to publicize and implement the newly issued "Outline and Explanation for preparing the feasibility study of Investment Project" of the Chinese Government</li> <li>• The Fourth Urban Rail Transit Sustainable Development Forum, July 23rd, 2023 in Tianjin China</li> </ul>
<b>India</b> <i>Consulting Engineers Association of India</i>	<ul style="list-style-type: none"> <li>• Webinar on "Legal and General Aspects of Contract Process and Contract Administration".</li> <li>• Course on "Construction Law"</li> <li>• Webinar on "Critical Flow Transition Design in Hydraulic Structures"</li> <li>• Soft Skill Training on "Be a Constructive Leader"</li> <li>• Webinar on "Project Financing"</li> <li>• Webinar on "Transportation Planning, Road Safety and Traffic Engineering"</li> </ul>



# EXPANDING CONTRACTUAL OBLIGATIONS



**Infrastructure  
Global**



by Anthony Barry  
**President of FIDIC**

Expand contractual terms have significantly extended the scope of liabilities to which Consulting Engineers are exposed. The complexities in project delivery have increased the risk of errors and omissions, compliance errors and target date errors.



### Expanding contractual obligations

The services provided by consultants and the projects to which they are provided have grown in complexity and size as well as expansion in scope to include social, economic and environmental outcomes.

At the same time, investors and other stakeholders require greater certainty in terms of project outcomes. Clients executing projects have sought to manage risk more effectively and to do so with greater efficiency. The nature of the parties involved in project delivery and the complex delivery mechanisms adopted have created complex relationships and interdependencies between the parties. Technology has facilitated a high level of collaboration and information sharing and exchange, and has enabled designers and constructors to develop more elegant and effective solutions for their clients.

In this changing context, clients have sought to develop contract provisions which ensure that their accepted risk appetite is reflected in contracts and service agreements. The terms used in these contracts and service agreements have found their way into both government and private consulting service agreements.

These contractual terms have significantly extended the scope of liabilities to which consulting engineers are exposed. The complexities in project delivery have increased the risk of errors and omissions, compliance errors and target date errors.

### Changing contractual terms

The contractual terms referred to in this article, which are often framed as warranties, include:

- high or very high standards of care
- fitness for purpose obligations
- absolute compliance with scope of work and technical criteria
- absolute compliance with programme target dates
- liquidated damages.



In addition to including these clauses, the contracts have been drafted to extend the consultant's liability in terms of:

- unlimited or very high limits of liability
- duration of exposure to professional liability
- indemnities, some of which are opened ended, and no-fault indemnities
- multi-party collateral warranties
- liability for client supplied information and investigations
- liability for indirect costs
- liability for consequential losses.

These obligations become more complicated when projects are undertaken under separate agreements for various phases of the project or where the client assigns or novate their interests in a project to another party such as a contractor.

Negotiating services contracts which include these provisions has become commonplace for consulting engineers in many jurisdictions where standard forms of agreement do not have government endorsement.

### **Fitness for purpose**

More than most of these provisions, fitness for purpose provisions have become problematical for consulting engineers and have found their way into infrastructure design contracts.

In my understanding, this obligation developed in contracts where the intellectual property for a process (e.g. mineral processing, manufacturing) was not known or transparent to the client and where intellectual property rights were protected and valued highly. The owners of the intellectual property provided various forms of performance guarantees that the purpose would be achieved.



Fitness for purpose obligations are very difficult to manage and essentially expose a consultant to significant risk and limit the scope of a defence a consultant may offer against a claim by either a contractor or owner to whom such an obligation may exist.

In managing an engineering investigation, design and documentation assignment, a consultant needs to undertake the work in a manner which specifically enables the consultant to meet the fitness for purpose obligation.

We cannot be at all confident that the fitness for purpose requirement can be met if the consultant relies on assumptions, which may be made in the normal course of the consultant's work.

### **Managing fitness for purpose obligations**

From the consulting engineer's perspective, fitness for purpose obligations fall into four parts:

- adequacy of the description of the purpose
- adequacy of the design documents
- the constructability of the design
- the contractual and functional requirements of the facility.

The complexity in responding to this obligation is that the "purpose" ranges from operational functionality of the whole facility to the component parts of a project, in a sense potentially creating thousands of separate obligations in one project.

To assist managing fitness for purpose obligations, consulting engineers need to establish:

- a clear description of the "purpose" of the facility, signed off by the client (owner or contractor) such that any ambiguity or conflicting requirements are resolved.



- clarity about whether the obligation can be varied by directions, clarifications or other statements made by the client including questions raised by the consultant.
- identify those assumptions or assumed knowledge a consultant may seek to rely on, which may be made in the normal course of engineering a project.
- produce design documents which are appropriate, accurate and complete.
- frame the scope of the design and documentation to incorporate all processes required of the client (and contractor) to ensure the design meets the fitness for purpose obligations.

It is also vital that where decisions are left with contractors, the consultant must indicate the qualifications of those entitled to make decisions, the processes to be followed and the records to be produced.

#### **Increasingly onerous contract terms**

The impact of increasingly onerous contract terms is not well researched. However, anecdotally, two things are clear:

- the cost, effort and expertise required to negotiate and manage projects with these provisions is very high and clients are paying higher fees to achieve the certainty they are looking for
- the availability and the cost of insurance is responding to the claims history which has developed as a result of breaches of these onerous contract terms.

FIDIC will continue to work with stakeholders, member associations and firms to improve contract conditions and the ability to manage the risks to which they are exposed.



# EFFECTS OF

# CLIMATE CHANGE



We are the first generation to feel the impact of climate change and the last generation that can do something about it.

- Barack Obama



# THAILAND

Chawalit Chantararat | *President of Consulting Engineers Association of Thailand*

## 1. Thailand is prone to impact by climate change :

Thailand is a country in Southeast Asia located in the north equator with the latitude from 6 to 21 degrees north and longitude of 97 to 105 degrees east. It is situated at the far end of the western Pacific Ocean. The climate is tropically warm and humid in nature.

Greenhouse gas in the atmosphere is the cause of the Global Warming and Climate Change which makes significant levels of adverse effects to the country, such as a new record of the highest daily temperature and prolonged heatwave, higher level of rainfall, the higher rising of sea levels that increases salt-water intrusion, the higher shoreline erosion and sedimentation and the relating impacts. The Greenhouse gas has an average atmospheric lifetime of about 200 to 400 years. Therefore, reduction of the emission is the most important targets of the mankind. We aim to be a net zero world in the Year 2065, before the Global temperature is 1.5 degrees Celsius higher than the Year 1880, Industrial Revolution reference year.

The El Niño-Southern Oscillation (ENSO) also regularly gives major impacts to recurring climate pattern especially floods and droughts to Thailand and the adverse effects seems to be fueled by the climate change.

## 2. Higher Temperature:

The records of Thai Meteorological Department of 93 stations over Thailand, from 1981 to 2020 (40 years), were analyzed by the Long Term Climate Change Monitoring and Warning Working Group in September, 2022. It is found that monthly maximum temperature is fluctuating in the range of 0.5 lower to about 1.0 degree Celsius higher than the average figure. But its trend is up higher about 1.0 degree Celsius over the recent 40 years. It is remarkably high compared with the world campaign to keep not more than 1.5 degree Celsius higher than the Year 1880, the Industrial Revolution.

Recently, it is reported that the World has already reached 1.2 degrees higher temperature than the Year 1880. Moreover, the tendency of 0.03 degrees Celsius higher per annum for the minimum, average and the maximum temperature are statistically significant. This year, the new highest temperature is 45.4 degrees Celsius in Tak province breaking Thailand's previous all-time record high was 44.6 Celsius, in Mae Hong Son province, set in 2016. Moreover, the high temperature in Thailand this year unusually extends longer into the period that is supposed to be the rainy season, which normally starts around the third week of May 2023.



Lately, at 12:00 hrs of August 13, the daily high temperature is 44.5 degrees Celsius at Phu Kra Dung district, Leoi province, causing the higher evaporation and alkalinity to the water reservoirs. The hot weather has contributed to record electricity consumption in Thailand, more electricity is being consumed through cooling fans, ventilation and air conditioners, breaking the highest electricity usage record of the year. The country's electricity consumption was 39,000 MW in April 6th, 2023, higher than the previous record of 32,000 MW in April 2022.

Thailand is one among the Southeast Asia countries effected by a heat wave during the April, hot season. Although, the level of the heat wave is not as high levels as the level in India and Bangladesh, where the high temperatures as 40 degrees Celsius continued for several days, and the accumulation of the heat causing the average temperature has increased as high as 5° C per day.

### 3. High Precipitation:

Over the recent 40 year records, Thailand has a tendency of about 100 millimeters higher precipitation than its average. Last year, the annual precipitation was 2,012 mm, which is 24% higher than the average rainfall. It is 5 mm less than the highest level of this decade and 64 mm more than the mega flood year, 2011. However, in the long range, Thai Meteorological Department said that, during these 40 years, the annual precipitation increase (of 2.5 mm per year trend) occurs in only some areas, but the tendencies of most of the areas remain unchanged.

The El Niño-Southern Oscillation (ENSO) is a recurring climate pattern. For Thailand, the El Nino causes dry weather and less precipitation, where the La Nina causes more precipitation. Strong La Nina hit Thailand in 2011 increasing the average rainfall by 20%, resulted in a mega flood to a wide area of central Thailand and lasting for about 3 months which caused approximately USD 46.5 billion in economic losses. The World Bank's estimate for this disaster means it ranks as the world's fourth costliest disaster as of 2011 surpassed only by the 2011 Tōhoku earthquake and tsunami in Japan, Great Hanshin earthquake in 1995, and Hurricane Katrina in 2005. Strong El Nino was in 2015 and half a year of 2016, causing a long period drought to wide areas of the country with the economic damage of about 3.5 billion USD.

It is forecasted by key weather institutions including the World Meteorological Organization (WMO) that the strong El Niño is coming this year with the additional impacts of climate change. Also, it is anticipated that this El Nino may last long to 2024, similar to the 2 year El Nino occurred from 2015 to 2016, with recurrence of 8 years.

The National Water Resources Committee (NWRC) and the Royal Irrigation Department (RID) has the strict measures to reduce the water use for irrigation, industry, commercial and domestic use. Rehabilitations of water storages and canals are the urgent actions to store as much water as we can. The precise water management are practicing, such as rotation watering and irrigation only in the rain shortfall period.



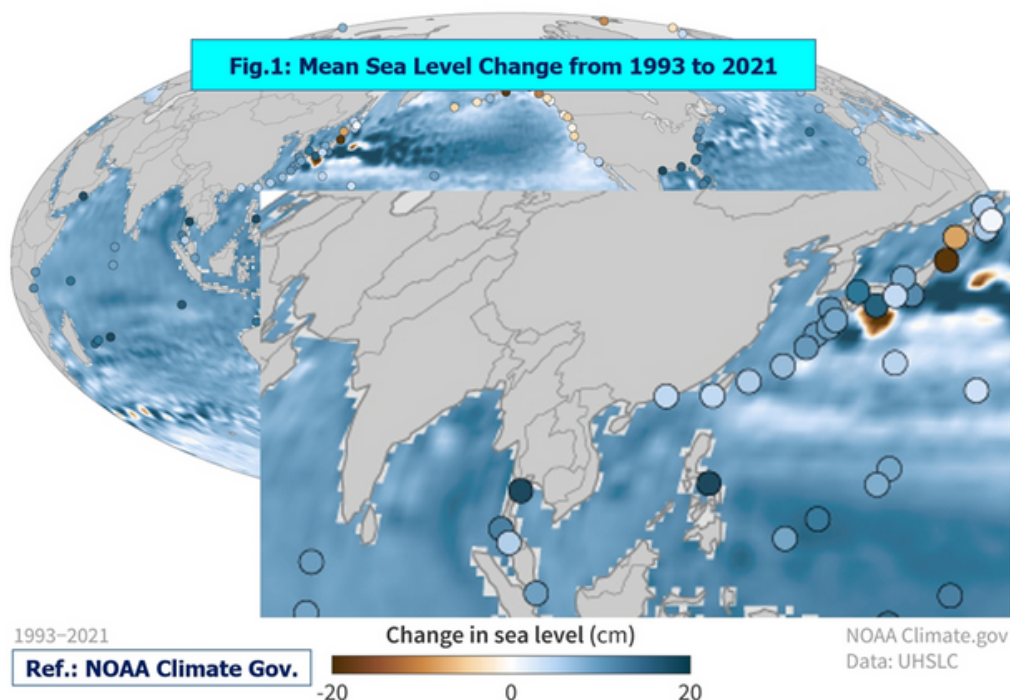
Promoting of drought-resistant agriculture crops and applying the alternate wetting and drying in irrigated rice practices are being carried out to gain 20% savings. Closely monitoring and supporting the campaign of 3-R, reduce – reuse – recycle, in industrial water use are taking action to obtain about 25% water savings. Target of all measures is to retain as much water in all reservoir to reach more than 55% (much less than that of 75% in normal years) of the storages at the end of the wet season, October, to secure the supply up to the next May, 2024. Where the El Nino continues, more tightened measures must be employed in the next seasons.

#### 4. Sea Level Raises:

As the Global Warming affect the melting of glaciers and ice sheet in the North and the South poles, when these ice sheets and glaciers melt, the water eventually runs into the ocean, causing sea level to rise. The mean rate of global sea level rise is accelerating about 3.3 millimeters per year. The low lying estuary and river mount areas are at high risk to be inundated. The sea level rise affects the salinity intrusion and obstructing the natural drainage from the upstream water and also causing higher river backwater effect.

According to the measurement made by the Port Department of Thailand at Samut Songkhram province, from the Year 2004 to 2023 (20 years), shows that trends of both the monthly average and maximum high tides are about 15 centimeters higher. However, there is no data on the damages caused by higher sea levels.

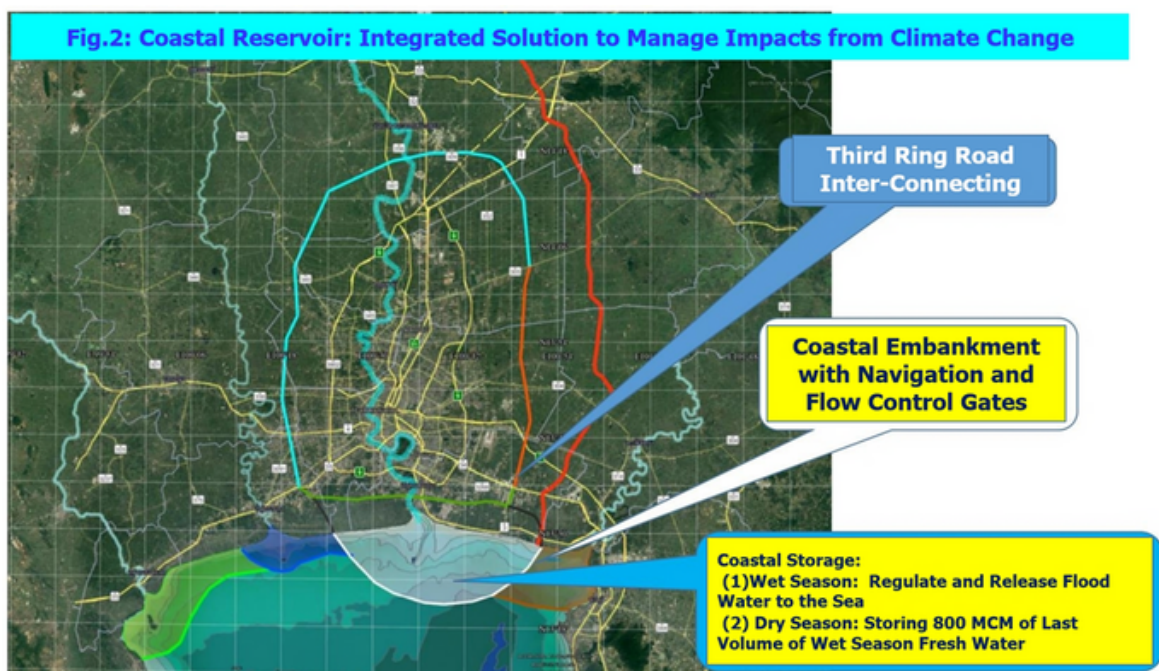
The National Oceanic and Atmospheric Administration (NOAA) published their map, as shown in Figure 1, indicating the change in sea levels from the Year 1993 to 2021 at several locations around the World. It is found that in these 28 years, sea level at the west coast near Phetchaburi province raises by about 20 centimeters, which is the highest raise among the published locations.





According to the analysis results of NASA, for the median case, found that sea water level in the Gulf of Thailand in the Year 2050 (30 years from the baseline) would be about 74 centimeters higher than the 2020 datum. By using the Chao Phraya River Hydrodynamic model, we found that salinity intrusion will go up, from Pathum Thani province, at present, further to Ayutthaya province, some more 30 kilometers upstream. Tributaries of the rivers are then needed to be protected by regulating gates and diking system, at not less than 74 cm higher than the present situations in order to keep the agricultural land at its safe levels. Saline areas at the estuary and river month will be increased and local farmers there must change their agriculture or career to match with the changing ecology.

A study was carried out to expecting for an alternative solution. A Coastal Reservoir as shown in Figure 2, could be built to protect the higher salinity intrusion and to use its storage to regulate absorbing the flood volume of The Chao Phraya river basin. The flood of 100 year return period can effectively be regulated by this Coastal Reservoir. More studies on Environmental Social Impact Assessment should be further carried out to obtain the mitigation measures for the impacts, especially, to mangrove, ecology, fisheries, navigations and others.



## 5. Conclusions:

Thailand is currently severely affected by climate change, especially the long- term impacts such as increasing average temperature with longer hot period causing more economic losses and the higher intensity rainfalls causing flash floods found in some areas. The extreme flood and drought forecasted to be more frequent. Therefore, the improvement of control structures with advanced management are required.

The Reduction of Greenhouse Gas emission can mitigate such impacts. In the future, climate change will increase the occurrence of droughts, flood, sea level rise and more salinity intrusion. Therefore, mitigation measures shall be further studied in details to obtain an appropriate solutions for various circumstances. Both structural and non-structural mitigation measures shall be taken action effectively for a long period to reduce such impacts, and could be more than 20 years in some cases. Therefore, both shall be carried out in parallel and should start now.



# NEPAL

**Thakur P Sharma** | *Vice President, Society of Consulting Architectural and Engineering Firms, Nepal*

**Aditya Khanal** | *Civil Engineer, Full Bright Consultancy (Pvt.) Ltd*

## 1. Introduction

Climate change is causing severe problems worldwide, like extreme weather, rising sea levels, and ecological shifts. Nepal, located in the lap of the Himalayas, shows how vulnerable a country can be due to climate change. The effects of climate change encompass the melting of glaciers, changing weather patterns, and an increase in both landslides and floods. Given its status as a developing country, Nepal encounters unique obstacles in effectively addressing these concerns, necessitating a collaborative approach from local and international entities.

## 2. Nepal's vulnerability when dealing with unexpected weather events

Nepal's land is experiencing more frequent and stronger extreme weather conditions, causing calamities like floods and landslides. Rising global temperatures cause more rain and glacial melt, leading to sudden floods and glacial lake floods. The country's mountains and monsoon weather (typically from June to September) make it highly susceptible to monsoon-related floods, causing widespread damage and loss of life. Also, deforestation and unstable soil from climate change make slopes more likely to have landslides after heavy rain.

## 3. Tragedy Strikes Sankhuwasabha District: A Sobering Reality

The horrific occurrence that highlights Nepal's vulnerability happened on June 17th 2023 in the Sankhuwasabha district of Eastern Nepal under Koshi Province. Unrelenting rains caused disastrous floods and landslides that claimed many lives, caused significant property damage, and destroyed crucial hydropower installations. This catastrophe reverberated deeply through the communities of eastern Nepal, imparting not only human suffering but also dealing blows to crucial infrastructures. Surprisingly, 22 individuals, including 17 workers working on the ongoing Super Hewakhola Hydropower Project, went missing after being swept away by flooding caused by the swollen Hewakhola river.

The flooding and landslides were initiated by continuous rainfall. The path to recovery is projected to be prolonged and resource-intensive, necessitating substantial financial backing and unwavering commitment to rebuilding the afflicted regions.





## 4. Monsoon Trials and Tribulations on the Narayangadh-Mugling Road

During the rainy season, the significant national highways, especially the Narayangadh-Mugling road, encounter added challenges. This road plays a crucial role in connecting various regions of Nepal, but it frequently becomes impassable due to landslides and heavy rainfall. The need for improved strategies to address these rainy season difficulties becomes evident when considering the necessary road repairs.

Despite its relatively short length of approximately 36 kilometers, traveling becomes very difficult during the rainy season. This year, there were 19 reported landslides solely along this stretch of road, resulting in delays. In comparison to 139 landslides on national highways throughout the country, the Narayangadh-Mugling road's vulnerability becomes evident. The impact of these challenges was pronounced this year, with the road being obstructed for more than 90 hours due to these issues.



## 5. Urban Inundation and Drainage Predicaments in Kathmandu Valley

The Kathmandu Valley faces repeated waterlogging and flooding in the monsoon due to poorly managed drainage systems and fast urban growth. This leads to congested roads, blocked waterways, worsened by climate change-induced heavy rainfall and river surges. Asphalt roads and concrete structures prevent water from soaking into the ground, straining drainage. Insufficient environmental planning intensifies the problem, endangering health and the environment as sewage mixes with floodwaters.

Urban settlements area lik Balkhu, Kuleshwar, Narephant, Balaju, Dhumbrahi, Mulpani etc. experiences the most impact, while significant road portions in Kumaripati, Tinkune, Jamal, Baluwatar, Bhadrakali, and certain segments of the Araniko Highway are flooded during this season, with a particular focus on the Banepa, Punyamati river region. The Kapan-Tarkari Bazaar-Sat Tale Road segment faces annual flooding during the monsoon due to river encroachment and inadequate drainage.



## 6. Himalayan Glacial Retreat and Its Wider Ramifications

The increasing melting of glaciers in Nepal due to climate change leads to various linked problems. Glacial lake outburst floods (GLOFs) are a major concern as they can be dangerous when breached moraines release a lot of water suddenly. Unpredictable water flows cause sudden floods and landslides, which disrupt communities, farming, and infrastructure. Less melting ice from glaciers means less water, affecting homes, power, and farming. Nepal's diverse ecosystems, important for its biodiversity, are also threatened, impacting tourism and mountain activities. These issues add to economic challenges, emphasizing the need for strategies to protect Nepal's future. . For instance, a flood occurred in Barun Valley, eastern Nepal, on April 20, 2017, blocking the confluence of Barun and Arun Rivers, creating a potentially hazardous 200m lake due to glacier melt and rockfall.





## 7. Technology to Fight Climate Challenges

Nepal is taking quick action to adapt to climate change by using technology like drones, satellites, and maps. Drones, which were first used after the 2015 earthquake, have become a vital tool. They help respond to disasters and assess risks, collecting and analyzing data in tough areas. .

Nepal's drone network shows how local skills can be powerful in managing disasters and climate changes. The success of using local drone experts during the Melamchi disaster proves how fast data can be gathered and analyzed during emergencies. This approach makes disaster responses quicker, more effective, and affordable, improving how we deal with risks and crises.

## 8. Conclusion

The country's vulnerability to harsh weather and tragic events such as the Sankhuwasabha flooding, and difficulties on crucial highways emphasize the urgent requirement for careful planning and investment to handle climate impacts. The recurring issues of urban inundation, glacial retreat, and their broader consequences highlight the complex interplay between climate change and various sectors, demanding innovative solutions. Nepal's commendable use of technology, particularly drones, showcases the power of local expertise in mitigating climate challenges. As Nepal faces these challenges caused by climate change and other human activities like river encroachment and unplanned settlements, it shows the way for other countries to work together in protecting our planet's future.

In future editions, we plan to gradually incorporate reports from other countries in the region. Additionally, the Editorial Board intends to develop and publish a dedicated compendium focusing on this significant issue.



## UPCOMING EVENTS

<p><b>Hongkong</b> <i>The Association of Consulting Engineers of Hong Kong</i></p>	<p>ACEHK is organizing a Mediation Workshop on Construction Disputes which is to be held on 18 September</p>
<p><b>New Zealand</b> <i>The Association of Consulting and Engineering New Zealand Incorporated</i></p>	<p>ACE is organizing following;</p> <ul style="list-style-type: none"> <li>• Webinar : Finding and landing international talent [August 29]</li> <li>• conference : Futurespace 2023 [Naumi Hotel Wellington - September 20]</li> <li>• ACE Awards Gala [September 21]</li> </ul>
<p><b>Malaysia</b> <i>The Association of Consulting Engineering Malaysia</i></p>	<p>ACEM is organizing following ;</p> <ul style="list-style-type: none"> <li>• webinar series: Electrical Power quality Issues and Solutions [September, every Monday &amp; Tuesday]</li> <li>• webinar series: Digital Transformation in Various Industries [September, every Wednesday &amp; Thursday]</li> <li>• Induction course for new M&amp;E Engineers [25-27 September]</li> <li>• Construction Convention 2023 ; Online [19 September]</li> <li>• Webinar: The role of system assurance in successful delivery and opening of railways for public use</li> <li>• Webinar Series : Site Supervision General Module [October to November]</li> </ul>
<p><b>Australia</b> <i>Consult Australia</i></p>	<p>Consult Australia is organizing following ;</p> <ul style="list-style-type: none"> <li>• Consult Australia Awards for Excellence [Closing date 4 December]</li> <li>• DELTEK webinar : The trends reshaping the built environment industry- Interactive panel [13 September]</li> <li>• FutureNet VIC Unveiling the Code: Decoding AI &amp; Automation [14 September]</li> <li>• Role of the Superintendent (in person) 17 October 2023</li> <li>• FutureNet ACT - Future State of the Territory 2023 [19 October]</li> <li>• Role of the Superintendent Online [29 November]</li> <li>• Contracts for Consultants Online [30 November - 1 December]</li> </ul>
<p><b>China</b> <i>China National Association of Engineering Consultants</i></p>	<p>CNAEC is going to be visited by the FIDIC President and CEO : in Beijing, China on July 19th, 2023</p>
<p><b>Philippines</b> <i>Council of Engineering Consultants of the Philippines</i></p>	<ul style="list-style-type: none"> <li>• Masterclass for Consultants</li> <li>• Disaster Risk Reduction webinar [13th October]</li> <li>• FIDIC Trainings/Webinar</li> </ul>



# FIDIC ASIA PACIFIC EMERGING LEADER'S AWARD



We are thrilled to announce the FAP Emerging Leaders' Award, a prestigious accolade designed to recognize and celebrate the outstanding accomplishments of Emerging Leaders (ELs) in the Consultancy Engineering industry. This award aims to not only acknowledge their remarkable achievements but also foster their active engagement within the FAP community.

To be eligible for the FAP Emerging Leaders' Award, candidates must meet the following criteria:

1. Candidates must be either individual members or employed by a company that is a member of the MA.
2. Candidates should be 40 years of age or younger.

Key Submission Dates:

- Submission of Application Documents to MA: September 30, 2023
- Selection of an Applicant and Submission to AFLEC by MA: October 31, 2023

For more details and application guidelines, please contact your MA (Member Association). Don't miss this chance to showcase your achievements and contribute to the growth of the industry.

Organized by

FIDIC ASIA PACIFIC FUTURE LEADER'S EXECUTIVE COMMITTEE



# MEET A FUTURE LEADER



## HARSHITA

## JAIN

Ms. Harshita Jain, a graduate in Civil Engineering from UK and Executive Management from London School of Economics. She is today considered as one of the most dynamic entrepreneurs in the infrastructure industry in India. She is the Director of Consulting Engineers Group Limited (CEG), one of the largest Indian owned infrastructure consultancy company in India providing services for metros, railways, high speed bullet train, highways, urban development, tunnels, etc.

She has been contributing to the Consulting Engineering industry as the Vice Chair of the FIDIC ASPAC Future Leaders and member of Consulting Engineers Association of India, the Member Association of FIDIC.

Her inherent leadership qualities are a key reason that CEG today is a brand name in the infrastructure sector with operations spanning in over 12 countries with over 1500 employees working from over 52 offices. CEG currently has international subsidiaries in London and Dubai with branches registered in Rwanda, Ethiopia, Zambia and Gabon.

Harshita's entrepreneurial journey in the consulting industry has been featured as a Cover Story / Story in many leading business magazines like Forbes India, Fortune India, Women Entrepreneur India, Global Business Line, etc. She also has been the recipient of many awards like Times of India Women Icon of Year 2022 in Infrastructure Sector, ET Women Inspiring Leaders Award 2022-2023, India's Top 30 under 30 by Business Mint and many more.



# PUBLIC-PRIVATE PARTNERSHIPS (PPP) FOR A SUSTAINABLE AND RELIABLE WATER SUPPLY FOR LARGE URBAN AREAS IN INDIA

## 1. Introduction

Urban areas in India, particularly those with large populations, face several challenges in ensuring access to clean and reliable water supply. These challenges stem from a combination of demographic, environmental, economic, and infrastructural factors. Sustainable water supply is of paramount importance in India for several compelling reasons, as it directly impacts public health, economic development, and environmental conservation. Most of the developing nations face financial crunch in financing water and sanitation projects.



*Dr Ajay Pradhan President  
& CEO, C2S2 Pvt Ltd*

Public-Private Partnerships (PPPs) have emerged as a potential solution to address water supply challenges in many regions across the globe. These innovative collaborations between public and private entities offer a framework for improving access to clean, reliable, and sustainable water supply services. In this paper, we will explore the concept and key elements of PPPs in the context of water supply challenges.

## 2. Public-private partnerships (PPP) in India

A Public-Private Partnership (PPP) in water supply in India refers to a contractual arrangement between a public-sector authority (often a municipal or state government) and a private-sector entity (usually a company or consortium) for the purpose of developing, operating, maintaining, or upgrading water supply infrastructure and services. These partnerships are established to ensure reliable, efficient, and sustainable access to safe drinking water for the population.

In India, Public-Private Partnerships (PPPs) in water supply projects can take various forms, each with its specific contractual arrangements and objectives. The choice of PPP model in a water supply project in India depends on various factors, including the specific project objectives, funding availability, risk-sharing preferences, and the legal and regulatory framework in place at the state or local level. Each model comes with its advantages and challenges, and selecting the most appropriate one is critical to the project's success.

Public-private partnerships (PPP) offer several advantages and disadvantages when used for water supply management. It's important to carefully consider these factors before entering into a PPP arrangement. The author will refer here at Delhi Jal Board to the Design, Build, Finance, and Operation of PPP model.



Design-Build-Finance-Operate-Transfer (DBFOT): In a DBO PPP, a private company is responsible for designing, building, financing, and operating a water supply system. This includes the construction and augmentation of treatment plants, distribution networks, and related infrastructure. The private partner will further operate the system for a specified period (15 Years) and may be responsible for maintenance as well.

### 3. Case Studies of Successful PPP Projects

#### 3.1 Introduction

The Delhi Jal Board (“DJB” or the “Authority”) has invited for the Design, Construction, Development, Finance, Operation, and Maintenance of the Improvement and Revamping of the Existing Water Supply, Transmission, and Distribution Network under the Command area of Nangloi Water Treatment Plant, West Delhi on Public Private Partnership (PPP) basis for the Concession Period 15 years.

#### 3.2 Project Overview

The Service Area is situated in West Delhi, covering an area of about 129 sq. km. with an existing population of around 1,072,000 and about 68,000 registered connections. The Nangloi Water Treatment Plant (WTP), which has a capacity of 40 MGD (180 Mld), receives water from the Bawana intake works which is located about 14km away. The water supply network in the project area comprises about 31km of transmission lines, about 1127 km of distribution lines, and 4 Underground Reservoirs / Booster Pumping Stations.

#### 3.2 Key Objective of the Project

- To enhance service Standard
- Reduction of NRW,
- Energy conservation,
- Improve water quality
- Better collection efficiency of revenue
- Extension water supply in unserved areas 24 X 7

#### 3.3 Project Model

- The project is based on PPP model (Design Built For Operation Transfer)
- Funding - Government Grants (DJB) - 70% on Capex related to Water Infrastructure with escalation & 30 % by Promoter. DJB also Grants 100% on capex-related Road Restoration Works.
- O&M – Billing to households on a monthly basis with annual tariff escalation as per price index
- Project Tenure: 15 years since Sep-2013

#### 3.4 Partners

Veolia India Pvt Ltd Noida - 51 %  
Swach Environment Pvt Ltd Kolkata – 49 %



### 3.5 Details scope of the work

#### CAPEX

- Rehabilitation of Raw water Feeder Main from Bawana Intake works to Nangloi WTP;
- Rehabilitation and automation of 181.60 MLD Nangloi Water Treatment Plant including construction of 14.50 Waste Water Treatment Plant/Sludge Recirculation System.
- Repair, Rehabilitation, and Construction of Underground reservoirs (UGRs)/ BPS/ Tube wells;
- Construction, operation and maintenance of the Najafgarh UGR (8 MGD) and Mundka UGR (6.5 MGD) ;
- Installation, replacement, and Rehabilitation of Transmission and Distribution system in the Service Area, including installation/replacement/repair of bulk meters wherever required with formation of 35 nos DMAs.

#### OPEX

- Operation and Maintenance of entire system like WTP, UGRs, 24x7 Water supply into 1600 KM Network piping for 15 Years
- Bi-monthly GPS-based photo Meter readings, Billing, and Collection of Water Charges from Consumers in the Service Area
- Depositing the collection fund into the designated Project Escrow account.
- Strict and timely action as per DJB norms against illegal users and defaulters
- 24x7 Customer Service and Grievance Redressal.
- Attend pipeline leakage, Meter Repair
- Set up a consumer redressal Center in all 4 Zones

### 3.6 Key Terms of the Concession Agreement

- The concession period is 15 years commencing from the compliance due date of 23rd October 2021. NWSPL shall continue to be the exclusive and dedicated operator as there is no other perennial source of water in Nangloi
- DJB would pay Operator Fees at INR 14.99 /KL (plus y-o-y escalation) of Water Billed for a Concessional Period of 15 years Presently this rate is INR 22 per KL
- Payment of bills by DJB to NWS is dependent on collection efficiency (CE). The concession agreement (CA) guarantees min. 80% CE till COD, post which it will be based on actual CE (of the preceding year) as per KPI
- At the beginning of every financial year i.e., April 1 operator fee shall escalate at
- $\text{Operator Fees} \times (0.25 + 0.45 (\text{CPI of Current Year} / \text{CPI of Previous Year}) + 0.30 (\text{WPI of Current Year} / \text{WPI of Previous Year}))$ .
- DJB would pay a grant on Capex for Water Infrastructure (@70% of total capex) and for related road restoration works (@100% of cost) including escalation arising from inflation
- DJB would supply the raw water which is to be treated and distributed by the Operator It will ensure free availability of a minimum of 44 MGD of Bulk Water and an additional 7.5 MGD of Treated Water to the Operator
- If DJB supplies less than 80% of guaranteed water for more than 30 days, then the Operator shall be paid a minimum of 80% of the last one-year average billing and is valid for the next 60 days, beyond which the Operator can charge an Extraordinary Rate.



- DJB would provide free guaranteed electricity of 15.6 mn Kwh for the first two years and 13 Mn KWh thereafter

#### 4. Key Factors for Successful PPP Implementation

Public-Private Partnerships (PPP) for water supply projects involve collaboration between public and private entities to ensure a reliable and sustainable water supply. Several key factors in this project play a crucial role in the success of PPP projects in the water sector. Here are some of the key factors:

- **Clear Legal and Regulatory Framework:** A well-defined legal and regulatory framework is essential to provide a transparent and stable environment for PPP projects. This includes outlining the roles, responsibilities, and rights of each party, as well as mechanisms for dispute resolution.
- **Risk Sharing and Allocation:** Effective risk sharing and allocation between the DJB and the private sectors is critical. Risks include financial, operational, technical, and environmental risks. It is a challenge to balance the distribution of risks to help ensure that each party performs and manages risks effectively.
- **Transparent Procurement Process:** A transparent and competitive procurement process ensures fairness, accountability, and the selection of qualified private partners. This process is being guided by clear criteria and evaluation methodologies.
- **Stakeholder Engagement and Public Participation:** One of the most important factors here in this region is to involve local communities, stakeholders, and end-users in the decision-making process enhance project legitimacy, identify community needs, and ensure that the project aligns with public interests.
- **Performance-Based Contracts:** Contracts should define performance standards, quality benchmarks, and service level agreements that the private partner is obligated to meet. Linking payment to performance encourages efficient and effective service delivery.
- **Appropriate Tariff Structure:** The tariff structure should balance affordability for consumers with the financial sustainability of the project. It's important to ensure that tariffs are reasonable and can cover operation, maintenance, and capital costs. In DJB case, the government subsidizes the tariff for the customer.
- **Long-Term Planning and Sustainability:** PPP projects should consider long-term planning for the entire project lifecycle, including infrastructure maintenance, renewal, and potential expansion. Sustainability aspects, such as water source protection and conservation, is being integrated into the project design.
- **Financial Viability and Investment:** The private partner's ability to secure financing and invest in the project is a key consideration. Adequate financial resources are necessary to ensure the project's success and long-term viability. This is one of the key challenges to accessing fund at a reasonable rate of interest.
- **Monitoring and Performance Evaluation:** Robust monitoring and evaluation mechanisms allow for tracking project progress, identifying deviations, and making timely adjustments is one of the key KPI. Regular assessments are being done to ensure that the project remains on track and achieves its objectives.
- **Flexibility and Adaptability:** PPP agreements should allow for flexibility to adapt to changing circumstances, technologies, and market conditions over the project's lifecycle.



- **Political and Institutional Support:** Strong political will and commitment at the local levels are essential for project success. Institutional support and coordination are necessary for effective project implementation and management with the involvement of several line departments.

Each factor mentioned above requires careful consideration and tailored strategies to ensure the successful implementation of a PPP project for water supply. The specific context, local conditions, and the characteristics of the partnership have a greater influence on the emphasis and approach for each factor.

## 5. Environmental and Social Sustainability

Public-private partnerships (PPPs) in water supply projects for a city like Delhi, India, have carefully considered environmental and social aspects to ensure sustainable and equitable service delivery. Here are the key environmental and social aspects to address in a PPP for water supply in Delhi:

### Environmental Aspects:

- **Water Source Protection:** Ensure that water sources (e.g., Yamuna and Ganga rivers and groundwater) are adequately protected from pollution and over-extraction. Implement measures to safeguard water quality and quantity.
- **Efficient Water Use:** Promote water conservation and efficient water use practices through 24X7, leakage management, etc. Implement demand management strategies to reduce water wastage by deploying SCADA.
- **Climate Resilience:** Assess the vulnerability of the water supply infrastructure to climate change impacts such as increased temperature, changing precipitation patterns, and extreme weather events. Incorporating the resilience measures into the project design, especially during the increase in ammonia level at the source and diversion of water to other plants.
- **Energy Efficiency:** The effort is there to ensure the design aspects of water treatment and distribution systems for energy efficiency to reduce greenhouse gas emissions and operational costs.

### Social Aspects:

- **Equitable Access:** To ensure that the water supply system provides equitable access to clean and affordable water for all residents of Delhi, including vulnerable and underserved communities.
- **Affordability:** The water tariffs at levels that are affordable for all income groups while ensuring the financial sustainability of the project. Implement targeted subsidies for low-income households, if necessary.
- **Community Engagement:** Involving the local communities and water users in decision-making processes, project planning, and monitoring to address their needs and concerns.
- **Health and Sanitation:** Consider the link between water supply and public health. Promote safe drinking water and sanitation practices to reduce waterborne diseases.
- **Public Health and Safety:** Implement measures to ensure the safety of the water supply system and the health of both consumers and workers involved in the project.



- **Complaints and Grievance Mechanism:** Establish a transparent and accessible mechanism for addressing public complaints and grievances related to water supply services.
- **Capacity Building:** Provide training and capacity-building programs to enhance the skills and knowledge of local government agencies, community organizations, and project staff.

Balancing these environmental and social aspects within a PPP for water supply in Delhi is essential to achieve not only water security but also sustainability, equity, and improved quality of life for all residents. It requires strong collaboration between public and private partners, active community engagement, and adherence to environmental and social safeguards throughout the project's lifecycle.

## 6. Challenges and Risks

The Nangloi Water Supply Project, under the Delhi Jal Board, is an essential initiative to improve water supply services in the Nangloi area of Delhi, India, through a Public-Private Partnership (PPP) arrangement. While PPPs offer various advantages, they also come with specific challenges and risks. Here are some challenges and risks associated with PPP projects in water supply, particularly relevant to the Nangloi Water Supply Project:

### Challenges

- **Financial Sustainability:** The PPP project is working towards balancing the need for financial sustainability with affordability for consumers, especially in lower-income areas like Nangloi, which is one of the most significant challenges.
- **Operational Efficiency:** Achieving operational efficiency improvements and cost reductions may require significant investments in infrastructure and technology.
- **Capacity Constraints:** Delhi Jal Board may face capacity constraints in terms of contract management and oversight, potentially leading to governance issues.

### Risks

- **Financial Risks:** Fluctuations in water demand, revenue collection, or unforeseen project costs can lead to financial risks for both the public and private partners.
- **Legal Risks:** Legal disputes and contract violations can arise due to disagreements over contract terms, performance standards, or regulatory changes.
- **Force Majeure Events:** Natural disasters, epidemics, or other unforeseen events can disrupt project operations and timelines, which also disrupt in the revenue collection including during COVID 19 during 2020- 2022.

Effective risk assessment, mitigation strategies, and contingency planning are critical for managing these challenges and risks. Additionally, strong governance structures, clear contractual agreements, regular performance monitoring, and open communication between the Delhi Jal Board and the private partner are essential to ensuring the success and sustainability of the Nangloi Water Supply Project.



## 7. Future Outlook and Recommendations

The future outlook for the Nangloi Water Supply Public-Private Partnership (PPP) project in Delhi should aim to ensure reliable, equitable, and sustainable water supply services for the Nangloi area. Here are some recommendations and considerations for the project's future:

- **Leakage Reduction:** Implement measures to reduce water losses from leaky pipes, which can improve the overall supply efficiency.
- **Tariff Rationalization:** Regularly review and adjust water tariffs to balance affordability for consumers with the financial sustainability of the project. This is too political in the case of Delhi.
- **Subsidy Mechanisms:** Subsidies or financial assistance programs for low-income households to ensure they have access to affordable water services with 20 KL free water.
- **Community Involvement:** Fostering meaningful community engagement in project planning, implementation, and monitoring to address local needs and concerns.
- **Policy Stability:** Working with relevant authorities to ensure policy stability and continuity, minimizing the risk of sudden policy changes impacting the project.
- **Performance Metrics:** Continue monitoring and evaluating project performance using clear Key Performance Indicators (KPIs) and service benchmarks.
- **Financial Prudence:** Maintaining financial prudence, with a focus on efficient cost management, revenue collection, and long-term financial stability.

## 8. Conclusion

Public-Private Partnerships (PPPs) play a significant role in ensuring sustainable water supply for large urban populations in Delhi for several compelling reasons;

Private sector entities bring technical expertise, management efficiency, and innovative technologies that can improve the operation and maintenance of water supply systems. This efficiency leads to reduced water losses, improved service delivery, and cost-effective infrastructure development. PPPs attract private sector investment and financing, which is crucial for addressing the massive infrastructure needs of a large urban population like Delhi.

PPPs distribute risks between the public and private sectors, allowing each party to manage risks that align with their capabilities. This risk-sharing mechanism will certainly make projects more attractive to private investors. PPPs promote financial sustainability by exploring diverse revenue streams, including user fees and non-tariff revenue sources. This approach will ensure that water supply services remain financially viable in the long term. PPPs require strong political will and commitment at both the national and local levels. Institutional support and coordination are essential for effective project implementation and management.

In summary, sustainable water supply is the cornerstone of public health, economic development, and environmental conservation in India. It addresses immediate health concerns, drives economic growth, and ensures the long-term well-being of ecosystems. As India faces challenges related to population growth, urbanization, and climate change, sustainable water supply practices become even more critical to securing a prosperous and healthy future for the nation.



# DATA STORAGE MANAGEMENT SYSTEM FOR PROJECT MANAGERS

## 1. Introduction

A common problem that is often encountered in any work that requires large amounts of data collection is that many people forget where they kept the data and spend a lot of time searching for the data. This is one of the reasons that affect other work delays. In particular, the Project Manager has to coordinate with all relevant parties and collect all data related to the project. There is an opportunity that the owner, designer, contractor, or other will ask for some data from the Project Manager.



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If the Project Manager is unable to find that data, it will be considered a defect in the responsibility that the owner expected. So, an effective data storage management system is very essential to reduce a lot of time spent searching for data to support more efficient work. This article aims to present an efficient data storage management system to increase Project Manager Performance and include the format of the data storage management system that the author's organization is developing to be shared as knowledge in another perspective. In addition, this article is going to focus on soft file storage in response to the current paperless campaigning.

## 2. Project Management Works

Project management is the process of leading the work of a team to achieve goals and meet success criteria at a specified time. Their responsibility is managing time and resources, including people, cost, team knowledge, tools and others to be effective. So, this is necessary to have a Project Manager with good soft skills and systematic expertise in problem-solving to take care of all these responsibilities and coordinate with all parties and collect all data related to a project.

## 3. Data Storage Management

### 3.1 Purpose of Data Storage

1. Collecting data to be reused later.
2. Organizing data that can be found efficiently.
3. Updating data to be correct and complete.
4. Protecting data from destruction, stealth, mishandling, including protecting data from accidents that may be caused by defects within the computer system.

### 3.2 The Principles of Data Storage Management

1. Access: Easy, fast and accurate access to data.
2. Security: Stored data has to be secured in order to prevent data leakage.
3. Edit: Can edit or update data in the future



## 4. Design of Data Storage Management System

The design of a data storage management system should be basic, simple, easily understood and applicable to any project. It needs to clearly categorize data such as what project, what timeline of data, Pre-construction or Construction, what kind of data, drawing or information or report or etc. It also has to be divided into subcategories to identify more specific types of data such as what party providing the data, date of receipt of the data, etc. The more specific data is categorized, the easier it is to find the data you need. An example of categorizing data is shown below.

- 0\_Information
- 1\_Directory
- 2\_Schedule
- 3\_Tender
- 4\_Contract
- 5\_Minutes
- 6\_Dwg
- 7\_EIA
- 8\_Permission
- 9\_Payment
- 10\_Correspondence
- 11\_Photo
- 12\_Report

**Figure 1:** Example folder categorization for Project Manager in Pre-Construction period

- Arch
- BMA
- EIA
- For-Con
- For-Tender
- ID
- Information
- Land
- MEP
- Perspective
- Str
- Topo
- Traffic

**Figure 2:** Reference from Figure 1, an example folder subcategory of “6\_Dwg”

- Comment
- Concept
- Co-ordinate
- DD
- Prelim

**Figure 3:** Reference from Figure 2, an example folder subcategory of “Arch”

- 2020-08-10 Presentation
- 2020-08-17 Presentation
- 2020-08-24 Presentation
- 2020-08-31 Approve

**Figure 4:** Reference from Figure 3, an example folder subcategory of “Concept”

## 5. Types of Data Storage Management Systems

Data storage for Project Managers is divided into 2 main groups as shown below.

### 5.1 Data storage for the Project Manager’s organization

Data storage for the Project Manager’s organization is the internal data storage system of the Project Manager’s organization. This data will be stored on the organization’s server so that employees can access this data. But for security purposes, the organization should have control over employees to access data on each department. Different departments may be able to access different data depending on the responsibility of each department.



For an example, if the Project Managers in the Pre-construction period and the Construction period are not the same, data related to designers' contract or payment should be accessible by only the Project Manager that works in the Pre-construction period, and this data should not be accessible by the Project Manager that works in the Construction period. If the Project Manager's organization has a separate Quantity Surveyor department, data related to tender in the project should be accessible by only the Quantity Surveyor department, and this data should not be accessible by other departments.

## 5.2 Data storage for the relevant parties in each project

Data storage for the relevant parties in each project is a data stored system that can be accessible by relevant parties in each project. This is one way to reduce the problem that other parties cannot find some data they want and ask from the Project Manager because they can find it by themselves. This reduces Project Manager work, allowing more time to do other tasks and increase the performance of work because you do not have to spend time to find data for other parties. In this system, the Project Manager has to create a cloud storage system. The Project Manager may send links to other parties to access the data on the cloud storage system. And also, the security of data must be taken into account that must not be leaked to other people. This may be set an access code or set up who can access this data. And we should also control the accessibility of project owners, designers, contractors and others. Examples of programs that can store data on Cloud and share with other people are shown below.



**Figure 5:** Examples of programs that can store data on Cloud and share with other people.

## 6. Conclusion

The above is a guide to the data storage management system that the author's organization is developing and had actually tested in some projects. From testing by using this data storage management system, we found that it can actually reduce the time spent to find the data. But we also found problems that for each project there is a chance that the design of the data storage category should be different. They must have some improvements to be made to suit each project. So, this data storage management system has to be more developed further in order to make the system more complete.

## 7. Suggestion

Good design of the data storage management system should easily find the data you need. Whenever you need to store data, you have to know exactly where it will be stored, the concept is the same as  $1 + 1 = 2$ . It is a fact. But in actual use, human errors may occur because each person is not the same and have different experiences and different senses. Therefore, our understanding of the data may not be the same. So, to reduce such problems, the organization should train employees to guide how to use the data storage management system to ensure that all employees can use the system correctly or reduce the human error that will occur to a minimum.



We invite our member associations to share their constructive feedbacks and inputs to incorporate in the next issue of the newsletter.

Member associations are requested to circulate this newsletter among their members and seek articles, news and information related to past and future events to enhance the network and to represent more parts of the region.

Thank you  
Editorial board

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