

出國報告 (出國類別：開會)

參加 **2015** 年挪威國際大壩技術安全研討會

服務機關：台灣電力公司

姓名職稱：營建處主管水理 王仲群

派赴國家：挪威

出國期間：104 年 6 月 11 日至 6 月 20 日

報告日期：104 年 8 月 14 日

行政院及所屬各機關出國報告提要

出國報告名稱：

參加 2015 年挪威國際大壩技術安全研討會

頁數____ 含附件：是否

出國計畫主辦機關/聯絡人/電話

出國人員姓名/服務機關/單位/職稱/電話

王仲群/台灣電力公司/營建處/主管水理/02-23666958

出國類別：1 考察2 進修3 研究4 實習5 其他

出國期間：104 年 6 月 11 日 至 104 年 6 月 20 日

出國地區：挪威

報告日期：104 年 8 月 14 日

分類號/目

關鍵詞：

內容摘要：(二百至三百字)

今年剛好逢每四年一次的國際大壩委員會(ICOLD)舉辦第 25 屆大會(Congress)及今年第 83 屆年會(annual meeting)-Hydropower'15 合併辦理, 挪威國家大壩委員會(NNCOLD)受委託主辦, 地點選在挪威-史達溫格(Stavanger),13 日首先登場的是技術委員會(Technical Committee)召開的討論會(workshop),然後開始年會 -Hydropower'15 討論會(symposium),為期約兩天,16 日主辦大會安排各項技術參訪活動,17 日開始 ICOLD Congress 問題演講討論會,分四大類: Question96-水壩水庫利用之革新、Question97-溢洪道、,Question98-堆填壩與磚石壩、Question99-現有水壩的提升及改建。

由於國內已建壩處為數眾多,再建新壩有限且本公司各大多數水力電廠水壩均已歷史悠久,完工運轉多年,尤其近年來陸續面臨水庫泥砂淤積及水壩老化劣化龜裂現象,,故將焦點著重在大壩復建更新調查及提昇老舊水庫,加強延壽技術..等議題上,,經由本次研討會與歐亞各國進

行研討及蒐集相關寶貴資料(如印尼 Wonogiri 壩復建經驗、日本 Yahagi 壩現地試驗利用虹吸作用(siphoning)吸砂排砂-..等)均可提供本公司借鏡參考,期能永續經營發展,對公司水力發電有所裨益。

本文電子檔已傳至出國報告資訊網 (<http://report.nat.gov.tw/reportwork>)

目錄

一.目的.....	1
二.會議概述.....	1
1. 會議地點.....	1
2. 過程說明.....	1
三.內容心得.....	4
1. Hydropower'15 討論會報告.....	4
2. ICOLD Congress 問題演講討論會—Question96~Question99.....	9
四.結論與建議.....	17
附件 1 會議日程表	
附件 2 出席者名單	
附件 3 相關照片	

一.目的:

參加 2015 年挪威國際大壩技術安全研討會,期能與先進國家進行研討及蒐集相關寶貴資料,汲取先進技術與經驗及未來發展趨勢,密切關注如何提昇老舊水庫功效,期能永續經營發展

二.會議概述

1. 會議地點--挪威-史達溫格(Stavanger),人口約 120,000 人,是挪威第四大城市,位於挪威西南部半島,成立於 1125 年,歷史可以追溯到中古世紀 1000 多年前威京年代(Viking Age),原是個寧靜的沿海城市,曾為重要的漁港,惟 1969 年在北海發現石油,從此人口增加,城市繁榮,一躍而為挪威的”油都”,是為歐洲能源重鎮之一,城市內新舊文化巧妙融合,引人入勝,坎寧博物館(Canning Museum)及天主教大教堂,羅馬式與哥德式建築宏偉壯觀,十八十九世紀中古建築完整,典雅宜人;史達溫格有 Solo 機場和歐洲各大城市有定期航班相通,機場與市區中心有 Flybussen 巴士來往,交通堪稱便利;開會場地是 Stavanger Forum(集會場),內有大會議廳及多個小型會議廳與辦公房室,以備各項會議及討論會議使用,部份少數研討會選在鄰近 Clarion Hotel Energy 會議室舉辦,便利又適當,如附件3 照片

2. 過程說明—

(1)出國行程:

六月 11 日 ----- 出國

12 日----- (經阿姆斯特丹轉機)-- 抵達史達溫格

13 日~18 日-----研討會

19 日~20 日-----返程

(2)會議日程表列為六月 13~20 日(詳附件 1-日程表),誠為挪威水利界一大盛事,今年剛好逢每四年一次的國際大壩委員會(ICOLD)舉辦第 25 屆大會(Congress)及今年第 83 屆年會(annual meeting)-Hydropower'15 合併辦理,挪威國家大壩委員會(NNCOLD)受委託卯足了勁全力以赴主辦,乃廣邀世界各國水利土木專家學者參加,報到時賓客雲集,洋腔洋調好不熱鬧;根據大會提供參加者名單(如附件 2)總數約 978 人,其中以法國派出的陣容最為龐大約 94 位,地主國挪威居次約 89 人,再來是日本 78 人,然後依次多的有瑞典 51 人,美國 42 人,伊朗 36 人,瑞士 35 人,韓國 30 人,印尼 24 人,義大利 21 人,俄羅斯 21 人,南非 21 人,奧地利 20 人,巴西 20 人,摩洛哥 20 人,土耳其 20 人.....等

台灣不知是否受限不是國際大壩委員會組織成員還是資訊不足抑或其他因素,包括筆者本職及中興工程顧問公司兩位工程師,總共只有三位與會;

13 日首先登場的是技術委員會(Technical Committee)召開的討論會(workshop),第二天又再分組研討相關子題,14 日同時開始年會-Hydropower'15 討論會(symposium),為期約兩天,16 日主辦大會安排各項技術參訪活動,筆者選擇了挪威頗負盛名的景點—聖壇岩(The Pulpit Rock;Preikestolen)挑戰體力兼運動,滿山遍野岩石嶙峋,壯觀奇險!六月 17 日開

始 ICOLD Congress 問題演講討論會,相關 Question96~Question99 同時分別依序展開,問題分四大類,詳述後面內容心得部份,會議期中尚有各國廠家展示介紹與水壩水庫水資源相關產品及說明圖片,琳瑯滿目不勝枚舉!

會期中值得一提的是:大會組織特選於六月 15 日晚在史達溫格市區一古色古香餐館 Sjohusene 辦理歡迎酒會(Welcome Reception),,賓主盡歡;另於六月 17 日晚間假史達溫格市音樂廳招待與會來賓享受一場文化藝術饗宴,見識到挪威當地歌舞風格,別具特色;此外開會中間還安排車輛接送約三小時史達溫格市市區導覽,備專人解說該城市的歷史典故風土民情及城市風貌,在在顯示大會的用心良苦與精心籌劃,期能讓與會來賓在研討水力專業領域發揮技術汲取知識之外又同時兼享人文藝術之美,以收開會與休閒雙重功效。

三.內容心得:

此次大壩技術安全研討會,各項議題豐富,涵蓋水壩水庫水資源環境...等各方面熱門又實用的講題,惟因同時分場次進行,確有分身乏術顧此失彼無法兼顧之感,只能隨時保持警覺,停、聽、看,期能廣泛接觸汲取各方精華,增廣見聞;惟由於國內已建壩處為數眾多,再建新壩有限,故選擇講題之優先順序擬著重在大壩復(改)建更新調查及提昇老舊水庫..這方面的議題上,下面就盡量擷取與本公司現有壩面臨類似問題而亟需解決之相關議題擇要說明如後,期能據以觀摩作為借鏡參考,俾達到永續經營發展目的。

1. Hydropower'15 討論會報告--- 其中一篇"Design Rehabilitation of Wonogiri Dam,Central Java Province-Indonesia" 印尼爪哇 Wonogiri 壩復健設計—

Wonogiri 壩是 1981 年建造的土石壩,壩高 40m,壩長 830m,溢洪道有 4 個閘門,淨寬 30m,自完工蓄水來快速遭受淤積所苦,到 2005 年水庫容量已 50.9%淤滿,主要淤積來源是來自主河道上游支流 Keduang 河; 印尼當局為減緩淤積問題,乃委請顧問公司提出分期計畫--緊急計畫、中期計畫、長期計畫來因應:

計畫構想—

- (1) 在 Wonogiri 壩上游右岸施築 2 道新 21m 長,12.6m 高,15m 寬(2@7.5m),排洪量 1270cms 弧形閘門之新溢洪道 (New spillway),用做排砂兼排洪,

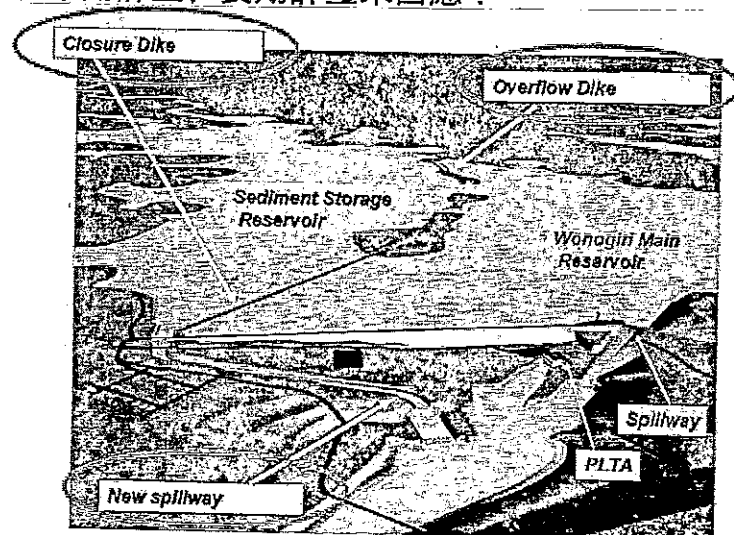


Figure 2. Countermeasures Layout

- (2) 設三座封閉堤(Closure dikes)-dikeA,dikeB,dikeC 將水庫分隔成兩半,一半是 Wonogiri 蓄水庫(main reservoir),一半是沉砂庫(sediment storage reservoir)
- dike A--長 700m,有 298m 長是溢流段,其左右連接 700m 長 dike B 及 402m 長 dike C,堤基礎係做在相當堅硬且不透水土層上,堤體施築取材自相關結構開挖料及借土坑,建造時先將基礎面頂層表土清除掉使其與堤接觸面良好即可
- (3) 平常正常情況,水是由沉砂庫經溢流段導入蓄水庫蓄水,而在濕季時超過蓄水庫正常高水位時多餘水量就由溢流段流進沉砂庫內以作為排砂操作用途。

Design annual sediment balance in the Wonogiri reservoir is shown below;

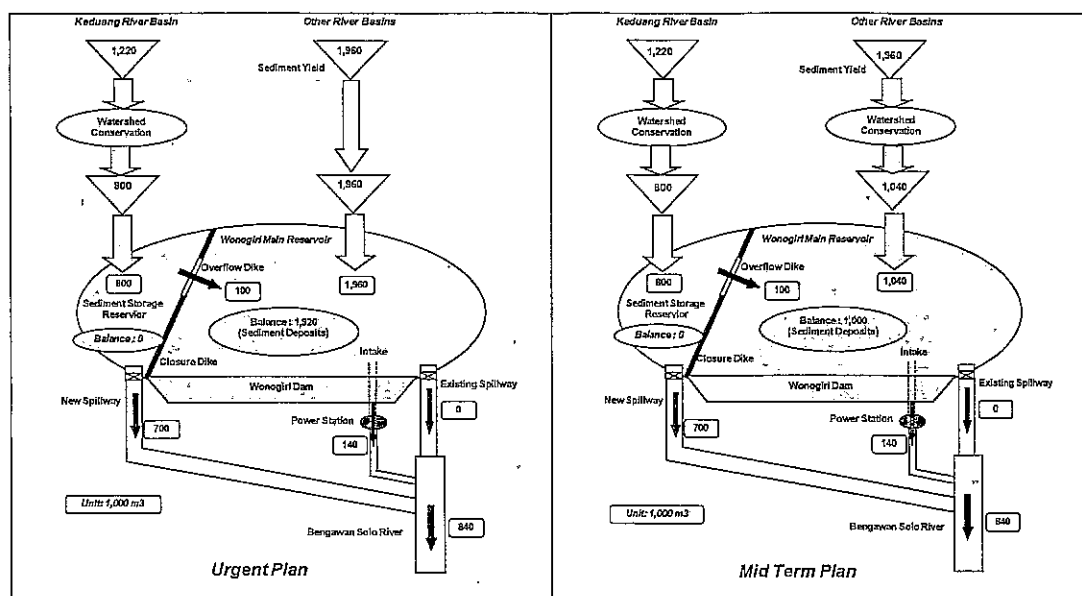


Figure 1. Design annual sediment balancing
Source: Supporting Report Volume 2 (2010)

(4) 分期計畫--

a) 緊急計畫:

- 建沉砂庫利用新溢洪道排砂
- 支流 Keduang 河流域水土保持
- 進水口定期浚淤維護

b)中期計畫:

-支流流域水土保持

c)長期計畫:

-流域水土保持區域重新復健

小結—

(1)可避免淤砂流進進水口

(2)可能執行排砂操作不致減低蓄水庫水位,因此對蓄水用途影響甚微

(3)減輕對環境及人為社交活動衝擊

(4)此復建計畫由於還在施工階段,其效果尚待確認

(5)依印尼大壩安全標準,還有需再 check 之處

(6)綜觀本案例,由於水庫面臨淤積問題嚴重,情況類似本公司日月潭水庫、霧社水庫,亟需設法改善,雖然地形環境不完全一樣,容或所提方法有所出入,但至少基本觀念除淤排淤理念相同,所謂「他山之石,可以攻錯」,不妨參考其方法及成效引為借鏡,初步看來頗有不謀而合之處,將更加強吾人所構思的改善方案。

(二)日本 Yahagi 壩現地試驗利用虹吸作用(siphoning)吸砂排砂-

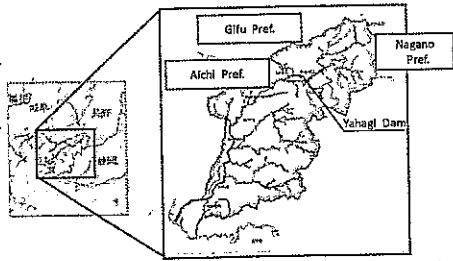
(1)背景--Yahagi 壩自從於 1971 年三月建造以來,其水庫土砂淤積就一直不斷

進行,在 2002 年九月發生在伊南(Enan)一場豪雨,遭受約 280 萬 m^3 泥砂淤積量,

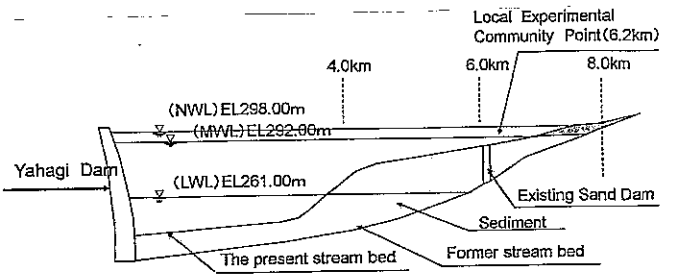
而在運轉 36 年後,亦即 2007 年水庫整個淤積量高達 1551 萬 m^3 ,遠遠超過預估

100 年內計畫淤積量 1500 萬 m^3 ;迫使 Chubu 地方當局研究提出有關因應對策:

(2) 對策-- 如下圖



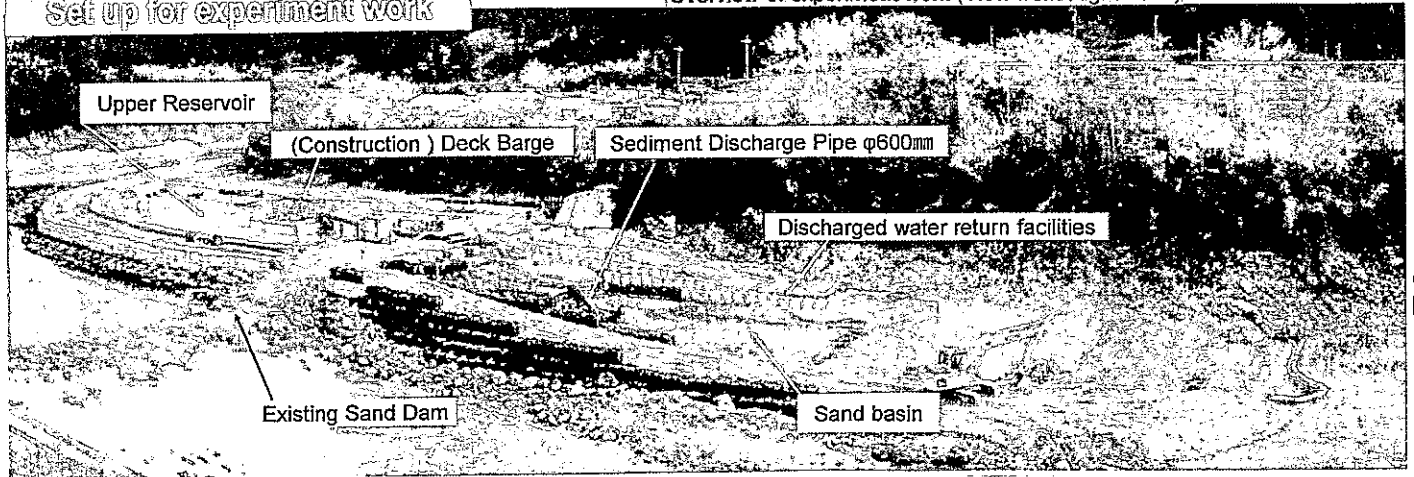
Location of the Yahagi Dam



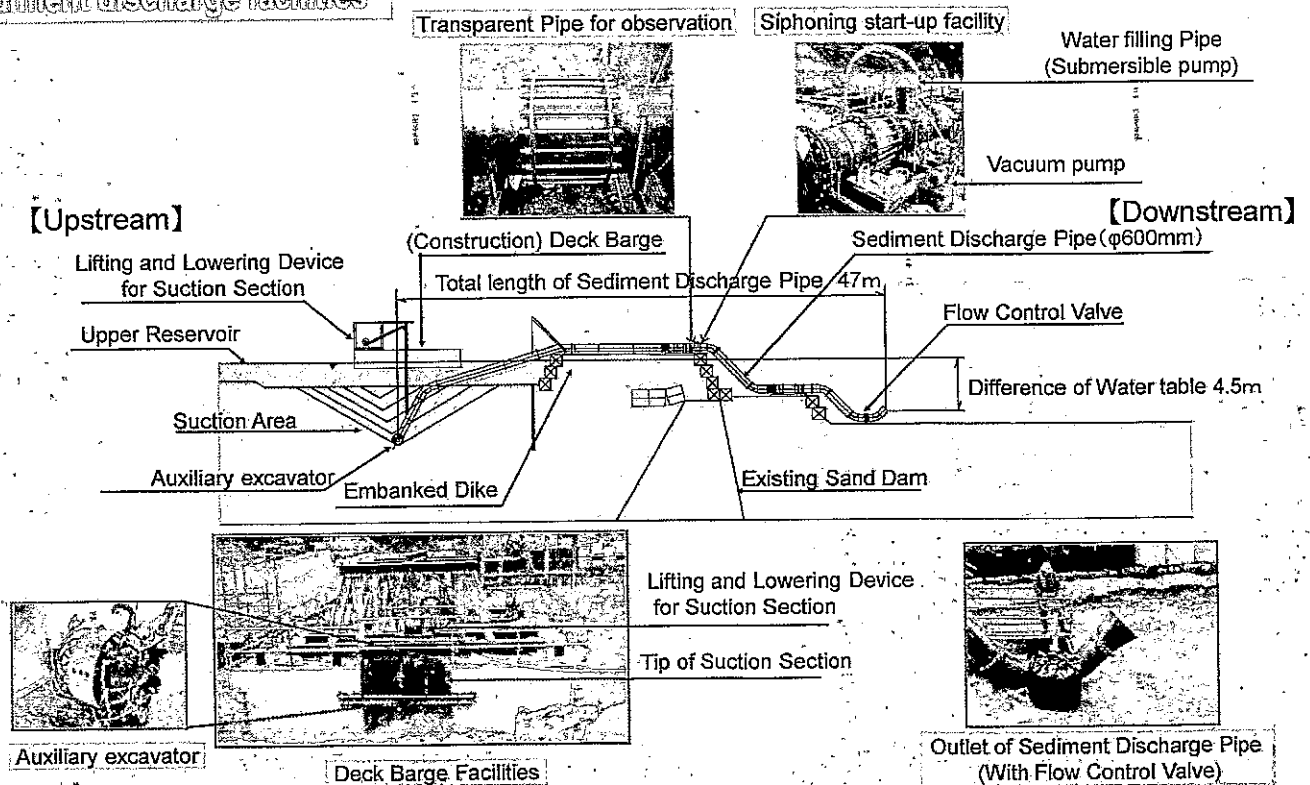
Cross section of Yahagi Dam Water reservoir

Set up for experiment work

Overview of experiment work (View from Right Bank)

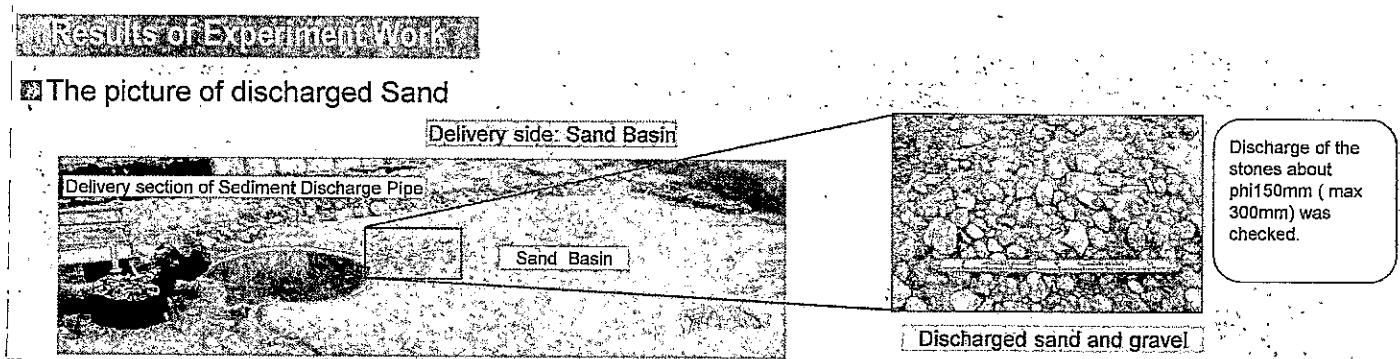


Sediment discharge facilities



現地在壩上利用虹吸作用(siphoning)吸砂排砂試驗(on site experiment work for mobile sediment discharge technology by Siphoning)---

在上游水庫面上架設有施工甲板之駁船,裝置吸力馬達設備,操控前端配置輔助開挖頭(Auxiliary excavator)之全長 47m 管徑 ϕ 600mm 吸砂管,一端跨越土壩深入上游水庫淤積層浚挖淤砂,利用虹吸作用強力將積砂排往下游另一端配有控制閥的出口,其效果很好;由試驗結果圖(如下圖)看出排出來的砂池(Sand Basin)中有顆粒直徑約 ϕ 150mm,最大有 ϕ 300mm 礫石。



小結—

淤積處理議題, 在參與分組討論會上曾提出台灣水庫面臨嚴重淤積亟需處理的問題就教與會專家,歐洲國家如法國,德國瑞典等由於水庫淤積未必如台灣嚴重,所回答的係屬一般性,聲言建排砂隧道未必是解決之最有效方式,需各方面綜合考慮再評估,倒是日本京都大學角哲也教授表示曾來台參與相關水庫淤積研討事宜,台灣河川地形環境及水庫問題與日本相近,可參考其相關處置方法; Yahagi 壩現地試驗利用虹吸作用(siphoning)吸砂排砂確可作為借鏡參考,也有 Miwa 壩建繞道排砂方式,也有利用駁船甲板伸管入深水庫內在庫底開挖淤泥之浚渫方式(可深達 75m), 均可作為本公司解決淤積之參考資料。

2. ICOLD Congress 問題演講討論會—Question96~Question99

Question96-水壩水庫利用之革新(Innovation in utilization of dams and reservoirs)

Question97-溢洪道(Spillway)

Question98-堆填壩與磚石壩(Embankments and tailing dams)

Question99-現有水壩的提升及改建(Upgrading and re-engineering of existing dams)

如前所述~著重在大壩復建更新調查及提昇老舊水庫的議題上;現今世界上新增一堆數量超過 50 年運轉的大壩,經自然老化(ageing)過程,很多壩都需要復(改)建以延長壽命,因為這些壩是在現代分析方法發展之前設計的,所以若不提升更新即不符合現代安全標準

事實上興建水壩決策過程是長遠而複雜的,因應社會環境衝擊,需適時衡量利弊得失,畢竟決策興建是基於某一個時點當下所作的預測評估,相關不確定性如下:

- (1) 水文上不確定—氣候變遷,冰雪融化,極端氣候變化
- (2) 可用蓄水量因淤積的損失---或由水土保持減少流域沖刷或施築通道輸砂
- (3) 需求改變—許多老壩原只是單一目標設計,因應環境需求改變而改變目的
- (4) 防洪需求改變-極端氣候強調防洪重要,尤其在某些阿爾卑斯山水壩的重要
- (5) 操作規則改變—增加監測系統,警報系統,考慮壩下游改變剩餘流量等足以牽涉改變操作規則屬之

基本上,壩的生命週期相對其他地下結構要長久,現存的壩必須配合環境變化,重新再檢視以便更適合目前及未來的需求,這仍是本會 Question 99 很熱門的主題之一,四項子題是其所考慮的:

- 1) 提高壩頂或操作水位
- 2) 清除淤泥(砂)方法--包含水力排砂,機械挖泥,開挖..etc.
- 3) 拆解壩體(dismantling)—方法,成本,衝擊..
- 4) 改進診測系統(auscultation system)及再觀測(re-instrumentation)

本項彙集了來自 24 國共 55 篇報告,其中有 40 篇來自歐洲國家,3 篇出自日本,(如附表 1)均是現有水壩夠多,再建新壩極其有限,最佳方式就是善加維護或增加現有大壩容量來因應;而美國如同歐洲,她們優先就現存水壩水庫間用途尋求最佳利用調配>事實上過去二十五年來,ICOLD 會議關注這項議題不遺餘力,歷次會議均有針對水壩老化(aging),改善(improvement),提升壩高(raising dam height),處理淤泥(managing sedimentation),等分別探討,詳如下表 2 所示:

Question 99 gathers together fifty-five reports from 24 countries.

Number of reports submitted	Country
7	Spain, France
6	Norway
5	Switzerland
3	Iran, Italy, Japan, Sweden
2	United Kingdom, United States of America, The Czech Republic
1	Austria, Burkina Faso, China, Guatemala, India, Morocco, Pakistan, Poland, Portugal, Romania, Russia, Slovakia

表 1

ICOLD congresses have focused on subjects linked to improving existing dams on several occasions. The table below shows the questions dealt with over the last twenty-five years.

Question / Year	Title
Q 95 / 2012	Aging and improvement
Q 90 / 2009	Improving existing dams
Q 89 / 2009	Managing sedimentation in existing and new reservoirs.
Q 82 / 2003	Aging and rehabilitation of concrete and masonry structures: associated dams and structures
Q 70 / 1994	Building in steps, raising or modifying dams
Q 68 / 1994	Evaluating and reinforcing operating dams security
Q 65 / 1991	Dam aging and repair methods

表 2

1) 提高壩頂

提高壩頂早在 ICOLD2003 於 Brasilia 會議上 Question90 即為一子題,並非每種 case 都能作,很特殊狀況才有可能:

- (1) 地質—壩體,基礎,左右壩座材料性質,力學特性,地質師根據地質模式計算,依新的操作狀況荷重,且要分析水庫邊坡的穩定性
- (2) 壩的行為—由設計時的假設及監測了解壩的行為,再評估改變操作水位或提高壩高所增加壩的額外荷重;提高壩高通常不外乎幾項理由:
 - a) 彌補施工時超乎預期的沉陷(settlement)或提供出水高(freeboard)防碎波
 - b) 允許異常洪水增加臨時超載而能由溢流面或壩頂閘門洩洪
 - c) 提供水庫額外容量用作供水,灌溉,防洪或發電
 - d) 提升蓄水高度增加發電水頭
 - e) 彌補水庫淤積造成的水庫容量損失

關於這項議題,謹擇取本次會議具代表性的報告案例說明如下:

- (3) 報告 22(瑞士)—名為 Nant-de-Drance 計畫,係在兩個現有的水庫 Emosson 及 Vieux-Emosson 間安裝一流量 360cms 之抽蓄發電 900MW 機組,將 1956 年 55m 高重力拱壩(arch-gravity dam)- Vieux-Emosson 壩加高 21.5m 改變成高 76.5m 之雙曲線拱壩(double curvature arch dam),上池壩因加高,容量由 11.2 增為 24.6 百萬 m^3 ,報告內討論因加高需將壩上半部拆除而對新舊壩面間接觸面的挑戰,其右岸還因地形限制施予垂直接縫部份灌漿;2015 年加高完工

- (4) 報告 36(西班牙)—Torre del Aguila 壩係 1930 為防洪而建,然從 1948 年以來早已用作灌溉 2000ha 面積,乃是中央混凝土心之分區型土壩,惟在 1961 年在壩下游側加裝一層填石而將壩高由 38m 加高到 42m,在 2012 年更由西班牙 Guadalquivir Hydrographic Confederation 聯盟機構開始執行壩體修建升級工作,將上游殼層加設膨潤土水泥(bentonite-cement)以減少壩體滲漏,其底部出水口及進水口機制適當修整亦為復建工作一環
- (5) 報告 28(挪威)—提出 Tunsbergdalen 壩改建,此係 1978 年營運之 43m 高,870m 長堆填壩,挪威法規要求每 15 年安全再評估(safety re-evaluation),在 2006 年再評估結論是出水高不足約 4m,受到一件雪崩事件(avalanche event)水庫波浪高 4m,且潛在威脅邊坡坍塌,因此規定要求至少出水高 6m,其解決之道是提高下游側壩頂 1.75m,如此出水高符合法規且排洪量顯著提升了

2) 清除淤積方法

水庫淤積處理在 ICOLD2003 於 Brasilia 會議上 Question89 亦為一子題,此次會議著重在現存壩淤積最佳化處理,水庫淤積處理問題通常會發展為河道淤積處理的問題

- (1)報告 24(瑞典),報告 26(瓜地馬拉及挪威)—係利用一種 SediCon 水吸力系統(SediCon hydro-suction system)來挖泥,亦即挖泥船上裝置吸管配備有高壓水注的吸泥頭可將黏滯性沉積排洩到壩下游,報告 24 說明用在阿爾巴尼亞之 Bajna 壩首次使用這種設備,有效清除了包含黏土細沙,礫石,垃圾...等;報告 26 敘述應

用在瓜地馬拉 El Canada 水電廠(48MW)之 200,000m³ 水庫,業主於 2011 年採用,10”~12” SediCon 挖泥機,黏滯性沉積土受到強力水注分解而不致阻塞吸泥頭,每年成功清除 50,000m³ 淤積,但在 2012 年 1~6 月估計清了 120,000m³,平均每個月清 20,000m³

(2)報告 31(瑞士)---利用導砂隧道解決水庫沉積,瑞士 Palagnedra 壩經驗了,繞道導砂隧道確為一防止水庫淤積而能把淤泥回歸到天然河道的有效對策,為了有效排砂,隧道內流速需增加,超臨界紊流,相對的隧道仰拱也可能受到磨蝕破壞,試驗室作了相關實驗,現地試驗更進一步模擬算出此磨損沖蝕率及隧道生命期關係之預估,其建議隧道水理設計及仰拱結構設計是需要的

3) 拆解壩(Dismantling dams)

當壩的不利點超越了有利點,考量內外成本,此項評估就將有必要了

(1) 報告 35(葡萄牙)---Alto Ceira 壩 1949 年建造的 37m 高拱壩為引水到另一水庫來發電,該壩嚴重受到鹼性骨材(alkali-aggregate)反應影響,經幾種情況評比發現:修復或強固所花的成本比新建壩來的高,最終選擇是在原來壩下游 200m 建一新壩,而用爆破方式拆解了原壩,使其沉沒在水庫內;同樣情況之前兩年也發生在瑞士 Serra 壩

(2) 報告 49(義大利)---1958 年建的 132m 高 Beauregard 拱壩,因範圍大且深層地滑崩塌而威脅壩跟水庫的安全,為降低風險,將最大運轉水位降低 60m,壩頂高也降低 52m,亦即將壩的上半部拆解了,以確保壩長期安全;原拱壩左壩座受崩塌

而變形,因將壩拆解了一半成為了重力壩

- (3) 報告 51(法國)—1959 年建造的薄混凝土拱壩 Ayrette 壩在經歷一串長期技術與行政討論程序後,終於在 2013 年夏天拆除了-回顧該壩曾在 1983~1985 年監測出來不規則變化,漏水顯著增加,雖基礎灌漿排水做了幾期,惟 2009 年壩經評估仍失去水庫飲用水目的,於是在 2013 年初決定放棄該壩運轉,後用爆破破壞拆除,在各方通力合作下減低環境衝擊,重建自然生態及河流動力形態功能

4) 改進診測系統(Auscultation system)

目的為確保壩長期行為安全,惟因對壩運轉或水資源利用並無直接利益而又牽涉高昂花費是最難以推行的; 改進診測系統有幾項理由,不外乎是現行儀器設備太老舊,為監測需要適宜的儀器,法規改變了,新方式蒐集診測資料更簡單又可靠.....,並無一定規則要求裝設多少數量的診測儀器,而是要看壩的型式,尺寸,建造方式,年齡,以及特別指定的位置,特別是關於基礎的部份,診測系統必須能測量出結構物的應力以及其特性相關參數; ICOLD 第 158 冊提供了有關診測系統設計及監測需求之一般準則,

- (1) 報告 55(法國)---風險分析可用來說明監測需求以及每個病理的觀測儀器設計,混凝土與岩盤接觸面之上舉力需要新監測方式,量其裂縫開度,接觸面水壓計,以及穩定計算,很早期的石磚壩(masonry dam)壩體量測水壓設備是需要的,對於堆填壩內部快速浸蝕現象需要不斷自動量測滲透水量並設定預警值的警報裝置,此新的觀測儀器及新的量測方法發展始能滿足需求

(2)報告 20(瑞士)---180m 高 Emosson 壩底下建造通路隧道時,預先即安置適當
診測系統以量測鑿洞可能引起的變化,壩周遭埋設自動測地設備檢視壩座移動,
擺線儀設有五個斷面可以自動記錄異常突然的反應,另壩體埋設溫度計量測壩
實際溫度以調整熱效應之變形預測模式;所有設備均顯示壩行為良好

5)復建符合標準或安全

大壩蓄水儲能自有一定風險,需妥善檢查管理,由公共權責機構來訂定安全規範,
會議資料提出水庫三個失敗案例,說明水庫必須建立安全規則,診測系統確實執行
且校正好,人員必須接受正確訓練完全了解壩的特性,緊急應變計畫可行,必要裝備
都備妥好,擇要如下:

(1)報告 6(摩洛哥)---舉 55m 高 Bab Louta 滾壓混凝土壩復建計畫為例,當水庫首度
開始蓄水時,就觀察到有大量滲漏經由壩體及基礎接觸面而出,全歸咎於 RCC 施作
不當,因此特別當地震應力事件發生時也就連累到結構穩定,解決之道是在壩體
下游加厚並設排水系統,對於功能不彰水平接縫施以灌漿加密止水,目前正計畫中

(2)報告 50(法國)---對於 1952 年做的 86m 高 Bimont 拱壩,約過了 10 年後,右岸出現
網狀裂縫,上游方向有無法改變的位移,形成某些分塊混凝土隆起膨脹,數值模式模
擬裂縫範圍,而復建辦法是針對裂縫施以接縫灌漿,上游面以地工防水膜,下游基腳
安裝排水幕,壩座加以垂直錨筋強固,當完工後計畫可提高水庫操作水位

6) 小結

改善現有的壩基本上對那些擁有壩老化比例甚高的國家是很重要而熱門的,復

建或重建改造意涵是讓壩盡量適用於不斷變化的環境,隨著經濟與人口的改變,生活水準的提升及追求更好更安全的生活形態,讓我們重新思考水資源的利用,而大壩居於其中必要關鍵的角色,改建有時係為配合國家對大壩安全及監測法規的改變,這種改變有些時候也包括施工量測或組織層面上的改變

氣候的變化修正了河川水系,有的是冰河融化,連帶重新省思防範特殊異常事件;科技發展與研究帶來革新,監測自動化及電子傳輸廣泛應用,特別在地震應力,流量預測方面提供可能異常情況以透過預防措施減低損害,報告展示壩工用途最佳化以滿足法規更新要求及安全標準


四.結論與建議:

1. 由於國內已建壩處為數眾多,再建新壩有限且本公司各大多數水力電廠水壩均已歷史悠久,完工運轉多年,尤其近年來陸續面臨水庫泥砂淤積及水壩老化劣化龜裂現象,故將重點放在大壩復(改)建、更新調查及提昇老舊水庫,加強延壽技術..等議題上;前第三節內容擇取各國報告,確實水庫(壩)係因水文氣候改變了,或因淤積導致功能損失,或因原先設置的目的達不到,或目的需求已改變了,或因操作法規改變....etc.等各種原因而重(復)建或升級,其理念方法過程均可提供本公司參考借鏡,俾能永續經營發展,對公司水力發電有所裨益。
2. 印尼爪哇 Wonogiri 壩復健係因水庫面臨淤積問題嚴重而設計,其基本觀念除淤排淤理念與本公司日月潭水庫相同,故其構想過程及成效確實可作為本公司參考,其中有不謀而合之處,將更加強吾人所構思的改善方案。
3. 日本 Yahagi 壩現地試驗利用虹吸作用(siphoning)吸砂排砂證明成效甚佳,台灣河川地形環境及水庫問題與日本相近,可參考其相關處置方法,所謂「他山之石,可以攻錯」,可提供本公司處理水庫泥沙之借鏡。
4. 參考挪威大壩安全法規,每 15 年做一次安全評估,係徹底檢討其用途與功能及安全各方面的改變,歐洲許多國家如瑞典亦然;相對而言,本國水壩每五年做一次安全評估算是頻率較多的了,或許東西方經緯度氣候及地形地質大大不同,並不能相提並論,但基本上壩的耐久性生命週期相對其他結構物要長久,也許五年中間未曾發生重大地震洪水等異常天災損壞,研判其實是安全的,往往

國內一些水庫水壩所作的安全評估有可能是例行性安全檢查而已,參考前一年的檢查評估再追蹤,似乎從未有過在安全評估中全盤檢討而大膽提出修建或重建的案例經驗,建議除保留原維持每五年例行性安全評估(檢查)外,每 10 年或 15 年或遭遇異常重大天然災害後做一次總檢討評估其需求性及安全性,以符合時代最新的需求。



5. 此次出國在兩年前編擬計畫,當時對開會時間與活動資訊很有限,所編擬之計畫係參照以往案例概估,惟實際會議確定後,上網報名時發現原估列 10 天(含來回旅程)並不足以涵蓋全程(全程應 12 天),經費也估算緊澀,連註冊費都估列保守,僅夠以參加研討會身分報名(不夠以參加全程身分報),由是之故,技術參訪電廠的行程就無法兼顧了,在此建議未來編擬類似計畫時,宜稍做放寬估列俾涵蓋全程會議及技術參訪行程。
6. 國際大壩委員會(ICOLD)每四年舉辦一次大會,每年並召開年會,研討各項水壩相關問題,此次與會各國專家學者甚為踴躍(如法國 94 人,挪威 89 人,日本 78 人...等),互相討論,非僅限於學術性論文,亦包羅水壩水庫設計施工及實務操作運轉所面臨的各項棘手問題,,然而回頭反觀國內似乎顯得十分疏離 ,未曾專設壩工方面組織,亦未曾有任何機構團體加入 ICOLD, 國內僅有三人參加此次會議 ; 建議未來國內有相關單位能統領土木水利各界積極參與,加入該組織並派員發表論文,與各國專家同步研討,以提升本國壩工在國際上的知名度,並掌握國際最新技術發展趨勢。

()

 (?pLanguageId=7)

[Home \(index.cfm\)](#) [Contact \(contact.cfm\)](#)

[Sitemap \(sitemap.cfm\)](#)

ICOLD 25th Congress / ICOLD 83rd Annual Meeting
Symposium Hydropower'15
25ème Congrès de la CIGB / 83ème Réunion Annuelle de la CIGB
Symposium Hydropower'15


Stavanger 2015

You are here:

[Scientific Programme \(scientificprogramme.cfm?FuseAction=GenPage&pWebprofilfunkid=86452\)](#)

/ [Program overview](#)

Date	ICOLD Norway 2015		ICOLD Symposium Hydropower '15	Technical/social programme	Accompanyin persons programme
Friday 12 June		ICOLD Board Meeting, Part 1		Pre-conference tour: - <i>The mountains in south-west, 3 days of hydropower safari</i>	
Saturday 13 June		ICOLD Board Meeting, Part 2 Meeting of Chair Persons of Technical Committees Technical Committees Workshops Regional Clubs			

Sunday 14 June	83. ANNUAL MEETING	Meeting of technical committees Young Engineers Forum Francophone Group Meeting		Guided city tour on foot (incl. in reg. fee)	Guided city tour on foot (incl. in reg. fee)
Monday 15 June		General assembly	Hydropower'15 Symposium Opening/plenary session	Welcome Reception in Sjøhusene (incl. in reg. fee)	Guided city tour on foot (incl. in reg. fee)
		Exhibition opening	Parallel session		
Tuesday 16 June		One-day technical/social tours	Parallel session	Parallel session	Options: - <i>Technical tour Svartevatn</i> - <i>Titania - tailing dams</i> - <i>Ulla-Førre - the backbone of Norwegian Hydro</i> - <i>The Pulpit Rock Challenge</i> - <i>Lysefjorden</i>
	Plenary/closing session Symposium closing reception (incl. in reg. fee)				
Wednesday 17 June	25. CONGRESS	Congress opening ceremony Q 96 & Q 97		<i>and Flor & Fjære Cultural programme in Stavanger Concert Hall (incl. in reg. fee)</i>	Boat trip to the island Sør-Hid (incl. lunch (Flo & Fjære)) Full day tour by coach at Jærei
Thursday 18 June		Q 96 & Q 97 Q 98 & Q 99		Free evening Young Engineers Forum social event	Guided tour by coach to Utstein Monastery with lunch and concert Guided city tour - from oil to oil

<p>Friday 19 June</p>	<p>Q 98 & Q 99</p> <p>Exhibition closing</p>		<p>Closing dinner (optional)</p>	<p>Viking tour</p> <p>Lysefjord Cruise</p>
<p>Saturday 20 June</p>	<p>Congress closing ceremony</p> <p>Start post-conference tours</p>		<p>Post conference tours:</p> <ul style="list-style-type: none"> - <i>The mountains in south west - 3 days of hydropower safari</i> - <i>Fjord tour Western Norway</i> - <i>Svalbard</i> - <i>Narvik</i> - <i>Mountain Hiking</i> 	

Conference secretariat: Gyro Conference AS, Storgt 85, N 2615 Lillehammer
 Email: ICOLD2015@gyro.no (mailto:ICOLD2015@gyro.no?subject=ICOLD2015)



LIST OF PARTICIPANTS

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
Albania	Engineer	Belba	Ilir		KESH sh.a
	Director	Hetoja	Agron		KESH sh.a
	Engineer	Jovani	Arjan		Albanian ElectroEnergy corporate
Algeria		Kalaja	Erjon		Devoll Hydropower Sh.A. (K82418002C)
	Mr	Lazareni	Agim		Devoll Hydropower sh.a.
	Dr.	Ouamane	Ahmed		Biskra University
Argentina	Civil Engineer	Giuliani	Francisco Luis	Clara Lima	ORSEP
Australia	Engener	Pujol	Alejandro	Graciela Pujol	RED INGENIERIA SRL
	Mr	Barker	Malcolm		GHD
	Mr	Brett	David	Elizabeth Brett	GHD Pty Ltd
Austria	Mrs	Dimas	Vicki-Ann		Seismology Research Centre
	Mr	Forbes	Brian		GHD
	Mr	Fox	Steven	Cheryl Fox	GHD
Austria	Mr	Herweynen	Richard	Ruth Herweynen	Entura - Hydro Tasmania
	Mr	Landon-Jones	Ian	Cheryl Landon-Jones	Water NSW
	Dr.	LOCKE	Mark		GHD
Austria	Mr	Reimann	Dietmar		Cairns Regional Council - Water & Waste
	Mr	Shane	McGrath	Anne White	SGM Consulting
	Mr	Swindon	Angus		Hydro Tasmania
Austria		Aigenbauer	Peter		Doka GmbH
		Androsch-Holzer	Renate		RAM Consutling GmbH
	Prof.	Aufleger	Markus		Universität Innsbruck
Austria		Breinhälter	Harald		Austrian National Committee on Large Dams
	DI	Czerny	Helmut		Federal Ministry for Agriculture, Forestry, Environment and Water Management
	Ing.	Furtmueller	Wolfgang		Doka Group
Austria	DI	Heindl	Herbert		Federal Ministry of Agriculture, Forestry, Environment and Water Management
	Dipl.-Ing.	Holzmann	Michael		TIWAG-Tiroler Wasserkraft AG
	Dr	Knoblauch	Helmut		Austrian Committee on Large Dams
Austria	Mr.	Landstorfer	Florian		VERBUND Hydro Power GmbH, ATU14703800
	Univ.-Prof. Dipl.-Ing.Dr.	Leitner	Hans-Martin		Pöyry Energy GmbH
	DI	Lienhart	Werner		Graz University of Technology
Austria	DI	Linortner	Johannes		Pöyry Energy GmbH
	Dr.	Messerklinger	Sophie		Dr. Sophie Messerklinger
	Dr	Netzer	Elmar		Vorarlberger Illwerke AG
Austria	Dr.-Ing.	Neuner	Johann		TIWAG-Tiroler Wasserkraft AG
	Dr.-Ing.	Perzmaier	Sebastian		TIWAG - Tiroler Wasserkraft AG
		Singh	Rana Pratap		BOKU
Austria	Prof.	Tschernutter	Peter		Vienna University of Technology
	Dr	Zenz	Gerald		Graz University of Technology
	Bhutan	Dasho Mr	Rinzin	Chhwang	Druk Green Power Corporation Limited

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
Brazil	Dasho Mr	Wangdi	Yeshi		Department of Hydropower & Power Systems
	Consultant	Avila	Joaquim		Pimenta De Avila Consultoria
	Mr.	Branco da Motta	Claudio Guilherme	Adriana Motta	FURNAS Centrais Eletricas S.A.
	Mr.	Brito	Sergio	Maria De Lourdes Sousa	Sergio Brito Consultoria
	Professor	Carvalho	Erton	Heloisa Carvalho	CBDB
	Mr	Castro	Fabio	Marlene Castro	Brazilian Committee on Dams
	Mr	Coelho	Dimilson		ITAIPU BINACIONAL
	Engineer	Correra Pimenta	Sergio	Diana Vermohlen	CBDB - Brazilian Committee on Dams
	Professor	De Mello	Flavio	Marlene Izoldi	Brazilian Committee
	Mrs	Divino	Paula		Cemig GT
	Mrs	Fusaro	Teresa Cristina		FUSARO Engenharia e Consultoria Ltda
	Mr.	Machado	Brasil	Elza Di Bernardo	Brazilian Committee on Dams
	Dr	Marques Filho	Jose		Brazilian Committee on Dams
	Mr.	Maurer	Edilberto	Leda Maria Solveira Maurer	CBDB
Bulgaria	Dr.	Medeiros	Carlos H. de A. C.		Comite Brasileiro de Barragens - CBDB
	Environmental Geologist	Miranda	Marta		Ministerio Publico De Minas Gerais
	Engineer	Neves	Claudio		ITAIPU BINACIONAL
		Silveira	João Francisco		SBB Engineering
	Ing	Soria	Miguel	Nuelita Soria	BrazilianCOLD
	Direstor CBDB	Varella	Luciano	Gilda Varella	CBDB Brazilian Committee on Dams
	Mr	Viotti	Cassio B	Maria Alice Viotti	CBDB
		Hinov	Atanas		Stanilov Ltd
	Mr.	Ibryam	Metin		Stanilov Ltd
		Kasabov	Slaveyko		Stanilov Ltd
		Lefterov	Aleksandar		Stanilov Ltd
	M.Sc. Civil Engineer	Petkov	Martin		Sweco Energoproekt
		Petrov	Plamen		Stanilov Ltd
	M.Sc. Civil Engineer	Popov	Dimitar		Sweco Energoproekt
	Shtarbov	Panayot		Stanilov Ltd	
	Stanilov	Georgi		Stanilov Ltd	
	Staykov	Nikolay		Stanilov Ltd	
	Stoilov	Stoyan		Stanilov Ltd	
	Tanev	Ivan		Stanilov Ltd	
Prof.	Toshev	Dimiter		BUNCOLD	
Burkina Faso		AMBONWINE ELOI	Somda		
	General manager	Celestin	Naze		BEM-IC
	Ingenieur hydraulique	NACANABO	Sidkeita Aïssa		CNBB
	President	Nombre	Adama	Ouedraogo Pascaline	ICOLD
Cameroon	Ingénieur Génie Civil	SORGHO	Ulrich Grégoire		PVEN
	Ingeneer	Mbaka Mouyeme	Theophile Abel		HYDRO-MEKIN
Canada	Director Dam & Public Safety	Bennett	Tony		Ontario Power Generation
	Représentante de l'ACB	Bibeau	Johanne	François Villiard	AECOM
	Director Hydropower & Dams	Bourgeois	Gilles	Martine Lefebvre	WSP
	Vice-President, Special Projects	Couturier	François		SNC-Lavalin

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Senior Principal	Davachi	Mickey	Shahnaz Davachi	Coffey
	Senior Vice-President & General Manager	Gagné	Bernard		SNC-Lavalin inc.
	Dr	Hartford	Des	Wendy Hartford	BC Hydro
	Vice President	McLeod	Harvey	Yvonne McLeod	Klohn Crippen Berger
	Dr.	Micovic	Zoran		BC Hydro
	President	Mitchelmore	Perry		Meco
	Mr.	Okoli	Kenechukwu		ENPLAN GROUP INC.
	Project Director	Perreault	Richard		AECOM
	Director	Rigbey	Stephen		BC Hydro
	Expert Consultant	Tournier	Jean-Pierre		Hydro-Quebec
	Geologist	Tournier	Alexandre	Sara Brúnelle	SNC-Lavalin
	Vice-President Engineering, Hydro Division	Tremblay	Michel	Christiane Millette	SNC-Lavalin Inc.
	Manager of Engineering	Westermann	Jerry	Laurie Columbus	Hatch
	Sr. Manager, Technology & Dam Safety	Zielinski	Przemyslaw	Alicja Zielinska	Ontario Power Generation
Chile	Geotechnical Consultant	Troncoso	Jorge	Frances Boys	MWH Americas Inc Chile
	Mr.	Troncoso	Gabriel		ICOLD Chile
China	Professor	Chen	Sheng-hong		Wuhan University
	Mr	Chen	Guanfu		Hydro China Corporation
	Mr.	Duan	Xiaoping		Power China Huadong Engineering Corporation Ltd
	Professor	Jin	Feng		Tsinghua University
	Ms	Jing	Xu		Ministry of Water Resources, P. R. China
	Prof.	Wang	Weibiao	Lang Pu	Xi'an university of technology
	Mr.	Xu	Zeping		CHINA INSTITUTE OF WATER RESOURCES&HYDROPOWER RESEARCH
	Mr.	Yuguang	Chen		EDF (China) Holding Ltd.
	Mr.	Zhang	Yingbo	Wenli Huang	Xi'an university of technology
	Mr.	Zhou	Jianping		Power Construction Corporation of China, Ltd
	Ms	Zou	Lichun		Power china Kunming Engineering Corporation Ltd
Colombia		Marulanda	Camilo		INGETEC
	Mr	Marulanda	Alberto	Maria Marulanda	INGETEC
	Project Management Director	Marulanda	Andres		INGETEC
Costa Rica		Gil	Marc		Enel Green Power SpA
Czech Republic	MEng; PhD.	Broucek	Miroslav		Czech Technical University in Prague
		Brozova	Lucie		Sweco Hydroprojekt a.s.
	Ing., Ph.D.	Hodak	Jiri		VODNI DILA-TBD a.s.
		Kratochvil	Dalibor		Povodi Odry
	Ing	Kucera	Richard		Povodi Vltavy
	Mr.	Kivka	Pavel		Povodi Labe, státní podnik
	Mr.	Polacek	Jiri		CZCOLD
	Prof. Dr. Ing.	Riha	Jaromir		Brno University of Technology
	Mr.	Satrapa	Ladislav		Czech Technical University in Prague
	Dr. Ing.	Spano	Miroslav		Brno University of Technology
	MEng; Ph.D.	Zukal	Milan		Czech Technical University in Prague
Dominican Republic	Presidente	Armenteros Rius	Jose Manuel		Comite Dominicanao de Grandes Presas (DOMCOLD)
Egypt	Prof.	El Ashaal	Ashraf		MWRI

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
Ethiopia	Dr.	Khalil	Ehab		MWRI
	Eng	Sayed	Loay		Permanent Joint Technical Commission for Nile Waters
	Pof.r	Zeldan	Bakenaz		Tanta University
	Engineer	Haile	Michael Abebe		ETCOLD
Finland	Mr.	Shiferaw	Frezer Zemed-kun		Yerer Engineering
	dam safety authority	Isomäki	Eija		Hämeen ELY-keskus
France	Senior Consultant	Laasonen	Juha	Aino Laasonen	Fortum Power & Heat Oy
	senior engineer	Varpasuo	Pentti		Fortum
	Doctor	Ylönen	Sami		FinMeas Ltd
	M.	A Vril	Thierry	Christine Avril	EDF
		Abbas	Dhafer		ISL
	Dr.	Aelbrecht	Denis		EDF - CIH
	Ingénieur Travaux de Terrassement	Alexandre	Gaylord		VINCI Construction Terrassement
	INGENIEUR RISQUES INDUSTRIELS	BALOUIN	Thibault		INERIS
	Project Manager	Bancal	Xavier		Tractebel Engineering
	Dr	Beck	Yves-Laurent		EDF-DTG
	Chief Executive Officer	Benoudiz	Samuel		Tractebel Engineering
	Innovation Director	Bessiere	Claude		INGEROP
		Billiani	Laura		ICOLD
	Dr	Bonelli	Stéphane		Irstea
Engineer	Boronat	Pascal		EDF	
Expert	Boudon	Remy		EDF	
Engineer	Bouquier	Pierre		EDF	
Senior Economist Engineer	BRANCHE	Emmanuel		EDF	
Project Manager	Camilletti	Sergio		Tractebel Engineering	
Ingénieur Conseil	Cassard	Alain	Christiane Cassard	Alain CASSARD Ingénieur Conseil	
Mr.	Chabal	Jean-Pierre	Annie Teboul	TRACTEBEL ENGINEERING FRANCE / COYNE ET BELLIER	
Mr.	Chevalier	Sylvain		Raycap	
Engineer	Cochet	Pierre	Elisabeth Cochet	Independant expert	
	Courivaud	Jean-Robert		EDF	
Mr.	Couvidat	Daniel		ICOLD CIGB	
	Cruchon	Philippe		MEDDE/DGPR/CTPBOH	
Directeur Technique Région France Est	D'Allard	Lionel		VINCI Construction Terrassement	
General Secretary	de Savignac	Xavier	Solange de Savignac	Hydrocoop	
SECRETARY GENERAL	De Vivo	Michel		ICOLD	
Area Manager	Del Rey	Franck		VINCI CONSTRUCTION	
Dam Expert	Delorme	Francois		EDF CIH	
	Deroo	Luc		ISL	
Head of Dams, Hydro-power and Infrastructures	Ducos	Xavier		ARTELIA	
	Durand	Thierry		Tractebel Engineering	
	Dury	Jean-Baptiste		EDF	
Mr	Emond	Cyrille		STATKRAFT	
Expert Monitoring of dams	Fabre	Jean-Paul	Sandrine Fabre	EDF	
CEO	Faussat	Olivier		HYDROPLUS	

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Project Manager	Ferranti	Federico		Tractebel Engineering
		Freitag	Nicolas		Terre Armée
		Frossard	Etienne		Tractebel Engineering
	Ing.	Fruchart	Francis	Isabelle Fruchart Laforet	Easy Hydro
	Dr	Fry	Jean-Jacques		EDF-CIH
	Project Manager	Gevodant	Mathieu		EDF
	Géologue -Géotechnicien Expert	Giafferi	Jean-Louis	Rénée-Marie Giafferi	Consultant
		GOURRIER	Maude		VINCI Construction Terrassement
		Gregoire	David		EDF
	Mr	Grenier	Emmanuel	Sylvie Grenier	ICOLD
	Project Manager	Grenier	David		Tractebel Engineering
	Directeur Scientifique	Guerinet	Michel		EIFPAGE TP
	Dr-Ing	Guilbaud	Claude		ARTELIA
	Mr	Guilloteau	Thierry		EDF
	Expert	Ho Ta Khanh	Michel		CFBR-VNCOLD
	Business Development Director	Jeanson	Gregoire		FREYSSINET International
	Head of Civil Engineering Structural Branch	Laugier	Frederic		EDF-CIH
	Consultant	Launay	Jean		independant
	Hydro Project Manager	Le Blanc	Martin		VINCI CONSTRUCTION
	Directeur directeur international development	Le Delliou	Patrick		BETCGB
	Chairman	Lemperiere	François		Hydrocoop
		Lignier	Patrick		Tractebel Engineering
	Directeur	Lino	Michel	Elisabeth Lino	ISL Ingénierie
	Project engineer	Loisel	Pierre-Etienne		ARTELIA Water and Environment
	Deputy General Manager	Mallet	Thibaut		SYMADREM
	Vice President Business Development HYDRO	Margaria	Laurent		Tractebel Engineering
	Engineer	Marmoner	Vincent		EDF
		Mathieu	Geoffrey		ARTELIA
	Directeur d'Offres Internationales	Moulligne	Michael		VINCI Construction Terrassement
	Engineer	Nerinx	Nicolas		ISL Ingenierie
	Dam Safety Expert	Noret	Christine		Tractebel Engineering
	Adjoint Directeur unité Ouvrages Spéciaux	Palacios	Jean-Charles		SAFEGE
	Hydrologist	Paquet	Emmanuel		EDF-DTG
	Ingénieur hydraulique hydrologie Sénior	PETEUIL	Christophe		COMPAGNIE NATIONALE DU RH-PONE
		Petitjean	Alain		EDF
	Mr.	Pigeon	Jean-Luc	Isabelle Pigeon-De-gardin	TRACTEBEL ENGINEERING FRANCE / COYNE ET BELLIER
	Dr	Piron	Alexis		EDF
	Directeur du Developpement International et Outre-Mer	Pommellet	Thierry		VINCI Construction Terrassement
		Poupart	Michel	Jacqueline Poupart	POUPART EIRL
	Ingénieur conseil	Puiatti	Daniel	Odile Puiatti	DPST Consulting
	Head of Civil Department Hydro Engineering Center - EDF	Reverchon	Bernard	Marie Christine Reverchon	Electricité de France

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
		Roult	Didier		CNR
	Direction de la Communication	Rouzaud	Anne-Marion		VINCI Construction Grands Projets
	Senior Engineer	Royet	Paul		Irstea
	DAM MONITORING ENGINEER	Sauaae	Jerome		EDF
		Schauner	Nathalie		ICOLD
		Silloux	Bergson		Electricité de Tahiti
	Director of Hydro-power	Soulimane	Hbid		Platinum Power
	Engineer	Taquet	Bernard	Marie-Andree Taquet	EDF CIH
		Tardieu	Bernard		BTEC
	Senior Vice President Dams & Hydroelectric Schemes	Tekirdaglioglu	Erkan		Tractebel Engineering
	Executive Vice President Hydraulics	Teyssieux	Jean		Tractebel Engineering
	Vice-Président CFBR	Tinland	Jean-Michel	Evelyne Tinland	EDF
	Mr.	Touileb	Bachir		Artelia Group
	Mr	Tourment	Rémy		Irstea
	Responsable de laboratoire	Truchet	Emmanuel		VINCI Construction Terrassement
	Manager of Hydraulic structures team	Vincent	Thierry		ARTELIA
	Consultant	Yziquel	Alain	Monique Yziquel	ARTELIA
Germany	Business Development Manager	Azartash Namin	Ardeshir		RUHFUS Systemhydraulik GmbH
		Blindenhoefer	Hannes		German national committee on large dams
	Dipl. Ing.	Breit	Klaus		Keller Holding GmbH
	Dr.	Detering	Michael		RWE Innogy
		Dornstädter	Juergen		GTC Kappelmeyer GmbH
	Dipl.-Ing.	Gronsfeld	Richard		Wasserverband Eifel-Rur
	Dr.-Ing.	Haselsteiner	Ronald		Björnson Consulting Engineers
	Dr. Ing.	Heiberger	Thilo		KfW
		Heiland	Michael	Gilda Patricia Crespo Mejia	Lahmeyer Hydroprojekt GmbH
	Dr.	Limbach	Markus		STRABAG International GmbH
	Dr.	Lohr	Hubert		SYDRO Consult
	Dr.-Ing.	Mueller	Uwe	Doerte Mueller	German national committee on large dams
	Prof. Dr.-Ing. habil.	Pohl	Reinhard		Technische Universitaet Dresden
	Dipl.-Ing.	Richter	Thomas	Monika Richter	Richter Deformationsmesstechnik GmbH
		Schwarze	Holger		MC-Bauchemie Müller GmbH & Co KG
	Dr.	Sieber	Hans-Ulrich	Maria-Ilona Sieber	State Reservoir Administration of Saxony
	Dr.-Ing.	Terheiden	Kristina		University of Stuttgart
		van Kessel	Marie-Therese		German national committee on large dams
Greece	Dr	Dounias	George		EDAFOS S.A.
	Mr.	Giovanidis	Danos		Raycap
	Raygates General Manager	Kladis	Anastasios (Tassos)		Raycap
	Dr	MOUTAFIS	Nikolaos		NTUA
	Technical Solutions Engineer	Rabias	Evangelos		Raycap
		Vordounas	Georgios		Raycap

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
Honduras	CFO	Flores	Manuel		GeoConsult
	CEO	Flores	Raul	Karen Hagestad	GeoConsult
Iceland	Power Plant Manager	Hafsteinsson	Ingvar		Landsvirkjun
	Chief Engineer	Stefánsson	Björn		Landsvirkjun
India	Mr.	Onuj	Toko		Hydro Power Development Corporation of Arunachal Pradesh Limited
Indonesia	Dr.	Adiwinata	Iding Srihadi		JASA TIRTA II PUBLIC CORPORATION
	Dr.	Amron	Mochammad		JASA TIRTA II PUBLIC CORPORATION
	Mr. Engineer	Bayu Adji Desi	Tri Arryani		Ministry Public Works and Housing PT. Waskita Karya Tbk.
	Mrs.	Dwi Yuliningtyas	Cristina		Ministry of Public Works
	Dr	Firman	Aries		INACOLD
	Mr	Gunady	Budy		Jasa Tirta II Public Corporation
	Mr.	Hanan Akhmad	Abdul		Ministry of public works and housing
	DR	Hargono	Bambang	Mike Elisabeth Hapsari	Public Works
	Ms.	Kubontubuh	Dwi Aryani Semadhi		Ministry of Public Works
	Mr	Mangapul Sianipar	Purba Robert		Ministry of Coordinating for the Economy
	Mr	MARDJONO	Airlangga		PT. Wijaya Karya
		Mayangsari	Anissa		Dam Safety Unit, Ministry of Public Works and Housing
	Ms	Mayasari	Reni		Jasa Tirta II Public Corporation
	DR	Pantouw	John Paulus		Jaya Dinamika Geohidroenergi
	Mr	Prasetiyo	Wahyu		PT. Wijaya Karya
	Mr.	RUDYANTO	Agus		PT. Wijaya Karya
	Mr	Siswanto	Sutiyo	Wiana WIDOWATI	PT PLN (PERSERO) KANTOR PUSAT
	Dr	Sungguh	Harry		jasa tirta 2 public corporation
	Mr.	SUPRAYOGI	Hary		PT. Wijaya Karya
	Mr	SUTADI	Graita		PT. Wijaya Karya
	DR	Widadi	Ismail		Ministry of public works and housing
	Mr.	Yahmadi	Anang	Lutik Hidayati	PT PLN (Persero) UIP VI
Iran	Mr	Ahmadi	Mohammad		BANDAB Consulting Engineers
	Mr.	Ahmadi Adli	Shahryar	Arezou Salari Lak	ASHENAB Consulting Engineers Company
	Dr	Akhtarpour	Ali		Ferdowsi university of mashhad
	Dr.	Bagherzadeh-khalkhali	Ahad		Yekom Consulting Engineers
	member of the board	Darabi Borojeni	Yaghoub		Mahab ghodss Co
		Ebadi TazehKand	Taghi		Ministry of Energy
	Mr	Emam	Ali	Hoda Golzadeh	EDOCT
	Dr.	Farahmand Azar	Bahman		Farazab
	Mr.	Farahmandazar	Bahram		Farazab
	Dr.	Gharavi	Mojtaba		Moshanir Power Engineering Consultants
		Hakami	Masoud		KWPA
	project manager	Hassani	Seyyed Hooshang		Mahab ghodss Co
	Mr.	Hossein Nezhad	Ali Mohammad	Shohreh Zobeiri	Ey-yol Construction Company
	Hydropower Dams Directory	Jafari	Nader		AB&TOSSEA PAYDAR CONSULTANT ENGINEER CO
	Mr.	Jahangir	Mohammad		Farazab
	Mr.	Jahangir	Nader		Farazab
	Dalaki Dam Administrative	Kadkhodapoor	Jahangir		Water board authority co
	Head of Dams Dept	Kanjoo	Nasser		Mahab ghodss Co

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	voci present of manager directoty on design and extension	Karampour	Fereydoon	Sara Karampour	Water board authority co
	Mr.	Khorasanizadeh	Shahram		Iranian National Committee on Large Dams (IRCOLD)
	Ph.d	Madadi	Fatemeh		Shoar gostar
	Head of Concrete technology group	Mahjoob Farshchi	Daryush		IWPCo
	technical directory of waterboard authority co	Manouchehri Dana	Farzad		Mahab ghodss Co
	Mr	Mohammadijaberi	Ali		Water board authority com
	Supervision	Najafian Ghojehbiglou	Davoud		Ardebil Regional Water
	Mr.	Nazaripourkiaei	Aliasghar		Mahab ghodss Co
	President	Nematzadeh	Rasoul	Marzieh Tavakoli-bazzaz	Farazab
	Head of R&D Dept	Noorzad	Ali		IRCOLD
	Head of Marketing in Dams Dep	Sadeghian	Mohammad Sadegh		Mahab ghodss Co
	Geological expert	Sajadi	Zahra		Mahab ghodss Co
	Mr	Shafaattalab Dehghani	Hassan		Mahab ghodss Co
	Managing Director	Shafiei	Aliakbar		Iran Water Resources Management Company
	Mr.	Shahrivari	Javad	Fatemeh Rajabzadeh	Iranian National Committee on Large Dams
	senior of mechanical structure	Tarkeshdooz	Nasser		Mahab ghodss Co
	Chief Civil Engineer	Tavakoli Shirazi	Nima		Iranian National Committee on Large Dams
	Engineer	Vatannia	Ziba		Mahab ghodss Co
Ireland	Engineer	O'Mahony	Brian		Electricity Supply Board
Italy	Mr.	Baldovin	Ezio		Geotecna Progetti
	Mrs	Cagiano de Azevedo	Alessandro		STUDIO ING. G, PIETRANGELI srl
	Mr	Caruana	Rosella		Enel
	Mr	Fiore	Antonio		CESI SpA
	Mrs	Frigerio	Antonella		RSE SPA
	Mr.	Galindo Pacheco	Ramon Alberto		ELC Electroonsult S.P.A.
	Engineer	Gropo Sembenelli	Pietro		SC SEMBENELLI CONSULTING Srl
	Mr	Marchi	Marco		Cooperativa Edile Appennino
	Mr.	Mariotti	Marino		SIREG SpA
	Mr	Masera	Alberto		CESI SpA
	Mr.	Mazzà	Guido		RSE SPA
	Mr.	Meghella	Massimo		RSE SPA
	Dr.	Palmieri	Alessandro		Salini-Impregilo SpA
	Mr	Piazza	Massimiliano		POOLMECCANICA LORENZON
	Mr	Pietrangeli	Antonio		STUDIO ING. G PIETRANGELI srl
	Mr	Pittalis	Giuseppe		STUDIO ING. G PIETRANGELI srl
	Mr	Rodio	Fiorella		Mapei
	Mr	Ruggeri	Giovanni		Enel
	Ingeneer	Saccone	Roberto		Mapei
	Mr.	SCARELLA	Marco		SC SEMBENELLI CONSULTING SRL
		Zaffaroni	Pasquale		Mapei
Japan	Mr.	Adachi	Eisei		Osakasaiseki Engineering co. ltd.

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Mr.	Atago	Tokuyuki		The Japanese Institute of Irrigation and Drainage
	Dr.	Auel	Christian		Kyoto University
	Mr.	Doi	Hiroyuki		Kansai Electric Power Co., Inc.
		Fukuwatari	Junichi		Nippon Koei
	Mr.	Hamaguchi	Tatsuo		NEWJEC Inc.,
	Mr.	Harada	Joji		Japan
	Dr.	Hashimoto	Noriaki		Kansai Electric Power Co., Inc.
	Mr.	Hatsuyama	Toshihiko		Hokkaido Port Service, K.k.
	Mr.	Horiya	Shigekazu		SNSS
	Ms.	Hoshiba	Tomoko		JCOLD
	Mr.	Ichikawa	Takaaki		MUTSUMI CORPORATION
	Mr.	Ikeda	Takashi		Japan Dam Engineering Center
	Mr.	Imamura	Keisuke		NIPPON KOEI CO.,LTD.
	Mr.	Irie	Hiroki	Machiko Irie	MAEDA CORPORATION
	Mr.	Itoh	Hiroshi		HAZAMA ANDO CORPORATION
	Mr.	Kambe	Takayuki		KAJIMA CORPORATION
		Kamegai	Yasuhisa		Chubu Electric Power Co., Inc.
	Mr.	Kasahara	Satoshi		Japan Water Agency
	Mr.	Kase	Toshihisa		SHIMIZU CORPORATION
	Mr.	Kashiwabara	Satoshi		IDEA Consultants Inc.
	Mr.	Kashiwagi	Yuji		West Japan Engineering Consultants, Inc.
	Doctor	Kashiwayanagi	Masayuki		Electric Power Development Co., Ltd.
		Kataoka	Takuji		Nippon Koei Co., Ltd.
	Mr.	Kato	Yuichi		MUTSUMI CORPORATION
	Mr.	Kawasaki	Hideaki		Japan Dam Engineering Center
	Mr.	Kido	Kentaro		Japan Water Agency
	Mr.	Kikuchi	Ryosuke		Water Resources Environment Center
	Dr.	Kitamura	Yuichi		J-POWER, Chigasaki Research Institute
	Secretary General	Koganezawa	Akira		JCOLD
	Mr.	Kondo	Akira		Nikki Kensetsu Co., Ltd.
	Mr.	Kuroki	Hiroshi		Taisei Co.
	Mr.	Kusumi	Masayuki	Kyoko Kusumi	Taisei Co.
	Mr.	Makita	Minoru		Yachiyo Engineering Co., Ltd.
	Mr.	Masaaki	Okamoto		NEWJEC Inc.
	Managing Director	Matsumoto	Norihisa		JCOLD
	Mr.	Matsuura	Masakazu		NTC Consultants Co, Ltd.
	Mr.	Mineno	Yoshihiro		NTC Consultants Co, Ltd.
	Mr.	Miyazaki	Akira		Tokai Regional Agricultural Administration Office, Ministry of Agriculture, Forestry and Fisheries
	Mr.	Mizuno	Ryo		FUJITA CORPORATION
	Mr.	Murata	Norio		Nishimatsu construction co.
	Mr.	Nakamura	Akira		Japan Dam Engineering Center
	Mr.	Nakane	Wataru		OBAYASHI CORPORATION
	Mr.	Nishiura	Kazuyuki		TOBISHIMA CORPORATION
	Mr.	Nobutani	Hidemasa		Association of Water Resources Sedimentation Technology, Japan
	Dr.	Noguchi	Hiroaki		Tokyo Electric Power Services Co., Ltd
	Mr.	Nonaka	Mikio		Japan Water Agency
	Mr.	Numano	Yuji		Water Resources Environment Center
	Mr.	Okamoto	Hazamu		KUMAGAIGUMI CO.,LTD
	Dr.	Sakamoto	Tadahiko		NIPPON KOEI CO.,LTD.
	Dr. Eng.	Sasaki	Takashi		NIIIM

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Mr.	Sasakura	Nobuaki		MAEDACORPORATION
	Mr.	Sato	Kenichi		MAEDA CORPORATION
	Ms.	Shibasaki	Kanae		JCOLD
	Mr.	Shimamoto	Kazuhiro		Ministry of Land, Infrastructure, Transport and Tourism
	Mr.	Sugahara	Toshiyuki		Kajima Corporation
	Prof.	Sumi	Tetsuya		Kyoto University
	Mr.	Tagashira	Hidekazu		Incorporated Administrative Agency National Agriculture and Food Research Organization, National Ins
	Mr.	Takano	Jun		Hokuden General Engineering Design & Consulting Co., Inc.
	Mr.	Takatsuka	Tetsu		CTI Engineering Co., Ltd
	Mr.	Takimoto	Junya		KEC Corporation
	Mr.	Toyoda	Takashi		IDEA Consultants Inc.
		Tsutsui	Junichi		Central Research Institute of Electric Power Industry
	Dr.	Ueno	Kazuhiro		National institute for rural engineering
	Dr.	Uesaka	Tsuneo		CTI Engineering Co.,Ltd.
	Mr.	Ujitsugu	Tsutomu		Company Taisei Co.
	Ms.	Uno	Mariko		West Japan Engineering Consultants, Inc.
	Mr.	Yamaguchi	Mitsuaki		KYOWA ELECTRIC COMPANY
	Dr.	Yamaguchi	Yoshikazu		Public Works Research Institute
	Mr.	Yamamoto	Hiroki		Yachiyo Engineering Co., Ltd.
	Mr.	Yamashita	Takahiro		NEWJEC@Inc.
	Mr.	Yanagawa	Joji		Japan Dam Engineering Center
	Dr.	Yasuda	Nario		Japan Dam Engineering Center
	Mr.	Yoshida	Hitoshi		Japan Dam Engineering Center
	Mr.	Yoshida	Mitsuhiro		Aoki Asunaro Construction Company
	Mr.	Yoshimura	Takeshi		Kyusyu Electric Power Company
	Mr.	Yoshitake	Hiroaki		Kyusyu Electric Power Company
	Dr. (Associate Professor)	Yuji	Sakai		Kogakuin University
Latvia	Mrs	Dislere	Sigita		Firma L4, Ltd
		Rozentals	Aigars		Latvenergo.Ltd
		Zegele	Andris		Latvenergo Ltd
Lebanon	Dr.	Abou Jaoude	Adel		Khatib and Alami
	Mr.	Fadous	Issam		Federation of The Lebanese Engineers.
	Dr.	Nasreddine	Khaldoun		Khatib and Alami
	General Secretary	Slim	Ghanem		Federation of The Lebanese Engineers
	Mr	Putsoane	Charles		Lesotho Highlands Water Commission
Luxembourg	Dr.	Riemer	Wynfrith		Luxemburg Nat. Committee
Former Youg Rep of Macedonia	Professor, PhD	Petkovski	Ljupcho		Faculty of Civil Engineering in Skopje
	Prof.	Tancev	Ljubomir		University of Skopje
Malaysia	Ms	Eden	Aisah	BAKRIE ZAINI	SYARIKAT SESCO BERHAD
	Mr	Hashim	Muhammad Hasnul Ariffin		Tenaga Nasional Berhad
	mr	Rashid	Radzi		Tenaga Nasional Berhad
Mali	President	Arbi	Hama Ould Sidi Mohamed		COMITE MALIEN DES BARRAGES ET LACS
Mexico	Dr	Botero-Jaramillo	Eduardo		Intituto de Ingenieria Universidad Nacional Autonoma de Mexico
	Dr. Eng	Marengo	Humberto		FEDERAL COMISSION OF ELECTRICITY
	Dr	Perez Rocha	Luis Eduardo		Instituto de Investigaciones Electricas

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
Morocco	Vice Président	Akalay	Mohammed Bachir	Khadija Boukhane	Comité Marocain des Barrages
	Directeur Général	Alaouch	Hamid		AIC Métallurgie
	Ingénieur en chef	Alt Ihdad	Abdelkarim		Ministère chargé de l'Eau MAROC
	Chef de service Conception des ouvrages	Baghdad	Hanane		Direction des Aménagements hydrauliques
		Bahtat	Mouhcine		comité marocain des barrages / Ministère chargé de l'Eau
	Mr	Benabdellah	Amine		BIOUI TRAVAUX
	Mr	Bioui	Abdennabi		BIOUI TRAVAUX
	Chef du Service Mécanique des Sols	Bouchama	Sanaa		Direction des Aménagements Hydrauliques
	Consultant	Chraibi	Ahmed Fouad	Meryem Alami Hassani	Damtech
	Secretary General	El Ghissassi	Abderrahim		COMITE MAROCAIN DES BARRAGES
		El Ghomari	Khalid		Ministère chargé de l'Eau
		El Mahboul	Abdallah		Ministère chargé de l'Eau
	D.G	Houar	Mohammed		société d'entreprise HOUAR
	Ingénieur Général	Labraimi	Aziz		Ministere Eau MAROC
		Louimine	Hicham		Entreprise Sodemiq
		Mahfoud	Jamal		Comité Marocain des Barrages
	Directeur	Marzouki Zerouali	Taoufiq	Khadija Rhazi	NOVEC
	Dev Director	Saimi	Nabil		Platinum Power
	Directeur des Aménagements Hydrauliques	Zakaria	Abdellahi		NOVEC
	Chef de département Barrage et ouvrages souterrains	Zoubeidi	Hilal Mohammed		NOVEC
Mozambique	Mr.	Baptista	Elias		Mozambican Commission on Dams
	Eng.	Carvalho	Ezequiel Fernandes		Hidroelectrica de Cahora Bassa
	Mr	Torcida	Domingos		Hidroelectrica Cahora Bassa
Myanmar	H.E. Deputy Minister	Htwe	Maw Thar		Ministry of Electric Power
	Director, Design Branch, DHPI	Khaing	Min		Ministry of Electric Power
	President of MNCOLD	Kyaw	Win		MNCOLD
	Member of MNCOLD	Myint	Ye		MNCOLD
		Toe	Chit		Ministry of Electric Power
Nepal	Dr.	Bishwakarma	Meg	Kamala Devi Hemchuri	Hydro Lab
Netherlands	Mrs.	Ariyanti	Vicky		INACOLD, Indonesian Min. of Public Works, Erasmus University Rotterdam
	Ms	Barus	Angela Sari, Ulina		Unesco-IHE
	Mr.	Bayu Asri	Vincentius Herdy		Unesco-IHE
	MSc	Janssen	Hans		Rijkswaterstaat
	Mr	Kahar	Selo		Unesco-IHE
	Dr	Marcel	Bottema		Rijkswaterstaat WVL
	Drs.	Oostinga	C.H.		Rijkswaterstaat
	ir	van Casteren	Antoine		BAS Remote Sensing B.V.
	Mr	Yongyeon	Bae		TNO DIANA BV
New Zealand	Mr	Amos	Peter		Damwatch Engineering Ltd
	Mr	Kilby	Andrew		SMEC
	Mrs	Knott	Rebecca	Gräeme Knott	Damwatch Engineering Ltd
	Mr	Leong	David		T... ..

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
		Leyland	Bryan	Jane Leyland	LCL Ltd
	Mr	Lilley	Peter	Peggy McKenzie	NZSOLD
	Mr	Mulvihill	Peter	Lois Mulvihill	Pioneer Generation
	Ms	Naylor	Suzanne		Watercare Services Limited
Nigeria		Abdul-Aziz	Daudu		North-South Power, Shiroro Hydroelectric Power Station
	Engr	Dacree	Solomon	Mariam Dacree	Infioquest International Ltd
Norway		Afsari-Rad	Vahid		Veidekke Industri AS
		Andersen	Ronald		NVE
	Dr. Eng.	Basberg	Leif		Energi Norge AS
		Batalden	Bjørn		BKK Produksjon AS
	Dr.	Belete	Kiflom		NTNU
	Director Supervision and contingency planning	Bendiksen	Ingunn Åsgard		NVE
	Mr	Berthelsen	Ole John		
		Blazevic	Senka		Norconsult AS
	Chartered dam engineer	Bolle	Vidar		Statkraft Energi AS
	Dr.	Bretas	Eduardo		NORUT
	Gen Secretary ICOLD 2015	Bråten	Tore		TBR Konsult AS
	Mrs.	Bull	Laura		ICH
		Bævre	Ingebrigt		Statkraft Energi AS
	Dr	Børresen	Bjarne		Multiconsult
	Miss	Dudhraj	Abha		Glommens og Laagens Brukseierforening
	Head of Dams and Underground	Duncumb	Richard		Multiconsult
	Senior engineer	Egeland	Ole Morten		Agder Energi
	Mr	Engesæter	Rune		NNCOLD
	Technical Support UTT	Espeseth	Rune		Mapei AS
	Business Development Manager	Fjellheim	Rune		Xylem Analytics
	Mr	Fløystad	Andreas		SWECO
	Sr.eng.	Grzanic	Goranka		NVE/NNCOLD
	Sen. Eng. Manager	Grøner	Chr. Fredrik		Statkraft AS
		Guddal	Rolv		Sira-Kvina Kraftselskap
	VTA	Guddal	Rolv		Sira-Kvina kraftselskap
	Senior Adviser	Halsnes	Per Vidar		BKK Produksjon AS
	M.Sc Hydropower	Hansen	Gøran André		Multiconsult
		Hauge	Stig		Brødrene Dahl
	Head of department	Helle	Janne Gunn		Lyse Produksjon AS
	PhD Candidate	Hiller	Priska Helene		NTNU
		Hjellestad	Ole Jørgen		Brødrene Dahl
		Hoegh	Bente Ågren		The Norwegian Water and Energy directorate
	Ms	Holberg	Henriette		ICH - International Centre for Hydropower
	Hon President ICOLD	Høeg	Kaare		NGI
		Jakobsen	Jens		NTNU
		Johansen	Pål		ICH
	Regional Sales Manager	Karlsen	Kenneth Macdonald		MJK Automation AS
	MSc	Kiel	Are		Sweco Norway
	dr. ing.	Kjellesvig	Hilde Marie		Sweco Norway

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
		Kjosavik	Fredrikke		NTNU
	Special advisor dams	Konow	Thomas		Norconsult
		Lancaster	James		Norconsult AS
	Sivilingeniør	Lefstad	Liv		Norconsult as
	Mr	Leknes	Eirik		Lyse Produksjon AS
	Professor	Lia	Leif		NTNU
	Mr	Lindemark	Jan		Multiconsult
	Project Manager	Ljodal	Vemund		Veidekke Industri AS
	Mr	Lundberg	Audun H.		Multiconsult
	Prosjektingeniør	Mathismoen	Guttorm		E-CO Energi AS
	Daglig leder	Middtlien	Nils Olav		Encono AS
	Dr.ing.	Middtømme	Grethe H.		NVE/NNCOLD
		Molle	Gjermund		Statkraft Energi AS
	CEO	Mork	Reidar Ove		Otra Kraft
	MSc. Hydropower	Moss	David Wauthier		Norconsult AS
	Scientific Assistant	Natvik	Eirik Yee		NTNU
	Mr.	Nielsen	Lars Eid		Multiconsult AS
	Professor	Nielsen	Torbjørn K.		NTNU
	Senior engineer	Nilsen	Knut		Agder Energi
		Ovedal	Jon		Sira-Kvina
	Msc	Pedersen	Vebjørn		NVE
	MSc.	Pettersen	Eirik Helgetun		NTNU
	Senior Hydropower Engineer	Rebne	Kjell Olav		Norconsult AS
		Repp	Kjell		Norwegian Water Resources and Energy Directorate
		Rettedal	Bjørnar		BKK
	Special Adviser Dams	Rikartsen	Claus		Norconsult AS
	Mrs	Rosenlund	Carole		ICH - International Centre for Hydro-power
	VP Civil & Environment	Rubensson	Morgan		Statkraft
		Ruud	Anne Marit		Statkraft Energi AS
	Technical support UTT	Ruud	Bjarne		Mapei AS
	Consultant	Saxegaard	Helge		Asphalt Core Consulting
	Exhibitor	Sellæg	Ole Andreas	Kristin Sellæg	Veidekke Asphalt Core Dams
	Civil Engineer	Simonsen	Harald Andreas		Statkraft
	Damvokter	Sinnes	Per Magne		Sira-Kvina kraftselskap
	Hydrologist/Hydraulic Engineer	Skoglund	Morten		Multiconsult
	Mr.	Solberg	Tom		ICH
		Spiller	Stephan Mark		Sweco
		Stoskopf	Mathilde		Oslo kommune Vann- og avløpsetaten
	Mr.	Strokkenes	Stig Arne		Multiconsult AS
		Svendsen	Ole Morten		Lyse Produksjon AS
		Sørli	Steinar		Glommen og Laagens Brukseierforening
		Thomas-Lepine	Capucine		Sweco Norway
	Administrerende direktør	Tjørhom	Gaute		Sira-Kvina Kraftselskap
	Mr	Valstad	Tore		NGI
	MSc	Vartdal	Egil Andreas		Sweco Norway AS
		Welte	Thomas		SINTEF Energy Research
	Senior Adviser/Program Director	Wright	David A.		NVE
	Secretary	Ødegaard	Elin		Veidekke Industri AS

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization	
Oman	Senior Project Manager	Ødegård	Lars		Statkraft	
	Mechanical Engineer	Øen	Oddgeir		E-CO Energi AS	
	Project Director	Aker	Mazen		Consolidated Contractors	
	Pakistan	Chairman	Khan	Raqib		IRSA Islamabad
		Member Punjab	Khan	Rao Irshad Ali		IRSA Islamabad
Panama	Member Balochistan	Naseem	Muhammad		IRSA Islamabad	
	Member Sindh	Shah	Syed Mazhar Ali		IRSA Islamabad	
	Mr.	Cuevas	Johnny	Yara De Cuevas	JACUM ENTERPRISES,S,A	
Paraguay	Mr.	de Puy	Maximiliano		Panama canal	
	Civil Engineer	Abud	Salim		Paraguayan Comittee of large dams	
Peru	Civil Engineer	Bogarín	Jose		Paraguayan Comittee of large dams	
	Mr.	de la Torre	Jesus Miguel		Geoservice Ingenieria S.A.C	
Philippines	President	Suazo	Miguel	Luisa Bellacci De Suazo	PERUVIAN COMMITTEE ON LARGE DAMS	
	Mr.	Lopez	Emmanuel		SN Aboitiz Power - Benguet, Inc.	
	Mr.	Mariano	Raymond		SAN ROQUE POWER CORPORATION	
Poland	CTO	VALDAL	Kjell Atale		SN Aboitiz	
	PhD	Radzicki	Krzysztof		Cracow University of Technology	
	M.Sc. Eng.	Steinski	Edmund		IMGW-PIB OTKZ	
Portugal	Prof. PhD. DSc. Eng.	Zaleski	Janusz		IMGW-PIB	
		Afonso	Jose	Maria Joao Afonso	CNPGB / PTCOLD	
	Dr.	Caldeira	Laura		Laboratório Nacional de Engenharia Civil	
	Eng.	Camelo	Armando		EDP - Energias de Portugal, SA	
	Engineer	CRUZ	Jorge		LCW Consult S.A.	
	Engineer	Cunha	Joao		EDP - Energias de Portugal, S.A.	
	Engineer	Fernandes	Irene		EDP - Energias de Portugal	
Republic of Korea	Mr	Mata	Juan		LNEC	
		Mateus de Brito	José António	Maria Hortense Mateus de Brito	CENOR	
	Mrs.	Oliveira	Mafalda		SOMINCOR, Sociedade Mineira de Neves-Corvo	
	Prof.	Pina	Carlos		LNEC	
		Tavares	Gonçalo	Cristina Brito	CENOR	
	Team Manager	Chae	Suk-Jun		DAEWOO E&C	
	Dr.	Choi	Byoung Han		Korea Rural Community Corporation Research Institute	
	Dr.	Choi	Gyewoon		K-water	
	Dr.	Choi	Byung Man		K-water	
	General Manager	Choi	Hoon		Hyundai E&C	
Republic of Korea	Vice President, Ph.D.	CHOI	Byoung-Seub		K-water	
		Choi	Dongnam		DAELIM	
	Vice President	JEONG HAK	Lee		KHNP	
	Vice President	Kim	Byeong Jin		Samsung C & T	
		KIM	Seonggoo		SK E&C	
	professor	Kim	Kyehyun		Inha University	
	Director general	Kim	Hanil		Korea Water Resources Corporation(K-water)	
	Deputy Director	KIM	Tae-Hoon	Jong-Chae LIM	Minister of Land, Infrastructure and Transport	
		Kwon	Ji-Hye		KISTEC	
	Associate Professor	Kwon	Hyun-han		Chonbuk National University	
Head of department	Lee	Youngki		Korea South-east Power Co.		
Ph.D Student	Li	Li		Sungkyunkwan University		
Mr.	Min	Hyo Dong		K-water		

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Assistant Manager	MIN SIK	Na		KHNP
		OH	Byoungdong		K-water
		Park	Jungmin	Young Sook Park	Korea National Committee on Large Dams(KNCOLD)
	Manager	PARK	Joo-Bum		K-water
	Principal Researcher	PARK	Dong Soon		K-WATER
		Park	Hyungseop		DAELIM
		Park	Jiyeon		KISTEC
	General Manager	SEUNG PIL	Baek		KHNP
	Deputy head of department	Yang	Munho		Korea South-east Power Co.
		Yang Soo	Yoo		Kyeryong Construction co.
	Vice President	Yum	Kyung-taek	Young-ae NAM	Asia Pacific Group of ICOLD National Committees
		YunHoi	KIM		Korea Hydro & nuclear Power co. LTD
Romania	Prof.	Abdulamit	Altan	Violeta Terci	ROCOLD
	Dr.	Asman	Iulian Dan		Romanian Water Authority
	Mr.	Ban	Cristian		A.N. Apele Romane
	Regional Business Manager	Cocioran	Aurel		Raycap
	Eng.	Gabor	Ovidiu	Daniela Gabor	National Administration
	Mr	Gaftoi	Daniel Andrei	Lazarescu Adina	Technical University of Civil Engineering Bucharest
	Dr.	Niculae	Sorin	Anca Niculae	Exploatare Sistem Zonal Prahova S.A.
	Professor	Sarghiuta	Radu	Rodica Sarghiuta	Technical University of Civil Engineering of Bucharest
	Prof.	Stematiu	Dan	Florica Durlea	Technical University of Civil Engineering Bucharest
Russia	Deputy Head of Department	Asarin	Alexander		JSC Hydroproject Institute
	Dr	Bellendir	Evgenii		JSC Vedeneev VNIIG
	Head of the Eniseiskoe basin water management agency	Blagov	Vladimir		Eniseiskoe basin water management agency
	Head of the Verhne-Obstkoe basin water management agency	Borisenko	Vasily		Verhne-Obstkoe basin water management agency
	Deputy Chief Design Engineer of the Project	Borshch	Pavel		JSC Hydroproject Institute
	Mr	Chernyshenko	Vasily		JSC
	Chairman of the Management Board – General Director	Dod	Evgeny	Vladislav Lipatov	JSC RUSHYDRO
	Dr.	Filippova	Elena		Vedeneev Research Institute VNIIG
		Glagovsky	Viacheslav	Galina Kamysheva	Vedeneev Research Institute VNIIG
	Mr.	Kabanov	Nikolai		JSC
	Mr.	Khaziakhmetov	Timur		JSC RUSHYDRO
	President	Klevtsov	Alexander		Carpi-TempStroySystem
		Kostyrya	Galina		Vedeneev Research Institute VNIIG
	Mr.	Pekhtin	Vladimir		JSC RUSHYDRO
	Head of the Federal agency	Seliverstova	Marina		Federal agency of Water Resources
	Design Chief Engineer	Shakirov	Ruslan		JSC Hydroproject Institute
	Deputy General Director	Sobolev	Viacheslav		JSC
	Interpreter and Assistant to Ms. Seliverstova	Spevakova	Irina		Federal agency of Water Resources

Country	Title	Lastname	Firstname	Accompanying person	Company/Organization
Slovakia	Mr. Chief Design Engineer	Yakovlev Yuriev	Dmitriy Sergey		JSC RUSHYDRO Hydroproject Moscow
	Prof., Dr.	Bednarova	Emilla		Slovak National Committee on Large Dams
	Dr. Eng., PhD.	Ivanco Kasana	Roman Andrej		Slovak Water Management Enterprise Vodohospodarska vystavba
	Dr.	Minarik	Marian		Slovak National Committee on Large Dams
	Mgr., PhD.	Nikolaj	Maros		Vodohospodarska vystavba
Slovenia	Ms.	Humar	Nina		Društvo nacionalni komite za velike pre-grade SLOCOLD
	Mr.	Kryzanowski	Andrej		SLOCOLD
South Africa		Širca	Andrej		SLOCOLD
	Ms	Anderson	Henriette		Verve Civil Eng (Pty) Ltd
	Ms	Angell-Schau	Tanya		Event Dynamics
	Mr	Badenhorst	Danie	Hettie Badenhorst	AECOM
	Prof	Basson	Gerrit	Marechia Basson	University of Stellenbosch
	Ms	Buthelezi	Gugulethu		Event Dynamics
	Ms	Cai	Rongqiu		Department of water and sanitation
	Mr	Cameron-Ellis	David		ARQ Consulting Engineers (Pty) Ltd
	Mr	Furstenburg	Leon	Sandra Wise	Knight Piesold
	Mr	Gladwin	David		Tourvest Destination Management
	Mr	Gouws	Pieter		Element Consulting Engineers
	Mr	Grant-Stuart	Duncan	Cheryth-Anne Grant-Stuart	Knight Piesold
	Mr	Hattingh	Louis		Hattingh Anderson Associates CC
	Mr.	Lephoma	Mzamo		Lesotho Highlands Water Commission
	Mr	Logan	Colin		Gibb (Pty) Ltd
Technical Director	Nel	Paul		Aurecon	
Dr	Oosthuizen	Chris		DS3	
Mr	Pyke	Peter	Susan Pyke	Private	
Dr	Roberts	Paul	Janet Roberts	SANCOLD	
Mr	Shaw	Quentin		ARQ Consulting Engineers (Pty) Ltd	
Mr.	van Breda	Jasper		Van Breda & Associates	
Spain	Mr	Wright	Henry John		Aurecon
	Honorary ICOLD Pres.	Berga	Luis		ICOLD
	Mr.	Blazquez	Francisco	María Sonsoles Jimenez	Canal de Isabel II Gestion, S.A.
	Dr	Cifres	Enrique		ICOLD - TRSA
	Mr.	De Cea Azañedo	Juan Carlos		SPANCOLD
	Prof.Dr.	Escuder-Bueno	Ignacio		Universidad Politecnica de Valencia
	General Manager	FLEITZ	Jurgen		OFITECO
	Chief Operating Officer	GOMEZ DE MEMBRILLERA	Manuel Enrique		OFITECO
	Dr Civil Engineer	Gonzalo	Alberto		HCC, S.A.
	Dr.	Granados	Alfredo	María Isabel Garcia	Technical University of Madrid
	Ms	Granados	Isabel		Technical University of Madrid
	Ms	MARTÍN	Ana		GAS NATURAL FENOSA INGEN
	CEO	Morales	Ignacio		HCC, S.A.
	Mr.	Moralo	Javier		GAS NATURAL FENOSA INGENIERIA Y DESARROLLO DE GENERACION
	Vice President .	Polimon	Jose	María Teresa Ola-barrieta	ICOLD
Mr.	Portal	Vicente		OHL	
Mr.	Reviriego Vasllo	Ismael		E.ON GENERACION S.L.	

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
		Soriano Martinez	Antonio		INGENIERÍA DEL SUELO S.A.
		Soriano Pena	Antonio	Mª Del Carmen Martinez Parrondo	INGENIERÍA DEL SUELO S.A.
	BUSINESS DEVELOPMENT MANAGER	VERGARA	David		ACCIONA INFRAESTRUCTURAS, S.A.
Sri Lanka	Director of Irrigation (Programme Management)	Jeyabalamoorthy	Kanapathipillai sinnathamby		Irrigation Department
	Dr.	Laksiri	Kamal LB		CEYLON ELECTRICITY BOARD
	Deputy Director General (Technical Service)	Premakumara	Herath Hitthamillage Padmasiri		Mahaweli Authority of Sri Lanka
	Eng.	Sahabandu	K.L.Sirilal		Central Engineering Consultancy Bureau
	Director of Irrigation project Manager	Shanmuhananthan Wagarachchi	Somasuntharam Ranjith.s.w		Irrigation Department, Northern Province CEB
	Director of Irrigation (Major Construction)	Weerasinghe	Saman Siripala Liyange		Irrigation Department
Sweden	Environmental coordinator	Adell	Birgitta		Fortum Generation AB
	Professor	Al-Ansari	Nadhir		Lulea University of Technology
	Dr Eng	Bartsch	Maria		Svenska Kraftnät
		Bengtsson	Jonas		Ångermanälvens VF
	PhD	Billstein	Mats		Vattenfall
		Bjelkevick	Annika		TCS, Tailings Consultants Scandinavia
		Bohlin	Thomas		Tailings Consultants Scandinavia AB
	Communications Manager	Boström	Kent		Wassara
		Ekstedt	Johanna		Tailings Consultants Scandinavia AB
	Mr.	Ekstrom	Ingvar		Sweco Energuide
	Engineer	Elvnejd	Per		SVF
	Dam Safety Process and Risk Manager	Eriksson	Mats		Fortum Generation AB, Renewables
	Emergency Manager	Evertson	Joakim		VATTENFALL
		Gasch	Tobias		
		Gunnteg	Marcus		Tailings Consultants Scandinavia AB
	Hydological Team Manager	Hallberg	Kristoffer		SMHI
		Halvarsson	Andreas		WSP
	Security and Safety Controller	Hammer	Lars		Vattenfall Vattenkraft AB
	Professor	Hassanzadeh	Manouchehr		Vattenfall AB
	Mr	Hautakoski	Marcus		Ångermanälvens Vattenregleringsföretag
	Dr.	Hellström	Gunnar		Luleå University of Technology
	Mr	Jewert	Magnus		Norconsult AB
	Dr.	Johansson	Sam		HydroResearch
	WSP Bro & Vattenbyggnad	Järve	Diana		WSP Sverige AB
	Professor	Knutsson	Sven		Luleå University of Technology
	MSc, PhD student	Knutsson	Roger		Luleå University of Technology
	Mr	Kuoljok	Uno		E.ON Vattenkraft Sverige AB
	Mr.	Lier	Øyvind		SWECO Norge A/S
		Lundell	Dan		Tailings Consultants Scandinavia AB
	Dr	Malm	Richard		KTH Royal Institute of Technology, Division of Concrete Structures
	Project Manager Dam Safety	Marthin	Peter		Boliden Mineral AB
	M.Sc.	Midbøe	Finn		HydroTerra Ingenjörer AB

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Mr	Nilsson	Åke		WSP Sverige AB
		Nilsson	Carl-Oscar		E.ON Vattenkraft Sverige AB
	Professor	Nordström	Erik		Sweco
	Mr	Norstedet	Urban		U NORSTEDT MTF AB
	Technical consultant	Persson	Jonas		Norconsult
	Mrs	Rådman	Birgitta		Ångermanälvens Vattenregleringsföretag
	Dr	Rönnqvist	Hans		Luleå University of Technology
		Spross	Johan		KTH Royal Institute of Technology
	Dam Safety Engineer	Steiner	Rolf		Fortum Generation AB
	Mr	Stenberg	Rickard		Ångermanälven Vattenregleringsföretag
	Product Manager	Svangård	Peter		Wassara AB
		Svensson	Björn		Sweco Energuide AB
	M.Sc. Hydraulic Engineering	Söderström	Anders		Sweco International AB
	Professor	Viklander	Peter		Luleå University of Technology
	DS (Dammtekniskt sakkunning)	Wallström	Sofie		Fortum Generation AB
	MD	Wiberg	David		Keller Grundläggning AB
	Ph.D.	Wilde	Marie Westberg		ÅF Industry AB
	WSP Bridge & Hydraulic design	Åstrand	Stina		WSP Sweden AB
Switzerland	Eng.	Amberg	Francesco		Lombardi Engineering Ltd.
	Senior Consulting Engineer	Asadi-Khiavi	Yousef		IBAKH GmbH
	Mr.	Bacchelli	Marco		CARPI TECH
	Mr.	Balissat	Marc		Stucky Ltd
	Mr	Baumer	Andreas	Michela Baumer	OFIMA SA
	Prof. Dr.	Boes	Robert		ETH Zurich VAW
	Dr.	Brenner	Peter		GDE
	Dr.-Ing.	Conrad	Marco	Elke Maier	AF-Consult Switzerland Ltd
	Dr.	Darbre	Georges		Swiss Federal Office of Energy
	Dr	Droz	Patrice		Stucky
	M	Fauriel	Jonathan		Alpiq
	Area Sales Manager	Geiser	Daniel		Rittmeyer AG
	Dr. Eng.	Joos	Bernard		Swiss Committee on Dams
	Dr.	Kreuzer	Harald		Harald Kreuzer
	Head of Civil Engineering Hydro Production	LEROY	Raphaël		ALPIQ SUISSE SA
	Techn. Director	Marti	Urs		Huggenberger AG
	Ph.D Engineering	Mean	Philippe		SynFOCUS
		Meier	Edwin		Edi Meier + Partner AG
		Mouvet	Laurent		Hydro Operation Int'l SA
	Engineer	Mueller	Damian		Walo Bertschinger AG
	Mr.	Naterop	Daniel		SISGEO INTERNATIONAL SA
	Engineer	Nguyen	Si-Ngac		Walo Bertschinger AG
		Nigg	Gerhard		Rittmeyer AG
		Panduri	Rocco		Swiss Federal Office of Energy
		Peter	Marco		Pöyry Switzerland
	Mr	Ross	Kenneth		Pöyry
		Rouïller	Jean-Marie		Consulting
	Prof. Dr.	Schleiss	Anton	Katrin Schleiss	Ecole polytechnique fédérale de Lausanne (EPFL), Laboratory of Hydraulic Constructions (LCH)

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Chairman & Executive President	Scuero	Alberto		CARPI TECH
		Stahl.	Helmut		AF-Consult Switzerland Ltd.
	Engineer	THANOPOULOS	Yannis		CARPI TECH
	Engineer	Torkuñil	Cornelius		Walo Bertschinger AG
	Vice-President	Vaschetti	Gabriella		CARPI TECH
		Von Euw	Markus		Rittmeyer AG
Taiwan	Dr.	Wieland	Martin		Poyry Switzerland Ltd.
	Mr.	Chung	Wen-Shiang		Sinotech Engineering Consultants, Ltd
	Engineer	Hsieh	Chang-Ting		Sinotech engineering consultants,ltd
	Civil Engineer	Wang	Jong-Chyun	Shu-Lan CHU	Taiwan Power Company
Thailand		Chaovanalikit	Anuthep		Panya Consultants.Co.,LTD
		Hanpattanapanich	Thanu		Panya Consultants.Co.,LTD
	Miss	Hansakul	Puchareeporn		Department of Alternative Energy Development and Efficiency
	Mr.	Jongwattana	Griangsack		Department of Alternative Energy and Efficiency
	Mr	Kongjun	Thongplew		Royal Irrigation Department
	Mr.	Nanudorn	Ekkapong		Royal Irrigation Department
	Mr	Pedugsorn	Chatchai		Royal Irrigation Department
	Mr	Sopanangkool	Poemporn		Royal Irrigation Department
Turkey	Chairman of the Board	Aker	H. Irfan	Cigdem Aker	DOLSAR Engineering Inc. Co.
	International Projects Coordinator	Aker	Cem		DOLSAR Engineering Inc. Co.
	Mr.	Akman	Salih Bilgin		ES PROJE LTD. CO.
	Mr.	Akman	Altug		ES PROJE LTD. CO.
		Arici	Yalin		METU
	Civil Eng. MSc.	Askeroglu	Mehmet Harun		BAR-SU PROJE LTD.CO.
		Aslan	Sebahattin		Turkish National Committee on Large Dams
		Aydogan	Dincer		State Hydraulic Works
	Mr	Becerik	Mehmet Ugur	Rahime Becerik	Su-YAPı Engineering&Consulting Inc.
	Secretary General of TRCOLD	Dincergok	Tuncer		GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS (DSI)
	Director General Of DSI	Diniz	Ali Riza		GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS (DSI)
		Er	Yasemin		General state of state hydraulic works(Turkey)
	Director	Ergeneman	Isin		ERGES CONSULTING
	Mr	Ilter	Korhan	Mehmet U ur Becerik	Su_Yapi Engineering and Consulting INc.
	Managing Director	Koksal	Aldonat		Hidro Dizayn Engineering Consultancy Inc.
	Mr.	Kozumali	Dzhelal Arif		ENERGO-PRO
		Küsmez	Hüseyin		The General directorate of state hydraulic works (Turkey)
	Dr.	PELEN	Nurettin		DSI TURKEY
	Deputy Director	Uzucek	Ergun		GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS (DSI)
	Technical Lead	Özkan	Gürcan		Statkraft
Ukraine		Ruban	Oleh		ALL-UKRAINIAN NON-GOVERNMENTAL ORGANIZATION «Ukrainian Committee on Large Dams»
	Team Leader hydraulic department	Ryzhykov	Kyrylo		ALL-UKRAINIAN NON-GOVERNMENTAL ORGANIZATION «Ukrainian Committee on Large Dams»

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
United Kingdom		Tarasenko	Natalia		ALL-UKRAINIAN NON-GOVERNMENTAL ORGANIZATION «Ukrainian Committee on Large Dams»
	Ms	Bartle	Alison		Aqua Media International Ltd
	Mr	Bridle	Rodney		Dam Safety Ltd
	Mr	Cambridge	Mike	Lesley Cambridge	Camtab Consulting
	Dr	Dunstan	Malcolm	Kate Dunstan	MD&A
	Mr	Gladwin	Kevin		Telespazio Vega UK Ltd.
	Mr	Goff	Craig		HR Wallingford Ltd.
	Mr	Grubb	Ken		KGAL
	Mr	Hope	Ian	Jo Hope	Severn Trent Water
	Professor	Hughes	Andy		Atkins
	Mrs	Loredo	Maria Teresa		Aqua Media International Ltd
	Dr	Mason	Peter		MWH Ltd
	Mrs.	Spasic-Gril	Ljiljana		Arup
	Mr	Taylor	Grant		Geosense Ltd
	Mr	Tudor	Samuel		Dwr Cymru Welsh Water
United States of America	Mr.	Usher	Steven		Aqua Media International Ltd
	Technical Director	Warren	Alan		Mott MacDonald
	Mrs	Williamson	Tracey	Anthony Williamson	Welsh Water
	Ms	Alexieva	Tatyana		MWH
	Vice President	Arnold	Terry	Ruth Ann Arnold	MWH Americas
	Mr.	Barfuss	Steve		Utah State University at UWRL
	Dam Safety Officer	Becker	Brian		Bureau of Reclamation
	National Dams, Levees Director	Beduhn	Bob	Susan Beduhn	HDR
	Mr	Blohm	Harry	Brenda Blohm	Blohm Consulting
		Bowles	David		RAC Engineers and Economists, LLC
	Vice President of Engineering	Brabant	Keith		The Reinforced Earth Company
	Senior Hydropower Specialist	Canale	Luciano		World Bank
	Dr	Charlwood	Robin	Candace Charlwood	Robin Charlwood & Associates
		Dehler	William		Barr Engineering
	Design Manager	Delmer	Shannon		ASI Constructors
Mr	Edwards	Wayne	Lucille Edwards	W.D.Edwards Cons. LLC	
President, United States Society on Dams	Ferguson	Keith	Susan Ferguson	HDR	
Sr. Engineering Geologist	Greene	Brian		Gannett Fleming, Inc.	
Special Assistant	Halpin	Eric		US Army Corps of Engineers	
Vice President	Hutton	Jesse	Daylon Hutton	Ballard Marine Construction	
Mr	IBANEZ DE ALDECOA	Rafael	Natalia MARTINEZ	DRAGADOS USA	
Vice President	Johnson	Daniel	Star Waring	AECOM	
COO	Lemons	Ronnie	Patricia Lemons	Freese and Nichols, Inc.	
Dr.	Lindell	James		MWH Global	
	Moler	William	Colleen Reed	Bill Moler Consulting	
Construction Management Engineer	Moore	James	Ann Moore	US Army Corps of Engineers	
Dr	Ng	Kit		Bechtel Corporation	
Principal	Peterson	David	Lianne Peterson	Peterson Brustad Inc.	
	Ragon	Rebecca		US Army Corps of Engineers	
Application Engineer	Randall	Brent		Campbell Scientific	

Country	Title	Lastname	Firstname	Accompanying person	Company/ Organization
	Associate Professor	Rice	John		Utah State University
	Vice President	Rogers	Michael	Kristin Rogers	MWH
	Executive Vice President	Sanger	Jeff		Worthington Products, Inc.
	Mr.	Schmidt	Justin		Hexagon
	National Levee Practice Lead	Sossenkina	Elena		HDR
	Mr.	Steele	Kenneth	Rita Steele	Water Resources Engineering
	Mr.	Stephens	Larry		U.S. Society on Dams
	Mr	Sutter	Amanda		USACE
	Mr	Tarbox	Glenn		MWH
	Mr.	Teal	Martin	Angelica Teal	WEST Consultants
		Tjoumas	Constantine	Constance Tjoumas	Consultant
	Professor	Tullis	Blake		Utah State University
	Lead Dam Specialist	Ueda	Satoru		World Bank
	Mr.	Viengkhou	Outhay	Angela Viengkhou	Kinometrics Inc.
		Wolfhope	John	Shelley Wolfhope	Freese and Nichols
Venezuela	Mr	Francisco Ortiz	Cristobal Nicolas		CARPI TECH
	Mr.	Hitcher Marvaldi	Alejandro Antonio		CARPI TECH
	Mr.	Montes Prado	Julio Augusto		CARPI TECH
Zambia	Eng.	Chamba	Daniel		Irrigation Development Support Project
	Mr	Kamanga	Romas		ZESCO Limited
	Mr.	Kampata	Jonathan		Water Resources Management Authority
	Dr.	Mulenga	Barnabas		Ministry of Agriculture & Livestock
	Mr.	Zimba	David		ZESCO LIMITED

SPONSORS & EXHIBITORS

Company	Lastname	Firstname	Title	Country
Amiantit Norway AS	Hausberg	Jarle		
Aqua Media International	Port	Lukas		United Kingdom
Ballard Marine Construction	Korab	Scott		United States of America
Brødrene Dahl	Skår	Bjarte		Norway
Campbell Scientific	Bennett	Mark	Application Engineer	United States of America
Campbell Scientific	Ruiz	Lynne		United States of America
Canadian Dam Association	Butcher	Don		Canada
Carpi Tech BV Amsterdam	Vaschetti	Gabriella		Switzerland
CESI SpA	Facciolo	Luana		Italy
Comité Français des Barrages et Réservoirs	Blancher	Benoit		France
Cooperativa Edile Appennino	Vignoli	Maria Vittoria		Italy
CRC Press/Taylor & Francis	Bright	Alistair	Senior Publisher	United Kingdom
Doka Norge AS	Pedersen	Tore		Norway
Flow Science Deutschland GmbH	Grünzner	Markus		Germany
Geokon, Incorporated	Flynn	John		United States of America
Geosense Ltd	Brown	Claire		United Kingdom
German & Austrian National Committee on Large Dams	Müller	Uwe		Germany
Globesar AS	Cetinic	Franco		Norway
Hibbard Inshore	Malak	David		United States of America
Huggenberger AG	Meier	Edith		Switzerland

Company	Lastname	Firstname	Title	Country
ICH	Rosenlund	Carole		Norway
International Comission On Large Dams	Schauner	Nathalie		France
Japan Commission on Large Dams	Yanagawa	Joji		Japan
Keller Grundläggning AB	Bolin	Per		Sweden
KGAL	Mills	Nolan		United Kingdom
Kinematics Inc.	Viengkhou	Outhay		United States of America
LKAB Wassara AB	Boström	Kent		Sweden
Lyse Produksjon AS	Honningsvaag	Bjørn Aase		Norway
Mahab Ghodss	Rostami	Javad		Iran
MAPEI	Orlando	Manuela		Italy
Multiconsult AS	Lokshall	Elisabeth Wendy	Senior adviser	Norway
Norconsult	Helgesen	Knut Dagfinn		Norway
Otra Kraft	Mork	Reidar Ove		Norway
PennWell	Coulson	Ella		United Kingdom
Pöyry Switzerland Ltd	Aemmer	Martin		Switzerland
Raycap	Makris	Elena		Cyprus
Rittmeyer AG	Julen	Nicole		Switzerland
RUHFUS Systemhydraulik GmbH	Arndt	Hans-Günther		Germany
Samsun Makina Sanayi A.S.	Yucel	Ahmet Ali		Turkey
SediCon AS	Santamarta	Nicolas		Norway
SIREG SPA	Natoli	Emanuele		Italy
SISGEO SRL	Caci	Vincenzo		Italy
Statkraft	Stokseth	Siri		Norway
Sweco Norge AS	Karlsen	Per Arne		Norway
Telespazio Vega UK Ltd.	Cifres	Ricardo		United Kingdom
Temelsu international Engeneering Services Inc.	Yildiz	Ersan		Turkey
TNO Diana	Owen	Stephen		Netherlands
Turkish National Committee on Large Dams	Dincergok	Tuncer		Turkey
Veidekke ASA	Nykkelmo	Grete Ingeborg	Kommunikasjonsdi- rektør	Norway
Vinci Construction	Stolberg	Sandrine		France
WALO Bertschinger AG	Schmid	Rose-Marie		Switzerland
Willowstick Technologies	Chandler	Shirley		United States of America
Willowstick Technologies	Gardner	Val	Director of Business Development	United States of America
Worthington	Rollins	Paul		United States of America
Xylem Analytics	Dalland	Reidun		Norway

