

### **SANCOLD Conference 2013**

The SANCOLD Management Committee has been hard at work in planning for this event. We will be in a position to provide the detail during January 2013. An interesting site visit to a dam under construction is being arranged.

### **SANCOLD Young Engineers Forum**

Mention was made in the last SANCOLD News of the formation of the SA Young Engineers Forum with SANCOLD Vice-Chairperson taking the lead in the matter. An additional page has been added to the SANCOLD website (Activities>SA Young Engineers Forum) with a URL of [http://www.sancold.org.za/index.php?option=com\\_content&view=article&id=79&Itemid=104](http://www.sancold.org.za/index.php?option=com_content&view=article&id=79&Itemid=104) Ivor already has a number of interested persons on the SA Young Engineers' Forum and wishes to expand it further. If you are interested, contact Ivor on [sayoungengineers@sancold.org.za](mailto:sayoungengineers@sancold.org.za)



***SANCOLD Vice Chairperson Ivor Segers***

### **SANCOLD Management Committee: Elections**

The Management Committee elections went off very well and 87 valid ballot papers were received which gives a percentage poll of 48 per cent. The percentage poll is 49% for the Corporate Membership and 47% for Individual Members. The elected members are:

- Danie Badenhorst;
- Andre' Bester
- Quentin Shaw;
- Michelle Blaeser: Representative younger than 35 years.

Congratulations are extended to these members. We wish to thank the other candidates for their willingness to stand for election. You can be sure that we will be knocking on your door for assistance with SANCOLD matters including ICOLD 2016.

The next SANCOLD Management Committee will be held on 19 February 2013 when the elections for vacant office-bearers and planning for the year will take place.

### **SA Representation on ICOLD Committees and SANCOLD Working Groups**

SANCOLD participates in a number of ICOLD Committees as shown in the updated list given below. Some of the participation is as a corresponding member where inputs are made via correspondence. SANCOLD recently applied to the ICOLD Central Office for representation on the Committee on integrated operation of hydropower stations and reservoirs. The SANCOLD Management Committee considered that it is desirable to form SANCOLD Working Groups for those Committees where there is a need for such participation in order to support the South African representative. An invitation is extended to SANCOLD Members to volunteer for participation in these Working Groups.

It is pleasing that we have had several volunteers recently. Please submit your name to the SANCOLD Secretary and the Working Group/s you would like to participate in.

### SA representatives on ICOLD Committees and SANCOLD Working Groups 2013

| No  | Committee Name  | Term                   | SA Representative          | SANCOLD Working Group   |
|-----|---|------------------------|----------------------------|---|
| C   | Committee on Hydraulics   | 2009-2013              | Dawid van Wyk              | Dr Andre' Bester  |
| D   | Committee on Concrete Dams  | 2012-2015              | Q Shaw                     | J Kroon<br>H-J Wright<br>A Botha<br>D Ochan   |
| E   | Committee on Embankment Dams  | 2010-2014              | D Badenhorst               | H Elges<br>Johan Beukes<br>K Legge (Geofabrics)<br>Jan Brink  |
| F   | Committee on Engineering Activities Associated with the Planning Process for Water Resources Projects | 2011-2014              | S Mabuda                   | Menard Mugumo<br>Jannie van der Mescht  |
| New | Committee on Dam Surveillance   | 2012-2016              | Dr C Oosthuizen            | A Botha<br>DJ Hagen<br>L Hattingh   |
| H   | Committee on Dam Safety   | 2012-2016              | I Segers                   | Dr C Oosthuizen<br>L Hattingh<br>L van den Berg<br>Bongani Sibanda<br>Alan Kockott<br>Bandula Kendaragama |
| K   | Committee on integrated operation of hydropower stations and reservoirs                               | 2011-2015              | L Furstenburg <sup>4</sup> | Janus Basson<br>John Sawyer   |
| L   | Committee on Tailings Dams  | 2011-2014              | Duncan Grant-Stuart        | Working Group being formed on 21.11.2012  |
| M   | Committee on Operation, Maintenance and Rehabilitation of Dams  | 2012-2015 <sup>1</sup> | PD Pyke                    | L Moloi<br>Rep of Umgeni Water  |
| O   | Committee on the Register of Dams & Documentation   | 2011-2014              | Mr Bertrand Collet         | Leo vd Berg from the Dam Safety Office (DSO).   |
| Q   | Committee on Dams for Hydroelectric Energy  | 2007-2012              | L Furstenburg              | Janus Basson<br>John Sawyer   |
| Z   | Ad Hoc Committee on Capacity Building   | 2012-2015              | [K Wall] <sup>2</sup>      |   |

Representation cannot be changed in the case of an **ad hoc committee**. SANCOLD Working Group members make inputs into the ICOLD Committee via the SANCOLD Representative.

1. Reappointed Committee to complete the work of the previous Committee.
2. Corresponding Member
3. SANCOLD MC to ratify
4. SANCOLD applying for membership. Approval by GA in 2013.

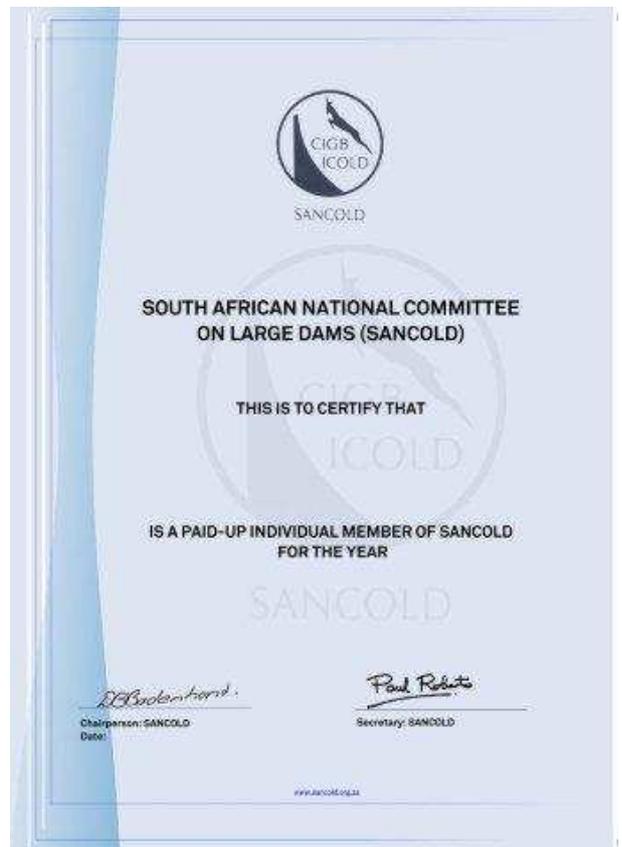
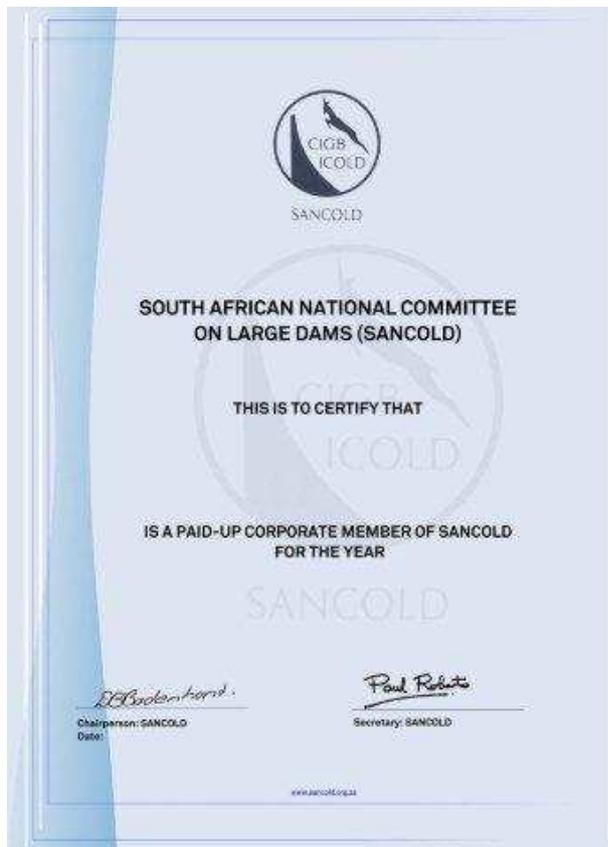
### SANCOLD Membership Fees 2013 and Membership Certificates

The membership fees for 2013 are as follows:

- Corporate Membership R3 500.00;
- Individual Membership R350.00.

The invoices for the Corporate Members have been sent out and I am in the process of sending the invoices out for the Individual Members. Please pay your account before the **end of January 2013**. Prompt payment will greatly reduce the Secretariat's administrative burden in following up outstanding payments. Please inform the SANCOLD Secretary of any changes in your contact details. Recently there have been a number of organisational changes which have impacted on e-mail addresses.

SANCOLD has instituted an innovation for next year. An electronic membership certificate for the year will be sent to you once payment has been received. A number of requests have been received for SANCOLD membership certification for instance for tenders or consulting proposals. Examples of the new certificate are given below. The name of the Corporate or Individual Member will be in a prominent font on the certificate.



### Short Course: Environmental Water Quality Modelling

The Department of Civil Engineering, University of Stellenbosch is presenting this course from 11 to 13 February 2013. Contact [merentia@sun.ac.za](mailto:merentia@sun.ac.za)

### SANCOLD and ANCOLD

I have just received this e-mail from SANCOLD Member Marius Jonker:

*ANCOLD (Australian National Committee on Large Dams) recently celebrated its 75th anniversary at its annual conference held in Perth during the last week of October. The conference was attended by more than 300 delegates from 12 countries. As part of the conference, there was a one-day workshop on outlet works, which formed part of ANCOLD's initiative to develop new guidelines on dam outlet works.*

*As convenor of the working group that is drafting these guidelines, I suggested to the organising committee of the workshop that they invite Wally Kohlmeyer (Water Affairs) as member of the international panel of guest speakers, to share his knowledge on the South African experience in dams' outlet works. We thus had the privilege of having Wally as invited speaker, sharing the stage with Dr Andy Hughes (UK) and Don Read (USBR). Wally's presentation was very relevant and well received, and there was a lot of interest and questions for him over the next 2 days of the technical conference, which he also attended.*

*Besides Wally, Walter Ramokopa (Water Affairs) and Peter Bliersch (Aurecon) from South Africa also attended the conference – i.e. we were 4 SANCOLD members (that I know of) at the conference. The South African contingent was welcomed by another 11 ANCOLD members attending the conference who are former South African and Zimbabwean dam engineers now living in Australia.*

*I thought it is worth sharing Wally's visit and involvement at the conference with SANCOLD as this is the reason why I decided to be a member also of SANCOLD, i.e. to share our knowledge and experience with dams. I suppose I now have to put my money where my mouth is and come to the next SANCOLD conference to share a bit of my experience from Australia!*

## **SANCOLD Scholarship-Holder Report**

The SANCOLD Scholarship for post-graduate studies in a field of dam engineering was awarded to Guy Robertson for 2012 and 2013. I received the report below in August on his progress and activities and I thought that it would be of interest to SANCOLD Members. The next SANCOLD Scholarship will be advertised later in 2013 for award in 2014 and possibly 2015.



**Guy Robertson**

*I did enjoy reading the SANCOLD News regarding the recent conference in Pietermaritzburg and was sorry to not have been able to be there myself. I will definitely try get to Spring Grove Dam in December when I am home to see the construction in progress.*

*Since it is (near) the beginning of the new semester I thought you might like to have an update on my progress thus far. I will give you a quick break down of the sections that are either in progress at the moment or have been completed including literature review, model design, physical model, numerical model and general master's requirements and courses.*

*Literature Review - The literature review is on-going but at this stage I have compiled summaries of all my resources (to date) which I will be organising and typing into report format over the next while.*

*Model Design - I have completed the design of the model, which is integral to the project.*

*Physical Model - A scale of 1:20 has been used for the physical model and drawings submitted. The model is currently under construction.*

*Numerical Model - I attended a course at the end of June on the use of ANSYS Fluent which I will be using for the computer modelling portion of the thesis. Currently I have just started the initial stages of mesh construction for the model.*

*General Master's and Courses - On the general front it appears as though my work for Prof Basson and the University is coming to an end as I will be submitting a report for the project I have been working on later today. As far as courses go I have one more to attend in order to meet requirements, however, I was recently accepted as an exchange student to do two courses in the Netherlands at Delft University. This will mean I will be in the Netherlands for a little over two months and will be fortunate enough to gain from the experience as well as their expertise in water engineering in general. The courses I will be doing are "Hydrology of Catchments" and "Water Management".*

*Future Planning - Completion of my final Master's Thesis, and thus of my studies, should occur in June 2013 according to my current planning schedule.*

## **SANCOLD Publications**

Mention was made in SANCOLD News of the publications that SANCOLD is preparing. The SANCOLD Management Committee considered that we should provide the membership with regular progress reports and indications of where members can be involved. The Progress Reports for the four publications are given below:

### Flood Studies

The WRC research project undertaken by Prof Fanie van Vuuren and his team from the University of Pretoria to review the status and to determine the requirements for overhauling the Flood determination Methods in South Africa is nearing completion.

- A workshop to discuss the content of the draft report and to identify research needs was held on 16 May 2012. Some 30 practitioners were invited by SANCOLD to participate in the event. Twenty-two persons representing, SANCOLD, Consultants, Universities, DWA and WRC attended. In addition two other practitioners sent in their written comments on the draft report.
- There was general agreement that the time for overhauling the flood determination methods is overdue. Stacks of data have become available since the methods in use had been formulated using data available at the time. New approaches have also become available that need to be assessed. Concern was expressed at the Workshop at the dwindling number of stream flow gauging stations and rainfall stations and this will be followed up with the appropriate authorities.
- Potential research projects were identified and provisional priorities were given for each topic.
- Subsequent to the workshop the research team have revised the document and produced a Draft Final Report. This report was posted on the website and the list of 30 practitioners previously invited to the workshop, were requested to again review the draft and forward comments. At least four individuals responded.
- The final document of the Team is awaited. Once received the WRC and SANCOLD will apply their final quality controls before releasing the report. This will probably be early in 2013.

The way forward has been decided. The following aspects are relevant:

- The research needs have been divided into four groups ie. rainfall frequency, flood frequency, hydrograph analysis and urban issues. At the centre of all of this attention needs to be given to database, publication, GIS and software.
- It appears that there is a greater requirement for research than could be handled by the existing research units across the country.
- The research work will have to be coordinated. This could be done by identifying the content of a National Flood Studies Programme (NSFP)
- If normal procedures of allocating funds for research to be done by the WRC are to be followed then funds would only become available for the 2014/5 Financial Year. There may be an option available by approaching DWA to persuade the WRC for a late allocation of funds on the basis of research considered as URGENT.
- A SANCOLD delegation will discuss the implementation of the proposed NFSP with the senior management of DWA and WRC.

SANCOLD Member Willie Croucamp is steering the initiative on behalf of SANCOLD.



**Willie Croucamp**

### Guideline on Risk Analysis

No significant progress has been achieved due to lack of funding. SANCOLD will appoint a “champion” for this initiative in the New Year.

### Guideline on Geofabrics for Dams

Kelvin Legge is leading the initiative and recently reported on the feedback received from the ICOLD Committee in Kyoto which suggested that all geotextile applications should be covered. The SANCOLD MC agreed that the SANCOLD Guideline would only deal with filtration and separation and that the title of the Guideline would be *Geotextiles as filters in embankment dams*. The target date for the Guideline is December 2013. Prof Fannin of the University of British Columbia and local experts would act as SANCOLD reviewers.



**Kelvin Legge**

### Publication on *Your Dam*

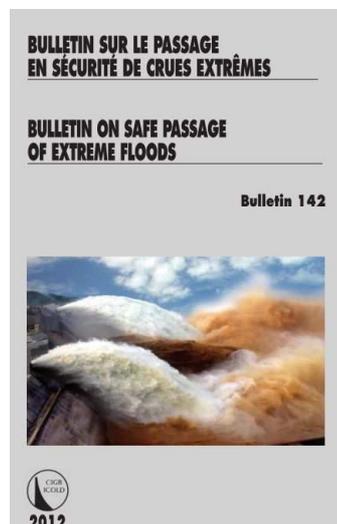
Kelvin Legge is leading the initiative and has involved the participation of a number of persons. The intention was to make use of current IT technology and make it more interactive. The publication holds marketing potential for SANCOLD and this will be pursued. The target date for the publication is mid-2013.

### **ICOLD Publications and Website**

ICOLD took a decision in 2009 regarding easier (and cheaper) dissemination of its publications. This will be done via the revamped ICOLD website ([www.icold-ciqb.net](http://www.icold-ciqb.net)). A password has been issued to each National Committee which allows access to the Members' Section on the website and also for free downloading of ICOLD Bulletins (reports). Any SANCOLD member who requires this access must apply to the SANCOLD Secretary for the password.

### **ICOLD issues a new Bulletin on safe passage of extreme floods**

This publication has recently been release by ICOLD. SANCOLD Members can download a free electronic version via the ICOLD website. Bulletin 142 is also available in hardcopy form at a price of 60 Euros per copy via SANCOLD. The publication is 192 pages long, bilingual English/French, in 9 chapters.



**ICOLD Bulletin 142**

Extreme floods are regularly making news headlines and again recently in Nigeria or India. As the main professional organization on dams, ICOLD is of course very concerned about the implications of floods for dams' security. The last technical bulletin just published by ICOLD is deals with the safe passage of extreme floods.

The following subjects are addressed in this Bulletin:

- Confidence Level Assessment of Design Flood Estimates;
- Strategy for planning spillway arrangements with emphasis of floods exceeding design flood;
- Project facilities means to deal with floods in excess of design flood;
- Operational procedures and flood warning system;
- Case studies: some experiences on safe passage of extreme flood in China, Canada and Brazil.

The adequate management of floods is of fundamental importance either for dam safety and for the security these dams should provide. According to statistical overviews (ICOLD, 1995 and 2003), in recent times flood events have been the main natural hazard responsible for human and economic losses and one of the main reasons for dam failures. This is particularly true for small dams with heights 30 meters or less.

### **African Regional Club (ARC) of ICOLD**

The African Regional Club arranged for sponsored visits to China to attend a Workshop and to visit dams. SANCOLD Member Ms Ronqiu Cai of the Department of Water Affairs was fortunate in being selected and submitted the following interesting Report:

The "World Declaration Water Storage for Sustainable Development", initiated by the ICOLD and joined by ICID, IHA and IWRA, was launched during ICOLD 24<sup>th</sup> Congress in 2012 in Kyoto, Japan. As one of national committees, the Chinese National Committee on Large Dams (CHINCOLD) wanted to contribute to promoting the World Declaration and help African countries in water resources and hydropower development. The CHINCOLD Workshop and Technical Tour have served exactly such a purpose.

The nine African delegates of ICOLD from Ethiopia, Ghana, Kenya, Libya, Mozambique, Burkina Faso, Nigeria and South Africa attended the CHINCOLD workshop and technical tour. Ms R Cai, Chief Engineer in the Civil Engineering from the Department of Water Affairs has been recommended by SANCOLD and selected by CHINCOLD to represent the South Africa for the workshop; Ms K Khomo, Candidate Engineer was requested by the DWA Management to attend as capacity building purpose.

This workshop was combined with the 2012 CHINCOLD Congress held in Chengdu, China on 11-12 October 2012. Lectures, project visits and discussions with Chinese experts from government departments, investors, designers, contractors, etc. in the field of water resources and hydropower development were arranged for African delegates.

The 2012 CHINCOLD workshop focused strongly on the needs, priorities and plans of the developing countries. The theme of the workshop was "*Sustainable Development of Dams and Hydropower*" A Round Table meeting with the African delegates was held on the 12th of October 2012 to introduce current situations of dam construction and hydropower development and also future needs in African countries. Papers were presented by all members of the African delegates. Two Chinese companies also presented papers highlighting their capabilities of Dam Engineering and Sedimentation Engineering. During the meeting, presentations and discussions were carried out regarding the status of dams and hydropower in Africa and the intent for future cooperation. The meeting provided a platform for cross-border communication, through which mutual understanding and cooperation would be enhanced between African delegates and Chinese Professionals in water sector.

Ms R Cai was selected as one of seven African delegates for the workshop and offered an opportunity of making a presentation on "*Water Resource and Hydropower Development in South Africa*" in the round table session on Sustainable Development of Dams and Hydropower. The presentation gave an introduction of South Africa Water Resources development status and

perspective and future challenges and highlighted the current dam engineering skill shortages experienced in the country and addressed the needs for the capacity building, research and information exchange. The presentation is summarised as follows:

*South Africa is a semi-arid country and rainfall and runoff highly varied in terms of geographical and seasonal distribution. World Annual Average water resource per capita is 7 340 m<sup>3</sup> and South Africa is only 1 158 m<sup>3</sup>. In world terms, SA is water scarce now changed to a water stressed country.*

*SA water resources are highly developed in terms of dams and transfers schemes. There are 4 755 dams registered at the Dam Safety Office in 2012 and 4 475 dams classified according to size and risk potential to human and resource and economic. In the past the focus was mainly on the development of new resources; Focus of the National Water Resource Strategy is now on efficiency, beneficial use and sustainability. The DWA is in the process to develop the strategy for promoting of small hydropower water and infrastructure use and also authorizations procedures and legal requirements in terms of water use licenses and dam safety licenses. Because of South Africa's limited water resources and erratic rainfall, it is not feasible to make greater use of hydropower. The DWA is responsible for the country's water resources. Hydroelectric and pumped storage schemes operate in conjunction with water transfer projects.*

*The area for the cooperation between the two countries is guided by the signed MoU which was renewed last year for a further 5-year period. The implementation Plan agreed to with the Ministry of Water Resources in China for next two years focus on ground water management and capacity building. With regards to Infrastructure Development; we are more closely working through the Forum on China-Africa Cooperation (FOCAC) – which looks at AU, SADC etc. Projects, for e.g. the North South Corridor that our President is championing etc. A mandate will have to be sought from the Minister if we would start negotiations on water infrastructure.*



***African Delegates after the Round Table Meeting***

The presentation drew a lot of attention from the Chinese professionals in water sector involved in the session and further discussion and information were requested by the Hydro China Chengdu Engineering Corporation and Water resources Information System Solutions and products.

#### Knowledge and Information Sharing During the 3rd CHINCOLD Workshop

China is currently in her golden age of water resource and hydropower development; there are about 14 Dams higher than 200 meters constructed and under construction; there are also some dams higher than 300 meters under design stage. A large group of high dams and large reservoirs are under construction and to be constructed in Southwest China, with both engineering scale and technical difficulty at the forefront of the world. It is urgent to conduct key technical research on dam safety and risk management. With over 50 years practice in dam construction, China has rich successful experience in hydropower development; 100-meter-high dams, 200-meter-high dams and even 300-meter-high dams have been constructed gradually, and dam construction has played

an important role in the process of China's economic and social development. By the end of 2008, there are over 80 000 large and small dams in China, in which 5 340 dams completed or under construction are higher than 30m. China is facing challenging issues related to safety and rehabilitation of old dams. Along with the development of water resources and hydropower considering global climate change and urbanization, there is still a long way to go for dam construction and management in China.

Higher quality design and construction, construction speed and dam safety aspects are all prominent internationally. Great achievements have been made on high arch dam design, RCC dam design and construction technology and high CFRF dam design and construction over last decade and played a leading role internationally. Many large dams experienced the 1998 extreme floods and the 2008 Wenchuan Earthquake and remain sound and well-conditioned. These milestone projects are representative of the main achievements in RCC and rockfill dam construction until now, and it is also the basis for the construction of new dams. The experience of these successful projects can be used as a valuable reference for the future development of dams of these types.

In the water resources information system solutions and products, China has also fast track developed great extend; many universities, research institutes are actively involved in the fundamental research and innovative technology on the products and system design.

Ms Cai attended various technical programs, sessions on Risk Analysis, Rehabilitation, Safe Operation of Dams and Reservoirs and Dam Safety Monitoring and plenary session. There are a few highlights which impressed the most are:

- Dam Safety Development, including: Climate impact, and System approach including Risk Assessment and Risk Management;
- Dam Safety Monitoring System Solution: The system is designed for real-time monitoring and management of dams. Through collection, analysis, processing and query of monitoring data, it will realize the real-time control of dam operating conditions and it can detect anomalies and take measures. In China, many important HPP dams were developed the real time monitoring system to undertake dam safety inspection and management;
- Environment-friendly Technologies for Dam construction, Long-term Operation and Maintenance of Dams, Dam Rehabilitation and Upgrade;
- Effective utilization of existing dams, including: Rehabilitation and refurbishment, Modification of Reservoir functions and Expansion of Reservoir functions;
- Physical modelling research about Hydrodynamics and morphological changes around hydraulic structures - Research on sediment in hydro project has played an important role in producing project benefits and guaranteeing project safety. Sediment model test of hydro-project is an important studying method for solving sedimentation problems in hydro-junctions.

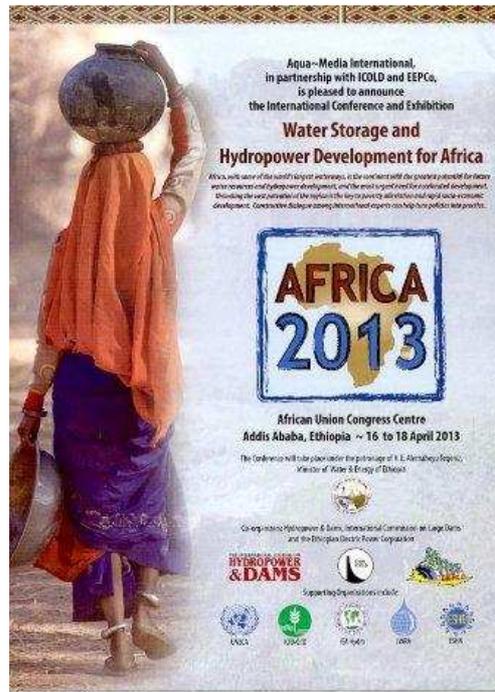
#### Technical Tour and Professional Networking

After the workshop, the technical and social tours were arranged for the African Delegates. The President of the United States Society on Dams also participated in the activities of the African Delegates. The technical tours to Xiangjiaba Dam, Zipingpu CFRD and Dujiang Weir were arranged. Social activities were also arranged to Chengdu Panda Research Base, Bamboo Forest and the Qing Cheng Mountain. Four days of travelling together has offered a unique opportunity to build a strong bond for the professional networking among the African members, Chinese and American professionals.

As the SANCOLD is a major role player in the civil engineering profession in South Africa, especially in all water engineering related aspects, it is essential to maintain professional contacts and collaboration with other organisations worldwide. The CHINCOLD workshop and technical tour has fulfilled this objective and made it possible to set up links that would be useful in enhancing and maintaining our own professional profile. Ronqiu Cai states that she has greatly benefited from these interactions and appropriately presented South African professional profile at this gathering.

## Africa 2013

The African Regional Club is also sponsoring Young Engineers to this event. It is hoped that several SANCOLD Members, young and old, will be able to attend and participate in this event. Contact the SANCOLD Secretary for further information or [www.hydropower-dams.com](http://www.hydropower-dams.com).



With kind regards and I look forward to comments on this SANCOLD News and SANCOLD's activities.



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