

# BUILDING ON THE LEGACY AS THE FUTURE UNFOLDS...

## An integrated approach on Dam Safety Management



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*The past teaches us a lesson, the present helps us in our decisions and the future helps us dream and aspire!*

*Spain, a country with one of the world's oldest cultures and rich heritage, has influenced the world in many ways. Mr.,..... brings forth how water governance system in Spain is the result of continuous effort of 2,000 years right from the time of the Romans. He sheds light on the fact how lessons learnt from history and invoking the social consciousness has accorded Spain an enviable reference point status worldwide in terms of Dam Safety Management. He shares his optimistic view on the implementation, success and future goals of the ambitious DRIP initiative by the Government of India.*

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Water Digest (WD): 1. Dr. Ignacio, you have an exceptional work experience of over 25 years in the area of Dam safety, across the globe. Please share the important milestones of your journey so far, with our readers?

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Dr. Ignacio Escuder-Bueno (IEB): My journey started in the middle nineties, when I was close to attaining my Civil Engineering degree in Valencia, Spain, and I got an offer from the University of Wisconsin to travel overseas for a Teaching Assistant appointment.

That was the "ignition" point. I had the opportunity to complete my Master's Degree in the USA, and my dissertation was based on an in-depth review of dam safety protocols in the USA, including its practical implementation.

When I returned to Spain in 1996, in that very year the government passed a new legislation on dam safety that stimulated the whole sector, from private firms to universities and research centers, and I was fortunate to be there at that exact opportune moment.

In the second half of the nineties I completed my PhD, acquired a tenured professorship position at the Polytechnical University of Valencia and also became actively involved in consultancy and technical committees within SPANCOLD and ICOLD.

The rest is a 20 years long journey. Today, I am the President of the Spanish National Committee on Large Dams, founding partner (together with my University) of a company named iPresas devoted to developing dam safety and flood risk analyses concepts and practices in the entire world. I am also contributing to multilateral organisations (such as World Bank or the Inter-American Development Bank) in developing and applying disaster risk policies. Additionally, I am serving as a member of the latest review panel for the US Army Corps of Engineers (USACE) dam safety program.

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WD: Based on your association with the Technical Committee of International Commission on Large Dams, SPANCOLD, US Army Corps of Engineers

### **etc, what is your analysis regarding dam safety protocols in various countries, and India's position vis-à-vis other countries?**

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**IEB:** I now have a very broad and at the same time pragmatic view of how dam safety protocols eventuate, both on paper and in reality, in many different places. In today's world, with our unprecedented capabilities to cooperate and share information and knowledge, everything evolves very rapidly.

Whatever may have taken decades in other countries or continents (i.e. the dam safety programs in USA and Spain, which started in the late seventies and early eighties) is now achievable in a relatively shorter number of years. Furthermore, you can learn from other's experiences and build not only faster but also better.

In my view, that is how India's dam safety position needs to be analyzed. The progress during this decade has been enormous in terms of enhancing capabilities and institutional strengthening, and the challenge now is not only emulating other countries but also surpassing their standards. In that sense, the coming 5-10 years are the most important to capitalize on all the ground work done already.

To summarise, Indian dam safety program should be able to provide in the coming years, not only success cases of major rehabilitation projects but also rational and prioritized investment efforts in diagnosis of problems, improved operation and maintenance of dam infrastructures, and effective emergency management.

### **WD: Spain is known to have more than 1200 large dams, the highest number of dams in Europe. How do you rate dam safety management of Spain in the global context?**

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**IEB:** I think Spain is a very unique example in terms of dam safety management due to a number of historical and practical factors.

Firstly, it is worth a mention that the modern Spain would not exist as we know it without the services provided by its large portfolio of dams. Its imperative to bear in mind that natural regulation (the amount of the total volume of water that is possible to use) in Spain would not reach even 10% of the total water resources (while in Central and Northern Europe it is over 40%). Our dams have raised that percentage to almost 50% making us the country we are today.

Secondly, our water governance system is the result of 2,000 years of effort (the Romans had built some dams that are still in operation), and it relies on management at a basin level. That enables integrated approach on water resources management, dam safety practices and flood protection policies that are consistently combined and regulated.

Last but not least, Tous Dam failure in 1982 created the necessary social conscience on the importance of the matter and created a new culture of safety, that later translated into modern legislation (1996 and 2008), and a number of procedures and guidelines (such as SPANCOLD Dam Safety Guidelines) that are now worldwide references. Simultaneously, impressive efforts in comprehensive dam safety activities (such as site investigations, monitoring, safety assessments, new operating rules, emergency action plans, major rehabilitations, risk informed governance schemes, etc.) were made possible.

### **WD: Having authored a number of papers and guidelines based on your rich experience in "Risk Assessment and Dam Safety Portfolio" ,please outline the processes that India needs to put in place.**

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**IEB:** Heading straight to the point, India requires risk practices to manage two different needs: new studies (knowledge) and safety upgrades (works). In fact, the key factor for a successful application of portfolio risk management in India would be how to properly balance both queues, so that investment decisions are made on the basis of reasonable information.

In a nutshell, the challenge is to reach a mature dam safety risk informed program faster than anyone else before, without scarifying robustness. I am convinced that it is possible due to a number of factors that make India unique.

Among these factors, India is in a privileged position given the fact that the country is currently building a very significant number of dams, so that the expertise in design and construction is present and available currently to be used in the framework of dam safety (other countries had already lost those capabilities when they started to build their dam safety programs).

Another very important factor is the quality of the higher education system in the country and the amount of young engineers willing to learn from their more experienced peers. That energy must be properly channelized.

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**WD: Since you have been part of this project for a short while, how do you envisage the success of the DRIP initiative by the government of India?**

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**IEB:** I think DRIP is a very well conceived program, as it combines institutional strengthening, knowledge gathering, implementing best dam safety practices and investing in urgent rehabilitation projects.

The success will be measured not only in terms of concrete achievements, but in terms of how profound a change can be effectuated in the dam safety culture of the country. Furthermore, the fact that there is a consensus on the need of moving towards a second phase of DRIP, with more focus on diagnosis and prioritization and making use of the already developed capabilities, may provide a visualization of what I call success.

Having said that, self complacency needs to be avoided. There is no reason for India not aiming at a leading role in dam safety and it is in the hands of the government officers, dam owners, contractors, consultants, professors, and all involved personnel to accomplish that. In my view, this should be the goal of the second phase of DRIP.

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**WD: What are your thoughts on the Dam Safety Program of India?**

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**IEB:** After all, we cannot forget that DRIP deals only with a “sample” of the more than 5,000 Indian dams. According to me, the key issue to construct a rational and efficient dam safety program will pivot on how the lessons learnt and the capabilities developed under DRIP are made available nation wide. Also, the government of India needs to explore the possibility of enacting official regulation to strengthen the Dam Safety Program in India as it is one of the important pillars of dam safety management.

Also, it includes how the States implement it in their whole portfolio and also on how they exchange experiences and cooperate with other States and the central government to pursue a sound national program.

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**WD: Would you like to give any message for the readers of Water Digest?**

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**IEB:** Yes, a very important message. All these efforts will not be sustained in time unless the population in general understands and appreciates them. In this sense, transparency from the authorities side and collaboration with mass media become critical to provide the required and accurate information to the citizens for them to play an active role in making India a better and a safer country.

