Topics

Initiatives for knowledge succession in dam engineering

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1. Present state and problems with the knowledge succession in dam engineering

Dam engineering has been developed and succeeded by constructing many dams in Japan. A "knowledge cycle" has been established as follows;

① Various technical standards and know-how possessed by dam engineers have been applied to the construction of dams.
② New knowledge has been learned.
③ Further research and development has been conducted based on this knowledge.
④ At the same time, many experts with this knowledge have appeared one after another.
⑤ Advanced knowledge has been applied to later dam construction through improved technical standards and by experts.

In recent years, technical information and human resources which support this "knowledge cycle" have shrunk and become regionally unbalanced due to a decline of dam construction sites.

On the other hand, there has been a gradual increase in dam alteration projects such as constructing additional large outlets to use the existing dams and reservoirs more effectively. We are forced to carry out design and execution under harsher condition than any previously experienced.

We have to continue challenging such new subjects to make dams safer, more economical and more efficient. For this reason, we need to ensure a requisite "knowledge cycle" for knowledge succession in dam engineering.

Therefore we have studied knowledge management methods to share technical information between regional blocks throughout Japan and permit future generations to succeed to this information.

In 2011, we have, jointly with the Water and Disaster Management Bureau and nationwide regional development bureaus of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), and the Public Works Research Institute (PWRI), begun initiatives to do so.

2. Specific methods

(1) Sharing information through dam engineering study meetings

We organized a dam engineering study meeting (administrator: River Department of the NILIM) which included dam engineers in the Water and Disaster Management Bureau, nationwide regional development bureaus, the PWRI and the NILIM so we could share the results of each activity for knowledge succession. We also created opportunities for dam engineers in nationwide regional development bureaus to study skills and exchange opinions on dam construction sites in various regions (Photo 1).

Furthermore, we built a data base to pigeonhole the contents of technical guidance by experts and preserve them because they will be very important to revise technical standards and have in many cases, been forgotten over time.

(2) Technical guidance by dam engineering advisors

It is also necessary that technical guidance be given smoothly by experts in the future. Therefore the River Department of the NILIM will centrally appoint persons with rich experience and technical guidance achievements as "dam engineering advisors" to provide advice concerning the selection of appropriate persons according to the needs of construction offices.

Photo 1. Technical Committee on Tsuruda Dam Redevelopment Project
Thirty-one dam engineers from regional development bureaus throughout Japan attended
(November 17, 2011)