AI (Artificial Intelligence) and Big Data Using for Groundwater Management

Pobporn Settapruksa[1]

[1] Bureau of Groundwater Resource Regional 1, Department of Groundwater Resources (DGR).

Corresponding Author(s): settapruksa@gmail.com

The Department of Groundwater Resources (DGR) has created many projects, such as the groundwater development for a community project, the groundwater development in large scale with the piping system for sending water to drought area which has low potential of groundwater project, groundwater development project for solar-based agriculture. Each project has differences in water use objectives (for consumption or agricultural purposes), characteristics of beneficial areas (community, residential or agricultural areas), capacity of water tanks (depending on the project model and amount of water demand). The height of the tank tower (depending on the project model and the distance of the water consumption) and the water distribution system will vary according to the purpose of the project. The problem is how to put the suitable project for people in each area. Although DGR has many criteria for making decision, but that stills not enough. Another problem is about the tracking system, how to follow up the project after it has finished.

Using big data and the AI operating system to operate the DGR projects can solve those problems. The Big Data composes of groundwater potential of each area (groundwater supply), location of the old groundwater wells, the location of the old project of DGR, groundwater demand, land use, surface water, populations and others. An AI operating system is used for choosing the suitable project that can meet all demand by using fuzzy logic. Using AI in conjunction with big data to operate the groundwater development projects for the public has started from area selection for making a choice of a suitable project model, monitor performance, and set the tracking system for evaluating the project after it is delivered to a local government or water users. That allows the selection of groundwater resource areas and project models to meet all the participation criteria and meet the needs of the people, reduce the risk of external factors that may influence the making decisions for planning. The questions of all stakeholders about the selection of the project area can be clearly answered. It is used as a monitoring system, evaluating the project to quickly identify problems and solve them. As a result, the management of groundwater resources in the spatial is effective. The public is served thoroughly and fairly.

Keywords: Groundwater development, Groundwater management, Water supply