

“Research and study on fish passage for improvement of fish migration at cross-river barrier in Thai basin”

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Abstract

Inland fisheries resources in the Southeast Asian Region especially in THAI Basin is important source to deliver food security and income for rural households and also to serve as valuable source of protein. However, inland fisheries are becoming increasingly threatened by riverine development projects. Construction of cross-river obstacles such as dams, weirs, roads, etc. as means as rapid development in response to increasing population and demand for agriculture products, changes in migration of fish. Appropriate mitigation measures to alleviate possible impacts from barrier for migration of fish are therefore necessary.

Fish migrations are undertaken major reasons including spawning, feed and seeking refuge. These migrations are also essential to ensure the dispersal of species and maintain genetic fitness within fish communities. Fish Passages, also as known as fish ladders or fish passage, are structures placed on or around constructed barriers (such as dams or weirs) to give fishes the opportunity to migrate.

Fish passages have been constructed worldwide and have proved to help migration many fishes globally. Nevertheless, in order to assure the effectiveness of the fish passage, it is important that fish passage design criteria are established for local species and conditions of the specific region, and should not adapted from studies to conduct elsewhere.

Each weir or dam on a river that is targeted for Fish Passage construction represents a unique situation. There are many aspects that need to be considered within the design of a Fish Passage, the species diversity and size of the migrating fish community varies from site to site. Fish Passages are designed to cater for the physical characteristics and swimming abilities of the prevailing fish community. Typically, the smaller species of fish are weaker

swimmers and are unable to negotiate the faster flows in a Fish Passage that larger fish can. The hydraulic conditions within a Fish Passage need to provide both enough depth for large fish whilst ensuring the velocity is suitable for smaller fish.

Considerations were raised on specific requirements of different species and stages of fish that should be taken into consideration in designing, construction and operation of fish passage. On the several types and designs both of Close to nature type fish passes and Technical fish passes these types could have advantages and disadvantages over different circumstances, it was noted that particular attention should be given on position of the entrance; while the design of Fish Passage needs to also take into consideration both biological and hydrological aspects in order to provide free passage of fish up- and downstream. In addition, the specificity of habitats and typical cross-river obstacles in the region, having big differences between upstream and downstream water levels, as well as between rainy and dry seasons, should be carefully considered in designing of fish passage.

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