Introduction to SEAT Work Package 4 –
Environmental Modelling

A major aspect in ensuring sustainable and ethical aquaculture production is to ensure that aquatic food is produced within the capacity of the environment to sustain it while not itself damaging the environment. One approach of assessing this is to take lots of water and soil samples from the environment and to analyse them for various chemical and biological features. However, this is very time consuming and expensive, and often only of limited use for very specific locations. Another, and very efficient approach, is to use the data collected from these analyses and to build computer-based environmental models which predict the quality of the environment used for aquaculture and what is happening to it due to aquaculture. Different sorts of models can be used for this; ones that look at the changing environment in a location over time (dynamic models) and those looking at movement of change with distance (spatial models).

The WP4 within the SEAT project will use specially developed environmental models to predict environmental inputs and change to and from aquaculture in the particular locations in China, Vietnam, Thailand and Bangladesh selected from the initial scoping study (WP2). These models will interact with several other work packages within SEAT, taking data from the scoping study (WP2) and feeding outcomes into chemical risk assessments (WP7), life cycle analyses (WP3) and further developed for wider use through action research (WP9).

Dynamic and spatial models developed within WP4 will use modelling development software, such as PowerSim, for local and integrated dynamic models and IDRISI geographic information system software (GIS) for large-scale spatial models. Outcomes and tools developed from the models will be made available online for further use within decision support for sustainable aquaculture development in south-east Asia.