

Abstract

In the reconstruction process after a natural disaster, the treatment of disaster waste is indispensable for the rapid rebuilding of people's livelihood. Many municipalities have emphasized waste management in their disaster countermeasure planning, and some have already formulated waste management plans in advance. However, various problems arise in transportation and processing at disaster-damaged areas, temporary storage locations, and disposal facilities in actual disasters. Even those municipalities with formulated plans also find that their waste treatment does not proceed as expected in the real situation. Therefore, the existing disaster waste management systems and plans need to be continuously improved and updated. In order to realize it, it is expected that a simulation model that takes into account the detailed decision-making, behaviors, and scenarios before and during an actual disaster, for example, to what extent temporary storage locations, disposal facilities and means of transportation should be prepared in advance and work in case of the disaster, how they should be operated on-site, and which route vehicles should take, will be an effective option to provide guidelines. Agent-Based Modelling is an appropriate match for this scenario, and models are developed to represent the flow of disaster waste treatment. Applying the model to actual cities such as Hitoyoshi City in Kumamoto Prefecture and Tokyo, we discussed the effectiveness and development of the model and clarified the characteristics of the disaster waste management procedure. The model is expected to be further developed by defining each stakeholder's behavior in more

detail and enriching the variety of behavioral patterns. This model will possibly apply to the actual disaster countermeasure planning.