EVALUATION OF MATERIAL ACCUMULATION OF INFRASTRUCTURES AND ITS APPLICATIONS FOR SUSTAINABLE STOCK-TYPE SOCIETY: EMPIRICAL CASE STUDIES IN JAPAN （社会基盤の資源蓄積量評価と持続可能なストック型社会への適応：日本における実証的研究）

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We have been enjoying mass extraction of construction materials and mass production and it means that we are in the material flow type society. As a result, significant impacts on environment are attained. However, it is time to change our society from material flow type to a sustainable stock type society where effective and efficient utilization of material stock are coupled with high socioeconomic outcomes reducing construction materials as much as we could. This research will discuss about transitions to sustainable stock type society for Japan while promoting more understanding on development of Material Stock Accounting(MSA) and Material Flow Accounting(MFA). In Japan, material flows data have already been calculated by the Ministry of Environment (MOE) for every year but how much exact amount of construction materials accumulated in each type of infrastructure is still uncertain for Japan. In addition, how much materials are added to each infrastructure as gross additions to stock (GAS) and what is the balance between added amount and depleted amount of accumulated materials that is stock depletion (SD) in Japan for each infrastructures, i.e. net additions to stock (NAS) are also unanswered questions. This paper estimated the material accumulation of roadways, road-bridges, road-tunnels, railways, buildings and sewer networks in Japan from 1970 to 2005 and also the GAS, NAS and SD for each type of infrastructure. It also evaluated the correlation between material stock of infrastructure and industrial structural change in Japan. Lost material stock of infrastructure due to the Great East Japan Earthquake and Tsunami was calculated by thinking development of MSA (Material Stock Accounting) for the natural disaster affected areas as innovative and useful implications for waste management, disaster prevention, community relocation and infrastructure recovery planning including thoughts of resiliency of long-term sustainable stock type society. The central aim of this research is to assist in policy measures for Japan to move to a sustainable stock type society, by putting effort on development of MAS/MFA for each infrastructure type and helping more understanding on

stocking and utilization of construction materials by analysing with different socio-economic indicators, natural disaster and regional disparity.