

## 論文の内容の要旨

### 論文題目

Revisiting local human-nature relationships to enhance inclusive wellbeing  
(包括的福利の構築に向けた地域レベルの自然と人間の関係の再考)

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*“Revisiting local human-nature relationships to enhance inclusive wellbeing”* consists of six chapters that together examine human-nature relationships within the framework of wealth and wellbeing. The overarching hypothesis is that human-nature relationships are important to human wellbeing, and that these relationships are largely missed by current approaches for capturing wealth. This hypothesis is examined through the two objectives of the dissertation: 1) to examine how the current approach to inclusive wealth captures the contributions of capitals to wellbeing, and 2) to assess whether and how aspects of wealth missed by the conventional approach contribute to subjective wellbeing. Chapter 1 introduces the above objectives and structure of the dissertation. Chapter 2 reviews the state of art on how human-nature relationships contribute to wellbeing and justifies the local-scale focus and selection of the study site. Chapters 3 and 4 empirically address the two objectives introduced above. Chapter 5 concludes, integrating findings from the previous chapters in a summary and recommendations for policy and research toward inclusive wellbeing.

From utility in economics to happiness in Buddhism, human wellbeing has long been a central, societal interest. Chapter 2 reviews literature on the pertinence of the human-nature relationships to wellbeing. While nature’s contribution to human wellbeing is widely accepted and increasingly acknowledged in intergovernmental platforms, discussions of the relationship between humans and nature remain scarce. Further, nature itself has rarely been integrated in wellbeing assessments that successfully inform development. Representatively, the concept of sustainable development combines nature and wellbeing in its ultimate objective of intergenerational wellbeing. However, the means to achieving such development has remained unclear. General consensus that the Gross Domestic Product (GDP) is an ill-fitting indicator of such progress has brought about various “beyond-GDP”

indicators. Yet, few have gained traction for implementation. The Inclusive Wealth Index (IWI) was developed in this context, and is unparalleled in its combined comprehensiveness, theoretical robustness, and cross-temporal relevance. However, its young methodology and simplistic proposition that societal welfare is a sum of natural, human, and manufactured capitals neglects the complexity of human-nature relationships and may benefit from further refinement.

Chapter 2 further suggests that the pertinence of human-nature relationships to wellbeing is best seen at the local scale. It then goes on to introduce the study area: Sado. Sado is an island city in Niigata, western Japan. In addition to the convenience of a jurisdictional boundary with a clear geographical border that concretizes the material cycle, Sado was chosen as an archetypical socio-ecological production landscape. Also known as SATOYAMA, these cultural landscapes are known for intimate and multifaceted human-nature relationships. In Sado's case, the harmonious co-existence of humans and nature embedded in the society led to its designation as a Globally Important Agricultural Heritage Site (GIAHS). At the same time, the island's rapid depopulation and aging has been threatening its future prospects, typical of many rural areas of Japan and other developed countries. Rich, multifaceted human-nature relationships, geographical boundary, and challenges projected across society were considered for the selection of Sado Island for this empirical investigation.

Chapter 3 addresses the first objective of the dissertation through the hypothesis that current approaches to assessing wealth does not aptly capture human-nature relationships at the local scale. The Inclusive Wealth of Sado and Japan between 1990 and 2014 was calculated approximating the methodology used by developers of the IWI. Most data used were publicly available, secondary data, and additional data were acquired from various organizations and institutions where local level data were otherwise unavailable. Modifications were made to improve the accuracy of human capital estimations and according to data availability. Results confirm the hypothesis. Natural capital was disproportionately small relative to human and manufactured capitals: across the study period, natural capital comprised 2% of Sado's inclusive wealth, and 0.6% of Japan's inclusive wealth. Further, natural capital was found to characterize the rural landscape. Sado's per capita wealth was about 10% lower than the national averages, but its natural capital was about threefold national averages. Supplementary estimations of the natural capital of fisheries and cultivated forests indicate that inclusion of additional factors in the evaluation would further increase the relative wealth valuation of rural regions. Preexisting studies suggest that the prominence of natural capital is likely to have positive impacts on residents' wellbeing. Overall results directly reflected the relative size of economic activities and shrinking demographics, confirming the anticipated weakness of the conventional IWI methodology in capturing human-nature relationships.

Chapter 4 addresses the second objective, to examine whether and how aspects of wealth missed by the conventional approach contribute to subjective wellbeing. The chapter focuses on the

subjective realities of Sado's residents with the aim of uncovering how perceptual factors mediate the relationship between nature and wellbeing. The underlying hypothesis is that intangible aspects of natural capital contribute significantly to residents' wellbeing. To this aim, an island-wide questionnaire was conducted to assess individual residents' experiences and perceived realities pertinent to their natural environment and wellbeing. The questionnaire included many Likert-scale items borrowing from preexisting assessments for concepts including subjective wellbeing, place attachment, perceived ecosystem services, conceptual relationship with nature, and social capital. Respondents were randomly selected by the municipal government and their identities undisclosed to the researcher. A hypothetical model of how perceived nature, ecocentric relationships with nature, place attachment, and social capital contribute to subjective wellbeing was constructed based on preexisting studies. Structural equation modeling statistically assessed the hypothesized linkage between perceived nature and subjective wellbeing, contributions of ecocentric relationships with nature to perceived nature, as well as the outcome of adding income to predict subjective wellbeing. Responses to open ended questions in the questionnaire were used to verify and qualify results of the statistical analysis. This chapter confirms the hypothesis that intangible aspects of the human-nature relationship play a significant role in determining the subjective wellbeing of Sado's residents.

Chapter 5 integrates empirical results from the two studies described above: 1) the conventional methodology for assessing inclusive wealth does not capture the multifaceted ways in which human-nature relationships contribute to human wellbeing, and 2) intangible human-nature relationships are important for human wellbeing. The dissertation thus affirms that while the IWI improves upon GDP's focus on transitory, economic performance, it continues to grossly undervalue nature's importance to sustainable development. Governments are urged to place greater weight on the benefits of human-nature relationships and to honor their intangible, yet real, dimensions.