博士論文（要約）

Projected impact of poverty reduction on access to water and sanitation in low- and lower middle-income countries in South Asia, Southeast Asia, and Sub-Saharan Africa: Bayesian projections to 2030

南アジア、東南アジア、サハラ以南アフリカの 低所得国および低中所得国における、貧困削減がもたらす水・衛生アクセスへの効果予測：2030 年までのベイズ予測分布

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論文の内容の要旨

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Objectives: In 2017, 785 million people globally lacked access to basic services of drinking water and 2 billion people lived without basic sanitation services. Most of these people live in low- and lower middle-income countries (LMICs) in South Asia, Southeast Asia and Sub-Saharan Africa. To monitor the progress towards universal access to water and sanitation, this study aimed to predict the coverage of access to basic drinking water supply and sanitation (WSS) services as well as the reduction in the practice of open defecation by 2030 under two assumptions: following the current trends and accelerated poverty reduction.

Methods: Households reporting access to basic WSS services and those practicing open defecation were extracted from 210 nationally representative Demographic Health Surveys and Multiple Cluster Indicator Surveys from 1994 to 2016 comprising of 51 countries. A Bayesian hierarchical regression model was developed to predict the indicators in 2030 at national, urban-rural, and wealth-specific levels. Additionally, a Bayesian regression model with 95% reduction in poverty by 2030 was applied to assess the contribution of poverty reduction on these indicators.

Results: Out of 51 countries, only nine (the Philippines and Vietnam in Southeast Asia; Bangladesh, Bhutan, India, Nepal and Pakistan in South Asia; and Ghana and Togo in Sub-Saharan Africa) were predicted to reach over 90% coverage in access to basic services of drinking water by 2030 while none of the countries were projected to achieve equivalent coverage for access to basic sanitation services. By 2030, 21 countries were projected to achieve the target of less than 10% of households practicing open defecation. The urban-rural and wealth derived disparities in access to basic drinking water services and the practice of open defecation were predicted to be smaller in South Asian and Southeast Asian countries than in Sub-Saharan Africa. However, the disparities in the projections for basic sanitation services were pronounced in all included regions. By accelerating poverty reduction, access to basic sanitation services was projected to improve considerably whereas only moderate improvement was predicted in access to basic drinking water services. The largest improvements in national coverage of basic drinking water (85.0%, 95% credible interval (CrI): 52.4% – 98.4%) and sanitation services (77.6%, 95% CrI: 49.7% – 93.4%) were projected in Madagascar with 29.5 percentage point and 62.2 percentage point increases from the current trends, respectively. Households residing in rural settings were predicted to receive greater benefit from poverty reduction than urban populations in access to both basic WSS services.

Conclusion: Achieving poverty eradication targets has a substantial positive impact on access to basic WSS services. However, many LMICs are still projected to struggle to achieve the goal of universal access to

basic services, particularly in the sanitation sector.

Keywords: water supply and sanitation, inequality in access to WSS, impact of poverty reduction, South Asia, Southeast Asia, Sub-Saharan Africa