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論文審査の要旨及び審査員

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論文審査の要旨（2000 字程度）

The dissertation entitled, “Case Study Assessment of Post-Disaster Green Reconstruction and Energy Policy in the Age of Climate Change,”（**ケーススタディによる気候変動時代における災害後グリーン復興とエネルギー政策の評価**）contains 9 chapters. A brief summary of each chapter and summary follows below.

Chapter 1: Responding to disaster in disaster-prone communities, introduces the terminology used in the thesis, related background on post-disaster renewable energy usage and the case study research approach used to develop an index for assessing green reconstruction. Five natural disaster case studies that occurred in the United States of America (US), Japan and China were analyzed.

Chapter 2: What is green reconstruction?, defines the term green reconstruction as well as identifies the stakeholders involved and issues related to renewal energy incorporation after natural disaster reconstruction. Cooperation among an array of stakeholders from various tiers of government, the private sector, and civil society is required for green growth policies to succeed. Renewable and less carbon intensive energy sources are not only better for the environment in the long-term but also provide for a stronger energy system in the face of a future man-made or natural disaster.

Chapter 3: Green reconstruction and community focused development, explains the benefits to the local community for planning and utilizing green reconstruction after natural disasters using two cases in the US: rural reconstruction following a large tornado in Greensburg, Kansas in 2009 versus urban reconstruction after Hurricane Sandy in New York in 2011.

Chapter 4: Costs and benefits of renewable energy investment, a comparison of renewable and conventional technologies discusses greenhouse gas emissions, renewable energy technology, related costs and US electricity grid and options for embedding renewable energy technology. A new model for prioritizing vulnerabilities and costs associated with climate change and implementation of renewable energy policies weighs economic costs against social costs is discussed, which includes the environmental cost of carbon based fuels and energy generation.

Chapter 5: After Fukushima: a case study in implementing sustainable energy technologies, gives an overview of post-Fukushima issues in Japan related to energy, policy, economics and environment. Energy and green reconstruction policies must focus on the long-term issues. Examining the recovery and reconstruction process following the loss of nuclear electrical power generation from the 2011 Fukushima disaster in Japan highlights weaknesses in national policy. A final hurdle that Japan will continue to address as it rebuilds after the Tohoku 3.11 earthquake/tsunami disaster, are the degree of

preventive measures it will need to take against another potential future disasters.

Chapter 6: Case Study: Katrina, and Northeast Hurricanes Irene and Sandy, covers the various case studies involving US hurricanes that have resulted in post-disaster reconstruction and utilization of renewable energy after reconstruction. In particular, building a more resilient electricity grid system will keep decision-makers and citizens better connected when future disasters occur. Energy and green reconstruction policies must focus on future long-term issues.

Chapter 7: US-Japan energy partnership and clean technology initiatives, discusses issues facing the US-Japan partnership involving energy resulting from the shut-down of nuclear power generating stations. The Tohoku 3.11 disaster strongly impacted economics, security and the US and Japan's energy demand and supply relationship. Therefore, the impact of local disasters can have wide ranging consequences to international relations.

Chapter 8: Looking Forward: China and Green Reconstruction, analyzes the last case in detail and energy usage following post disaster reconstruction after the 2008 Sichuan earthquake, in addition to new developments including eco-cities. China is also experimenting on advanced solar technology, and there is opportunity for the US and Japan to partner with China on cutting edge technologies that can reduce the enormity of each country's carbon footprint.

Chapter 9: Post-disaster green reconstruction index, the final chapter summarizes the previous chapters by proposing a green reconstruction index that consists of four parameters (renewal energy power generation after post-disaster reconstruction, renewal energy government incentives, utility electrical power incentives, and renewal energy incentivized build policy) a five point scale was assigned to each indicator to assess how well post-disaster green reconstruction incorporated renewal energy technology. The advantage of creating a numerical index was that it allowed a relatively straightforward comparison of post-disaster green reconstruction The index was applied to the Tohoku 3.11 earthquake and tsunami as well as Hurricane Sandy post-disaster reconstruction with the former having a score of 3.5 versus 3.0 for the latter. One of the key issues that emerged from this study is that rebuilding varies case by case, and the pace of reconstruction is time dependent, depending upon how well disaster resiliency is incorporated in the rebuilding plan. Since rebuilding is very much case by case and varies depending on the scope of the damage, the index is considered to be a dynamic indicator, which is first applied two years after reconstruction.

Finally, overall conclusions and proposed future work are included in the last section.

Based upon the research summary above, this dissertation on post-disaster green reconstruction fulfills the conditions for conferment of the degree of Doctor of Philosophy (Ph.D.).