



Reconstruction and Transformation of Living Space: Focused on Tsunami Affected Coastal Housing Settlements in Sri Lanka

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Reconstruction and Transformation of Living Space: Focused on Tsunami Affected Coastal

Housing Settlements in Sri Lanka(地域生活空間の再建と変容に関する研究—スリ・ランカの津波災害で被災した沿岸市街地に着目して)

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SUMMARY

Coastal housing in Sri Lanka currently faces a variety of problems related to living environment, including quality and quantity habitability issues and administrative problems in the form of vague government regulations regarding housing construction on the nation's coastline. These problems vary according to the urban or rural areas of the country. Most low income communities are located along the urban coastline due to the livelihood opportunities associated with such areas and the relative ease with which they can sustain themselves using the available resources such as fisheries, tourism and opportunities related to the provision of service labor, etc. About 70% of all such coastal housing is structurally unsound and susceptible to collapse during disasters. Even though government authorities have historically ignored these factors during housing planning, proper consideration is essential for developing reliable housing designs and proper living environments.

In such a situation two thirds of the entire Sri Lankan coastal population was affected by the Sumatra earthquake and tsunami on 26th of December 2004. And two percent of entire housing were totally or partially damaged and that made the necessity of a quick reconstruction processes in the housing sector of Sri Lanka. Most low income communities those who were residing in the coastline squatter camps, which had not taken account to the government housing stock also severely affected by tsunami and became the problem worst.

Such circumstances made a sudden necessity of a mass housing supply for the country. Although such a mass housing reconstruction program was a big challenge to Government of Sri Lanka and other development authorities through the continued aids a quick start of permanent housing reconstruction was possible. As Sri Lanka remains a densely populated country, land pressure is particularly intense in the Coastal Zone. The government and the other authorities happened to start rebuilding on the principle of minimum land use as unused land is at a premium in the coastal zone since rebuilding was the priority.

Several housing reconstruction programs were implemented by the Sri Lankan government with many financial supports to obtain a full recovery for the affected living environments. Simultaneously, buffer-zone (set-back zone) which directs two programs for permanent housing known as home-owner driven housing reconstruction program and donor-built housing resettlement program to repair or rebuild damaged houses were also introduced. Later it could be found many shortcomings in most of those post-disaster reconstruction programs. As most of the reconstruction programs had been missed the order of original community, environmental contexts and livelihood facilities. It is evident such unplanned prompt reconstruction proposals drag the housing and living environment related problems in to future which makes the current housing problems more severe.

Because of that this research had been conducted in the opinion of reconstruction can make not only the rebuild the damaged housing but also a substantial contribution to long-term development in the coastal zone in the country as a whole and correct reconstruction methods and strategies provides the opportunity to rectify many of the mistakes that were made and mitigate the affect of future natural disasters.

The study clarifies the pre-disaster and post-disaster local living environment organizations and domestic spatial arrangements and availability. Implications of resettlement and relocation on changes to domestic spatial arrangements and availability as well as community adaptations to the changing living environment were also investigated through the study. The study introduces different post-disaster housing reconstruction approaches of urban and suburban areas and analyzes and discusses about the advantages and short comings of those. Finally propose some proposals which could be helpful to develop an appropriate post disaster housing reconstruction strategy for the Sri Lankan coast line.

A chronological study method has been used for this research to clearly observe and clarify the existed conditions, transformation and development progresses of each stage of selected coastal living environments. Furthermore in this study the pre and post disaster coastal living environments and domestic spatial arrangements and their transformations due to the post disaster reconstruction processes have been studied in detail. To select the case studies, several observations had been conducted in the western and southern coastal areas. Those selected villages were fully or partially fishers' villages and selected as case studies due to the clear evident of community problems. This is a descriptive and explorative field work study by using six different case studies in Western and Southern coast line which occurred a marked damaged from tsunami by being highest populated provinces of the country. Two of the six fieldwork surveys conducted in the selected fields in Colombo (urban) and Galle (urban and suburban) districts were used for detailed study and to produce layout maps of each stage a.) Pre-tsunami b.) Post-tsunami-shortly after the disaster c.) Post-tsunami-2.5 years after the disaster, which could be helpful to investigate real situation of the affected areas.

Findings reveals that; 1.) Through the post disaster housing reconstruction programs inhabitants of shanty areas would receive guidance for building permanent housing; possibly the first such experience for many and it will help to mitigate the future damages and alleviate problems associated with shanty/squatter settlements along the coastline. 2.) Most of the permanent housing reconstruction projects have been unable to identify the former balance of the original communities, importance of usual living patterns and livelihood, and satisfy the beneficiaries in the new settlements. In many cases reconstruction of the permanent housing have been unable to done in harmony with existing regional or local patterns and quality which creates the conflicts and gap between the inhabitants and new comers. Furthermore, according to the analysis of six case studies, it can be said 50% of the case studies have been unable to satisfy the beneficiaries and provide the adequate requirements. 3.) Necessity of structurally sound housing for other community groups in squatter settlements in the country for the prevention from future natural disaster. According to the observations about 94% of the totally destroyed housing in Colombo and 89% of Galle districts case studies were semi permanent/shanty/squatter camps. 4.) The decrease in floor area and household occupancy of post disaster housing could result in future housing quality problems. 5.) Reduction of buffer zone regulation clearly affects the progress of reconstruction programs and deferring coastal housing and living environment related problems into the future. 6.) There is a wide gap between the quality and quantity of

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permanent housing and the progress of restoration efforts in urban areas compared to suburban areas.

Could be proposed; 1.) The process of housing reconstruction must be driven by the goal of upgrading existing living standard, promotion of better livelihood and ensuring the future security. 2.) The concept of post disaster reconstruction methods should be deal with community based disaster prevention and the main facts to be considered are original community and living environment organization, neighborhood groups and livelihood 3.) Reconstruction programs should be response not only to future tsunami disasters as well as other possible natural disasters through the entire processes 4.) Re-establishment or strengthen of coastal zone management, development laws and related authorities will be a backup for reconstruction process. 5.) Reconstruction programs should be considered the difference of housing measures and resettlement arrangements in between urban and suburban areas or redevelopment plans should consider the differences between areas and community needs.

The next proposals could be help full to develop an appropriate post disaster coastal housing reconstruction strategy for Sri Lanka.

- Proposal 1 - Reconstruct with the awareness of future tsunami disasters and other natural disasters of the region
- Proposal 2 - Retrofit the unaffected housing.
- Proposal 3 - Site selection should be done prior to the livelihoods.
- Proposal 4 - Preserving original local communities and immediate neighborhood at the relocation and resettlement.
- Proposal 5 - Arrange a new settlement in harmony with existing environment.
- Proposal 6 - Promote active participation of beneficiaries for house design projects.
- Proposal 7 - Provision of a selection/choice of house designs for beneficiaries.
- Proposal 8 - Reconstruction should be fairly deal with natural environment.

Finally it could be concluded that, post disaster housing are not only a shelter for the homeless. It should be a home which provides an environmental compatible with the life style, physical need, economy, social and cultural values and hope. Hence post disaster reconstruction projects should be done in a great effort on correct necessities according an appropriate post-disaster reconstruction plan and strategy for the well being with safety and symbiosis and a sustainable development of the regenerated community.

(別紙1)

論文審査の結果の要旨

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論文 題目	Reconstruction and Transformation of Living Space: Focused on Tsunami Affected Coastal Housing Settlement in Sri Lanka 地域生活空間の再建と変容に関する研究 —スリ・ランカの津波災害で被災した沿岸市街地に着目して		
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要 旨			
本研究は2004年12月スマトラ大地震によって引き起こされた大津波によって被災したスリ・ランカ沿岸地域の被災後の再建復興過程に関する研究である。この津波ではスリ・ランカの海岸線の2/3が被災し、スリ・ランカ全体の住宅戸数の2%＝10万を超す住宅が流出した。学位申請者ウオハリカ・カウムディ・ウェエラシンハは数次にわたってスリ・ランカ南西部沿岸地域の6ヶ所において詳細なフィールドワークを行うと共に、政府機関、国際機関、NGOからの事情聴取と資料収集を行い、これらを分析して復興の実態と問題点および今後の課題を明らかにし、本論文をまとめたものである。 1章では研究の目的と方法について述べ、被災前データと被災直後および以降のデータの比較を行うこと、空間調査の対象および方法について論じており、6つの調査フィールドについて明らかにしている。特にコロンボ市およびゴール市に近い都市エリアから2地区、また他の南東部海岸線から4地区、都市地域と海岸部集落地域における密集地域など地域構造の異なる事例を選んでいる。さらにこれらに対する（持ち家援助型か、援助者による直営かなどの）復興補助形態の違い、また現地再建か集落移転かその複合かなどの復興政策の適用法の異なるものをも組み合わせ諸構造および復興諸形態と復興の実態把握その問題点抽出に役立つようサンプリングを行っている。 2章では被災にともなう居住問題を展開している。被災前の海岸線居住の状況についてまず記述し、海岸線の漁村部の民家の原初的な居住形態から海岸線における漁業や観光、交通などに関連して人口が密集してきた不法占拠の居住形態を示し、海岸線バッファゾーン（BZ）がこれに与えた影響を論じている。政府は津波からさかのぼること7年以前＝1997年に海岸線における公共空地の確保、美観と防災管理の観点から海岸線管理計画を立て、100mのセットバックを要求するBZを設定したがこれらは不十分に適用された。またこのことが逆に不法占拠などの不適格な劣悪・狭小住居群を増大するきっかけとなり、被災後BZはまず南部・西部では100m、被害が大きかった北部・東部では200mという決定がなされ、この範囲での再建を制限したが、住宅再建代替地の欠乏から、南部西部では25－50m、北部東部では30－80mに縮小したため、さらに混乱が倍加した経緯を述べている。また住宅再建戦略について、応急住宅から仮設住宅へそこから恒久住宅への道のりと被災者生活再建支援の公的な政策の概略を示しつつ、代表的な都市が立地し人口が密集する西部海岸線地区、またリゾート地区および臨海地区として近年人口が急速に増加させてきた南部海岸線地区の概要と被災地の被災前の状況について明らかにし、被災前からの計画課題を示し、加えてこれら沿岸地域の被災の実態を明らかにしている。			

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3章では恒久住宅の再建プログラムの実行過程とその評価について展開している。これら沿岸地域に施行された再建復興政策と各種の国内外の NGO 等の援助の体系を説明している。さらに仮設住宅から恒久住宅へと向かうプログラムに大いに制約を与えている海岸線の防災および環境整備の観点からなる土地利用規制計画＝バッファゾーン政策の内容と問題点について明らかにしている。これらの政策によって事情が異なる地区・区域ごとの問題点に加えて供給主体によって生じる問題について分析し、これらによって被災者の生活再建課題が異なることから、6ヶ所のフィールドごとに政策と供給がどのように再建復興に影響を与えるかについて詳細に分析している。

まず援助者直営のケースとして4事例を挙げ、被災地内の BZ の分断が複雑な社会問題と新たな不法占拠をうんだモルトウア、6－7 km奥地に質の高い居住地をつくったが生業問題と社会的紐帯で問題のある“ザルツブルグ”、6－10 km奥地だが新しい生業が生まれつつある“モンロヴィア”、最初につくった住宅がまったく居住者ニーズと合わずまた劣悪素材であったためにすべて建て直した地区であるが、海岸との距離が近いため生業上の問題は少ない“ミリハナワッタ”、エコロジー系の NGO がつくった“ミンシリブラ”では海岸の拠点とセットになっているため漁民はまったく減っていない。これらに対し持ち家への直接支援によるトタムネ地区プロジェクトでは、むしろ地域の活性化を引き出し、生業的にもむしろ発展する結果をつくり出しており、社会の持続性と空間の持続性、生業基盤の安定が復興には決定的な要因になることを分析している。

4章ではこれらの結果について被災者の生活環境の変化について、現在の住宅状況の詳細な調査および住宅事情の調査、生計の調査などオリジナルなフィールド調査から再建復興状況の評価を行っている。ことにバッファゾーン政策の与えた問題点や移転居住地が海岸線から離れた場所であることの問題が生計や社会展開にもたらす状況、また供給形態の違いと地域社会の持続の課題などの多くの重要で未指摘の問題について、調査分析を行い、詳細な家屋立ち入り実測・インタビュー調査によって明らかにしている。エゴダウヤナの海岸線居住地区の被災前後の比較では恒久住宅へ入れた人々と未だ仮設住宅や不法占拠住宅に住まう人々などの違いがあり全体の住宅広さ、一人あたり床面積などでむしろ生活水準は低下している点を示している。一方でデワタ海岸線居住地区から前掲の“ザルツブルグ”に移住した居住者の居住水準は向上しているが、新しい不法占拠による海岸線劣悪住居も生んでいることを明らかにしている。

5章はこれらをまとめて考察しつつスリ・ランカ復興政策の評価および改善点の考察をまとめている。上記諸問題に加えて、1) 被災者に生活再建と安全健康な住居獲得への展望を示す必要、2) コミュニティと生業を持続しつつ環境改善とのバランスをとる必要などを、本研究から得られた知見の普遍的な災害復興の課題に敷衍しうる問題として論じている。

本研究は津波被災地の復興という未曾有の課題について、地域計画・住宅計画的観点から地区や住宅を詳細に観察し復興政策や社会活動との関係において、復興の実情と課題を研究したものであり復興・減災計画に重要な知見を得たものとして価値ある集積であると認める。よって学位申請者 Woharika Kaumudi Weerasinghe (ウォハリカ・カウムディ・ウェエラシンハ) は、博士(工学)の学位を得る資格があると認める。