Good Practices and Lessons Learned

in Post-Conflict Reconstruction in Sri Lanka

UN-HABITAT
FOR A BETTER URBAN FUTURE

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in Post-Conflict Reconstruction in Sri Lanka

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HS: HS/057/17E
ISBN: (Volume) 978-92-1-132765-6

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Design and Layout: Jay and Jay Advertising, Charmalee Jayasinghe

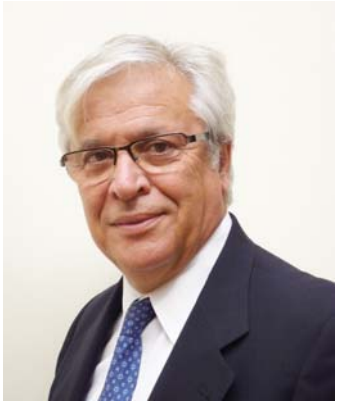
Printer: Gunaratne Offset (Pvt) Ltd

Contents

Acronyms and Abbreviations

CAP	-	Community Action Planning
CBO	-	Community Based Organisation
CSEB	-	Compressed Stabilised Earth Blocks
DS	-	Divisional Secretary
DRR	-	Disaster Risk Reduction
EU	-	European Union
FHH	-	Female Headed Household
GA	-	Government Agent
GN	-	Grama Niladhari
GoSL	-	Government of Sri Lanka
HOD	-	Home Owner Driven
IDP	-	Internally Displaced Person
LA	-	Local Authority
LDO	-	Land Development Ordinance
MRE	-	Mine Risk Education
NAITA	-	National Apprenticeship and Industrial Training Authority
NGO	-	Non-Governmental Organization
NERD Centre	-	National Engineering Research and Development Centre
OHG	-	Organic Home Gardening
PTF	-	The Presidential Task Force for Resettlement Development and Security of the Northern Province
SDC	-	Swiss Agency for Development and Cooperation
SIP	-	Settlement Improvement Planning
UN	-	United Nations
UN-Habitat	-	United Nations Human Settlements Programme
VRC	-	Village Reconstruction Committees
WCBSG	-	Women's Community Based Savings Group
WRDS	-	Women's Rural Development Society

Foreword



Since the end of the conflict in Sri Lanka, the United Nations Human Settlements Programme (UN-Habitat) has been supporting conflict affected communities to rebuild their lives by constructing permanent houses and vital infrastructure facilities in the North and East of Sri Lanka.

From 2010, UN-Habitat supported over 31,000 families to rebuild their conflict damaged homes and provided over 420,000 people with community infrastructure facilities. This programme was made possible with the support of numerous partners – including multiple donors, Government of Sri Lanka, Non Governmental and Community Based Organisations and the communities of the North and East.

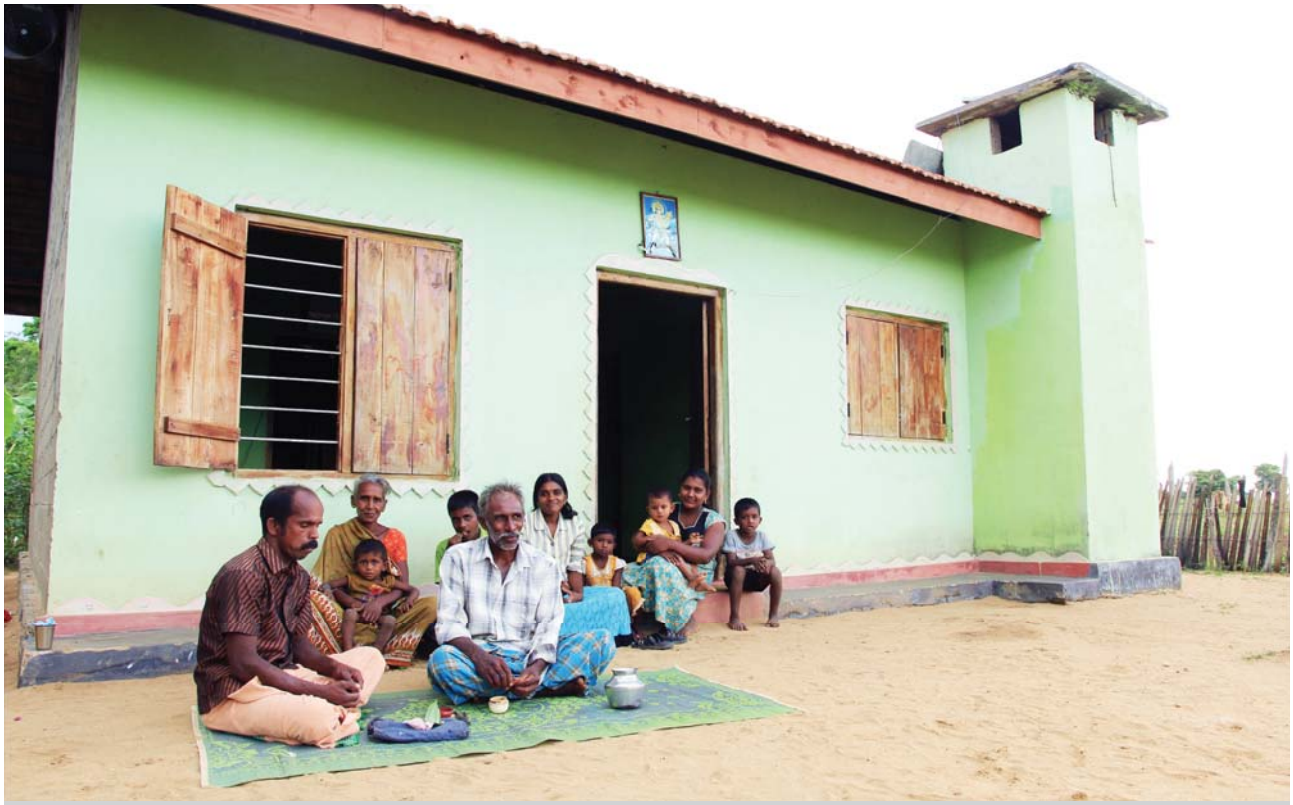
This publication documents the key good practices and lessons learned by UN-Habitat in implementing the post conflict reconstruction programme over a period of six years. Implemented in the districts of Kilinochchi, Mullaitivu, Jaffna, Vavuniya and Mannar in the North and Batticaloa in the East, this Programme has contributed towards changing the lives and improving living conditions of over 450,000 people.

UN-Habitat is grateful to our main funding partners - the Government of India, Government of Japan, European Union, Government of Australia and the Government of Switzerland, who made this programme possible through their generous funding. The support provided by the Government of Sri Lanka at the central, district and local government levels was a vital factor in the success of this programme. The communities of the Northern and Eastern Provinces of Sri Lanka, who helped implement this programme by providing their time, energy and labour is highly appreciated.

We hope this publication is useful to organisations, governments and countries throughout the world, who are helping their own communities recover from conflict situations.

Dr. Joan Clos
United Nations Under-Secretary General and Executive Director,
UN-Habitat -United Nations Human Settlements Programme

Executive Summary



Over 31,000 houses were constructed in the North and East using a homeowner driven process.

For many decades, the United Nations Human Settlements Programme (UN-Habitat) has been providing assistance to rebuild lives devastated by natural disasters and conflicts around the globe. Yet, no two situations are ever the same. Each provides a unique set of circumstances, and every new initiative produces fresh challenges and opportunities to learn.

When three decades of conflict ended in May 2009 in Sri Lanka, approximately 450,000 people had been displaced, with many having to rebuild their lives after having their houses destroyed, having lost family members, and with no proper means of livelihood. The urgent need was for an accelerated programme that would provide the affected people permanent homes and vital infrastructure facilities, to move away from poverty, and place the uncertainties of the conflict behind them. While the Sri Lankan government focused on major infrastructure such as road networks, railways, and irrigation systems, there was also a clear need for investment in community infrastructure facilities.

The Post-Conflict Reconstruction Programme in Sri Lanka's Northern and Eastern Provinces, implemented by UN-Habitat, provided numerous opportunities as well as challenges and proved to be a testing ground for many new strategies and technologies. The programme proved to be highly successful, completing the reconstruction of 31,350 homes and 520 infrastructure facilities, and bringing fractured communities closer together.

This report looks closely at three main elements that made the programme a success – the participation of people from the inception to the end, the diverse partnerships – donors, government, community based organisations that brought people together to implement the projects and the new and innovative technologies that were introduced to make the programme cost effective and sustainable.

The report documents the good practices as well as challenges faced during the implementation of several projects which constituted UN-Habitat's Post-Conflict Reconstruction Programme. It also

documents the Lessons Learned during the seven years of the programme from 2009 - 2016 in the hope that future programmes would benefit through the knowledge gained by UN-Habitat in Sri Lanka.

The extensive scope of the programme required the full support of the Government of Sri Lanka, a multitude of donors, partners, individual families and entire communities. This was a vital factor in ensuring the success of the programme, as it required the full acceptance and participation of numerous organisations, from donors providing crucial funding support, to community based organisations which were directly involved in the day to day implementation of the programme.

A key practice that is examined in detail is the sustainability of UN-Habitat's approach of involving and empowering beneficiaries with their full participation in rebuilding their own homes and in many ways their lives, and also its community based processes. This people's participatory process of reconstruction for both housing as well as infrastructure was a cornerstone in the showcasing of the good practices of the programme, and empowered individual families and communities and ensured a sense of ownership in the assets. The inclusion of both men and women in Village Reconstruction Committees to participate in village development and housing construction as well as the inclusion of elderly, youth and people who became differently abled due to the conflict enhanced the participatory nature of the programme and brought long term dividends to the region.

With such significant numbers of houses and infrastructure facilities to be rebuilt with the participation of the people, management of the project was challenging, where management of finances, quality, environment conservation and time were paramount factors in the programme. New construction technologies were introduced to reduce costs, enhance environmental conservation and to provide long term sustainability, without compromising quality. As this report has found, some were highly successful, while others were found to be less than ideal for prevailing ground conditions and peoples' socio-cultural norms. Flexibility and adaptability were key components of the programme, to ensure that it would evolve and be strengthened by challenges, rather than deterred by them.

The programme also witnessed the introduction of concepts such as access for the differently abled, child friendly facilities, disaster risk reduction

Community participation was a key aspect of UN-Habitat's approach.

The programme helped communities construct infrastructure facilities, including preschools.

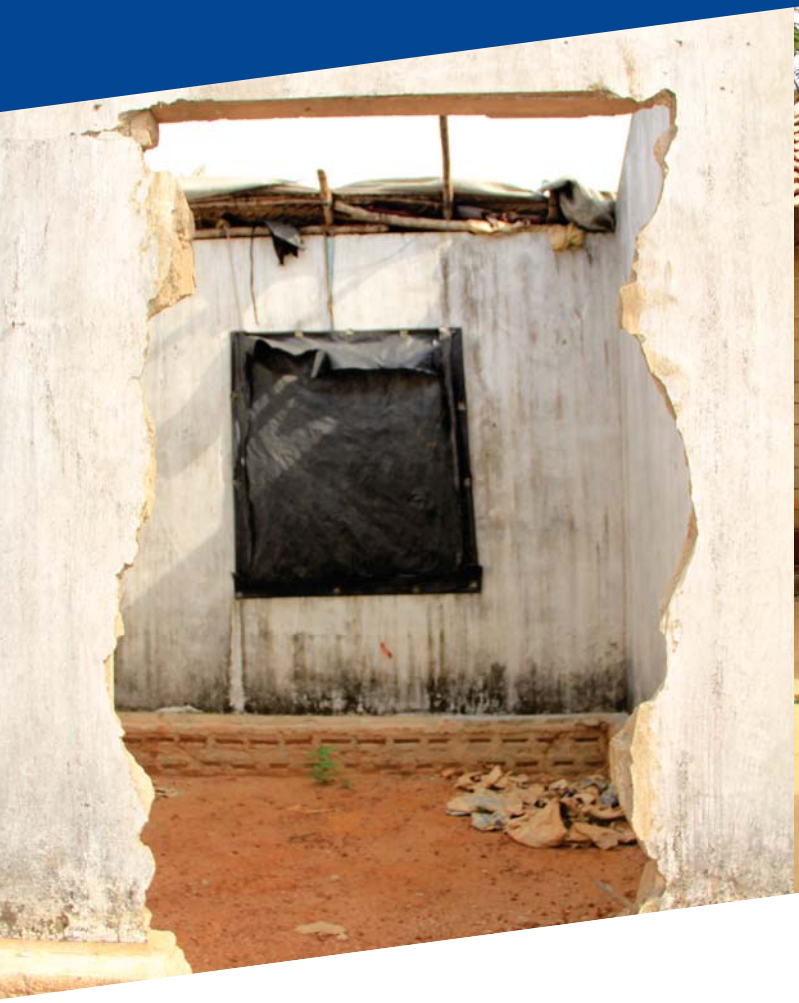
measures in construction, mainstreaming gender equality, boosting the local economy and environmental conservation. While these may seem commonplace, it must be remembered that the 30-year conflict had in many ways stalled progress in the main conflict regions.

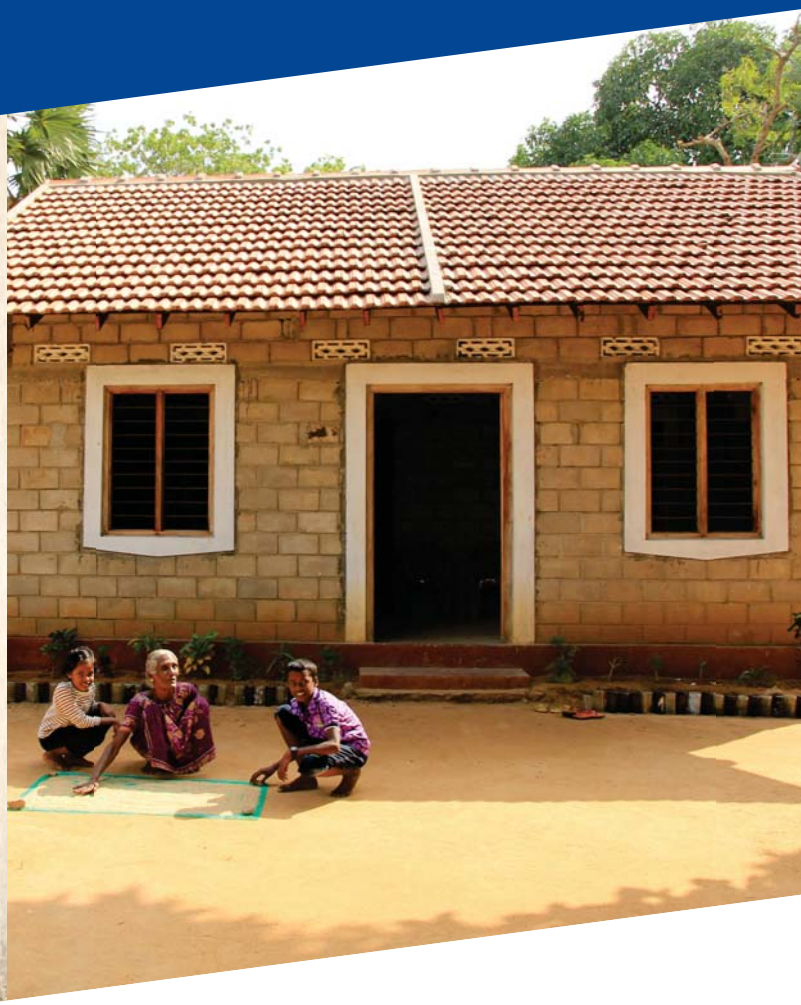
This document closely examines the many challenges that the programme faced due to the prevailing ground situation. These included identifying the most vulnerable group for assistance among affected communities, shortage of adequate skilled labour and building materials, initial tight security situation in the North, accessibility issues and the loss of land tenure documents among beneficiaries. It also provides insights into the multidimensional aspects of social issues which arose as a consequence of the conflict.

Data for this report was drawn from field visits, interviews with staff of UN-Habitat Sri Lanka, and from material published by UN-Habitat Sri Lanka.

UN-Habitat worked closely with community members to implement the projects in villages.

Introduction





A happy family outside their newly constructed house in Batticaloa district.

Country at a glance:

Population	20,966,000
Ethnic groups	Sinhalese 74.9%, Sri Lankan Tamil 11.2%, Sri Lankan Moor 9.2%, Indian Tamil 4.2%
Religions	Buddhist 70.2%, Hindu 12.6%, Muslim 9.7%, Roman Catholic 6.1%, Other Christian 1.3%
Life Expectancy	74.9 years (2014)
Administrative Divisions	Nine Provinces (Central, Eastern, North Central, Northern, North Western, Sabaragamuwa, Southern, Uva, Western). Subdivided into 25 Districts.
GDP (Market Price)	USD 82.3 billion (2015)
GDP Growth Rate	4.8% (2015)

(Source: Central Bank of Sri Lanka, Annual Report 2015)

Sri Lanka - Country Profile

Sri Lanka is an island nation located off the southern tip of the Indian Subcontinent. It is a lower middle-income country with a total population of 20.9 million people and a per capita income of USD 3,912. Following a 30 year civil conflict that ended in 2009, Sri Lanka's economy has grown at an average of 6.4 percent between 2010 - 2015, reflecting a peace dividend and a determined policy thrust towards reconstruction and growth.

In recent years, Sri Lanka's economy has transitioned from a previously predominantly rural-based agriculture towards a more urbanized economy driven by the services sector. In 2015, the service sector accounted for 62.4 percent of Gross Domestic Product (GDP), followed by manufacturing (28.9 percent), and agriculture (8.7 percent). The country is ranked 73rd in the Human Development Index in 2014 and had comfortably surpassed most of the MDG targets set for 2015.

UN-Habitat in Sri Lanka

The United Nations Human Settlements Programme (UN-Habitat) is the UN agency for human settlements, mandated to promote socially and environmentally sustainable towns and cities, with the goal of providing adequate shelter for all.

Working with governments, global and local partners, and communities, UN-Habitat is actively engaged in initiatives on risk reduction and rehabilitation, urban legislation, land and governance, urban economy, urban basic services, settlement planning, housing and slum upgrading, and research and capacity development.

Building on a successful partnership dating back to 1978, UN-Habitat presently assists Sri Lanka in post disaster reconstruction, climate change and disaster risk reduction, water and sanitation, low income settlement upgrading, and urban planning. As part of its contribution to sustainable development, UN-Habitat is committed to provide technical assistance to the government towards achieving the Sustainable Development Goals (SDGs), primarily towards Goal 11 of building inclusive, safe and sustainable cities and human settlements; while also contributing to several other SDG goals.

UN-Habitat adopts a participatory process in the implementation of its programmes. All initiatives are developed and implemented in partnership with a range of key stakeholders. At the commencement of programmes, effective partnerships are formed for collaborative decision making, problem solving and resource sharing.

The Indian Ocean Tsunami of 2004 which devastated the coastal regions of Sri Lanka, resulted in a sharp increase in UN-Habitat's support in the country through post–disaster reconstruction. In all, UN-Habitat facilitated the construction of 10,600 houses throughout Sri Lanka's coastal belt.

Sri Lanka's Internal Conflict

The conflict between the Government of Sri Lanka and the Liberation Tigers of Tamil Eelam (LTTE) spanned over three decades from 1983 to 2009, with the majority of clashes in the Northern and Eastern Provinces, with frequent, significant incidents in the Northwestern, Northcentral, Uva and Western Provinces. Several attempts at mediation during the course of the conflict, including the involvement of foreign governments as facilitators, were unsuccessful, although ceasefires were observed for significant periods of time. The conflict ended with the defeat of the LTTE in May 2009.

Frequent clashes resulted in the migration of large numbers of civilians in the Northern and Eastern

Returnee homeowners in Mullaitivu outside their temporary shelter. Their damaged house is in the background.

Roof work in progress in Vavuniya district.

Provinces from their homes, some of whom were obliged to move on multiple occasions. The conflict severely disrupted the social fabric of the North and East, and had a negative effect on agriculture which is the dominant feature of the economy of these two provinces. The coastal waters of the Northern and Eastern Provinces were also the scene of frequent clashes. This severely disrupted the fisheries industry and affected the livelihoods of the large fishing community.

Much of the Northern Province and to a lesser extent the Eastern Province was devastated during the course of three decades. At the end of the conflict in May 2009, over 160,000 houses had been destroyed or damaged and more than 450,000 people were displaced in the Northern and Eastern Provinces.

Post-Conflict Reconstruction

From 2009 - 2016, UN-Habitat facilitated the construction of a large number of houses in Sri Lanka's Northern and Eastern Provinces. The agency also facilitated the construction of community infrastructure facilities.

It is a measure of the recognition of UN-Habitat's reputation and expertise, that the major donors in post conflict reconstruction, the European Union and the governments of India, Japan, Australia and Switzerland selected UN-Habitat as one of the key executing agencies for their programmes.

UN-Habitat's unique people's participatory process for reconstruction of houses and infrastructure also resulted in the introduction of other vital value added measures including Disaster Risk Reduction, environmental conservation, and a range of low cost construction methodologies.

Among the important long term consequences of the programme was the introduction of fundamental social and humanitarian concepts such as equal opportunities, gender sensitivity, child friendliness, facilitation for differently abled persons, and a rights based approach. All these concepts were integral parts of UN-Habitat's programme, but were relatively novel to a region whose growth had been impeded by three decades of war.

UN-Habitat's post-conflict housing and infrastructure reconstruction programme was implemented in six districts – Mannar, Mullaitivu, Kilinochchi, Jaffna and Vavuniya in the Northern Province and Batticaloa in the Eastern Province. The support of many international donors was instrumental to the multiple projects undertaken and carried out by UN-Habitat.

People

UN-Habitat officer discussing road construction with members of a Women's Rural Development Society in Mullativu.

Introduction

UN-Habitat does not simply build houses; it helps people to rebuild their homes and brings affected communities together, improving living standards and assisting people reintegrate to normal civic life.

Over decades of engagement in post disaster reconstruction, UN-Habitat has found that reconstruction projects have higher rates of success when key stakeholders are involved in the process and actively participate in finding solutions to their challenges. This participatory process of construction is strikingly different from the alternative practice of building houses and handing them over to homeowners, who may find them unsuitable for a variety of reasons ranging from location, size, design, and specific needs of the family.

In Sri Lanka, it was observed that many reconstruction projects following the Indian Ocean Tsunami failed due to non-involvement of owner beneficiaries, while the homes constructed through a Home Owner Driven Process by UN-Habitat and other agencies were well received by homeowners and other stakeholders.

Although UN-Habitat has actively supported Sri Lanka for over four decades, the post-conflict period was a new experience for all stakeholders. Based on the success of the post tsunami reconstruction programme, a decision was made at the outset to implement a participatory homeowner driven process of construction. It was also widely accepted by the Government of Sri Lanka and donor partners as the preferred methodology of post disaster reconstruction.

Hence, when the Government of Sri Lanka requested UN-Habitat to assist in post-conflict reconstruction in the North and East, the homeowner driven process was selected as the preferred methodology. However, it was modified to suit the specific needs and requirements of the region, as well as the communities and individuals.

People's Process of Construction

UN-Habitat employs a People's Process, which recognizes that individuals and communities possess resources and capabilities- potential Human capital which give them the capacity to build their own homes and bring communities together. UN-Habitat serves as a catalyst in this process.

The Homeowner Driven process evolves around the concept that homeowners themselves would manage the construction and repair of their own damaged or destroyed houses. UN-Habitat and its partners would provide a wide range of direct and indirect support for each homeowner and for entire communities. These included:

- Funding
- Technical assistance
- Trouble shooting
- Training, and
- Supervision of progress

A comprehensive set of selection criteria was applied to select beneficiary families to participate in the programme. Once an applicant was selected, UN-Habitat's staff discussed the needs of each family, in keeping with the appropriate standards required for the construction of a house. Multiple house designs were made available as a basic framework from which homeowners could choose. These plans took into consideration the socio-cultural and religious needs of the beneficiary families and different layout arrangements to cater to the different choices. Each homeowner had the flexibility of modifying plans for their home depending on their personal needs. The participatory house plan development process incorporated both local knowledge and the inputs of beneficiaries. Deciding on the design was the first step in the beneficiaries' decision making process. Making decisions regarding the house and its construction increased beneficiary satisfaction and their sense of ownership of the completed house. The house plans too were flexible to incorporate future expansions to cater to the future family needs.

The majority of beneficiaries belonging to the Tamil Hindu community practice "Vaastu Shasthra" (an astrological belief of land use planning and building passed down through generations) which strictly stipulates auspicious directions and dimensions of the overall house and its principal rooms. Hence, UN-Habitat technical staff had the challenge of designing spaces in keeping with the auspicious dimensions dictated by "Vaastu Shastra" within the limitations of various donor requirements and minimum standards. They worked in close consultation with homeowners to accommodate their religious and cultural beliefs in the house-type plans.

Once plans were finalised, a construction schedule was prepared, and homeowners began the process of

Homeowners in Mullaitivu discussing specifications of their house plan with UN-Habitat Technical Officers.

Supporting elderly parents to rebuild

Showing resilience and determination following years of hardship and displacement, 52 year old Ms. Sellaiya Sivasothi from Pulumachchinatha-kulam village in Oddusuddan DS division of Mullaitivu district constructed a permanent house for her elderly parents, 88 year old Mr. Kanthar Sellaiya and 83 year old Mrs. Sellaiya Thangamani, who were selected as beneficiaries by the UN-Habitat programme.

The new home is particularly special, as Sivasothi contributed much of her own labour. From a young age, she supported the household through agricultural labour work. During the conflict her 10 siblings relocated to other districts, leaving Sivasothi as the sole caregiver for her parents. In 2003, she underwent masonry training and was provided with her own masonry tools, with which she undertook masonry work in the village.

After her parents were selected as beneficiaries, Sivasothi commenced the house foundation work in March 2014 with a skilled mason. However within a few days, Sivasothi dis-continued his services due to poor quality of work. She took over the masonry work with guidance from UN-Habitat. Hiring an assistant for excavation work, she completed the foundation within a week. The UN-Habitat Technical Officer provided support with the bills of quantities, measurements and advice on construction methods. Their 550 square foot house with two bedrooms, kitchen and living area, was completed in April 2015.

"My greatest wish is to look after my parents and provide them a comfortable, secure house to live in. I am happy that I have achieved this goal. UN-Habitat staff supported me and appreciated my contribution in constructing this house. I am very grateful for all the support by this project," said Sivasothi.

physically constructing their new homes, with the range of activities required in the construction of permanent homes. These included sourcing building materials, negotiating with labour and material suppliers, and liaising with government officials for planning approvals.

Funds were released to home owners by UN-Habitat in four installments depending on the physical progress of work, and the construction was closely monitored by field staff. In this process, UN-Habitat staff played a multi-functional role, providing technical support for the construction, while dealing with a myriad of issues and challenges faced by families, which could impact the construction. These challenges including a wide range of social issues, are described in greater detail in other sections.

In addition, UN-Habitat introduced vital concepts such as quality management, affordable technologies, Disaster Risk Reduction features, construction safety, access to the differently abled, and financial planning as part of its Programme. Preserving the environment and providing livelihood opportunities was a cross cutting theme. Many of these were relatively new concepts to conflict affected communities and are described in detail in other sections.

Mobilising communities

One of the key factors in the success of the UN-Habitat programme was the high level of involvement of homeowner families as well as entire communities in the process of reconstruction. An important step in implementing the programme in a community was the establishment of a Village Reconstruction Committee (VRC), which consisted of a group of community leaders and representatives of all strata of the community, to drive the reconstruction process.

The establishment of VRCs in target GN Divisions was essential in coordinating project activities between UN-Habitat and the beneficiaries. It also assisted in activities such as bulk procurement of building material and labour to reduce costs, monitoring of project activities and providing construction support to vulnerable beneficiary households. VRCs proved to be dependable institutions that were respected by all stakeholders, including homeowners, and were able to support reconstruction programmes.

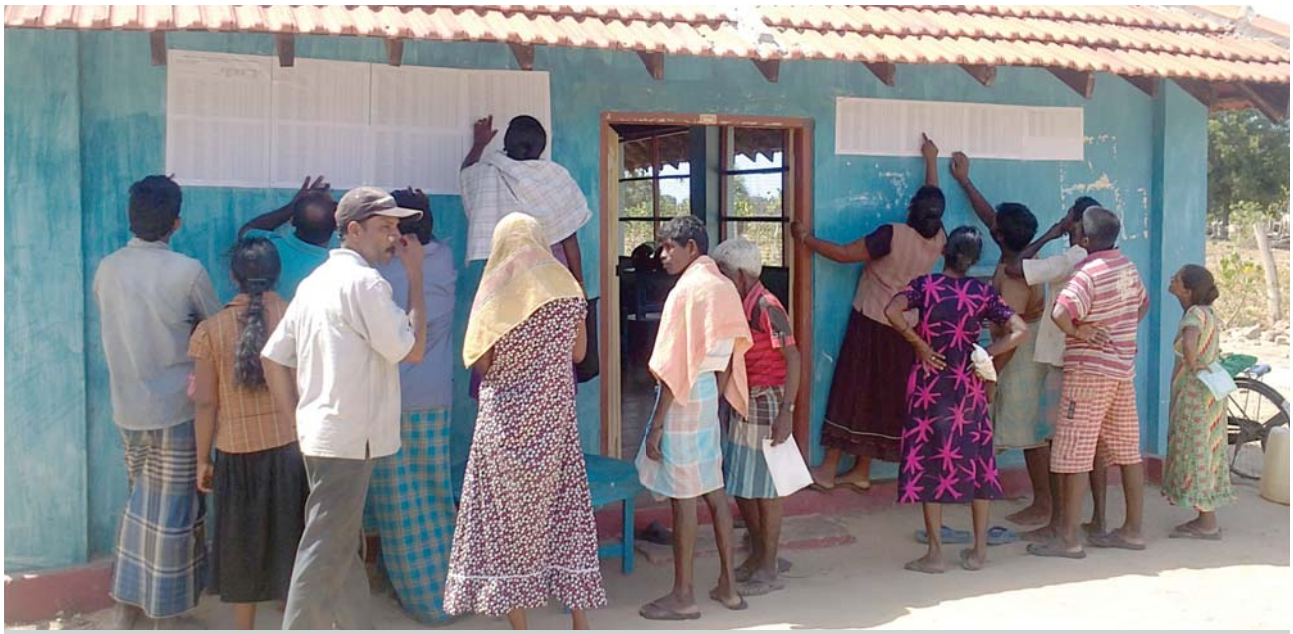
The establishment of VRCs and building their capacities had many positive impacts on the overall Programme outcomes. The facilitation of bulk procurement of building materials by the VRCs enabled considerable cost savings through reduction of transport cost and by purchasing materials at wholesale prices. This also ensured improved access to construction material and labour markets, especially for vulnerable households and communities with poor accessibility.

VRCs have been instrumental in monitoring project implementation and in identifying and providing support to the most vulnerable households needing extra support. They have also played an active role in identifying and prioritising community needs during Settlement Improvement Planning (SIP) workshops in their villages. Following the conclusion of the post conflict reconstruction programme, it is envisaged that many VRCs will evolve to different forms and continue to guide development activities in their respective communities in the foreseeable future.

Throughout the Programme, Community Based Organisations (CBOs), including Rural Development Societies (RDS), Women's Rural Development Societies (WRDS), Fisheries Organizations and Farmer Organizations have played a vital role in the development of community infrastructure which were an important aspect of the UN-Habitat programme. The role played by CBOs is discussed in detail in the *Infrastructure* section.

Beneficiary selection

As the number of households eligible for housing assistance greatly outnumbered the number of households allocated with available funding, a transparent beneficiary selection process was a vital requirement of the programme. This required the eligible beneficiaries to be carefully screened and selected. The eligible beneficiaries were ranked based on the vulnerability of the households as per the eligibility and ranking criteria. This selection process is different to that of selecting the vulnerable villages and providing assistance to all the eligible beneficiaries in the village. Although there are some merits in this method, experience shows that most vulnerable families in other villages do not have the opportunity for assistance. By choosing this method most vulnerable families in the entire district were included for assistance.



Community members scrutinising final beneficiary lists displayed at prominent locations for the Indian Housing Project.

A New Home for Caroline's Family

Mrs. Uthayarasa Caroline Nirmala from Iranapalai in Puthukudiyrrupu DS Division in the Mullaitivu District reconstructed her damaged home with a cash grant from the programme. Caroline received priority in the beneficiary selection process as she was both differently abled and a female head of household.

Caroline's husband, Uthayarasa, had died in a road accident several years ago, leaving her the sole breadwinner of her family which includes her elderly parents and son Anistan.

Her family had been badly affected by the conflict, experiencing multiple displacements over several years. The worst was in early 2009, when they were compelled to leave their homes and travel to Mullaitivu District. During this time, Caroline was seriously injured during a shell attack and her left leg was amputated from the knee.

Returning home in 2012, they found their home damaged beyond repair and received assistance to build a transitional shelter. Caroline and her mother started several livelihood activities, including a small poultry farm in their garden, weaving cadjan and sewing. While income from these activities was adequate for the family's daily needs, it was insufficient to build a permanent home.

Caroline was selected as a beneficiary of the Post Conflict Reconstruction Programme in early 2013 and provided a cash grant of LKR 550,000 in four instalments. Their home was completed in mid 2014 and consists of a living room, kitchen, two bedrooms and a toilet.

A comprehensive set of selection criteria was utilised to select the most vulnerable families to participate in the programme which took into consideration a wide range of aspects of every family and gave special consideration for vulnerable families. At the outset, a set of criteria for the selection of beneficiary families was agreed upon between UN-Habitat Sri Lanka, the Government of Sri Lanka and donors. These criteria included:

- The family owned the property
- The family had been displaced due to the conflict
- The family had returned
- The house had been damaged or destroyed
- Homeowner/family should not own another permanent house anywhere else in Sri Lanka

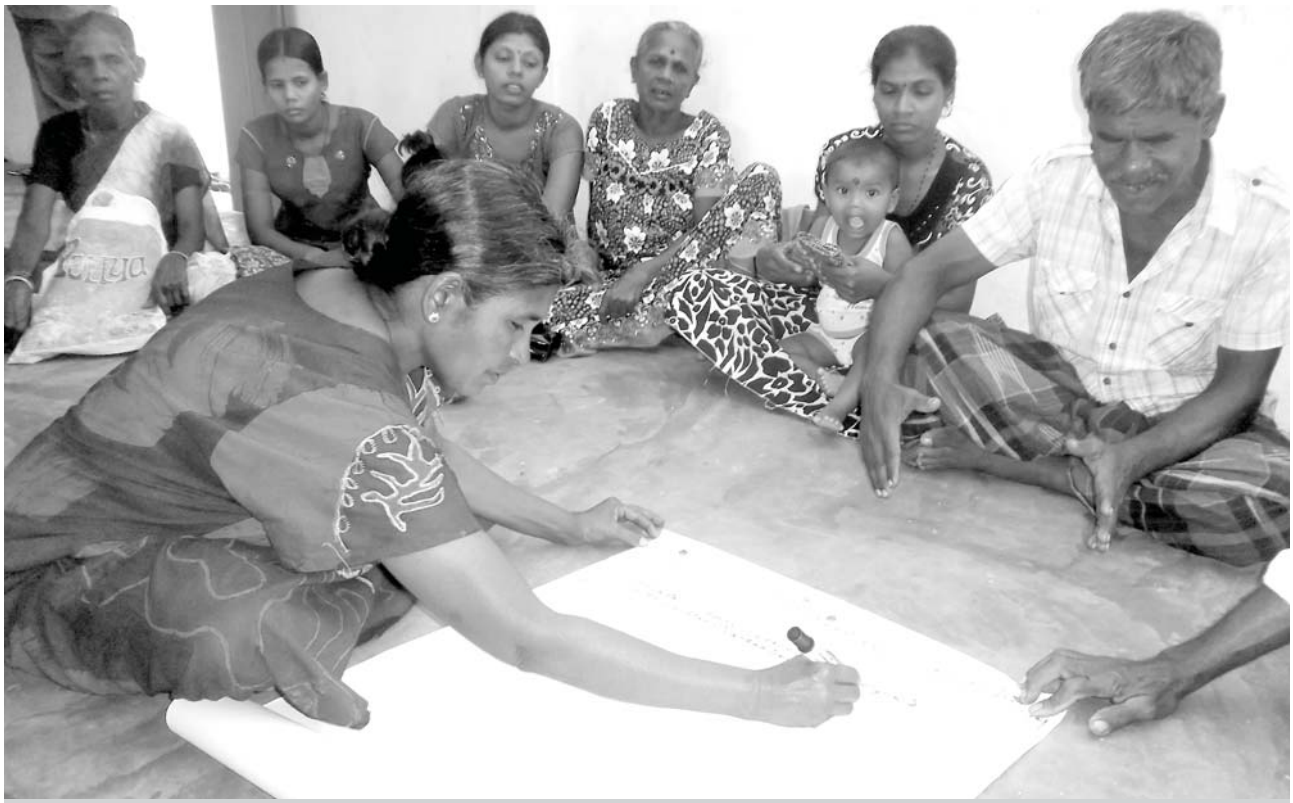
Once a list was established according to the above criteria, applicant families were further analysed and a prioritisation process using a second set of criteria was adopted, which included:

- Number of disabled persons in the family
- Number of aged members in the family
- Number of small children in the family
- Female headed households and other vulnerability factors

A Committee consisting of UN-Habitat staff, a representative from the Divisional Secretariat, the Grama Niladhari and community representatives verified the information on vulnerability and decided on the households to receive housing assistance. The lists of selected beneficiaries were then displayed in prominent, public locations in the village. The UN-Habitat technical teams visited the beneficiary households for physical verification and damage assessments. This ensured that the most vulnerable households with the greatest need for houses, were selected for housing assistance.

Settlement Improvement Planning

The entire programme involved resettling families in the same villages and lands that they occupied prior to the conflict without involving 'Green Field'



CAP workshops provided opportunities for community members to map the development priorities for their villages.

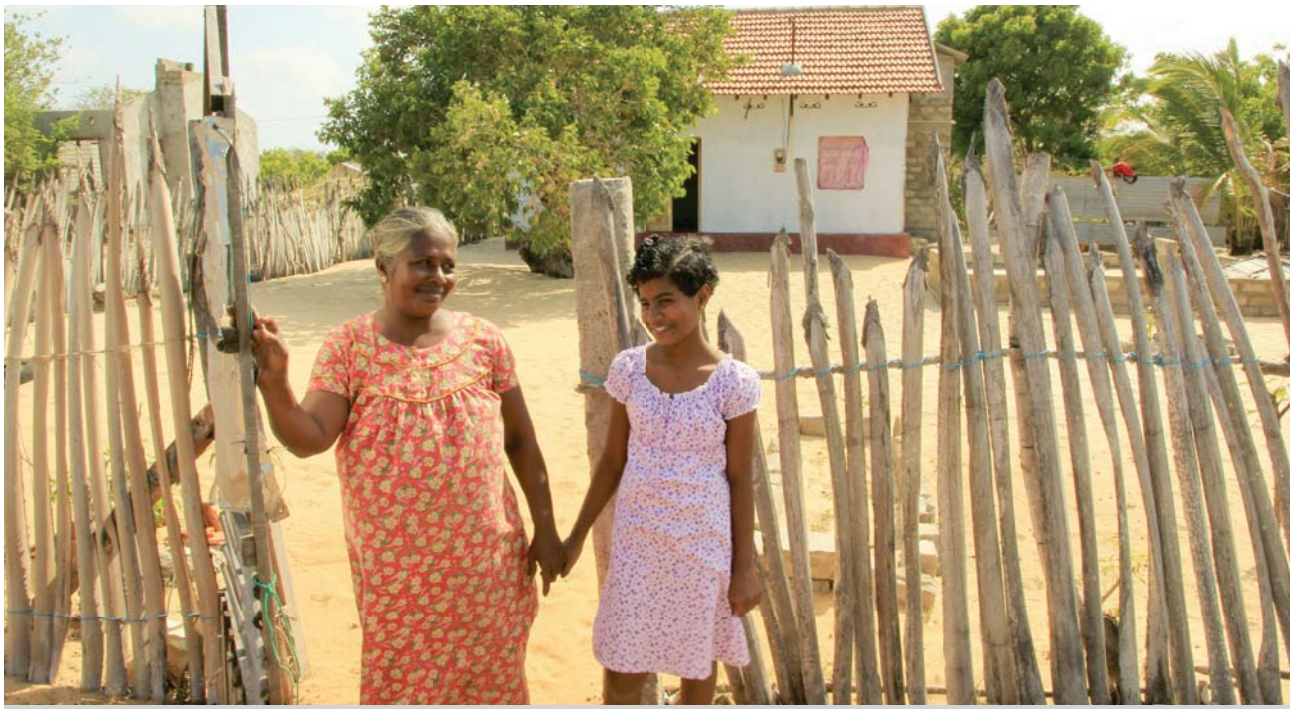
development or creation of new settlements. Therefore Settlement Improvement Planning exercise was confined to planning of improvements needed for existing villages. An important tool in ensuring community involvement in the participatory process was the series of Participatory Settlement Improvement Planning (SIP) workshops, also known as Community Action Planning (CAP) workshops, which were organised in many villages during the programme. The SIPs provided the space for community members to provide insights into the development of their respective communities through the identification of gaps in infrastructure facilities and prioritisation of needs.

> "The donors and UN-Habitat have helped the residents to fulfil some of their basic needs. These include building permanent homes and a community well to obtain fresh water. By involving the community in this project, knowledge on good construction and management practices have been shared with us for future initiatives."
>
> Grama Niladhari,
> Weligahakandiya village, Batticaloa district

As explained elsewhere in this report, communities were provided with a range of small community infrastructure facilities to choose from, including community centres, preschools, internal access roads, and irrigation channels, with each community selecting one or perhaps two interventions according to their priority needs. Community members were thus able to provide direct inputs and influence the formulation of village level policies in finding lasting solutions to urgent infrastructural issues. The SIPs also provided a platform for further discussion of other issues faced by communities. They also enabled other agencies working in project locations to identify prioritised interventions, without the need to conduct repeated assessments. SIP also enabled to select their priorities within the available budget.

SIP workshops resulted in improved access to infrastructure services for communities, encouraging them to continue living in their places of origin and thereby reduce out migration to urban areas due to the lack of facilities.

The main challenge faced by UN-Habitat in prioritising needs was the need to upgrade an overwhelming number of essential services in villages, as infrastructure facilities were either non-existent prior to displacement or had been destroyed



Female headed homeowner in Jaffna district with her daughter in front of their permanent home.

during the conflict. During SIP workshops it was discovered that some priority needs, including livelihoods and health, were outside the purview of the project and were referred to relevant agencies.

Grievance Redress Mechanism

As the assistance provided by UN-Habitat did not cover entire communities, beneficiaries for housing assistance were selected based on vulnerability. Hence it was inevitable that some families not selected for assistance perceived the selection as unfair. Therefore, establishing and operationalising a grievance redress mechanism was vital to increase the transparency and accountability of the beneficiary selection process.

Initially, a complaint was conveyed to the Technical Officer overseeing the GN Division and the grievance was heard within seven days by a panel consisting of the UN-Habitat Technical Officer, Grama Niladhari and two VRC members, including a female member. If the complainant was not satisfied with the ruling of the grievance hearing, the grievance was referred to the Divisional Secretary, who held a similar hearing. If required, the decision was referred to the Government Agent who would then make the final decision.

The main challenge in operationalising the grievance mechanism was the unfamiliarity of the communities and government officials with the concept. As a result, the number of grievances in the initial years of the programme were low. However, the establishment of grievance redress committees significantly increased the transparency and accountability of the beneficiary selection process.

Women's empowerment and participation

UN-Habitat actively promoted *Gender in Development* and *Women in Development* with the aim of facilitating sustainable development with both women and men as decision-makers. Although the strategic interests of women were governed by elements specific to the socio-cultural contexts in the project areas, UN-Habitat promoted gender equality through empowerment of women, with particular focus on the disadvantaged. The gender perspective was integrated throughout the planning and implementation process of the programme, ensuring gender equality and equity.

Women's empowerment and full participation in the post conflict reconstruction programme were not simply idealistic concepts, but proved to be of an urgent practical and operational requirement due to the large numbers of Female Headed Households (FHHs) in the Northern and Eastern Provinces, and families having become fractured due to a variety of

reasons. In addition, communities had been traumatised during decades of conflict and were beset with social challenges, and the success of the programme required the full participation of both women and men.

From the commencement of the programme, UN-Habitat implemented its Global Policy and Plan for Gender Equality and the Empowerment of Women. This involved a number of concrete steps with regard to ensuring women's equal participation in the programme. The UN-Habitat Sri Lanka Gender Policy and Strategy (2015 – 2017) clearly defined the focus adopted in the planning and implementation process.

Protection of women and children

The three decades of conflict had disrupted the very fabric of society in many communities, resulting in severe challenges for the most vulnerable segments of society, especially women and children.

Understanding women play a major role in achieving transformational social, economic and environmental change, the UN-Habitat programme primarily served to enhance the level of protection for these persons, through the rebuilding of relationships in the communities, providing knowledge and livelihood opportunities, and the physical construction of community infrastructure and homes.

The inclusion of the issues of protection of women and children from the very inception of the programme served to enhance awareness of the challenges they faced, and brought these issues to the forefront to be dealt with by relevant authorities.

Giving priority to female-headed households

The prioritisation of marginalised groups, including FHHs, took place at the planning stage of the Project. The scoring system for beneficiary selection gave priority to FHHs, given the absence of support by male heads of households in these families, discrimination experienced and the burden of poverty.

Six criteria were taken into consideration in the selection of households for the housing grant, and priority was given for families headed by an elderly person (above the age of 65) or an FHH.

> “UN-Habitat staff visited the construction site regularly and provided a lot of support especially in selecting the house design and good quality building materials. I am so happy that I managed to complete the house during such a short time period. Now, I am hoping to extend the house with a front verandah so that the children will have more space to play.”
>
> **Ms. Jeyakumar Jeevakala,**
> Female Headed Homeowner,
> Kilinochchi district

In some instances, giving priority to FHHs resulted in negative responses and complaints from those not selected for housing assistance. The established grievance redress mechanism was responsible for the resolution of such issues. In addition, this ensured transparency and accountability. The process, where necessary, clarified and explained the reasons for non-eligibility for housing assistance.

In all instances, the selection of the house design considered the views of all family members while women's special needs were given additional consideration. For instance, in FHHs, toilets attached to the main house were encouraged for privacy and safety reasons.

UN-Habitat has thus far assisted 31,350 households in the Northern and Eastern Provinces through housing, out of which about 3,000 were FHHs.

Reserved positions for women on Village Reconstruction Committees

Approximately 250 VRCs were formed by UN-Habitat to assist housing construction activities in the North and East. Each VRC consisted of seven office bearers. The VRCs were trained on bulk procurement of building materials, basic book-keeping, Mine Risk Education and Settlement Improvement Planning.

The office bearers of the VRCs had a mandatory inclusion of 40% for women. This enabled both women and men to collectively determine development at intra-household, inter-household and community levels and acted as a means of consultation. Further allowing the identification of practical needs of women and men to improve their

Female masonry trainees undergoing "on the job" training in Kilinochchi District.

conditions, served to improve access of both women and men to resources, most importantly encouraging female-male power balance, and positively transformed the unequal gender relations to achieve equal benefits.

Assisting Female Headed Households with free labour

A clear requirement was identified early in the programme of FHHs facing challenges in providing in-kind labour assistance for house construction. VRCs assisted such households through the provision of voluntary labour.

VRCs, which are led by both men and women, contributed significantly to the prevention of discrimination. For instance, VRCs provided guidance to FHHs to submit necessary supporting documents, such as death certificate of spouse, marriage certificates and land documents to facilitate applications for housing assistance. In addition, in many cases, VRCs represented FHHs when complaints arose from the community or encouraged them to attend the grievance redress process. Where livelihoods were in danger of being disrupted, VRCs supported families to ensure construction was not delayed.

Specific training for women in masonry and carpentry

Women were provided training in various aspects of construction, including masonry and carpentry, DRR measures in construction and production of building materials to ensure participation in housing construction. This also enhanced their ability to better supervise construction workers and negotiate rates with building material suppliers. It has been observed that FHHs made an extra effort to learn construction skills from trained beneficiaries and artisans.

During the implementation stage, interactive technical training programmes were conducted by UN-Habitat in villages, in which both men and women participated. At these sessions, construction related issues that the beneficiaries faced were discussed and addressed. Training on basic construction skills was provided to all beneficiaries, as well as awareness on quality construction, and selection of building materials and suppliers. This process further facilitated the community monitoring mechanism. Women's participation in vocational training programmes jointly held with NAITA/CEFE in masonry and carpentry was more than that of men.

Gender specific data and awareness programmes

UN-Habitat field staff were provided training on the collection of gender specific data during their day-to-day work.

Indicator setting at the planning stage included gender empowerment and mainstreaming aspects. Collection of gender-disaggregated data was an important element in the programme, especially to understand provision of labour, land ownership, and decision making. Male-Headed Households (MHHs) and FHHs were not comparable due to the structure of the household, and FHHs were more constrained in resources and labour than MHHs. In addition, the role of the woman in an MHH was more clearly defined than in FHHs. This assisted UN-Habitat to tailor the interventions to ensure maximum participation of women and men.

Partnerships with savings groups

UN-Habitat enhanced economic empowerment of women in the programme by facilitating the access of FHHs to financial support by entering into strategic partnerships with specialised NGOs and Cooperative Societies, namely, HelpAge Sri Lanka and Sri Lanka Women's Development Service Co-operative Society Ltd.

The method of operation was for 60 women from a selected community to form a branch of the partner organisation in their village. Each participant contributed a nominal sum of LKR 5 or 10 per week,

Engaging Women's Community Organisations

Kovilvayal Grama Niladhari division consists of 243 families with a population of 845, located 2.5 km from the nearest town of Iyakachchi in Pachchilaipalli Divisional Secretariat Division in Kilinochchi district. Key livelihoods include agriculture, fishing and livestock farming. From 1990, the community suffered several displacements, resettling in the village in 2010.

UN-Habitat held discussions with community members through a SIP Workshop to understand their priority needs. The rehabilitation of a 2.1 km stretch consisting of two roads, Savaththi and Murugan, was selected as these roads had not been repaired for many years. This stretch was used daily by residents as it connects the village to the main road to Iyakachachi town. These rough, sandy roads were in a state of disrepair making accessibility difficult, especially during the rainy season.

To implement the work, UN-Habitat selected the Kovilvayal Women's Rural Development Society (WRDS), engaging community members in the reconstruction of their own infrastructure. The WRDS was led by its President, Mrs. S. Balarajini who was actively involved in the project together with the committee members. The WRDS worked closely with the Pachchilaipalli Pradeshiya Sabha and UN-Habitat in co-ordinating the road design and cost estimate, and monitoring the physical progress of the work. A special mixture of gravel with seashells available in the area was used as the top layer of the road. The total cost of the road construction was LKR 3,769,259.

In addition to managing the initiative, WRDS members also volunteered their own time and labour towards the road construction, including clearing the site as well as turfing the sides of the road with grass.

Mrs. Balarajini, President of the WRDS, said "This road has improved accessibility for our community. School children and parents are very happy now as they can cycle to school and save valuable time."

which then enabled her to access financial assistance from the group.

The broader aim of Women's Community-based Savings Groups was to reduce poverty, improve the economic conditions and thereby empower the beneficiaries to take control of their lives. It also enabled the most vulnerable persons to save money within their community. The project model was simple and took into consideration the low literacy levels in many rural communities. In many projects, group activities commenced with the help of savings rather than credit.

UN-Habitat also assisted in the establishment of Women's Community-Based Savings Groups (WCBSGs). By mid-2016, there were 153 WCBSGs comprising of 1,513 members. This facilitated the formation of sustainable institutional structures without injection of seed capital while promoting solidarity amongst the community.

UN-Habitat further enhanced the sustainability of its social programmes targeted at women and children through a long-term partnership with Action for Peace, Capability and Sustainability (APCAS) to provide services for communities in the project areas.

Sixty nine Women's Self-Help Groups (WSHGs) were formed in Batticaloa district with 1,750 members.

Opening of joint bank accounts for homeowners

UN-Habitat encouraged the opening of joint bank accounts, which provided women more control of the housing grant, in addition to strengthening their intra-household bargaining power. These also enabled women to continue construction when the male head of household was away from home, through easy access to finances.

Engaging women's Community Based Organisations in development activities

UN-Habitat engaged more than 60 Women's Rural Development Societies (WRDS) to construct community infrastructure facilities including internal access roads, storm water drainage systems, community centres and preschools. In general, it was experienced that WRDSs displayed a high level of commitment in ensuring quality of work and completing projects on schedule.

Small savings groups were established in villages.

Home gardens provide nutrition and additional income for beneficiary families.

Livelihood support for women

UN-Habitat introduced a number of initiatives during programme implementation which directly and indirectly provided livelihood opportunities for women.

The programme provided Organic Home Gardening support for 250 families with the aim of generating a supplementary income for households. Sixty five of the selected households were FHHs. The selected beneficiaries were trained by the Department of Agriculture on key aspects of Organic Home Gardening including land preparation, pest and disease control, composting and nursery preparation, seed propagation and harvesting. A variety of plants and seeds have been distributed to the beneficiaries together with material to produce compost.

In addition to basic construction training for homeowners, the programme also provided construction skills training in masonry and carpentry for youth. A high percentage of women trainees participated in the training programmes. This programme gave opportunities for women to break traditional barriers by moving into previously male-dominated occupations in the construction sector. The National Apprentice and Industrial Training Authority (NAITA), German Development Cooperation (GIZ) and CEFE NET Sri Lanka partnered with UN-Habitat to deliver this training. The Programme encouraged youth participation with the twin objectives of enhancing their skills and creating a cadre of skilled workers that were urgently needed for post-conflict housing construction activities in the North.

Improved Cooking Stoves (ICSs) were introduced to beneficiary communities as an environmentally friendly alternative to traditional cooking stoves. These cooking stoves, whilst reducing indoor air pollution, relieved women and children from exposure to toxic emissions. At present 830 households have been assisted, of which 30% are FHHs. This initiative also provided new livelihood opportunities to a number of women – some of whom were trained as installers, potters and promoters.

A traditional Hindu welcome table at a house warming ceremony in the Northern Province.

Referral services for prevention of exploitation and abuse

As there was a likelihood for FHHs to be exploited by construction workers or building material suppliers, a series of measures were taken to counter such incidences. These included encouraging the bulk procurement of building materials to avoid dealing directly with middlemen and suppliers; providing assistance and guidance to select suppliers of quality building materials and guaranteeing the purchase of good quality material. VRCs supported FHHs with unloading of building materials in order to avoid unnecessary visits of men volunteering to support FHHs. VRCs also supported the construction of houses for FHHs while awareness programmes were held for beneficiaries on gender and Sexual and Gender Based Violence (SGBV). In addition, UN-Habitat utilised the services of the SGBV Coordinators at the Divisional Secretariat and existing referral/advocate system to address cases of abuse. The majority of cases were shared with relevant agencies at the Protection Working Group and SGBV Coordination meetings at the District level, and later referred to either the Legal Aid Commission or District level SGBV Coordinators.

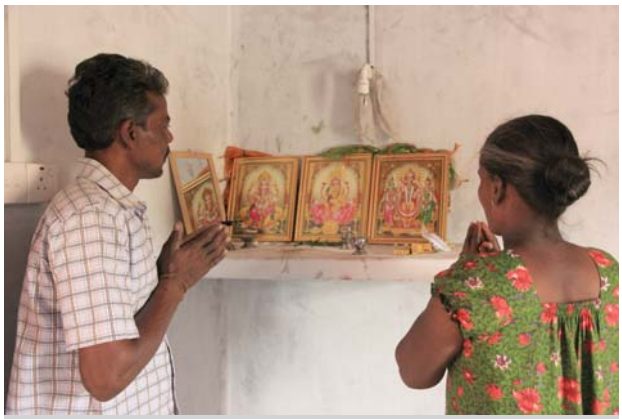
Cultural Sensitivities

Religion and Culture

Religion and culture were important factors during the entire period of operations of the programme, and had a significant impact on construction.

Residents in the project locations principally practiced three main religions – Hinduism, Islam and Christianity. Communities were on the whole a preponderance of one religion, while some especially in more urban areas were multi religious. The fisher communities on the coast often consisted mainly of Roman Catholics or other Christians; while the agricultural communities further inland consisted mainly of Hindus.

In some instances, the design of homes was influenced by religious requirements of beneficiaries. For example, in Hindu households, the largest bedroom is used as the shrine room. In addition, this room was also used as a place to store the harvest and family's valuable goods. It was observed that only male members of the family used this room to sleep. With regard to community infrastructure, especially



The shrine room served a dual purpose - a place of worship and a room to store valuables.

multi-functional community centres and preschools, UN-Habitat followed a policy of respecting all religions. In some regions, several villages of different religious faiths were brought closer together by the provision of shared infrastructure provided by the programme.

Culture played an important role throughout the project period. Cultural events and rituals caused some adverse impacts on the project during certain periods of time when there were temple festivals, which reduced the participation of beneficiaries in construction related activities. Cultural practices and beliefs influencing when certain construction activities can commence also resulted in construction delays. Planning construction activities using seasonal calendars helped to overcome major delays caused by beliefs of the beneficiaries. For example, UN-Habitat advised beneficiaries to commence roof construction before the onset of the "Aadi" period, which is considered an inauspicious time to commence roof work. House warming ceremonies generally began with religious observances and meetings usually commenced with one or two minutes silence. Special emphasis was placed on respecting such traditions during project implementation, including monitoring visits by donors and partners.

House designs were also modified by homeowners based on the type of the livelihood practice, i.e. fisher folk needed a larger veranda to store their fishing gear such as nets.

Social Issues

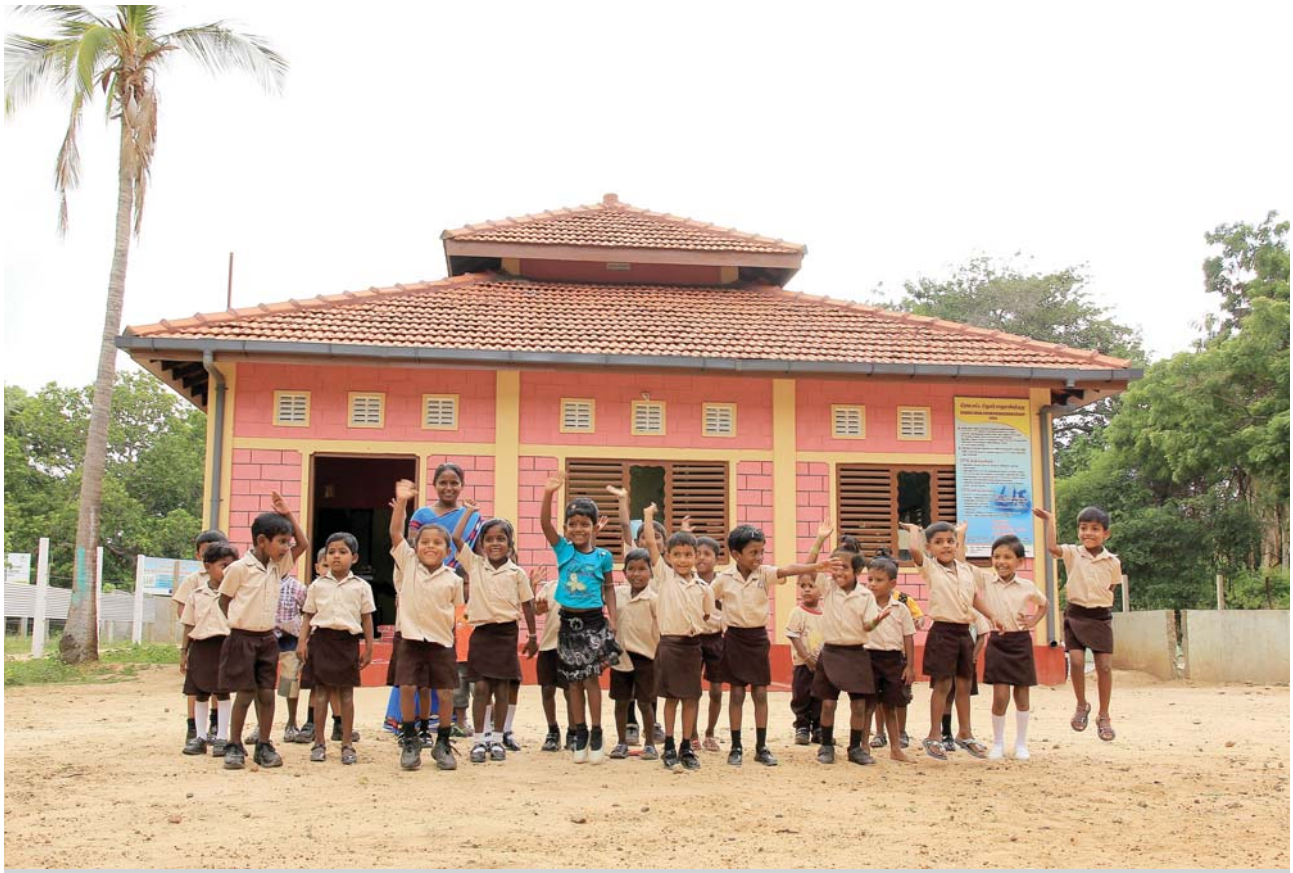
Three decades of conflict had created a wide range of social issues that had to be dealt with by UN-Habitat staff throughout the tenure of the programme. These included:

Implementation of the rule of law: Laws had not been properly implemented in many of these areas for decades. The return to peace brought about a sudden implementation of the rule of law, together with the system's attendant rules, procedures and regulations. An example was the government requirements in building approvals, which had not been practiced for many years.

Lack of initiative: It was found that some beneficiaries initially displayed a lack of initiative exacerbated by the trauma and uncertainty experienced during years of conflict. Having received assistance as Internally Displaced Persons (IDPs), some families expected houses to be constructed by the implementing agencies. Following focused awareness creation, families were motivated to take the initiative to become involved in the construction of their own homes.

Conflict trauma: Many beneficiaries had lived as IDPs for considerable periods of time, and were uncertain of their own futures. Some had been displaced multiple times and had lived in IDP camps for long periods, which increased the level of trauma and consequently resulted in many of them taking a longer time to adapt to peacetime life. This often adversely impacted upon their active participation in the programme.

Indebtedness: Personal indebtedness was mostly the result of repaying personal loans for various reasons including purchase of household goods such as televisions, mobile phones and vehicles such as tractors, motorcycles as well as housing. In addition, productive sources gave either little or no income during drought seasons, and many people had no regular means of income. Daily wage workers from the rural areas could not find adequate work. Families also borrowed from money lenders charging high interest for unexpected contingencies such as illnesses.



Child friendly concepts were introduced to newly constructed preschools.

Therefore, when housing grants were released to beneficiaries, a significant number were trying to meet their day to day needs from the grant. In the case of housing construction, some homeowners built their houses with larger plinth areas by borrowing additional funds through loan schemes, which further negatively affected their financial situation. This often resulted in a half-built house with inadequate finances to complete the construction.

In addition, money spent on alcohol by some beneficiaries resulted in indebtedness as in the case where a husband was the primary beneficiary and spent the money without the wife's knowledge.

Promoting better financial literacy and livelihoods amongst returnees, and special attention to the most vulnerable were identified as vital strategies towards alleviating indebtedness of returnee families.

Alcohol and substance abuse: The programme also encountered a significant level of alcoholism and drug use among communities. This is a long term challenge for communities which will require a multi-faceted response on the part of the government, community based organisations, and other organisations specializing in these issues. The reconstruction programme itself was hampered by these issues, and faced delays in implementation of schedules.

Caste: A key issue that the programme faced in operations was the deeply ingrained issue of the caste structure. Caste based divisions in communities and between communities resulted in difficulties in implementing policies of inclusion. However, UN-Habitat made stringent efforts to include all social levels with special focus on ensuring that all community members regardless of social, caste or gender divisions were provided equal and equitable access to project activities and benefits.

Child-friendly facilities: The issue of children's safety and general child friendliness was also a relatively new aspect for many communities. Among the many facets of child-friendliness that were introduced by the programme were safety fences, child friendly colours and paintings in pre-schools, sandy play areas, and children's sinks and commodes.

Gender

Sri Lanka's Northern and Eastern Provinces contained a predominantly male dominated society, where modern discourse and understanding of gender equality was inadequate. The protracted internal conflict had also served to stifle significant advancement in this area.

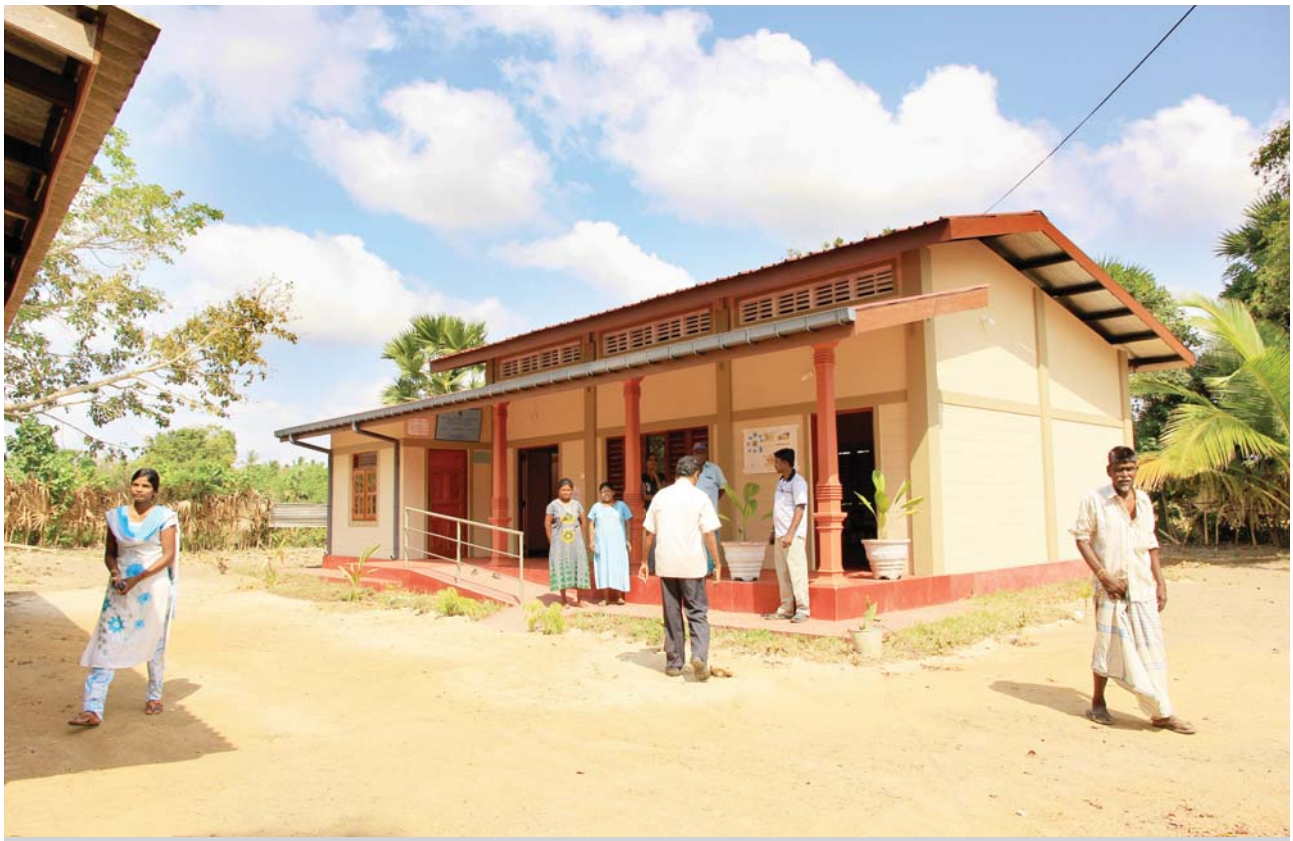
In keeping with its global policies, UN-Habitat focused on mainstreaming gender concerns in all its activities. This was of crucial importance since the population contained a high incidence of FHHs, due to large numbers of men losing their lives in the conflict. Desertion by male members of the family was also a serious issue, since the cohesion of family units had often broken down under the strain of the conflict, or due to other reasons. The requirements of FHHs were therefore of vital importance during all phases of the programme.

This also led to large numbers of women being trained in construction skills such as masonry and carpentry, in order to carry out work on their homes themselves, and also to supervise construction workers. This was indeed an aspect which was quite novel to the culture of the region. Intensive training was provided in such areas, including matters such as negotiation skills to prevent cheating by suppliers who might attempt to take advantage of vulnerable beneficiaries.

Even in families where both men and women were present, issues such as alcoholism, and gender based violence caused serious impediments to the progress of construction. UN-Habitat staff on their regular supervision visits were often the point of first contact for women affected by such issues, and facilitated by liaising with relevant officials in addition to their other duties. These cases were most often referred to government officials in the region, for further monitoring and resolving.

Another unexpected need for women's empowerment was discovered in fishing villages, where the majority of men returned from the sea in the mornings after working all night, and slept most of the day. This left the house construction in the hands of the women.

Members of VRCs collaborated to help vulnerable beneficiaries, such as elderly or female headed homeowners to construct their houses.



All public buildings constructed by the project included wheelchair ramps for differently abled and elderly persons.

Language

In support of the Government policy, UN-Habitat promoted the use of three languages in the Programme, and implemented a strict 'Three Language Policy' of using both National languages – Sinhala and Tamil – together with English, in all of its operations.

This was implemented in a practical manner by recruiting a number multi-lingual staff who were capable of conversing in three or two of the languages; using the preferred language of choice of beneficiaries and government officials in official communications; and ensuring the use of all three languages on signboards, notices, preschool wall paintings and other communiques.

Differently Abled and Elderly

The special needs of differently abled persons and elderly persons had largely been ignored during the years of conflict, and UN-Habitat made stringent efforts to ensure inclusion of globally accepted standards throughout the programme. These included:

- Toilet facilities for differently abled and elderly persons, especially in community infrastructure.
- Wheelchair ramps for differently abled and elderly persons to enjoy full access to community facilities.
- Facilities for differently abled and elderly persons were also included in house designs where a member of a household had such a requirement.

People

Challenges Faced and Lessons Learned

Personal Indebtedness

Challenges Faced: Sri Lanka's prevalent culture of borrowing money from money lenders has caused negative consequences to families in the post conflict areas. Families often borrowed for unexpected contingencies such as purchasing medicine for illnesses, and could not afford the high interest rates of moneylenders.

One reason for indebtedness was the purchase of luxury goods. A large number of commercial organisations had entered the post-conflict areas with products sold on easy-payment schemes. Families were enticed into purchasing these goods which they could ill afford, leading to items being repossessed when payments could not be made.

It was found that the pledge of financial assistance to construct one's house often led to families becoming over ambitious in the size of houses, and consequently their cost. The result would be a half-built house with the homeowner lacking financial resources to complete. Significant care was needed during the planning stages of each house, where field staff educated families on the importance of proper financial planning, and each house was strictly monitored during the construction process.

However, it must be stressed that the provision of permanent housing is a vital component of any programme aimed at restoring normalcy to a post-conflict area, since it brings about a sense of permanency for both individual families and entire communities, which would be difficult to achieve if the population was a transient one. As such, housing should not be unduly delayed until the restoration of all other aspects of normalcy, such as regular employment for beneficiaries or the buildup of savings.

Lessons Learned: In housing projects, more comprehensive programmes should be included to educate and constantly remind beneficiaries of the critical importance of financial planning and money management in order to avoid falling into debt.

Action should be taken at the outset of the programme to provide financial literacy training to beneficiaries as they may not understand how to manage their housing grant installments. In particular, mismanagement of finances and over ambitious house designs that are larger than the standard 550 sq. feet can lead to indebtedness.

Beneficiaries' desire for larger structures should be more strictly controlled, in order to prevent beneficiaries from falling into avoidable debt. In this process, it is important to maintain a constant dialogue with beneficiaries in order to impress upon them the high costs of constructing larger structures.

Low interest housing loan schemes should be developed with state and commercial banks' support, to enable beneficiaries to access funds for construction at reasonable rates of interest. Such loan schemes should be tailored to take into consideration factors such as lack of credit-worthiness of beneficiaries in a conventional sense, as they may not have had the opportunity to establish credit records due to conflict situations, or may not have regular sources of income. It is highly desirable for state or international funding for such a loan scheme.

Providing a greater level of livelihood support to beneficiaries may help to ease their financial burden. Poverty is a severe restriction on the ability of beneficiaries to carry out construction, as families recovering from the conflict may lack the capacity to provide in-kind labour or financial contributions for house construction. In addition, beneficiaries may be obliged to engage in full-time livelihoods which may result in having less time to monitor and supervise their home construction.

Loss of land ownership title documents and ownership disputes

Challenges Faced: A key issue which needed to be addressed early in the programme was the loss of title deeds, land permits and other tenure documents as populations fled their villages during the intensification of the conflict. Since beneficiary selection criteria requires valid land ownership documents, construction could not begin until new documents were available. The assistance of government authorities especially the Land Officers in the district and divisional secretariats were instrumental in resolving these issues. UN-Habitat further assisted the process by holding regular "Land kachcheri" (mobile land consultations) with the affected communities and the Government officers to expedite and resolve land tenure issues.

In a small number of cases, disputes arose over ownership of land in the North and East during the construction of houses. Some beneficiaries selected for housing assistance, had claimed ownership of land which was subsequently disputed by others claiming legitimate ownership. These land disputes were referred to the relevant Government authorities for resolution and in some instances where resolution was not possible, the housing grant was re-allocated to another beneficiary family.

Lessons Learned: The authority required to regularise issues with regard to individual land ownership title documents is vested with government authorities and not with project executing agencies. It is however one of the most vexatious and critical issues that need to be addressed during the very early stages of a programme. It is recommended that the project executing agency make this a key area of focus and provide an enhanced level of assistance to government agencies in resolving land title documentation matters. One aspect of this should be the rapid settlement of disputes over ownership of lands.

Requirements of differently abled persons

Challenges Faced: There was insufficient awareness in the project areas of differently abled-friendly aspects in construction of community infrastructure and housing. This was despite the higher than average level of differently abled persons in communities in the areas of operations, caused in some cases directly by injuries from the conflict, and in other cases due to lack of medical and long-term care in these areas for situations such as motor vehicle accidents, domestic or work related incidents.

Awareness on the needs of differently abled persons was introduced into training programmes and type plans at an early stage of the resettlement process. These included provision of ramps for wheelchair

users, handrails on ramps, use of commodes in toilets as opposed to squatting pans and construction of wider corridors for ease of wheelchair users, especially in community buildings.

Lessons Learned: A vital aspect of successfully including differently abled issues into a reconstruction programme lies in creating a high level of awareness among government officials of the importance of the subject, and the non-optional nature of it in modern reconstruction programmes. It is therefore important to commence a comprehensive awareness programme on the issues that differently abled persons face for government officials at all levels. Since the UN-Habitat programme did not significantly enhance disability access in housing, an extensive series of awareness programmes should be carried out on differently-abled needs, and differently abled-friendly facilities should be included in the designs of houses and infrastructure facilities. This needs to be an integral part of the overall programme from its very commencement.

Inclusive language policy

Challenges Faced: UN-Habitat recognized the need for language inclusion throughout its programmes. Wherever possible, programme initiatives and activities were carried out in the country's three languages – Sinhala, Tamil and English. These included project visibility boards, commemorative plaques and preschool educational drawings on internal walls.

In addition, a key stipulation for all local staff was language capability, ensuring ease of communication with all stakeholders. This requirement also applied to partner organisations. One partnership with a financial services organisation to serve community women's societies proved unsuccessful since the organisation lacked local language skills.

Lessons Learned: In multi-lingual communities, it is essential that all languages which are in use in the area be integrated into the programme, in order to avoid alienating any section of the community from the programme. Suitable measures should be taken to ensure that language policy is implemented at all levels, including among partner organisations and government agencies, such as awareness programmes and assistance in setting up departments and assisting officials to facilitate better communication in those languages.

Ensuring gender equality

Challenges Faced: Gender equality was a key issue in ensuring equal opportunity in a traditionally male dominated culture that had not become modernised for several decades due to isolation by the conflict, and had not therefore developed in accordance with international norms and practices.

Gender equality was a critical issue in the entire reconstruction programme, due to the high level of FHHs in the communities as a result of the conflict. It was thus vital to integrate gender equality measures into the programme from its early stages, to ensure inclusion of all segments of society.

In addition, issues of vulnerability of women in these operational areas, where law and order had broken down for many years and was only slowly returning to a level of normalcy, needed to be rapidly addressed.

Lessons Learned: The importance of gender equality was underlined in the initial stages of the programme when 40% of the membership of Village Reconstruction Committees (VRC) were reserved for women. In addition, it was stipulated that one of the three office-bearers of each VRC – Chairman, Secretary, and Treasurer – should be a woman.

UN-Habitat, by employing dedicated staff members to address gender issues, further enhanced the mainstreaming of gender into the programme. Other initiatives included collection of gender disaggregated data by field staff; and awareness programmes on gender issues including gender based violence with the co-operation of local government officials and specialised agencies.

Delays caused by local cultural activities

Challenges Faced: Seasonal festivals, harvests, etc. lead to a dearth of labour as construction workers were drawn to these activities. In addition, traditional societies firmly believe that not adhering to all their

beliefs would bring misfortune to a home; this results in a lack of interest and enthusiasm on the part of beneficiaries if the start of construction is hurried.

Firm belief in astrology and 'Vaastu shastra' led to significant issues during construction. These included delays in dates of commencement as participants were unwilling to commence construction until auspicious dates; requests for larger room sizes; and requirements of specific roof styles.

Lessons Learned: Unfortunately, cultural requirements cannot be overridden or ignored, and it is an issue which requires executing agencies to allow greater flexibility in construction schedules to accommodate traditional cultural activities. Executing agencies should familiarise themselves with the prevalent cultural practices when designing schedules for the project. Where necessary, the reason for delays due to cultural practices should be made known to donor agencies in order to ensure that there are no misunderstandings with regard to time schedules.

Addressing social issues

Challenges Faced: Fractured communities have high levels of social issues including estrangement, polygamy, substance abuse, etc. which need to be addressed. In particular, post conflict regions developed social issues of alcohol and drug dependency, especially among men. This resulted in challenges which delayed the programme, including poor financial management, abandonment of families by the men, and gender based violence, all of which negatively impacted on the reconstruction programme. Since UN-Habitat cannot perform these functions, these needed to be referred to relevant authorities and specialised agencies.

Lessons Learned: More emphasis should be placed on social issues and more support should be provided for social institutions. In particular, the inclusion of NGOs and international organisations specialising in combatting social issues is highly desirable from the commencement of a project.

Accessibility of operational areas and beneficiary communities

Challenges Faced: During the early post-conflict stages, field staff were required to travel considerable distances on badly maintained roads, and faced various hazards. Close monitoring of the movements of individual staff was highly desirable. The situation gradually eased when more field offices were established in each district, and roads were repaired and reconstructed.

Lessons Learned: Since field staff should not be unduly exposed to overly hazardous situations, the level of delays in reconstruction programmes that would be caused by such limitations should be factored into a programme's schedule from its inception.

Scarcity of labour and building materials

Challenges Faced: The low capacity of the construction industry and the sudden demand for materials and labour due to the boom in construction especially in the North, resulted in a shortage of both building materials and labour and a steep increase in material and labour prices. In addition to the demand for materials, periodic restrictions on the mining of sand in project locations resulted in shortages for construction and resultant price increases.

Housing beneficiaries' preference for traditional hardwood for carpentry and joinery resulted in a high demand for these timbers, creating price increases and an illegal market. Some beneficiaries faced delays in completion of their houses as illegally harvested timber was confiscated by the Authorities. Managing construction within the budget was a challenge, with material and labour costs escalating from the commencement of the project. In addition, many of the project locations were isolated from main transport routes, adding to transport costs.

Lessons Learned: Bulk procurement of materials by communities through VRCs established by UN-Habitat, significantly lowered building material prices for individual households due to the benefits of purchasing materials at wholesale prices and lower transport costs. Procurement of building materials at community level was managed by the VRCs,

who negotiated with local material suppliers to procure materials at wholesale prices. A database of local suppliers developed by UN-Habitat was used by the VRCs to locally procure materials.

The main challenge in implementing bulk purchasing was the differing progress of housing beneficiaries, as the more vulnerable beneficiaries were slower than the rest of the community and were unable to enjoy the full benefits of bulk procurement. UN-Habitat field teams worked to mobilise the vulnerable households showing slow progress to accelerate construction and encouraged VRCs to provide extra support to these households. Bulk procurement enabled beneficiaries to complete houses with minimal cost overruns in most locations. In isolated areas such as villages in Musali DS Division in Mannar District, bulk purchasing has been crucial in the completion of houses.

Awareness on child labour

Challenges Faced: It was discovered that there was a high level of school absenteeism in many families participating in the programme, especially in the 14-16 years age group. In many instances, the children had stayed behind to assist with house construction, a practice which was especially prevalent in single-parent FHHs. Awareness on child labour was included in training programmes to ensure construction activities did not hamper children's education.

Lessons Learned: A multi-pronged attempt should be made to eradicate practices of child labour, whether caused by exigencies of local situations or cultural norms. This should be in the form of public awareness programmes, and empowering of government officials in the area.

Vulnerability of female headed, single parent households and sexual harassment

Challenges Faced: The entry of external construction workers such as masons and carpenters led to an increase in the number of sexual harassment complaints, especially by women in female-headed households. This required reporting to law enforcement authorities.

A significant number of families in the areas of resettlement were female headed, single parent units, often due to mortality of men during the conflict, but also due to mass migrations leading to extramarital affairs and broken families.

This led to a variety of issues including security of families, lack of income generation as mothers stayed home to care for children and could not undertake full time employment, and lack of labour for construction purposes. The latter issue was alleviated by providing women training in carpentry and masonry, and with VRCs providing voluntary labour support to vulnerable families.

However, it was observed that despite difficulties, FHHs completed construction significantly faster than households where both parents were present.

Lessons Learned: In post-conflict and disaster areas, sexual harassment is often, but not exclusively, the result of a breakdown in law and order. It is therefore vital that government agencies involved in law and order be strengthened, either by the reconstruction programme itself or by allied programmes, including police, courts, school teachers, local government officials, and CBOs.

In addition, the level of awareness of issues relating to sexual harassment should be raised through public meetings, including the reporting of incidents to authorities.

Cheating by suppliers and construction workers

Challenges Faced: A significant issue arose in suppliers and construction workers taking advance payments and not delivering, especially with regard to FHHs, and required serious intervention on the part of field staff. However, this was resolved to a great extent by involving VRCs in sourcing and purchasing building materials on behalf of families.

Lessons Learned: Bulk purchasing of construction materials should be undertaken by CBOs on behalf of beneficiaries whenever possible. Discussions should also be held with government agencies with regard to the possibilities of price control of construction

materials within operational areas, using methods such as increasing of the number of suppliers to bring about a greater level of competition among suppliers and to break monopolies and unfair market practices. A mechanism should be established for suppliers to also be closely monitored for both quality standards of construction materials and pricing.

Balancing construction and employment

Challenges Faced: Participating families where beneficiaries had regular employment were found to often fall behind on construction schedules, due to the difficulty of time management in employment and construction. It is recommended that this factor be taken into consideration in future programmes.

Lessons Learned: Enhanced livelihood support should be a more distinct feature of any reconstruction programme, to ensure a greater balance for beneficiaries between construction activities and employment. In addition, this factor should be included when drawing up construction schedules, to set more realistic dates for completion.

Different micro-cultures

Challenges Faced: A wide range of micro cultures were encountered throughout the resettlement areas, depending on ethnicity, religion and caste. For example, fishing villages on the coastline of the Mullaitivu district had significantly different cultures from agriculture based communities in Kilinochchi, with the former being predominantly Christian while the latter mainly comprised of Hindus. Each had a different set of requirements in housing construction including auspicious times for construction work, use of "Vaastu Shastra" in house plans and specific usages for rooms, which had to be accommodated.

Lessons Learned: Field staff should be trained to quickly comprehend the effects of different micro cultures on construction matters, and advise on this matter, especially with regard to schedules, tailoring of house plans and infrastructure priorities for individual beneficiaries and communities, etc.

Lack of initiative among post-conflict communities

Challenges Faced: The prolonged conflict had resulted in families and communities becoming dependent on handouts and external assistance for many years. There was some expectation that families would be provided with houses constructed by implementing organisations. It was therefore a challenge to change this mindset to one of active community and family participation in the entire construction process.

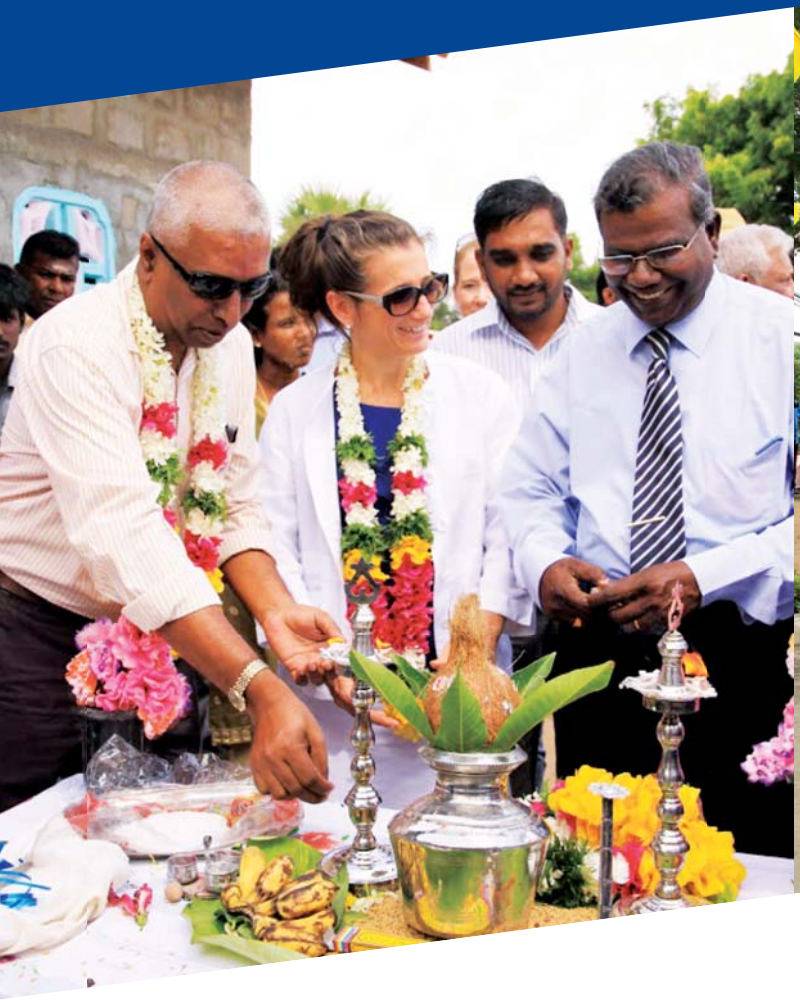
Lessons Learned: Awareness creation methodologies with regard to the benefits to beneficiaries of building their own houses should be focused upon at the early stages of the programme in order to generate higher levels of enthusiasm.

Caste divisions

Challenges Faced: The caste system, which has prevailed in Sri Lanka for centuries, proved to be a significant challenge. Members of low castes are marginalised in many communities, and a great deal of effort was made to provide a more inclusive process. A key component was in ensuring that members of lower castes were given suitable representation in VRCs.

Lessons Learned: All community members should be made aware that international reconstruction programmes will ensure nondiscrimination among beneficiaries on the basis of caste, religion and other cultural issues. Where marginalised sections exist within communities, steps should be taken, through local government agencies and CBOs, to ensure that all are given equal access to information and decision making in development programmes.

Partnerships



UN-Habitat staff provided vital technical assistance to homeowners to construct their houses.

Introduction

Over a seven-year period, UN-Habitat developed and drew upon the generosity and co-operation of a number of donor governments, government funding agencies and private sector organisations, with which it had developed longstanding relationships over many decades of cooperation. The main Post Conflict Reconstruction Programme consisted of a number of different programmes which evolved over time, funded by different donors both individually and collectively. These programmes had different areas of focus i.e. some on rebuilding homes, others on strengthening community infrastructure, while some programmes addressed both needs.

In 2010, UN-Habitat commenced the first housing construction project with funding from the Government of Australia, leading to the second housing project which was implemented with funding from the European Union in partnership with the governments of Australia and Switzerland. This project was expanded to a second phase following the success of the first phase and included both housing as well as community infrastructure facilities. UN-Habitat was one of the implementing agencies of the Indian Housing Project, one of the largest post conflict housing projects in Sri Lanka, which was implemented from 2012 – 2016 in the North. The two community infrastructure projects funded by the Government of Japan was implemented during the same period.

Stakeholder engagement

UN-Habitat's strategy of focusing on reconstruction efforts, rather than investing resources on temporary shelter, ensured that IDPs are provided permanent homes in as short a period as possible. This also ensures that families are not exposed to the shortcomings of temporary shelter for any great length of time.

UN-Habitat has successfully adopted a participatory home owner driven process, in the implementation of its programmes, which encourages families to take responsibility of their own recovery process, albeit with support of UN-Habitat and its partner organisations. This process is developed and implemented in partnership with a wide range of stakeholders.

At the commencement of the housing construction programme, each homeowner was provided LKR 375,000 to reconstruct a house that was completely

destroyed; or LKR 250,000 to repair a house that was partially damaged. The sum for reconstruction of a full house was subsequently increased to LKR 550,000 in the latter stages of the programme. The financial aspect of building the houses was managed by the homeowners themselves.

A key strength of UN-Habitat continues to be its wide range of partners, including central government, local authorities, non-governmental organisations, community based organisations, private sector, and funding partners.

Government of Sri Lanka

At all times, the full co-operation of government officials at all levels was an essential component in the successful implementation of the programme. In this regard, the cordial relationship UN-Habitat enjoyed with central, district and local government, which had been fostered over many decades of engagement in Sri Lanka, was of paramount importance. Without the support of the GoSL officers at all levels, this programme would not have been possible. The active participation and support provided by government officials is referred to in the *Introduction* and in several other sections throughout this report.

Role of the Presidential Task Force

The Government of Sri Lanka on May 7, 2009 appointed a Presidential Task Force for Resettlement, Development and Security in the Northern Province (PTF) to prepare strategic plans, programmes and projects to resettle internally displaced persons, rehabilitate and develop economic and social infrastructure of the Northern Province.

The PTF was comprised of 19 members and was chaired by a Senior Presidential Advisor, with the Commissioner General of Essential Services serving as its Secretary. Its membership was comprised of the Secretary to the President, Secretaries of key Ministries, and several senior officers of the military. As its name implies, the PTF wielded extensive powers and was the absolute authority on matters in the Northern Province in the immediate aftermath of the conflict, including the authority to direct all governmental and non-governmental organisations in activities in the Northern Province.

UN-Habitat worked in close collaboration with the PTF with regular monthly meetings to keep PTF members informed of progress of the reconstruction programme, challenges and issued faced, and to obtain the assistance of the PTF. UN-Habitat

Opening of preschool by the Japanese Ambassador in Sri Lanka.

worked in a spirit of complete transparency, and received a high level of co-operation from the PTF.

The PTF served for a little over five years and was dissolved in July 2014. UN-Habitat projects that had been under the authority of the PTF were then moved under the Ministry of Resettlement.

Mobilising communities through the people's process

An important aspect of the People's Process is the co-operation of all segments of a community, due to the participatory, rights-based approach utilised by UN-Habitat which respects diversity, gender inclusiveness, and integration of differently-abled persons, including culturally and socially diverse communities.

The foundation of all UN-Habitat's programmes is the forming of solid partnerships with beneficiaries and stakeholders in the project locations and instilling in them a sense of trust, ownership and solidarity. This ensures optimal co-operation in all aspects of work, including planning, decision making, problem solving, and resource sharing, leading to long term sustainability. In doing so, UN-Habitat also serves to promote further links and partnerships between communities and a network of stakeholders, including government authorities and community based organisations.

During the programme, several important community based partner organisations were either formed or capacities enhanced in existing organisations to play active roles in the reconstruction process. These included VRCs, CBOs and Community Monitoring Committees.

Integrated development

Throughout the programme, UN-Habitat carried out a series of Skills Development programmes in construction skills and financial management to build capacity of beneficiaries, as well as numerous awareness programmes on social and practical issues such as gender based violence and mine risk awareness. These programmes were implemented with the assistance of a number of partner organisations. A detailed analysis is provided in the *Skills training and awareness creation* section.

The development of such marketable skills also promoted livelihood opportunities and economic safety nets for beneficiaries and the economic welfare of communities in the long term. These include vulnerable and marginalised segments of the population such as FHHs, elderly persons and unemployed youth.

Engaging a people's process in infrastructure

UN-Habitat took the holistic view of rebuilding sustainable settlements inclusive of community infrastructure facilities, in addition to permanent houses, wherever possible. Hence, particular focus was given to the construction of community infrastructure, as one of the most effective means of bringing people together after decades of conflict which had resulted in the fragmentation of communities.

Just as permanent housing is important to families to lead normal healthy lives sheltered from the elements, community infrastructure is vital to return to normal civic life for the entire community. Without basic facilities such as functional access roads, storm water drainage systems, water supply schemes and preschools, it is difficult for people to resettle in their villages.

Provision of infrastructure also helped generate employment opportunities and stabilise communities by enhancing local governance capacity and linkages with the service providers, which in turn contributed to the sustainability of the infrastructure facilities.

The reconstruction programme supported the construction of a number of infrastructure facilities, with each village generally receiving one infrastructure project except some extremely resource poor villages receiving several. It is notable that the 520 infrastructure interventions constructed under this programme provided direct benefits to a total of 420,000 people in the Northern and Eastern Provinces.

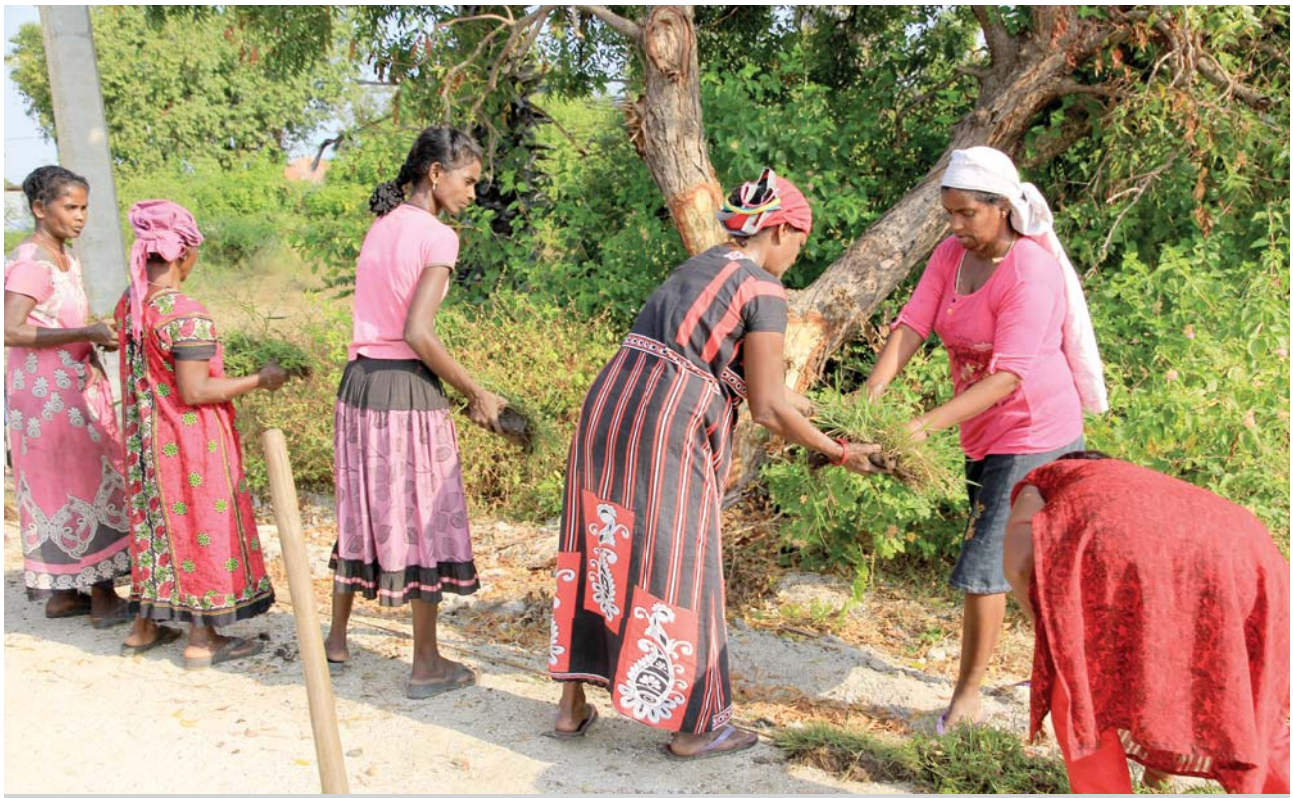
For the Post-Conflict Reconstruction Programme, UN-Habitat obtained funding from the following donors, listed in chronological order:

Project	Funding Partners	Quantum of Funding	Duration	Project Activities
Shelter Support to Conflict Affected IDPs in the North of Sri Lanka	Government of Australia	US$ 8.7 Mn	2010-2011	Construction of 3,786 houses.
Support to Conflict Affected People through Housing	European Union, Government of Australia and the Swiss Agency for Development and Cooperation	US$ 21.0 Mn	2011-2014	Construction of 5,059 houses; 52 community wells, 20,000 trees planted, 10 RWH systems installed.
Indian Housing Project	Government of India	US$ 82.0 Mn	2012-2016	Construction of 17,944 permanent houses
Rehabilitation of Community Infrastructure and Facilities in the Conflict Affected Areas in Northern Province of Sri Lanka	Government of Japan	US$ 3.6 Mn	2013-2015	Rehabilitation of 95.8 km of internal access roads and 6.14km of storm water drains; Establishment of 62 rainwater harvesting systems in public buildings; Construction of 29 community centres and 22 pre-schools; Planting of 76,184 trees.
Improving Living Conditions in Returnee Areas of Sri Lanka through Housing	European Union, Government of Australia and the Swiss Agency for Development and Cooperation	US$ 23.0 Mn	2013-2015	Construction of 4,569 houses; Construction of 12 preschools, 13 community centres, 16 wells; Rehabilitation of 35 km of internal access roads; 25 RWH systems installed.
Project for Rehabilitation of Community Infrastructure, Improvement of Livelihoods and Empowerment of Women in the Northern and Eastern Provinces	Government of Japan	US$ 3.6 Mn	2014-2016	Construction of 45 community centres and 31 preschools, Establishment of 76 RWH systems; Construction of 13 community storage facilities and 5 small irrigation channels; Rehabilitation of 13.62km storm water drainage and 32 km internal roads; Planting of 70,568 trees.

Results of the programme

The multiple projects carried out by UN-Habitat in its Post-Conflict Reconstruction Programme resulted in the construction and repair of the following in the Northern and Eastern Provinces:

Type of Construction	Number
Houses Repaired and Reconstructed	31,358
Multipurpose community centres	87
Preschools	65
Internal access roads	95 projects totaling 163 km
Storm water drainage systems	13
Rainwater harvesting systems	173
Community storage facilities	13
Irrigation channels	5 projects totaling 12 km
Community wells	68



Members of the Kovilvayal Women's Rural Development Society performing voluntary shramadana activities to turf the roadside.

Most of the infrastructure facilities were constructed parallel to, or after the construction of housing to ensure rapid development of conflict affected villages. UN-Habitat field staff initiated discussions with the community members through Settlement Improvement Planning Workshops to identify the needs and available resources of each community for the development of their village. Action Plans were drafted accordingly, prioritizing essential infrastructure for each village. The design of each infrastructure project was customised according to the needs of the community in collaboration with the relevant local government authorities.

As with the construction of homes, the infrastructure projects were also carried out through a people's participatory process, where community contracts were awarded to Community Based Organisations including women's CBOs such as Women's Rural Development Societies. This approach further enhanced intra-community relationships and the level of community spirit and social cohesion as village residents worked together for a common cause that would provide immediate and long term benefits for all residents. Community contracts through CBOs also fostered a sense of ownership in the asset. The community members were trained on construction techniques that were also useful for the maintenance of the output. In addition, the CBOs received leadership, monitoring and financial management training. This was particularly beneficial to the community especially in implementing future development activities.

The unit price for the cost of construction of infrastructure was significantly lower than industry norms due to the involvement of the CBOs with their in-kind contributions as well as in negotiating with suppliers with the technical assistance of UN-Habitat. The absence of a profit margin also contributed significantly towards lowering the total cost of construction.

Upon completion, each infrastructure output was handed over to the relevant government authority to be registered into their inventories, which in turn ensured responsibility for management and maintenance. In addition, it was part of the agreement that community members would carry out regular maintenance work.

All infrastructure facilities were designed and constructed with emphasis on the following key

aspects, where applicable: environment protection; eco friendliness; disaster risk reduction, safety during construction; cost effectiveness; access for differently abled persons and child friendliness.

Preschools

In many villages, community members selected preschools as the priority infrastructure intervention. This was of positive significance, as adults who had grown up during the conflict with little access to education, were very keen in providing their children with opportunities for early childhood education, in order to ensure productive and happy childhoods.

As in other infrastructure interventions, the preschools were constructed using a participatory process of construction. Selected CBOs in each village were responsible for the construction of the preschools, while UN-Habitat provided technical assistance. The programme constructed 65 preschools in the districts of Kilinochchi, Mullaitivu and Mannar.

Each preschool consists of a main school room, a teacher's room, kitchen, and toilet facilities. Different designs to suit the student populations were customised with the communities and teachers. Disaster risk reduction features have been incorporated into the design and construction. These include roofs anchored to a reinforced concrete framed structure and restraining plaster bands over clay tiled roofs to resist seasonal high winds. Plinth levels were raised, taking into consideration annual flood levels and dampness due to high ground water levels during monsoon rains. Alternative technologies and rainwater harvesting systems have been incorporated into the preschools, similar to those used in community centres. A playground with equipment is located in each preschool yard.

In addition to providing the building and equipment, the programme also contributed towards capacity building of preschool personnel in the North. Through a partnership with Save the Children Japan, selected preschools were provided with specialist training, targeting teachers and preschool management committee members. This included conducting a preschool teacher diploma course, training on Child Friendly Teaching Methods and Preschool Management techniques. This joint initiative provided training for 21 preschool teachers on child-friendly teaching methods in seven preschools in the Mullaitivu District, and training on overall pre-school management to over 70 members of the Management Committees in the seven preschools.

Preschool children in the bright and airy environment of their newly constructed preschool.

Community Centres

Community Centres are a vital indoor public space in villages. They are used by community members to interact, hold meetings and important events and receive extended government services. With the destruction caused by the conflict, many common buildings were destroyed. As a result, events were held outdoors or in temporary buildings lacking basic facilities. Since 2012, the post conflict reconstruction programme has assisted over 80 villages to construct community centres in Kilinochchi, Mullaitivu, Mannar and Batticaloa districts.

The standard community centre design included a large meeting hall, two office rooms for village administrative officers, toilets and a front verandah that is used as a waiting area. Three designs were developed by UN-Habitat with varying meeting hall sizes to suit the size of the community. The communities and government stakeholders were consulted in customising the designs to suit each village. Disaster risk reduction features were incorporated into the construction to ensure resilience to extreme weather events such as high winds, heavy rains and flooding

Samurdhi Officer in her office at the Thiruvaiyaru Community Centre in Kilinochchi district.

> "We didn't have a proper place to hold mass meetings and attend to our administrative work. Several government field officers including the Grama Niladhari, Development Officer, Samurdhi Development Officers and Public Health Midwives have been working in the village without a proper building or facilities. We faced many difficulties, especially during the rainy season. We are grateful to the Japanese Government for this assistance."
>
> **Ms. Thasavaran,**
> Grama Niladhari of Thiruvaiyaru village, Kilinochchi

These community centres were designed for a variety of purposes, including meetings, training programmes, festivals, classes for school children, public health inspectors' visits and other community activities. The main hall served a dual purpose as it could be rented out for short term events thus earning revenue for the community.

An important aspect of the community centres was the inclusion of office space within each centre for local government officials – specifically the respective Grama Niladharis (Community Officer) and Samurdhi Officers (Social Services Officer) of the villages.

The new community buildings were also used to demonstrate environmentally friendly, alternative construction technologies. Community members were trained to produce new building materials, thus opening up new avenues for livelihoods. Wherever possible, building materials used for construction were sourced locally. Construction materials used include cement blocks and mud concrete blocks for walls, zinc-aluminum roof cladding and concrete door and window frames. Cost effective, eco-friendly building methods included fair-faced wall construction which eliminates the need for plaster. Two community centres were constructed using 'Rat-Trap Bond' walls. A roof top rainwater harvesting system was installed in each building to utilise water in drought prone areas.

The community centres were also designed to serve as gathering points and emergency shelters for area residents in the event of natural disasters such as floods. Rainwater harvesting tanks on the roofs could also be used as a reserve water source.

Internal access roads

During the early stages of the programme, it was noted that while main roads were being reconstructed under various state funded programmes, there were a significant number of smaller internal gravel roads which connected villages to main roads, requiring rehabilitation and reconstruction following decades of neglect.

> ❝ Fishing is an important livelihood In Karaveddy. Many fishermen use the Karaveddyaru tank for fishing. The internal road linking the village to the tank is very useful for fishermen to transport their catch to the markets. Also the 1.4 Km cemetery road is now wide enough for people and vehicles. As the surrounding areas has been cleared of scrub jungle, we can use the road safely. ❞
>
> **Mr. S. Gobalakrishnan,**
> Grama Niladhari of Karaveddy, Batticaloa.

Well maintained internal access roads are vital for the efficient functioning of villages in rural Sri Lanka. Internal roads are used daily by residents to travel to their workplaces, farms and schools and to visit towns and marketplaces to buy and sell produce and access services. When internal roads are in a state of disrepair communities are severely inconvenienced, particularly during the rainy season as badly maintained roads flood and become impassable, and communities are cut off.

Communities together with UN-Habitat technical staff identified the most important internal access roads which included those that provided access to schools and market places. These were reconstructed to the standards set by the local authority, which included raising the road surface above annual flood levels and re-surfacing with gravel.

In keeping with the participatory people's process of implementation, the management of the road construction was handed over to CBOs. Roads surfaced with gravel was the selected option due to low traffic densities. This also eliminated the dependence on external technical resources for road maintenance as the roads are maintained through traditional voluntary work by the communities themselves. The Government authorities had the option of converting these roads to asphalt in the future when funding is available. Storm water drainage and annual flooding patterns were important considerations when designing the roads, with culverts and side drains ensuring proper drainage. Construction materials used included gravel, earth, rubble, cement and sand, sourced locally where possible. Pre-cast concrete items including hume pipes were also procured from local concrete yards.

Irrigation and drainage

The construction of drainage and irrigation systems was important for water management particularly for both agriculture and disaster risk reduction.

The economies of both the Northern and Eastern Provinces are heavily reliant on agriculture. However, the conflict had damaged existing agricultural infrastructure as there had been little investment in maintenance of irrigation facilities. The construction of irrigation channels and drainage systems through the programme served to restore a strong sense of balance to agriculture in the region, and enhanced the revenue generating capabilities of individuals and communities.

In terms of DRR, the areas of operation are vulnerable to the annual Northeast Monsoon rains, and the construction of drainage facilities significantly reduced the risk of flooding in many villages.

Community storage facilities

The remoteness of many communities in the Northern Province has led to a requirement for storage facilities, most notably for the storage of fertilizer during periods when fields are being prepared, and for storing the harvests for food security and for selling them at the best possible price, at the right time. These serve the purposes of ensuring that planting of seedlings is not delayed due to a lack of fertilizer and harvests are protected from adverse weather conditions and agricultural pests.

A total of 13 storage facilities were constructed as infrastructure interventions in communities. These

Rice paddy stored in a community storage facility in Kilinochchi district.

Residents collecting water from a community well in Mullaitivu district.

were handed over to the Agrarian Services Department, a government body with an appointed official in each area.

The provision of community storage facilities is an important support facility, and also serves to bring communities closer together around a shared resource. Storage facilities were included following the noticing of high demand from the communities during implementation of early stages of the programme. Communities whose livelihoods are more closely dependent on agriculture tend to choose storage facilities.

Community wells

Most homes in the Northern and Eastern Provinces are not connected to pipe borne water systems, and families and communities rely on wells, rivers and irrigation tanks for their daily supply. However, these are vulnerable to the vagaries of weather and often dry up during periods of drought.

The post conflict reconstruction programme has provided access to fresh water to communities through several initiatives. These include the construction of deep community dug wells in villages where UN-Habitat assisted families to construct homes. These common wells are located in easily accessible locations where families can now obtain water for drinking, cooking and washing needs.

Community wells were typically 8 feet in diameter, with depth depending on the ground water level. Construction was of 6-inch thick cement-sand block walls, reinforced columns and 6-inch thick ring beams, with plastering, 3-feet high external walls as a safety measure and rung ladders for ascending/descending painted with anti-corrosive paint.

In keeping with UN-Habitat's participatory methodology, these wells were constructed by CBOs and non-governmental organisations with technical assistance from UN-Habitat.

Skills training and awareness creation

Three decades of conflict had resulted in a serious lack of skills in many peacetime activities in the Northern and Eastern Provinces. This included a significant gap in knowledge of modern practices in construction, as the conflict had stalled formal construction activities and craftsmen did not have opportunities to practice or update their skills in new technologies. Therefore, construction skills training was one of the vital needs, since a cadre of trained

Constructing Storm Water Drainage Systems

The Grama Niladhari Division of Puliyampokkanai in Kilinochchi district consists of 424 families. During the Settlement Improvement Planning workshop held by UN-Habitat, the community identified several urgent requirements including the need for a storm water drainage structure on Puliyampokkanai Road. This intervention was a key priority as the road was prone to flooding during heavy rains, as excess water from nearby fields and streams flows through this area, severely inconveniencing residents. Funding of LKR 4,481,370 was provided by the Government of Japan.

The Puliyampokkanai Women's Rural Development Society (WRDS) was selected by UN-Habitat to construct the storm water drainage structure, including a small bridge for pedestrian and vehicular traffic. The village residents and the Rural Development Officer worked closely with the WRDS to support the project implementation while the Grama Niladhari closely monitored the progress. The completed storm water drainage structure is 5 metres in length, consisting of a 1.5m X 1.5m twin cell. The WRDS was responsible for the hiring skilled construction workers and purchasing construction materials. The planning and implementation of the project was driven by the WRDS and the community while UN-Habitat provided technical assistance. The construction work was completed in October 2015 and the drainage structure, which also functions as a motorable mini bridge, is used daily by residents. The project demonstrates the successful implementation of a people's participatory process – where communities have been involved in the identification and planning as well as the execution of their own community assets.

Mrs. Rajeswary, the WRDS President, stated "This project gave us the opportunity to work with both the community and the Government. We now have a close bond with the community. We are grateful to the Government of Japan for the financial support and to UN-Habitat for guiding us to construct the structure".

The storm water drainage system constructed in Puliyampokkanai GN division.

and skilled workers was needed to implement the programme.

Quite apart from the challenges posed by the dearth of trained masons and carpenters, the inclusive approach of UN-Habitat faced more challenges since it required beneficiaries to have some basic knowledge of construction practices, including planning, negotiation and supervisory skills.

UN-Habitat therefore initiated a series of formal training programmes to upgrade the skills of existing craftsmen, enhance the skills of new construction workers, and provide trainees with a sufficient level of knowledge to participate in the many aspects of the construction process. The programme was of six months duration, including three months each of class room and practical training on a construction site. Trainees were divided into groups and allocated project sites under the guidance of a head mason or trainer.

Through these programmes, UN-Habitat's interventions contributed significantly towards revitalising the construction skills of the workforce in the North and East. In addition, youth were provided with new avenues of employment and livelihood.

In addition to construction related training, UN-Habitat provided training of other skills that were required in the post conflict context such as environmental awareness, Gender Based Violence (GBV), mine risk education and HIV/AIDS.

Target groups

By their very nature, the community based approach and homeowner driven construction process adopted by UN-Habitat required capacity building in the form of awareness creation and skills training of a variety of target groups, due to the lack of relevant skills among stakeholders. These target groups included:

- Beneficiaries, who required basic awareness in ensuring the quality of work, selection of materials and alternative technological options and DRR features.
- Local builders, semi-skilled and unskilled workers, including youth interested in construction.
- Office bearers and members of VRCs and other community based organisations.
- Training of trainers.

The experience in the programme showed that training in construction methodologies should be

Young men and women participate in practical carpentary training programme in Welimada, Mullaitivu District.

Classroom masonry training in progress in Kilinochchi district.

commenced during the early stages of projects, in order to ensure rapid completion. In addition, youth skills development training and engagement in construction resulted in new livelihood opportunities, which was an important factor considering that in the immediate aftermath of the conflict, lack of employment opportunities and space for meaningful engagements in remote villages led many youth towards anti-social activities and alcoholism.

Types of training programmes

The types of training were identified through discussions with stakeholders, resulting in a diverse range of programmes. Protecting the environment, disaster risk reduction, construction safety, utilisation of local resources and minimising wastage of building materials were cross cutting themes in the construction training programmes.

The training programmes provided by UN-Habitat included the following:

- Cost-effective construction technologies
- Waste reduction, recycling of salvaged materials and utilising construction debris in new construction.
- Skills training in alternative technologies
- Training of craftsmen in improved productivity through new tools
- Standards in construction and material selection
- Construction quality assurance
- On site timber treatment
- Community mobilisation
- Mine risk education
- Incorporation of DRR measures in construction
- Environmental impact mitigation measures
- Awareness of gender related issues
- HIV/AIDS awareness

Each training session contained various numbers of participants, ranging from half a dozen up to several hundred, depending on the level of specialisation of the topic. Training sessions included construction of houses, as on the job training.

Gender empowerment in construction

The large number of FHHs in the conflict affected areas resulted in significant numbers of women receiving training and entering traditionally male-dominated fields of construction. With training in carpentry, masonry, negotiating skills and supervisory skills, women were more equipped to fully participate in the construction of their homes, including the supervision of construction workers. This served to provide a significant level of empowerment amongst female beneficiaries.

In most of the basic technical trainings, women participated in large numbers since their husbands were occupied with income generation activities. As a result, during the construction period, activities such as block casting, earth filling, storing materials, curing casted blocks, mixing of cement, were very often undertaken by women, resulting in a significant contribution to the construction of their own houses. This high level of participation of women ensured an uninterrupted household income from their husband's income generation activities, while the wives managed the house construction activities. Wives of masons and carpenters were able to work together, improving family income, which relieved dependency on the husband's income for household expenses.

Families with poor incomes and incomeless families have been identified by gender focused organisations in the North to be facing more gender-based violence at domestic level. Therefore, the involvement of women in the construction process and the accompanied training is believed to have contributed significantly to the reduction of gender-based violence at household level.

Leveraging the expertise of partners

While some components of the training during the various phases of the post-conflict reconstruction programme were carried out by the UN-Habitat team, the agency also leveraged upon the expertise of a wide range of partner organisations. These included:

- National Engineering Research and Development Centre (NERD) – Vocational skills development in masonry and carpentry
- National Apprentice and Industrial Training Authority (NAITA) – Vocational skills development in masonry and carpentry
- Creation of Enterprise through Formation of Entrepreneurs (CEFE NET) - Vocational skills development in masonry and carpentry
- GIZ – Providing funds for vocational skills development in masonry and carpentry
- Holcim – Masonry; Training of Trainer (ToT) programmes on environmentally sustainable low-cost housing construction methods
- Disaster Management Centre – Disaster Risk Reduction (DRR)
- World Vision – Psychosocial training
- Practical Action / Janathakshan – Improving construction quality. Low cost chimney design
- University of Moratuwa – Training in mud concrete block production
- Integrated Development Association (IDEA) – Training of potters in production of environment friendly improved cooking stoves
- HelpAge Sri Lanka and Sri Lanka Women's Development Services Cooperative Society Ltd. – Financial and savings management
- Action for Peace, Capability and Sustainability (APCAS) – Self-help groups

Empowered beneficiaries

The viability of projects implemented with the homeowner driven construction process depends to a great extent on technical guidance provided to beneficiaries, since most beneficiaries are not acquainted with the intricacies of construction methods. Wide ranging programmes were carried out on diverse aspects of construction including minimum standards, application of cost-effective technologies, masonry, carpentry, and financial management and negotiation skills. In addition, a significant amount of awareness creation was carried out on social issues, including gender related issues.

Families involved in agriculture as their primary source of income used the skills from their technical trainings to engage in labour work in their villages as an off-seasonal income generation activity. This helped them to bear the shocks caused by seasonal changes such as drought and floods. The skills obtained through the training can also be used in the future expansion of houses by the beneficiaries when additional finances are available. Where the head of household is a mason or carpenter, the houses can be constructed by the families themselves as they possess the required skills to undertake the construction.

Community members participating in a mass meeting.

Construction workers

The construction industry in the North had undergone major handicaps during the years of conflict, which had resulted in a significant shortage of skilled labour. The largest component of UN-Habitat's training programmes was therefore focused on construction related training.

For youth, construction training programmes included classroom training, and practical training at construction sites, with trainees being divided into groups under the guidance of a trainer mason or carpenter. The masonry curriculum included basic setting out and excavation of foundations; mixing of cement and concrete; construction of foundations; junction and corner construction; plastering and skirting; floor construction; and tiling and toilet construction. The carpentry curriculum included seasoning of timber and planks; manufacturing joints; fixing and adjusting; roof work; shuttering; manufacturing doors, windows and frames; varnishing, polishing and spray painting.

In several programmes, such as those conducted in partnership with NAITA and NERD centre, participants were provided recognised certificates, which would serve to enhance their employment opportunities, and provide long-term revenue generation. In addition, training was provided to both those involved in the construction industry and the beneficiaries on the incorporation of DRR into construction, as well as the use of alternative eco-friendly technologies.

Even those already skilled in construction had not had the opportunity for exposure to new technologies and techniques. Hence, refresher programmes were carried out to upgrade their skills. When conducting trainings on new technologies, it was helpful to utilise local craftsmen. These skilled craftsmen were encouraged to participate in training of trainer programmes and were treated as master craftsmen.

VRC office bearers and members of CBOs

Capacity building of CBOs is an important aspect to ensure the long term sustainability of a programme. The prolonged nature of Sri Lanka's conflict had led to a significant breakdown in the functioning of civil society organisations in the areas of conflict. It was therefore vital to establish Village Reconstruction Committees in order to provide leadership at the local community level. VRCs played a multi-functional role which included mobilising communities for construction, monitoring the progress of individual houses and reporting to UN-Habitat, bulk procurement of building materials, and mobilising extra support for vulnerable households.

At the inception of the project, many communities had only recently returned to their places of origin. Hence, limited knowledge and skills of the VRC members due to their lack of experience in participating in civil society activities was a major challenge during these initial stages. However, through capacity building programmes and leadership training, the VRC members were able to actively contribute to the programme. VRC members were provided focused training in a variety of areas which included leadership skills, monitoring of project activities, basic accounting and book keeping, and maintaining minutes of meetings.

Partnerships

Challenges Faced and Lessons Learned

Rebuilding the community fabric

Challenges Faced: In post-conflict areas, it was found, that each local community had suffered severe disruption to its social fabric during the conflict. UN-Habitat's resettlement programme served to bring together disrupted communities, through the formation and strengthening of local organisations, especially through the formation of VRCs, and by providing common infrastructure facilities for communities. However, in most cases, each community was provided with one infrastructure facility, with two facilities being the exception.

Lessons Learned: The provision of more community infrastructure facilities is highly recommended in future projects. The construction of community infrastructure facilities served to greatly strengthen communities by providing a focal point for a tremendous range of community activities, ranging from children's education to agriculture, health camps, government administrative matters, etc. It was found that many communities placed a high priority for construction of a community centre and preschool in the early stages of the programme, which indicated the clear desire of community members to have a focal point for the community as well as ensuring long term development through early childhood education for their children.

Role of CBOs

Challenges Faced: Community based organisations play a significant role in many aspects of the success of the programme such as monitoring, facilitating training, providing support to vulnerable households, and community infrastructure development. They also play a vital role in assisting UN-Habitat field staff to deal with social issues of beneficiaries and challenges in construction.

Lessons Learned: Capacity building programmes should be carried out to strengthen VRCs and CBOs in each community throughout the operational area. These would be better able to support the

wider reconstruction programme through a visible and valuable presence on the ground, which is not often possible through government agencies or the executing agency's own field staff.

Making community centres the focal areas for local government officials

Challenges Faced: The conflict had led to a breakdown in government authority in some areas, due to the lack of government officials to staff all necessary positions. In many communities, it was found that local government officers serve several villages, and travel between them with no permanent office infrastructure. This leads to lack of effectiveness of government agencies for their service delivery, since communities do not easily identify them with a well-defined location. This in turn resulted in delays in the projects, due to non-availability of officials on a regular basis.

The solution was provided through the construction of two office rooms, for the use of the 'Grama Niladhari' (village official), 'Samurdhi Officer' (social services officer), Health Officer and Development Officer, at each of the 87 multipurpose community centres. The community centres thus served to bring communities together for multiple requirements.

Lessons Learned: The needs of local government officials should be taken into consideration during the designing of community infrastructure facilities. Such facilities for government officials should be included in the designs of community centres. This expression of concern for the work facilities and environment of government officials also results in enhanced levels of co-operation from such officials. This leads to effective linkage between communities and government and efficient service delivery for grassroots needs.

Ensuring Gender Equality

Challenges Faced: A key challenge was in ensuring an inclusive approach by which gender equality could be encouraged, especially given the need for equal opportunities and access to resources and decision making for women.

Lessons Learned: The inclusion of women's community based organisations in the infrastructure programmes to implement activities on the ground also ccontributed towards gender equality. It was observed that women's CBOs such as Women's Rural Development Societies had a high potential for fulfilling construction contracts on schedule as they are particularly attentive to the work, progress and comple-tion. Hence, women's CBOs were encouraged to apply for community infrastructure projects.

Security considerations

Challenges Faced: As can be expected in areas where a conflict has recently ended, heightened security was in place in the Northern Province. This caused a significant distrust of persons from outside the resettlement areas, especially foreign nationals. However, UN agencies were generally more accepted, especially due to the UN's global obligation and leadership role in assisting countries in post-conflict situations.

One significant drawback in the immediate post-conflict situation was the lack of approval to establish offices in the affected areas, leading to communication issues as field staff were obliged to travel great distances to reach remote villages through narrow roads and foot paths from field offices based in Vavuniya and often returned after dark. At the time, Vavuniya was the centre of operations due to a lack of infrastructure in Kilinochchi and Mullaitivu. However, once approval was granted by authorities and sufficient infrastructure was in place to establish offices in each district, the situation improved significantly.

The presence of mines and UXOs posed a major risk to residents as well as humanitarian workers and hence delayed the resettlement process until the mines and UXOs were officially cleared. There were instances when land mines and UXOs were found in cleared areas where housing work had commenced. UN-Habitat held awareness programmes on mine and UXO risk for community members during the course of the Reconstruction Programme to ensure their protection from such threats.

Lessons Learned: It is of paramount importance to ensure the safety of both field staff and beneficiaries, and suitable provision must be made for demining activities by relevant agencies, prior to the commencement of activities by the executing agency. Close relationships should be built and maintained with all relevant agencies. In addition, beneficiaries should be provided extensive knowledge of the dangers posed by UXOs, and such awareness programmes should focus particularly on children, since it is they who tend to stray away from cleared paths and explore wilderness areas, abandoned buildings, etc, and are therefore most likely to stumble upon UXOs.

Accessibility and Infrastructure

Challenges Faced: The scarcity of essential services and infrastructure facilities was a key challenge faced by the programme. This affected both UN-Habitat as well as the beneficiary families during the early stages of project implementation. Due to the lack of infrastructure such as access roads in remote rural areas, UN-Habitat staff faced many challenges in accessing project locations. This also affected the transportation of building materials to rural villages especially in the Mullaitivu, Kilinochchi and Mannar districts.

The dearth of banks and financial institutions during the initial years was a major drawback for beneficiary families to access funds. For instance, at the outset, only three banks were located in three operational districts in the Northern Province which caused challenges for beneficiaries from remote areas to withdraw their housing grant and continue with construction activities. Communication problems were also a major challenge as initially there were no telephone or mobile phone facilities in the newly resettled areas.

Lessons Learned: The issue of infrastructure is not one which can be directly resolved by a community reconstruction programme, since highways, railways and commercial infrastructure require more wide ranging reconstruction projects. However, close relations should be maintained with government agencies, NGOs and international agencies involved in major infrastructure programmes, in order to positively influence such programmes in areas where community infrastructure reconstruction is to be carried out.

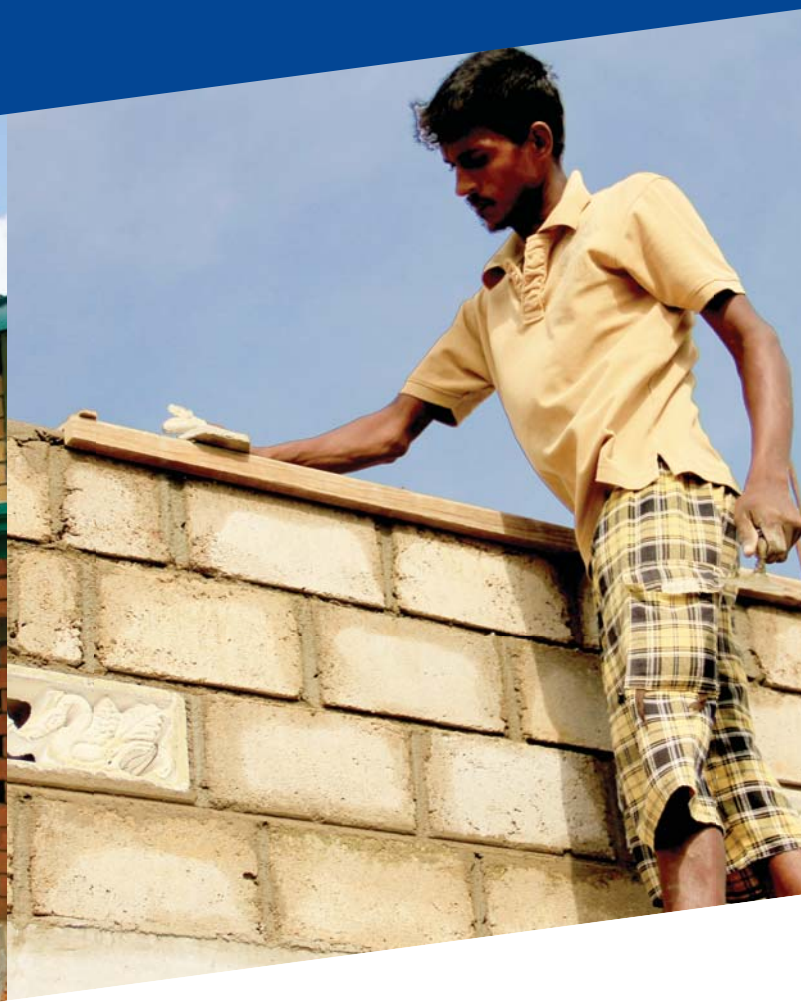
Co-operation from government authorities

Challenges Faced: The nature of Sri Lanka's conflict, and the many organisations that had been directly and indirectly involved, resulted in a degree of mistrust of external agencies. This led to delays in implementation of projects in the areas affected by the conflict, especially during its immediate aftermath. The Programmes undertaken by the United Nations agencies including UN-Habitat were less affected, as the UN's mandate of post-conflict assistance is globally accepted. The post conflict programmes in the Northern and Eastern Provinces was a high priority to the United Nations, with several UN agencies actively engaged in humanitarian as well as reconstruction assistance.

The Government of Sri Lanka's Presidential Task Force for Resettlement, Development and Security in the Northern Province (PTF) was appointed as the authority to co-ordinate and monitor all matters in the Northern Province. As such, it was crucial to obtain full co-operation of the PTF and to keep them informed of the progress of the programme and to resolve issues and challenges. It was noted that non-UN organisations that attempted to work independently of government authorities were less successful in their programmes.

Lessons Learned: Government agencies should be engaged at all levels in order to guarantee their co-operation and cordial working relations. This may commence with senior officials far from operational areas, and must extend down to the most junior officials in communities.

Technologies



Masons constructing a wall using compressed stabilised earth blocks.

Introduction

The programme introduced a wide range of cost reduction technologies with the express intention of mitigating the construction cost inflation and in addition conserving the environment which had been severely degraded during more than three decades of conflict.

In addition, the introduction of cost reduction technologies also targeted the enhancement of the local economy, advancement of local construction material manufacturing industry, engagement of local labour, enhancement of their construction skills, and encouraged the utilisation of locally sourced materials.

An important measure in this regard was the internal standardisation of technologies to match national standards, along with the objective of maintaining good quality construction. This included training and awareness raising in good construction practices using specific guidelines. Measures were taken to ensure good quality construction while keeping the cost affordable to the beneficiaries through improved productivity.

Another factor that added to the requirement for low cost construction was the need to utilise sources of funding efficiently, in order to maximise the benefits through the financial assistance provided by donors. The definition of 'low cost' extended to the life cycle cost of houses, whereby significant savings would accrue to beneficiaries over the lifetime of each house due to low repair cost and reduced energy needs, thermal comfort, enhanced lighting, and ventilation.

These technologies were introduced to local communities through a variety of methodologies, which included:

- Construction of model, demonstration houses to showcase low cost, eco-friendly technologies.
- Provision of training and awareness raising on construction skills, DRR and building material production for communities.
- Construction training in new technologies for skilled workers and selected VRC members (NERD centre).
- Training in new technologies for UN-Habitat Technical Officers.
- Vocational training for youth conducted with NAITA.

- On-site training of masons and beneficiary members by in-house training unit.

The main challenges in the introduction and upscaling of new technologies was the nature of the homeowner driven approach itself, as an authoritative position was held by the beneficiary homeowner with regard to his/her house construction. In addition, conventional practices instilled within the local craftsmen, non-availability of required material locally, lack of national standards and local authorities not readily accommodating alternative technologies, also posed challenges to the acceptance of these new technologies. Prior understanding of these challenges will enable future projects to plan appropriate measures to address these.

Recycling building debris

The re-use of debris from buildings damaged during the conflict for the construction of houses throughout the programme was considered a significant achievement. This innovation proved to be highly popular among beneficiaries due to its impact on reducing the overall construction cost.

Debris was classified in two forms; the first were salvageable bricks, tiles, doors and windows and timbers which were utilised in their present form in new homes; the second were selected hard and durable debris from buildings that had been discarded throughout the region, including in areas such as beaches and canal banks.

Debris was especially useful in foundations, where it could constitute up to one-third of raw material (aggregates); and in floor concrete, where it constituted as much as 60 percent of raw materials.

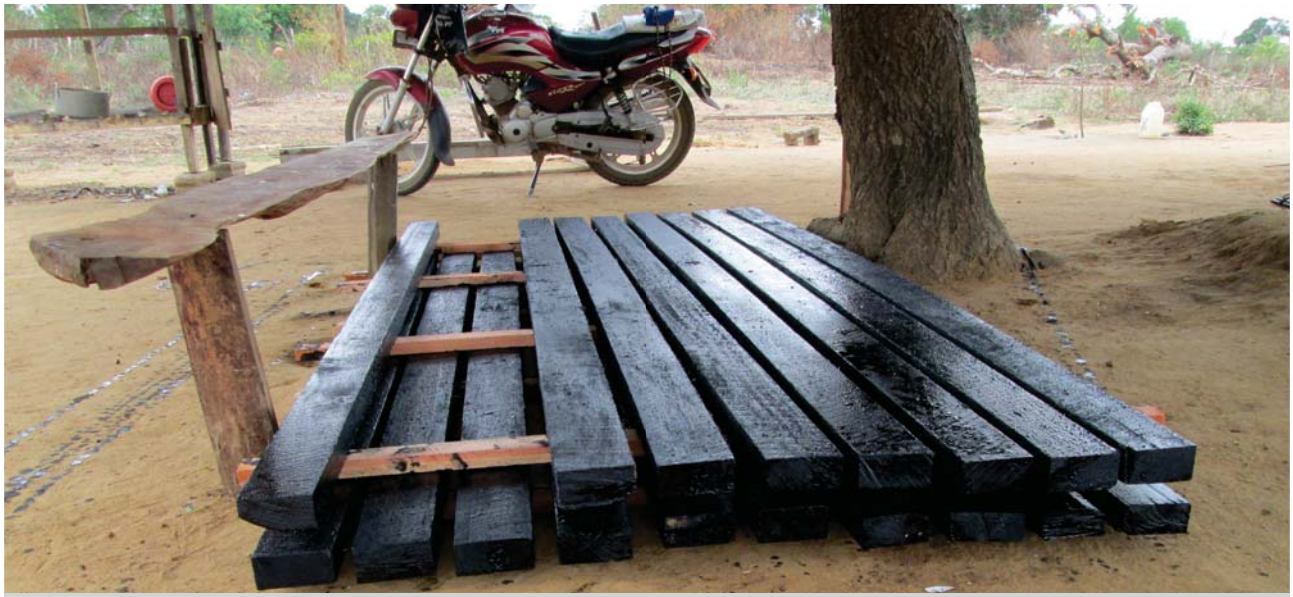
The re-use of salvaged materials such as doors, windows, roof timber, roofing tiles, and bricks in house construction was encouraged as it ensured both cost reductions as well as environmental sustainability through recycling.

This practice provided benefits in terms of cost reduction and clearing the environment of debris. A hidden resource previously considered as a nuisance and eye-sore was made a productive resource.

Waste reduction

Incorrect construction practices and unscientific usage of building materials by the local craftsmen as well as lack of concern by the beneficiaries themselves resulted in the wastage of expensive construction materials increasing the construction cost as well as resulting in over consumption.

UN-Habitat through focused awareness programmes, educated the skilled workers and beneficiaries in a number of good practices to reduce wastage. These included proper site planning, correct method of mixing and using cement mortar and concrete, methodical stacking and storage of materials, regulating block dimensions and ensuring uniformity in size when casting of blocks, coordination of



Treated roof timbers.

opening sizes to suit the block sizes, and selection of good quality building materials. Training was also provided to improve safety at construction sites.

In addition to lowering the overall construction cost, reduction of waste also served to create a change in the prevailing culture, where communities began to actively practice reducing of wastage during construction.

Use of plantation timber

Due to the shortage of timber species traditionally used for construction in the project locations (such as Jack, Neem and Palmyrah), plantation timber species were introduced as an alternative, for use in roofing support structures (beams). The most commonly used varieties were Grandis, Eucalyptus and Pine. This reduced dependency on jungle timber, thereby reducing the destruction of forest reserves.

There was significant resistance to the use of plantation timber on cultural grounds, since communities have their own preferences and superstitions. Common availability of Palmyrah timber trunks too has reduced the need for plantation timber. However, an increase in usage of these timbers was observed during latter part of the programme, when local timber was becoming scarce.

Pre-cast concrete door and window frames

A significant saving in both cost and time of construction was achieved by the use of pre-cast concrete door and window frames, in place of traditional timber frames; and in the use of ferro-cement slabs in place of wooden shelves.

Initially, there were no manufacturers of these products in the Northern Province. However, after one manufacturer commenced production, these products were distributed throughout the region, although some cost reduction advantages were lost due to transportation costs.

This practice provided cost savings as high as 10 percent in comparison with timber frames. However, there was some resistance from families who preferred traditional wooden frames due to "Vastu" beliefs. Many beneficiaries used timber frames for front doors and shrine rooms, with concrete frames for the rest of the house, a rational compromise in keeping with Vastu. Although concrete elements are generally not considered eco-friendly due to high usage of cement, concrete frames are contextually considered eco-friendly since they reduce felling of trees for timber. They also reduce the requirement of carpenters, since the concrete frames are usually pre-cast on a mass scale and transported to the construction site.

Main Alternative Technology Interventions

Waste reduction and recycling
- Recycling building debris in foundations, floor concrete, etc.
- Waste reduction
- Timber treatments with used engine oil

Eco-friendly life supporting systems
- Rainwater harvesting systems
- Twin-pit lavatory systems
- Low cost smoke free chimney

Nature-friendly, low-cost building technologies
- Fair faced block work
- Compressed stabilized earth blocks (CSEB)
- Mud concrete blocks
- Filler slabs (waffle slabs)
- Mud plastering / painting
- Pre-cast concrete door and window frames
- Trowel finished concrete floors
- Use of treated plantation timber

Trowel finished concrete floors

Trowel finished concrete flooring was introduced as a cost saving measure to homeowners. This method does not require concrete rendering over the floor slab as the slab itself was smoothly finished by trowel during the laying of the floor.

This technology achieved significant savings on cost of labour, material and time of construction. The trowel finished concrete flooring was more readily accepted among the less affluent beneficiaries, as it gives a less polished finish than traditional rendered concrete floors. However it offers flexibility of improving the finish by rendering or tiling at a later stage.

Building Model Demonstration Houses

Mr. Shahul Hameed Anees is a beneficiary from Puthuweli Village in Mannar District who was selected to construct a model 'demonstration house' using environmentally friendly materials and techniques.

In November 1990, when he was just 19, Anees, his parents, and siblings were forced to leave his village. They settled in Kalpitiya, where Anees married and began raising a family. In August 2009, Anees returned to Puthuweli to resettle with his family. As he showed a keen interest in eco-friendly technologies, he was selected by UN-Habitat to build a demonstration house.

Anees completed construction within a period of nine months. Their new home has a verandah, two living rooms, a kitchen, two bedrooms, a bathroom and toilet. The bedrooms, sitting room and kitchen open out to a courtyard which gives the house extra light and ventilation. The kitchen is bright and airy as it gets sunlight from both the front garden and the courtyard.

Anees achieved a considerable cost saving by reusing debris from his old, damaged house in the foundation and in concreting the floor area. The walls were constructed using fair-faced cement blockwork. Several internal walls were finished with mud plaster. The roof was constructed with clay tiles and coconut timber beams. In order to minimise the adverse impact on the forest cover and save carpentry costs, Anees used precast cement door and window frames. A rainwater harvesting system was installed to conserve and re-use water during the dry season.

Timber treatments with used engine oil

The tropical climate of Sri Lanka results in a proliferation of insect species, including many that are extremely harmful to trees and timber. Traditionally, this was countered by insect proofing wood surfaces by painting them with chemicals and paints, all of which are less durable and significantly increase the cost of construction.

The use of recycled engine oil proved to be an effective alternative to traditional insect proofing methods. The treatment method introduced, entailed heat treating the timber inside oil baths, until the water inside the cells were replaced with oil, to provide long term protection. The technical feasibility of the technology was demonstrated in the model demonstration houses but did not become popular due to cultural reasons and insufficient stocks of used engine oil in the two provinces.

Rainwater Harvesting Systems

The Northern and Eastern provinces experience prolonged periods of drought on an annual basis, with rainfall being limited to the five-month period between October - February. Many areas of the Northern Province receive an average of less than 1,250 millimeters of rainfall annually. It is therefore essential for families and communities to conserve water resources during the March - September period.

UN-Habitat assisted the collection and conservation of water through the installation of Rainwater Harvesting Systems (RWH) in houses as well as in public buildings. Over 173 RWH systems were installed in public buildings such as community centres and preschools. The systems work by collecting rain water from the roof area and channeling it to a tank installed on the rooftop or through gutters into a ground based container. Awareness creation of the advantages of reusing rainwater and RWH systems has led to increased acceptance for such systems among communities.

The most significant need for water conservation is among families affected by poverty, as they tend to be located away from towns and on the outskirts of villages, where water supply systems are not often available. The installation of RWH systems also assists families in home gardening and ensures a higher level of survival of trees. Precautions such as sealed lids for tanks were introduced in the RWH systems to prevent mosquito breeding.

Twin-pit lavatory systems

Twin-pit lavatory was demonstrated in one of the model demonstration houses in Mullaitivu district, a system that offers benefits over the traditional cess pit (single pit) system commonly in use.

The system has two pits placed sufficiently apart to prevent cross contamination and only one pit operates at a given time. Each pit is designed to hold excreta for a period of not less than one year. Once the first pit is full, the second pit is utilised while the waste matter in the first pit breaks down through natural bacterial processes. This reduces health dangers to workers clearing pits, since disease carrying pathogens are less likely to survive for long periods until the pit is cleared, generally after one year. The removed decomposed matter serves as a good fertilizer. The system also does not require deep excavation and as a result does not contaminate ground water sources.

The cost of the twin pit is slightly higher than the single pit system but lower than the two chamber septic tank. The twin-pit therefore provides a greater degree of convenience as it eliminates the need for periodical emptying of pits by deploying gulley-emptier. The higher cost could also be considered an investment for agricultural purposes, as waste material can be used as manure.

Low cost smoke free chimney

Wood stoves located inside the kitchens are the most common method of cooking in the operational areas of the programme. These however cause a significant health hazard since smoke remains inside the houses, especially during monsoon periods when doors and windows are kept closed to prevent rain beating in. On the other hand, the large conventional chimney constructed by local masons was costly and not efficient in smoke removal.

The programme introduced a low cost, smoke free chimney design, which was included in all house designs. The chimney rapidly extracted smoke out of the kitchen through an arrangement of a slanting ferro-cement slab, and was also well protected from rainwater.

Initially, the new chimney design was not accepted by local masons due to a feature that was not complying with "Vastu" prescriptions. This was overcome by modifying the design. Thereafter, it was accepted by beneficiaries, as its advantages were patently clear, both in terms of cost savings and health benefits.

Fair Faced Block Work

Fair faced block work entailed leaving one or both surfaces of a wall free of plaster, resulting in cost reductions in terms of labour, sand, cement and time. The use of fair faced block work as an alternative to traditional double plastered walls, resulted in a significant saving of around 40 percent when both sides were not plastered; and 20 percent savings when one side was not plastered. Some training was required to train the masons on constructing aesthetically pleasing walls with this methodology and special tools were introduced to improve productivity.

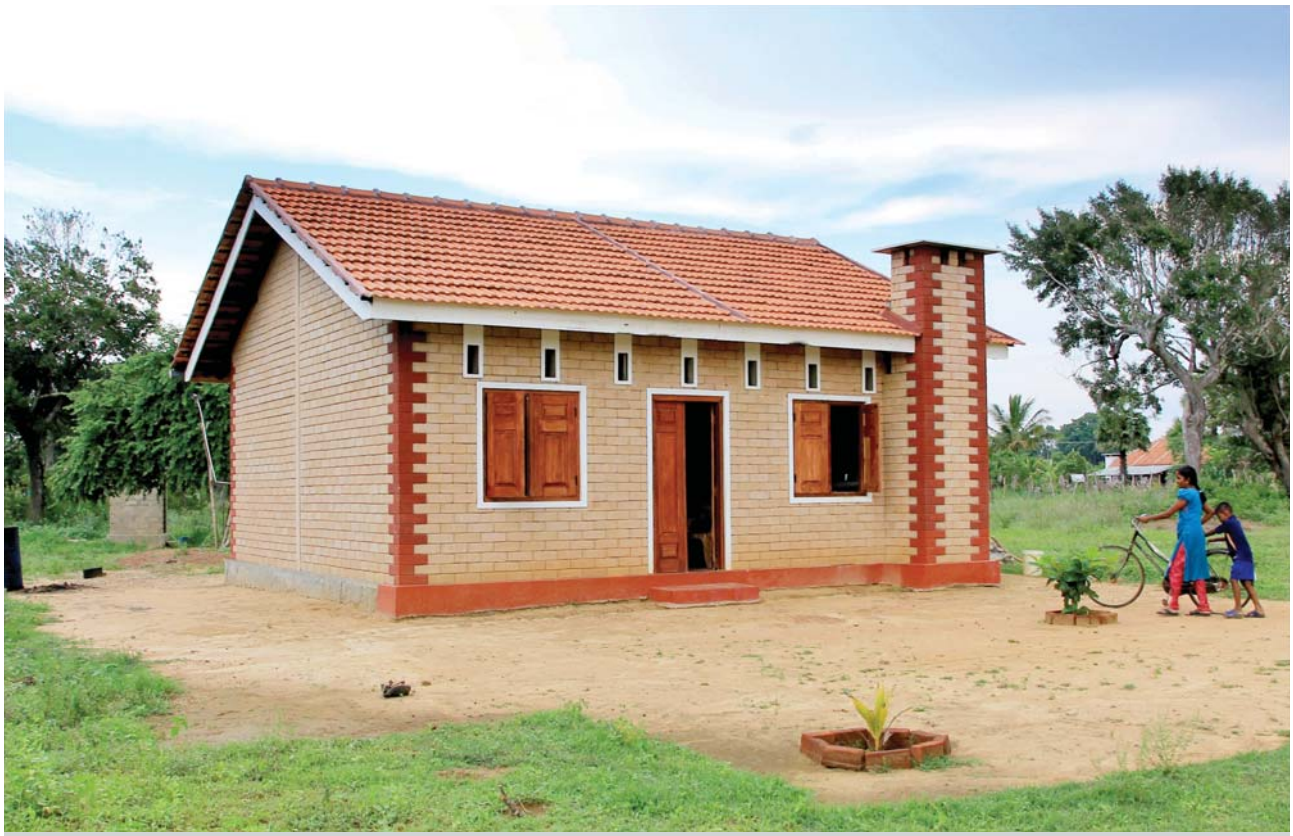
The aesthetic appearance of un-plastered walls was further improved by adding three inch wide plaster bands (architraves) formed along the edges of door and window openings and along the edges of walls. Labour costs of forming these architraves was further reduced by pasting strips of cement-fiber sheets, in lieu of forming plaster bands.

The cost savings were accrued in multiple means such as reduced use of cement, sand and labour days. The ease of fair faced block work also resulted in significant time savings. The workmanship was important for finishing the walls to meet an aesthetically pleasing appearance.

Compressed Stabilized Earth Blocks (CSEB)

Four demonstration houses were built with CSEB with the intention of demonstrating benefits offered by it. Houses built with CSEB provided significant cost savings in terms of sand, cement, lime and also the labour required; and also provided a higher level of thermal comfort for the occupants, more than houses built with burned bricks or cement blocks. CSEB is eco-friendly in several ways, especially by eliminating the requirement of fuelwood which is needed for the production of burnt bricks with an aesthetically pleasing wall surface. Engineering properties of CSEB are comparable to those of conventional materials and are durable.

However, the artificially inflated price of earth in the Northern Province was not conducive to the mass production of CSEB, obstructing popularising the product, despite beneficiary willingness to use them.



Model demonstration house constructed using CSEB for walls.

The cost of transportation of CSEB from outside the Northern Province was also prohibitive which resulted in limited usage of this building material to a few houses.

Mud Concrete Blocks (MCB)

Mud Concrete Blocks (MCB) is a new eco-friendly, building material for wall construction, which was developed through extensive research by the University of Moratuwa. The mud concrete block is cast using suitable proportions of gravel, cement and water. An optimum ratio of 20 - 30 percent sand is required to produce good blocks. It is sometimes necessary to add some sand, if the gravel contains less sand. The ratio of cement by volume varies between 4 - 8 percent. The cement-gravel mixture is mixed with water to semi-liquid state and poured into steel or timber molds and tamped with a rod to remove entrapped air. The strength of MCBs meets the strength requirements for load bearing walls in community buildings and offer superior internal thermal comfort. The bricks also do not require burning in production, eliminate the need of plaster and uses less sand, therefore being eco-friendly and less costly than conventional building materials for walls. MCBs, immediately after casting are placed under a polythene sheet cover to prevent evaporation of water and generally do not require curing, therefore saving water as well.

This technology was still in the research stage when the programme was progressing. Although laboratory tests have proven the technology to be acceptable for structural use, UN-Habitat decided to further field test the technology by using them in community infrastructure such as community centres. The pilot constructions proved the material to be structurally sound and aesthetically pleasing with superior thermal properties which could be used in future construction projects. This product has brought credit to University of Moratuwa by winning the 2016 National Energy Globe Award.

Filler slabs (Waffle slabs)

A Filler Slab is a low cost concrete slab, spanning up to three metres, used in floor slabs or canopies. It is lower in self-weight, thereby reducing the need for steel reinforcement. The volume of concrete too is less, as concrete is partially substituted with a filler material such as salvaged roofing tiles or waste clay

Mud Concrete Blocks

The use of Mud Concrete Blocks, designed by the University of Moratuwa, for the walls of the community centre in Mahilavedduwan Grama Niladhari division, serving four main villages, was a key aspect of its environmentally friendly construction. Other environment friendly technology included recycling of construction debris and reusing excess mortar.

The community centre was selected as the priority requirement of the residents as the village had no common building. Meetings and events were held outdoors, most often under a tree, creating numerous difficulties, particularly during the monsoon rains.

"This project has ensured maximum community participation from planning to implementation. It is building the capacity of the community organisations in our area. CBOs have enhanced their leadership and book keeping skills. This will help them to implement other development projects in the future," the Rural Development Officer stated.

milk pots. Filler material can be arranged to offer an aesthetically pleasing appearance to the bottom of the slab to eliminate the need of a soffit plaster.

Significant savings as high as 15 percent was achieved through the use of filler slabs. Filler materials required for the construction were also readily available in damaged buildings in the project locations.

However, a significant degree of training was required for casting the filler slabs, as construction workers were not familiar with this technology. Where the slabs are meant to carry heavy loads, their construction needs to be carried out under strict supervision to ensure a quality product that is safe for use in homes.

Mud Plastering / Painting

The traditional "cement: lime: sand" plastering of walls, finishing with emulsion paints, proved quite costly for homeowners. The introduction of mud plastering and mud paint on a pilot scale in a number of houses offered a low cost alternative to the traditional methodology.

Mahilawedduwan Community Centre in Batticaloa district constructed using Mud Concrete Blocks.

Mud plaster was prepared on site with the mixing of cement, soil and sand in the proportion of 1:3:3. A variety of other materials such as paddy husk could also be added to reduce cost.

The mud paint was also prepared on site by mixing sieved fine soil with cement (one portion of cement to eight portions of soil) and a commercially available Epoxy based adhesive. The colour of the paint could be varied by mixing colouring influenced by the colour of the soil.

A significant cost reduction as high as 25 percent was achieved through the use of mud plaster and earth paint, as opposed to traditional cement plaster and emulsion paint. Although there was a clear cost saving advantage in the use of mud plaster and earth paint, the programme encountered an initial reluctance among beneficiaries to use these materials, mainly due to cultural reasons of image and pride. This was encountered less in the less affluent segments of communities. However, the clear cost saving was an advantage in convincing beneficiaries to adopt this technology.

Disaster Risk Reduction (DRR)

UN-Habitat has had extensive experience in DRR in Sri Lanka, including substantial projects to prepare DRR infrastructure and introduce DRR mitigation measures in eight cities in the Sabaragamuwa, Northern and Eastern Provinces, working closely with government, Local Government Authorities, and Civil Society. In the Post Conflict Reconstruction Programme, UN-Habitat ensured the incorporation of DRR measures into all its housing and infrastructure construction activities.

Sri Lanka's Northern and Eastern Provinces are highly vulnerable to several types of natural disasters including flooding from monsoon and inter-monsoon rains; cyclones and high winds which occur in the northern Indian Ocean and Bay of Bengal; droughts; tropical storms, lightning and high winds. The two provinces contain the longest coastal areas of the island, and are therefore particularly vulnerable to storm surges and tsunamis.

UN-Habitat's integrated approach served to ensure that some aspects of DRR were included in the post-conflict reconstruction programme from its very inception, in order to ensure communities are safeguarded from natural disasters that periodically affect these regions. These included DRR aspects in the site selection, locating and orienting the house to improve resilience, and disaster resilient designs for houses and community infrastructure facilities. As the post conflict construction programme evolved, the DRR measures were enhanced, and by 2012 UN-Habitat was incorporating disaster risk reduction features into all its housing and infrastructure initiatives.

Raised foundations in houses have enabled families and their assets to be safe from floods.

DRR components were incorporated into the construction of community centers and preschools to ensure that the buildings are resilient to natural disasters. Both the community centres and preschools are also expected to serve as gathering points for the community in times of natural disasters. These included extreme care in the location of the buildings on high ground; and the provision of rapid drainage facilities to carry away rainwater from roofs. The road designs incorporated culverts and storm water drainage elements to ensure speedy drainage of storm water to streams and paddy fields.
DRR features incorporated in the house and community building designs included:

- Raised foundations to protect from flooding.
- Specially designed foundations for structurally poor soils such as expansive soils.
- Increased external wall thickness (150 mm) combined with a reinforced concrete ring beam at lintel level to improve structural stability during high wind and flood situations.

- Increased roof gradient (25 degrees), anchoring of roof to the ring beam and mortar bands (restraining bands) over tile roofs.

Additional features in the community buildings included:

- Concrete framed structure with columns tied with beams in community buildings.
- External landscaping with rapid drainage elements.
- Roofs anchored to a reinforced concrete framed structure and restraining plaster bands over clay tiled roofs to resist seasonal high winds.
- Raised plinth levels, taking into consideration annual flood levels and dampness due to high ground water levels during monsoon rains.

The programme took into consideration disaster risks faced by each community especially in the provision of community infrastructure facilities. The construction of drainage systems and irrigation channels were a key area of focus in providing disaster reduction measures for communities. In many cases, simple drainage channeling systems conveying storm water into existing water bodies such as lakes and lagoons in the neighborhoods was sufficient to prevent flash flooding within the settlements.

All house design options provided to home owners included aspects of DRR. UN-Habitat's technical staff were provided DRR training, to ensure that critical measures were included in all designs. DRR aspects were also included in the training programmes for homeowners and construction workers in order to ensure compliance during construction

The provision of drinking water to communities was of great importance, since the quality of groundwater tends to vary in different locations. The particular focus of disaster risk reduction was on water quality. This was also to ensure security of drinking water in case of emergencies. Testing of water samples was carried out, particularly in areas where residents complained of ground water unfit for consumption. Measures were taken to improve the water quality by ground water recharging through improved rainwater percolation by digging trenches to retain ground water before discharging into outlets and also by planting trees.

The inclusion of elevated rain water harvesting tanks in the designs of community centers and preschools to collect rain water falling on the roofs served as a significant buffer stock of fresh water which is expected to make homeowners and communities more resilient in times of drought and emergency.

In addition, the construction of community storage facilities for agricultural purposes as part of the development of community infrastructure, also contributed to disaster risk reduction in terms of ensuring food security.

Sustainability through environmental conservation

Globally, UN-Habitat is committed towards environmental conservation and sustainability. Addressing environmental concerns was a key feature incorporated into all of its programmes including the Post Conflict Reconstruction Programme.

UN-Habitat proactively introduced a number of environmentally friendly initiatives in the project areas with the twin objectives of protecting the fragile environment of the conflict affected districts, while providing environmental as well as financial benefits to the families. These initiatives included plant distribution programmes, organic home gardening, introduction of environmentally friendly building materials and techniques, waste reduction measures at construction sites and improved house designs incorporating eco–friendly aspects such as smoke free chimneys.

Increasing Tree Cover

The conflict had caused significant negative impacts to the environment in the North and East while reconstruction efforts had further exacerbated the pressures on the environment leading to the rapid depletion of forest cover. With the aim of re-greening conflict affected villages, UN-Habitat initiated a plant distribution programme to encourage tree planting amongst communities.

Tree saplings were distributed to community members in project locations.

UN-Habitat made a concerted effort to increase the level of forest cover and to restore the green cover lost due to construction activities through an extensive community based initiative that resulted in the planting of more than 170,000 saplings. These included species of timber and fruit trees. These serve a dual purpose, with the fruit trees providing an additional source of income for homeowners and the timber trees providing shade as well as timber for maintenance of homes and an additional income. In addition, the trees will improve the overall quality of the environment including air and thermal quality, soil stabilisation and ground water recharge.

Many families in the programme were provided with ten saplings for their home gardens. This was carried out in three phases, the first were coconut plants, while the second and third were a mix of timber, fruit and coconut plants. These trees are expected to have multiple benefits including shade for homes from the harsh tropical sun; safeguarding groundwater levels through reduced evaporation by sunlight especially during the drought; retention of groundwater by the roots of trees; and contributing towards disaster risk reduction by acting as wind breakers and reducing each home's vulnerability to high winds.

Trees have been distributed to both households and communities to create gardens in public land at community centres, preschools and schools. With the aim of increasing awareness of environmental

The beneficiaries of the Organic Home Gardening Project were trained by the government's Department of Agriculture on key aspects of Organic Home Gardening including land preparation, pest and disease control, composting and nursery preparation, seed propagation and harvesting. A variety of plants and seeds were distributed including okra, bitter gourd, snake gourd, chili, capsicum, radish, spinach, eggplant, beans, long beans, tomato, green gram and leafy vegetables. Beneficiaries were also provided thick polythene sheets to be used to produce compost.

Mrs. K. G. Lalitha, a beneficiary from Nikkewewa, Welioya in Mullaitivu District stated "I am happy that our family was selected for this project. We got the opportunity to learn about growing organic vegetables. In addition, we are able to sell some of the extra vegetables to earn an additional income for our family".

Organic vegetables from a home garden in the Northern Province.

challenges and influencing attitudes and behaviour, two awareness programmes were conducted in Kilinochchi and Mullaitivu districts in collaboration with the Central Environment Authority. This included a programme on organic home gardening for selected families with the aim of improving household nutrition and to increase the availability of fresh fruit and vegetables in villages.

Communities benefited from improved nutrition due to the increased availability of local fruits and vegetables in their localities. The families participating in organic home gardening have successfully used available cultivable land whilst ensuring environmental sustainability. This programme was implemented by UN-Habitat in close collaboration with the Department of Agriculture and community members.

Environmentally friendly construction practices

In the entire programme, preserving and improving the already vulnerable environment was a cross-cutting theme. Concerted efforts were made to minimise the damage to the environment from construction activities. Over extraction of environmentally sensitive natural resources like timber, sand and rock aggregates was eliminated by introducing alternative technologies. These included:

- Use of hard, durable building debris as aggregates in foundations and floor concrete. (About 30-40 percent natural rock aggregates were saved)
- Recycling salvaged materials from demolished structures such as roofing tiles, bricks, doors and windows
- Promoting the use of concrete door and window frames, instead of wood
- Promoting the fair faced wall construction technique, which eliminated the need for plaster, thereby substantially reducing sand usage
- Promoting use of plantation timber such as Grandis to substitute forest timber
- Introducing on-site timber treatment, utilising used engine oil to transform plantation timbers to durable structural timbers

Using recycled material in foundations and floor concrete.

- Use of ferro-cement slabs for shelves, instead of wood
- Introducing filler slabs (waffle slab) technology for concrete slabs, thereby encouraging recycling salvaged materials to reduce cement, sand and metal aggregates
- Introducing the concept of waste reduction to homeowners and construction workers
- Introducing pilot initiatives to encourage eco-friendly technologies among homeowners such as compressed stabilized earth blocks to substitute cement-sand blocks thereby reducing the sand and cement usage, earth plaster, which also contributed to save sand and the use of earth paint

Reducing indoor air pollution

The level of environmental pollution was also significantly reduced by two measures; a) the improved chimney design described above and b) the introduction of a low cost, low smoke emitting stove to all the communities in the programme. The Anagi Improved Cooking Stoves (ICS) were produced in selected communities for which training was provided to five potters; they in turn had a network of persons who served to promote the stoves in communities, and also to install the stoves, thus providing livelihood opportunities for a number of persons.

The beneficiaries confirmed that the *Anagi* improved cooking stoves saved cooking time, enabling them to cook more meals during a short time period. In addition, these stoves consumed less firewood due to increased thermal efficiency. Women were actively

involved in this initiative both as end users of the ICS and also as potters, promoters and installers of the cooking stoves. UN-Habitat worked in collaboration with a national NGO, the Integrated Development Association (IDEA) to implement this initiative.

Female potter producing Anagi cooking stoves.

The 'Environment Friendly Improved Cooking Stove Project' was implemented in the districts of Kilinochchi, Mullaitivu, Jaffna and Batticaloa. Ten months after the introduction of ICS, a survey showed that families found cooking with ICS easier than traditional stoves. It also showed a significant improvement in the health and wellbeing of families as well as their home environment due to clear reductions in indoor air pollution. These stoves also consume less firewood due to increased thermal efficiency.

Mrs. Y. Easwari from Jaffna mentioned, "I don't have to collect firewood as often as I used to. Since it takes less time to cook, I now spend less time in the kitchen and more time with my family."

Technologies

Challenges Faced and Lessons Learned

The need for Environmental Conservation

Challenges Faced: In large scale reconstruction programmes, construction requirements inevitably lead to degradation of environmental resources such as forest cover as a significant amount of timber is required and extraction of sand, rocks etc. for aggregates. UN-Habitat promoted the use of alternative materials and debris wherever possible to protect the forest cover. However, a similarly effective initiative was the inclusion of an organised Tree Planting Campaign within the programme, through which more than 170,000 trees were planted. It was found that individual family units were enthusiastic regarding tree planting within their household premises, when saplings were made available.

Lessons Learned: Multiple initiatives for environmental conservation should be included from the very inception of the programme. It should include awareness programmes on the importance of environmental conservation; methodologies through which the environment can be protected during construction including use of alternative construction materials; tree planting campaigns; and creation of plant nurseries to ensure availability of fast growing and indigenous plant varieties.

Construction safety

Challenges Faced: There was insufficient awareness of the importance of safety at construction sites, which posed risks and caused accidents to construction workers and family members, as human safety is more important than any delay. Safety awareness was incorporated in the technical training programmes for masons and carpenters, to instil the requirements of simple safety precautions such as signboards, ramps and handrails, use of circular edges instead of sharp edges, reduction in the usage of barbed wire, etc. Construction workers were also provided training in first aid.

Lessons Learned: Specialised construction safety plan should be incorporated in the project from its inception with suitable refresher sessions to be carried out intermittently in order to ensure that modern standards in construction safety be a regular practice in all construction. In addition, beneficiaries and labourers should be made familiar with modern safety equipment and given training in first aid methodologies.

Incorporation of Disaster Risk Reduction aspects in programmes

Challenges Faced: Modern methodology of DRR was found to be an almost unknown concept in the operational areas. DRR is also often neglected in the urgent process of construction. This can have an unfavourable impact later, especially with regard to high winds, floods and drought. Some aspects of DRR were included in the programme's early stages, with fully fledged DRR measures added in the latter stages of the programme.

Lessons Learned: A comprehensive awareness creation programme should be implemented from the inception of the programme for beneficiaries, labour and even government officials, in order to familiarise them with concepts and practices of DRR, and ensure the success of DRR implementation during the construction of houses and infrastructure facilities.

Scarcity of skilled labour

Challenges Faced: There was a serious scarcity of skilled labour in the operational areas, due to the decline of the construction industry during the conflict years. This led to a high level of unskilled workers being employed, which caused various construction issues including low quality construction, delays and higher costs.

Lessons Learned: It is vital that a comprehensive and broad based, multi-faceted training programme be carried out at the outset of the project, in order to generate sufficient numbers of skilled labourers for the smooth functioning of the programme. It is also important to provide additional training for beneficiaries in construction methodologies, which in turn would facilitate their becoming skilled or semi-skilled in housing construction. Another strategy used was to introduce technologies requiring less skilled labour, such as fair faced wall construction.

Use of non-traditional materials

Challenges Faced: Many beneficiaries continued to favour traditional styles of construction and materials, which were more expensive. Influence of the local mason plays an important role in making choices. Most of the local masons in the conflict affected areas did not have the exposure to up-to-date technologies. Therefore, it is very important to train the local craftsmen initially to develop their confidence in new technologies.

Lessons Learned: Awareness and training programmes should be carried out on a continuous basis to create a greater level of familiarisation among skilled and unskilled workmen of new techniques and materials in construction, as opposed to traditional methods. In order to convince beneficiaries that higher productivity can be achieved by using modern methods and tools, a change in mind set is needed.

Use of Compressed Stabilised Earth Blocks (CSEB)

Challenges Faced: Despite the many advantages of using CSEB including eco-friendliness and the willingness of beneficiaries to use them, its usage proved to be impractical due to the artificially inflated price of earth in the Northern Province.

Lessons Learned: A key lesson learned in introducing this technology was that actual conditions in operational areas can preclude the use of technologies which would have reduced construction costs otherwise. Creating awareness of the benefits of the technology among the authorities would be required to eliminate such constraints, but will take a significant amount of time.

Use of construction debris in new construction

Challenges Faced: A large amount of construction debris existed in the post-conflict areas, which was found to be suitable for use in foundations and floors of new house construction, thus reducing building material costs significantly. However, beneficiaries were initially reluctant to use debris, due to cultural reasons and lack of awareness of reusability.

Lessons Learned: Technical officers who undergo formal technical education do not have a sufficient level of awareness in the reusability of construction debris. It is therefore necessary to educate and convince technical officers first and through them local craftsmen and beneficiaries need to be educated on the selection of proper debris and advantages of using them in construction of their homes as an alternate building material. A co-ordinated programme to overcome this cultural barrier is needed before they can be convinced to use construction debris.

Use of low cost materials

Challenges Faced: The use of low cost materials in construction was a key component of the programme. The use of such materials also served to partially mitigate the negative impact of hyperinflation in the immediate aftermath of the conflict.

In many cases, homeowners preferred to use traditional materials in construction as a matter of prestige. There was therefore some resistance to use of low cost materials, and demonstration through models and awareness creation was required on the benefits of using such alternative materials.

Lessons Learned: Awareness programmes should be carried out during the early stages of a project, in order to educate beneficiaries on the advantages of using low cost materials. This allows for greater flexibility in planning the construction of individual houses.

Lack of support from the formal construction sector

Challenges Faced: The HOD approach itself does not offer significant commercial opportunities to the construction contracting sector as the beneficiaries themselves undertake construction employing local artisans. Alternative technologies further restrict involvement of the formal contracting sector and sometimes even formal building material production sector. Deprival of opportunities for local contractors to engage in a foreign funded widespread construction project has resulted in jealousies that have caused unreasonable criticism of the home owner driven method.

Lessons Learned: The regional development programmes should create opportunities for the local contracting sector to become involved in parallel large scale projects in the region, possibly in the construction of major infrastructure.

Non-acceptance by Local Authorities

Challenges Faced: Building approval of the Local Authority (LA) is an important requirement in legalisation of newly constructed houses. LA building approval processes, governed by the two statutes, Housing and Town Improvement (H&TI) Ordinance and the Urban Development Authority (UDA) Act, permits only stipulated 'permanent building materials' to be used in construction. This causes an obstruction to some alternative technologies utilising newly identified materials, which are not formally identified as permanent building materials.

Lessons Learned: Newly introduced alternative technologies should be introduced under professional guidance with proper monitoring of performance. Awareness programmes should be carried out to educate Local Authorities on alternative technologies. At a more macro level, efforts should be made to include alternative materials in existing statutes.

Lack of national standards for alternative technologies

Challenges Faced: Construction quality and safety is ensured by national standards for materials, products and processes. In Sri Lanka, the Sri Lanka Standards Institute (SLSI) and Construction Industry Development Authority (CIDA) (formerly known as ICTAD) are the regulatory authorities responsible for formulating national standards for the construction industry (building codes). National Standards are available for many conventional construction materials, products and processes but for the alternative technologies these standards are rare. This causes engineers who design structural components of a house using a technology not covered by the SLSI or ICTAD, to take an undue professional risk.

Lessons Learned: Linking regulatory authorities with research organisations is important in the planning stages of the programme to undertake monitoring of performance of new technologies and to set standards for them. In addition, awareness programmes should be carried out among engineers to educate them with regard to new standards.

Management concerns over additional interventions

Challenges Faced: Meeting the project milestones in an HOD programme is much more challenging than in a conventional contractor driven programme, as the participating home owners have their own priorities to attend other than the construction activities. In a programme where alternative technologies are newly introduced, management is even more complicated.

Lessons Learned: Conventional project planning and management concepts may not become valid in the HOD approach. Time management in reaching project milestones may include human parameters deviating from pure technical project management strategies. In addition, different expertise in community mobilisation, skills training, effective communication etc. are needed for successful implementation of an HOD programme. This special nature of a HOD programme need to be understood by all the stakeholders including the donors of a programme and provisions made in the programme plan.

Beneficiaries' preference for conventional technologies which are viewed as safer than alternative technologies

Challenges Faced: As with many home owners, beneficiaries generally do not wish to take risks in a once in life time investment and prefer to follow conventional practices.

Lessons Learned: Where alternative technologies are to be utilised, comprehensive awareness creation is required during the formative stages of the programme to educate both beneficiaries and artisans on the advantages of such technologies and their performance in comparison to conventional technologies.

Need for focus of technical staff to create awareness of alternative technologies

Challenges Faced: It has been found that mass meetings are not effective in communicating the advantages of alternative technologies in terms of changing the mindset of beneficiaries, masons and carpenters.

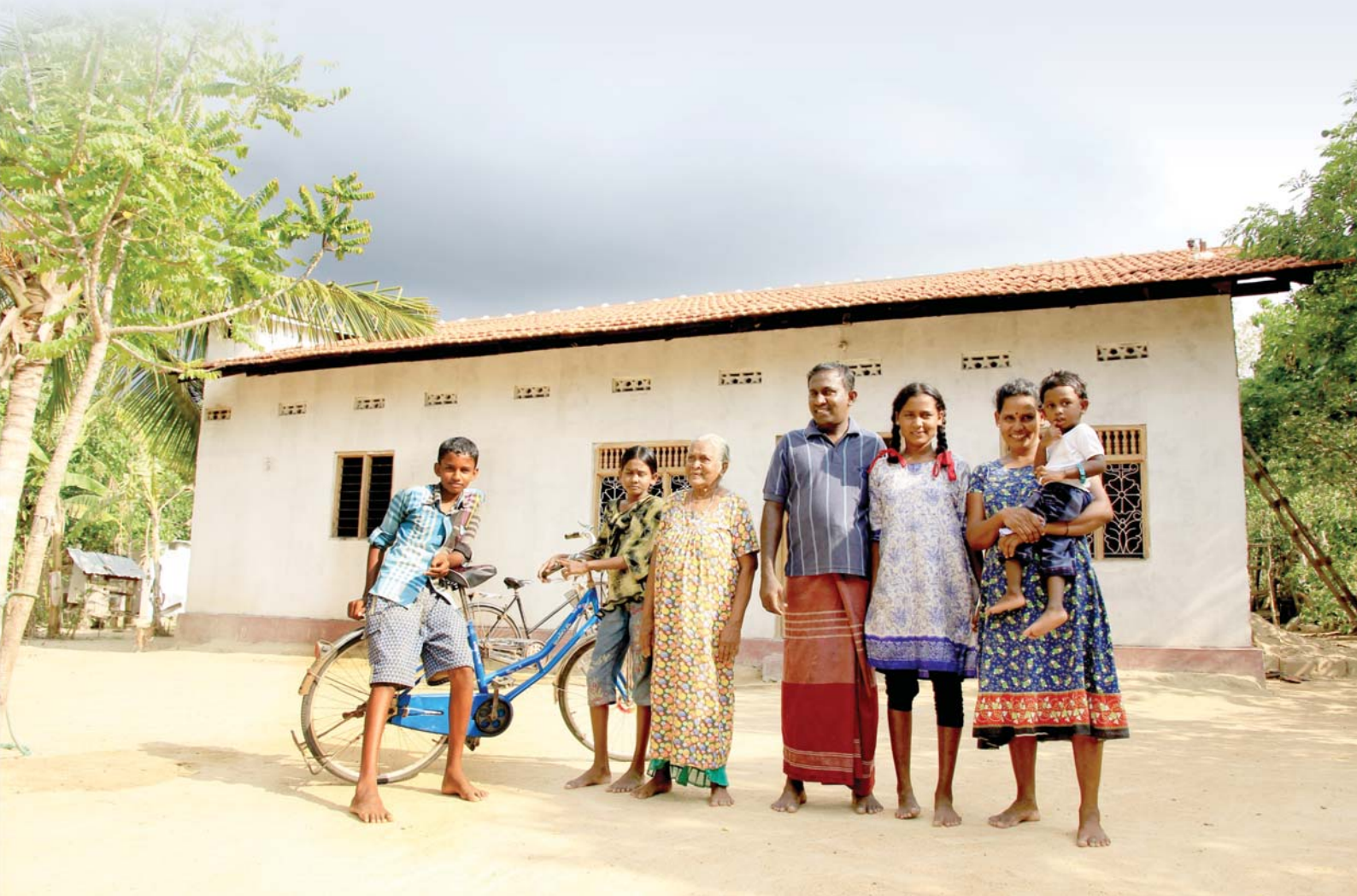
Lessons Learned: It is important for technical staff to carry out direct communication with individual families, with proper understanding of the mindset and circumstances of each family. Technical staff may give less priority for communication when they are expected to perform non-technical activities, such as clerical work, due to the limitations in availability of time and divergence of focus.

Reluctance of traditional artisans to accept alternative technologies

Challenges Faced: Local artisans engaged in construction are not aware of alternative technologies and are therefore reluctant to use such technologies. The drawback is that these artisans are the most trusted technical personnel in construction in the eyes of beneficiaries. Sometimes even when the beneficiary accepts a certain technology, the local mason is able to change his/her mind. In particular when self-building technologies are introduced, the job security of the traditional mason is threatened and as a result they may spread adverse publicity against these technologies among beneficiary communities.

In addition, some alternative technologies involve new tools and improved construction methods, which village masons may be reluctant to learn and practice.

Lessons Learned: It is important to obtain the buy-in of local artisans through comprehensive awareness creation at the commencement of a programme, focusing on the advantages to such artisans of learning and utilising alternative technologies. They must be convinced of the benefits they can accrue in using new tools by increased productivity.



When three decades of conflict ended in May 2009 in Sri Lanka, approximately 450,000 people had been displaced, with many having to rebuild their lives following the destruction of homes, villages and livelihoods. The urgent need was for an accelerated programme that would provide the affected people permanent homes and vital infrastructure facilities.

The Post-Conflict Reconstruction Programme in Sri Lanka's Northern and Eastern Provinces, implemented by UN-Habitat from 2010-2016, provided numerous opportunities as well as challenges and proved to be a testing ground for many new strategies and technologies. The programme proved to be highly successful, completing the reconstruction of 31,350 homes and 520 infrastructure facilities, and bringing fractured communities closer together.

This report looks closely at three main elements that made the programme a success – the participation of people from the inception to the end, the diverse partnerships – donors, government, community based organisations that brought people together to implement the projects and the new and innovative technologies that were introduced to make the programme cost effective and sustainable.

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