



# PERMANENT SHELTER FOR HOUSING INFRASTRUCTURE AND SERVICES DESIGN - PLANNING PROCESS

Practical Action maintains a **people first** approach to housing. We firmly believe that when the housing process starts with comprehensively identifying the needs of the people, then the technology for providing the infrastructure and services will fall into place. Practical Action is committed to the fact that a house is not merely a structure but a starting point for communities to regain a lost future.

This brief describes this approach taken by Practical Action in post-tsunami reconstruction in Sri Lanka. However, it would also have wider application wherever homes and livelihoods have been damaged by disasters or where rebuilding or improvement projects are being undertaken with the resident population that is vulnerable; in many slums or informal settlements, for example.

Prior to designing permanent shelters for persons displaced by disasters it is imperative to engage the community in the planning process. It is also important that communities understand the context of the changes and future risks they will have to face as a result of the disaster.

It is recommended that prior to entering into housing rebuilding; a general discussion takes place. This will help participation of the community and the housing rebuilding subsequent steps.



Figure 1: Photo credit: Practical Action South Asia

# technical brief



Figure 2: Photo credit: Practical Action South Asia

**Engaging the community**

Identify and list the most successful strategies used by communities living in disaster-prone areas.

In consultation with the community, build on indigenous measures to develop strategies that have already been successful. The following mechanisms are recommended to integrate community participation in the planning process:

- Include both women and men from the community in the assessment, planning and implementing of housing programmes.
- Invite women and men who are leaders in the community to strategic planning meetings and discussion, to enable a better focus on ground realities, leading to more targeted strategies.
- Identify and plan out the most useful forms of communication that can highlight and address the needs and concerns of women and men and marginalised communities such as people with disabilities.
- Bring together the different village-level organizations working in the area and share the focus / mandate of these organizations.
- Make sure that community-level practitioners/CBOs secure the involvement of both women and men in the community in local organisations.

Source: Madhavi Malagoda Ariyabandu and Maithree Wickramasinghe (2003) Gender Dimensions in Disaster management: A Guide for South Asia, ITDG South Asia Publication

Participatory surveys, processes and analysis aim to create and recognise multiple perspectives and offset biases by creating a debate about change. Debate about change should generate new thinking and a readiness to take action.

**Remember that**

1. Time should be allowed for survey design, testing and adjustment prior to large-scale efforts.
2. Flexible and informal techniques should prevent collection of superfluous detail.
3. Data analysis should be an integral part of fieldwork not something done afterwards or by others.
4. Collective analysis of the findings from pilot surveys should result in changes to the approach.

## Tools for participatory assessment

The following are some of the tried and tested tools of participatory assessment, these should be adjusted and new approaches invented based on local knowledge and preferences.

- Review of existing information – what do we know already?**  
Existing written material can provide a rich overview of relevant issues. Media, reports and information gathered by others should be reviewed keeping in mind that often these materials will have been written for a different purpose at a different time. Nonetheless “secondary data sources” can promote thinking and raise many questions for further exploration.
- Observation – watch and learn**  
Simply watching people, noting what they do and how they act in a variety of situations can be very instructive. For example, if you observe the dynamics at a gathering you will get clues as to who is a natural or appointed leader in the community and clues will be evident as to who is excluded either by their total absence or silence during discussions. It is important to select the most appropriate tools and methodologies depending on the location/ communities etc. It is recommended that a suitable combination of a few tools is selected and used to obtain community participation.
- Semi-structured interviews – talking with a purpose**  
People like to talk - having a conversation is the most natural thing in the world. Careful planning and some flexibility can go a long way to guiding natural conversations to ensure you cover issues of interest. Listening carefully and following up on the issues which are of most concern will result in an awareness of people’s concerns, problems and priorities for the future. Unexpected or new topics which arise can offer a fruitful direction of enquiry to pursue. Such interviews can be carried out with individuals, in small groups, and with specific people who are felt to be key players because of their specialist knowledge or roles. Interviewers should stop at the end of each interview and note their findings and share these with others at the end of each day to promote learning and to revise the structure of future interviews.
- Drama, role play, songs and visual art forms – tell us a story**  
Traditionally, performing arts can be used to express ideas and concerns which might otherwise remain buried. Sensitive issues can be tackled in a non-personal way. Performers can structure their story in a way that raises questions or encourages the audience to determine the story line. For example, role plays talking about the lives of a fictitious Mr & Mrs Perera and their children has been used to promote discussion about HIV/AIDS in a way that saves any embarrassment, raises problems and suggests advice they might be given to overcome the challenges they face.
- Diagrams and visual tools – can you picture this?**  
Diagrams and symbolic representation can usefully represent the current situation and risks faced at many levels. Laying symbols and diagrams out and noting how people relate various risks and measures to counter them can be informative in understanding existing coping mechanisms. The products may be interesting but it is often the conversations that people have during these processes that provide the richest materials for learning. Comparing and talking



Figure 3: Photo credit: Practical Action South Asia

about the differences between diagrams produced by different groups of people can also be instructive. For example by asking women and men, or young and old people, or able bodied and people with disabilities to work separately a rich and diverse picture will emerge.

- **Mapping – it looks like this**

Collectively producing a map of an area can identify specific hazards and features which vulnerable people can use to mobilise in times of need to minimise the risks to life and property. Mapping can also be used as a tool to plan how neighbourhoods should be developed. Many materials can be used to create maps, from sticks and stones to computer based software. If you need to keep a record then the process should be paper based or be transcribed onto paper.



Figure 4: Photo credit: Practical Action South Asia

- **Transects – a slice of life**

By taking a walk through a neighbourhood, or potential settlement area, a group of people can record what they see, talk to people along the way and make notes, look at natural features and identify hazards. Taking pictures and later discussing what was taken and why it is considered important can generate useful debate.

- **Modelling – bringing ideas to life**

Ideas can be brought to life through building models – using simple local materials or scale drawings can all enhance a process involving people in defining their built environment. The same techniques can be used to show what neighbourhoods, community spaces or individual dwellings might look like.

- **Seasonal calendars – what a difference a year makes**

People's daily reality and livelihood options can change significantly with the seasons. Hazards change in periods of rain or drought, women and men's workloads may vary enormously and their economic situation accordingly. Plotting out a seasonal calendar with older and younger people, women and men will help to understand the seasonally dependent hazards and opportunities.



Figure 5: Photo credit: Practical Action South Asia

- **Social and institutional network analysis – who's who?**  
All communities rely on social networks and institutions to govern, organise, and access resources and services. Careful mapping of organisations, for example by placing cut out circles of varying sizes and colours in relation to each other, can highlight which formal and informal organisations relate most to, or which ones are disconnected from, communities. It is possible to identify who has responsibility for and controls what. Pivotal relationships and gatekeepers can be identified and implications for any interventions explored.
- **Livelihoods & class analysis – how do you make a living?**  
Diagrams and discussions can help to understand individuals' and households' sources of livelihoods, behaviour, decision making and coping strategies. Interventions can be focused to strengthen and /or diversify the existing livelihood options and mitigate apparent risks.
- **Gendered resource mapping – what's the difference?**  
By exploring resource availability and use by women and men an appreciation of who controls what and how each benefits can be gained, and a profile can be established.
- **Problem tree – getting to the root of it**  
This process aims to create an understanding of prominent problems impacting on individuals and communities. Collective discussion aims to dig deeper in order to understand the root causes and then develop strategies to address these rather than simply tackling symptoms. The branches of the tree reach for the light to nourish future growth.
- **Ranking and scoring – putting things in place**  
Hazards, needs or planned actions, services, or any aspect of development can be placed in a matrix and people can be asked to rank each according to the others. By asking people to share out finite numbers of counters (beans, stones or any other local object available in quantity) a quantitative ranking can be created. It remains true that the discussion and qualitative debate is more interesting than any absolute numbers coming out of the exercise.
- **Disability mapping – whose needs are special?**  
A census of disabled people and their disabilities within the community, their location, their livelihood options and the facilities which are available to assist them need to be mapped, so that they can be included in community based activities and their future aspirations realised.

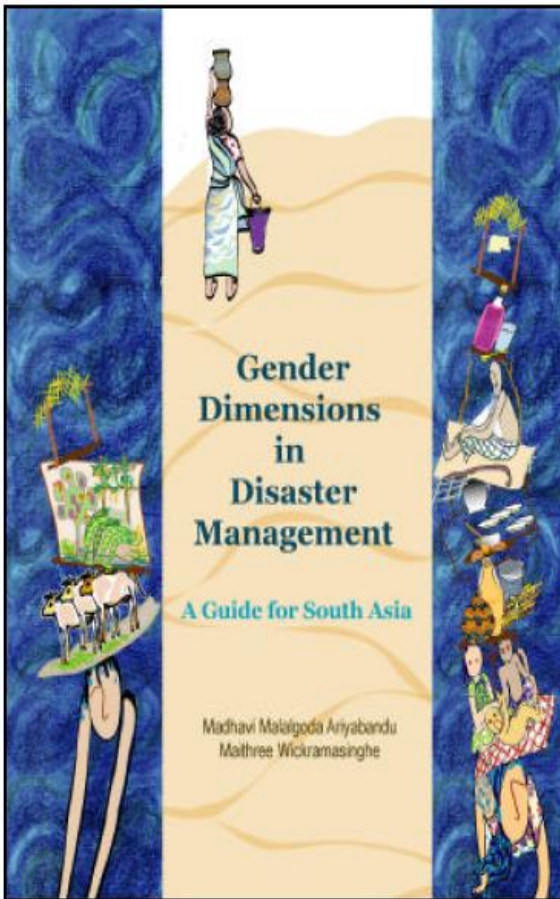


**The Practical Action South Asia Approach**

During the preparatory and planning phase, Practical Action;

- Provides assistance to adopt participatory tools assessment.
- Ensures the adoption of a disaster sensitive approach, through awareness creation.
- Provides expertise in the field of disaster mitigation.
- Brings awareness among district authorities on how to develop plans that reduce the future risk to vulnerable communities.

### Situational analysis and risk assessment



The reconstruction of shelter and other physical infrastructure needs to be based on a situational analysis and risk assessment. For example planning for housing will need to look at any hazards of the particular location, what kind of resources and capacities people have to be involved in the rebuilding, and what designs are appropriate to cope with disasters such as floods, droughts, earthquakes etc.

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Planning for housing needs special focus on the needs of women, disabled and the elderly. The following checklists provide a framework for undertaking a situational analysis and risk assessment among communities affected by disasters. For further details refer to [\*Gender Dimensions in Disaster management: A Guide for South Asia\*](#) by Madhavi Malagoda Ariyabandu and Mithree Wickramasinghe (2003); an ITDG South

Asia Publication. (Available from Practical Action Publishing, UK ISBN 9781853396076)

### A checklist for essential issues to be covered in an assessment

- Household information of the communities
- Livelihood patterns
- Natural resource analysis
- Institutional structures
- Community/ social support structures
- Overall development concerns and priorities
- Hazard analysis
- Risk analysis
- Vulnerability and capacity analysis
- Existing preparedness and emergency management plan and strengths
- Community coping mechanisms
- Gender issues and concerns

### A checklist for assessment of a risk-area

- Livelihood patterns and their dynamics
- Resources and assets of the people in the community
- Availability of water
- Availability and supply of food
- Availability of fodder for livestock
- The formal institutional structures and accessibility
- Health and educational service as well as their accessibility and availability to the people
- Quality and effectiveness of the health service
- Shelter opportunities and constraints in the area
- Means of communication in the area
- Employment opportunities available in the community
- Available skill of the people which can provide alternative employment
- Potential and constraints to promoting these skills
- Social networks which can safety-net to people at vulnerable times
- Management practice and common property resources
- Governmental policy toward relief and development activities in this area
- The work of social organizations in the communities

## Land –use and neighbourhood planning

Land use and neighbourhood planning involves the following process.

- **Situational Assessment** of the communities.
- **Utility Assessment** of the land available.
- **Comparative Analysis** to match the community’s needs and physical resources available.
- **Formulation of the neighbourhood land-use map and District level master plan**

### Practical Action South Asia Facilitates Planning by:

- Assisting the District Secretariats to conduct situational assessments,
- Carrying out Land-use Analysis, with the involvement of all stakeholders,
- Providing participatory tools for comparative analysis

### Situational Assessment of the Communities

A consultative process needs to be adopted to identify and analyse the housing requirements and to prioritise the needs to be addressed. One or several of the tools for participatory assessment set out above can be used for this consultative process.

Results of this process will enable development practitioners to assess:

- Previous lifestyles and post-tsunami aspirations of people.
- Profiles, family patterns, social, religious and cultural norms (special attention needs to be paid to single women/ women headed households/ single parents both male and female/youth).
- Land use patterns, domestic and home-based enterprise requirements, common, commercial facilities and services.
- Activities that take place ‘in’ built structures and those which take place ‘outside’ built structures
- Current location and realities of displaced people (the sort of environment needed to enable the different activities of the people).

### Utility Assessment of the land available

This analysis needs to draw on the knowledge and expertise of all service providers and stakeholders such as the;

- Local Authorities/Provincial Councils.
- Urban Development Authority.
- Road Development Authority.
- Central Environmental Agency.
- Coastal Conservation Department.
- Service providers such as the CEB (electricity) and NWSDB (water).

The utility assessment would highlight the vulnerability of the land, posed through natural (cyclones, floods, earthquakes etc) and man-made hazards such as internal conflicts, border disputes; and its implications on the suitability of the land. The risks highlighted should guide the planning and design of neighbourhoods, housing and infrastructure.

The following process may be adopted for undertaking the utility assessment of the land using the *tools for participatory assessment* mentioned above.

Carry out a **physical survey of the land** to identify contour levels, vegetation and noteworthy physical elements such as rock formations and water bodies.

Thoroughly assess the **physical environment** and the associated physical characteristics of the site and its surroundings with attention to;

- Geology
- Topography
- Water
- Local climate

Thoroughly assess the **natural environment** of the locality giving attention to;

- Soil
- Vegetation
- Ecological value
- Wildlife
- Air quality



Thoroughly assess the **social environment and accessibility** giving attention to;

- Land-use
- Built environment
- Rural environment
- Population
- Historical development
- Land value (selling price per pitch etc)
- Land ownership
- Views and scenery
- Landscape types
- Landscape character
- Unique areas and features

A land-use analysis can highlight the various limitations and resources of the land and their implications on the design of neighbourhoods, houses, infrastructure and services. It will lead to the formulation of an integrated land-use plan (through a comparative analysis) which will maximise the needs and aspirations identified through the Situational Assessment of the Communities.

### **Comparative Analysis - to match the community's needs and availability Of physical resources**

Following on from the situational assessment of the community and the utility assessment of the land, a comparative analysis needs to be undertaken. This will enable an assessment of the potential of the site, based on the relationship between the physical characteristics of the site (from the utility assessment) and the user requirements (from the situational assessment). This may require some elements of the physical characteristics of the site to be changed to allow a better match between the users and the site.

Particular emphasis needs to be paid to the requirements of the people who will reside in and use the site giving due consideration to diversity of age, gender and disability.

An **environmental impact assessment** needs to be carried out of the proposed activities on the site, taking into account;

- Site assets
- Site liabilities
- The impact of the proposed built environment on the ecology of the site and its surroundings
- Conservation
- Sustainability of the eco-system

## **Formulation of the neighbourhood land-use map and district level master plan**

### **Land-use map**

Subsequent to the comparative analysis a land-use map can be drawn for permanent housing. The map needs to be a balance between human requirements and the need to ensure the conservation and enhancement of the natural environment. The final land-use map should be drawn up only after evaluating a conceptual map and one or several alternative concepts.

### **Components of a Land use map**

- Residential.  
Family home, cluster of houses, block apartments, care units for specific social group such as the elderly.
- Educational establishments.
- Commercial and retail establishments.
- Industrial establishments.  
To accommodate the diverse range of livelihoods engaged in by the community.
- Infrastructure and services.  
Roads, water supply and drainage, sewerage, electricity, telecommunications
- Government and semi-government establishments.
- Health and social welfare establishments.

### District level rebuilding master plans

The land use map arising subsequent to the Comparative Analysis should be integrated with District level rebuilding master plans. All stakeholders should be invited to a consultative process where the information collated through the Comparative Analysis is assimilated and discussed. All professional bodies involved in rebuilding housing and infrastructure should be given a forum to contribute their expertise on how to adapt a range of proven technologies and services to suit the local environment.

The stakeholders consulted should include the District Housing Consultative Forum which is the coordinating body of all stakeholders including;

- UDA District Level Officers
- Local Government Agencies – Pradeshiya Sabha
- the Centre for Housing, Planning and Building(CHPB)
- UN-Habitat
- The National Engineering, Research and Development Centre (NERD).
- CBO's & NGO's of each area.
- Researchers
- Professionals
- Artisans



Figure 7: Photo credit: Practical Action South Asia

### The housing process

**Awareness creation** among implementing organisations on disaster sensitive participatory approaches to planning and implementing the construction of houses.

**Dialogue** (with the community and CBOs) to understand the post disaster lifestyles and aspirations.

**Consensus** with the implementing organisations on possible interventions. (Agreement on partnerships, the commitments of each partner, and the duration of each commitment need to be clearly specified).

**Family consultation** on the core housing option and plot layout (family occupation details, ages, gender, special needs, interests, ownership verification, finalising the orientation of the layout).

**Facilitating design choices** (creating awareness among beneficiaries of the design options, enabling participatory decision making on the design choices, making available information on various technology choices with regard to the use of materials and other appropriate technologies such as renewable energy sources (e.g. biogas) and water capture units (e.g. rain water harvesting units).

**Housing designs:** should be developed based on the availability of building materials, skills and the local environment. The concept reducing, re-using and recycling waste is promoted by Practical Action. The significant volume of building rubble left by the tsunami should be re-used wherever possible.

**Implementing construction work** - prior to commencing construction, decide on logistics (of who, when, how), create awareness and train masons and local artisans on the available technologies and best practices in construction and how to adhere to socio-cultural practices. Prior to construction, establish collective supervision and monitoring practices, set in motion a mechanism for regular monitoring and reviews between house owners and implementing organisations.

### Infrastructure and services

Reconstruction efforts should encompass not only the building of houses but also the provision of effective access to infrastructure and services such as;

- Access-ways - Roads, culverts, bridges.
- Renewable energy facilities – generating energy through wind, water, biomass.
- Waste management techniques.
- Water capture, storage and distribution methods – such as rain water harvesting.
- Other facilities that will accommodate, healthcare, education, recreation, governance, commercial, communication.

Collaboration among local authorities, private sector service providers and government organisations in charge of providing basic amenities such as roads, water and electricity is essential in planning housing schemes.



Figure 8: Photo credit: Practical Action South Asia

### What Practical Action Has Provided

- Participatory approaches to housing, infrastructure and service design.
- Proven, cost effective technology option for infrastructure & services, e.g. Community managed gravel roads.
- Guidance on the type of housing & infrastructure to built, based on available resources
- Obtaining the expertise of:
  - National Water Supply & Drainage Board
  - Regional Road Development Authorities
  - Ceylon Electricity Board (on the Lanka Electricity Company)
  - Central Environmental Authority
  - Provide on-the-job training on cost effective construction methods.

### Additional Information Resources

The following information resources, not specifically connected to reconstruction in Sri Lanka, would also be informative for post-disaster reconstruction;

- EPC (Environmental Planning Collaborative) / TCG International / FIRE-D (Indo-US Financial Institutions Reform and Expansion) Project, [Participatory Planning Guide for Post-disaster Reconstruction](#), January 2004, (case studies of reconstruction following 2001 Gujarat earthquake in India covering planning and experiences)
- OCHA (Office for the Coordination of Humanitarian Affairs) / Shelter Centre / DFID (Department for International Development), [Transitional Settlement and Reconstruction after Natural Disasters \(Field Edition\)](#), United Nations, 2008,
- Twigg J, *Good Practice Review — Disaster risk reduction mitigation and preparedness in development and emergency programming*, Humanitarian Policy Group Paper Number 9, Overseas Development Institute, London, March 2004,
- ALNAP (Active Learning Network for Accountability and Performance in Humanitarian Action), [Participation by Crisis-affected Populations in Humanitarian Action, A handbook for practitioners](#), Overseas Development Institute, London, 2003,
- Benson C & Twigg J, [Tools for Mainstreaming Disaster Risk Reduction: Guidance notes for development organisations](#), Provention Consortium, Geneva, January 2007,
- Risk and Disaster Management Unit, [Guidelines for Operational Programme Formulation in Post Disaster Situations: A resource guide](#), UN-Habitat, Nairobi, 2001,
- Practical Action, South Asia, [Guidelines for Planning in the Re-building Process – Resource pack](#), January, 2004,
- Wates N, [The Community Planning Handbook: How people can shape their cities, towns and villages in any part of the world](#), Earthscan Ltd, 2000.
- Kumar S, [Methods for Community Participation: A complete guide for practitioners](#), Practical Action Publishing, UK, 2002
- [Earthquake-Resistant Housing](#), Practical Action Technical Brief
- [Building Back Better](#) T Schilderman et al Practical Action Publishing
- [Disaster Risk Management and Reconstruction in Latin America](#) Montoro & Ferradas, Practical Action Publishing, 2012
- [The Sphere Handbook](#) SPHERE/ Practical Action Publishing, 2011

Additional resource materials on reconstruction can be found in the online library of the Shelter Centre:

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Website: <http://www.sheltercentre.org/library/>

Duryog Nivaran, the South Asian Network for Disaster Risk Reduction, has published a number of studies, technical briefs and other resource documents that focus in particular on issues of policy, gender, communication and participation - <http://www.duryognivaran.org/>

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Practical Action is a development charity with a difference. We know the simplest ideas can have the most profound, life-changing effect on poor people across the world. For over 40 years, we have been working closely with some of the world's poorest people - using simple technology to fight poverty and transform their lives for the better. We currently work in 15 countries in Africa, South Asia and Latin America.

# technical brief