

## Annex IV: HOUSING

### A. Introduction

1. The tsunami impacted fishing families most severely, causing extensive damage to shelter and housing. As the link between housing and employment in fishing is very strong, any measures that affect housing location have immediate implications for the livelihoods of fisher families, and vice versa. This is particularly important when considering the industry's ongoing decline in terms of profitability and share in the states' GDP.

2. Many of the occupants of the damaged housing did not have titles to their property. Instead, "ownership" rights are essentially vested in the community and the value of housing derives mostly from its proximity to the fishing area, than from the specifics of the dwelling. Under such circumstances, it is difficult for such families to move away from their location or to shift to different forms of employment because the wealth they have accumulated in fishing gear or housing has mostly been lost.

3. The issue is complicated by the fact that most fisher families live within the Coastal Regulation Zone (CRZ), promulgated in 1991, which proscribes construction within specific distance of the sea. At the same time, the rights of those having dwellings within the CRZ prior to its adoption need to be examined.

### B. Damage Assessment and Government Response

4. **Asset Losses.** Almost 154,000 houses were either destroyed or damaged entailing losses of about Rs. 994.0 crore or \$228.5 million<sup>26</sup> (Tables 1 and 2). In the hardest hit state, Tamil Nadu, housing losses are estimated to reach 130,000 units. Pondicherry, though small in coastal exposure, suffered disproportionately higher damage due its high population density, with an average 2,029 people/km<sup>2</sup> versus the 324 people/km<sup>2</sup> average for India.

5. The type of housing affected varied widely from state to state. While almost all the affected housing in Kerala was indicated to be *pucca*<sup>27</sup>, it was less than half in Andhra Pradesh, and only an estimated 13 percent in Tamil Nadu. The rest was thatch huts or mud wall houses with thatch roofs. While specific numbers for Andhra Pradesh, Pondicherry and Kerala were not available, in Tamil Nadu 24,222 of the damaged houses were located in urban areas, mostly in Chennai, but also in the district towns of Cuddalore, Nagapattinam and Kanniyakumari.

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<sup>26</sup> For the purposes of currency conversion an exchange rate of Rs 43.5 / US\$ is used.

<sup>27</sup> In India, the terms *pucca* and *kachcha* are used to denote, respectively, permanent and light/temporary structures.

**Table 1. Estimated Number of Damaged Houses**

| State/UT       | Pucca               | Kachcha              | Total          |
|----------------|---------------------|----------------------|----------------|
| Andhra Pradesh | 216                 | 265                  | 481            |
| Kerala         | 13,042 <sup>a</sup> | 0 <sup>a</sup>       | 13,042         |
| Pondicherry    | 1,312 <sup>b</sup>  | 8,749 <sup>b</sup>   | 10,061         |
| Tamil Nadu     | 16,957 <sup>a</sup> | 113,043 <sup>a</sup> | 130,000        |
| <b>TOTAL</b>   | <b>N/A</b>          | <b>N/A</b>           | <b>153,585</b> |

<sup>a</sup> Estimated by the mission based on the state government's indications.

<sup>b</sup> Due to lack of detailed information the same share for *pucca* housing was applied as in Tamil Nadu.

6. Based on information and discussions with the state governments, and the estimated unit costs, the total damages to the housing units could amount to as much as Rs. 841.0 crore or \$193.3 million, of which Tamil Nadu accounts for \$165.3 million (Table 2.). In addition, the loss of personal property is estimated to account for an additional Rs. 154.0 crore or \$35.2 million.

**Table 2. Estimated Housing and Personal Property Damages (Rs. crore)**

| State/UT       | Housing damages |             |              | Losses       | Total        | \$ million    |
|----------------|-----------------|-------------|--------------|--------------|--------------|---------------|
|                | Fully           | Partially   | Total        |              |              |               |
| Andhra Pradesh | 1.0             | 1.0         | 2.0          | N/A          | 2.0          | 0.45          |
| Kerala         | 51.0            | 28.0        | 79.0         | 13.0         | 92.0         | 21.15         |
| Pondicherry    | 39.0            | 2.0         | 41.0         | 10.0         | 51.0         | 11.73         |
| Tamil Nadu     | 677.0           | 41.0        | 718.0        | 131.0        | 849.0        | 195.17        |
| <b>TOTAL</b>   | <b>768.0</b>    | <b>72.0</b> | <b>840.0</b> | <b>154.0</b> | <b>994.0</b> | <b>228.50</b> |

**ASSUMPTIONS:** The average cost of pucca housing was assumed to be Rs. 120,000 in Andhra Pradesh and Tamil Nadu, Rs. 180,000 in Kerala and Rs. 160,000 in Pondicherry. The cost of a kachcha house was assumed to be equal to 30 percent of the cost of a pucca house in the respective state. In Andhra Pradesh, Pondicherry and Tamil Nadu, all kachcha houses were assumed to be fully damaged, while half of the pucca houses were assumed to be only partially damaged in Andhra Pradesh, Tamil Nadu and Pondicherry. Kerala provided a specific break up between partially and fully damaged housing units. The cost of partially damaged house was assumed to be equal to 35 percent of the total cost of a pucca house, except in Kerala where the specific numbers were provided by the state (Rs. 35,000 in the case of major damage and Rs. 25,000 in the case of minor damages). The costs of lost household items were assumed to be Rs. 10,000 per family on an average and to have occurred to all families who had their houses damaged.

7. Because the level of basic services in most villages prior to the disaster was minimal or non-existent, including an almost complete lack of sanitation, the damage to such infrastructure has been considered negligible<sup>28</sup>. Even simple pit latrines were limited to a few relatively affluent families residing in villages further away from the beach.

8. **Immediate government emergency response.** Different levels of governments have responded quickly and effectively to the crisis. People have quickly been re-housed, and various forms of relief assistance have been provided. These include a wide range of relief packages, shelter provision in relief camps and temporary housing, as well as financial assistance for immediate housing and personal needs (Table 3.). Extensive additional assistance has also been provided by a number of other organizations such as UNICEF, Oxfam, and other major NGOs. In addition, governments have made assessments and proposals of longer term assistance to restore or replace housing as discussed below.

<sup>28</sup> See Annex IX on Rural and municipal infrastructure.

**Table 3. Summary of Immediate Housing Relief Steps Taken by the States**

| State/UT       | Housing          |                               | Losses          |                         | No. of relief camps |
|----------------|------------------|-------------------------------|-----------------|-------------------------|---------------------|
|                | No. of families  | Assistance (Rs./family)       | No. of families | Assistance (Rs./family) |                     |
| Andhra Pradesh | 481              | 1,871*                        | N/A             | 375                     | N/A                 |
| Kerala         | > 1 lakh persons | 7,500 per person in Ernakulam | N/A             | N/A                     | >100                |
| Pondicherry    | 5,562            | 10,000                        | 13,758          | 2,000                   | 48                  |
| Tamil Nadu     | N/A              | N/A                           | 150,000         | 3,000                   | 416                 |

\* While the announced relief packages were Rs. 1,500 per fully damaged house and Rs. 750 per partially damaged house, the total cost of Rs. 900,000 and 481 damaged houses indicates that the average per unit subsidy has been of Rs. 1,871. (Government of Andhra Pradesh, February 9, 2005. Tsunami Tidal Waves in Andhra Pradesh. Presentation to the mission).

### C. Reconstruction Needs

9. Housing needs have been divided into immediate and medium term needs. The governments of Andhra Pradesh and Kerala have also provided estimates for the long term needs for relocation of housing from areas that are vulnerable to recurring hazards such as cyclones and related storm surges. However, the assessment of such needs was beyond the scope of work of the present team and would require further work in conjunction with studies on environment and risk management, livelihoods and resettlement issues.

10. Immediate Needs. The various state governments have already carried out the immediate emergency steps with regard to housing – partial compensation for housing damage, provision of temporary housing, debris removal, salvaging and so on. In most areas, the process of community consultation and participation, through village/community associations and leaders, and some NGOs, has been initiated to consider broader immediate to medium term recovery requirements.

11. *Temporary shelter.* Due to the much larger number of families rendered homeless by the tsunami in Tamil Nadu relative to the two other states and Pondicherry, there will be a need to improve the basic temporary living conditions for the tens of thousands residing in the relief camps. Once it becomes warmer and the monsoon arrives, health concerns and possible social discontent could arise unless a specific and tangible plan to improve the temporary housing and living assistance is pursued. There are already a number of effective instruments in the state to address these concerns – NGO initiatives, the government’s Indira Awas Yojana program, and the Slum Clearance Board. Since it will take time to relocate or replace the permanent housing, it will be necessary to provide reasonably comfortable temporary shelter for a one to two year period. For example, it may be possible to develop a voucher scheme to encourage families residing in the relief camps to stay with relatives or use the rental housing market. It may also be important to consider how *in situ* assistance could be used to reduce the numbers in the relief housing. These steps could also have major implications for the cost of addressing the permanent housing needs.

12. *CRZ regulations.* The costs of addressing housing needs will be even more fundamentally affected by decisions taken with regard to the enforcement of the CRZ regulations. For instance, these regulations are closely tied up in the issue of whether *in situ* assistance can be provided. It appears that a choice has been made in some cases to move some communities en mass, as in

Chennai, where the Slum Clearance Board proposes to relocate the affected families into apartment blocks. While this may be tried in urban areas, such multiple housing schemes are not likely to work in rural/coastal villages and hamlets.

13. *Priority assistance.* It should be possible in the short term, perhaps within the following few months, to make determinations of which locations are clearly unsafe and which are not, at least for the purposes of defining priorities as to who should be assisted first. Any such determination should include local officials and community representatives. The construction of a large number of new housing units in other locations will not only increase the costs due to required land purchases, but also are likely to cause delays common with such acquisitions.

14. *Costs.* The basis for estimating the housing reconstruction needs are the proposed programs prepared by the state governments. The different states have proposed varying house sizes and unit costs. These are: Kerala 430 sq ft, Andhra Pradesh 200 sq ft, Tamil Nadu 250 sq ft and Pondicherry 300 sq ft. The respective state estimates of cost per sq ft are Rs. 698.0, Rs. 200.0, Rs. 234.0 and Rs. 333.0. Due to the large housing needs in Tamil Nadu in absolute terms and in Pondicherry in relative terms, it is estimated that during the immediate phase (i.e. the first year) it would be possible to provide the temporary housing and repairs to the partially damaged housing and build about 20 percent of the new permanent housing. The remaining 80 percent of the new construction is estimated to be finalized during the medium term (see below). Based on these parameters, the estimated costs, including temporary housing, land and infrastructure would be Rs. 696.0 crore or \$160.0 million (Table 4).

**Table 4. Estimated short-term financing needs (Rs. crore)**

| State/UT       | Temporary Housing | Housing repairs | Permanent housing |              |              | Total        | \$ million    |
|----------------|-------------------|-----------------|-------------------|--------------|--------------|--------------|---------------|
|                |                   |                 | Housing           | Land         | Infrastr.    |              |               |
| Andhra Pradesh | 0.4               | 0.3             | 1.0               | 0.3          | 2.0          | 4.0          | 0.90          |
| Kerala         | 7.0               | 28.0            | 79.0              | 65.0         | 17.0         | 196.0        | 45.05         |
| Pondicherry    | 37.0              | 3.0             | 24.0              | 5.0          | 11.0         | 80.0         | 18.40         |
| Tamil Nadu     | 80.0              | 18.0            | 143.0             | 30.0         | 145.0        | 416.0        | 95.65         |
| <b>TOTAL</b>   | <b>125.0</b>      | <b>49.0</b>     | <b>247.0</b>      | <b>100.0</b> | <b>175.0</b> | <b>696.0</b> | <b>160.00</b> |

**ASSUMPTIONS:** The costs of temporary housing are assumed to be Rs. 8,000/unit in Andhra Pradesh and Pondicherry, and Rs. 26,880/unit in Kerala. The total costs of temporary housing in Tamil Nadu were provided by the state government. Costs of repairs were either those provided by the state (Kerala) or assumed to compose 35% of the unit cost. The cost of land was assumed to be Rs. 250,000/plot in Kerala, Rs. 12,000/plot in Andhra Pradesh and Tamil Nadu, and Rs. 24,000 in Pondicherry, based on the information provided by the state governments. Infrastructure costs were estimated to be Rs. 59,000/unit, across all states, and would include a share of the common property and infrastructure such as water and sanitation, roads and drainage, and power supply.

15. Estimates for land and infrastructure are based on an assumption that all of the fully damaged houses would be rebuilt in new safer areas. *In order to assess the actual needs for additional infrastructure investments and land acquisition a more in-depth survey is required of land availability, household willingness to relocate and other factors.* Decisions will also need to be made with respect to the use of the remains of the damaged housing, the land in the existing damaged areas, and how to discourage people from moving back to their previous locations in vulnerable areas. This will require close coordination with livelihood, environmental and resettlement issues and policies, and the longer term development strategy of the states.

16. Since at least part of the housing will require household relocation, consultations, transparency and flexibility in housing assistance will be important to ensure widest beneficiary support. For example, given the trauma they have experienced, those who want to move from the coast should be given that option. However, they should also be given the option to determine how they would like to use their assistance. For instance, many may be willing to construct a more modest house than that provided by the government and use the remaining assistance for new livelihood opportunities, education or other purposes. This may be particularly relevant for those who were living in *kachcha* housing in what is determined to be relatively safe locations.

17. There are obviously a host of questions related to providing direct financial assistance rather than in-kind compensation, and the process requires further study and consultation with those affected. For this sort of housing-related assistance to be most successful, it might be accompanied by training for those who were crew members of trawlers as well as formal titling for the properties of those who want such titles. The lack of property title appears to be one of the aspects of the poverty trap faced by the low-income fisher communities. All their assets are related to fishing, which has value only as long as they have access to a near-by beach to keep their boats. However, without title they cannot sell their property. Therefore, it may be useful to assess whether the establishment of property rights could be one way for those who want to exit the industry to do so.

18. Medium Term needs: In the medium term, the total financing needs for construction of permanent housing for the remaining 97,000 families in Tamil Nadu and 7,500 families in Pondicherry who had their houses fully damaged by the tsunami are estimated to reach Rs. 1,431.0 cr. or \$329.0 million (Table 5).

**Table 5. Estimated medium term financing needs (Rs. crore)**

| State/UT       | Housing        |              | Land         | Infra-structure | Total          | \$ million   |
|----------------|----------------|--------------|--------------|-----------------|----------------|--------------|
|                | No. of units   | Amount       |              |                 |                |              |
| Andhra Pradesh | -              | -            | -            | -               | -              | -            |
| Kerala         | -              | -            | -            | -               | -              | -            |
| Pondicherry    | 7,524          | 94.0         | 19.0         | 45.0            | 158.0          | 36.3         |
| Tamil Nadu     | 97,217         | 574.0        | 120.0        | 579.0           | 1,273.0        | 292.7        |
| <b>TOTAL</b>   | <b>104,741</b> | <b>668.0</b> | <b>139.0</b> | <b>624.0</b>    | <b>1,431.0</b> | <b>329.0</b> |

NOTE: For assumptions see Table 4.

19. Long Term needs. Perhaps the most important long term step is a rigorous evaluation and determination of the vulnerability of the different locations and the eventual application of CRZ rules. Any such rules will have much broader effects on the land markets in the coastal areas. A uniform restriction all along the coast will result in unnecessary restrictions on land use in areas that may be safe, while not providing a sufficient safety zone in those areas that may be very susceptible to cyclones and other sea hazards. Thus, the need for new housing for families in vulnerable areas can be assessed only after the determination of vulnerable coastal areas and CRZ rules have been finalized, and affected households have been consulted on relocation.

20. Consideration should also be given to some type of housing hazard insurance. At present, fishermen bear most risk directly with some part assumed by the government when it supports people afflicted with disasters as frequent as cyclones and as rare as a tsunami. The viability of such a scheme, possibly modeled on the current insurance operated through fishermen's co-operatives, would have to be assessed through extensive studies of the risks involved as well as interest and

willingness to pay. But even more importantly, it would require the government to be willing to facilitate the transfer of hazard risk from itself and vulnerable populations to the insurance industry.