

Transportation Issues in Disaster Management

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Introduction

- Transport system is an important part of urban development which is considered as life line of the urban areas.
- **Modern Transit System** reflects the image of the society .
- **Relation between Transport & Disaster.**
- **Case I** : Failure of transport system brings disasters .
- **Case II** : Occurrence of natural disasters causes failure/ damage to the transit system.

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Disaster Management

- Disaster management is a multi disciplinary area covering a wide range of issues such as
 - Search
 - Relief
 - Rehabilitation
 - Evaluation.
 - Rescue
 - Reconstruction
 - Monitoring
- Disaster Management Activities in
 - Pre-disaster Phase
 - During disaster
 - Post disaster Phase
- **Transport has important role to play in each phase of disaster.**

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Transport in Pre-disaster Phase

- Transportation network and evacuation planning are an integral component of disaster management.
- Role of Transport in **Evacuations before disaster and Mass Evacuation.**

Example :

Hurricane Katrina of the 2005 Atlantic hurricane season was one of the five deadliest in the history of USA .

- Formed : August 23, 2005
- Dissipated : August 30, 2005
- Highest winds : 280 km/h



Hurricane Katrina on August 28 2005

- **On August 28, 2005, Mayor ordered mandatory evacuation of the city New Orleans, Louisiana.**
- 1.4 million inhabitants were in the high threat areas.
- **About 3 lakhs people did not have access to reliable personal transportation.**
- **Public officials were aware of and willing to accept risk to 3 lakhs people unable to evacuate because they lacked transportation.**
- **Public officials provided little guidance or assistance to people who lacked automobiles.**
(John Renne (2005), Car-less in the Eye of Katrina, Planetizen)

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•Failure to have an effective evacuation plan for non-drivers.

•Failure to prioritize evacuation to ensure that the most vulnerable leave first.

•Failure to offer free or subsidized evacuation transport to people who need it.

Photo: West End Blvd interchange and surrounding area of North West New Orleans and Metairie, Louisiana



- **10 pickup locations** were established where city buses were to take people to emergency shelters.
- The service was unreliable.
- **Transit dependent people were directed to the Superdome.**
- Superdome had insufficient water, food, medical care, and security. It led to a medical and humanitarian crisis.
- "Refuges of Last Resort" for citizens who could not leave the city were established.

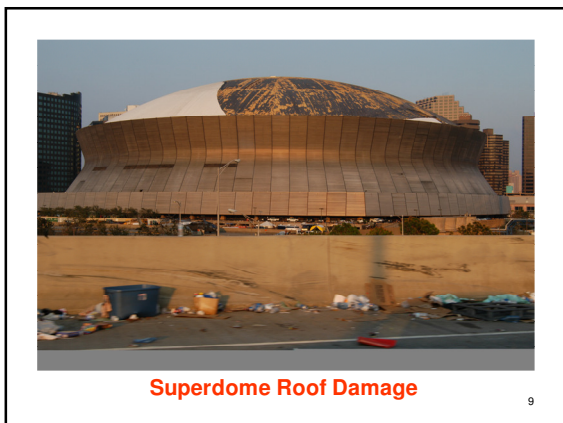


Louisiana Superdome



Damage of Louisiana Superdome

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Superdome Roof Damage

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- **Example : Hurricane Rita at Louisiana and Texas Coasts, Sept 24, 2005**
- Public officials ordered evacuations of coastal cities and provided free bus transportation for non-drivers.
- More residents responded to evacuation instructions.
- Significant automobile traffic problems.
- 3 million people evacuated the Texas coast, creating colossal **100 mile long traffic jams** that left many stranded and out of fuel.

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10 mile long traffic jams at Texas Coast

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- *Many fuel stations ran out of gasoline.*
- *Mechanical breakdown of vehicles.*
- Vehicles failed along the way due to **overheating and running out of fuel**, further increasing congestion.
- Vehicles were crawling average 10-20 miles in nine hours.
- Some driver **turned around to take their chances at home rather than being caught in the open when the Rita struck** (Blumenthal 2005)

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- **Public Transport** were considered as a **mode of last resort**.
- Failure to prioritize evacuation traffic to favour buses, HOVs and service vehicles.
- Failure to implement a transit and school bus in “Evacuation Action Plan”.

Failure to coordinate

- vehicles rentals,
- fuels distribution and
- services along evacuation routes.



- It created huge differences in convenience, comfort and safety between

- Motorists and Non-motorists
- wealthy and poor
- white and black
- able and disabled.....resulted as

- costly & dangerous rescue efforts,
- health problems and
- distrust of authority.



According to HOV Priority VTPI 2005

- A city with one million residents and four lane highways (2 in Nos.) in functional conditions require only 24 hours to evacuate all residents if about half are transported by bus and other high occupancy vehicles.

- In some situations,

- train may be also be useful for mass evacuations.
- Urban light rail lines may carry 20,000 passengers/hour
- Heavy rail line can also be arranged .

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Transport during disaster/just after disaster

- Transport is required:

- search and rescue operation.
- delivery of emergency supplies and services, etc
- carry of victims from collapsed structure to local hospital and shelters in case of fire/earthquake, etc.



- Hence **Emergency Transportation** + **Public Transport Services** are an component of all emergency preparedness efforts.

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- Better existing networks in terms of

- Road, -Rail, -Air,
- Life line structures such as bridges, telecom, pipelines, etc. promote better rescue and relief & recovery process.



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Transportation in Post Disaster

- 26th Dec. 2004 was a black day for India (Tsunami in coastal areas and Andaman & Nicobar Islands)



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JETTY DEVASTED BY TSUNAMI IN TERESSA

Town & Country Planning Organization

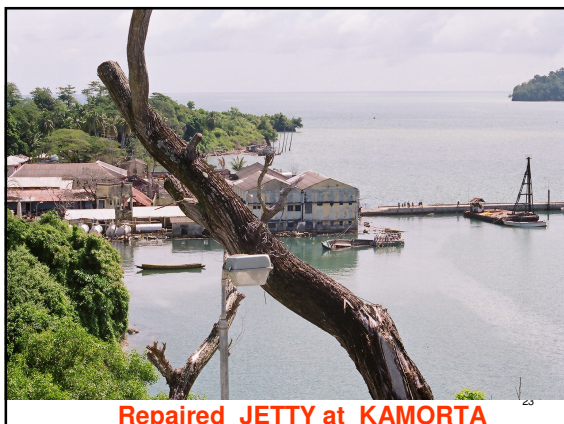
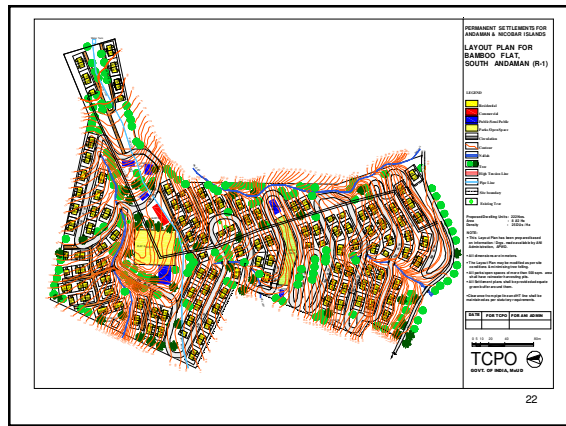
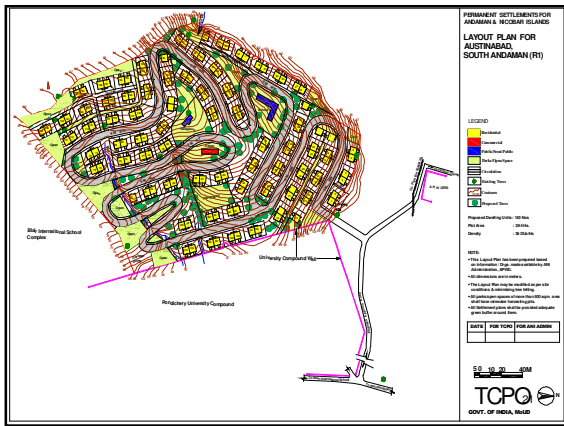
Ministry of Urban Development

Govt. of India prepared

Layout Plans for Permanent Settlements in 72 locations in various islands in Andaman & Nicobar Island



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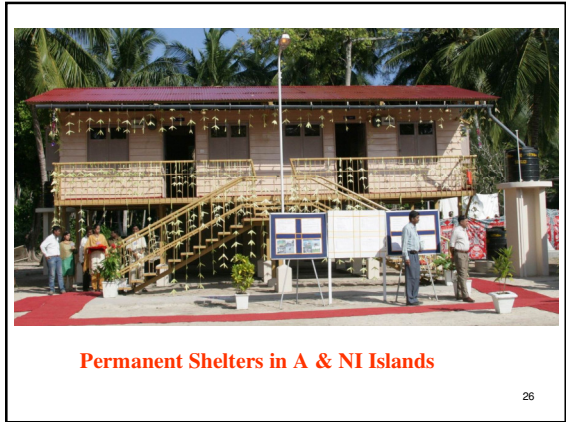
Repaired JETTY at KAMORTA



Bringing of Construction Materials at Kamorta²⁴



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Permanent Shelters in A & NI Islands

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UPA Chairperson Hon'ble Smt. Sonia Gandhi hands over 300 Permanent Houses to Tsunami victims on 28/02/2009.

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Jawaharlal Nehru National Urban Renewal Mission(JNNURM)

- The M/o Urban Development,, Govt. of India launched JNNURM programme in Dec. 2005 with Rs. 50,000 crores for 7 years.
- *Urban Transport, including roads, highways, expressways, MRTS/metro projects is one of the component for funding.*
- Hence it is important:
 - to include **disaster response** as part of **all transportation planning** (local, regional, national transit, etc.)
 - consider the widest possible range of **possible disaster** and **stresses on transport system** and **evaluate** the wide range of possible solutions.

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- Develop a **multi modal transportation system** that can provide a variety of mobility options.




- Create transportation system networks that provide **multiple links to each destination, including multiple rail lines, roads, paths, bridges.**
- **Design transportation facilities to withstand extreme conditions** (earthquakes, storms, etc.).

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Concluding Remarks

- Role of transport in 3 phases disaster management is understood
- **Need to develop Contingency Plans** to allocate
 - fuel,
 - emergency repair,
 - mechanical operations,
 - priority to public transport, high occupancy vehicles,
 - repair of transport infrastructure, etc in emergencies.
- **Plan to allow quick deployment of**
 - buses,
 - vans,
 - trains, etc for emergencies services which require an **inventory of vehicles, their drivers, routes & direction of movements.**

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- **Advanced information and communications systems** are required for proper dissemination of
 - Warning,
 - Evacuation,
 - Emergency services, etcamong residents, travelers and transport authorities.
- A variety of **Planning Policies** and **Programmes** can help create a more **Resilient Transport System**.
- These
 - increase system diversity and integration,
 - improver user information,
 - prioritize resource use and provide coordinated service during special events and emergencies.
- **Such policies can save lives, reduce sufferings, and provide substantial savings and benefits to society.**

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