

ආපදා කළමනාකරණය සහ සෞඛ්‍ය සේවා

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- ← තිරුවනය
- ← ආදිනව
- ← විශ්ව දර්ශනය
- ← අවතැන්වීම
- ← රෝහල් සුදානම
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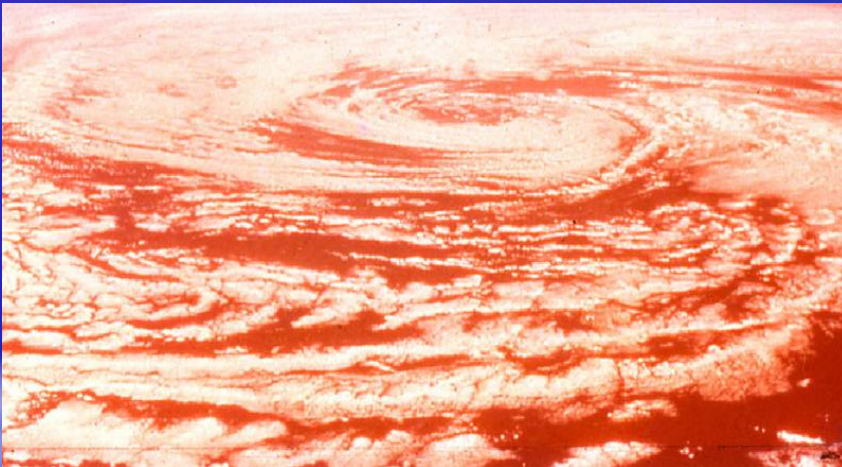
Disaster

- ❖ **Serious disruption of the functioning of a community causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.**
- ❖ ***A disaster results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.***



Hazard

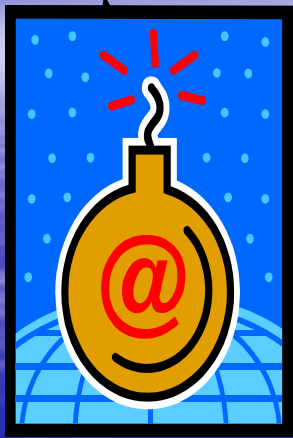
- A potentially damaging physical event, phenomenon (volcano) or human activity (deforestation) that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.



Risk

- The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions. (settlements in land slide prone slopes)





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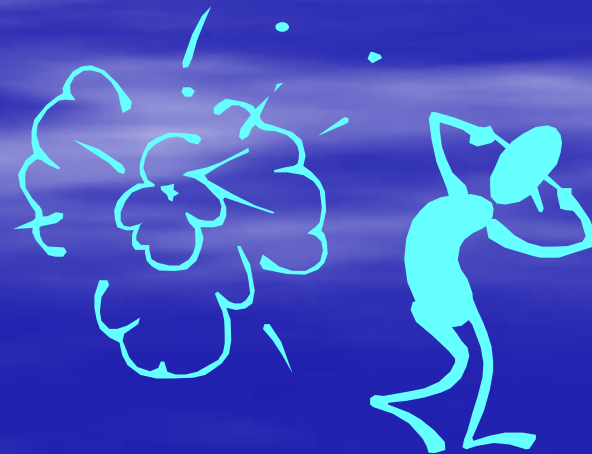


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ආපදා





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යටිතල පහසුකම්වලට, පරිසරයට,
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Damage to health facilities

Type	Curative	Preventive	Other	Total
Completely damaged	12	1	2	15
Partially damaged	21	51	12	84

Tsunami mortality - health Personnel

Total affected 689

Category	Specialist MO	MO / DS	Technical staff	Non technical staff	Student nurses	Total
Number	1	7	16	8	3	35
Percent	2.8	20.0	45.7	22.8	8.7	100

Source Ministry of health

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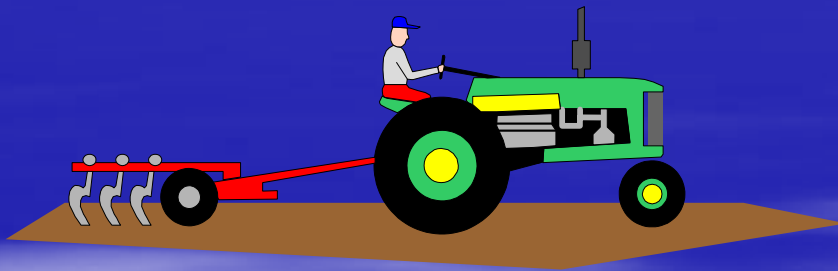
(AP PHOTO)

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Type of infrastructure



- **Economy / industry**
- **1,615 km of roadway**
(including 1,137 km of National Roads) with 25 bridges and Causeways damaged
- **Schools - 3,547**
- **59 fully, 102 partially damaged**

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- ➔ ස්වාභාවික
- ➔ **නාස්ථික**
- ➔ ප්‍රවාහන
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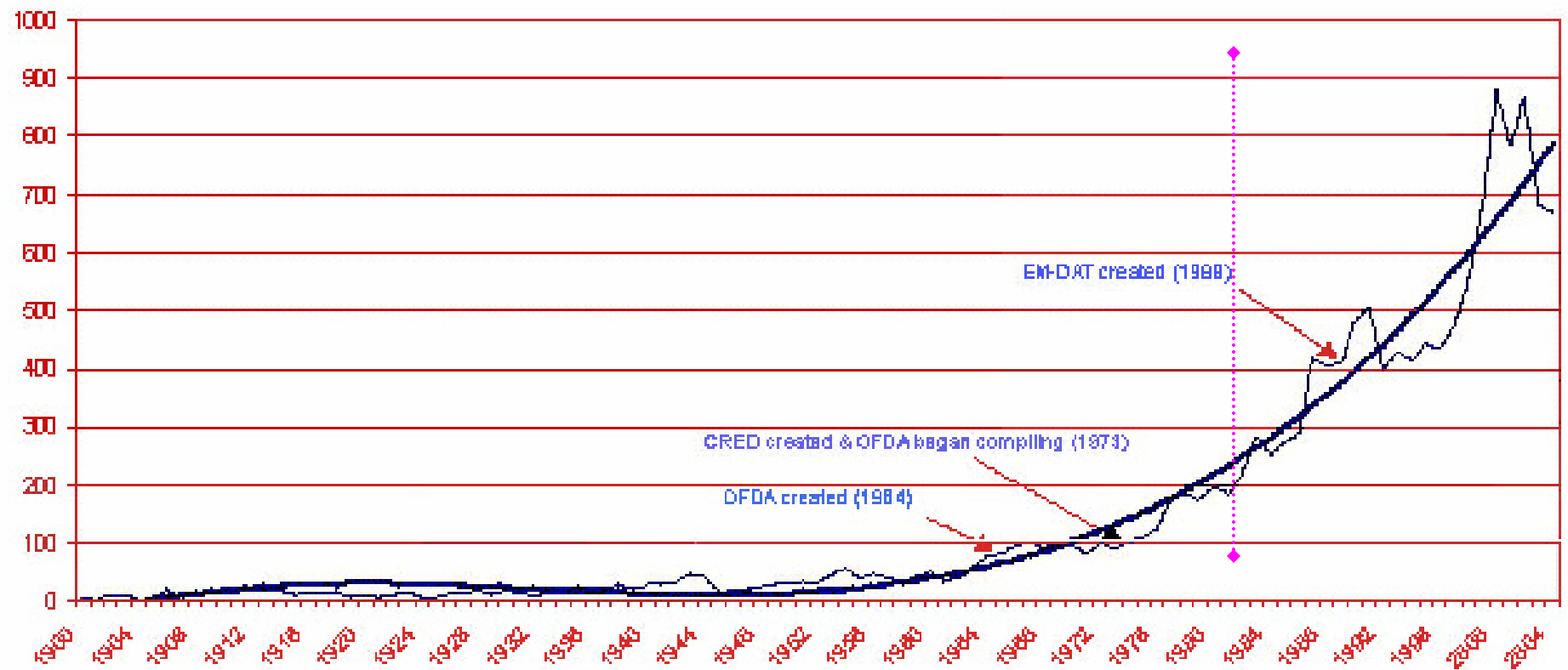


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- වාර්ෂික සිදුවීම් අනුව
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- වසංගත සහ හදිසි අනතුරු
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- රටතුල කලකෝලාහල සහ සරණාගත තත්වයන්

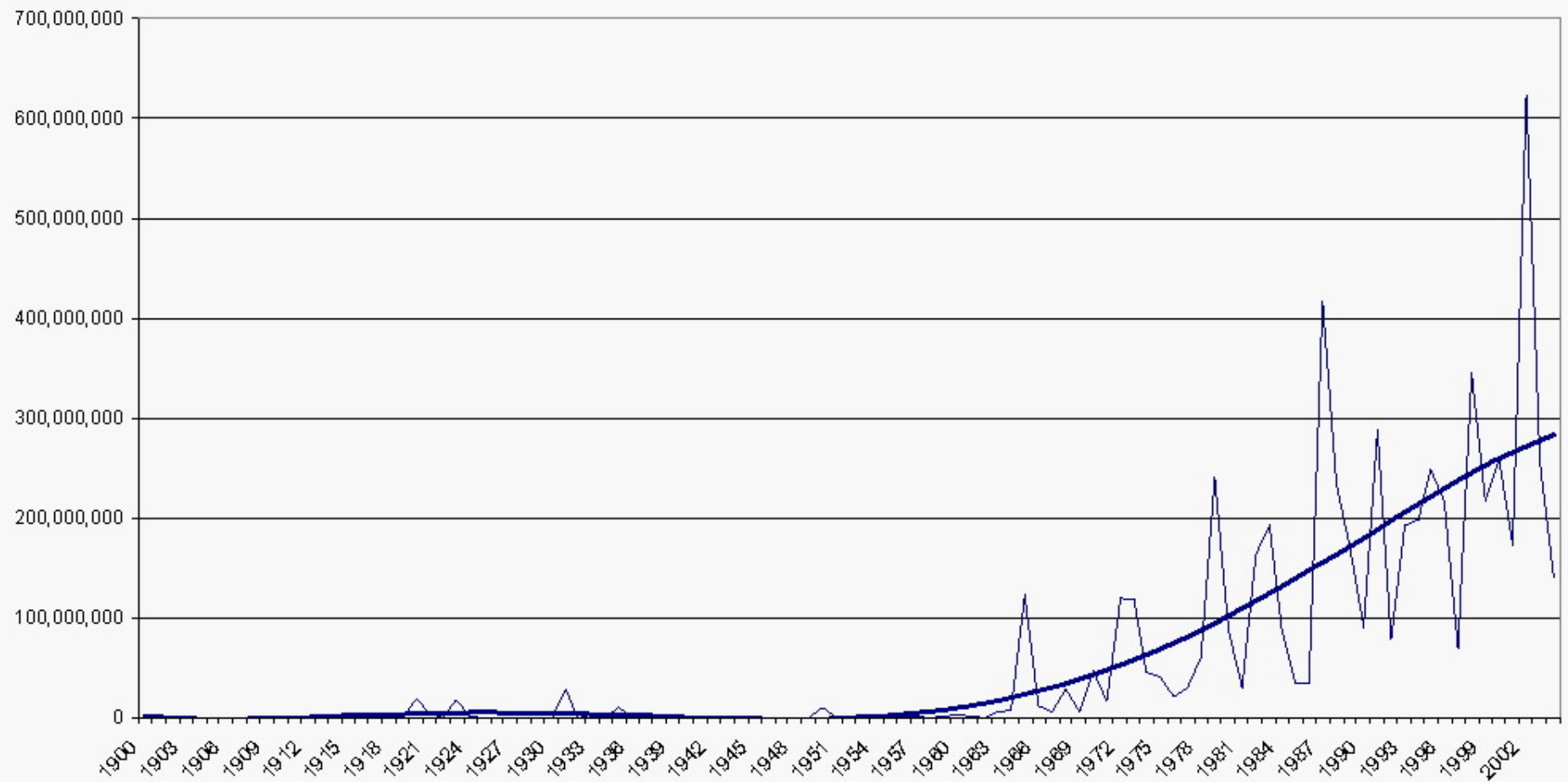
Total number of disasters reported. World : 1900 - 2004



Equation for the trend line : $y = 0,0023x^3 - 0,2311x^2 + 6,8707x - 29,376$; $R^2 = 0,9584$

Source : "EM-DAT : The OFDA/CRED International Disaster Database; www.em-dat.net/ - Université Catholique de Louvain - Brussels - Belgium"

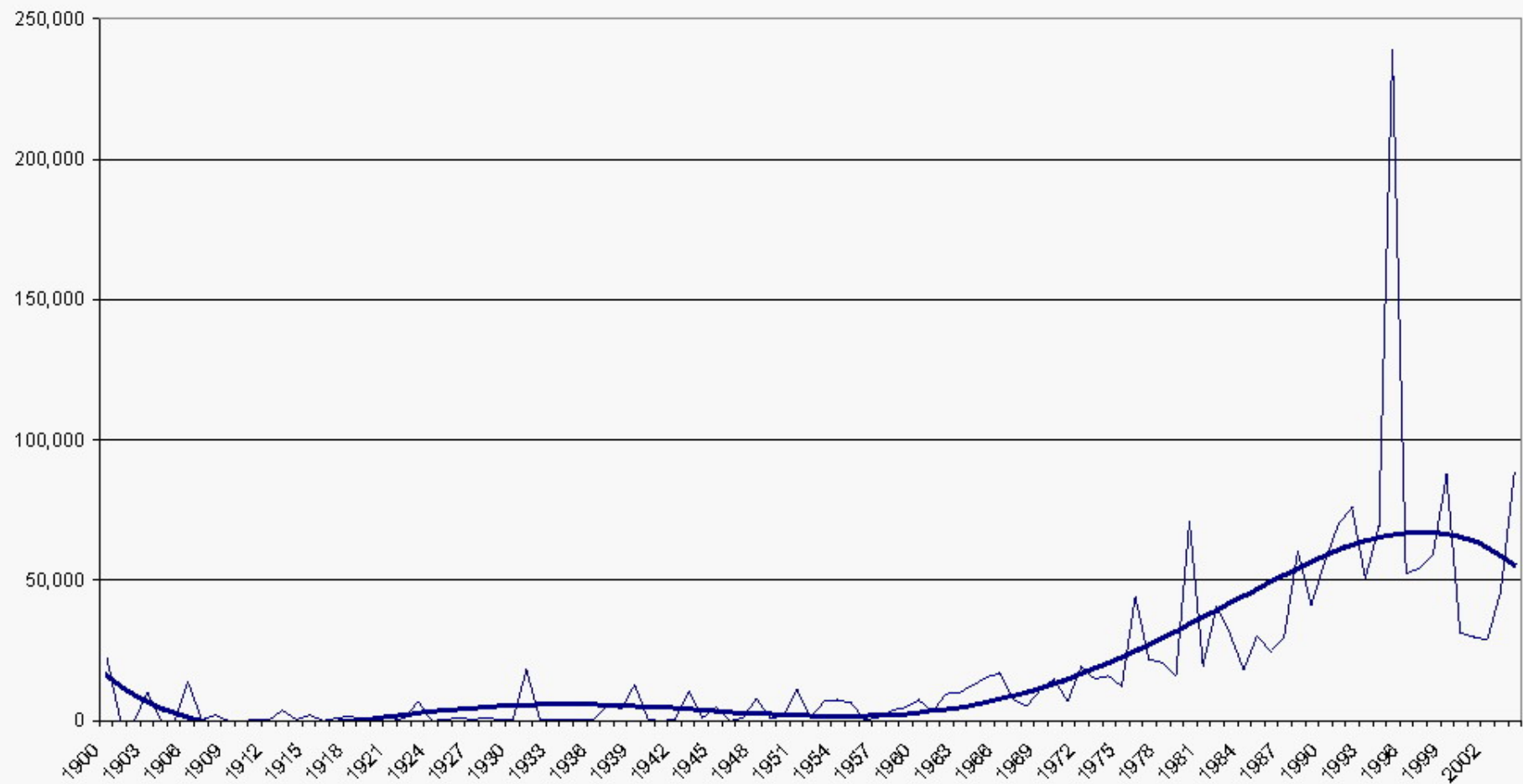
Total number of people affected. World : 1900 - 2004



Equation for time-trend line : $y = -0,3533x^5 + 85,423x^4 - 6441,5x^3 + 185483x^2 - 2E+06x + 4E+06$; $R^2 = 0,6608$

Source : "EM-DAT : The OFDA/CRED International Disaster Database; www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"

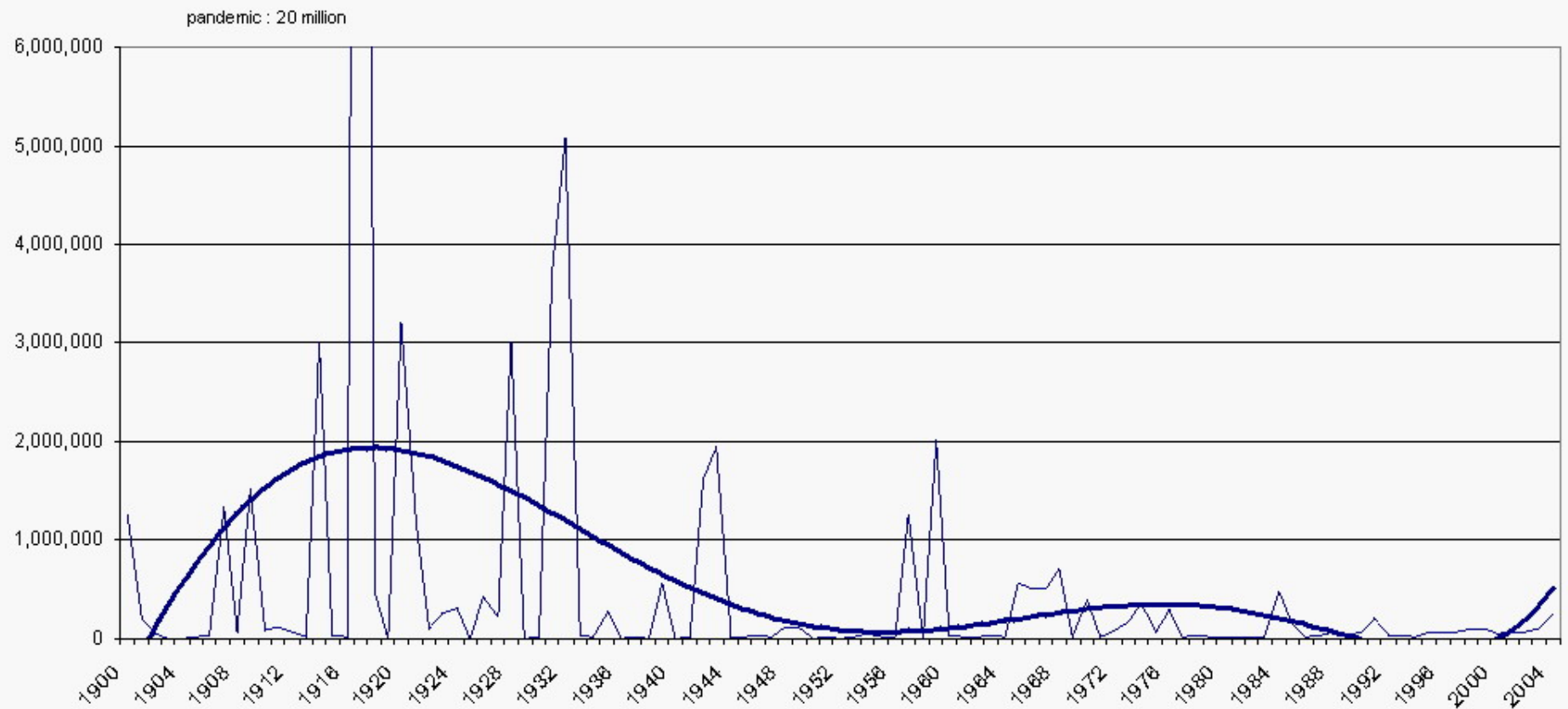
Total amount of reported damages (US\$ million at 2004 prices). World : 1900 - 2004



Equation for time-trend line : $y = -0,0004x^5 + 0,0907x^4 - 7,9411x^3 + 296,07x^2 - 4387x + 20027$; $R^2 = 0,5653$

Source : "EM-DAT : The OFDA/CRED International Disaster Database; www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"

Total number of deaths reported. World : 1900 - 2004



Equation for time-trend line : $y = 0,0002x^6 - 0,0666x^5 + 5,6467x^4 - 94,031x^3 - 8332,1x^2 + 301972x - 732338$; $R^2 = 0,0824$

Source : "EM-DAT : The OFDA/CRED International Disaster Database; www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"



World's 10 worst natural disasters

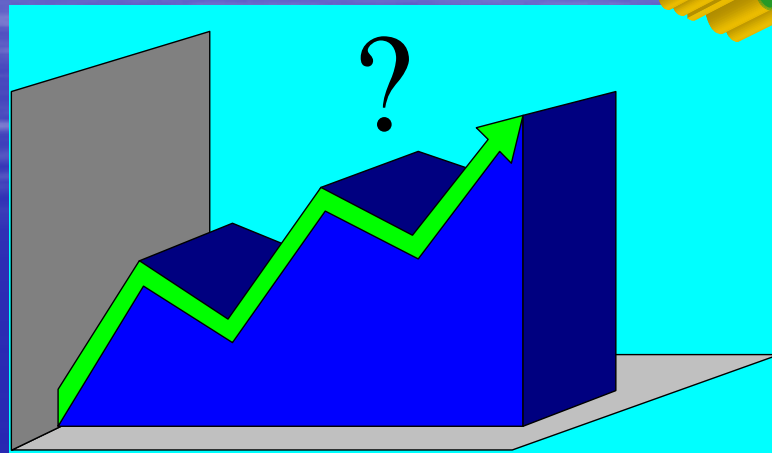
- 1201 - Egypt & Syria - deadliest earthquake in history - 1.1 million people killed
- 1347-1350 - bubonic plague - 25 million killed (25 - 33% of population of Europe + millions in Asia and North Africa died)
- 16th-18th centuries - Western Hemisphere - millions of lives of American Indians lost through various sicknesses brought over from Europe (lacked previous exposure & resistance)
- 1769 - India - 10 million people died from a famine in Bengal.
- 1876 - 1879 - China deadliest drought in recorded history - 9 million died
- 1918-19 - Influenza pandemic 35 - 75 million lives
- 1935 - China, Yellow River flood - 3.4 million victims (lives lost not estimated)
- 1958-61 - China - famine 20 million died
- 1995-98 - North Korea - famine and floods three million died
- 1981-1984 - Africa (20 African nations) - drought - During one season, about 20,000 were starving to death each month. Some 150 million faced starvation.

දරිද්‍රතාවය සහ ආපදා

- ▼ 1970 දශකයේ මරණ 95% ක් දියුණුවෙගෙන එන රටවල
- ▼ දරිද්‍රතාවය මරණ අනුපාතිකයට බලපායි
- ▼ මරණ අනුපාතිකය සහ දළ ජාතික නිපැයුම අතර කිට්ටු සම්බන්ධතාවයක්



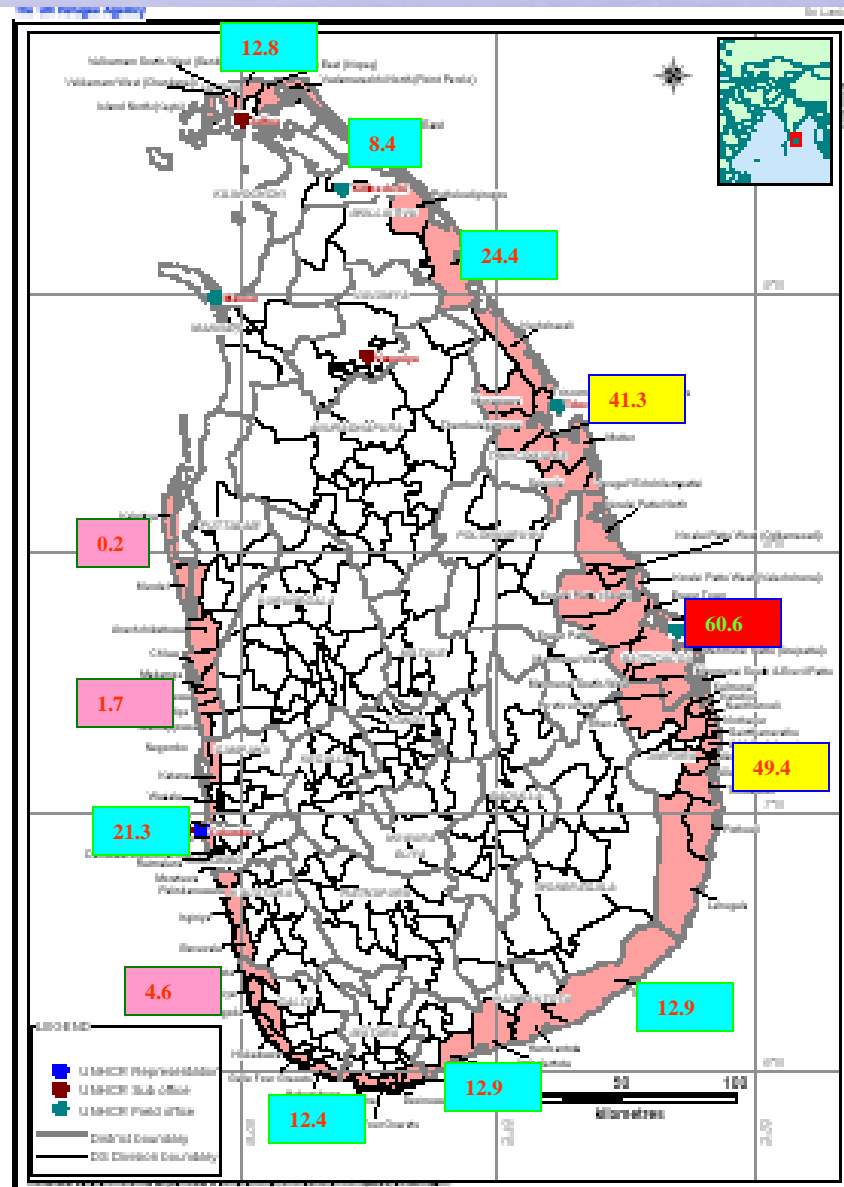
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මරණ+බලපෑ සංඛ්‍යාව

$$\text{ආපදා උග්‍රතාවය} = \frac{\text{මරණ+බලපෑ සංඛ්‍යාව}}{\text{හාජනය වූ ජනගහනය}} \times 100$$

Disaster severity index



- ❖ Sri Lanka 7.1%.
- ❖ India 18.1 %
- ❖ Indonesia 17.7%
- ❖ Maldives 5.4%
- ❖ District severity ranged from 0.2% in Puttalam to 60.6% in Batticaloa

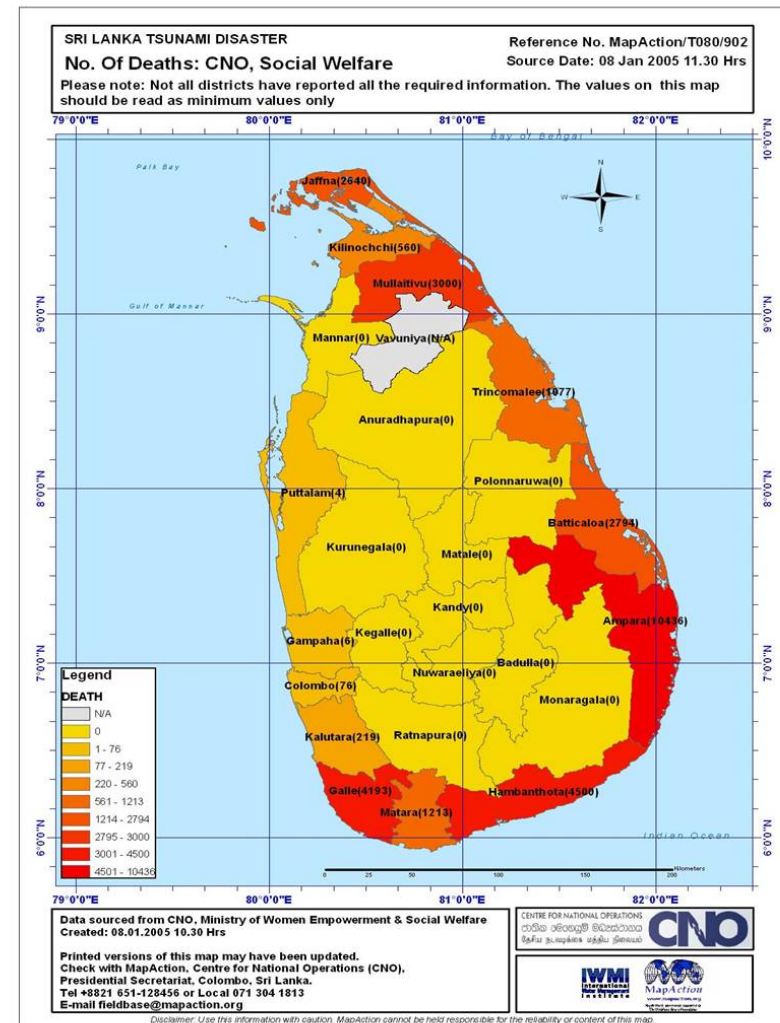
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- තුවාලකරුවන් අනිවාර්ය ආදිනව
- **සරණාගත කළුචුරු - කෙටි කාලීන ප්‍රශ්නය**
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Mortality & injuries

- 31,187 perished, 4,280 missing (total 35,467).
- Children, women
- Mortality rate 2.67%.
- Injured 23,189 (injured to deaths ratio 1:1.53).



tsunami victims disabled / injured / sick

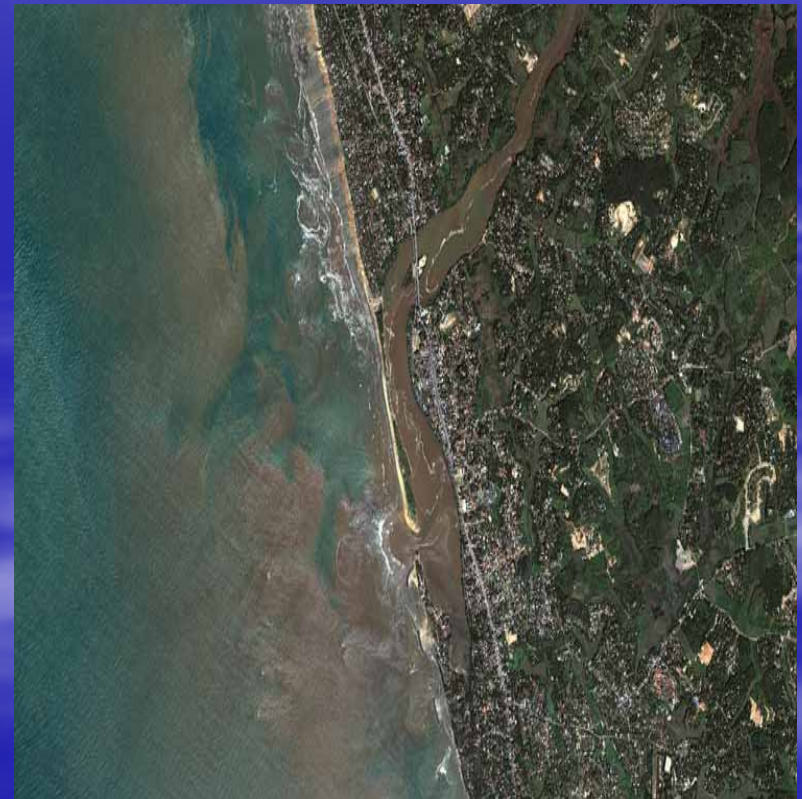
District	Affected population	Injured, sick, disabled	Rate (%)
Galle	47743	3100	6.49%
Gampaha	4307	100	2.32%
Colombo	24524	448	1.83%
Matara	27088	2052	7.58%
Hambantota	8667	1168	13.48%
Puttalam	228	2	0.88%
Trinco	35862	1423	3.97%
Kalutara	25245	647	2.56%
Batticaloa	77029	1881	2.44%
Jaffna	20156	1757	8.72%
Kilinochchi	1065	3	0.28%
Mulaitivu	22580	3710	16.43%
Total	294494	16291	5.53%

Tsunami injured admitted to TH Karapitiya

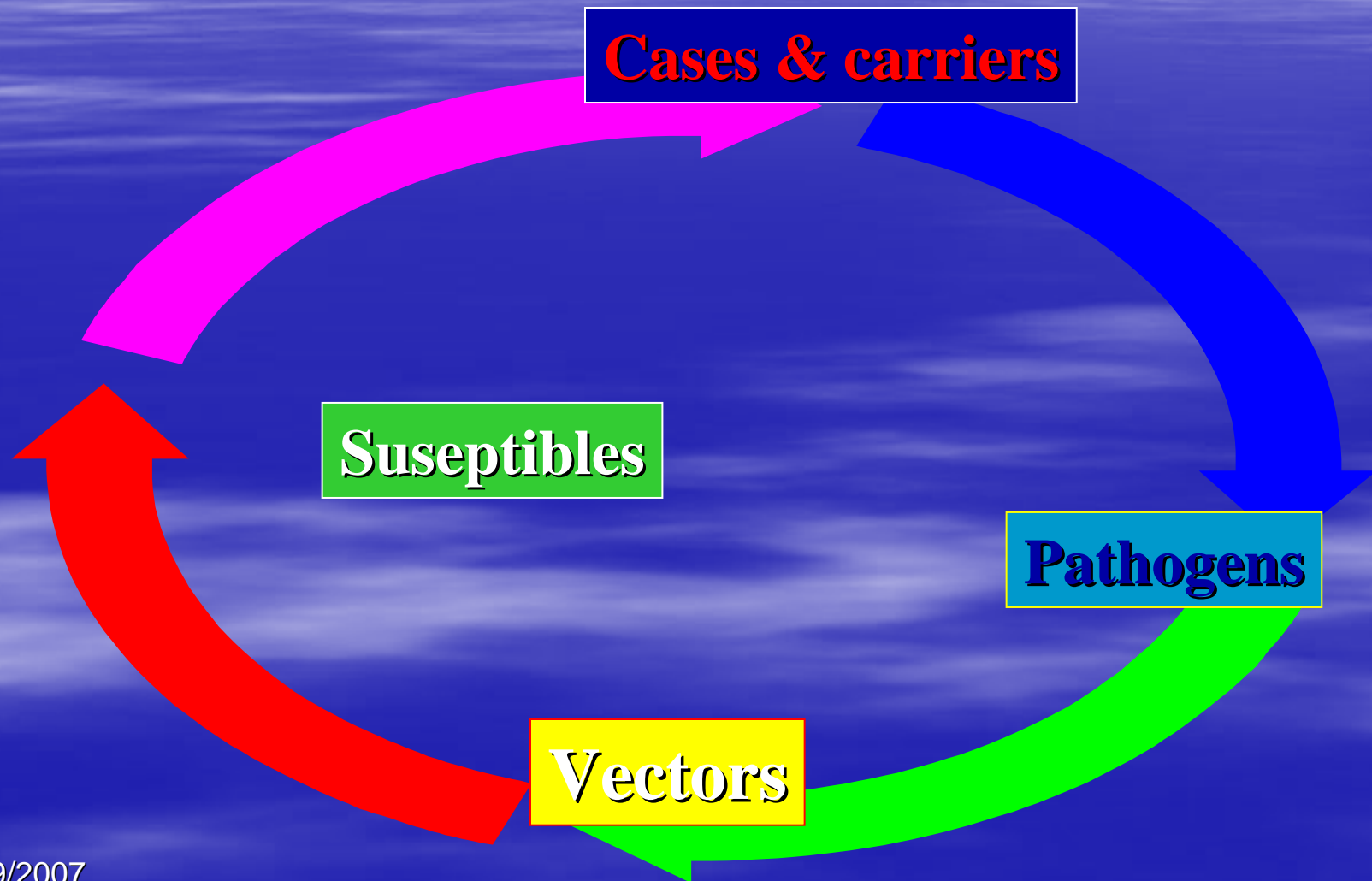
Nature of injury	No:	%
Superficial injury	78	16
*Fractures	50	10.24
Dislocations, sprains and strains	5	1.02
Injury of other internal organs	2	0.41
Crushing injuries and traumatic amputations	9	1.84
**Other injuries of specified and multiple body regions	126	25.82
All other burns – (Electrocutions)	2	0.41
***Near drowning	213	43.65
Infective Wounds (Existing wounds contaminated tsunami tidal water)	3	0.61
Total	488	100

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- කාලගුණය
- ප්‍රදේශයට ආවේණික වූ රෝගීවීම් රටාව
- **ආපදා වර්ගය**
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- **ආපදා සූදානම**
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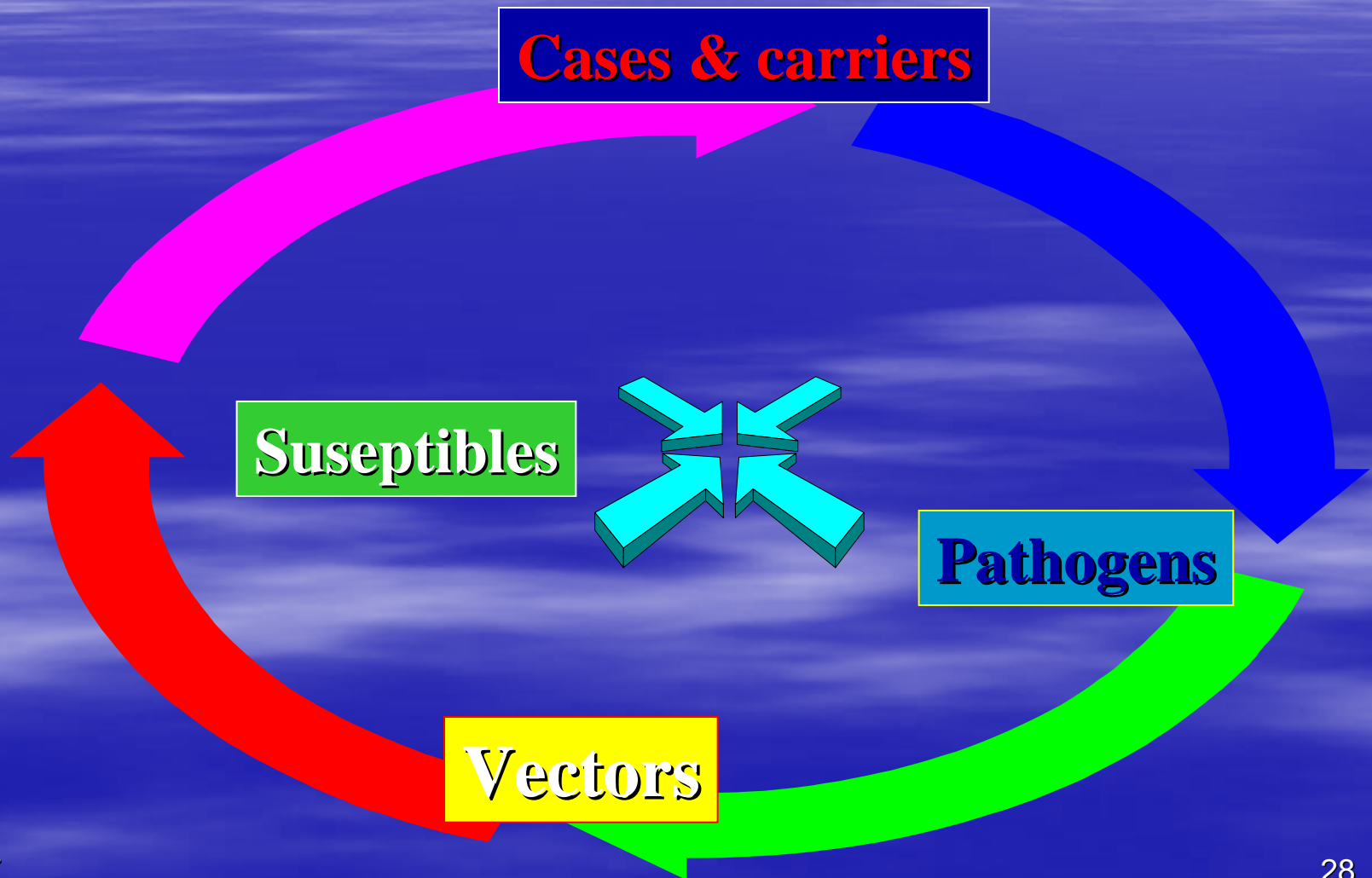


Threat of communicable disease



Post disaster situation

Disrupted control programmes



Morbidity

In welfare centres up to 18th. March, 2005
(population as of 04.03.05, 123,298)

Disease	Viral fever	Respiratory infections	Diarrhoea	Dysentery	Chicken pox	Mumps	Malaria	Measles
Incidence	3,083	2,163	1,538	90	30	25	15	2

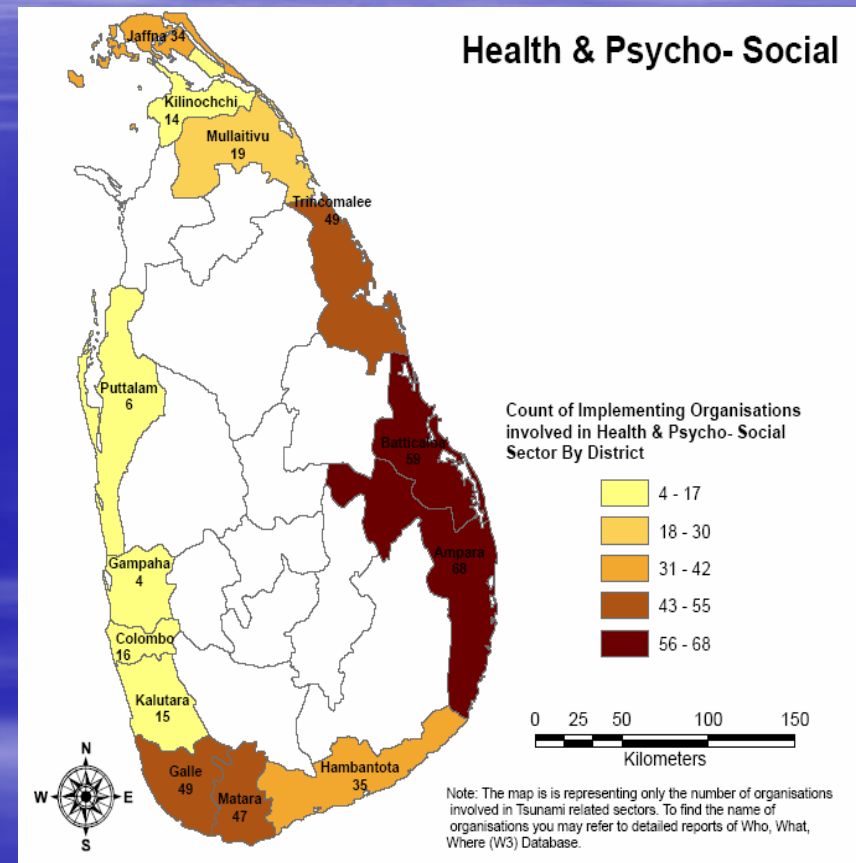
Reflection of the usual endemic back ground morbidity exacerbated by the over crowded conditions in welfare centres.

Water borne, based & washed diseases are usual in welfare centres.

No epidemics

Psychosocial issues

- No consensus on main problems / no sense of the scale / prevalence of these
- Evidence of tension between hosts and displaced people.
- Pressure from hosts to have displaced persons removed from shelters (Schools or public buildings)
- Harsh treatment of displaced children in host schools
- State has registered orphans, encouraged care within extended family and provided them with financial assistance



The role of hospitals



Experience of the National
Hospital of Sri Lanka

Site arrangement:

- Forward Command Post – Operations are directed and controlled from this point.
- Casualty Collecting Area – Casualties are initially assembled & triaged.
- Patient Treatment Post – Triage treatment of all casualties.
- Ambulance Loading Point – Patients are loaded at this point.
- Ambulance Holding Point – Vehicles are marshaled here.

ACTIVITIES:

- Receiving information about the disaster.
- Activation of the disaster plan.
- Disaster stocks.
- Ambulances to the site.
- Bay to receive patients.
- Strengthen the security.
- Alert different sections of the hospital.

- Receiving patients - Admitting & treating large number of patients within a short period of time – Most difficult task.
- Triage & sorting out dead bodies.
- Taking care of belongings of the patients.
- Crowd control.
- Seeking assistance from other hospitals agencies.
- Registration of patients & identification of dead.

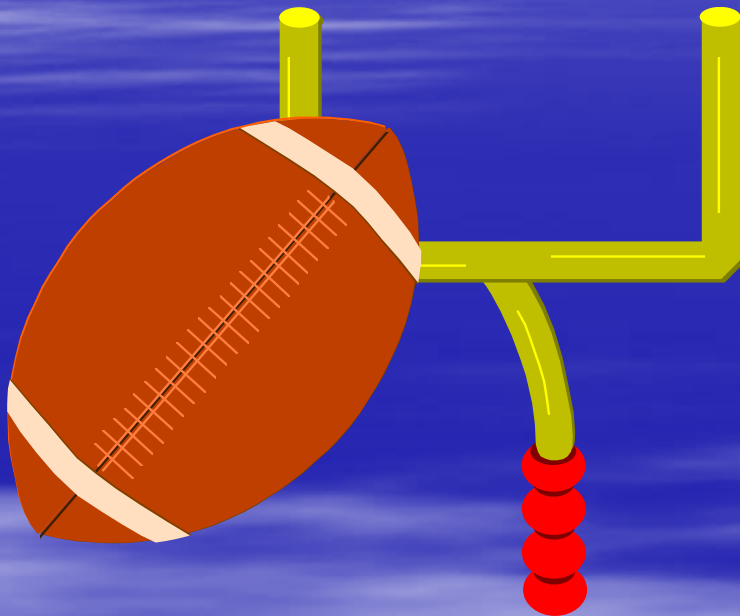
- Refreshments to the staff & other volunteers.
- Statistics.
- Dissemination of information to the superiors & public.
- Handling visits of VIPs & media personnel.
- Infection control.
- Rehabilitation

TRIAGE

It is the process by which disaster casualties are sorted, prioritised, and distributed according to the need for first aid, resuscitation, emergency transportation, and definitive medical care.

Continuing process – Begins in the field and continues into the hospital.

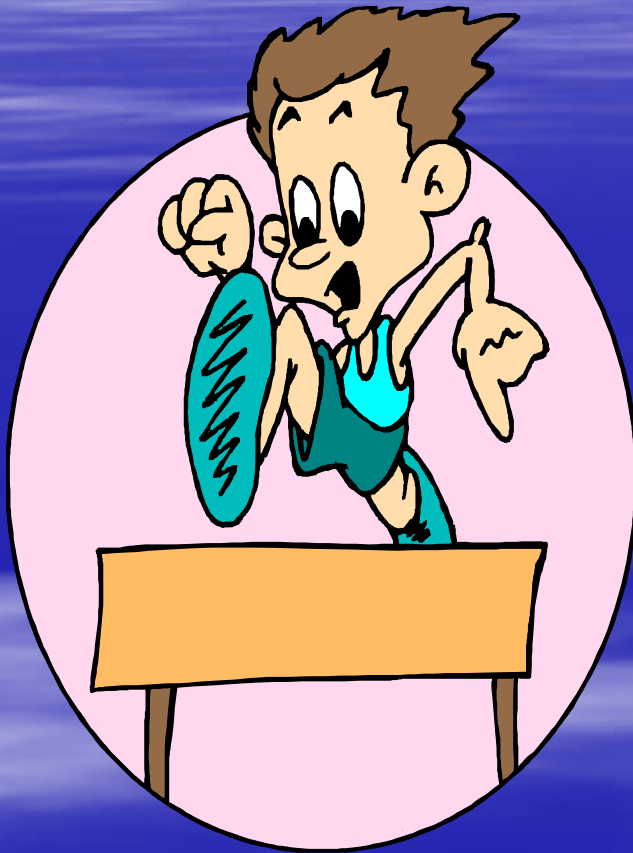
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↖ ප්‍රථම අවස්ථාවේ රෝගීන් රැකබලා ගැනීමට ප්‍රජා සුදානම

↖ මූලික අවස්ථාවේ ප්‍රජාවට පිටතින් ලැබෙන සම්පත් සම්බන්ධීකරණය කිරීමේ හැකියාව

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▶ තර්ජන සිතියම්
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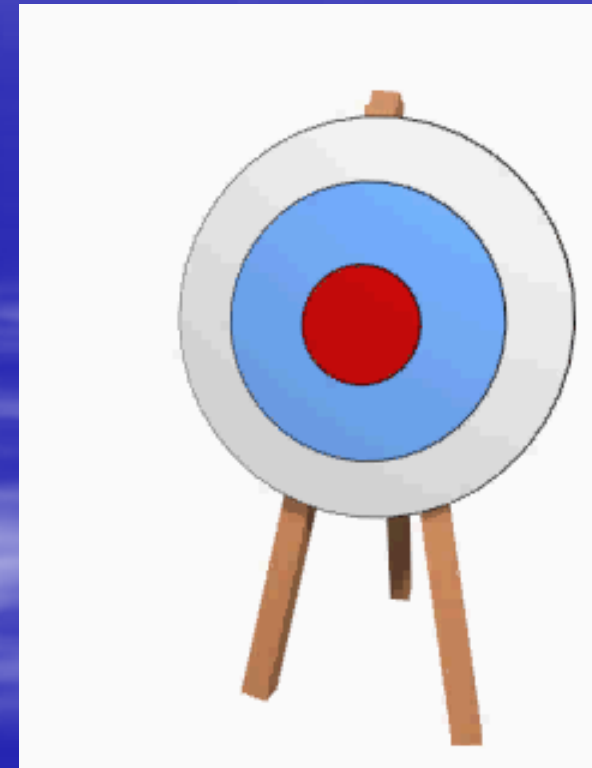
▶ ගොදුරුවීමේ
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කිරීම

▶ සම්පත් ලේඛනය

▶ පියවර සැලසුම්
කිරීම

සෞඛ්‍ය කේන්ද්‍රයේ ආපදා සූදානමේ අරමුණු

- ← සෘජු බලපෑම මුදා ගැනීමේ ප්‍රමාද ප්‍රතිකාර කිරීමේ ප්‍රමාද සහ සෞඛ්‍ය සේවා පහත වැටීම යන හේතු නිසා සිදුවන මරණ අවම කිරීම
- ← රෝහල් සූදානම
- ← අයහපත් කාලගුණ තත්වවලට ගොදුරුවීම වැළැක්වීම
- ← ප්‍රාථමික සෞඛ්‍ය සංරක්ෂණ සේවා ප්‍රතිස්ථාපනය කිරීම



ජලය කළමනාකරණය අන්‍යාචරය



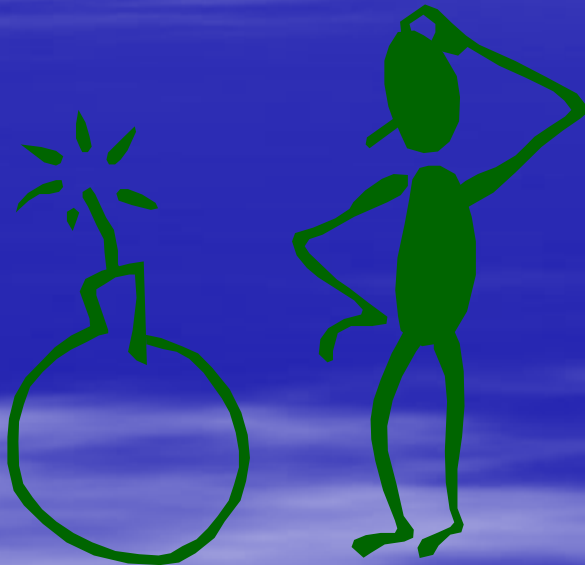
- ← ජලය මගින් ජලය නිසා ජලයෙන් සෝදා හැරිය හැකි රෝග
- ← **සරනාගත කඩවුරු තුල ජලය රැඳීම**
- ← අපවිත්‍ර ජලය බැහැර කිරීම
- ← **තාචකාලික වැසිකිලි සදහා ජලය සැපයීම**

Water and sanitation



- Dug wells still appear to be contaminated with salt water
- GOs & NGOs have attempted to clean thousands of private dug wells by pumping out salty water in the wells, often several times.

සරණාගත කඳවුරුවලට සෞඛ්‍ය සේවා



← සහිසාරකෂක පහසුකම් -
ජලය විෂබීජ නාශක ද්‍රව්‍ය
සහිසාරකෂක කම්කරුවන්

← කැලකසල ඉවතලීම

← ආරක්ෂිත පානීය ජලය

← රෝගී තත්වය විපර්යාස

← ජංගම චිකිත්සක සේවා

← සෞඛ්‍ය අධ්‍යාපනය

← රාජ්‍ය නොවන සංවිධානවල
සහාය

ජලගැල්මේ ආදිනව



☞ මරණ තුවාලවීම්

☞ මලකුණු සුන්බුන්
ඉවතලීම මැසි මදුරු
මී උවදුර

☞ සරණාගත කඳවුරු

☞ වගාපාලුව

වපතට පත් ප්‍රජාවන්ට ප්‍රාථමික සෞඛ්‍ය සංරක්ෂණය

- ← සෞඛ්‍ය අධ්‍යාපනය -
අවශ්‍ය නම් යාබද
ප්‍රදේශවලින් මානව සම්පත්
- ← පානීය ජලය
ක්ලෝරීනකරණය
- ← මලපහ නිසියාකාරව බැහැර
කිරීම
- ← සතුන්ගේ මලතුණු සහ
සුන්බුන් නිසි පරිදි බැහැර
කිරීම
- ← රෝගී තත්ත්වයන් වමසිල්ල



ජාතික ප්‍රතිපත්තිය



☑ පිළිගත දේපල ආරක්ෂාව

☑ ආපදාවලට මුහුණ
දීමට ප්‍රජාව දැනුවත්
කිරීම සහ සූදානම්
කිරීම

☑ ජාතික ප්‍රතිපත්තිය තුළ
ප්‍රාදේශීය සැලසුම් ඇති
කිරීමට පළාත් පාලන
ආයතනවලට අනුබල
දීම

ජාතික ප්‍රතිපත්තිය

- ☒ ආපදාවන්ට මුහුණ දීමට විශේෂ බලතල
- ☒ ජාතික සංවර්ධනයට රැකුලක් වන සේ පශ්චාත් ආපදා කළමනාකරනය
- ☒ ආපදා සූදානම

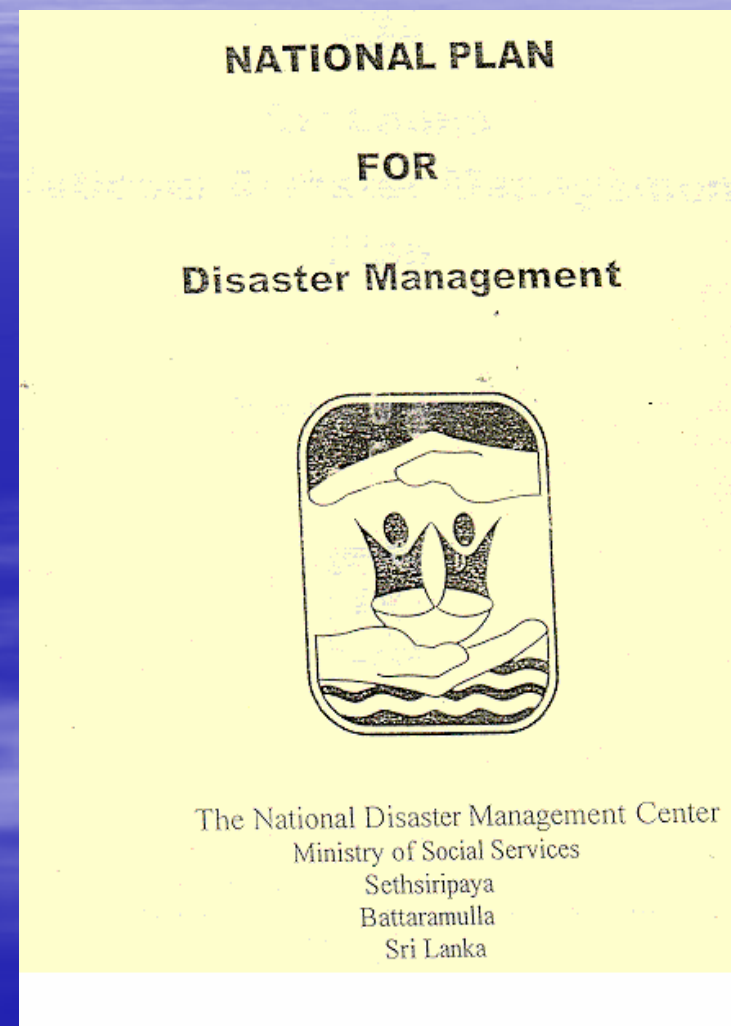


SL disaster management act no: 13 of 2005

- **Object - prevention, protect life & property, maintenance & restoration of order, provide facilities for relief & rehabilitation**
- **National council for disaster management & functions**
- **Declaration of state of disaster**
- **President's powers**
- **Preparedness & mitigation plans**
- **Natural & human disaster management center**
- **Delegation of powers**

National plan

1. Policies
2. Institutional arrangements
3. **Activation**
4. Assessment of risks, hazards, response capabilities
5. Mitigation
6. **Preparedness, warning & situation assessment**
7. Response
8. Recovery
9. **NGOs & private sector**
10. Public awareness
11. Guidelines for sub national plans



Services made available

- Rescue operations
- The local media "world class" effort
- Premises of TV stations inundated with relief material (Criss crossing the country)
- Government machinery kicked in
- International community



Associated Press, Jan 2005 – Sri Lanka

Post tsunami health care

- ✓ Health system responded immediately
- ✓ **Casualties**
- ✓ **PHC to welfare centres**
- ✓ **Mobile clinics**
- ✓ **Local**
- ✓ Foreign – self sufficient & reliant
- ✓ **Requirements in website**
- ✓ **Disease surveillance**
- ✓ **Ante natal & child development records**
- ✓ **Psycho social support**
- ✓ **Sanitation**

Drugs donations - waste

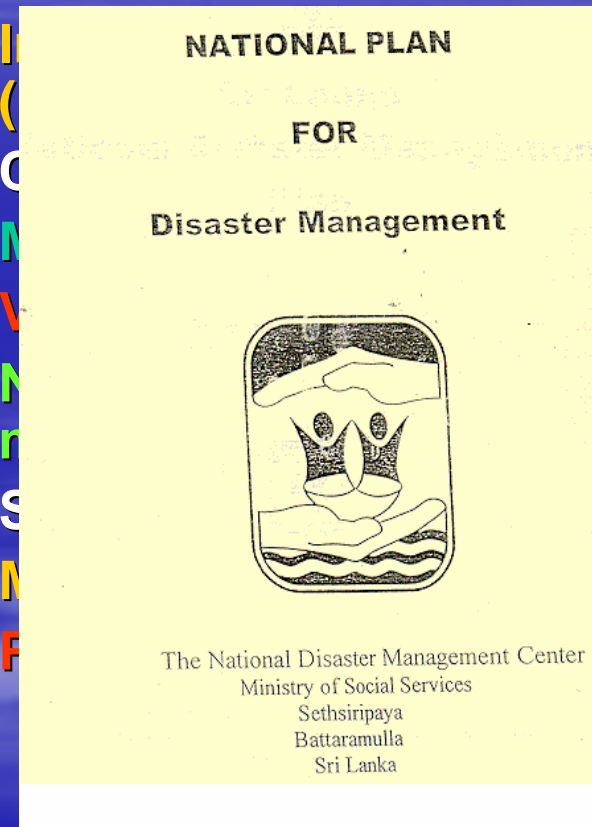
- ❖ 30% of the pharmaceuticals, & biologicals unusable
- ❖ About 5% had passed expiry dates
- ❖ About 10% had package inserts in languages that could not be read
- ❖ Another 5% were found to be unregistered & had never been used in the country
- ❖ Another 5% in strengths not used in the country
- ❖ 22 lorry loads were sent to dumping sites for disposal
- ❖ Another 60 lorry loads to be disposed of



Lessons learned from tsunami

- Lost opportunity (plan)
- **Changing face of disasters**
- **Damage to health infrastructure (17.3% of curative)**
- **Vulnerability**
- **Evacuation, alternatives**
- **Targeting services to vulnerable population groups**
- **Disease surveillance (gather intelligence)**

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- S ters
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**Tsunami is a Japanese word for
"harbour wave"**

**From an entirely different perspective,
another Japanese word for crisis
(weichi) has two connotations. They are
danger and opportunity**

**Even in the midst of calamities there are
likely to be windows of opportunity**



Thank You !!



2/15/2007