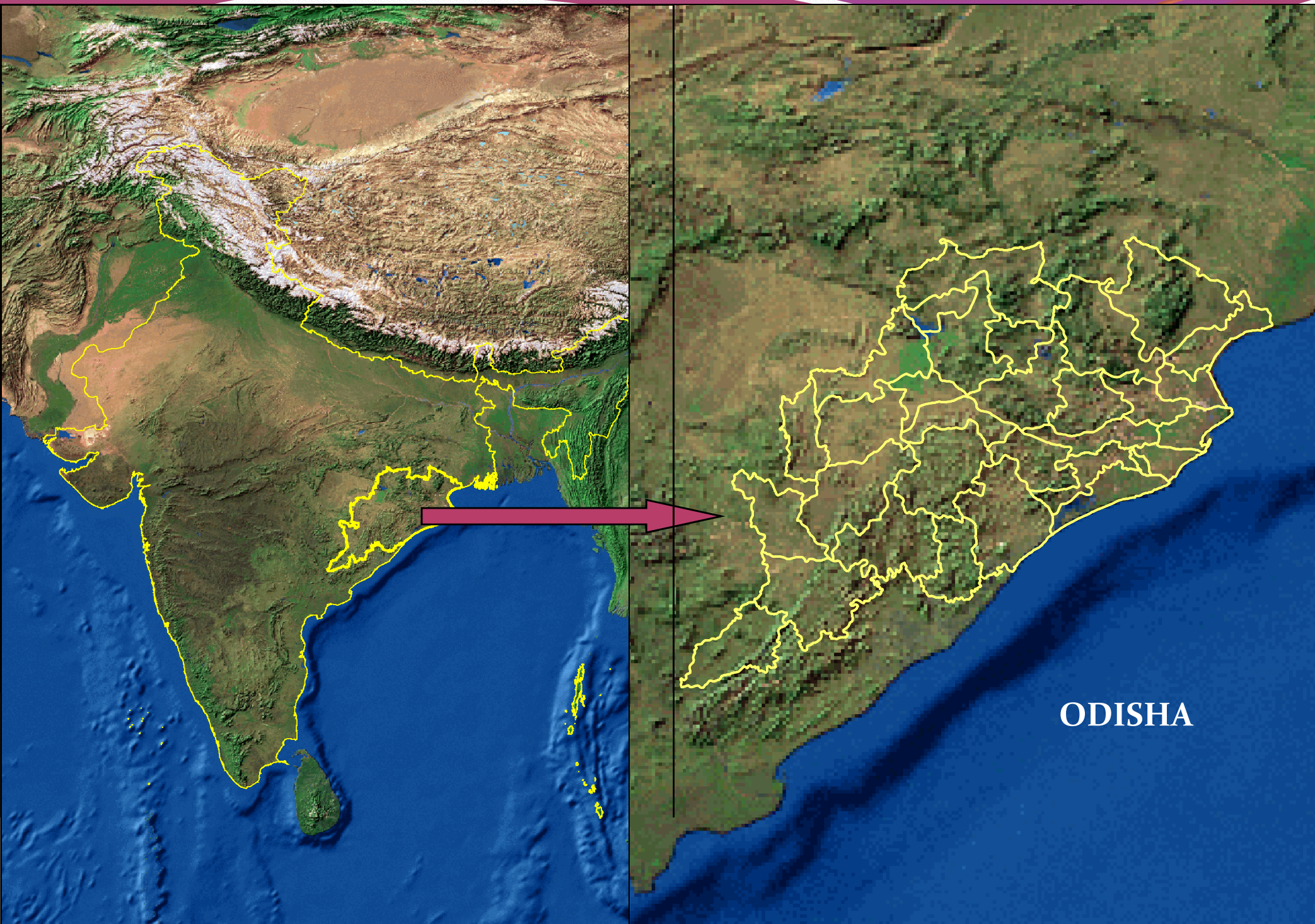




Heat Action Plan- Odisha India

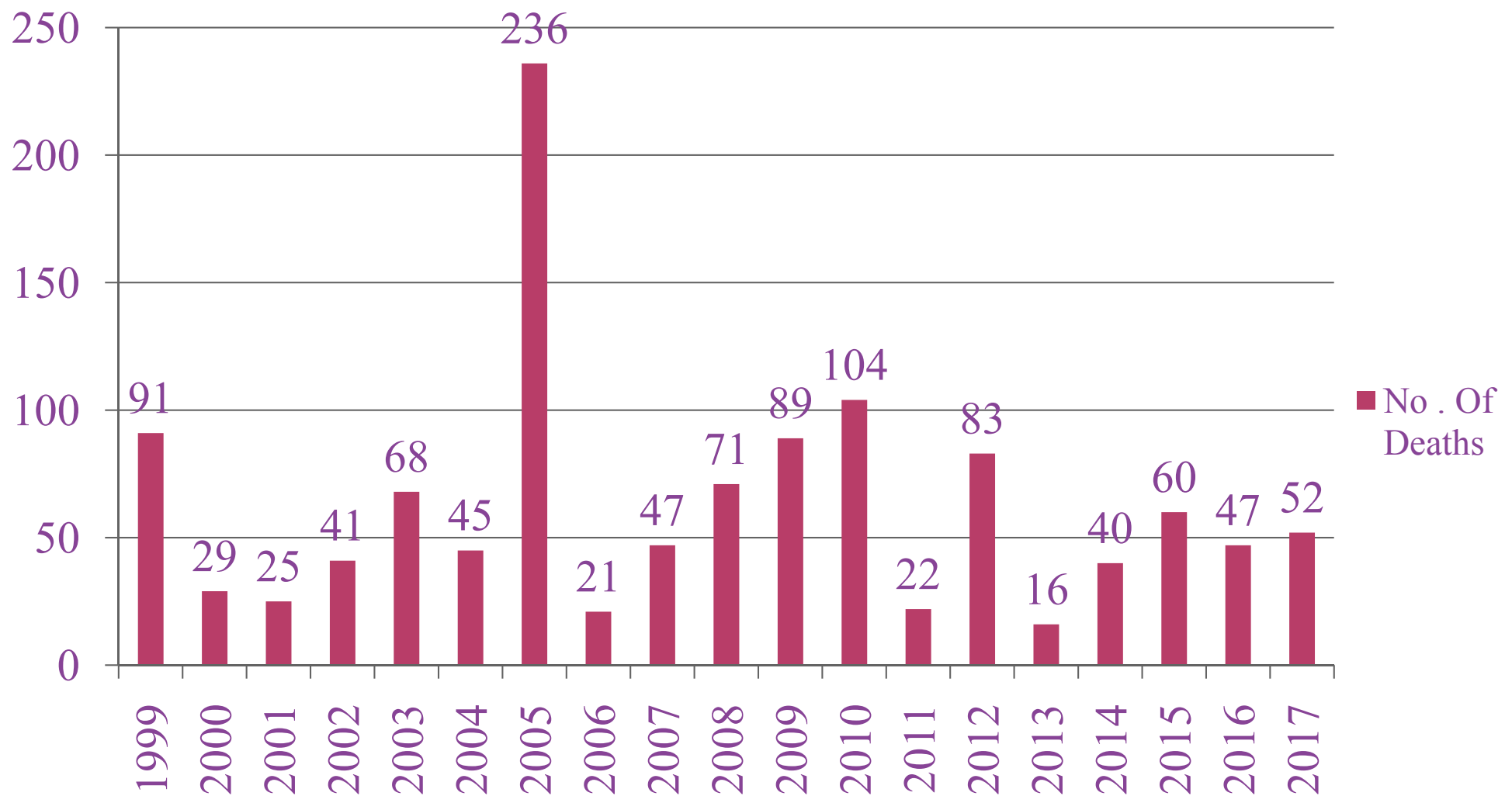
Subhendra Kumar Nayak, OAS
Chief General Manager
Odisha State Disaster Management Authority(OSDMA)



Heat Wave: Definition

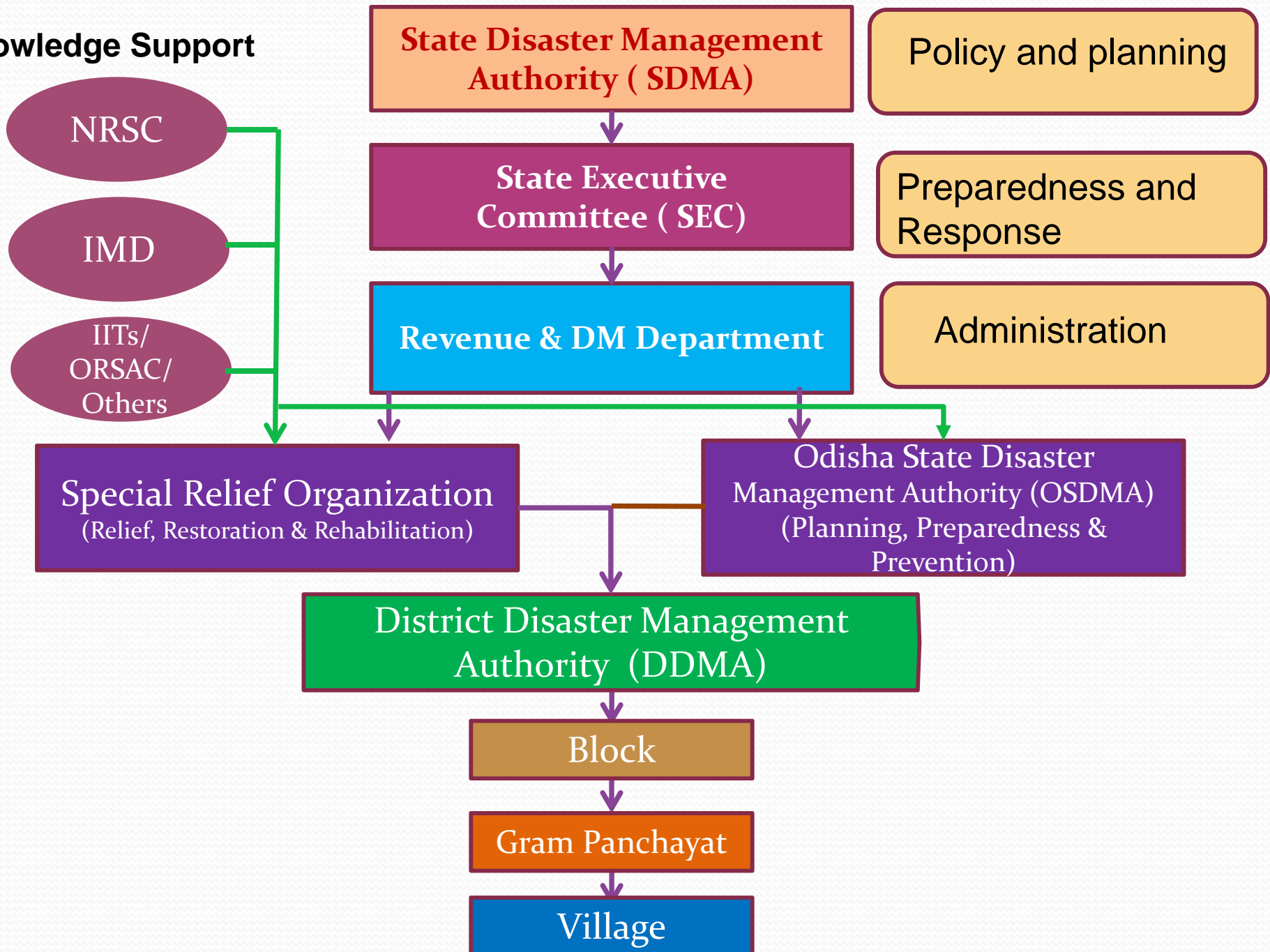
- Based on Departure from Normal
 - Heat Wave: Departure from normal is 4.5 °C to 6.4 °C
 - Severe Heat Wave: Departure from normal is >6.4 °C
- Based on Actual Maximum Temperature (for plains only)-
 - Heat Wave: When actual maximum temperature ≥ 45 °C
 - Severe Heat Wave: When actual maximum temperature ≥ 47 °C
- To declare a heat wave, the above criteria should be met at least at two stations in a Meteorological sub-division for at least two consecutive days. A heat wave will be declared on the second day.

Heat Wave Deaths in Odisha



Institutional Mechanism for DM

Knowledge Support



Heat Wave

- Declared as one of the State Specific Disasters in Odisha w.e.f. 1st April- 2015
- Ex-gratia for death due to heat wave (sun stroke) -@ Rs. 50,000/- per deceased
- For release of ex-gratia- post mortem report is mandatory.
- Additional Joint Enquiry by local revenue officer & local medical officer if the death has occurred outside (not in a medical/ health institution)

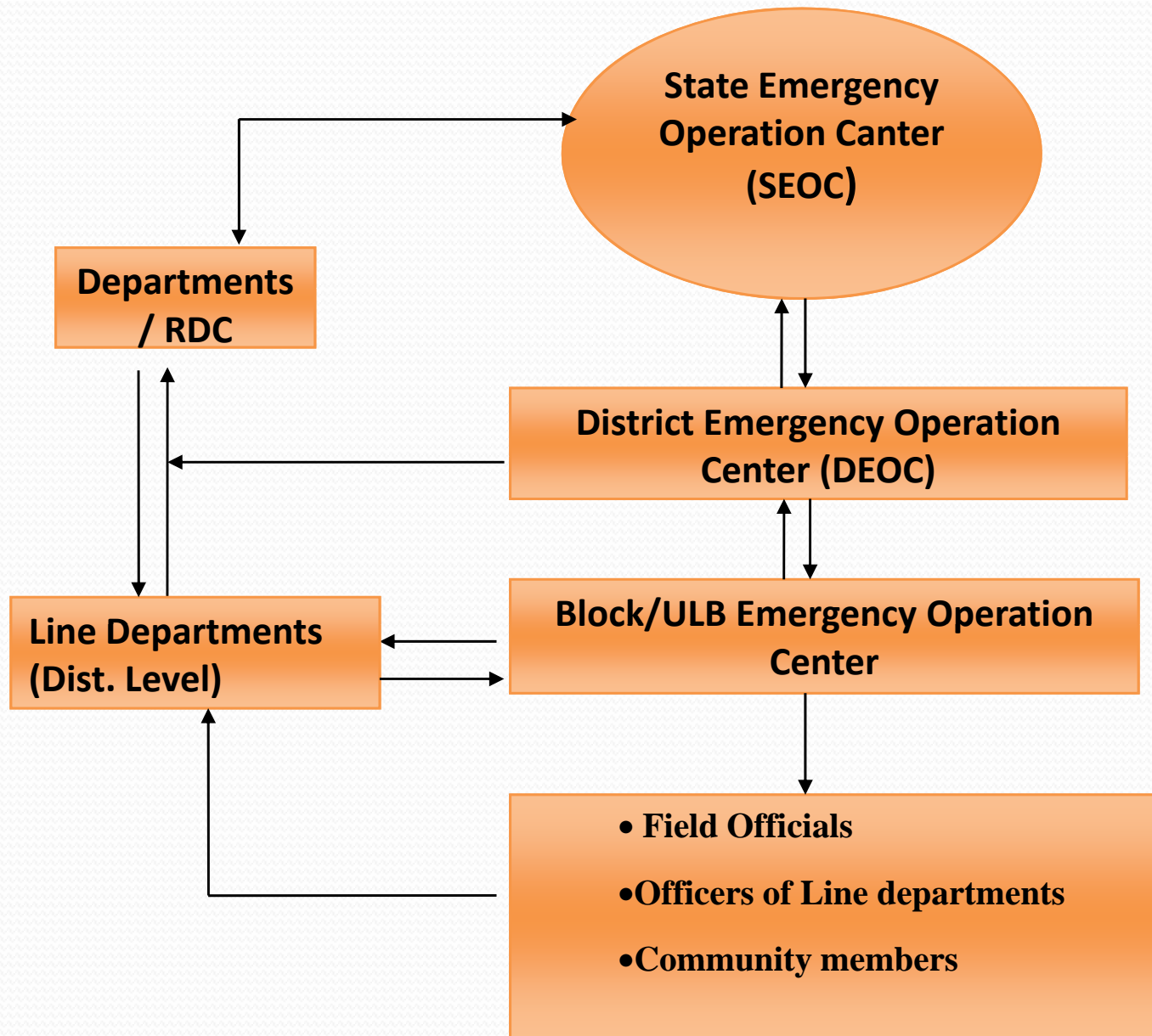
Preparation of Heat Action Plan

- State Level Steering Committee functioning since 2015 under the Chairmanship of Managing Director, OSDMA
- Members include
 - Special Relief Commissioner
 - Director Municipal Administration
 - Director, Social Welfare
 - Addl. Commissioner, Bhubaneswar Municipal Corporation
 - Addl. Secretary, Health & Family Welfare Department
 - Director, Public Health
 - Addl. Director, NHM
 - Director, Meteorological Centre, Bhubaneswar
 - Director, IIPH, Bhubaneswar

Estimating Threshold

- As per the study conducted by IIPH- Bhubaneswar
- The threshold temperature for Bhubaneswar city is between 36.2 °C and 40.5 °C
- It has been decided to carry out similar studies in the cities like Angul, Talcher, Titlagarh and Bhawanipatna.

Flow of Information



Special Relief Organisation and OSDMA

- Preparation of Heat Action Plan and coordination with all departments towards implementation.
- Issue appropriate directives to the concerned departments for taking preparatory and precautionary measures for Heat Wave Management
- Coordinating the awareness campaign and IEC activities
- Media briefing.
- Facilitating involvement of Civil Society Organisations for taking different mitigation activities
- Releasing ex-gratia relief to the family of each stroke victim
- Capacity building of different stakeholders on heat wave management

India Meteorological Department

- Issue early warning and disseminate heat alert to all key stakeholders
- Media brief using TV/ Radio/ FM/ Newspapers
- Provide temperature data for determination of Heat alert and for better mitigation activities, daily as well as annually.

H & UD Department

- Give directives to Urban Local Bodies (ULBs) /Development Authorities to take up appropriate measures for tackling heat wave
- City Afforestation – avenue plantation
- Promote and construct ‘Heat Resistant Building’ as a mitigating measures in the long run
- Ensuring regular and adequate supply of drinking water
- Opening of Water Kiosks and ensuring sanitation and hygiene of the water distribution points
- Give directives to Urban Local Bodies (ULBs) /Development Authorities to increase access to public parks, water bodies, public libraries for general public

Department of H & FW

- IEC activities in print and electronic media for public awareness and precautionary measures
- Capacity building of Health Care Service Providers (Doctor, Nurses, Pharmacist and health workers) on diagnosis and management heat related illness.
- Maintaining data base and surveillance on heat related morbidity and mortality.
- Provision for Health facility readiness to manage heat affected patients (beds, staff, inventories, ambulance etc.).
- Special attention towards high risk patients like geriatric/pediatric/pregnant women etc.
- Training of 108 workers and 'Mobile Health Units (MHU)' for management of heat related cases
- Take necessary steps to prevent diarrhea and other health hazards during summer season

Labour and ESI Department

- Issue directives for flexible working hours to restrict heat exposure.
- Guideline for workers to protect from heat exposure and provision of First Aid, drinking water and cooling space at work site.
- Awareness activities for construction workers, factory labourers, manual laborers and workers whose occupations require intensive work outdoors during extreme heat about the risks, signs, and symptoms of heat stress

Department of School & ME

- Restriction of school timing (6.00 am to 11.00 am) during summer
- Ensure Avoidance of physical activities during school hours
- Issue directive for Albedo painting on school roofs
- IEC activities on Heat Wave prevention and management in schools
- Promote School Safety Plan
- Encourage Plantation of trees and promote green campus
- Provision for safe drinking water

Department of Commerce and Transport

- Provision for creating awareness among drivers and other staffs
- Issue a guidelines for each public transport to address Heat Wave
- Provision of safe drinking water, ice pack, ORS in buses and provision of cool resting spaces at bus stops.
- Provision of water kiosk on highways

Department of Energy

- Create awareness among people on energy conservation
- Develop a policy for power cuts depending on vulnerable areas and population
- Power shedding should be cut down/reduced during severe heat (frequency and timing)
- The timing should be announced before one day
- Provision of power back up for life line institute

Department of F & ARD

- IEC activities for Animal Care during heat.
- Ensuring construction of vats near tube wells for roaming livestock to provide them with drinking water.
- Capacity building of veterinary officials on diagnosis and management heat related illness.
- Maintaining data base and surveillance on heat related morbidity and mortality.

Panchayati Raj & Drinking Water Department

- Sensitize vulnerable population on Heat Wave
- Public announcement about the do's and don'ts issued by the department of Health and family welfare and OSDMA.
- Provision of water kiosks, tube wells, tankers at strategic locations.
- Provision of funds in department budget for capacity building.
- Encourage for alternative livelihood activities.

Knowledge Partner (IIPH-BBSR)

- Conduct studies and Identify threshold temperature for different cities/ regions
- Technical support to strengthen the HAP for Odisha with periodic consultation with key stakeholders involved including health system preparedness measures and revised communication strategy for behavior change by giving evidence and recommendations.
- Conduct operational research to gather evidence on the epidemiology of heat related mortality and morbidity.
- Vulnerability Assessment: Mapping of vulnerable groups of population by using a structured questionnaire and suggest alternate livelihood strategies for the vulnerable populations.

Civil Society Organisations/ CSR

- To support the Govt. departments in generating awareness in community
- Support in setting up *Water distribution points* (water kiosks) on high ways, remote places etc.
- Distribute IEC materials duly accredited by the state health department and OSDMA
- Promoting healthy living style during summer
- Support the state government in establishing shelter and sheds



ଅଶୁଭାତ !

ସାବଧାନତା ହିଁ ସୁରକ୍ଷା

ବାହାରକୁ ଯିବା ପୂର୍ବରୁ ଯଥେଷ୍ଟ ଖାଦ୍ୟ ଖାଆନ୍ତୁ ଓ ପ୍ରଚୁର ପାଣି ପିଅନ୍ତୁ ।
ଓଡ଼ା ଗାମୁଛା ଓ ପାଣି ବୋତଲ ସାଥରେ ନିଅନ୍ତୁ ।



ପଖାଳ, ତରଭୁଜ, ଓ କାକୁଡ଼ି ଇତ୍ୟାଦି ଖାଆନ୍ତୁ ।



ଡୋରାଣି, କାଞ୍ଜିପାଣି, ବେଲପଣା, ସରବତ, ଘୋଳ ଦହି ଏବଂ ଓ.ଆର.ଏସ୍ ଘୋଳ ପିଅନ୍ତୁ ।



ଛତା, ଜୋତା, ଟୋପି, ପଗଡ଼ି, କଳା ଚଷମା, ସୂତା ଲୁଗା ବ୍ୟବହାର କରନ୍ତୁ ।



ମାଦକ ଦ୍ରବ୍ୟ ସେବନ କରନ୍ତୁ ନାହିଁ ।

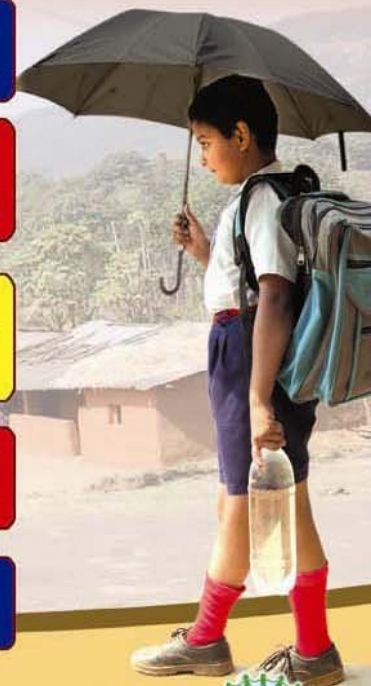


ଅସୁସ୍ଥ ଅନୁଭବ କଲେ ଡାକ୍ତରଙ୍କ ପରାମର୍ଶ ନିଅନ୍ତୁ ।



- ତାପମାତ୍ରା ସାଧାରଣତଃ ୪୩°/୪୪° ସେଣ୍ଟିଗ୍ରେଡ୍ ଅଧିକ ହେଲେ ଏହାକୁ ଗ୍ରୀଷ୍ମ ପ୍ରବାହ କୁହାଯାଏ ।
- ଉପକୂଳବର୍ତ୍ତୀ ଅଞ୍ଚଳରେ ବାୟୁମଣ୍ଡଳର ଆର୍ଦ୍ରତା ଅଧିକ ରହୁଥିବାରୁ ଏହାଠାରୁ କମ୍ ତାପମାତ୍ରାରେ ମଧ୍ୟ ଗ୍ରୀଷ୍ମ ପ୍ରବାହ ଭଳି ପରିସ୍ଥିତି ସୃଷ୍ଟି ହୋଇଥାଏ ।
- ସହରରେ କୋଠାବାଡ଼ି ଅଧିକ ଥିବାରୁ ଏବଂ ଶୀତାଞ୍ଚଳରେ କଳ କାରଖାନାରୁ ନିର୍ଗତ ଗ୍ୟାସ୍ ଯୋଗୁଁ ତାପମାତ୍ରା ଅତ୍ୟଧିକ ବୃଦ୍ଧି ପାଇଥାଏ ।

ଖରା ସମୟରେ ଜନସାଧାରଣ ସତର୍କତା ଅବଲମ୍ବନ କରିବା ଉଚିତ ।



OSDMA

ISO 9001: 2000 Certified

ଓଡ଼ିଶା ରାଜ୍ୟ ବିପର୍ଯ୍ୟୟ ପ୍ରଶମନ କର୍ମସମିତି
ରାଜ୍ୟ ଚଳନ, ଭୁବନେଶ୍ୱର

ଅଂଶୁଯାତ !

ସାବଧାନତା ହିଁ ସୁରକ୍ଷା



ଗର୍ମାବସ୍ଥାରେ ପୂର୍ବରୁ ଯଥେଷ୍ଟ ଖାଦ୍ୟ ଖାଆନ୍ତୁ ଓ ପ୍ରଚୁର ପାଣି
ପିଅନ୍ତୁ । ଓଡ଼ା ଗାମୁଛା ଓ ପାଣି ବୋତଲ ସାଥରେ ନିଅନ୍ତୁ ।



ତାପମାତ୍ରା ସାଧାରଣତଃ $37^{\circ}/38^{\circ}$ ସେଣ୍ଟିଗ୍ରେଡ଼ରୁ ଅଧିକ ହେଲେ ଏହାକୁ
ଗ୍ରୀଷ୍ମ ପ୍ରବାହ କୁହାଯାଏ ।

ତୋରାଣି, କାଞ୍ଜିପାଣି, ବେଲପଣା, ସରବତ,
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କିନ୍ତୁ ଉପକୂଳବର୍ତ୍ତୀ ଅଞ୍ଚଳରେ ବାୟୁମଣ୍ଡଳର ଆର୍ଦ୍ରତା ଅଧିକ ରହୁଥିବାରୁ
ଏହାଠାରୁ କମ୍ ତାପମାତ୍ରାରେ ମଧ୍ୟ ଗ୍ରୀଷ୍ମ ପ୍ରବାହ ଭଳି ପରିସ୍ଥିତି ସୃଷ୍ଟି
ହୋଇଥାଏ ।

ଛତା, ଜୋତା, ଟୋପି, ପଗଡ଼ି,
କଳା ଚଷମା, ସୂତା ଲୁଗା ବ୍ୟବହାର କରନ୍ତୁ ।



ସହରରେ କୋଠାବାଡ଼ି ଅଧିକ ଥିବାରୁ ଏବଂ ଶିଳ୍ପାଞ୍ଚଳର କଳ କାରଖାନାରୁ
ନିର୍ଗତ ଗ୍ୟାସ୍ ଯୋଗୁଁ ତାପମାତ୍ରା ଅତ୍ୟଧିକ ବୃଦ୍ଧି ପାଇଥାଏ ।
ଏଣୁ ଜନସାଧାରଣ ଖରା ସମୟରେ ସତର୍କତା ଅବଲମ୍ବନ କରିବା ଉଚିତ୍ ।

ଅସୁସ୍ଥ ଅନୁଭବ କଲେ ଡାକ୍ତରଙ୍କ ପରାମର୍ଶ ନିଅନ୍ତୁ ।



ମାଦକ ଦ୍ରବ୍ୟ ସେବନ କରନ୍ତୁ ନାହିଁ ।



ଓଡ଼ିଶା ରାଜ୍ୟ ବିପର୍ଯ୍ୟୟ ପ୍ରଶମନ କର୍ତ୍ତୃପକ୍ଷଙ୍କ ତରଫରୁ ଜନସଚ୍ଚିତରେ ପ୍ରକାଶିତ



ଓଡ଼ିଶା ରାଜ୍ୟ ବିପର୍ଯ୍ୟୟ ପ୍ରଶମନ କର୍ତ୍ତୃପକ୍ଷ
ଗାଜୀବ ଭବନ, ଭୁବନେଶ୍ୱର

Heat Island Study

- Study conducted by The Energy & Resources Institute (TERI) under climate change innovation programme funded by DFID
- Ib- Valley region of Odisha (Jharsuguda)

Key findings

- T max increased by 0.36°C , T min increased by 0.55° , and the diurnal temperature difference $T_{\text{max}} - T_{\text{min}}$ decreased by 0.15°C , implying that minimum temperature has increased more than the maximum temperature during this period, at a confidence interval of 99%. This establishes a steady build-up of heat in the area over time.
- As per thermal retentivity approach, locations Bhushan Steel and Market Road were hotspots from February to May where as Market Road was hotspot throughout the period.
- As per the relative heat index approach, locations Bhushan Steel, Municipality Office and Market Road were hotspots in the summer period, location OPGC, market road and municipality were hotspots in the monsoon period and locations Bhushan Steel, market road and OPGC were observed to be hotspots for the entire period.

Key findings

- From 2002-2016, built-up area has increased from 0.33% to 4.14 % of total geographical area, which is more than 12 times with respect to the baseline of 2002.
- Similarly coal mine area has increased twice and industrial area increased 10 times than the base year
- The dense forest cover has decreased and open forest has increased during this period.
- Seasonal effects were observed on water bodies and fallow land, while agriculture land shows an increase of 14%

Key findings

- The thermal sources and sink analysis based on biophysical parameters suggest that industrial area and coal mines are the highest thermal sources areas in both summer and winter season.
- Built-up areas, open areas and fallow land act as moderate thermal sources, while forest and water bodies act as thermal sinks.



Thank You