

Akaash Open Enterprise Center

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Operating Climate Engineering

- A Guiding principle for disaster stricken regions

A.1 Crisis in 2017

India faced a flood related crisis in the states of Gujarat, Assam, Rajasthan, Bihar, parts of West Bengal and Odisha.

A.2 Crisis in 2018

India today is facing a flood related crisis in the state of Kerala.

The states affected have reported torrential rainfall, flooding of inter-state river systems, uncontrolled opening of flood gates of dams, defective functioning or breakage of embankments, canal walls, edifices.

A.3 Crisis in 2019

India today is facing a flood related crisis in the state of Odisha.

B. Influences on the common man

Each time, the deluge like situation has been worsened due to some regions being very close to river systems or dam sites. In some cases, trees naturally growing in these regions have saved the lives of people, and in some concerning cases people have been washed away, roadways blocked, railway tracks and even public infrastructure like electrification, godowns, tourist destination spots, airports affected.

C. Reckoning

The rainfall in these regions has been above predicted levels. The connected Meteorological departments, control rooms and flood cells have been evaluating, predicting and monitoring the situations to different extents but is this sufficient?

The answer to this question is NO; the need of the day is “Operating Climate Engineering (OCE)”.

1. What is Operating Climate Engineering?

The term OCE refers to our ability to use the Natural systems interface (NSI) present in or near regions to design risk mitigation for the future.

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What is the Natural systems interface?

NSI refers to the topography, rock and soil texture, forest cover, river system proximity, ground water table sufficiency, sunlight, shade, winds and rainfall patterns.

2. What is the risk mitigation that needs to be designed for flood prone regions?

Primarily all regions having close proximity to a river system or dam site must be protected to the best extent possible. Tomorrow the possible proximity may change, keeping in the mind that there will be global warming and climate change. This said, the scope for such protection is an OCE network theory:

The **OCE network theory for a river system** includes 1-5

1. **Point Slope Interception and Traceability** of the **Water content index** at man-made or natural drainage based endpoints for water distribution, resource generation and content management
2. **Condition monitoring of the river system**
3. **Preventive methodologies** based on SMART principles
4. **Corrective methodologies** based on SMART principles
5. **Risk Mitigation** based on an OCE principle or Quality of Life principle

These 1-5 points include

- 2.1. Developing **wetlands** in regions prone to flooding, so man is not immediately affected by over flooding.
- 2.2. Focusing on the upper reaches and lower reaches of rivers that flood, so as to **develop drainage patterns** that reduce risks.

Gap analysis

Before launching any linking of river systems programme, however well-planned or impactful it seems, the need is to focus on all the points mentioned in this network theory.

Incorporating altered or improved drainage patterns may be the first critical step to content management of river systems.

- 2.3. Developing **Action Plan programmes to clean river systems and monitor water content indices & breaches.**

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2.4 Fortifying our dams and reservoirs by calling them **ASSETs**, where this effort will involve revisiting the need for **hazard resistant construction** of structures associated with dams, reservoirs, embankments, canals, canal walls.

2.5 Constructing **wall like windbreak fencing (with controlled porosity)** to protect habitats, cultivable land, trees & utility poles (sidelining canals and bridges), roadways, railway tracks in or near or close to regions that are prone to strong winds during flood like incidences.



Sensor controlled and mimics
enabled vaults

2.6 Building **underground vaults close to dam sites and reservoirs**, where the main purpose of the structurally resilient vault is to store water underground in such a manner that the storage capacity can help man control flooding, conserve water, design drainage patterns and control flow stream turbulence.

2.7 **Constructing weirs** across portions of river systems so as to reinforce steps such as

- a. Controlling flooding
- b. Measuring water discharge, so as to design risk mitigation
- c. Preventing increased siltation at certain locations of the river system, as this is known to cause flow turbulence, over flooding, landscape deterioration
- d. Developing wetlands

2.8 Designing a **Mission Health or Risk Management Grid** that can react to or respond to regions that are disaster stricken and prone to become disease causing. The Mission Health or Risk Management Grid will need to **work in close relation** to the Central Water Commission, Meteorological department and flood cells so as to respond to predictions by taking suitable steps either via distributing **self-help kits** or via the **enabling of infrastructure** much earlier, during forewarning, incidence or post incidence, to assess, treat and care for the afflicted.

2.9 Designing **Waste Management Programmes** in regions close to rivers, where this involves

- a. Dedicating resources to setup a secure contact organization that identifies norms, methodologies and solutions for waste management

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b. Deploying a Community Centre that can help people in connection with waste management issues

c. Designing **Point Slope Interception** at sites close to the river system. You can ask for more details on this by emailing the consultant on venkataoec@gmail.com

The first version of the same called “Rivers and waste management” has been made available for further reference.

d. Ensuring **Landfill design and development**, where the **capacity is relevant** to address a bulk increase in all categories of waste (known to occur after a disaster) and where there is technological advancement to collect, categorize, dispose & render waste harmless and also neutralize toxins, poisons, and microbes known to affect the water bodies, environment and man living in regions prone to incidence.

2.10 Designing **Inter-state convergence centres** to dedicate resources to monitor and converge on steps to mitigate risks and manage disasters in regions close to river systems. You can ask for more details on this by emailing the consultant on venkataoec@gmail.com

The first version of the same called “Responding to river systems” has been made available for further reference.

3. What are the Remedial NEXT steps for regions vulnerable to over flooding of river systems, dam sites?

1.a Designing a **Mission Health or Risk Management Grid**

1.b Ensure **Social accountability** via information on **Public Rights and Education** for people prone or afflicted

2. Designing of **Fast Track Markets** to help agriculturists, farmers and growers sell their produce when predictions foretell disaster like situations

3. Encouraging **Green Businesses & sense and respond cycles**

4. Designing **IT Service Continuity** in businesses using IT

5. Designing **Sustainable Project Management** models in all connected projects

6. Encouraging **Sustainable Facility Management** in healthcare provider sites, public infrastructure sites and as relevant in business sites

7. Transforming Kuccha and brick system construction in dwellings and settlements near flood prone regions.

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Planning signposts that notify people about weak structures that can become hazardous during over flooding

8. Designing Livestock Centres and accountability to mitigate risks due to climate change, deteriorating natural resources, poorly constructed livestock facilities, lack of SMART intervention to control animal or bird specific diseases

9. Developing a Behavior Model for agriculturists, farmers and growers

10. Designing methodologies for farmland restoration and transformation

Designing methodologies for farmland restoration and transformation

The reckoner uses earlier gap analysis for Sustainable Agriculture to state that the following insights could help farmland restoration and transformation in regions prone to be flood afflicted:

1. Designing a **Hub and Spoke layout** instead of adjoining farmlands or any other arrangement (if a farmer or grower has multiple pieces of land close to one another), where this layout will help inflow, outflow and irrigation & drainage patterns

2. Ensuring agriculturist, farmer or grower **maintains an inventory of resources to be used for Climate Change Mitigation**

3. Encouraging agriculturists, farmers and growers **to landscape their farm lands to maximize flow of storm water** into nearby underground wells, man-made ponds and lakes (that could be connected to larger water bodies). This landscaping will also help dewatering pumps and pipelines work effectively.

4. Facilitating **growth of foliage, shrubs and green shelter belts around farmlands** wherever this is possible

5. Designing **surveillance of crops grown, cropping patterns, harvesting practices and storage practices** of agriculturists, farmers and growers in regions that are flood prone

6. Controlling **man's intervention leading to land degradation** either by wrong cropping patterns, wrong irrigation methods, ignoring the settling down of cement dust & insoluble pollutants in farmlands, wells, man-made ponds and lakes

7. Developing a **FMCEA/FMEA based readiness, repair or restoration and transformation strategy** in regions prone to disasters. Here FMCEA stands for Failure Mode Cause and Effect Analysis, FMEA stands for Failure Mode Effects Analysis.

This Failure Mode Analysis could be developed on the basis of the **tabulation of crop types, type of soil needed, type of climate needed, typical rainfall measurements and intervention envisioned** (on the

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basis of the physical, chemical and organic process involved in the formation of the soil in and around the farmland).

On doing this the government and agriculturists will be more prepared and focused to address issues (as and when needed).

D. AOEC's toolkit offerings

AOEC has various toolkit offerings that can help climate change mitigation and disaster management. They are

1. Toolkit for Sustainable Agriculture (with focus on Climate Change Mitigation)
2. Toolkit for Sustainable Construction and Building Management (with focus on hazard resistant construction and prioritization)
3. Toolkit for Disaster Management Readiness
4. Toolkit for Sustainable Development and Growth (via the incorporation of I-Catalog synergy in business models)
5. Toolkit for Mission Healthcare or Risk Management (with focus on a sustainable model for QMS, EMS, .Mission Health or Risk Management Grids, SMART Prioritization to mitigate outbreaks, epidemics and endemics)
6. Virtual Family Advancement and UMI

You can ask for a specific toolkit offering by calling the consultant on +919342867666 or by emailing venkataoec@gmail.com

You can refer to proof of concept website to “understand work in progress to help save water”, www.venkataoec.wixsite.com/savewater