



National Policy Workshop Webinar Series
On
Countermeasures for Riverine and Marine Plastic Litter in India
12 -22 May 2020

Session 6: Scenarios to counter plastics litter in river and marine environment by overcoming barriers and Identifying Enabling

Methodology and standardization for Plastic Hotspotting & Plastic Leakage Scenario to adopt countermeasures in an urban setting in India

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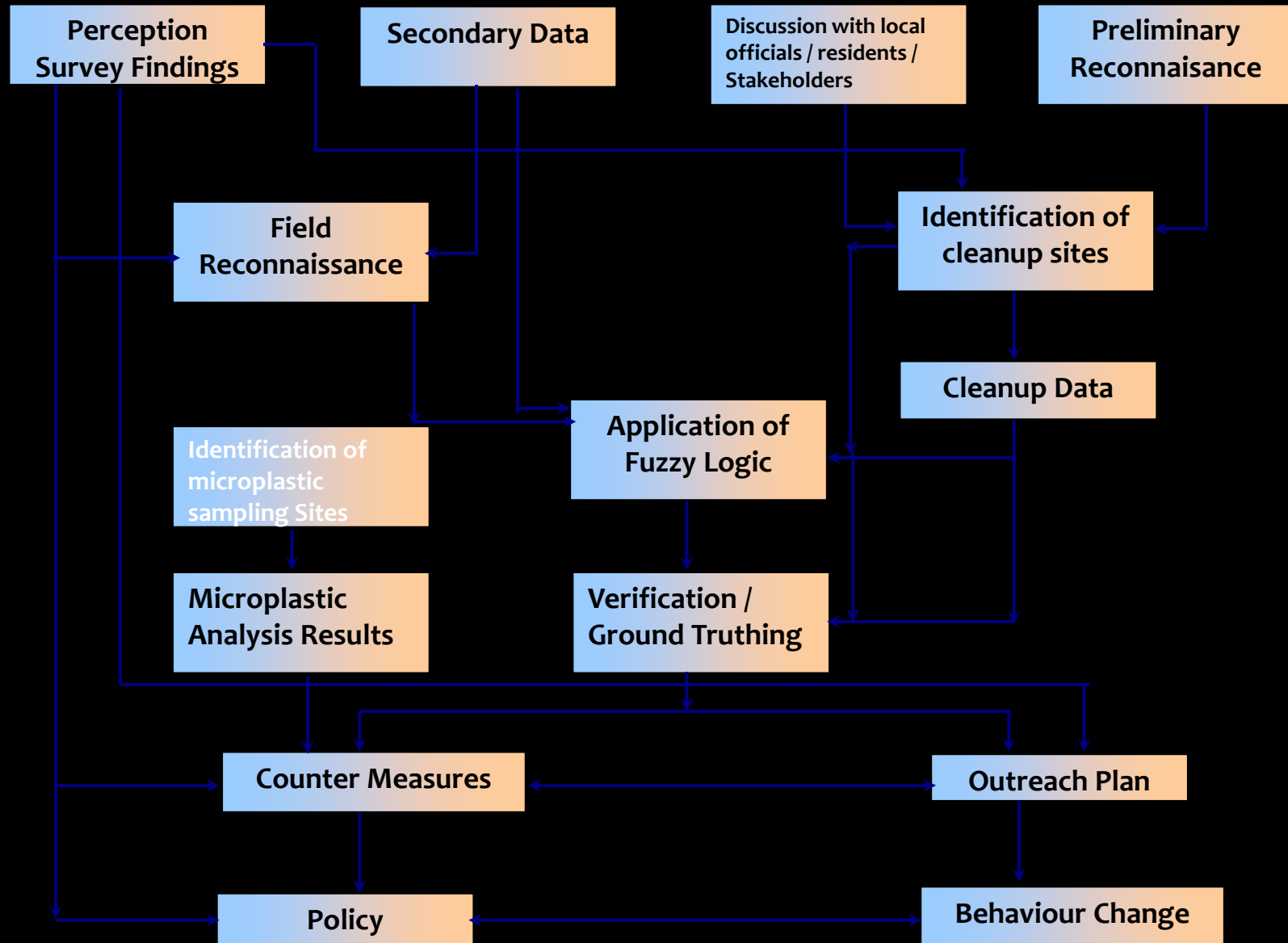
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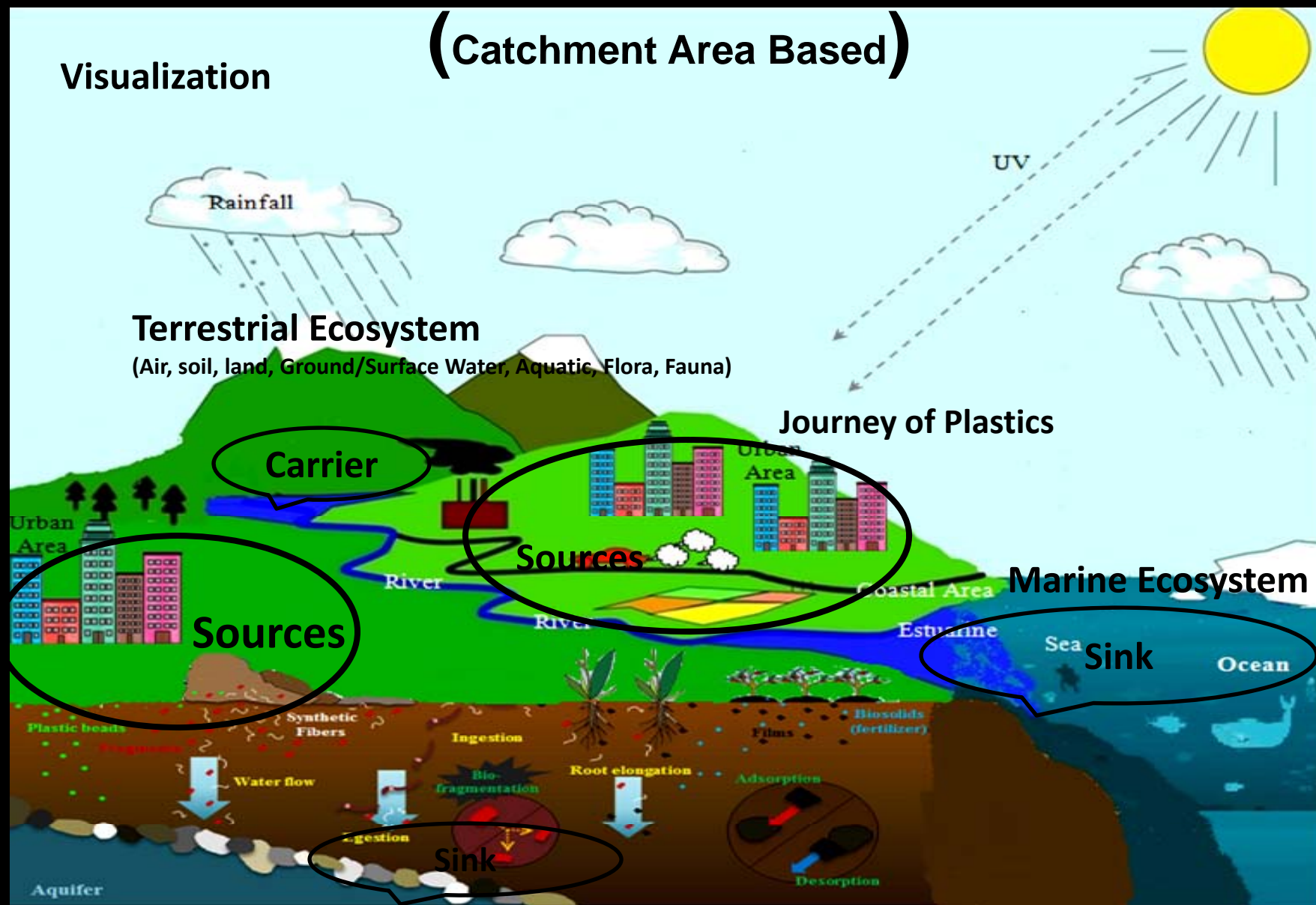
IRGSSA OVERVIEW

- Established in 2001, IRGSSA is an India based international professional services firm having executed more than 150 *projects in 12 countries*.
- IRGSSA provides technical assistance in environment, energy, natural resources, disaster relief & reconstruction, IT & Geomatics in the region.
- The firm has executed several projects for a diverse set of clients such as The World Bank, ADB, UNDP / UNEP / GEF, JBIC / JICA / JETRO, DFID, USAID, GIZ, Government of India, Private Sector, NGOs and Industry Associations.

Project Conceptualization

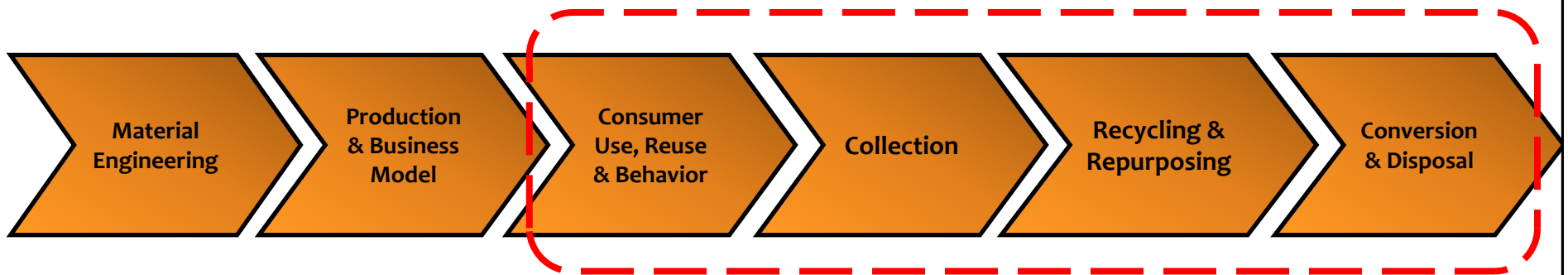


Conceptual Methodology

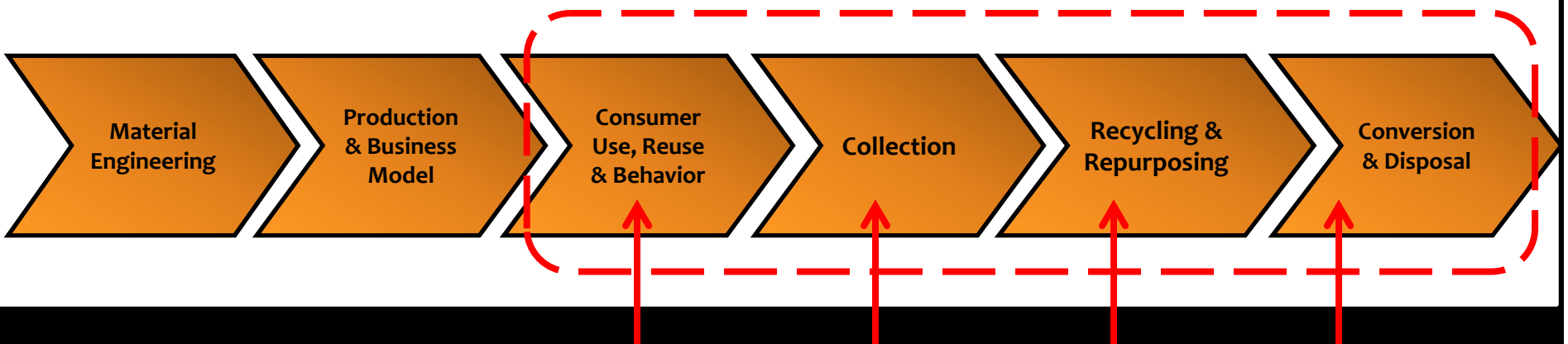


Sources leading to **Hotspot** Identification for Plastic Leakage Scenario

Conceptual Methodology (Contd.)



Plastic Value Chain Boundary Conditions within a geography



Data points for data collection, interpretation and analysis

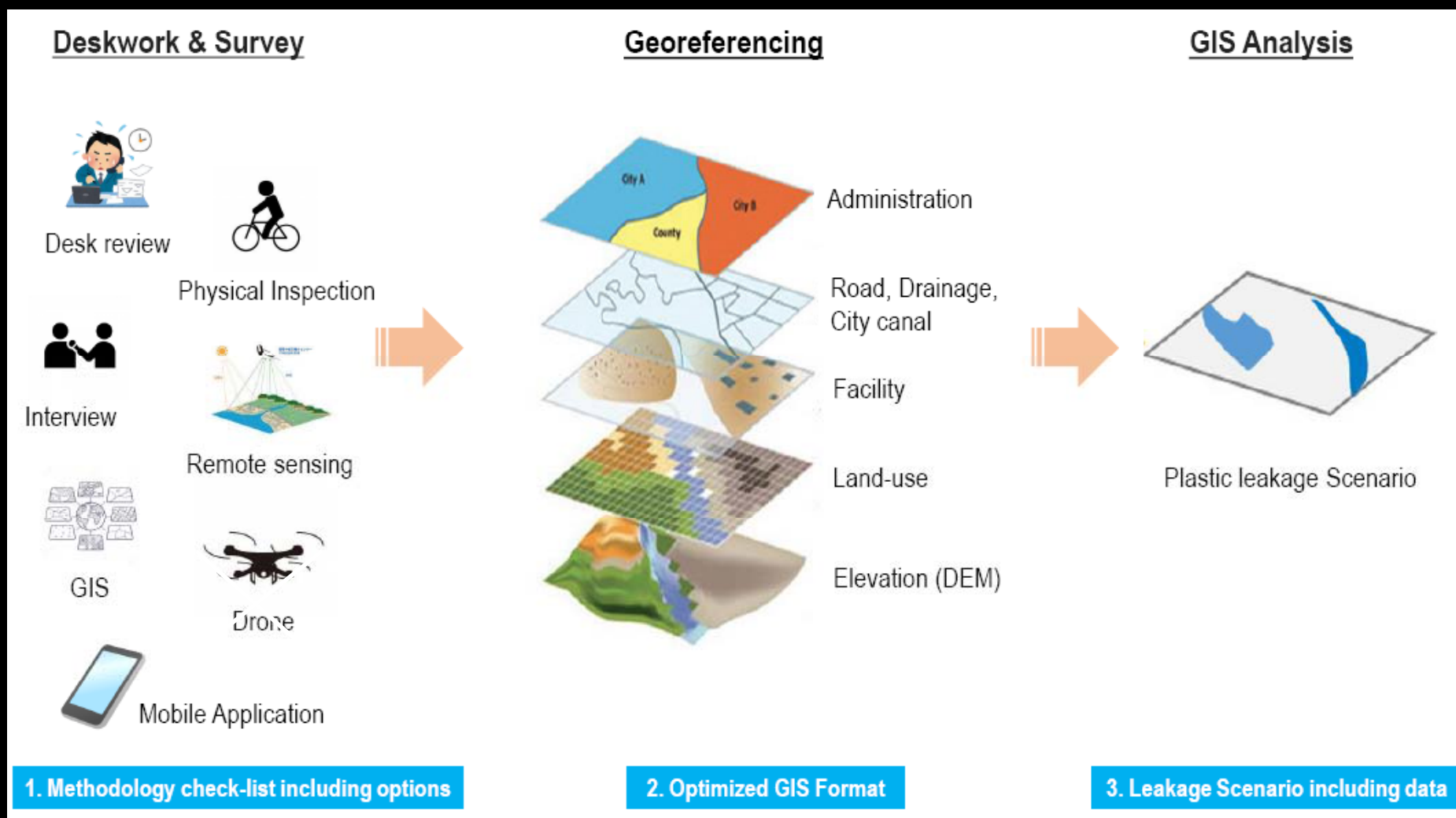
Conceptual Methodology (Contd.)

A combination of hybrid MFA-LCA when applied in sub-national geographical areas (region/city/any other geography) will assist in identification and classification of hotspots. The study boundary may include different stages where input-output analysis can be carried out within the boundary.

Tools/ Techniques

1. Reconnaissance & Perception Survey
2. GIS Technique & Fuzzy Approach
3. Microplastic Cleanup Assessment (Land/ Bank)
4. Microplastic Assessment (River/ Waterbody)
5. Waste Management Data Templates (Input/ Output, Mass Balance Approach)

Conceptual Methodology (Contd.)



Source: Kakuko Yoshida, UNEP, June 5th 2019

Mapping of Plastic Value Chain Geographically in an Urban Context

Conceptual Methodology (Contd.)

Plastic Leakage Risk Map (Fuzzy Logic Approach)

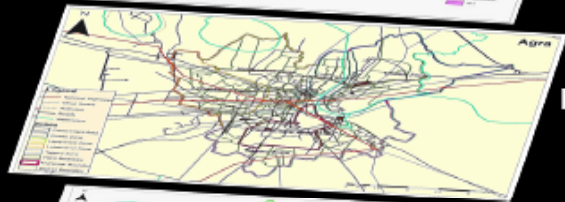
Variable (Indicator Factor, Layer)



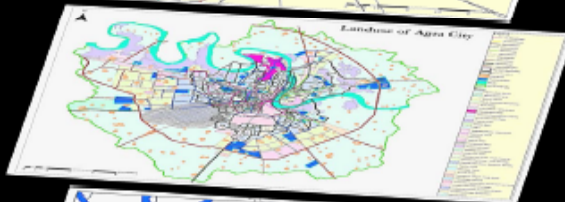
SLUM LOCATIONS



POPULATION
DENSITY



ROADS, RAILWAYS
AND RIVER



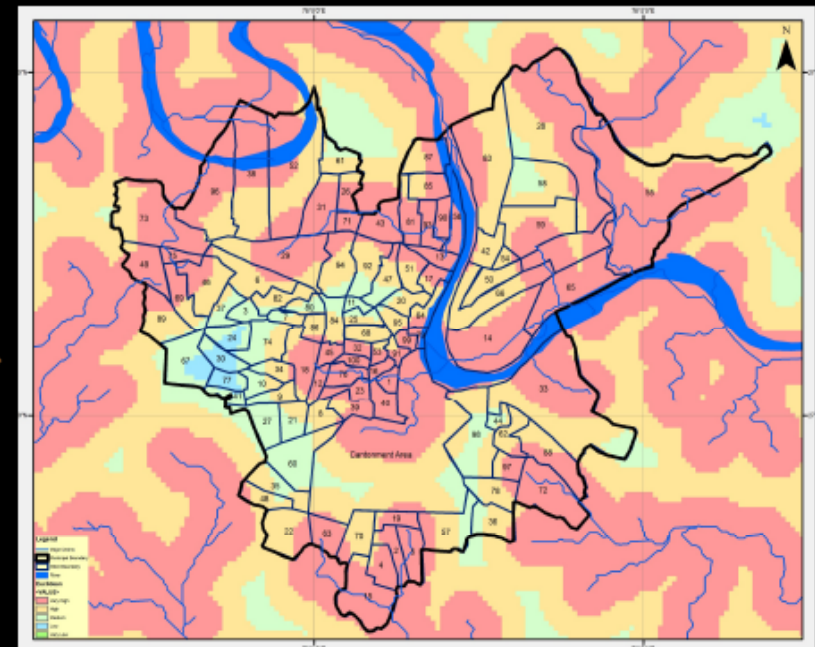
LAND USE



DRAINAGE

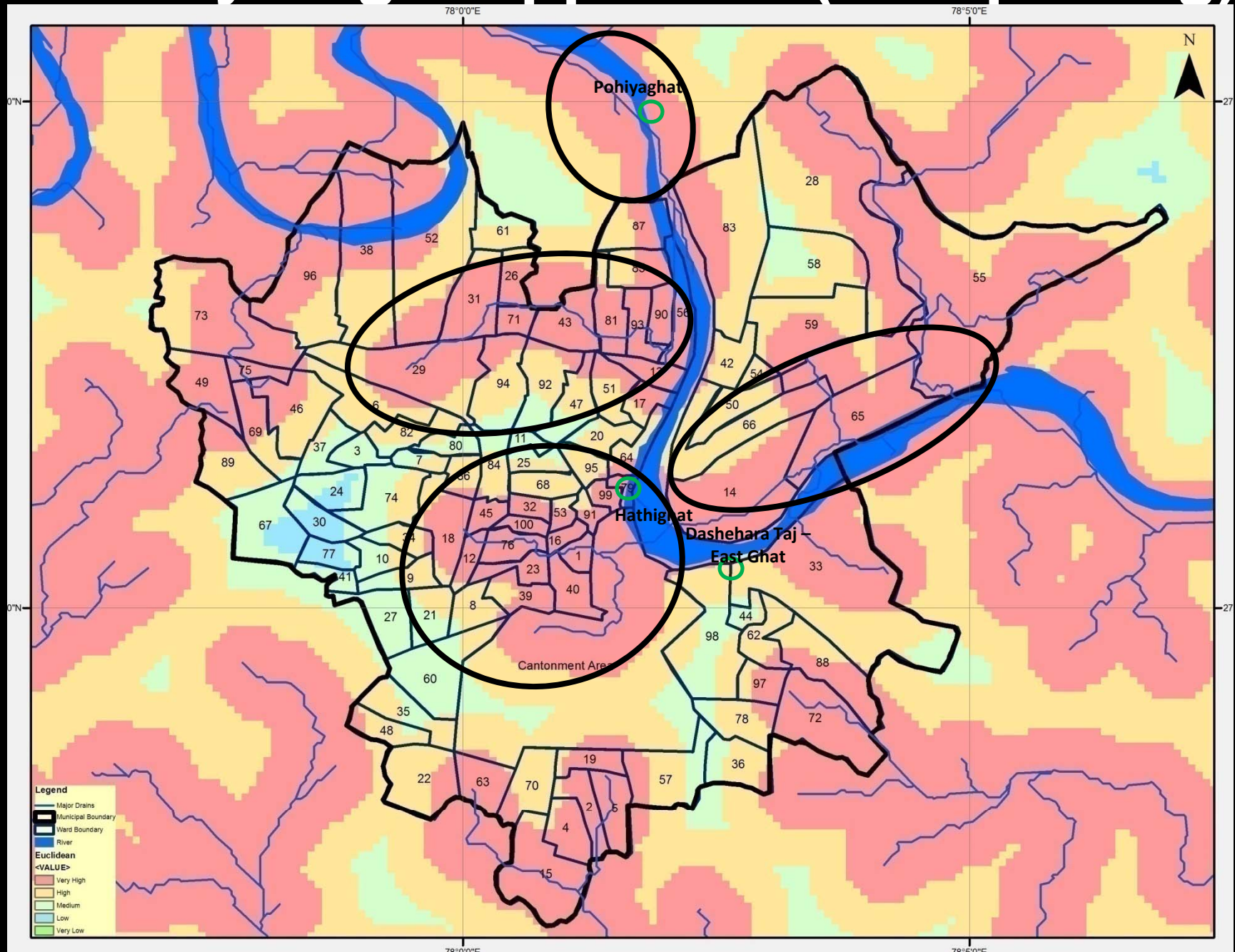


CONTOUR

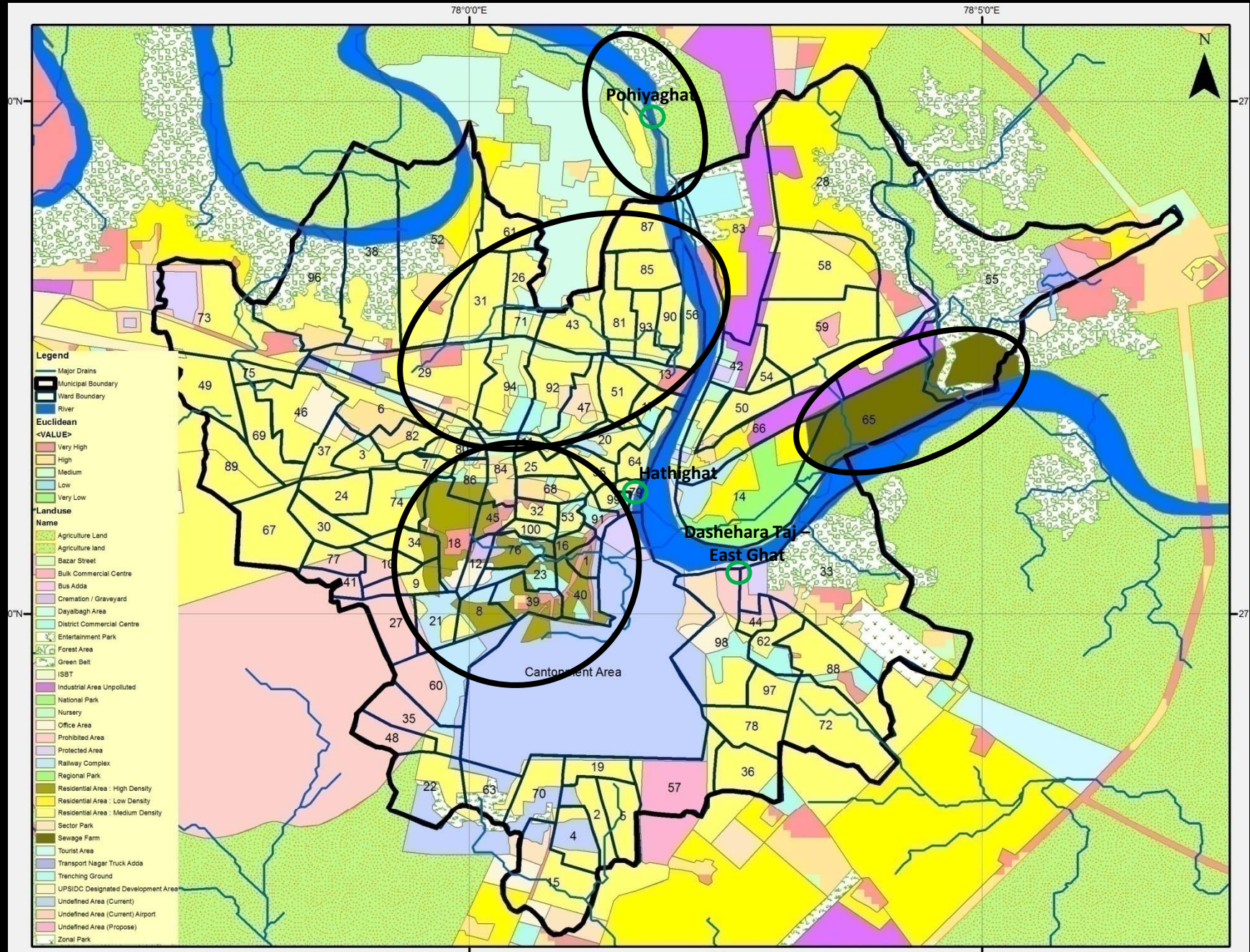


Risk Map on Plastic Leakage Source
(Low - High)

Fuzzy Logic Approach (Hotspotting)



Land Use & Population Density

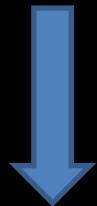


Ground Truthing & Validation (Hathi Ghat)

Before Cleanup



After a Month



After Cleanup



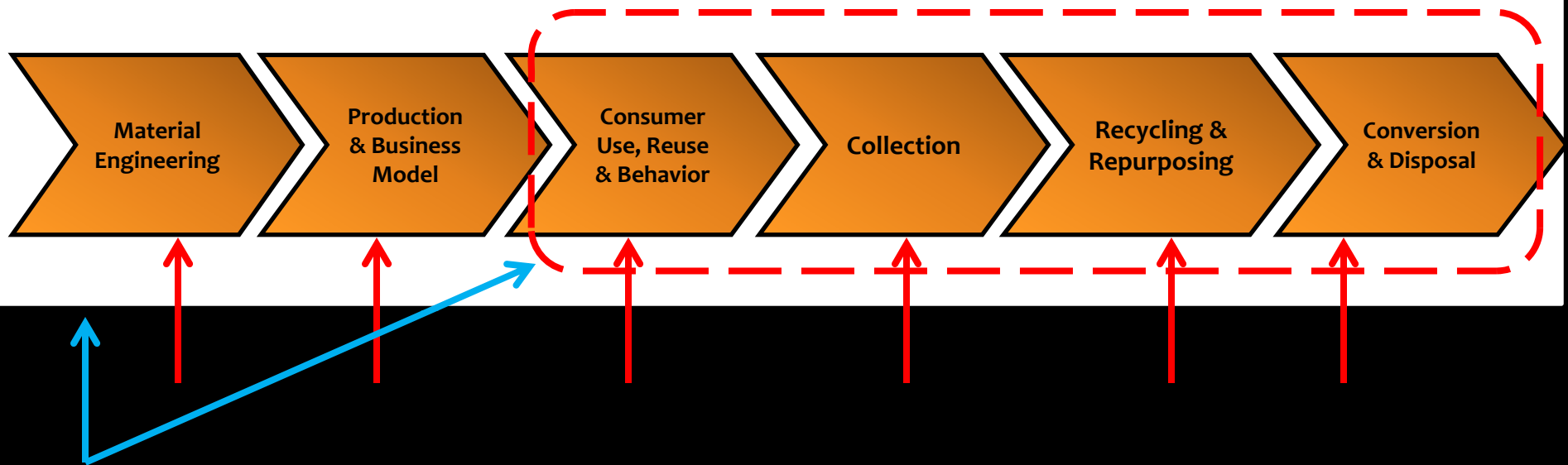
Survey Locations / Drains (Leakage Scenario)



Key Findings

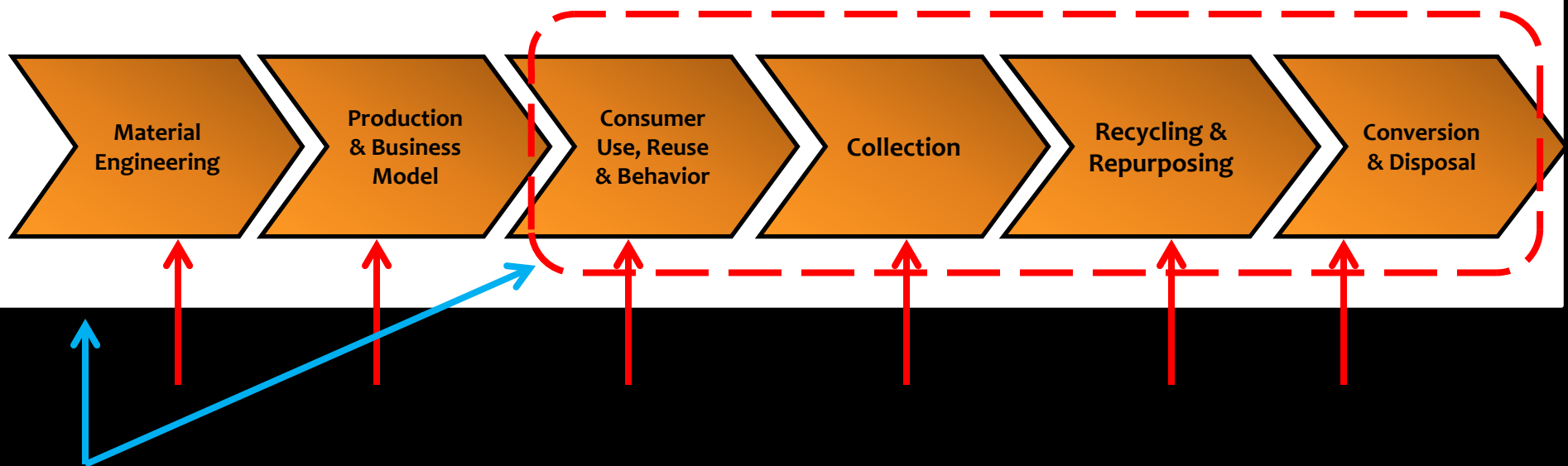
1. Hotspots (Accumulation, Source, Application, Value chain) & Plastic Leakage pathways identified and methodology piloted in riverine (Haridwar, Agra, Prayagraj Ganga & Yamuna) and marine environment (Mumbai)
2. Inefficiencies in waste management system (10% - 25% littering)
3. Recycling of positive value plastic waste items in place
4. Correlation found between on land macroplastic waste items and microplastics in rivers

Counter Measures



1. Where (Geography)
2. What (Type)
3. How (Mechanism)

Counter Measures (Contd.)



1. Where (across the entire plastic value chain, part of chain, national, regional, state, city...)
2. What (Type – Selected Product or overall)
3. How (Mechanism - Instrument - Policy/ Regulatory, Market Based or a combination e.g. Ban, Cess, Tax, EPR, Recycling Fee etc..)
4. Monitoring (KPIs, Basis - resource efficiency, waste reduction, Pollution Control, sustainable reporting, SDGs)

Challenges/ Lessons Learned

1. Data availability & Data mapping
2. Customization & uniform application of methodology
3. Identification of sampling location
4. Modelling considering length of the river i.e. Towns / cities downstream of river – need for phase 2 planning & implementation
5. Application of Counter Measures

Recommendations

1. Application of Standard Assessment Methodology (developed under CounterMEASURE project) for scaling up;
2. Stage & time wise plastic phase-out to be strengthened across plastic value chain for selected items;
3. Creation of drivers of recycled plastics sector
4. Support for enhancing plastic segregation by strengthening waste management infrastructure and development of ecosystem (EPR, Instruments, Incentives Up & Down, Pricing)
5. Strengthening of reporting, monitoring & evaluation, and regulatory capacity;
6. Incentivising innovative product/packaging design to support recyclability
7. Application of LCA for scientific environmental evaluation of alternatives.
8. Awareness Raising & Behavior Change

THANK YOU

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