

19<sup>th</sup> February 2021

# UN-Habitat the 11<sup>th</sup> Environmental Technology Expert Group Meeting: Perspectives from India

国連ハビタット第11回環境技術専門家国際会議  
インドからの報告

Dr. Rakesh Kumar  
Director, CSIR-NEERI

はじめに

- India ranks 2<sup>nd</sup> among the most affected countries in the world in terms of confirmed cases (USA ranks 1<sup>st</sup>) and 4<sup>th</sup> in deaths caused by coronavirus (India is after USA, Brazil and Mexico).

インドは世界でも2番目にコロナの感染者が多く、4番目に死者が多い

- Further, due to reverse (urban-rural) migration, concentration of COVID-19 increased significantly in migrant receiving poor districts.

出稼ぎ労働者が大量に都市から地方に戻ったことにより、地方の貧しい農村での感染者が多い

- The current COVID-19 pandemic Sanitation and Hygiene: Concern globally.

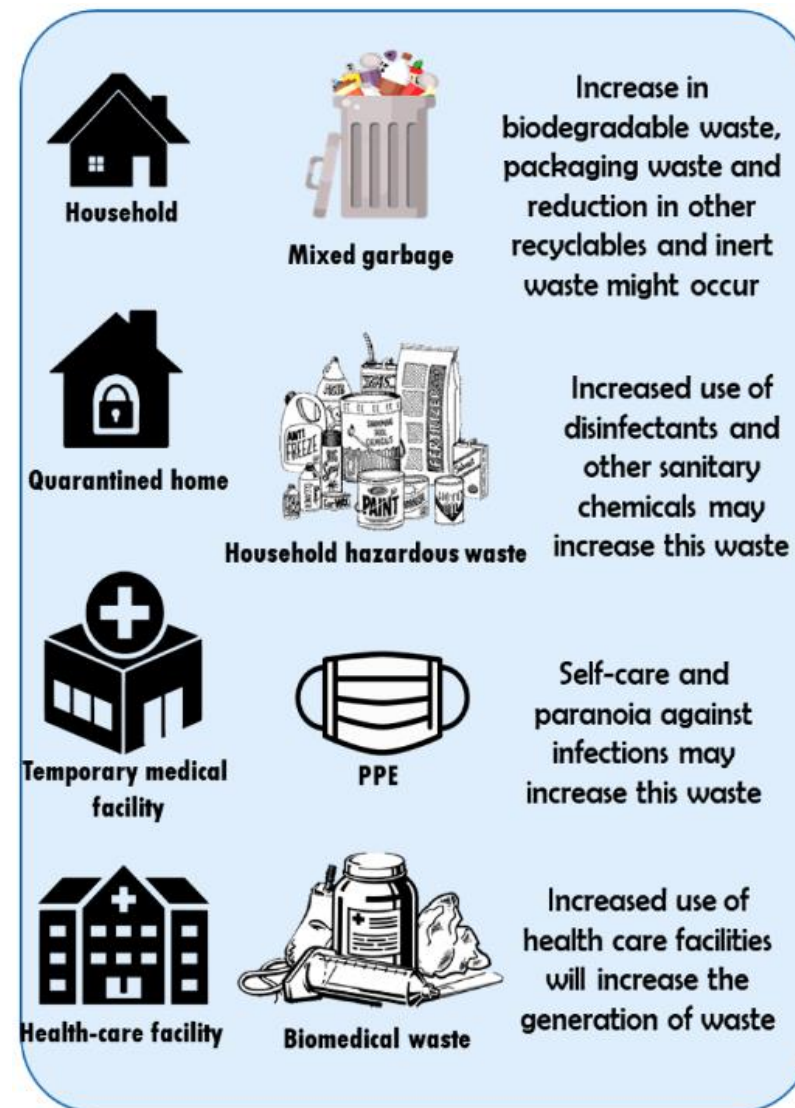
水・公衆衛生分野の懸念がいちばん多い。世界的な課題

- The lack of access to basic water, sanitation and hygiene (WASH) and waste management facilities are one of the critical examples of the lethal effects of inequality being exposed by the pandemic.

基本的な水・衛生・公衆衛生・廃棄物へのアクセスが不均衡に不足していることが、致命的

## □ Waste Management

- Waste Management is one of the most important sanitary barriers to prevent dissemination of illnesses and diseases. During the Corona pandemic, waste management becomes the challenge to every member of society. 廃棄物管理は感染症や病原菌の拡大防止に最も重要。コロナ下では社会のすべての人にとって重要な課題となった
- As the quantity of the **domestic hazardous waste (DHW)**, also includes gloves, masks, etc., is increasing significantly, there is a problem of the collection of the waste separately. 家庭でも感染ゴミが急増し、回収の取り扱いが困難に
- At some places of the country, site conditions require the manual loading or unloading of the waste and hence increase the chances of the contaminations. 手作業によるゴミの回収も多く、感染リスクが高まっている



- In India, practical implementation of effective COVID-19 waste management guidelines included:
  - Multiple cares at each step, including containers/bins/trolleys be disinfected daily,
  - Use of double-layered bags (using 2 bags) of collection,
  - Regular sanitization of workers, and vehicle sanitization etc.

インドではゴミ袋を2重にする、回収作業員や車両を定期的に清掃するなどのガイドラインができた

- **Life Cycle Assessment of PPEs** for disposal of infectious PPE waste becomes very vital for environmentally sound management of PPE

PPE（個人防護品）のライフサイクルのアセスメントが重要となる

- **It indicates that waste needs decentralized incinerators for disposal**

確実な廃棄のためには分散型の焼却施設が必要

## ❑ Water, Sanitation and Hygiene 水・衛生・公衆衛生

- According to National Sample Survey's (NSS) 2018 report, nearly 48.3% of the households in urban and rural India do not have exclusive access to drinking water.

インドでは都市・農村の両方で48.3%の世帯が飲用水へのアクセスがないとされる

- About 30.5% of rural households access public community sources.

地方の世帯の30.5%は公共の水源を利用している

- Community toilets and sanitation facilities pose a risk as it makes social distancing and hygiene difficult.

コミュニティ共用のトイレや手洗い所などではソーシャルディスタンスを保つのが困難

- In India, 41% of households use community bathrooms, 11.2% use community latrines and 20.2% have no latrines [NSS data 2018].

インドでは世帯の41%がコミュニティ共用のトイレを利用、11.2%が共用の汲み取り便所、20.2%が汲み取り便所もないとされる

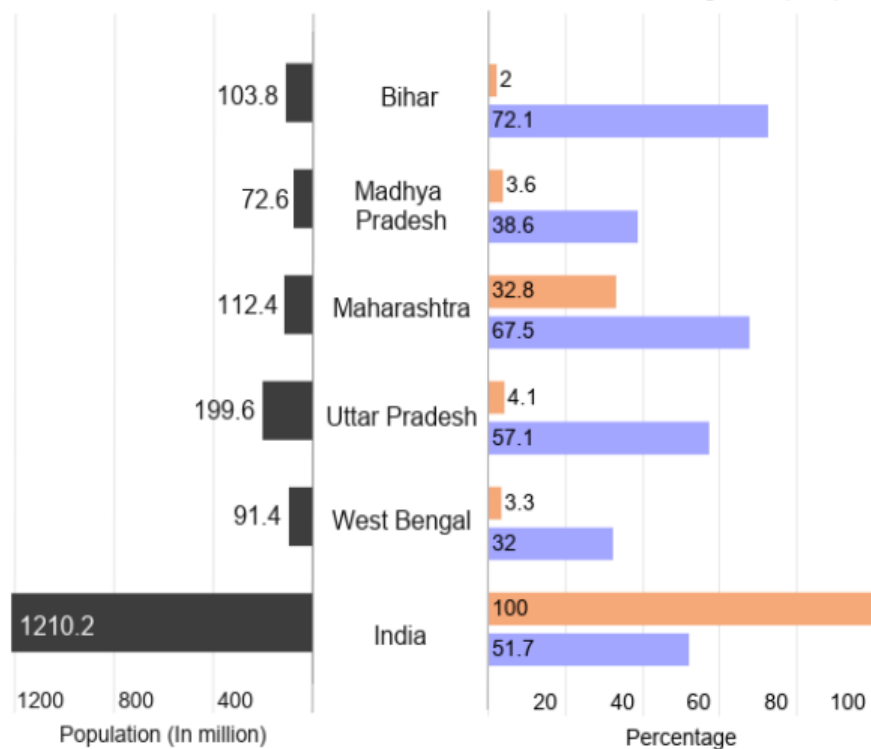
# Issues

課題

人口の多い州での飲用水へのアクセス

## Access to Drinking Water In India's Most Populous States

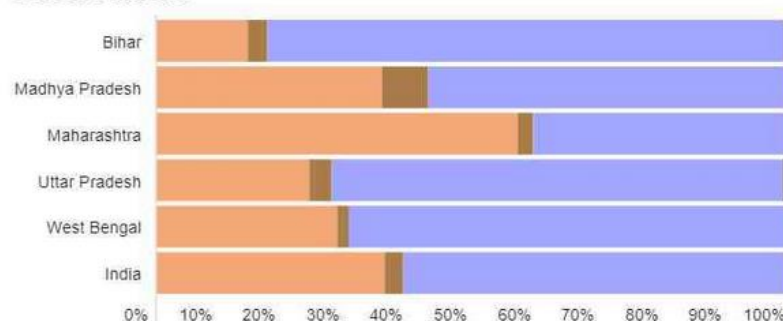
Population (In million) Cases (In %) Households with exclusive access to drinking water (In %)



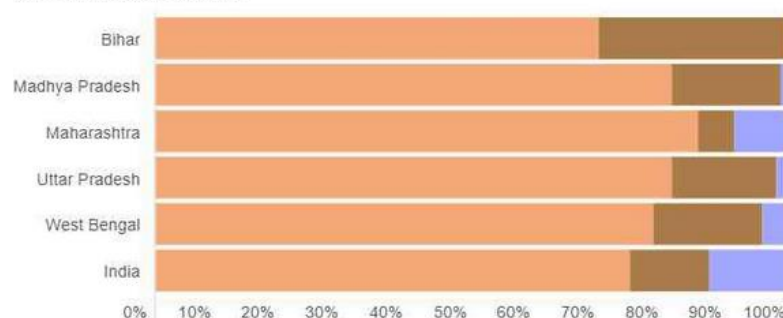
## Handwashing Habits 手洗いの習慣

With water & soap/detergent With water & ash/mud With water only No washing

### Before Meals



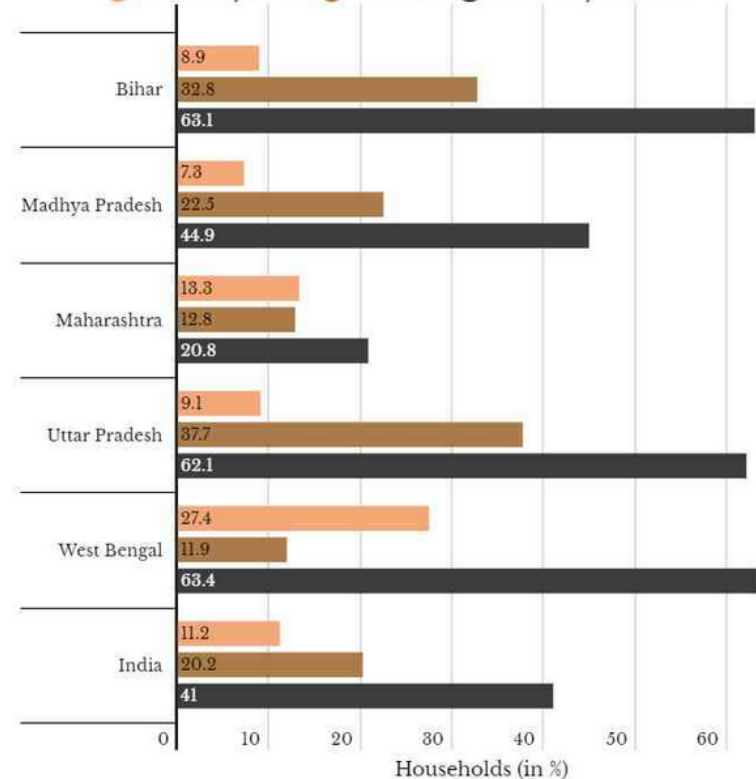
### After Defecation



トイレ施設

## Households Using Community Sanitation Facilities

Community latrines No latrines Community bathrooms



Source: Census 2011, Ministry of Health and Family Welfare, India

Source: Drinking Water, Sanitation, Hygiene and Housing Condition In India via IndiaSpend



## ❑ Waste Water 下水

- Due to mass transmission of SARS-CoV-2, government made large number of quarantine centres, screening centre, isolation wards for keeping the infected.  
SARSの流行時、インド政府は多くの検疫所や隔離施設を作った
- This implies that substantial quantities of wastewater would be generated from such facilities which may pose a threat if not treated before release.  
このような施設から排出される下水は適切に処理される必要がある
- It is especially challenging for temporarily requisitioned COVID-19 dedicated centres where toilets are connected directly to the municipal sewage network, as there is no residence time and disinfectants addition is not easy.  
コロナ用施設のトイレが市の下水ネットワークと直結している場所は課題
- Increase in water consumption: due to increased consciousness towards cleanliness  
感染への懸念から、水の消費が増加している

## Unique Practice/Invention

インドでの取り組み

- India released early guidelines in March 2020 for handling of biomedical waste,, in hospitals and quarantine areas, including sanitation of handling equipment and vehicles used for transportation, which has curtailed the spread amongst handlers of waste.  
感染初期の2020年3月に、政府は医療ゴミや医療関係車両、その取扱い業者に対するガイドラインを策定
- **Many industries in India such as GMR, TCS, Mahindra, Reliance created isolation and quarantine centres in factory premises for workers** with sanitation facilities and to reduce transmission amongst working population  
インドの多くの大手事業者は自社の工場内で隔離施設や検疫施設を作った
- **Central and State governments had used IEC and awareness campaigns for migrant workers to educate them about the new virus, its transmission and health habits to be followed for avoidance of transmission**  
政府・州政府は出稼ぎ労働者のための注意普及キャンペーンを実施
- **India is conducting research on wastewater for development of tailored prediction models with respect to prevalence of COVID-19 in an area.** Factors such as time lag and number of RNA copies are being standardised with clinical trials and STP data  
インドでは感染拡大防止のため下水の調査を実施



## Unique Practice/Invention

インドでの取り組み

- Computational fluid dynamics is being used to design ventilated rooms and transportation systems for reduction of transmission of disease via air. 空気感染を削減するための換気のある部屋や交通システムのデザインのためにコンピュータで飛沫の拡散などを解析

- Work on decentralised BMWs has increased given the necessity in India, and as indicated in the research cited above.

分散型BMWが増加

- Ambient air pollution control equipment are being modified to purify and decontaminate the air.

室内空気汚染コントロール危機は空気清浄や除菌機能付きにモデルチェンジしている



**Dr. Rakesh Kumar**

Director, CSIR-NEERI, Nagpur

Email: [r\\_kumar@neeri.res.in](mailto:r_kumar@neeri.res.in)

*Thank  
you*

