



# Mercury inventories: trends, highlights and lessons-learned

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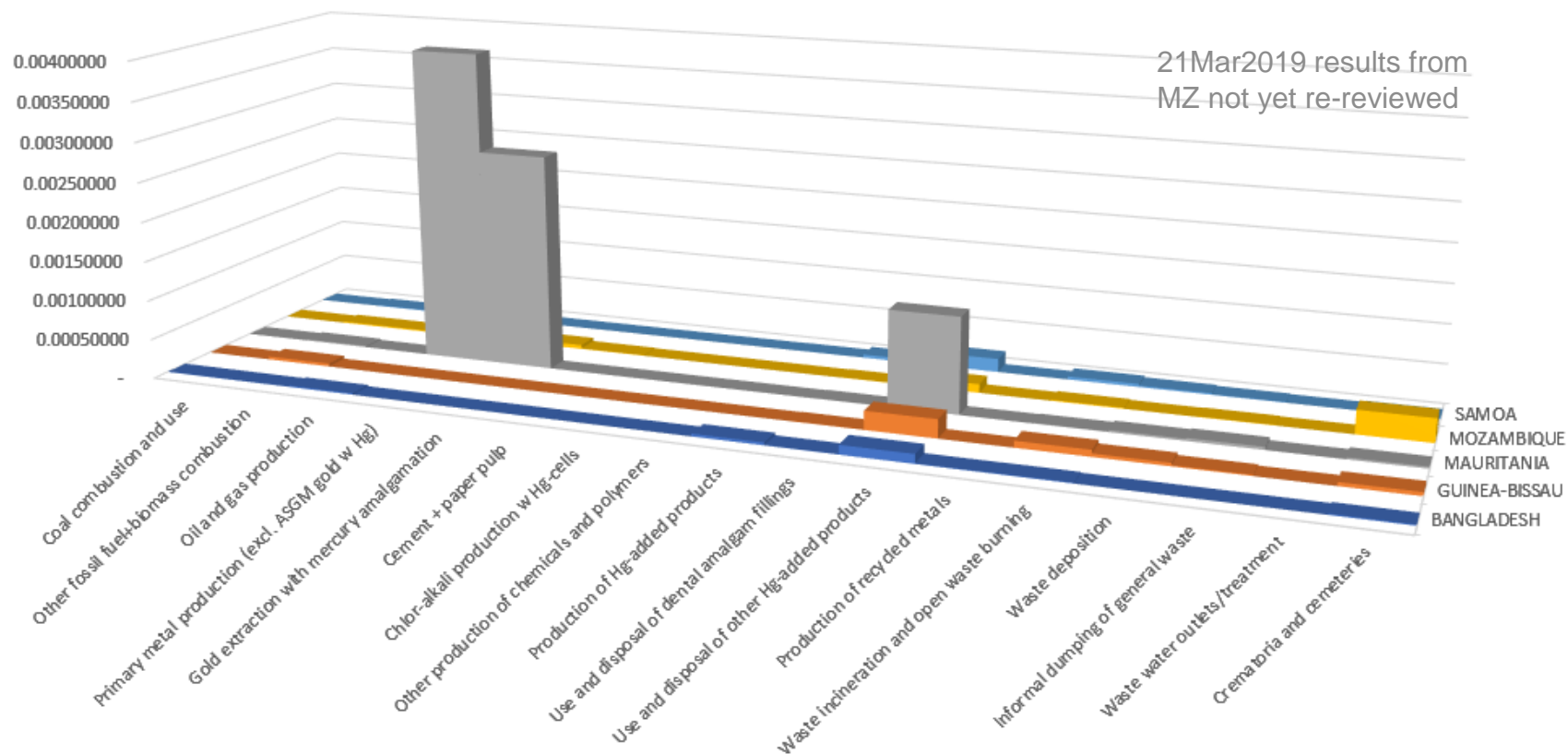
# Results – patterns observed

# Source types present

Source types present	Bangladesh	Guinea-Bissau	Mauritania	Mozambique	Samoa
Energy-related (oil, gas, etc.)	X	x	x	x	x
ASGM			X	X	
Industrial mining			X		
Cement klinker production	x			x	
Products	x	x	x	X	x
Open waste burning and dumping	x	X	x	X	X

# Results – differing

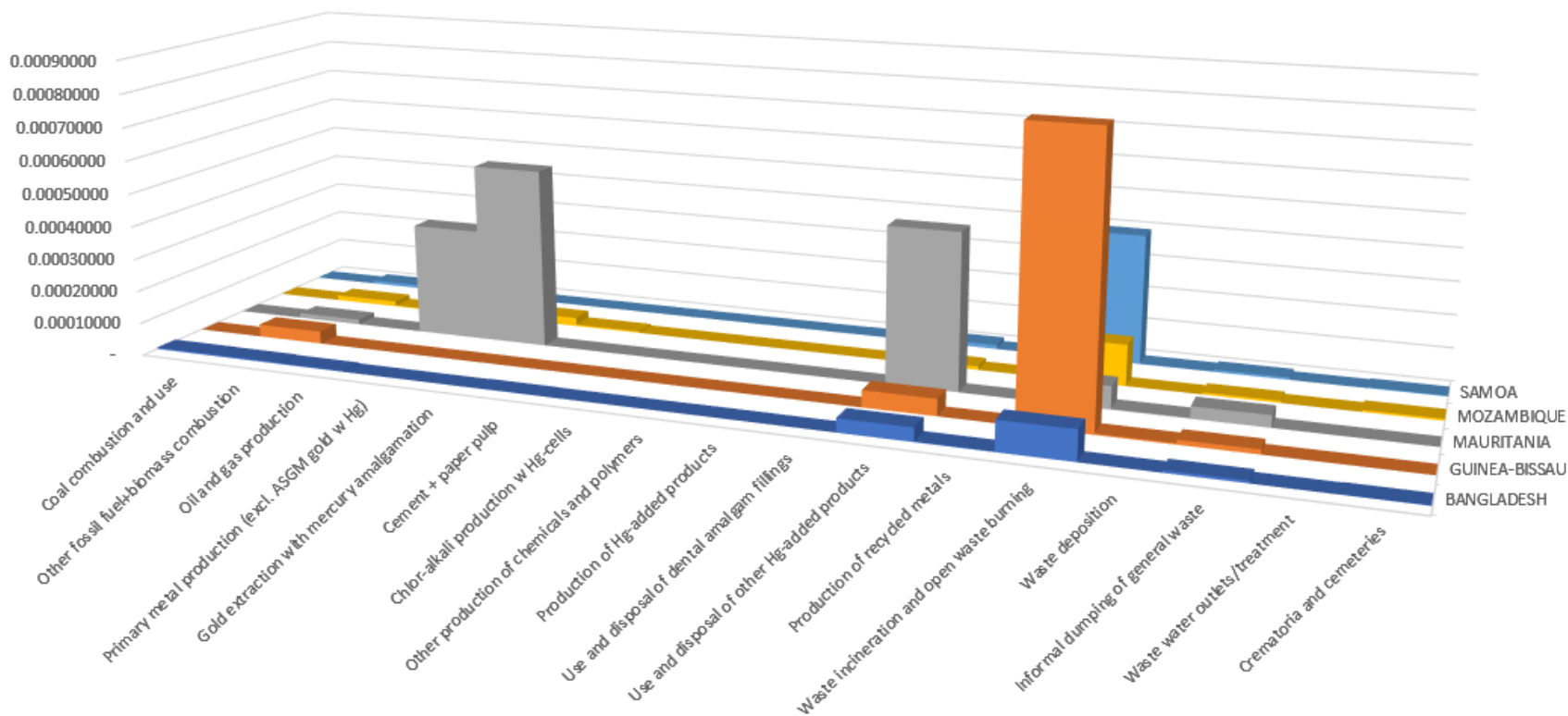
Mercury inputs to society, kg Hg/(capita\*y) - MA industrial gold div. by 3



# Results – mercury emissions

21Mar2019 results from  
MZ not yet re-reviewed

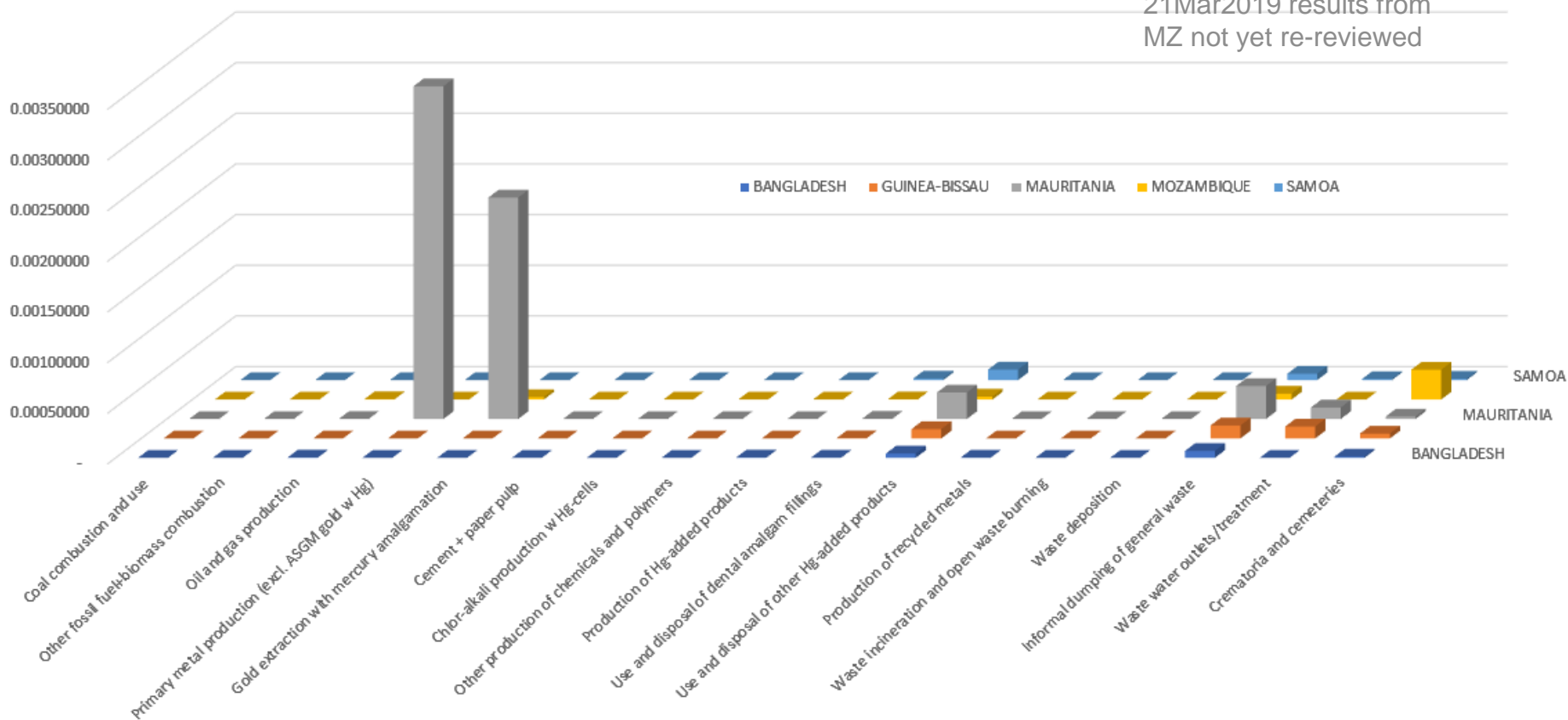
Mercury emissions to air, kg Hg/(capita\*y) - MA industrial gold div. by 3



# Results – mercury “releases”

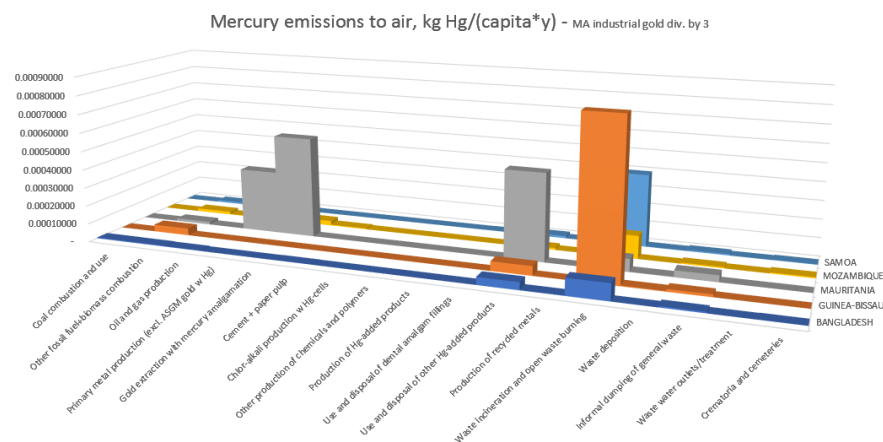
Mercury releases to water+land, kg Hg/(capita\*y) - MA industrial gold div. by 3

21Mar2019 results from  
MZ not yet re-reviewed



What we saw on charts:

- Industrial non-ferrous metal production and ASGM dominate, when they are present
- Other major sources are typically mercury-added products, open waste burning and informal dumping
  - Mercury-added products often underestimated due to lack of data



- Toolkit version differences: Waste input factors are under adjustment in the Toolkit
  - Implemented early in inventories for: SA, BD – reflected in MIA's
  - Not implemented in inventories for: MAU, G-B, MZ  
(but changed for MZ by JM 25MAR)



# Lessons learned

- Lack of national data:
  - Consumption data for some products:
    - Thermometers, share of Hg-containing
    - Switches and relays
    - Polyurethane with Hg catalysts
    - Biocides/pesticides
    - Paints (preservatives)
    - Pharmaceuticals
    - Cosmetics (skin-lightening creams)
    - Blood pressure gauges + other manometers
    - Laboratory Hg uses
    - Religious uses
  - Resulting in general underestimation of mercury inputs to society



- Lack of national data:
  - Mercury concentrations in waste + wastewater
    - Resulting in general overestimation of emissions/releases from waste treatment
  - Emission sources' filters and management solutions
  - National specific input and output factors
    - For improving accuracy
    - Only a few countries contributed with original factor data



- Reasons for lack of national data:
  - Lack of trust from data owners
  - Data collection is time-consuming; resource-intensive
    - Face-to-face meetings, inspections, measurements
  - In-experienced data collectors
  - Not all inventory personnel received training



- **Solutions:**

- Use international data, if available
- Use approximations and assumptions, accept uncertainty
- Assistance to collection of additional data in future updates/build-outs
  - Combined with additional training
- National training sessions allow for inclusion of all key persons and stakeholders
- Sufficient funding
- National set-up: Include key data owners through small data search contracts



- Incomplete products inventories
- Input factors for major emission sources, vary extensively in real world
  - For gold producing countries: Industrial gold production, Hg concentration in ores
- Input factors for waste and waste water
  - Virtually un-investigated in developing countries so far



# Conclusions

- ✓ Basic training performed
- ✓ First rough baseline established
- ✓ Key priorities for implementation of Minamata Convention identified
- ✓ Key priorities for further research identified
  - Improved products inventories
  - Measurements of concentrations in
    - Industrial gold ores
    - Municipal solid waste
    - Other non-ferrous metal concentrates
  - Measurements of mercury mass balances (fates) in same sectors/activities







# THANK YOU FOR YOUR ATTENTION

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