

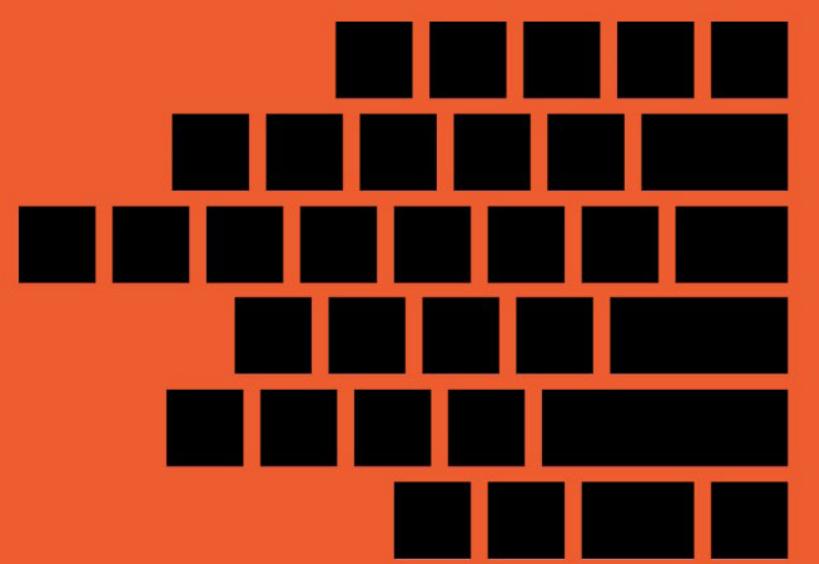
BANGLADESH A COUNTRY UNDERWATER

Bangladesh Rainfall Visualization

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Coding Fest 2020



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WHO ARE WE



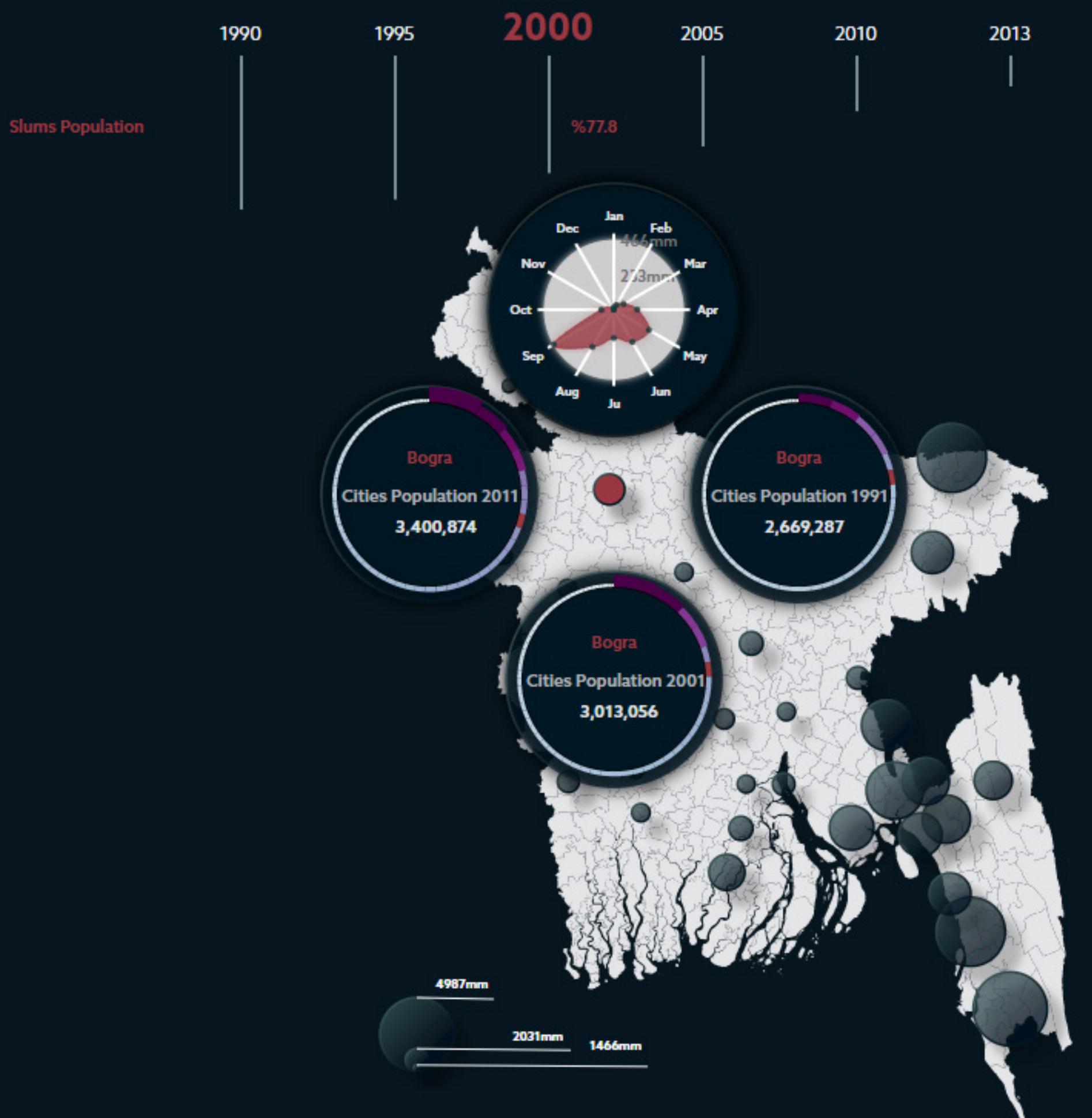
Amin Mohammadi
3rd Year Bachelor of Design
Computing



Heath McGregor
3rd Year Bachelor of Design
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1st Year Graduate of Bachelor of
Design Computing



UNICEF/Abash A child wades through water on her way to school in Kurigram district of northern Bangladesh during floods in August 2016.

BANGLADESH A COUNTRY UNDERWATER

This project has facilitated as an assignment for unit of study 'Information Visualization' from Architecture and Design planning faculty of the University of Sydney.

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This project is programmed in D3.js which is a very powerful JavaScript library for visualizing data sets and data mining.



THE FUTURE OF ASIA AND PACIFIC CITIES: Transformative Pathways to Achieve the 2030 Agenda for Sustainable Development Report

Infant mortality rates, and economic strifes across nations within the Asian-Pacific area.

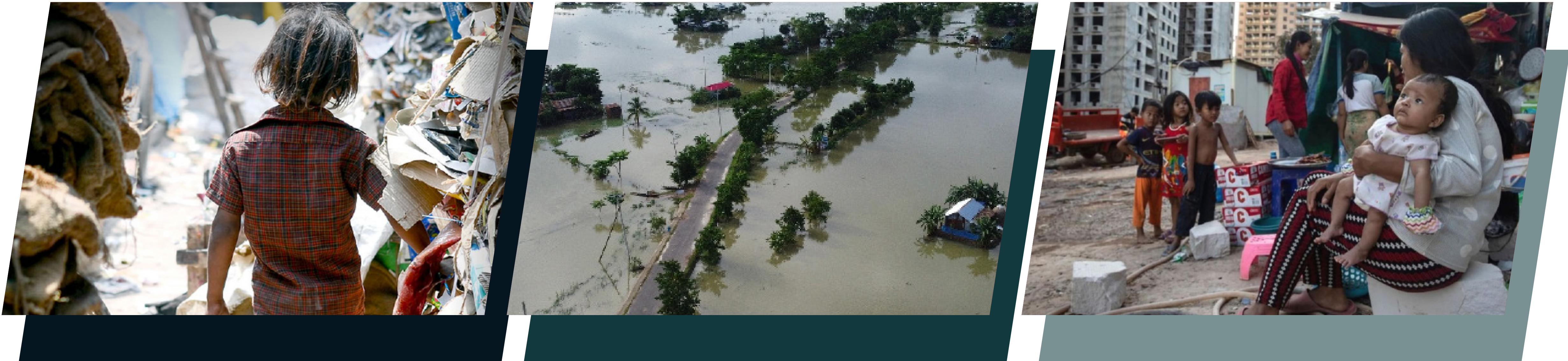
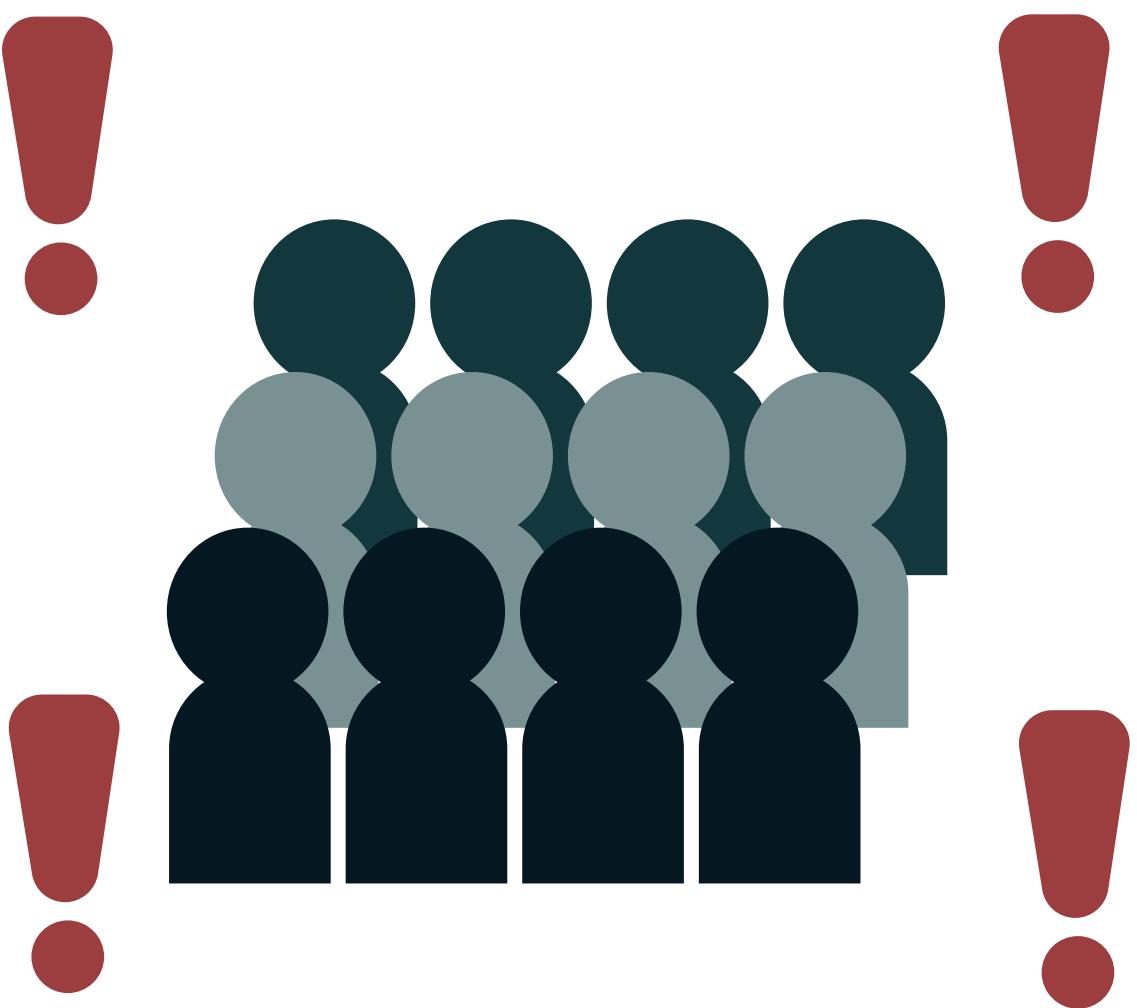


IMAGE FROM https://www.worldvision.org.hk/images/data/07_Learn/01_Issue/06_Poverty_in_Asia/issue_poverty-in-asia_intro_img0.jpg
https://assets.weforum.org/article/image/large_ORtyYm_TSdIgc6CJqVgwdYOB4JAtTJ1s__XVUcpEysg.jpg
https://www.aljazeera.com/mritems/Images/2020/7/14/505db66a03a145c6935b2cb162622e22_18.jpg

Where did we decide to focus?....

BANGLADESH





HIGH POPULATION DENSITY IN LARGEST CITY

RAPIDLY INCREASING URBAN POPULATION GROWTH

HIGH PERCENTAGE OF POPULATION LIVING IN SLUMS

HIGH INFANT MORTALITY FROM DROWNING

RAINFALL AND FLOODING IN BANGLADESH

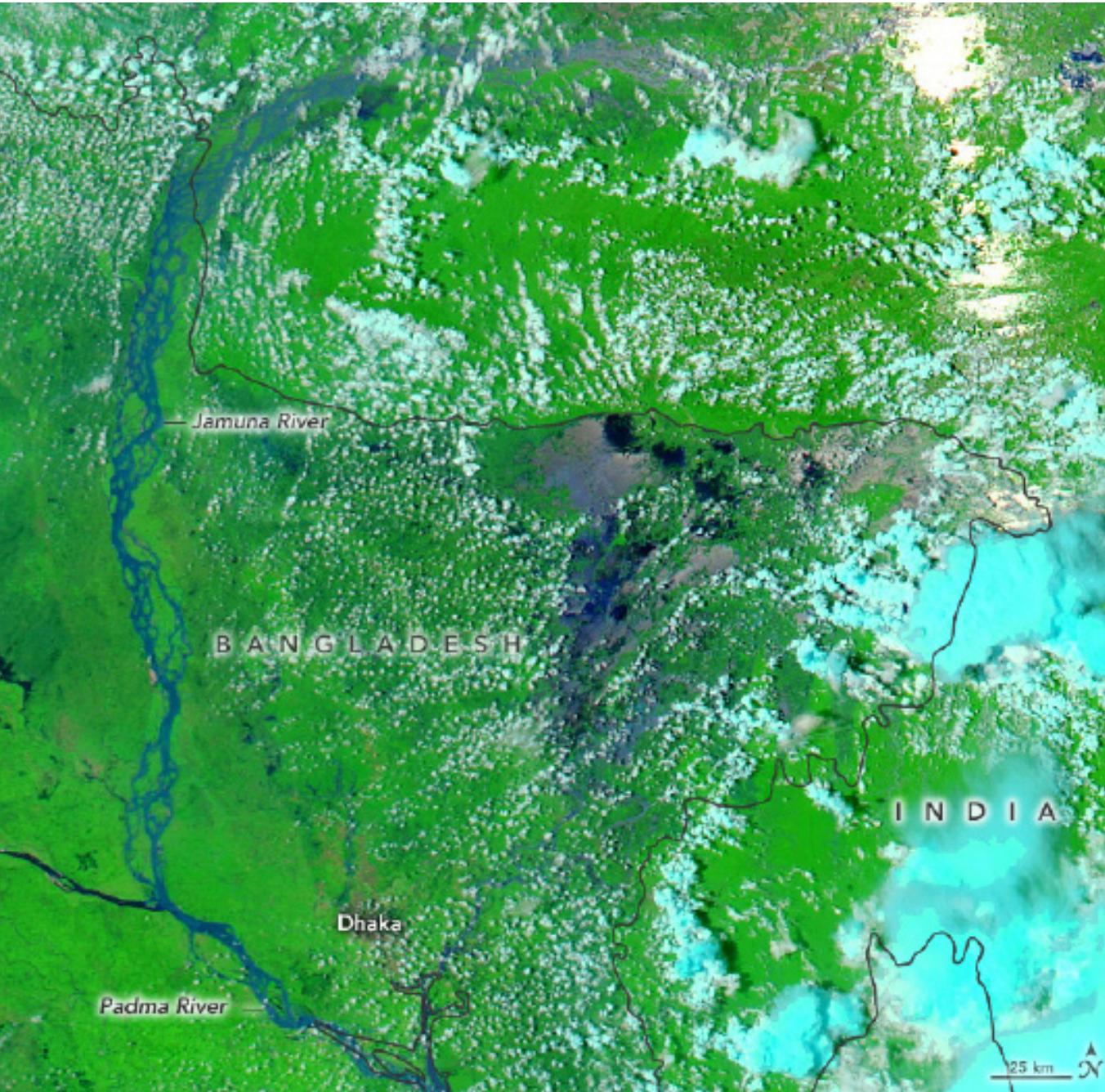


IMAGE FROM <https://www.bbc.com/news/business-52103666>

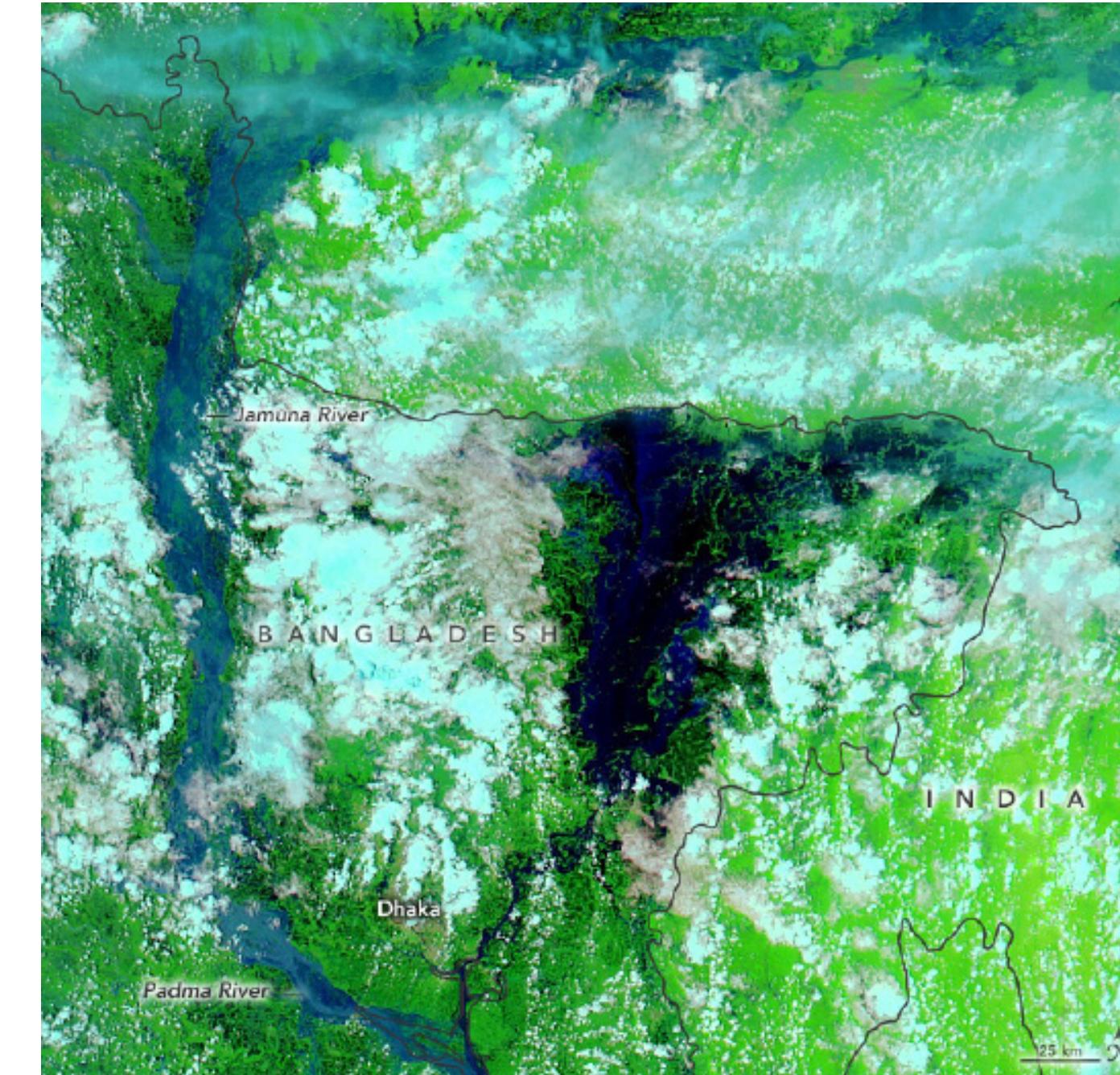


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July 2020 Flooding in Bangladesh



June 2020



July 2020

How to use what we discovered



Why is there such a high density of people in the capital city?

Why are people moving from rural areas to cities and living in inadequate housing?

Can something be done to prevent this from happening?

Is there a way to use data visualisation to help direct resources to where they are most needed?



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What we found

Urban migration to unsafe housing is often:

- Directly related to natural disasters, river erosion and recurrent flooding
- or indirectly whereby rural work opportunities are compromised resulting in better city-based employment opportunities especially in the ready-made garments sector.

Addressing Sustainable Development Goals



- Reinforce adaptive capacity and resilience to natural disasters and hazards related to climate change
- Improve capacity on mitigation, impact reduction, early warning and adaptation to climate change.
- Promote actions for enhancing capacity for better climate change-linked management and planning in the least developed nations
- More complex measurement metrics and systems are essential

Our Sources



Part of Bangladesh Open Government Data

Initiative aims to assist in achieving Sustainable Development Goals (SDGs)



Our World in Data

Open source research group that publishes, processes and collates data from the work of a global community of scholars

How this Visualisation can help address SDG 13



Geographically mapped rainfall allows comparison of location specific trends in irregular and extreme rainfall.



By comparing population growth across towns and cities with the rainfall data policy makers can see how these climate events have affected internal migration.



With this insight works can be planned for flood adaption measures in the areas in most need to prevent villagers from relocating to slum housing in large city centres, or to construct structural-engineering projects and housing projects in large city centres.

The Programming Language

We have used JavaScripts language because:

- Accessible to everyone.

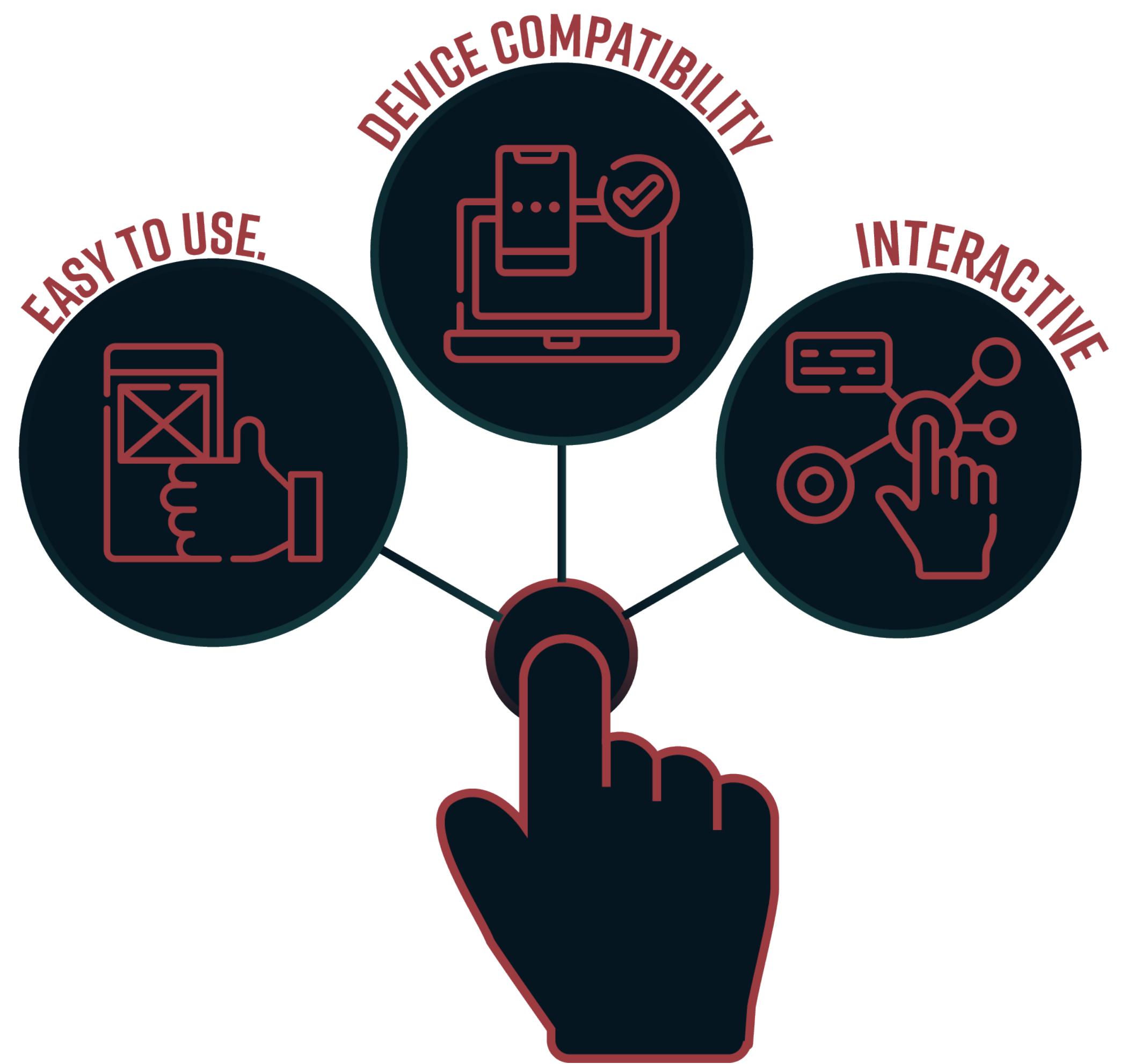


- Wide range of interaction resources using DOM

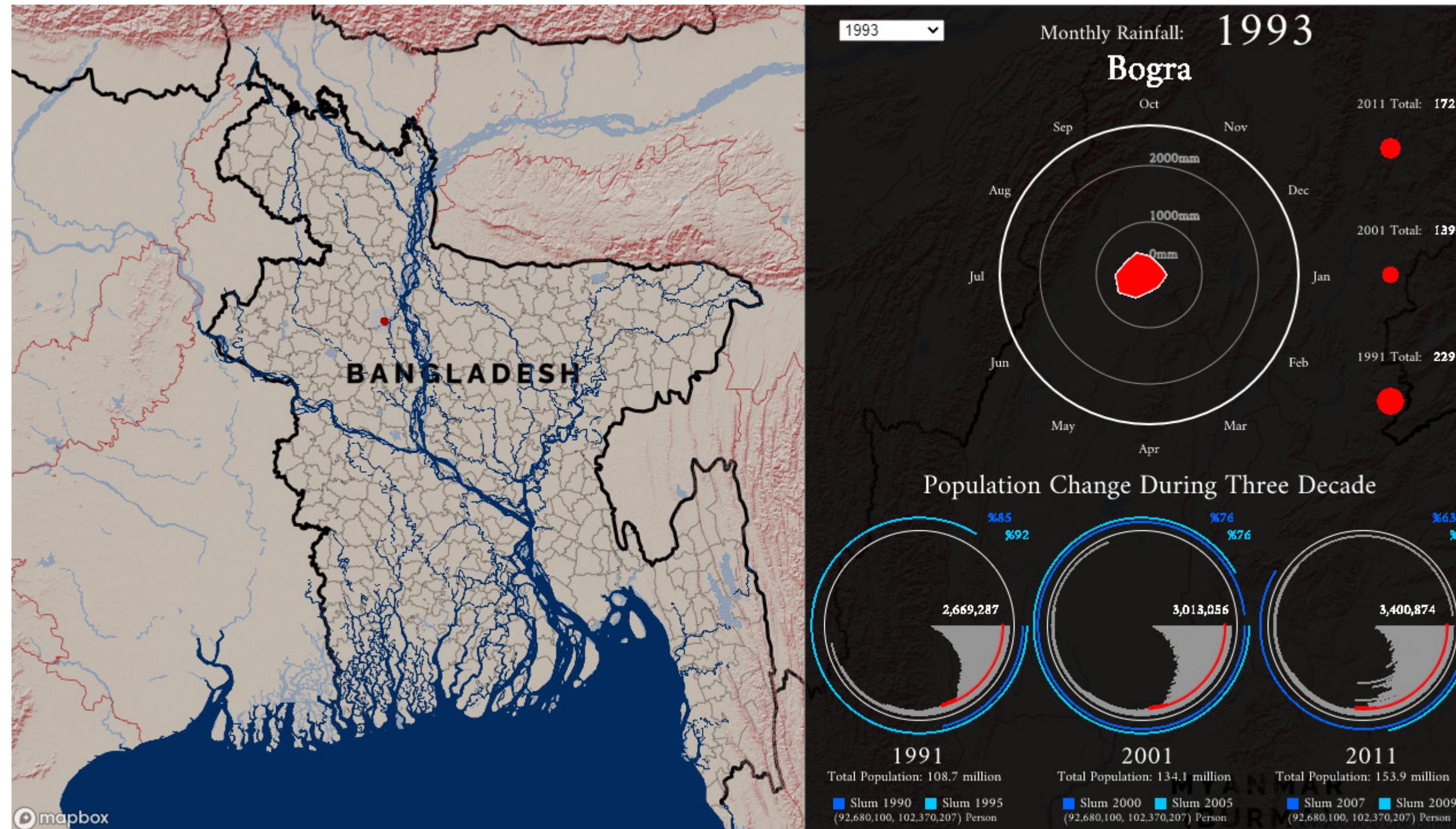
- Device compatibility

- Easy to use.

The Programming We have used JavaScripts



First library we started with developing in P5.js



p5.js is a JavaScript library for creative coding, with a focus on making coding accessible and inclusive for everyone.

- Full set of drawing functionality.
- Including HTML5 objects for text, input, video, webcam, and sound.

why to change library

developing the replica of the final version in D3.js

D3

**D3.js is a JavaScript library for
manipulating documents based on data.**

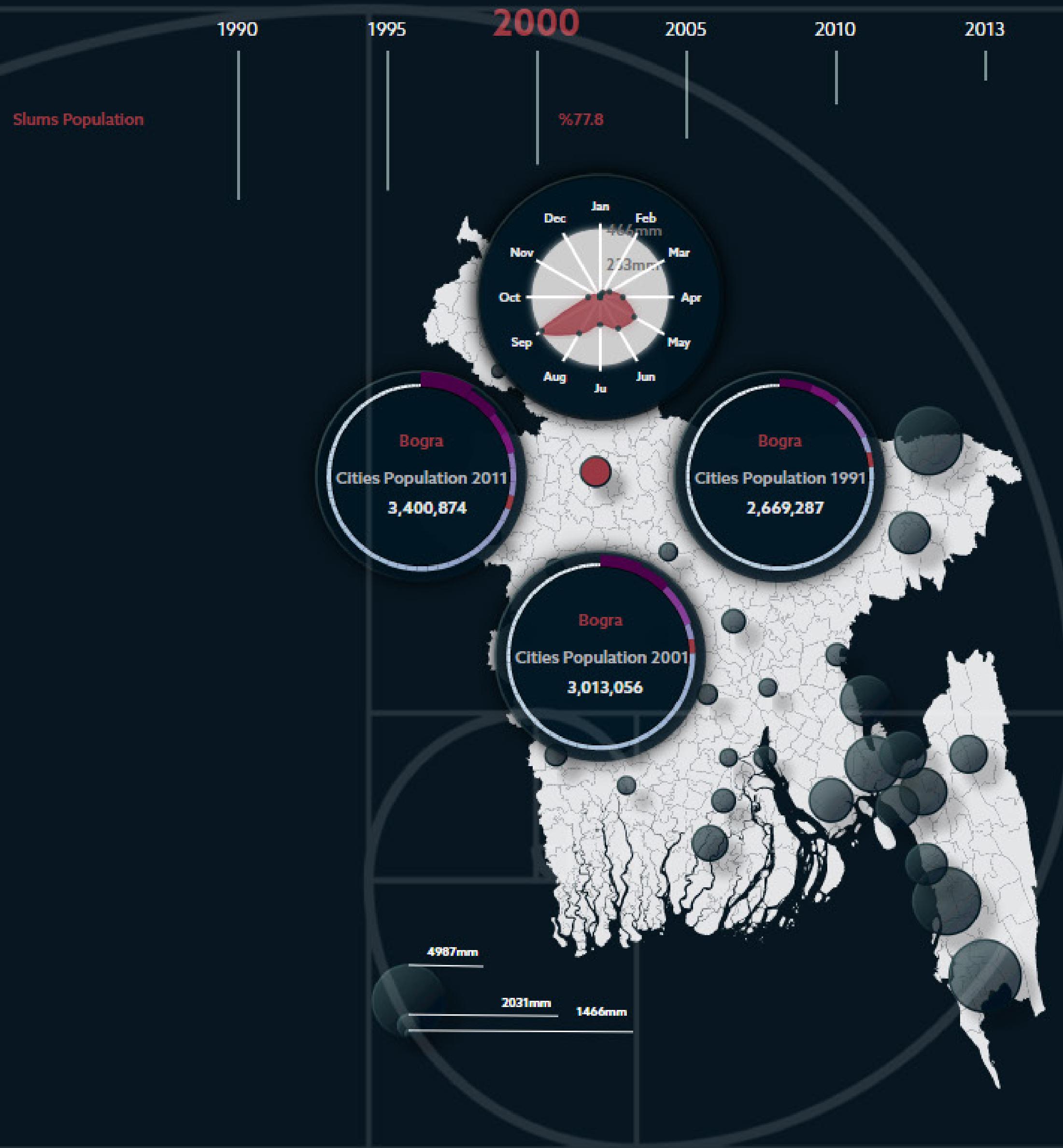
- HTML, SVG, and CSS
- D3's emphasis on full capabilities of modern browsers
- Splitting the SVG canvas to several groups
- Combining powerful visualization components
- Data-driven approach to DOM manipulation.

data structuring



- Plotting the map using GeoJson data
- Use of “geoMercator” function as projection function (latitude and longitude -to- X and Y positions)
- Four data reads Annual Rainfall, Monthly rainfall, Population, Slums Percentage.
- Radar Chart library by Alvaro Graves

USER INTRACTION explanation



- Color palette
- Golden ratio layout to enhance visibility
- Dynamic legend to improve visibility
- Dynamic graph visibility to enhance usability
- Cohesion of system by only using circles
- Dynamic colors to enhance awareness