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# Toward a Greener and more Livable Paramaribo

THE IMPORTANCE OF URBAN GREEN SPACES FOR SUSTAINABLE CITIES

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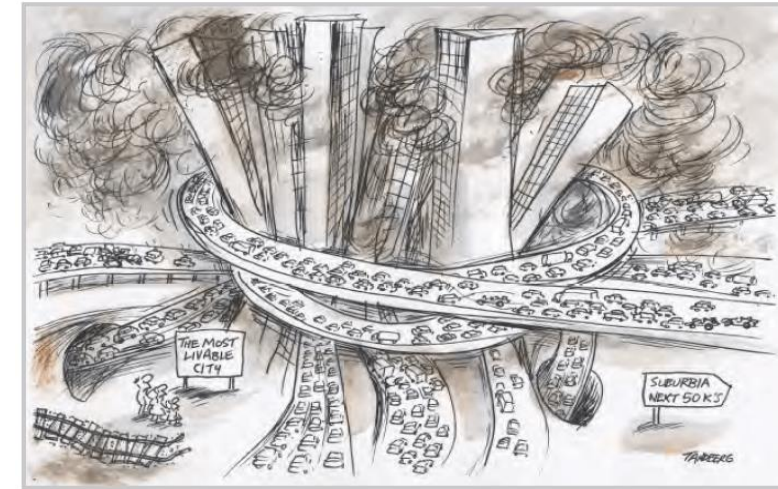
18<sup>th</sup> June 2021



**Caribbean Urban Forum 2021**

# Challenges with urbanization

- 55% of world population lives in urban areas
- Complexity: housing, infrastructure, environmental services, inequalities, human development, pollution, wellbeing...



Exacerbated by natural disasters and climate change effects

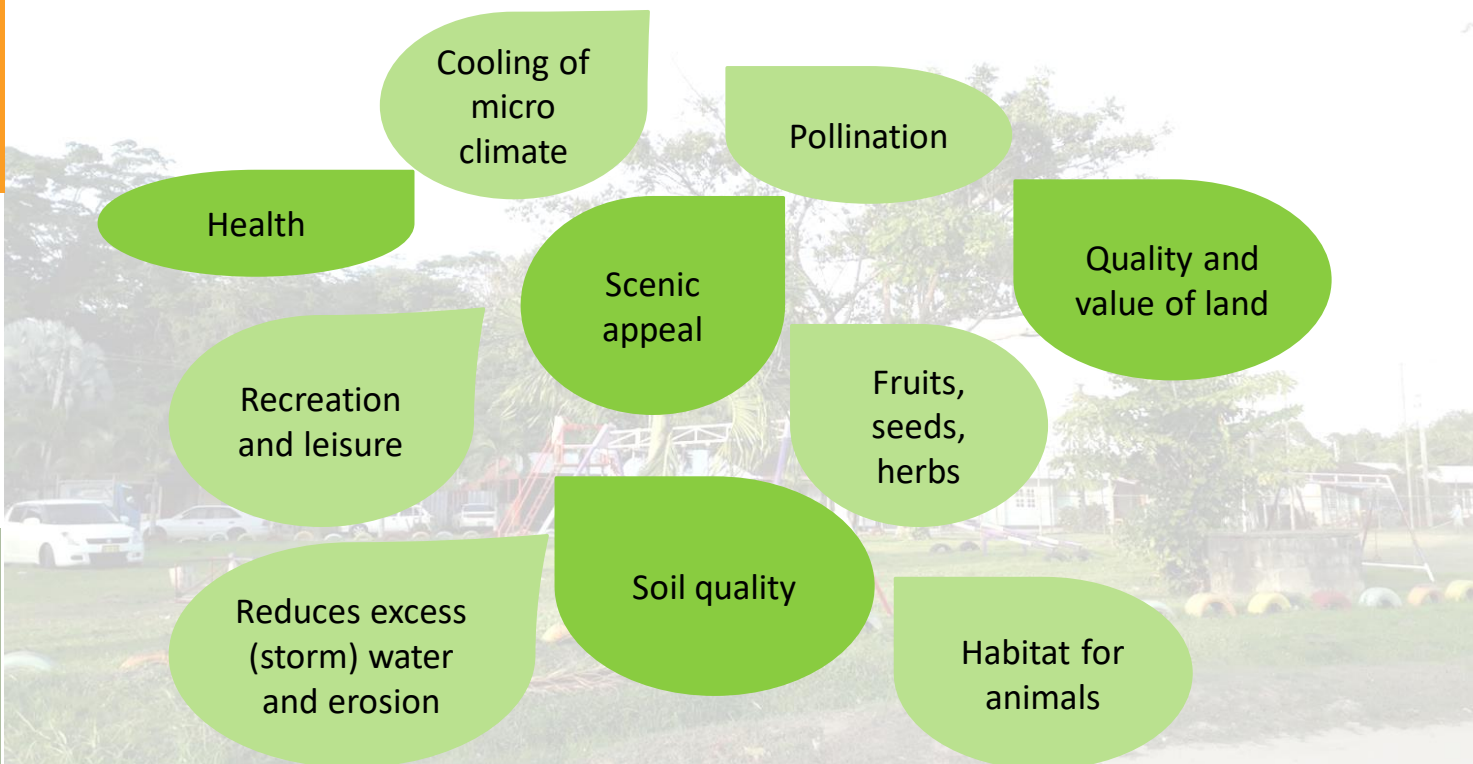
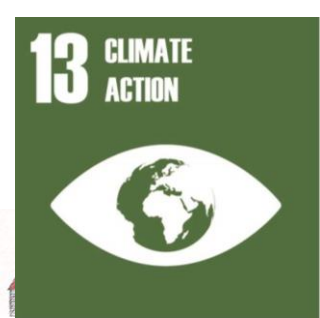
Implications for the livability of a city?

Open and public spaces, safety, health and wellbeing, culture, infrastructure, environment?



# Urban green spaces and ecosystem services

- Urban green spaces (UGS): Forests (fragments), street trees, parks, gardens, low vegetation and grass



# Urban context in Suriname

- More than half of the population lives in or in the surroundings of the capital Paramaribo (> 300,000 people).
- Uncontrolled urban expansion
- No structural approach for urban green space in the legislation



Cultuurtuin 2003,



2018 (Google Earth)



# Urban context in Suriname

Lack of greening policy in urban planning:

- Lack of (green) public recreation areas,
- Conversion of UGS for commercial projects
- 100% 'clearance of trees' in housing allotment areas,
- Large, old trees along streets replaced by asphalt and concrete,
- Soil sealing

Insufficient concepts and tools for future workforce

Low awareness of citizens on importance of UGS in everyday wellbeing

Lack of scientific knowledge on UGS in tropical cities

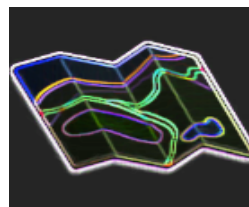
Limited knowledge and awareness of authorities

The benefits of UGS are insufficiently appreciated



# Toward a Greener and more Livable Paramaribo

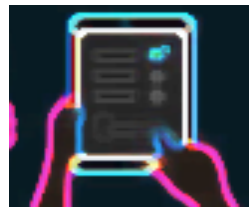
Enhance a green Paramaribo where ecosystem services contribute to a healthy and livable environment for its inhabitants



1. Improved knowledge: data and information available



2. Increased awareness



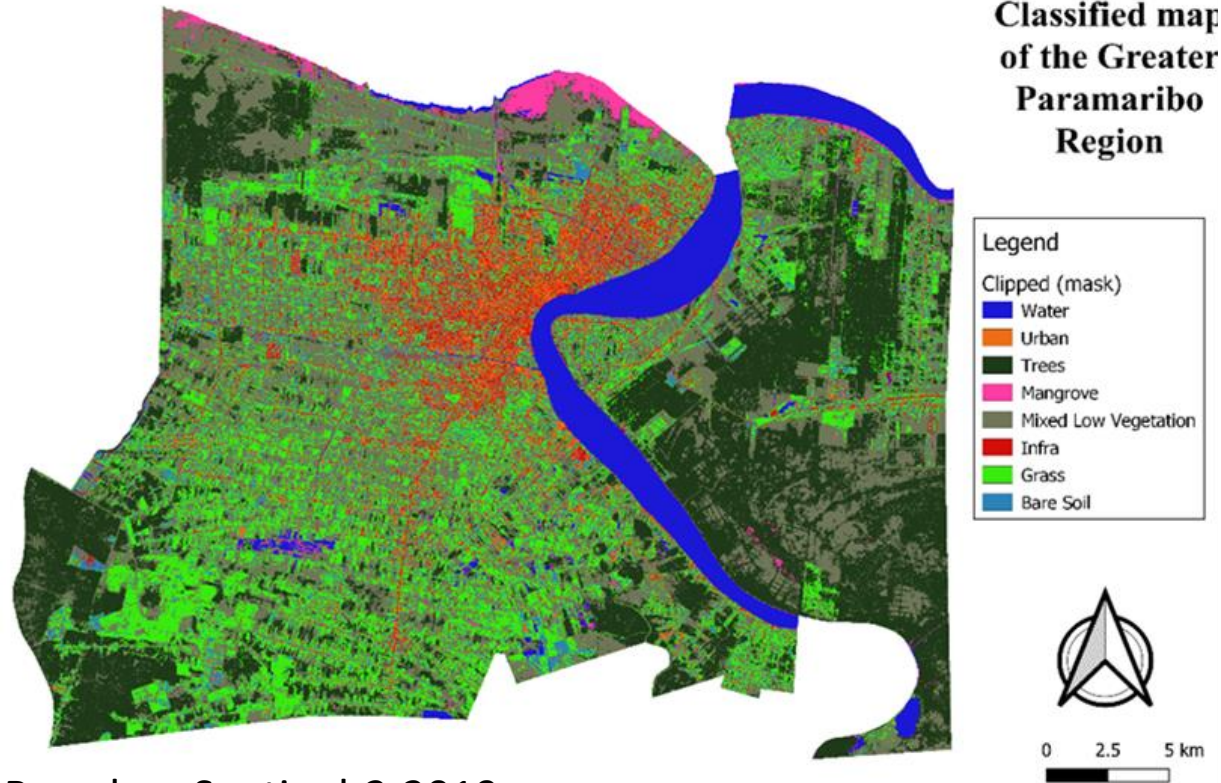
3. Maintaining existing UGS: monitoring



4. Education: capacitate (future) workforce

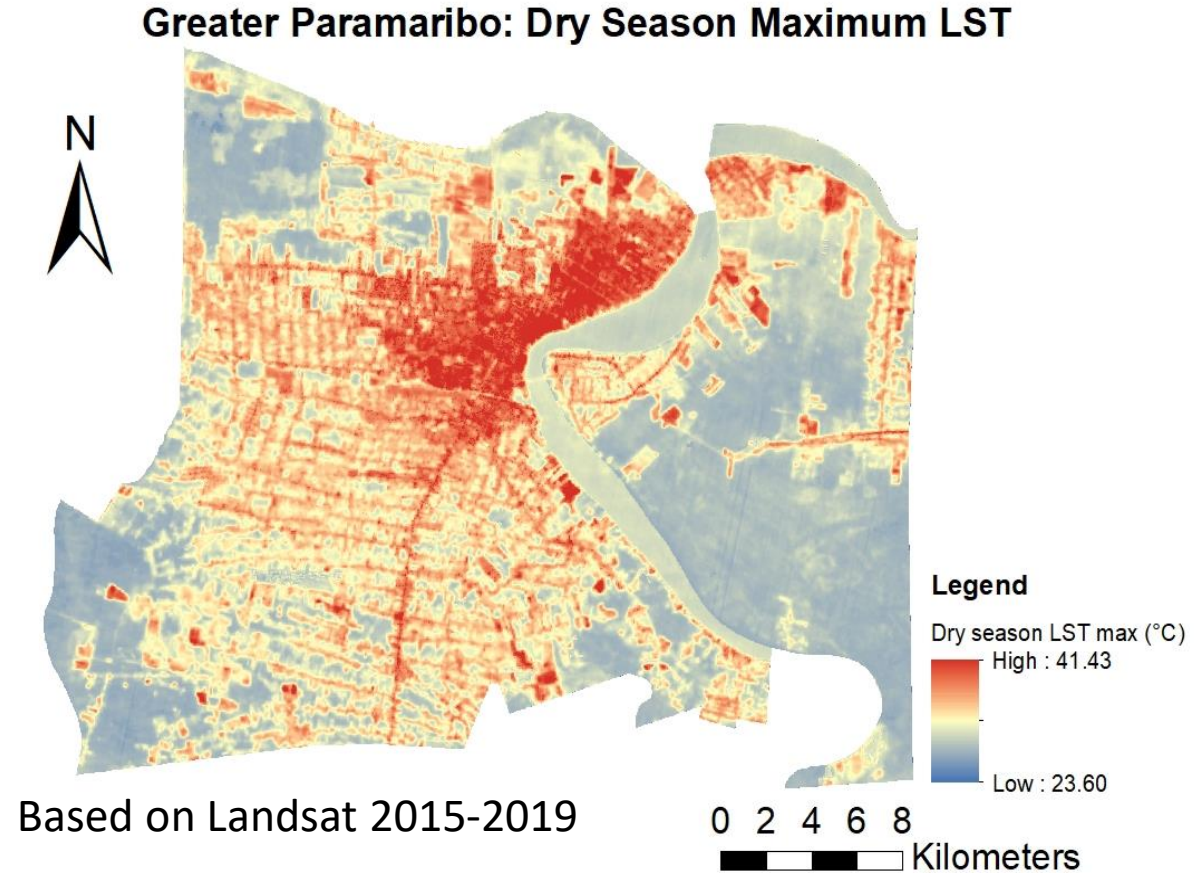


# 1. Data collection and sharing



Based on Sentinel-2 2019

*Razia Taus et al., 2020, Land cover map of the Greater Paramaribo Region 2019.*



Based on Landsat 2015-2019

*Tom Remijn et al., 2020, Maximum Land Surface Temperature in the Dry Season of the Greater Paramaribo Region 2015-2019.*



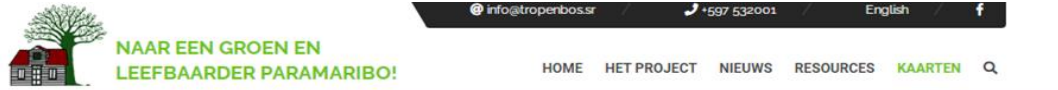
# 2. Engagement and awareness

- Policy-makers: collaboration, knowledge sharing, lobbying
- Stakeholders: knowledge sharing, strategic partnerships
- General public: awareness, education





# 3. Monitoring through citizen science

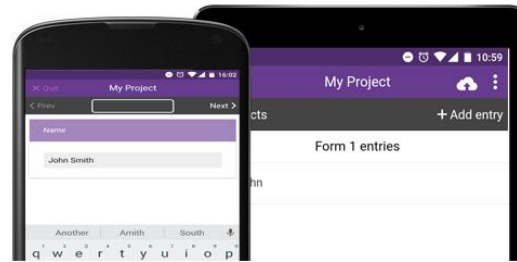
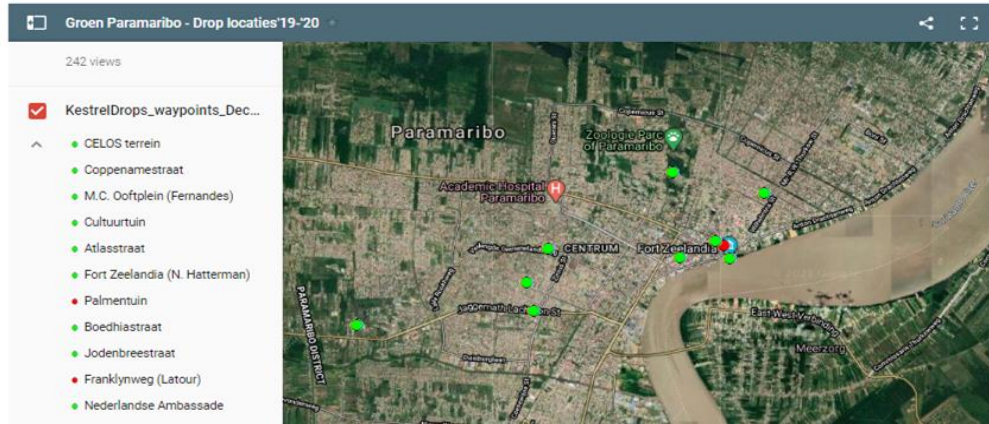


Groen Paramaribo launch **Verzameling klimaatdata**

## Verzameling klimaatdata via temperatuur metertjes

Een onderdeel van het project is het verzamelen van data en dit verwerken tot hapbare informatie voor relevante doelgroepen. Dit is belangrijk omdat er in Suriname weinig data en informatie is over stedelijk groen. Sinds juni 2019 hangen er enkele metertjes, 'temperatuur etjes', verspreid door Paramaribo om temperatuur en luchtvochtigheid in groene en minder groene, bebouwde omgevingen op te nemen. Helaas is van twee meters de data niet compleet, omdat deze op den duur zijn verdwenen.

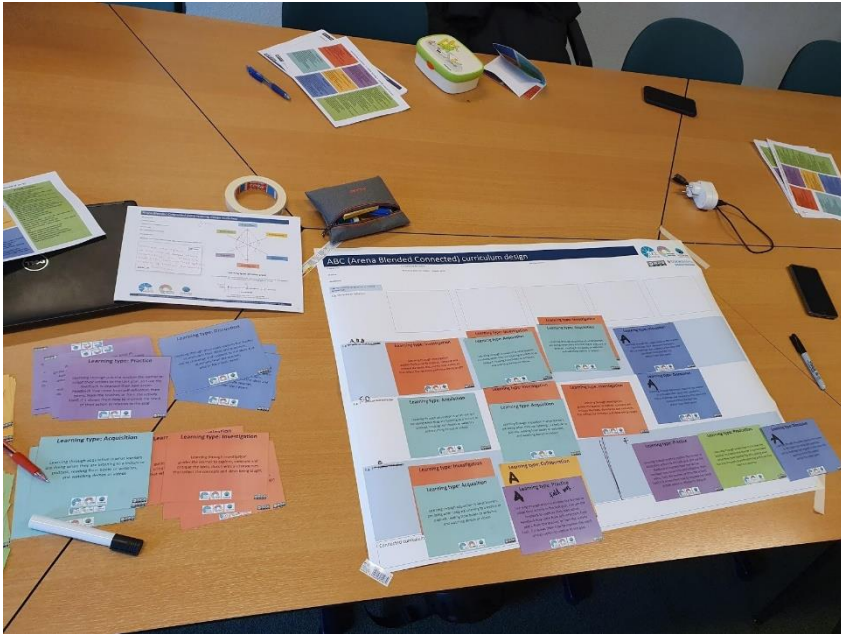
In deze kaart zijn ook de grenzen van de 12 ressorten van Paramaribo weergegeven.



- Cooling effect – Air temperature
- Urban green spaces – change, use, maintenance



# 4. Education material



## Multi-select

The authors provide two possible interpretations of "greenspace" for a more functional understanding. Mark the two that are correct.

- A) Urban green infrastructure
- B) Water bodies and vegetated areas, as a synonym of nature and antonym of urbanization.
- C) Nature-based solutions
- D) Vegetated open space in cities.

Show Feedback

Which aspects of "quality" of an urban green space did the authors find in their review? Tick all that apply.

- A Ecological integrity
- B Amenities (such as benches, paths) provided
- C (Perceived) 'naturalness'
- D Maintenance

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# Preliminary findings

*Paramaribo is quite green though, right?  
Yes, however....*

- Type and status of UGS
  - Ecosystem services: trees vs. low vegetation vs. grass
  - Accessibility, quality, disservices: private vs. public, abandoned land, maintenance
- Cooling effects
  - Urban Heat Island effect – needs to be triangulated with air temperature measurements
  - Cooling of air temperature in areas surrounding UGS – appropriate methods to consider various factors



# Preliminary findings (2)

## Main challenges

- Competing land use interests and needs
  - E.g. parking space, housing allotment
- Budgetary and policy provisions for adequate maintenance
  - Lack of capacity and coordination
- Negative perceptions
  - Disservices implicating safety, convenience, pests



# Toward resilient urbanization



## Further research:

- Perceptions, attitudes and preferences (gender, age, socio-economic class)
- Cooling effects on direct surroundings (multi-year citizen science)
- Tree species and ecosystem services
- Social inequalities

- Integration of UGS into spatial planning and housing allotment license requirements
  - Increase green public spaces, especially in neighborhoods
- Recognition of UGS and ecosystem services as a strategy for climate resilient and sustainable cities
- A tree management plan: The right tree in the right place
- A human approach to changing negative perceptions:
  - Health and mental wellbeing; food provision; income generation



*Define and design what a green and livable city means in our tropical, Caribbean context*



# Thank you!

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