

“The first Public Transport in Ulaanbaatar”

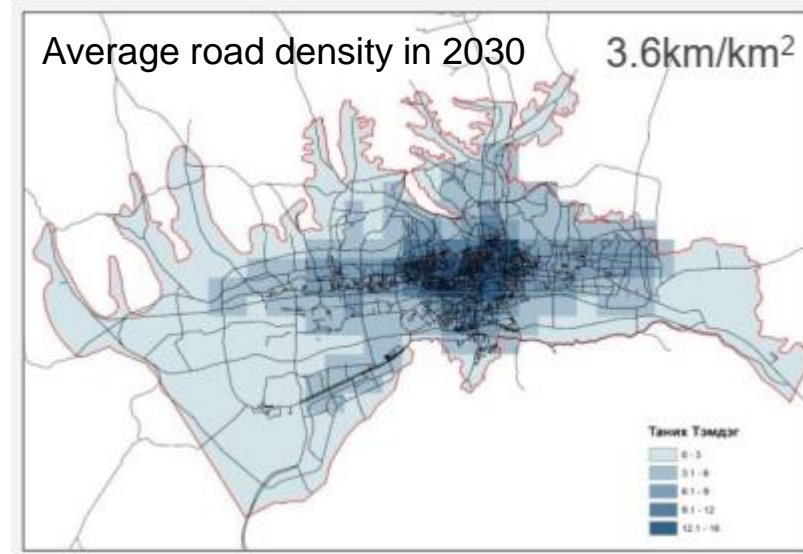
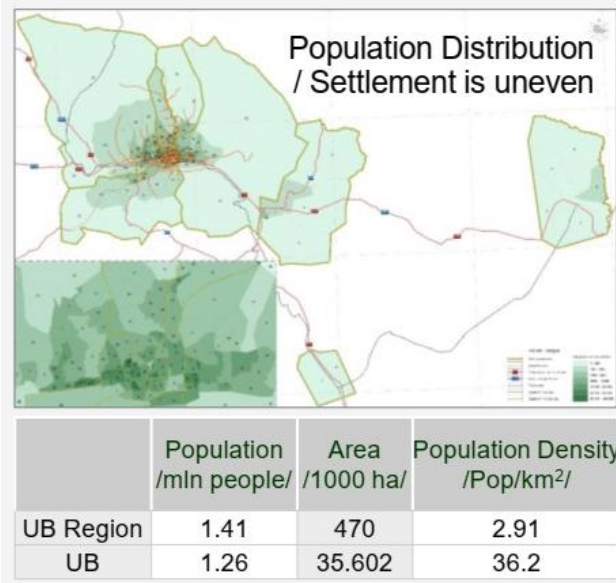
Designing a metro in a climate resilient way

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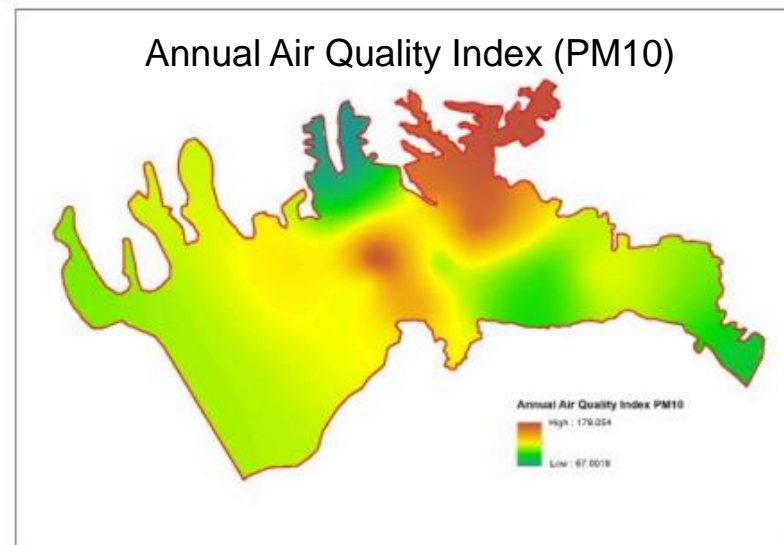
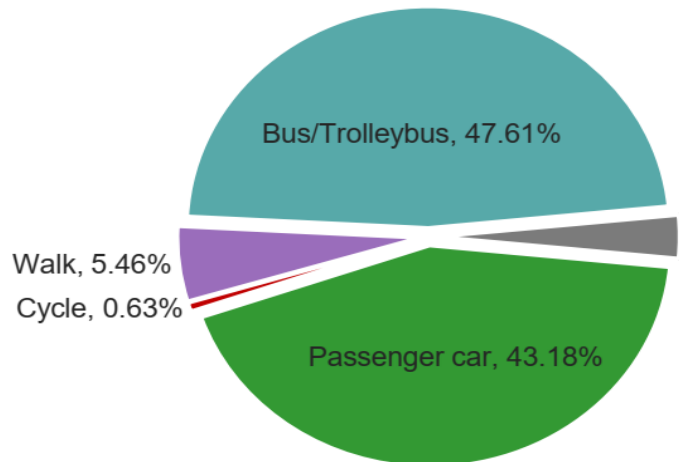
Key facts of UB related to traffic congestion



Prediction for without 'Metro'

Present	2030
Ratio of public transportation	40% → 25%
Number of vehicles	712,000 → 928,000
Peak time speed (km/h)	7~13 → 5
Daily road congestion length (km)	97.3 → 200

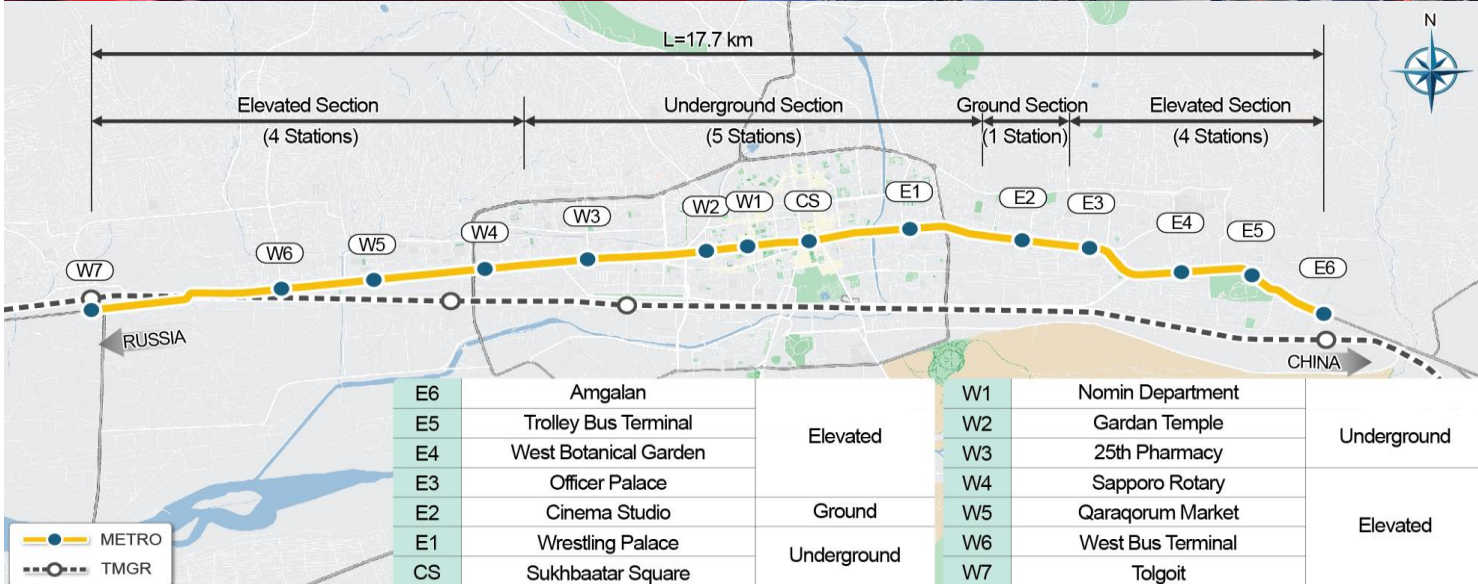
Share of public transport in commuting



Project Overview on 'Metro Line 1' in Ulaanbaatar



- Lengths: 17.7 km with 14 stations
- Capacity: 17 ~ 26 thousand passengers per hour (peak time)
- Rolling stocks: 90 cars
- Construction period : 60 months (est.)



How would the first metro in Ulaanbaatar help address climate change? (1)



- Reducing Air Pollution
 - A metro system can reduce the number of private vehicles on the road, leading to lower emissions and improved air quality.
- Lowering Greenhouse Gas Emissions
 - Public transport systems like metros emit significantly less CO2 per passenger kilometer compared to private cars
- Improving Traffic Congestion
 - A metro system can alleviate congestion by providing a reliable and efficient alternative to road transport, thus reducing the time and fuel wasted in traffic jams.
- Enhancing Climate Resilience
 - The metro system can be designed to withstand extreme weather conditions, which are becoming more frequent due to climate change.

How would the first metro in Ulaanbaatar help address climate change? (2)



- Supporting Equitable Access
 - A metro system can provide affordable and reliable transportation options for all residents, including those in low-income areas.
- Encouraging Sustainable Urban Development
 - The introduction of a metro system can promote higher-density, mixed-use development around stations.

By integrating these strategies, the metro system in Ulaanbaatar can play a crucial role in mitigating climate change and enhancing the city's resilience to its impacts.

How can a metro be designed to be climate resilient way? (1)



"climate resilient design" involves key considerations for making a metro system resilient:

- **Redundancy and Reliability:**
 - **Infrastructure.** Use multiple, redundant systems for critical components like power supply and communication. For instance, have backup power sources (e.g., generators) and alternative signaling systems.
 - **Rolling Stock:** Maintain a diverse fleet of trains to avoid service disruptions due to breakdowns.
- **Flexibility and Adaptability:**
 - **Modular Design:** Design the system so that new technologies or changes can be integrated with minimal disruption. For example, modular stations and track sections can simplify upgrades.
 - **Scalable Capacity:** Plan for future growth by designing stations and tracks that can accommodate increased passenger volumes or additional trains.

How can a metro be designed to be climate resilient way? (2)



- **Robust Maintenance and Monitoring:**
 - **Predictive Maintenance:** Implement sensors and analytics to monitor the health of the infrastructure and rolling stock, enabling proactive maintenance before failures occur.
 - **Regular Inspections:** Conduct routine checks and maintenance to address wear and tear.
- **Passenger Communication and Support:**
 - **Real-Time Information:** Provide real-time updates about train schedules, delays, and service changes through digital displays and mobile apps.
 - **Emergency Response:** Develop and clearly communicate emergency procedures. Train staff to handle emergencies efficiently and ensure passengers are informed.

How can a metro be designed to be client resilient way? (3)



- **Safety and Security:**
 - **Surveillance and Security:** Install CCTV cameras and employ security personnel to ensure safety. Implement measures to handle various threats, including physical and cyber attacks.
 - **Disaster Preparedness:** Plan for natural disasters and other emergencies by developing evacuation plans and ensuring infrastructure can withstand extreme conditions.
- **Sustainability and Environmental Considerations:**
 - **Energy Efficiency:** Design energy-efficient systems and consider renewable energy sources to reduce environmental impact.
 - **Green Infrastructure:** Use sustainable materials and practices in construction and operation.

By focusing on these areas, a metro system can be designed to be more resilient, ensuring it continues to meet the needs of its users even in the face of various challenges.