

# Asian Development Bank and Emerging Technologies for Green Transport



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ADB

*Session 3: Emerging technologies to advance green transformation of transport sector in North and Central Asia  
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# Leveraging resources to transform a city

## Grant resources

- ADB trust funds
- External trust funds

\$0.5-1 million

Prefeasibility  
/ Feasibility

## Grants and loans

- Project Readiness Financing
- Small Expenditure Financing Facility

\$2-10 million

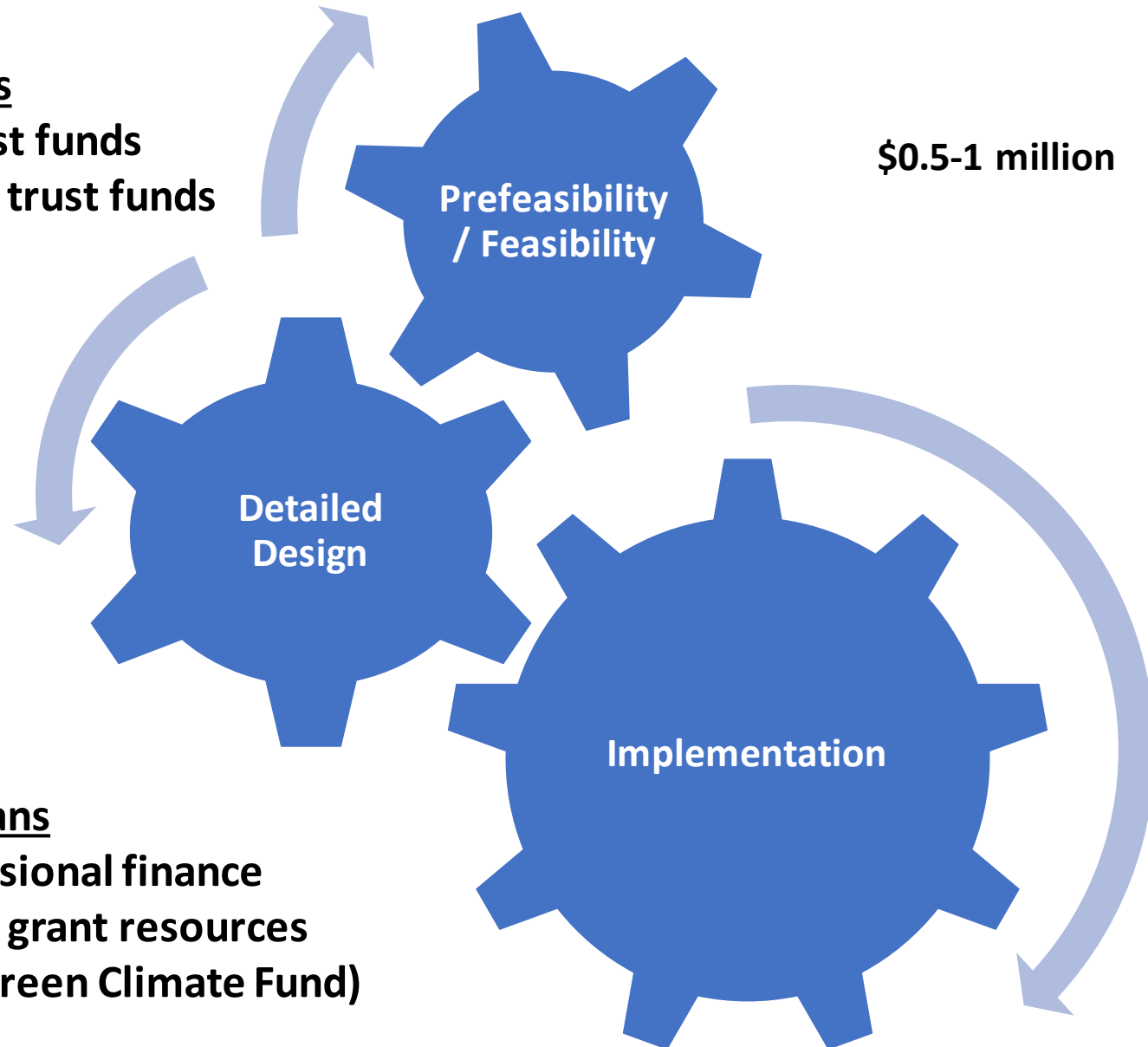
Detailed  
Design

## Grants and loans

- Concessional finance
- Special grant resources (e.g., Green Climate Fund)

\$30-500 million

Implementation

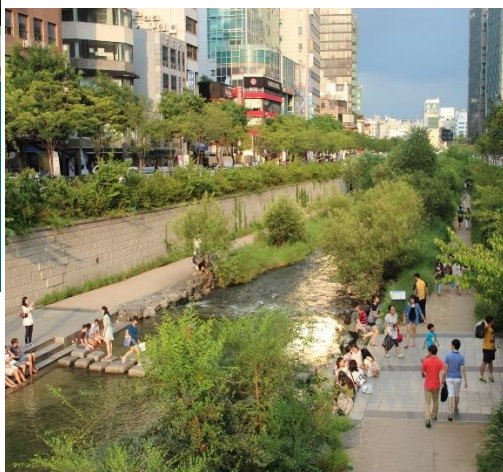


# ADB's approach to integrated urban mobility

## Комплексный подход к городскому транспорту



1. *Public Transport*  
*Общественный транспорт*



2. *Non-Motorized Transport*  
*Общественные места, прогулки и езда на велосипеде*



3. *Traffic Management*  
*Управление движением*



4. *Parking Management*  
*Управление парковкой*



5. *Institutional Development*  
*Институциональное развитие*



# Integrated Urban Transformation

**Urban transport**



**Third-generation BRT**

**Climate resilience**



**Bioswales**

**Environmental sustainability**



**Air and noise quality**

**Social sustainability**



**Community development**

**Energy**



**Biogas energy plant**

**Urban agriculture**



**Community farming**

**Historical restoration**



**Building restoration**



**Non-motorized transport**



**Permeable pavements**



**Waste management**



**Gender mainstreaming**



**Energy efficiency**



**Circular economy water recycling**



**City center revitalization**



**Transit-oriented development**



**Integrated utility relocation**



**Ocean cleaning**



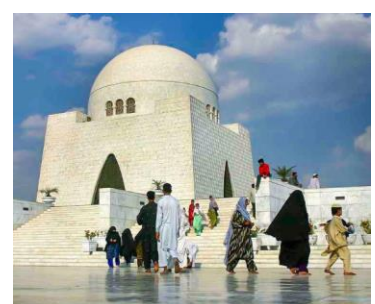
**Universal accessibility**



**Electric feeder vehicles**



**Compost production**



**Tourism promotion**



**GREEN  
CLIMATE  
FUND**

**[www.greenclimate.fund](http://www.greenclimate.fund)**

## **ADB E-Mobility Program**

**Collaboration between ADB and GCF**

**Armenia, Georgia, Indonesia, Kazakhstan,  
Kyrgyzstan, Nepal, Uzbekistan**

**GCF total funding:**

**\$170 million**

- \$65 million grant**
- \$105 million concessional loan**



# Eligible areas for GCF funding

1. Climate resilience (bioswales, sun canopies)  
Grant

2. Infrastructure (busways, cycle ways)  
Grant and loan

3. Electric bus fleet and charging  
Loan

4. Technical assistance (planning and design)  
Grant



# 1. Almaty EcoMobility Project

- i. E-bus fleet of 40 vehicles
- ii. Busway corridor construction
- iii. Depot upgrading for e-buses
- iv. Non-motorized transport
- v. Transit hub facility







**Depot upgrades in Almaty to:**

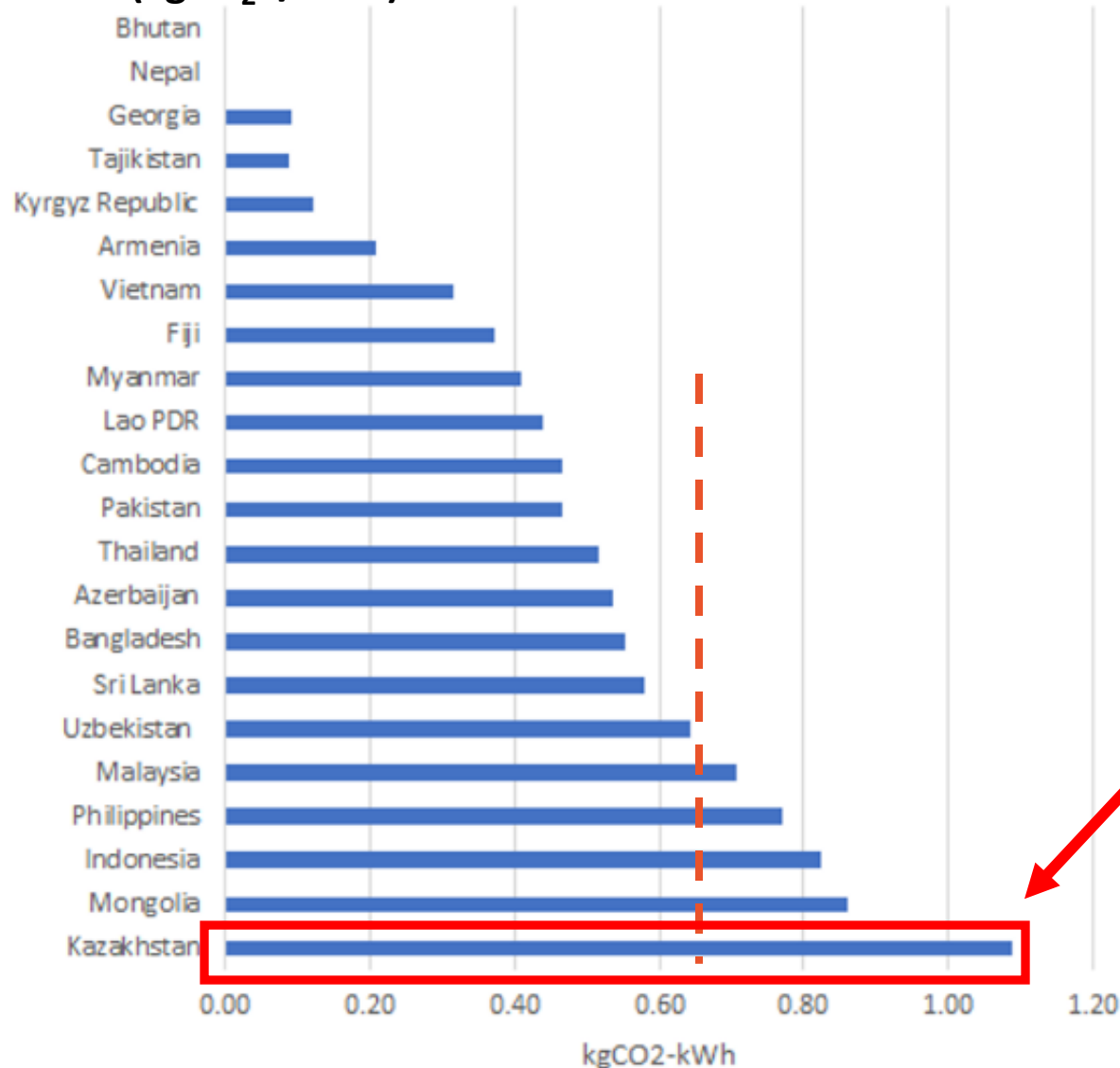
- Modernize facilities**
- Add charging equipment.**





# e-Mobility and greenhouse gas emissions

Grid Factor of selected ADB developing member countries in 2019  
(kgCO<sub>2</sub>e/kWh)



The high carbon intensity of power generation from the Kazakhstan grid means that e-vehicles will increase greenhouse gas emissions without offsetting measures.



# Offsetting emissions by providing solar photovoltaic panels over depot parking

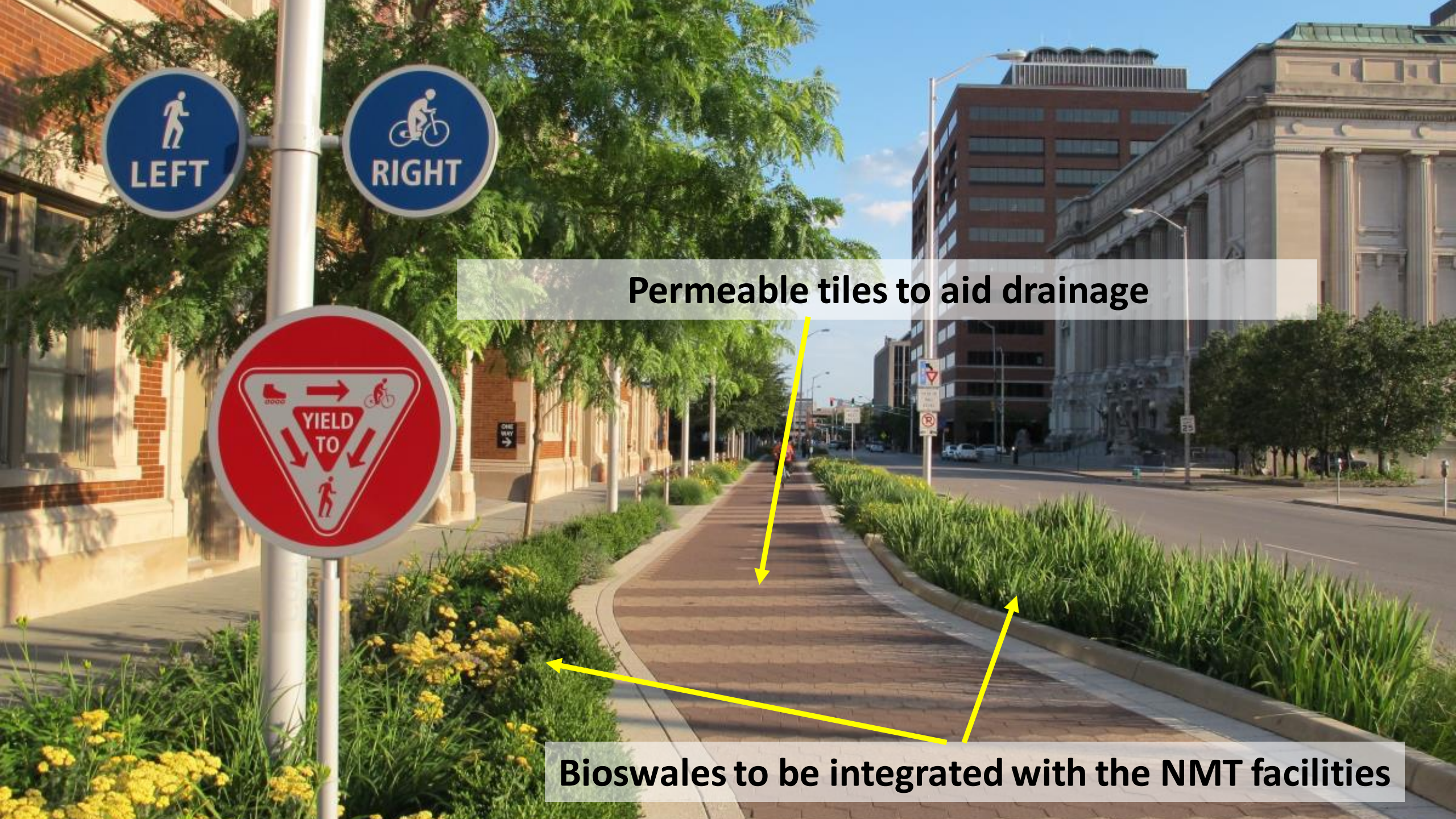




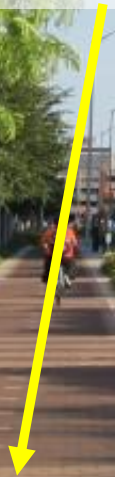
# Almaty: Urban space enhancements







**Permeable tiles to aid drainage**



**Bioswales to be integrated with the NMT facilities**



## 2. Bishkek Electric Bus Project



### ADB's investment to Bishkek, Kyrgyzstan

- Fleet of 120 electric buses
- Retrofitting depots for electric buses
- 3.5-km green corridor development

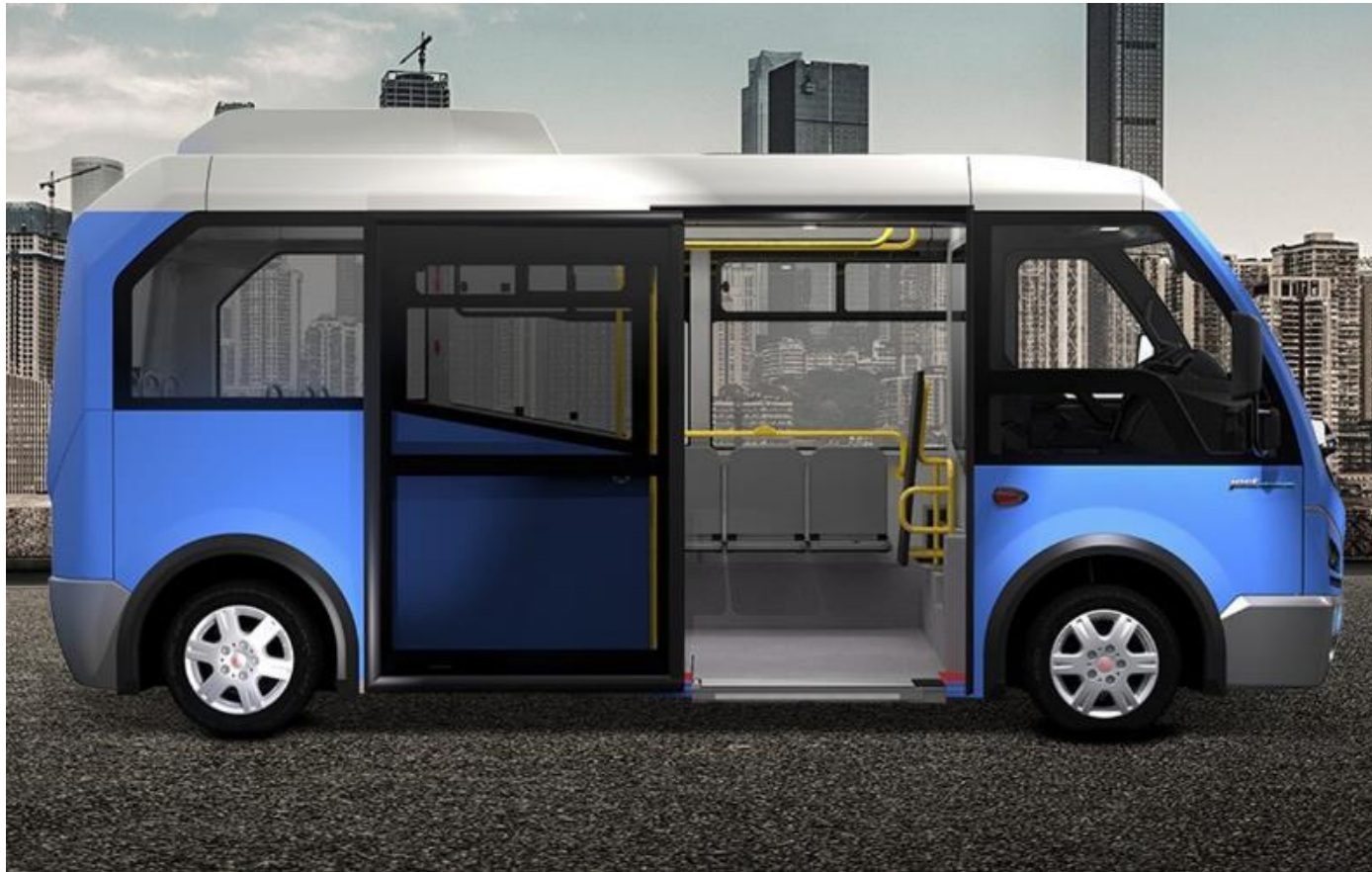






# C. Dushanbe EcoMobility Project

## Transforming van services with electric minibuses



5.8-meter minibus, Karsen (Turkey)





# Electric three-wheelers for last-kilometer connectivity





**Micromobility for the last kilometer**

**Peshawar: Pakistan's first bicycle sharing system**







# Fiber optic deployment as a non-fare revenue source



## Public transport corridor: Additional revenues

1. Mobile antenna space on street lighting
2. Fiber optic conduits along corridor





# *Transforming cities with sustainable mobility*



Thank you

ADB