Beijing Traffic Jam

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Presentation Overview

- China population, economy, infrastructure
- Highway system
- Traffic Jam
- Problems Identified
- Potential Solutions
- Q&A
Population

- 1.3 billion people
- 72% of population
- 43% live in urban areas
Economy

- Major advances
- Rapidly growing private sector
- Foreign investment increase
- GDP
- Development
- Challenge: environment
- Goal: energy
Infrastructure

• 500 airports
• 3rd largest railway system
• 3.5 billion kilometers of road
China’s Highway System
About the Highway System

- Series of trunk roads
- Sometimes tolls
- 000, 100, 200, 300 series
Highway System History

- 1913- First Modern Highway
- 1998- Major construction
- 2005 - 17 million cars
- 1988- First Expressway
- 2000 - 6.25 million cars
- 2006 - 24,480 miles expressway; 2.15 million miles highway
- 2020: 53,000 expressway miles
National Highway 110

- Beijing-Tibet Express
- Beijing to Huai’ and Jining
- Major artery for supplies
China Traffic Jams

“Traffic jams are one of the norms in the expanding Chinese economy”
August 2010 Traffic Jam

- August 14, 2010
- Highway 110
- Snail’s pace traffic
- Over 100 km (60 miles)
- Expected duration
Testimonies

• Price of food sky-rocketed
• Stuck for days
How it ended

• Went away for no apparent reason:

  "If you pour rice through a funnel, at some point it may become jammed. But once you can unjam that, eventually it will start working its way out again."
What Caused the Jam?
Cause #1: Coal-Carrying Trucks

Trucks from Mongolia doubled the capacity entering Beijing.
Cause #2: Increasing Cars on Roads

2,000 new cars per day

Poor public transportation

Demand > Capacity
Other Causes

- Poor road planning
- Broken down vehicles
- Peak-season travel
Challenge 1: Limited Roads

- Roads in Southwest China are limited
  - Taking back roads isn’t an option
  - Lack of small state and country roads
  - Alternative routes are much longer, expensive
Challenge 2: Meeting Demand

“If people mostly get around in personal vehicles, no matter how you expand the capacity of the roads, demand will exceed the capacity almost over night”

2,000 new cars a day = new lane every day.

Traffic could slow; < 15km/hr.

7 million vehicle capacity
Challenge 3: Braess Paradox?

Is the current situation (traffic jam) better than adding new roads?

- Only a fleeting impact on easing congestion
- New roads lead to more travel
- Many drivers who had shifted their trips resume previous patterns and converge onto new highways

- Spread traffic out more evenly
- Measure demand more accurately

12/10/10
Potential Solutions
Solution: Railroads

“Special railway should be built to transport coal from Inner Mongolia. Adding that railway would be the most efficient and environmentally friendly way for energy transportation”

- 42,000km new tracks by 2020
- Massive amounts of stimulus
Solution: Straddle Bus

- Two levels
- Runs above car and under overpass
- Electric and solar power
- 60km/hr.; 1200-1400 passengers
- Saves road space; efficient
- Can reduce up to 25-30% of traffic jams
- Safety precautions
- 86km track construction
Solution: Energy Transportation

- Convert coal to electricity locally
- Send energy
Summary

“The root of the problem is that transportation network planning and construction lag behind demand.”

Causes: Increased demand, coal trucks, construction

Solutions: Railroad, Straddle bus, transport energy