Beijing Traffic Jam

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Presentation Overview

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

- 1.3 billion people
- 72% of population age between 15-64
- 43% live in urban areas
Economy

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

• 2000 – 6.25 million cars

• 1988- First Expressway

• 2005 – 17 million cars

• 2006 - 24,480 miles expressway; 2.15 million miles highway

• 2020: 53,000 expressway miles
National Highway 110

- Beijing-Tibet Expressway
- Beijing to Huai’ and Jining
- Major artery for supplies
August 2010 Traffic Jam
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 skyrocketed
- Stuck for days
- Drivers played cards
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
Cause #2: Increasing Cars on Roads
Other Causes

• Poor road planning
• Broken down vehicles
• Peak-season travel
Challenges
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 routs 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.
- 6.7 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 highway

- Spread traffic out more evenly
  - Measure demand more accurately
  - Weave multiple modes
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; high capacity
- Can reduce up to 25-30% of traffic jams
- Safety precautions
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
Thank you!

Questions?