



**Our products  
work here**



**to keep  
this clear.**

**CCICED Enterprise Forum  
April 23, 2008**

**Nicholas Sonntag, Executive VP Corporate Development  
and President Westport Asia Westport Innovations Inc.**

**Westport™**

*Creating a Better World  
through Innovative Energy Solutions*

[www.westport.com](http://www.westport.com)

# Westport Innovations Inc.

- World leader in gaseous-fueled engine technology (CNG, LNG, Biogas, LPG & H2)
  - 20,000+ engines in 35 countries: cities including Beijing, Washington, Los Angeles, San Diego, Sacramento, Washington DC, Boston, Paris, Moscow, Delhi
  - More than 50 OEM vehicle manufacturers in 20 countries offer our engines
- Revenues: Approx. \$(C)70 million
- Market Cap US\$280 million
- 250 employees



#2 Fastest Growing in North America

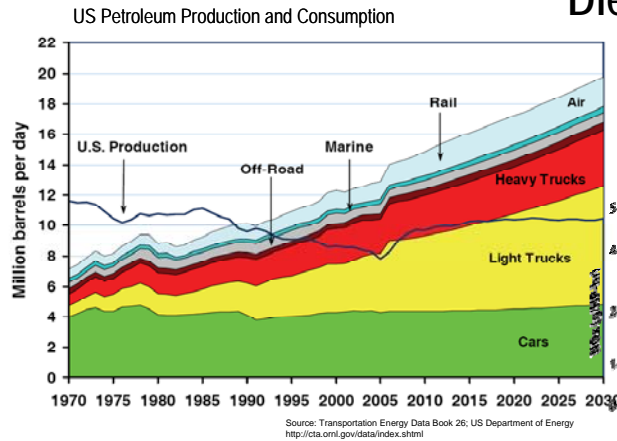


#1 Fastest Growing in Canada

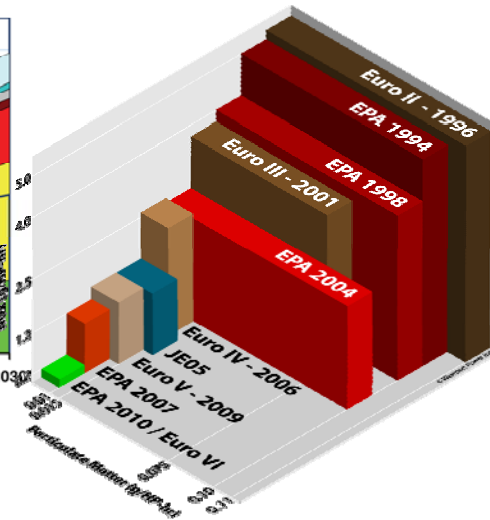


# Why Alternate Fuels?

## Energy Supply & Pricing

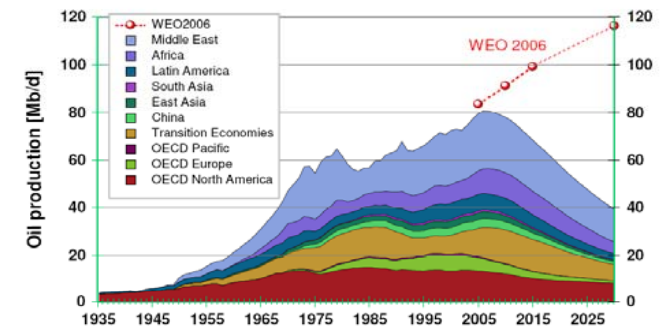


## Diesel Emissions Standards



## Energy Security

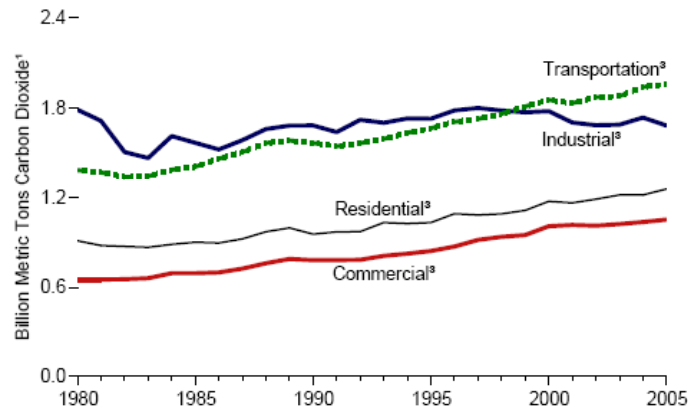
Forecasts of oil supply and demand



Source: Energy Watch Group Oct 2007

## Climate Change

By End-Use Sector, 1980-2005



<sup>1</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

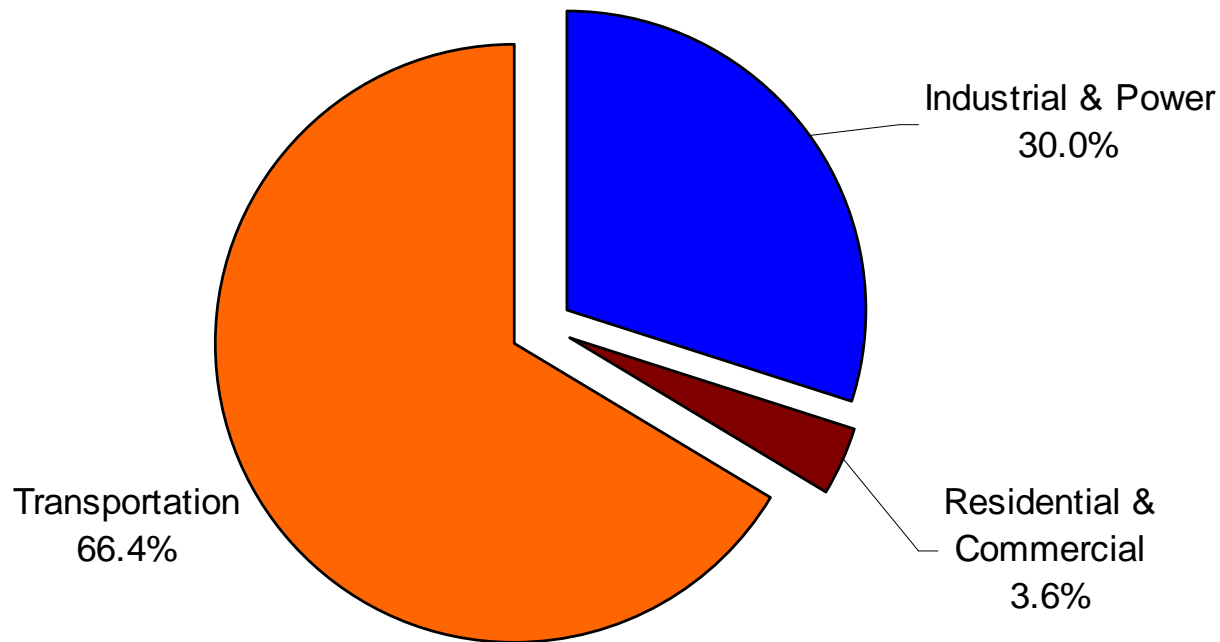
<sup>2</sup> Based on chained (2000) dollars.

## Urban Emissions



## Most of the Increase (2002-2025) in World Oil Consumption Is Driven By Transportation

### Growth in World Oil Consumption 2002-2025 Most of the Increase Goes to Transportation



data source: US Energy Information Administration, "International Energy Outlook 2005"

# Our Global Focus

## Large Fuel Use Fleets

- Westport is focusing on the largest users of diesel fuel – greater fuel cost savings
- Urban Fleets such as buses and work trucks
- Class 8 Heavy Duty Highway trucks
- Mine trucks and other off-road applications
- Minimal Infrastructure requirements



~25,000 litres/yr



~40,000 litres/yr



~80,000 litres/yr



~1,000,000 litres/yr



~2,500 litres/yr

# Westport LNG Heavy Duty Trucks: *Diesel Performance using LNG*

- Tight geographic market focus
  - California, Texas
  - Ports of Los Angeles & Long Beach
  - First sales in Australia in 2007
- Production of “upfit” service in 2008
- Kenworth factory assembled T800 available in 2009
- Continued “upfit” production with other OEM compatibility
- Early adopting customers:

**Kenworth to produce Liquefied Natural Gas Vehicles**  
*Westport to supply LNG fuel systems  
through new assembly centre in British Columbia*

FOR IMMEDIATE RELEASE – January 24, 2008

VANCOUVER, BC and KIRKLAND, WA – Kenworth Truck Company will expand its presence in the growing market for environmentally friendly, liquefied natural gas (LNG) vehicles by beginning production of Kenworth T800 LNG trucks at its manufacturing facility in Renton, Washington, in 2009. Under an exclusive agreement with Westport Innovations Inc. (TSX:WPT), Kenworth will use Westport's LNG fuel system technology adapted for the Cummins ISX-15-liter engine.



**PROMETHEUS**energy

**Westport**  
**LNG System for Heavy-Duty Trucks**

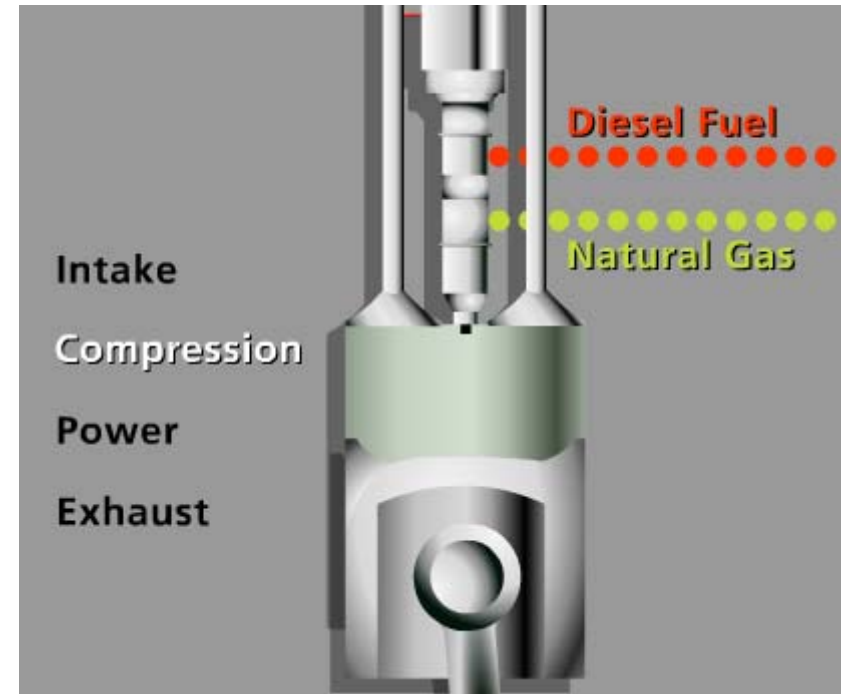


click to visit:  
<http://LNGtrucks.westport.com>



# HPDI Technology

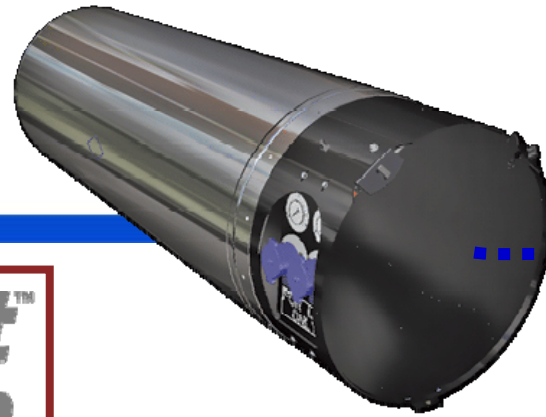
- Pilot diesel injected just prior to natural gas to provide energy for auto-ignition of gas injection
- Natural gas injected at high pressure at end of compression stroke (no pre-mixed air/fuel)
- Low diesel usage under all conditions
  - Average of about 5% diesel over vehicle operating cycle
- Diesel engine performance remains
  - Same high power and torque
  - Same or higher efficiency



- Typical Emission Reductions
  - 40-50% lower NO<sub>x</sub>
  - 70-80% lower PM
  - 20-25% lower GHG

# HPDI System

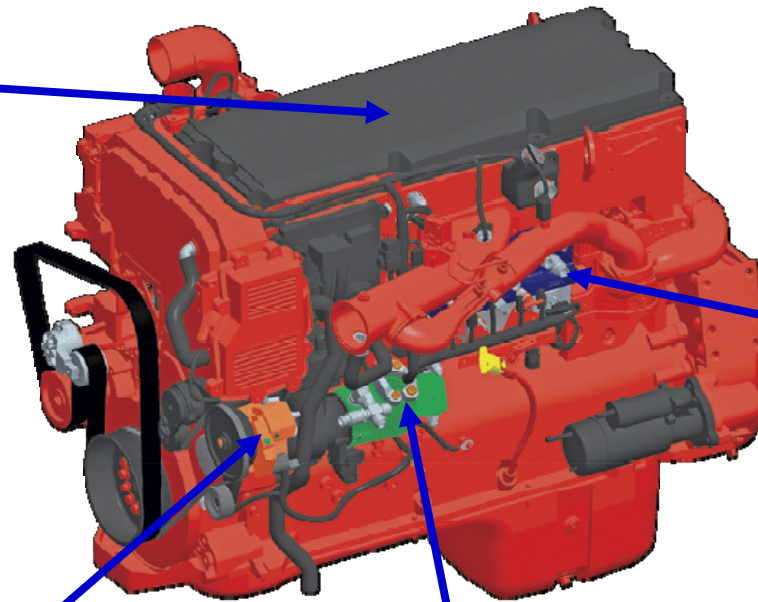
## Westport<sup>™</sup> LNG System



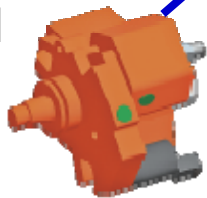
**LNG tank and pump**  
(chassis mounted)



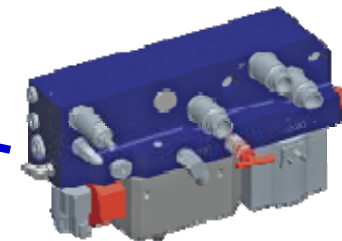
**fuel injectors**  
(under valve cover)



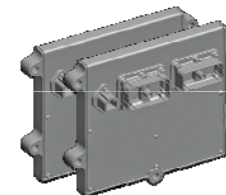
**Common-rail  
diesel  
fuel pump**



**hydraulic  
pump**  
(drives LNG Pump)

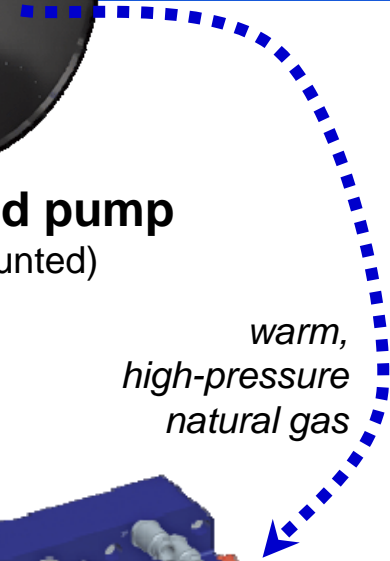


**fuel conditioning  
module**



**control units**  
(chassis mounted)

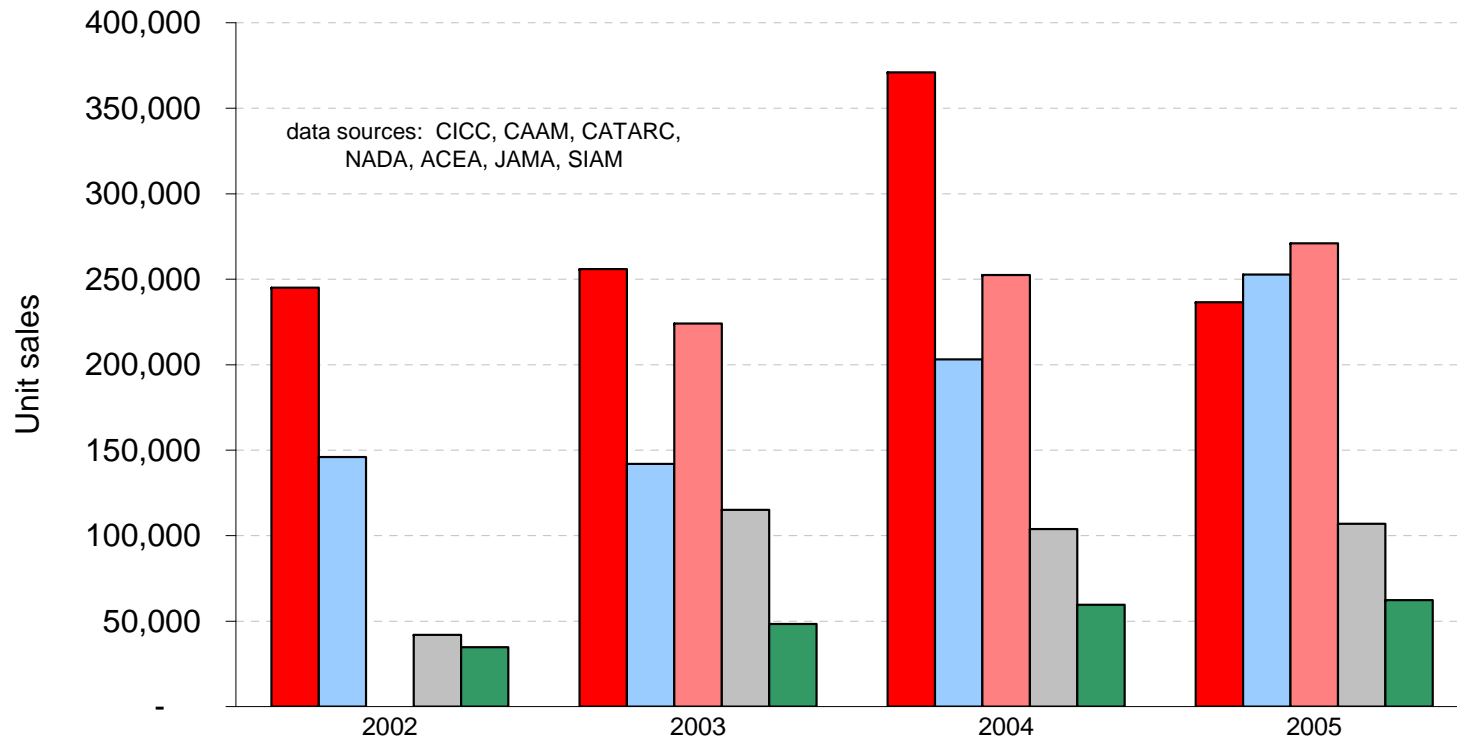
*warm,  
high-pressure  
natural gas*





# China is worlds largest heavy-duty truck market

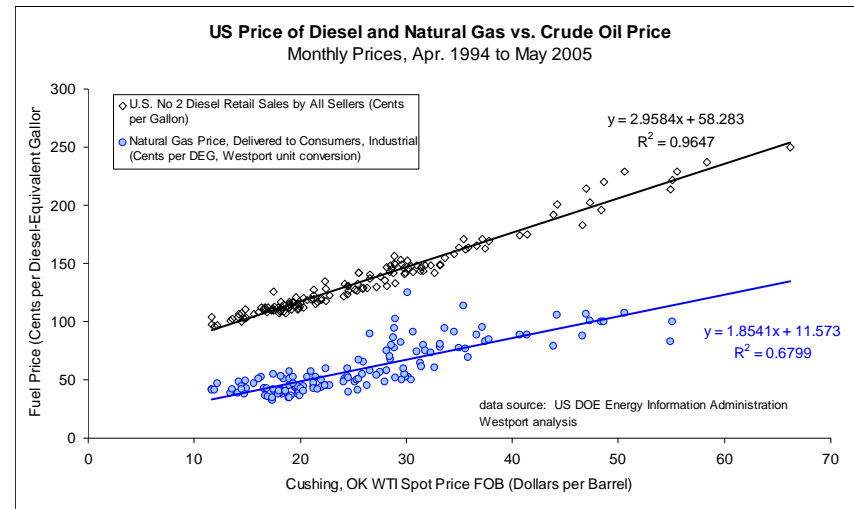
**Heavy-Duty Truck Unit Sales by Location**



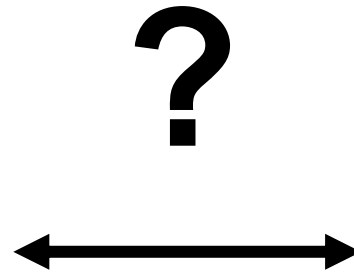
	2002	2003	2004	2005
China	245,000	256,000	371,000	236,586
USA	146,031	141,964	203,197	252,792
EU23+EFTA		224,083	252,415	270,947
Japan	41,918	115,086	103,872	107,000
India	34,713	48,419	59,552	62,234

# Natural Gas is viable Transportation Fuel for China

- The growing price difference between oil based fuels and natural gas is now providing a strong case for the economics of using NG
- Up to 12+ LNG terminals in China by 2020 or sooner
- CNOOC, Dapeng and Guangzhou Gas, Shenzhen Gas have all shown high interest in selling LNG into non-power markets



# “Our Dilemma”



# “Our Dilemma”



?

**LNG DEMAND**  
**“The Customers”**



# “Our Solution”

*Collaborative Market Development*

## Supply



## Demand

### 1. Identify the major players

- a. CNOOC
- b. Guangzhou Gas
- c. BP
- d. Shenzhen Gas
- e. Dapeng Terminal

### 2. Demonstrate our Value

- a. Build Relationships
- b. North American Experience
- c. LCNG Station Design
- d. Demonstration Projects
- e. Feasibility Studies

### 3. Construct LNG Infrastructure

- a. Station Design Collaboration
- b. Structure of Cooperation (e.g. PPP)
- c. Attract Investment
- d. Government Subsidies

### 1. Develop Immediate Demand

- a. Work Closely with Partners
- b. Focus where Gas is available today
- c. Promote Adoption of LNG ‘Fuel Systems’

### 2. Develop Fleet Opportunities

- a. Key East China Cities
- b. Port Cities
- c. Trucking Corridors
- d. Government Subsidies

### 3. HPDI ‘Made in China’

- a. Establish JV with Engine OEM
- b. ‘Fast track’ HPDI in China
- c. Dialogue with all players
- d. Government grants and policy

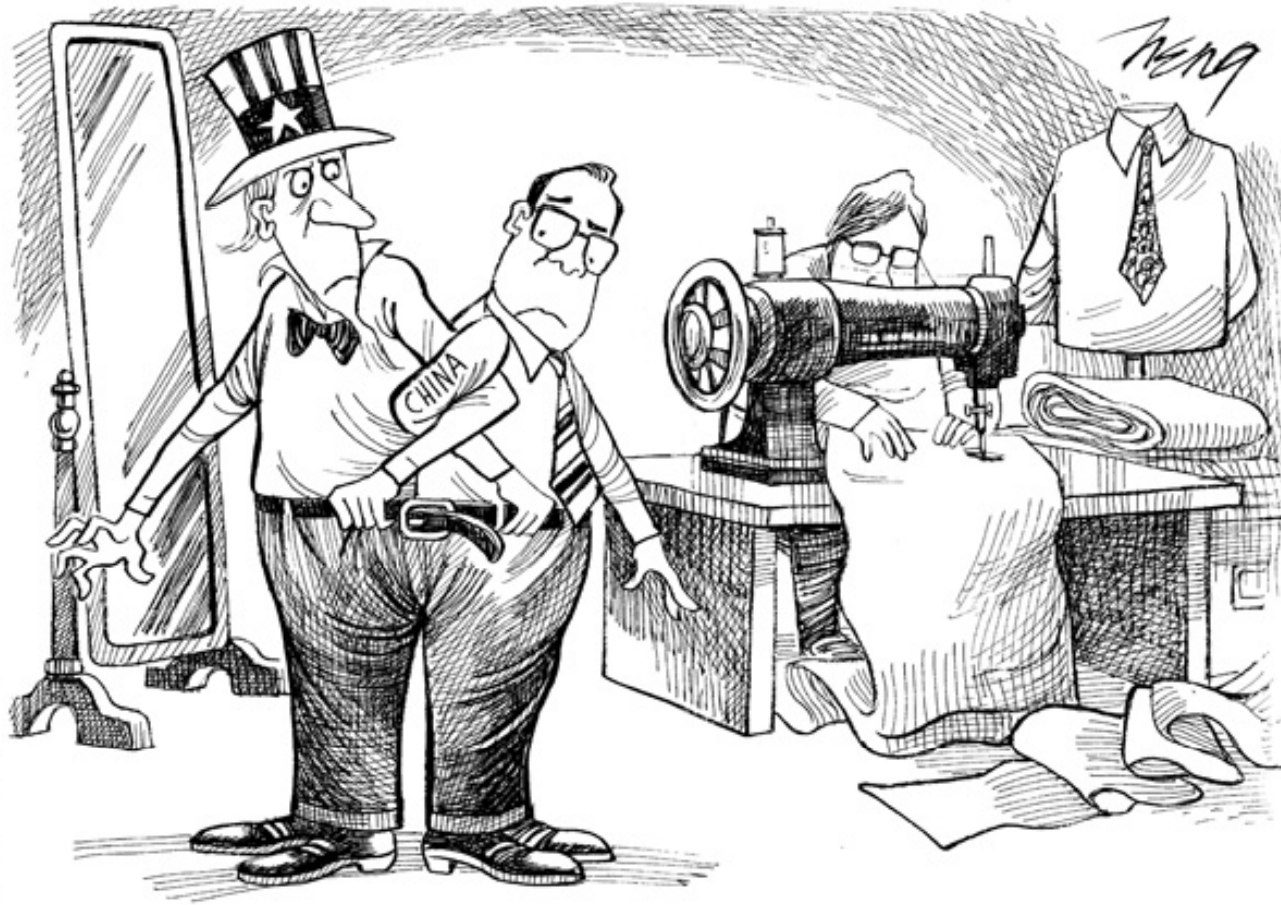














Thank you

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