SAVING OIL IN A HURRY - DEMAND MANAGEMENT MEASURES

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Context - Establishment of IEA

- **IEA established against backdrop of 1973-1974 oil crisis**
  - Avoiding competition for limited resources
  - Coordinated mechanisms for response
  - Safety net

- **Today, energy security as urgent as ever**
  - Oil security remains cornerstone
  - IEA move to a more comprehensive approach beyond oil

**IEA definition of Energy Security**

“Uninterrupted availability of energy sources at an affordable price”
Context – IEP Requirements

- **Agreement on International Energy Program (IEP) =** IEA’s founding treaty from 1974
- **Key IEP obligations for oil security for IEA Member Countries:**
  - Hold emergency oil stocks equivalent to 90 days of net-imports
  - Maintain program of oil demand restraint measures to reduce final consumption by 7% & 10%
  - Also allowed fuel switching & production surge
Oil use focused in transport

OECD Oil consumption by sector 1973-2013

- Increased oil use in transportation (60%) & expected to rise
- Accentuates potential economic impact of disruption
IEA oil emergency response measures

Increase supply
- Stockdraw
  - Public
    - Government
      - Loans
      - Sale/tender
    - Agency
      - Loans
      - Sale/tender
  - Industry
    - Reduction of mandatory level
    - Instruct physical release
    - Use of spare production capacity

Reduce demand
- Demand restraint
  - Light-handed
  - Medium
  - Heavy-handed
    - Temporarily replacing oil use with other energy sources
      - Persuasion/public campaigns (e.g. eco-driving, carpooling)
      - Administrative/compulsory (e.g. speed reduction)
      - Administrative/compulsory (e.g. driving restrictions)
      - Electricity generation in multi-fired installations

Fuel switching
Demand-side measures

- **Demand restraint**
  - Most policies focus on transportation sector
    - Light measures = public persuasion campaigns for eco-driving / carpooling
    - Medium measures = compulsory speed limit reduction
    - Heavy measures = driving restrictions or fuel rationing

- **Fuel switching**
  - Significant decline since 1970s
  - Virtually no potential for short-term switching in transport

- **Other**
  - Relaxation of regulation, e.g. on fuel quality specifications
Demand-side Evolution

- Purpose of emergency response measures to mitigate economic harm arising from oil supply disruptions
- But demand restraint policies curtail economic activity
- Better use in longer duration disruptions to maximize effectiveness of available supplies / resources
- All IEA countries have demand restraint policies but not generally developed
- Any policy development focused on demand management, i.e. managing panic buying
Saving Oil in a Hurry publication

• IEA started project to identify best practice on demand restraint that led to “Saving Oil In A Hurry” book published in 2005

• Prepared Guidelines for Demand Restraint based on SOIAH

• Have been working to update revisiting this study based on new experience, new technologies etc.

• Draft paper shared with IEA’s SEQ Committee
Categories of Measures

- Car- & ride-sharing
- Driving restrictions (e.g. speed limits, driving bans)
- Multi-fuel light-duty vehicles
- Pricing & parking policies
- Eco-driving & vehicle efficiency measures
- Public transit (service upgrades & fare reductions)
- Employer & institutional measures
- Freight trucking
- Fuel allocation (most extreme)
New areas of analysis

- **Modal Shifts**
  - expanded public transit & pedestrian/bicycling alternatives to cars

- **Alternative Fuels**
  - including biofuels, hybrid electric drive, & natural gas
  - begun to provide viable substitutes to petroleum-based fuels since 2005

- **Freight/Logistics**
  - which, with on-going revolutions in information technology and logistics, may provide some further opportunities for demand restraint savings

- **Regional Analysis**
Key findings

- **Short-term supply disruptions** require different responses & measures than **long-term energy savings** promotion.
- Measures should increase options for individuals & companies to deal with disruption.
- **Oil price signals** can help consumers respond to disruption.
- **Rationing** should be last resort.
- Most measures require advanced planning.
- “Pull” measures generally preferable to “push” measures, though having both may create synergies.

### Push
- Speed limits
- Driving bans
- Congestion charging
- Parking pricing

### Pull
- **Public Transit** (upgrades & fare cuts)
- Telecommuting
- Flexible work hours / Compressed work week
- Parking ‘cash-outs’ / Public transit vouchers
Promising Measures

- Low-cost measures offer large savings available to all countries
- Ride sharing has great potential
- Public transit systems can help – where they exist
- Driving bans are effective but sub-optimal
- Pricing strategies can be effective /efficient, but may be unpopular
- Information & public awareness campaigns are valuable reminders for people to take important fuel savings actions
- Alternative fuels can help – but only where they are available
- Freight (trucking) offers several promising strategies
- One size does not fit all – every country unique
### Estimated potential for saving

<table>
<thead>
<tr>
<th>Measure</th>
<th>Expected oil savings across all IEA Member countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odd/even day driving ban</td>
<td>~ 5 mb/d</td>
</tr>
<tr>
<td>Car-pooling infrastructure and programme</td>
<td>~1.5 mb/d</td>
</tr>
<tr>
<td>Ecodriving</td>
<td>~1.2 mb/d</td>
</tr>
<tr>
<td>Telecommuting</td>
<td>~0.8 mb/d</td>
</tr>
<tr>
<td>Speed limits at 90 kph</td>
<td>~0.7 mb/d</td>
</tr>
<tr>
<td>One day in ten driving ban</td>
<td>~0.6 mb/d</td>
</tr>
<tr>
<td>Compressed four-day work week</td>
<td>~0.6 mb/d</td>
</tr>
</tbody>
</table>

*Note that different measures can overlap, so savings cannot be added.*
Regional differences

- Total on-road fuel consumption (billion litres gasoline equivalent)
- Potential savings across all measures
- Potential savings omitting 'high impact' measures

Oil consumed in Road Sector (thousand BPD)

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Regional potential

Potential savings across all measures (including ride-sharing & even-odd license plate driving bans)

Potential savings omitting 'high impact' measures

Percent reduction of oil consumed in road sector

- Non-OECD Europe
- Australia, New Zealand, Other OECD
- Russia
- Mexico
- Brazil
- India
- Other LAC
- Africa
- Japan
- Korea
- Other Asia
- Middle East
- China
- OECD
- Europe
- USA
- Canada

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### Regional suitability

- Different sets of most effective measures for different regions
- Some overlap for measures such as eco-driving / fare reduction across multiple regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Total on-road fuel use (thousand BPD)</th>
<th>Best Measure(s)</th>
<th>Savings (% of PDLVs road fuel use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA &amp; Canada</td>
<td>11,584</td>
<td>Change Parking Pricing, Employer-Institutional TDM, Fuel switching</td>
<td>3.1% - 5.6%, 1.4% - 2.9%, 2.3% - 3.2%</td>
</tr>
<tr>
<td>Mexico</td>
<td>1,150</td>
<td>Fare Reductions - urban bus, Ecodriving, Speed limit reduction</td>
<td>1.1% - 2.1%, 4.3% - 10.3%, 4.7% - 7.3%</td>
</tr>
<tr>
<td>OECD Europe</td>
<td>6,362</td>
<td>Change Parking Pricing, Fare Reductions - urban bus, Employer-Institutional TDM</td>
<td>3.3% - 6.1%, 0.7% - 1.5%, 1.4% - 2.8%</td>
</tr>
<tr>
<td>Japan &amp; Korea</td>
<td>1,915</td>
<td>Fare Reductions - high-capacity public transit, Change Parking Pricing, Employer-Institutional TDM</td>
<td>0.8% - 1.4%, 2.9% - 5.3%, 1.6% - 3.1%</td>
</tr>
<tr>
<td>Australia-New Zealand / Other OECD</td>
<td>791</td>
<td>Ecodriving, Change Parking Pricing, Fare Reductions - urban bus</td>
<td>4.2% - 10.1%, 4.4% - 8.2%, 2.4% - 6.6%</td>
</tr>
<tr>
<td>Non-OECD Europe</td>
<td>609</td>
<td>Change Parking Pricing, Fuel switching, Fare Reductions - urban bus</td>
<td>3.3% - 5.9%, 2.9% - 6.3%, 1.6% - 3.0%</td>
</tr>
<tr>
<td>Russia</td>
<td>1,112</td>
<td>Change Parking Pricing, Employer-Institutional TDM, Fare Reductions - urban bus</td>
<td>3.6% - 6.4%, 1.5% - 4.5%, 2.7% - 5.1%</td>
</tr>
<tr>
<td>China</td>
<td>4,385</td>
<td>Congestion Pricing, Public transit improvements, Fare Reductions - urban bus</td>
<td>2.5% - 5.0%, 0.7% - 4.4%, 2.5% - 4.7%</td>
</tr>
<tr>
<td>India</td>
<td>1,250</td>
<td>Change Parking Pricing, Fuel switching, Fare Reductions - urban bus</td>
<td>2.2% - 4.1%, 4.7% - 6.9%, 7.2% - 14.5%</td>
</tr>
<tr>
<td>Other Asia</td>
<td>2,692</td>
<td>Fuel switching, Public transit improvements, Fare Reductions - urban bus</td>
<td>3.4% - 4.9%, 0.7% - 4.5%, 2.5% - 4.8%</td>
</tr>
<tr>
<td>Middle East</td>
<td>2,748</td>
<td>Change Pricing Policies, Ecodriving Campaign, Fare Reductions - urban bus</td>
<td>6.1% - 12.2%, 4.3% - 10.2%, 1.2% - 2.2%</td>
</tr>
<tr>
<td>Africa</td>
<td>1,824</td>
<td>Fare Reductions - urban bus, Speed limit reduction, Public transit improvements</td>
<td>5.9% - 11.1%, 5.8% - 9.0%, 1.1% - 7.0%</td>
</tr>
<tr>
<td>Brazil</td>
<td>1,189</td>
<td>Fuel switching, Fare Reductions - urban bus, Employer-Institutional TDM</td>
<td>24.2% - 27%, 3.3% - 6.2%, 1.7% - 3.4%</td>
</tr>
<tr>
<td>Other Latin American Countries</td>
<td>1,530</td>
<td>Speed limit reduction, Fare Reductions - urban bus, Public transit improvements</td>
<td>6.1% - 9.4%, 3.8% - 7.2%, 0.7% - 4.4%</td>
</tr>
</tbody>
</table>
Conclusions

- Transportation = most important sector for potential savings
- Range of potential actions to save significant oil “in a hurry” for every country
  - Costs difficult to estimate but some measures likely to be lower cost (either to society or governments or both)
  - Changing transportation dynamics offer new opportunities (ride sharing, alternative fuels)
  - Trucking potentially important area for all countries
  - Short-term measures require advanced planning; some could save oil quickly & lead to lasting behavioural changes.
  - Countries should undertake own analysis using these methods
Next Steps

- Aim to publish report as academic study

- Have SEQ delegate comments *BUT* generally from energy ministries so helpful to have input from transport experts

- Want to prepare practical guide for policymakers on how to make it happen but may take longer
Thank you!

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