Demand-side Policies to Promote Mission-oriented Innovation in China
– the case of New Energy Vehicles (NEV) program

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OUTLINE

• The rise of DSIPs especially IOPP/PPI in China

• Positioning the study

• Promotion of NEVs in China – policies

• ‘Ten Cities, Thousands of NEVs’ program – implementation

• Discussion and implications

Supply-side innovation policies (SSIP)
- R&D support
- Tax incentives
- VC
- Networking
- Public research platforms etc.

Mission Oriented Innovation; ‘Indigenous Innovation’ since 2006

Demand-side innovation policies (DSIP) since 2006
- IOPP/PPI
- Regulations incl. standards
- Support for private demand
- Cluster tools etc.

International policy transfer
An Institutional Assessment of IOPP as a Demand-side Innovation Policy (DSIP) in China

Institutional framework

- Context for DSIP
- Policy & legislation

Regional actions

Evidence evaluation

Cases of implementation

- Loongson e-classroom
- New energy vehicles
- Tunnel engineering
- Offshore wind farm
- LED lighting
- Water recycling

OECD experience
## Classification of DSIPs adopted in China

<table>
<thead>
<tr>
<th>Forms</th>
<th>Catalogues of equipment and other strategic technologies</th>
<th>Routinized IOPP mechanism via ‘innovation catalogues’</th>
<th>Active participation in standards setting</th>
<th>Support programs for key, strategic and emerging areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale</td>
<td>Signalling national demand; technology roadmap</td>
<td>Enhancing communication between suppliers and procurers</td>
<td>Using standards to drive indigenous innovation</td>
<td>Creating lead market; systemic mix of instruments</td>
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<tr>
<td>Implementation</td>
<td>Specialized ministries launch annual catalogues to inform researchers &amp; suppliers</td>
<td>Ambiguous national measures; regional autonomy in developing local mechanisms; diversified</td>
<td>Stakeholder engagement; regional initiatives; combined with sectoral policies</td>
<td>Targeted at various sectors e.g. LED lighting, solar energy and new energy vehicles (NEV)</td>
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<td>Current status</td>
<td>Relatively smooth; suitable for the Chinese top-down system</td>
<td>Withdrawn in July 2011 in response to international concerns</td>
<td>Controversial; lack of capabilities is evident</td>
<td>Results diversified across sectors; achievements as well as losses</td>
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NEV related policies in China – intro

- **New energy vehicles**: plug-in hybrid electric, battery electric and fuel cell vehicles; energy saving vehicles: regular hybrid vehicles that do not require external power supply. Chinese practitioners normally refer both as new energy vehicles (NEV).

- **Policy focus**:  
  - R&D for the past decade; since 2009 a trend of tool differentiation;  
  - More stakeholders involved along the supply chain;  
  - Complex policy mix across domains of environment, sector, energy and STI.

- **Three major driving forces** with an obvious mission orientation:  
  - societal factors, i.e. energy shortage and environmental pressure;  
  - indigenous innovation strategy and catching up;  
  - the government considered that the turning point to commercialization has arrived.

- **Approach**:  
  - Policy analysis with a focus on rationale justification.  
  - Micro-level analysis, i.e. two sub-case studies that include concrete IOPP processes.  
  - Data collected through elite interviews with 12 respondents; government and firm documentation; mass media.
‘Ten Cities, Thousands of NEVs’ program design

- **Central level ministries**: NDRC, MOF, MOST, MIIT
- **City-level governments**: City 1, City 2, City 25
- **Suppliers**
- **Public Transport Operators**
- **Private users**

- **Duration**: 2009 – 2012
- **Ministries**
  - select participants according to industry and market potential
  - set up policy targets
  - regulate entry permits for suppliers
- **City governments**
  - provide implementation measures
  - coordinate stakeholders
  - report progress to the centre
- **Rationale**: creating lead markets in suitable cities
- **Financing**: central and local funding 1:1
### ‘Ten Cities, Thousands of NEVs’ policy rationale

<table>
<thead>
<tr>
<th>Policy code</th>
<th>Content</th>
<th>Rationale</th>
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<tbody>
<tr>
<td>Fagaigonggao (2007) 72 &amp; Gongchanye (2009)44</td>
<td>Detailing the requirements for NEV enterprises including R&amp;D capability, IPR ownership etc.</td>
<td>Regulations of entry into industry</td>
</tr>
<tr>
<td>N/A</td>
<td>Standards of charging devices and energy-saving rate testing</td>
<td>Standardization</td>
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<tr>
<td>?</td>
<td>?</td>
<td>Holistic NEV industry plan</td>
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<td>Technological roadmap</td>
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<td>?</td>
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<td>Complementary measures</td>
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</table>
NEV program – local implementation progress

• **Overall progress by the end of 2011:**
  - 361 NEV models produced by 75 manufacturers listed in the recommended catalogues;
  - total amount of produced and sold new-energy cars was 8368 and 8159;
  - number of NEV charging stations and charging piles was 243 and 13283.

• **Progress of participant cities has been uneven:**
  - top three cities Hangzhou, Shenzhen and Hefei promoted 1374, 2011 and 2018 NEVs;
  - Average achievement rate among the participant cities was 38%.

• **Diversified outcomes resulted from diversified driving forces and pre-conditions:**
  - fieldwork suggests that outstanding regions tend to have good industrial foundations;
  - Beijing is the capital city which needs to play a leading role in green technologies;
  - Shanghai is trying to build a holistic supply chain based on its technological advantages;
  - Hangzhou and Shenzhen are exploring practical commercial modes;
  - Changchun and Hefei aim at occupying national markets;
  - western cities are trying to grasp this opportunity to nurture NEV industries;
  - some small and medium sized cities are trying to involve in key components manufacturing;
  - cities besides the 25 are doing NEV programs in their own way... no structured knowledge yet...

• **Overall impacts:** Fairly effective in promoting stakeholder awareness, technological achievements, industrialization, human resource building, infrastructure building and standardization.
NEV IOPP case in Jinan for National Games 2009

Step I: Communicating event schedule etc.

Step II: Communicating needs
- New IPRs emerged
- Lowering of NEV price
- Public awareness

Step III: PP procedure

Step IV: Monitoring progress

Step IV: User-producer interactions

Step V: Delivering 100 hybrid buses

National Games 2009
NEV program

Government
Public Transport Operator
Suppliers
Public Procurement Agency
NEV IOPP case in Shenzhen for Universiade 2011

Step I: long-term interaction, pilot projects in public sector
Step II: signalling demand, setting up requirements, market research
Step III: supplier-user interactions
Step IV: Commissioning
Step V: Communicating specifications
Step VI: Training

Government
NEV Suppliers
Infrastructure supplier
Public Transport Operator

Improved products
Improved infrastructure
Standards
Stimulating private demand

Universiade 2011
NEV program
Promoting local industry
Similarities:
- Driven by ‘green themes’ in large-scale events; other examples include Beijing Olympics 2008, Shanghai EXPO 2010, Guangzhou Asian Games 2010.
- Cross-departmental administrative group to coordinate the project; directed by cross-ministry group.
- Both proved that long term cooperation between governments/operators with suppliers is a key factor affecting the contracting in China.

Differences:
- Jinan’s case was one of the earliest; high price; cautious move; Jinan now falling behind due to the lack of strong local industry – lack of motivation
- Shenzhen’s budget is unclear; no tendering process, selected suppliers based on previous communication and pilot projects – local integration or regionalism?

Common issues:
- Uncertainty of technological roadmap (government waits for firms and vice versa)
- Difficulty to mobilize private consumers (lack of infrastructure or incentives)
- Flawed framework conditions led to questionable competition environment
Discussion & Implications

- Policy implementation in China – *de facto federalism*? Regional protectionism, ‘NEV fever’ and ‘NEV fear’ can all be explained by this.

- What about the *areas not covered* by the program...? Fieldwork suggests some practitioners and consumers are hesitating due to lack of support.

- The building of *framework conditions* seems to be most relevant E.g. reforming the public procurement system to protect competition – long way to go...

- **Improving capacity** for stakeholders Especially the policy practitioners and procurers – a surprisingly huge gap that policymakers never address...

- Towards *systemic governance* of systemic innovation policies Yes we do see the differentiation of innovation policies in China, but the use of them is still in a mechanical way. Exercise of policy cycle and policy mix perspectives is revelant.
Thank you