

## AGENDA

### IEA Experts' Dialogue on Material Trends in Transport

08 March 2018

Centre de Conférence Ministériel (CCM), 27 rue de la Convention, Paris (75015)

The International Energy Agency (IEA) is embarking in a project to analyse the implications of material efficiency strategies and material use trends in different sectors of the economy on the demand of key materials in a 2DS context, as well as the knock-on system-level impacts on energy demand and related CO<sub>2</sub> emissions. To provide strategic insights to this analysis, the IEA is organising a full-day experts' meeting on 8 March 2018 in Paris.

This meeting will bring together leading experts on materials production, vehicles manufacturing and transport infrastructure materials design and production to discuss future trends of materials use in transportation equipment, the implications of emerging transport technologies and potential disruptions to the provision of services in passenger and freight transport to materials demand, and adaptation strategies of materials manufacturers to consumer needs.

<b>9:00</b>	<b>Registration</b>
<b>9:30</b>	<b>Welcome:</b> David Turk, IEA
<b>9:45</b>	<b>IEA analysis objective, scope and timeframe:</b> Araceli Pales Fernandez, IEA
<b>10:00</b>	<b>Materials use and manufacturing trends in light-duty vehicles</b>
	<p><b>Moderator:</b> Pierpaolo Cazzola, IEA</p> <p><b>Presentations</b></p> <p><u>Michael Wang, Argonne National Laboratory:</u> Historical analysis and future scenarios of material use in light-duty vehicles across powertrains</p> <p><u>Maria Ljunggren Söderman, Chalmers University of Technology:</u> The impact of technology trends on materials in passenger car fleets</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>- What common expected trends emerge for LDV material use trends among auto OEMs, component manufacturers and steel, aluminium, and other material producers?</li> <li>- What is the relative importance and expected rollout of different material efficiency strategies in terms of material demand impact?</li> <li>- To what extent might emerging transport technologies (e.g. EVs, AVs) and business models (e.g. app-based ride hailing) reshape the transport materials demand landscape?</li> <li>- To what extent are observed regional differences in LDV vehicle sales composition due to geographic, economic, or cultural factors expected to converge or persist?</li> <li>- How are recyclability and reusability being considered in vehicle design?</li> </ul>
<b>11:00</b>	<b>Coffee break</b>
<b>11:15</b>	<b>Materials use and manufacturing trends in other transport modes</b>
	<p><b>Moderator:</b> Ferenc Pekár, Joint Research Centre of the European Commission</p> <p><b>Presentations</b></p> <p><u>Gregory Keoleian, University of Michigan:</u> Lightweight Innovations for Tomorrow (LIFT): Fuel saving potentials for heavy-duty vehicles, trains, ships, and aircraft</p> <p><u>Dimitrios Savvidis, Directorate General Climate Action of the European Commission:</u> The potential for material substitution and new vehicle designs in trucks and buses</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>- What data are publically available on material use intensity for rail cars, ships &amp; aircraft? What is the potential for lightweighting and/or material substitution in these modes?</li> <li>- Are there any common expected material demand trends between material users (component makers, OEMs) and producers' perspectives?</li> <li>- What currently drive, will drive in the future, regional differences in sales compositions and fleets?</li> <li>- How are recyclability and reusability being considered in design in these modes?</li> </ul>

<b>12:30</b>	<b>Transport vehicles material requirements – Modelling in the IEA 2DS Scenario</b>
	<p><b>Presentation</b>  <u>Jacob Teter and Tiffany Vass, IEA</u>: Overview of IEA preliminary results and remaining data gaps on vehicle material demand needs for transport equipment in the 2DS</p> <p><b>Discussion</b>  Solicit and compile experts’ feedback. Explore strategies to fill in remaining data gaps and estimates and to integrate insights from the morning session.</p>
<b>13:00</b>	<b>LUNCH</b>
<b>14:00</b>	<b>Materials use and design trends in roads and pavements</b>
	<p><b>Moderator:</b> Eric Masanet, Northwestern University</p> <p><b>Presentations</b>  <u>Arpad Horvath, University of California, Berkeley</u>: Determinants of material intensities and environmental impacts of roadway designs  <u>Thomas Matschei, HTW Dresden</u>: Concrete roads in Germany case study: Design parameters and challenges</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>- Are there any common expected material demand trends between researchers, material users and producers’ perspectives?</li> <li>- What will be the expected uptake of material substitution under current policy and technology trends, in a carbon-constrained scenario, in a material use efficiency scenario, and in a scenario where materials recycling is promoted?</li> <li>- Do we observe regional differences (e.g. in the share of asphalt vs composite or concrete roads)? What are the reasons for differences, and do we expect them to persist?</li> </ul>
<b>15:15</b>	<b>Coffee break</b>
<b>15:30</b>	<b>Materials use and design trends in rail and port infrastructure</b>
	<p><b>Moderator:</b> Nikolai Shevtsov, World Steel Association</p> <p><b>Presentations</b>  <u>Mikhail Chester, Arizona State University</u>: Rail Concrete and Steel Use from a Life Cycle Lens  <u>Toru Ono, Nippon Steel &amp; Sumitomo Metal</u>: Steel use in transport from a sustainability perspective</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>- Are there any common expected material demand trends between researchers, material users and producers’ perspectives?</li> <li>- What will be the expected uptake of material substitution under current policy and technology trends, in a carbon-constrained scenario, in a material use efficiency scenario, and in a scenario where materials recycling is promoted?</li> <li>- Do we observe regional differences (e.g. differences in the share of underground, elevated, or in tunnel railways, differences in topography or geology)? What are the reasons for differences, and do we expect them to persist?</li> </ul>
<b>16:45</b>	<b>Transport infrastructure material requirements – Modelling in the IEA 2DS Scenario</b>
	<p><b>Presentations</b>  <u>Tiffany Vass and Jacob Teter, IEA</u>: Overview of IEA preliminary results and remaining data gaps on transport infrastructure material demand needs in the 2DS</p> <p><b>Discussion</b>  Solicit and compile experts’ feedback. Explore strategies to fill in remaining data gaps and estimates and to integrate insights from the morning session.</p>
<b>17:30</b>	<b>Next steps and closing remarks</b>
	<p><b>Moderator:</b> Araceli Fernandez Pales, IEA</p> <p><b>Discussion &amp; Closing Remarks</b></p> <ul style="list-style-type: none"> <li>- Next steps in the IEA materials modelling project.</li> <li>- Opportunities for continued collaboration among a community of experts in engineering and design LCA, the automotive sector, industry associations, and energy modellers.</li> </ul>
<b>18:00</b>	<b>End of meeting</b>