PIARC Special Project
“Electric Road Systems”
Miguel Caso Florez, PIARC
Bernard Jacob, IFSTTAR

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Decarbonization of Road Freight
PIARC’s key missions and organization

• Be a leading international forum for analysis and discussion of transport issues related to roads
• Identify, develop, and disseminate best practice and give better access to international information
• Consider the needs of developing countries and countries in transition
• Design, produce, and promote efficient tools for decision making in road and transport engineering and policies.

• 121 National governments, members from 140 countries
• 1200 experts currently mobilized in TCs and WGs
• Operations guided by a 4-year Strategic Plan
PIARC has launched in October 2017 a Special Project called “Electric Road Systems: a solution for the future?”

Objectives:

- **Draw current practices on ERS all over the world** including TRL (Technology Readiness Level)
- **Engage with different stakeholders**: road administrations, road construction companies, vehicles manufacturers, researchers, power supply companies…
- **Produce an holistic vision of ERS**: different technologies (conduction and indication in different positions), different vehicles (cars and HVs) construction and operation phases, road safety, tunnels, landscape impact, etc. including impact of rival technologies such a long autonomy batteries.
- **Produce an objective recommendation to NRA about engaging ERS or not.**
Electric Road Systems
Schedule and methodology

Final report expected by October 2018 in English, French and Spanish, available for free at www.piarc.org

- A total of 24 case studies in 12 countries plus two global initiatives have been analysed.
- Ongoing survey online to stakeholders with more than 150 answers from more than 40 countries.
- 114 literature reviews and classified
## Electric Road Systems
Preliminary results (1)

Potential impacts of ERS according to stakeholders:

<table>
<thead>
<tr>
<th>Impact</th>
<th>Significant Adverse Impact</th>
<th>Adverse Impact</th>
<th>No Impact</th>
<th>Minimal Benefit</th>
<th>Significant Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse Gas Emissions</td>
<td>3%</td>
<td>2%</td>
<td>3%</td>
<td>15%</td>
<td>78%</td>
</tr>
<tr>
<td>Local Air Quality</td>
<td>4%</td>
<td>1%</td>
<td>4%</td>
<td>18%</td>
<td>73%</td>
</tr>
<tr>
<td>Operation, Costs for Road Admin</td>
<td>20%</td>
<td>33%</td>
<td>16%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>Vehicle Operating Cost</td>
<td>3%</td>
<td>17%</td>
<td>16%</td>
<td>31%</td>
<td>33%</td>
</tr>
<tr>
<td>Noise</td>
<td>2%</td>
<td>3%</td>
<td>16%</td>
<td>31%</td>
<td>48%</td>
</tr>
</tbody>
</table>
Electric Road Systems
Preliminary results (2)

Ranking of top challenges for ERS implementation:

1- Installation Cost & Maintenance Costs
2- Impact on Road Infrastructure
3- Regulatory and Business Model
4- User Acceptance and Public Opinion
5- Technical Feasibility
6- Increased Electricity Demand
7- Safety and Security
8- Ownership and Political Influence
9- Reliability and Availability of Road Network
## Electric Road Systems

### Preliminary results (3)

Technology Readiness Level (TRL) and time for deployment according to stakeholders:

<table>
<thead>
<tr>
<th></th>
<th>TRL Level (1-9)</th>
<th>Years to Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inductive (Static)</td>
<td>6.5 ++</td>
<td>2.2 --</td>
</tr>
<tr>
<td>Inductive (Dynamic)</td>
<td>5.0 +</td>
<td>5.5 -</td>
</tr>
<tr>
<td>Conductive (Dynamic Overhead)</td>
<td>5.9</td>
<td>4.1</td>
</tr>
<tr>
<td>Conductive (Dynamic In-road)</td>
<td>5.2</td>
<td>5.5</td>
</tr>
<tr>
<td>Conductive (Static Overhead)</td>
<td>6.8</td>
<td>2.3</td>
</tr>
<tr>
<td>Conductive (Static In-Road)</td>
<td>5.7 +</td>
<td>4.0 -</td>
</tr>
</tbody>
</table>
Thank you for your attention

www.piarc.org
info@piarc.org
@PIARC_Roads
World Road Association PIARC

bernard.jacob@ifsttar.fr