

Smart Cities and Communities

- Supporting action at European level

IPHE Workshop "A smart role for fuel cell
and hydrogen in creating liveable cities"
Rome, 4 December 2014

Kemal Önel
Clean transport & sustainable urban
mobility Unit
Directorate-General for Mobility and
Transport







Opportunities and challenges

- Deployment of smart city technologies and services offer **huge opportunities for tackling persistent urban challenges** -> citizen-driven
- More concerted action is needed so to **accelerate large-scale roll-out** of promising solutions -> city needs driven
- Bringing together innovative ideas and actions from across Europe to support a **dynamic, common market place** -> large market potentials

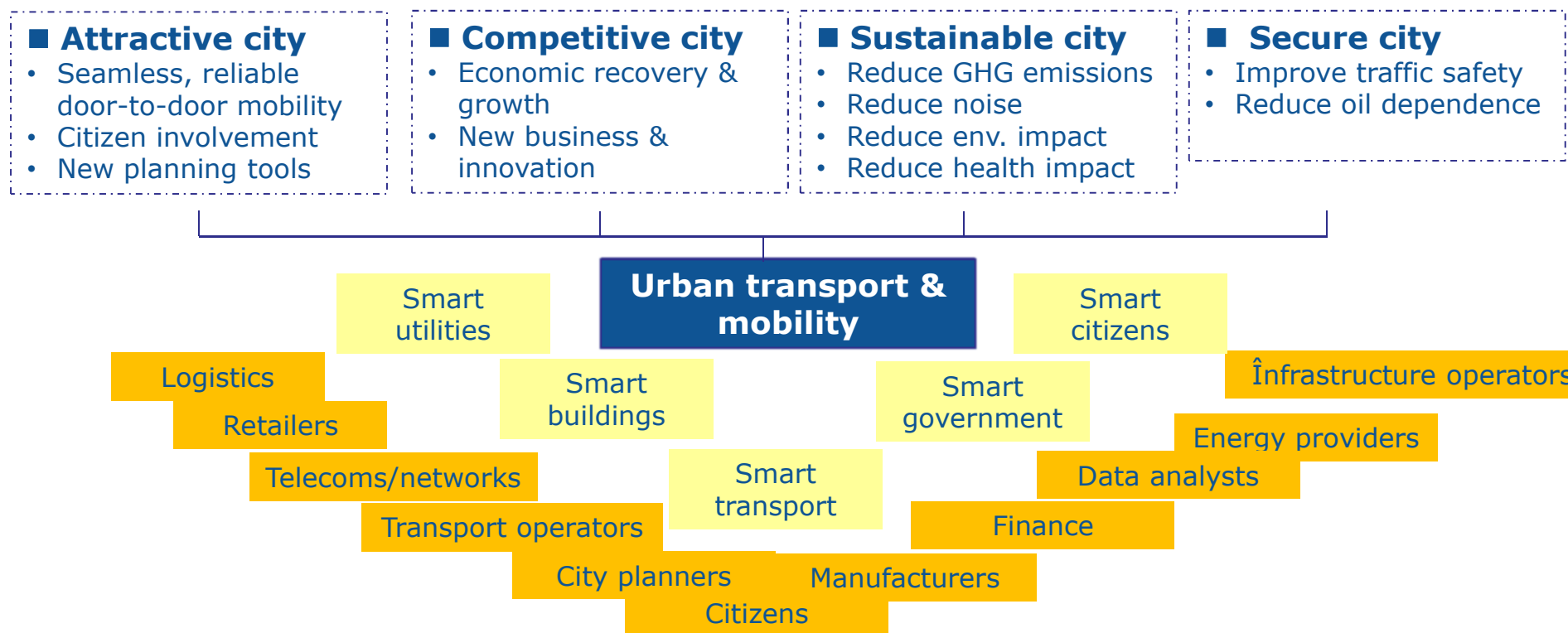


Urban mobility and smart cities – towards a cooperate, interconnected, data-rich innovative ecosystem, driven by personalized end-user ne





Major innovations are needed: increasingly complex, inter-dependent urban challenges



Major action is required – in short time (White paper 2011)

- Halve the use of 'conventionally-fuelled' vehicles in urban transport by 2030
- Achieve essentially CO₂-free city logistics by 2030 – in major urban centres

Why are we doing this?



Strategic Transport Technology Plan

CiViTAS



EU 'urban mobility' policy priorities (2011 White Paper):

- Clean power for transport
 - Sustainable urban mobility plans
- **Smart cities = convergence of technologies and users (energy, transport, ICT) -> technology innovation and new mobility services**



Key support actions for smart cities and communities at European level

- *Mobilising and partnering stakeholders:*
The European Innovation Partnership on Smart Cities and Communities
- *Proving seed-funding for large-scale demonstration and replication at city level:*
Horizon 2020 calls (2014-2015)

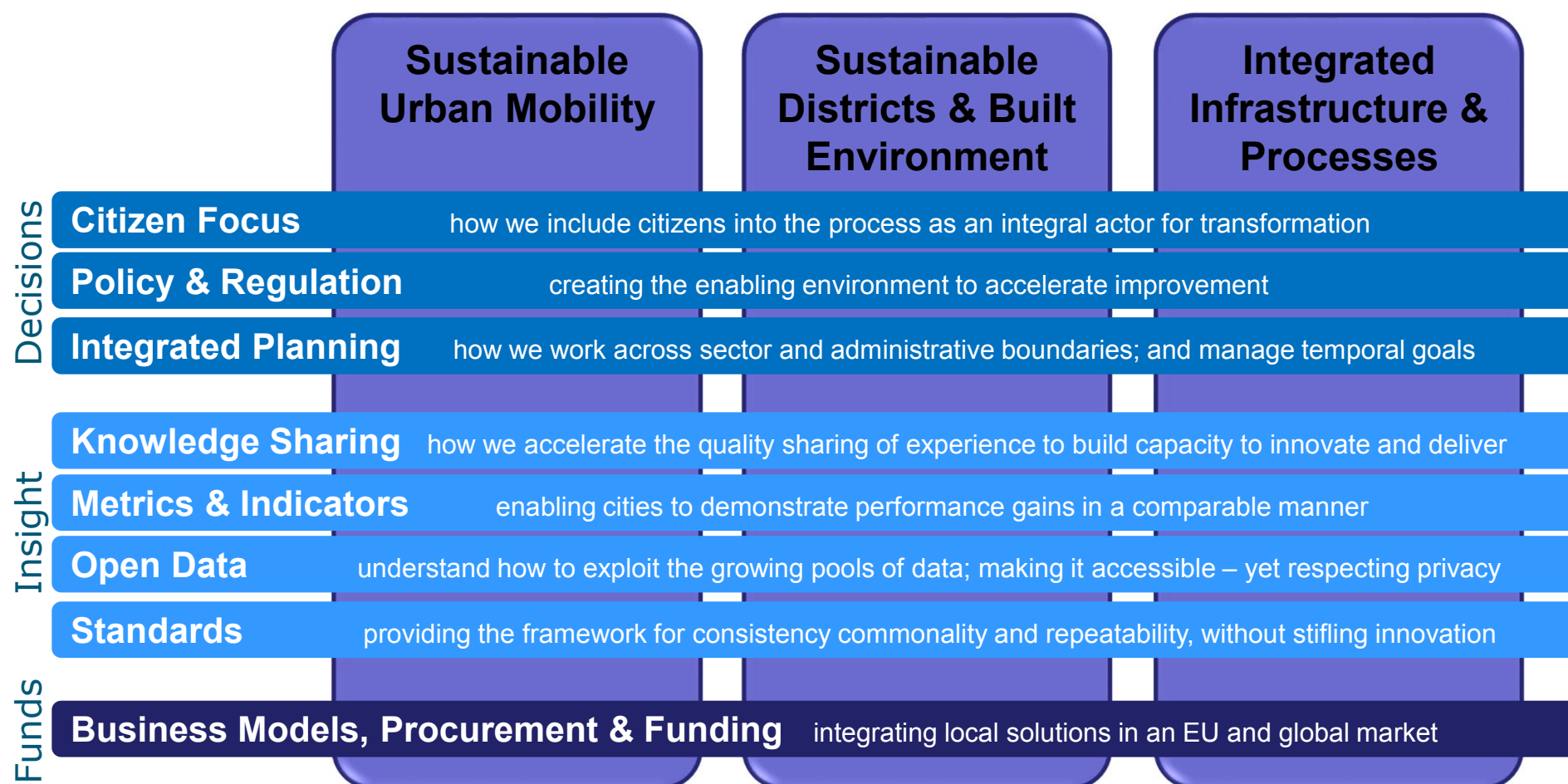


European Innovation Partnership on Smart Cities and Communities

1. **Triple-bottom gain line**
 2. **Focus on intersections**
→ Energy, Transport and ICT
 3. **Support roll-out of mature relicable technologies at large scale**
 4. **Bundle needs of cities and communities**
 5. **Include business and banks**
- **Build markets**



EIP Smart Cities: Strategic Implementation Plan (SIP)





EIP governance principles

- **Open**
 - Open to anyone who subscribes to the objectives of the partnership (respond to invitation for commitments)
- **Stakeholder driven**
 - High-Level Group & Sherpa Group steer and advice
 - Around 3000 partners from cities, companies and research interact in the market-place
 - Commission supports and facilitates
- **Action-oriented**
 - Regular meetings in action clusters to exchange knowledge, partner for new projects and implement action



European Innovation Partnership on Smart Cities and Communities: implementation



6 action clusters

- Sustainable urban mobility
- Sustainable Districts / built environment
- Integrated Infrastructures
- Citizen Focus
- Integrated Planning, Policy, Management and Regulation
- Business models & finance

384 commitments

bringing together ~ 3000 partners from 32 countries



Why to engage in action clusters?

Participation offers several opportunities for learning, partnering, efficiency gains and creation of new business:

- **Visibility:** promote actions on a European scale
 - **Engage** with others to get new ideas and feedback on actions
 - **Learn** from others and exchanges best practices
 - **Partner** with others to jointly achieve more and create cost savings or new business
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- *Geared towards implementation
(concrete work plans and targets expected)*
 - *Facilitated by online collaboration tools, searchable data bases for commitments, projects, best practice.*

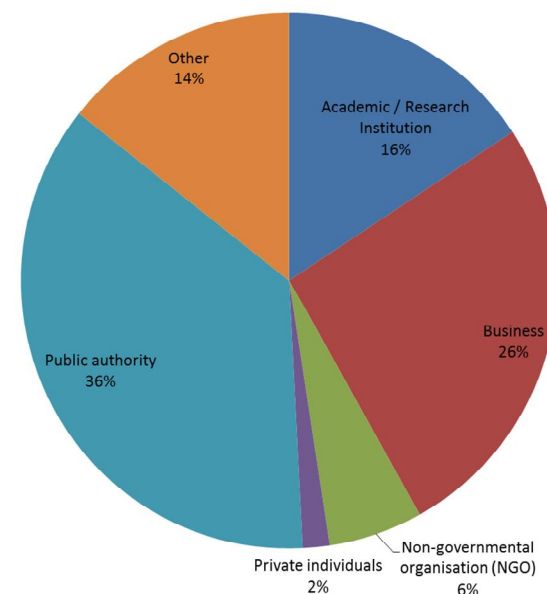


Where are we now?

- Good success
- Strong response to our Invitation for Commitment
- 370 eligible commitments...
- ... bringing together more than 3000 partners...
- From 32 countries.
- Public authorities in the lead in 36 per cent of all cases, business in 26 per cent.

Commitments	
Eligible	370
Non Eligible	71
TOTAL	441

Sectorial classification



Areas/topics with good mass of commitments (quick impacts or substantial gains)

- Electro-mobility
(links to smart use, energy management/storage)
- New mobility services (sharing/renting/travel planning)
- Smart retrofitting and energy-saving (incl. smart energy control and management)
- Smart lighting
- City platforms (software tools for city management)
- Citizen participation (living labs, apps)
- International coordination and collaboration

Scaling up action and mobilising resources a key priority



Next steps

- Action clusters kicked off on 9 October
- Joining an action cluster is possible by following the instructions given on the market place website (<http://www.eu-smartcities.eu>)
- Series of targeted events and other activities (webinars) to build capacity and mass behind commitments
- Action clusters will physically meet in spring 2015
- Annual meeting of the EIP on 22 May 2015, Berlin

Horizon 2020 Work Programme 2014-2015 (SCC1)

Lighthouse projects (EUR 106 million)

- *Low energy districts*
- *Integrated infrastructures*
- *Sustainable urban mobility*

Conditions

- Consortia: cities & industry
- 2-3 cities involving 2-3 follower cities
- Part of ambitious urban plan
- Funding from other parts secured
- Affordable solutions

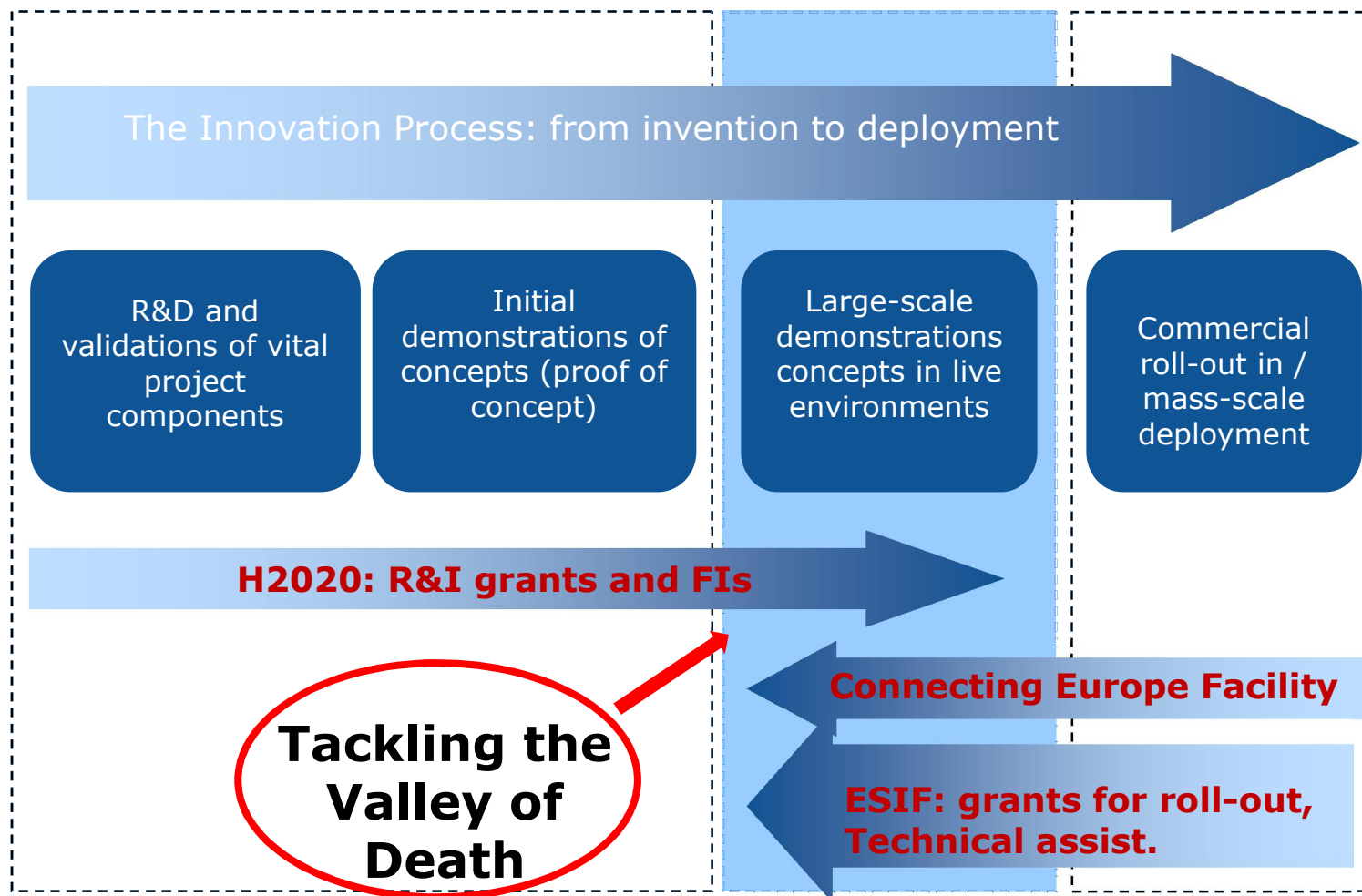


Future challenges: making concepts work in practice

- Lighthouse concept brings cities together, but...
- Need to increase ambition and scale of implementation
- Coming to grips with integration: often poor levels of real integration
- Improving replication planning
- Securing active embedding in ambitious and live long-term urban planning
- Securing adequate private co-financing



Using finance synergies



Other opportunities: Horizon2020 "TRANSPORT"

"To achieve a European transport system that is resource-efficient, climate-and-environmentally-friendly, safe and seamless for the benefit of all citizens, the economy and society."

- **Areas addressing Mode-Specific Challenges:**

1. Aviation; 2. Rail; 3. Road; 4. Waterborne

- **Areas addressing System-Specific Challenges:**

5. Urban Mobility; 6. Logistics; 7. Intelligent Transport Systems; 8. Infrastructure

- **Cross-Cutting Issues:**

9. Socio-economic/ forward looking activities for policy

- **Small business innovation research for transport**

+ Transport contribution to Smart Cities and Communities



Smart cities vs H2020 transport challenge

Smart Cities (Lighthouse projects)	Urban mobility topics/CIVITAS
Integration of 3 sectors: energy, transport and ICT	Innovation from in integration of tools, measures and technologies within 1 sector: <u>transport</u>
1 area: integration of transport into Smart Cities by alternative fuels	Focus on main broad challenges for urban mobility and transport of the Transport White Paper
Medium scale projects, but part of large scale initiatives	Medium scale projects (total value several 10's of Million EUR)
Targets (larger) cities with existing, mature Smart City plans	Targets <u>all cities</u> , also those with new/developing Urban Mobility plans
Large scale demonstration to encourage market uptake and roll-out of tested solutions	Focus on testing and demonstrating innovative solutions and their packaging and impact assessment



Directive 2014/94 on the deployment of alternative fuels infrastructure

→ The Directive entered into force on 17 November 2014 and *tackles the following missing links of the single transport market:*

- The build-up of **an EU-wide network of recharging and refuelling points** (→ economies of scale)
- The development of **harmonized EU-wide standards and common technical specifications** (→ interoperability)
- The provision of relevant, consistent and clear **consumer information** (→ awareness-raising)





The Directive on the deployment of alternative fuels infrastructure

→ *Subject matter [Article 1]*

"This Directive sets out minimum requirements on alternative fuels infrastructure build up, **to be implemented through Member States' national policy frameworks**, including common technical specifications for **recharging points for electric vehicles** and **refuelling points for natural gas (LNG and CNG) and hydrogen**, and user information requirements."

- **Targets to be set by MS in the NPFs** (→ flexibility)
- **Obligation of means**: EC assessment and recommendations
- **Obligation of results**: minimum infrastructure



The Directive on the deployment of alternative fuels infrastructure

→ *National policy frameworks [Article 3]*

The Directive requires Member States to **adopt national policy frameworks and notify them** to the Commission **two years after the entry into force of the Directive**.

The NPFs should include *inter alia*:

- **an assessment of the state and future development of the alternative fuels market** in the transport sector
- national targets, objectives, and supporting measures for the deployment of alternative fuels, including **a minimum level of infrastructure to be put in place**





The Directive on the deployment of alternative fuels infrastructure

→ *National policy frameworks [Article 3]*

The Directive requires the European Commission to:

- **facilitate the development and implementation of the NPFs** through the exchange of information and best practices
- **assist MS in the reporting** on the NPFs
- **assess and report on the coordination and coherence of the NPFs** at EU level
- **publish and update the information on the national targets and the objectives** submitted by each Member State on a regular basis



The Directive on the deployment of alternative fuels infrastructure

→ *Hydrogen supply for transport [Article 5]*

- Those Member States which decide to include hydrogen refuelling points accessible to the public in their NPF shall ensure that an appropriate number of such points are available to ensure the circulation of hydrogen powered motor vehicles, including fuel cell vehicles, within networks determined by those Member States, including cross-border links where appropriate, **by 31 December 2025 at the latest.**





The Directive on the deployment of alternative fuels infrastructure

→ *Standards and technical specifications [Article 4-6]*

For hydrogen refuelling points for motor vehicles:

- **Publicly accessible hydrogen refuelling points shall**, as from 3 years of the date of entry into force of the Directive, **at least comply with the technical specifications set out in Annex II:** ISO/TS 20100, ISO 14687-2, ISO/TS 20100, ISO 17268
- If new standards are adopted by the relevant standardisation organisations, **the Commission is empowered to update the references to the standards** referred to in the technical specifications **by means of** delegated acts.



The Directive on the deployment of alternative fuels infrastructure

→ *Reporting and review [Article 10]*

- Each Member State **shall submit** to the Commission **a report on the implementation of its NPF** *3 years after the deadline of notification* and every three years thereafter. Those reports **shall cover the information set out in Annex I.**
- The Commission shall submit to the European Parliament and the Council, within *3 years from the date of entry into force of the Directive*, **a report on the assessment of the NPFs** and their coherence at Union level, including an evaluation of the level of attainment of the national targets and objectives





The Directive on the deployment of alternative fuels infrastructure

→ *Reporting and review [Article 10]*

- The Commission, *if it considers appropriate*, shall adopt an **Action Plan** for the implementation of the strategy on "Clean Power for Transport" *by 31 December 2018*.
- The Commission shall **review the implementation** of this Directive *by 31 December 2020 at the latest*.





Directive 2009/33

The "Clean Vehicles Directive" creates:

Favourable conditions to foster market introduction of environmentally-friendly vehicles by creating economies of scale.

=> Incentives for manufacturers to produce energy-efficient vehicles.

The internalisation of external costs leads to an improved competitiveness of the European economy while also improving the contribution of the transport sector to the environment, climate and energy policies of the Union by reducing energy consumption, CO2 and pollutant emissions.



Elements of Directive 2009/33

Lifetime impacts have to be taken into account on a mandatory basis in purchase decisions on public transport vehicles:

- Energy consumption
- CO₂ emissions
- Pollutant emissions (NO_x, NMHC, PM)



Elements of Directive 2009/33

Three options exist:

- 1) **Technical specifications** regarding energy and the environment
- 2a) Energy and environmental impacts can be considered as **award criteria**
- 2b) The **impacts can be monetized** under the second option. This leads to the **mandatory application of a harmonized methodology.**



Directive 2009/33

- If the impacts are monetised for inclusion in the purchasing decision, common rules shall be followed, as defined in the Directive.
- The lifetime impacts of vehicles include at least energy consumption, CO₂ emissions and emissions of the regulated pollutants of NO_x, NMHC and particulate matter.
- Purchasers may also consider other environmental impacts.





Directive 2009/33 Monitoring

- The Commission monitors the application of the Directive via reports to be issued every two years.
- The first report on the application of the Directive was published on 18 April 2013 as COM(2013) 214 final.
- This legislation is being evaluated externally at the moment with a view to policy recommendations on how to proceed with this Directive by Q3 2015.





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Thank you!

kemal.onel@ec.europa.eu

<http://ec.europa.eu/eip/smartcities>

<http://eu-smartcities.eu>