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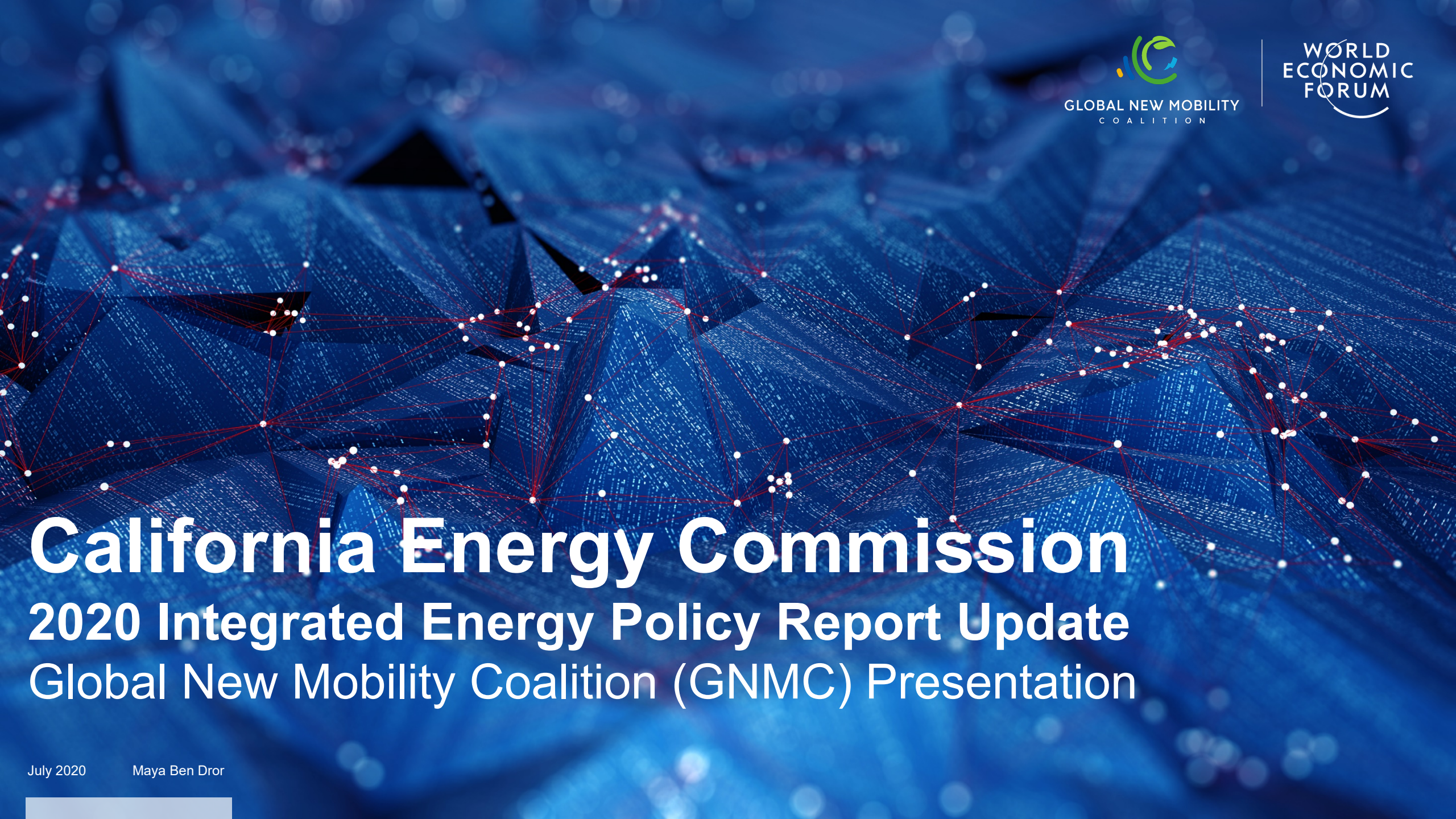

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WORLD ECONOMIC FORUM

California Energy Commission

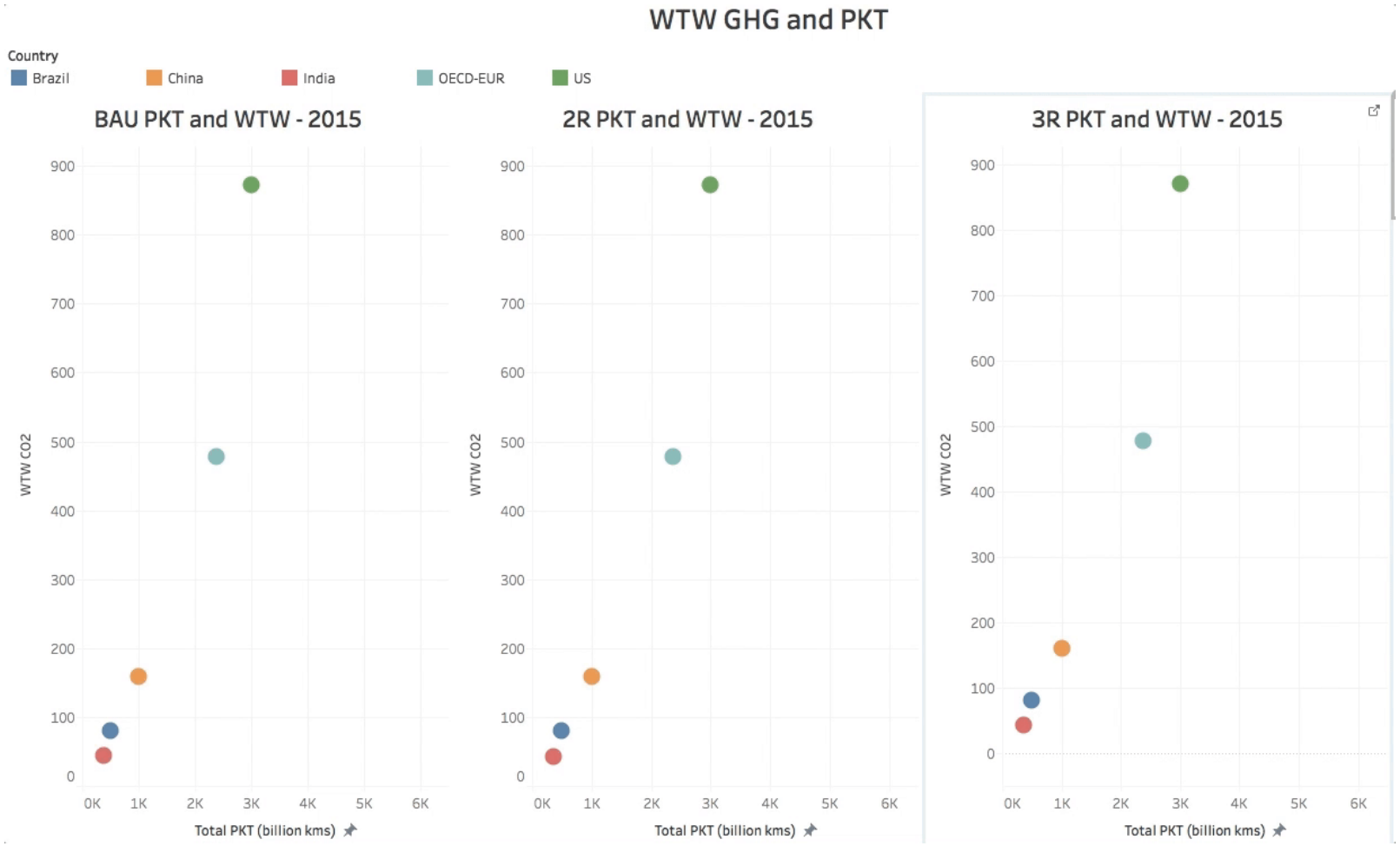
2020 Integrated Energy Policy Report Update

Global New Mobility Coalition (GNMC) Presentation

July 2020

Maya Ben Dror

The Challenge and Opportunity: electrification alone won't prevent a climate crisis; Shared, Electric and Automated Mobility (SEAM) will.



2R: electrification and automation enabled

3R: shared, electric, and automated mobility encouraged

- Provide for increased mobility demand
- Mitigate over 80% of passenger transport CO_2
- Decrease measured mobility costs by 40%
- Cut global energy use from urban passenger transportation by over 70%
- Achieve savings approaching $5 trillion per year

- By 2050.

Fulton, L., Mason, J., & Meroux, D. (2017). Three revolutions in urban transportation: How to achieve the full potential of vehicle electrification, automation, and shared mobility in urban transportation systems around the world by 2050 (No. STEPS-2050). https://steps.ucdavis.edu/gifsanimations-for-the-three-revolutions-in-urban-transportation/

VMT/VKT is key for advancing AV technology. Shared AVs (SAV) lower costs and carbon emissions, even if induce additional VMT in the ST.

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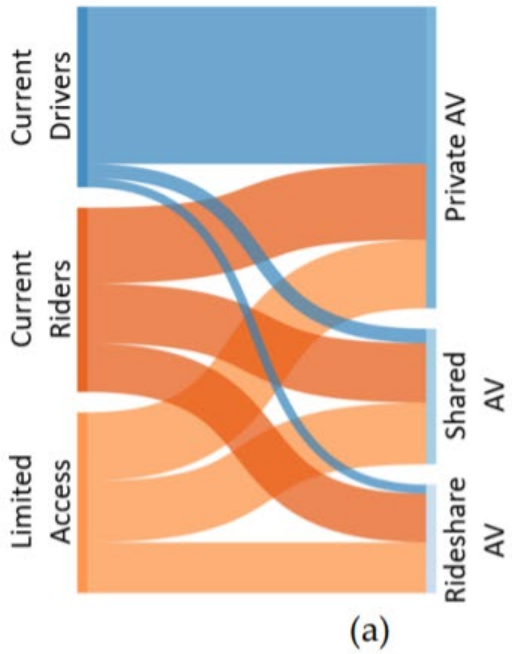
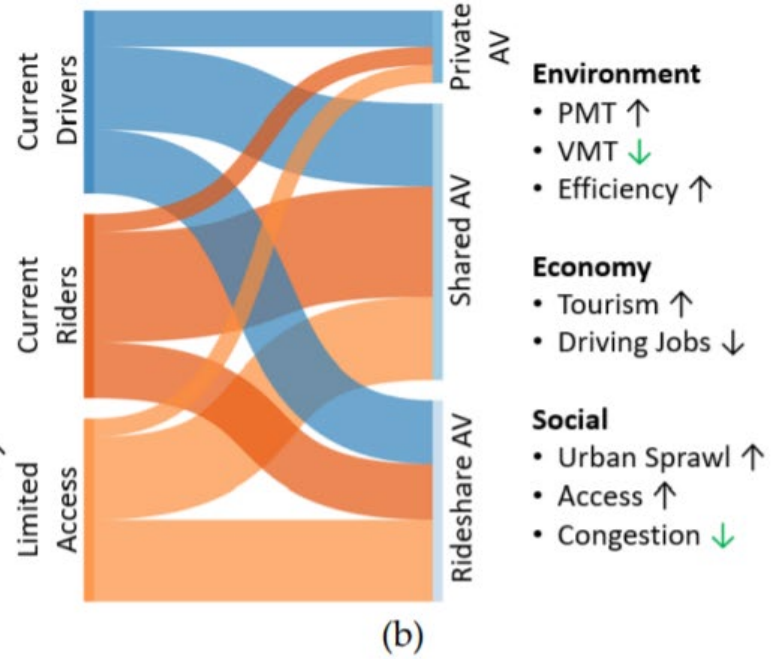
- Safety first
- Multimodality is critical for AVs as a Service

- Priorities high-use vehicles
  → SAVs ultimate use-case

Qualitative visualization of two possible adoption patterns for autonomous vehicles (AVs)



Many consumers prefer and can afford owning their own AV



For cost and other reasons, many prefer to give up owning and either ride in shared AVs or ride-share AVs

Williams, E., Das, V., & Fisher, A. (2020). Assessing the Sustainability Implications of Autonomous Vehicles: Recommendations for Research Community Practice. Sustainability, 12(5), 1902. https://www.mdpi.com/2071-1050/12/5/1902/pdf

Jones, E. C., & Leibowicz, B. D. (2019). Contributions of shared autonomous vehicles to climate change mitigation. Transportation Research Part D: Transport and Environment, 72, 279-298. https://www.sciencedirect.com/science/article/pii/S1361920918310861

Guided by a long-term vision for sustainable mobility, harmonization of regional and local approaches can steer cities' tailored SEAM facilitation.

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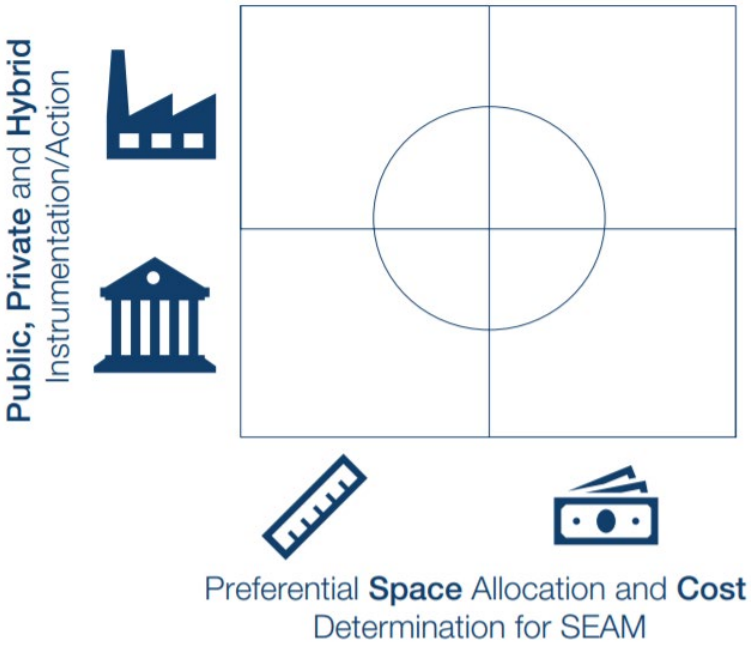
Policy design - Two dimensions at play



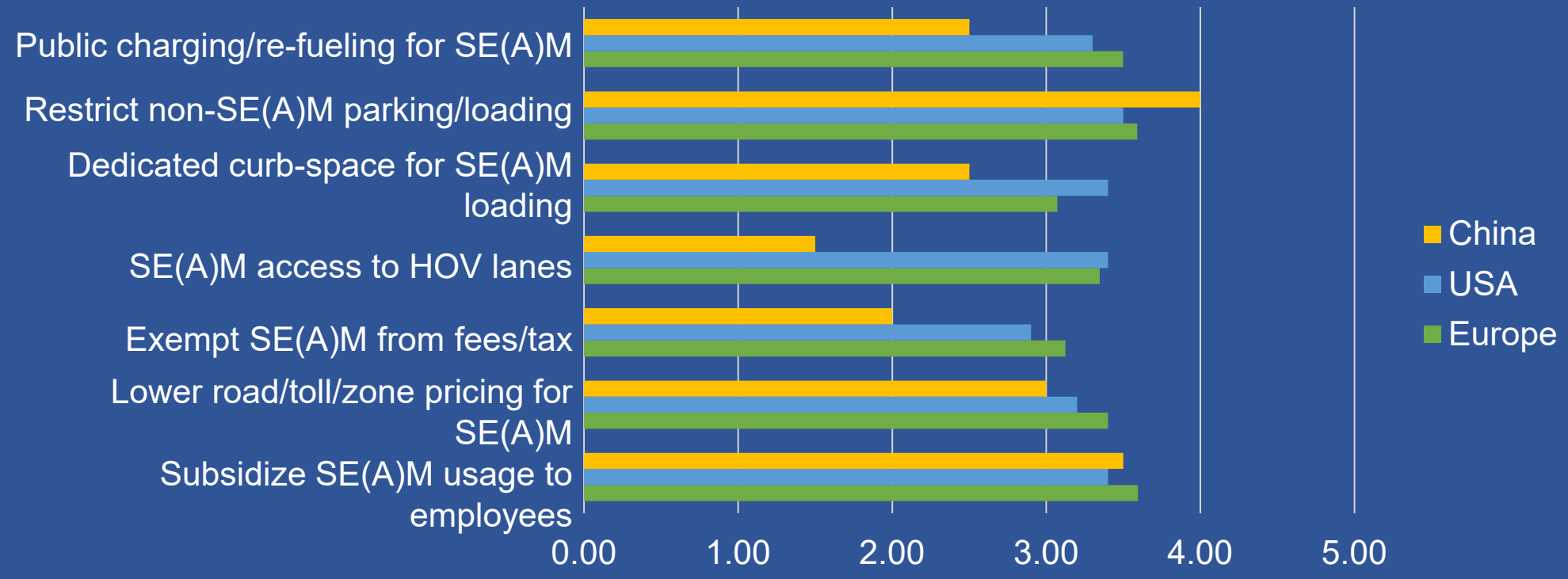
- Context-based approach, transition pathways

- Institutional coordination:

- Committee on Autonomous Road Transport for Singapore (CARTS)
- Office of Future Transport Technology
- Centre for Connected and Autonomous Vehicles (CCAV)
- China EV100 formed ICV Cities Alliance

http://www3.weforum.org/docs/WEF_Governance_Framework_US_UE_Prototype.pdf

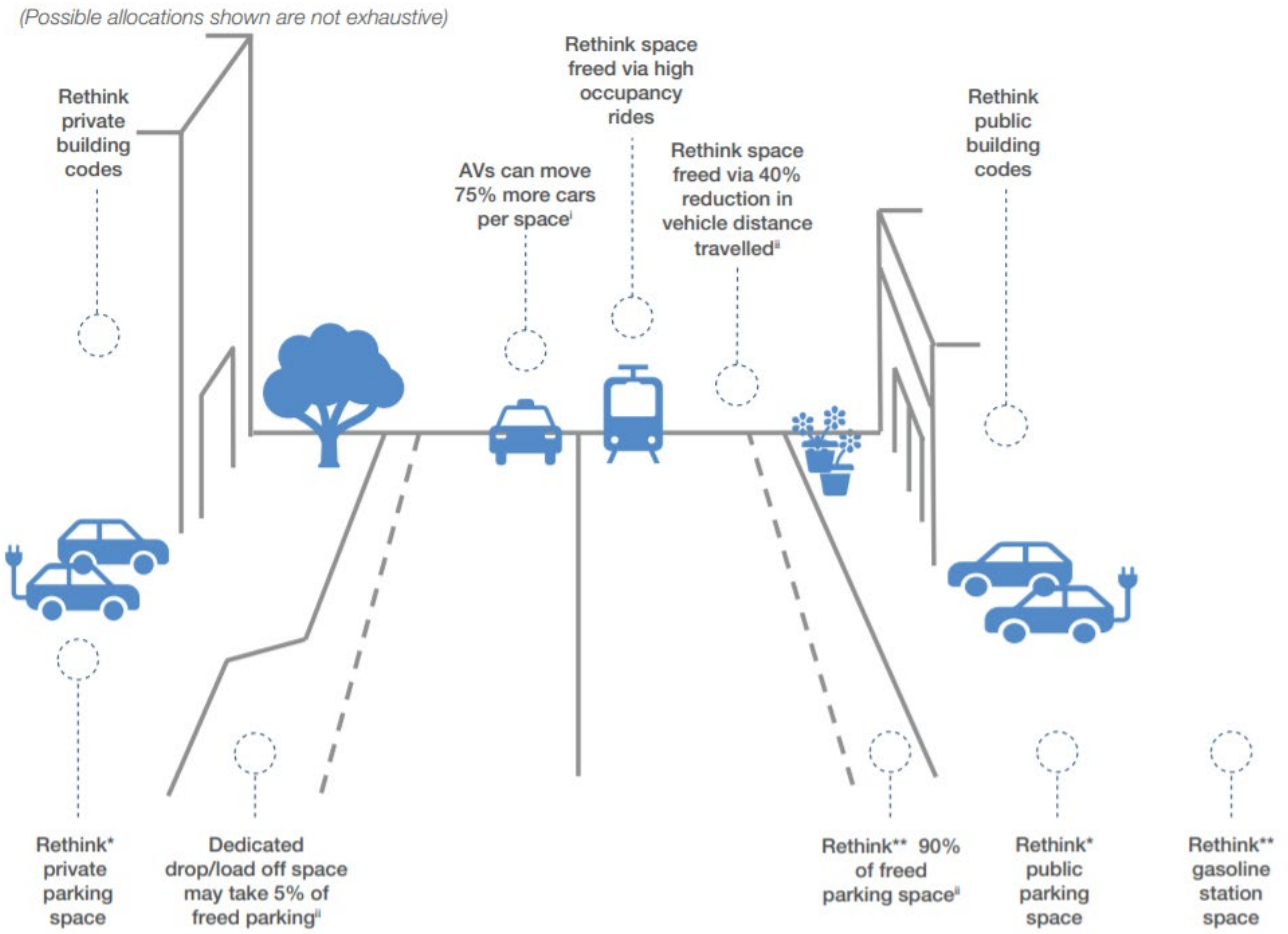
Well-designed packages of policy instruments can guide a SEAM transition for improved mobility energy efficiency.



Key policies ranking: initial global multi-stakeholder exercise (survey)

50% (importance) + 50% (feasibility) → 0=least … 5=most

COVID-19 presents threats and opportunities for SEAM. Recovery can accelerate transition to SEAM, if done right.



* Rethink parking: drop-off/load-on; Prioritize space for shared electric (autonomous) modes, etc.
** Rethink curb-space: active/micro mobility, high occupancy, green space, etc.

Source: Authors; [i] "Advice On Automated and Zero Emissions Vehicles Infrastructure", *Infrastructure Victoria*, October 2018; [ii] "Transition to Shared Mobility: How large cities can deliver inclusive transport services", *International Transport Forum Policy Papers*, No 33

http://www3.weforum.org/docs/WEF_Governance_Framework_US_UE_Prototype.pdf

COVID-19 impacts:

- Made all mobility users vulnerable; "biosafety"
- Accelerated smart solution adoption: in-cabin, in-app, on-street
- Increased data harvesting and sharing
- Opened up street to prioritized modes and uses
- Structured silos were removed, even if temporarily:

  - Movement of people < > Movement of things
  - Public operators < > Private operators

SEAM can gain momentum.

Multistakeholder engagement can reduce uncertainties and ensure an efficient SEAM investment by private and public sectors.

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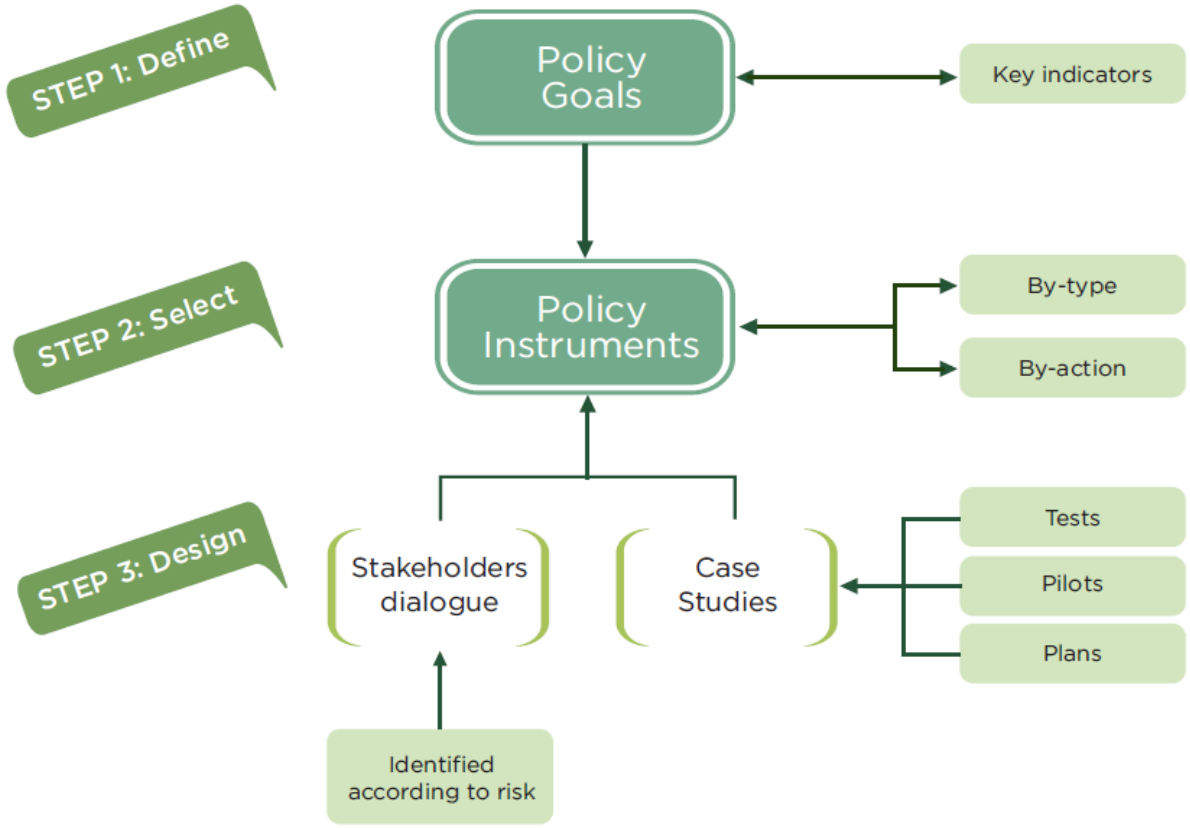
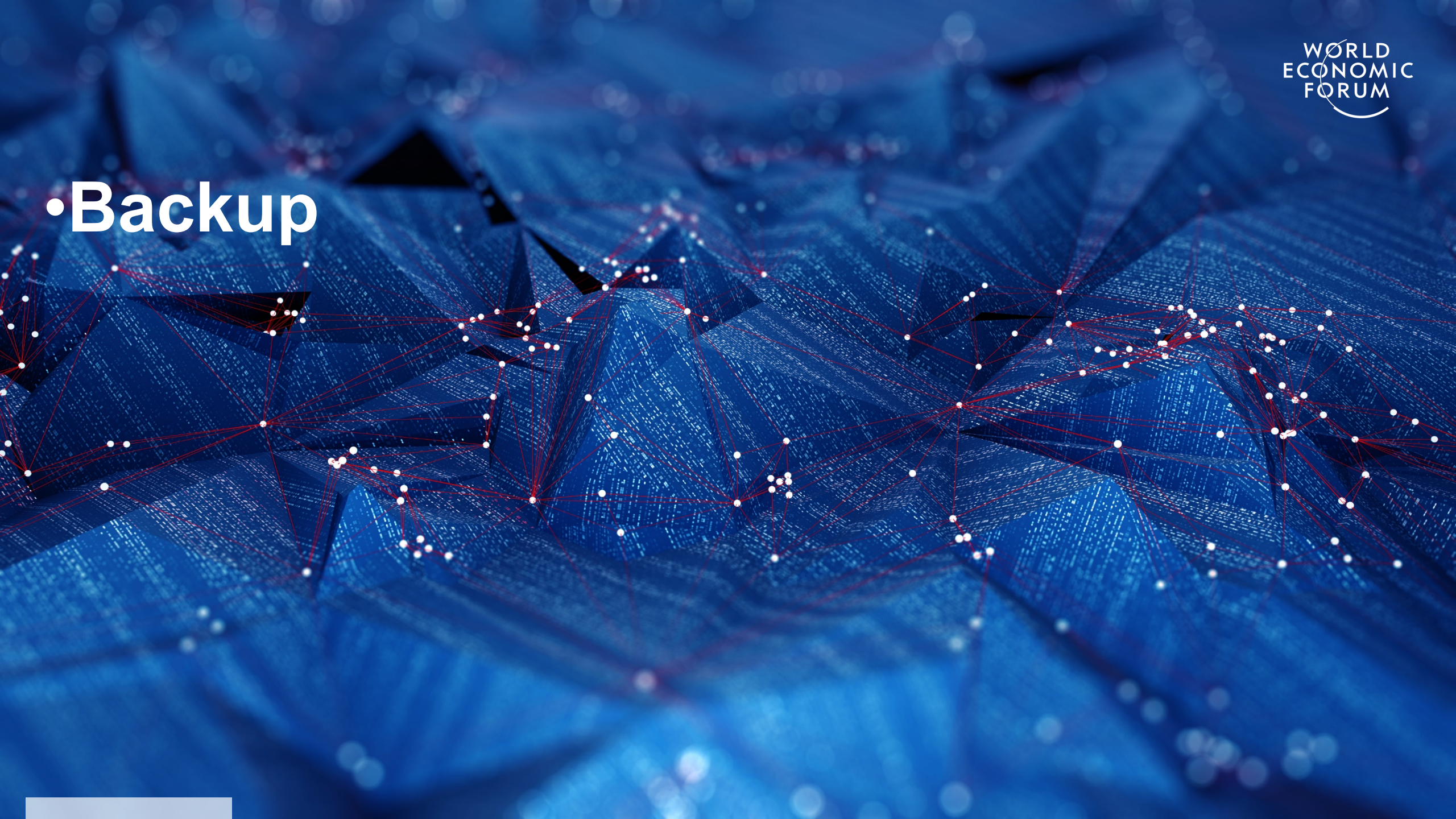
- Systemic changes to travel need to be addressed in policy evaluations
- New approaches to public engagement
- Consider:

- Battery as a Service: storage, bi-directional charging, financing
- Designated spaces: mobility/maintenance/ charging hubs, smart fleet energy management

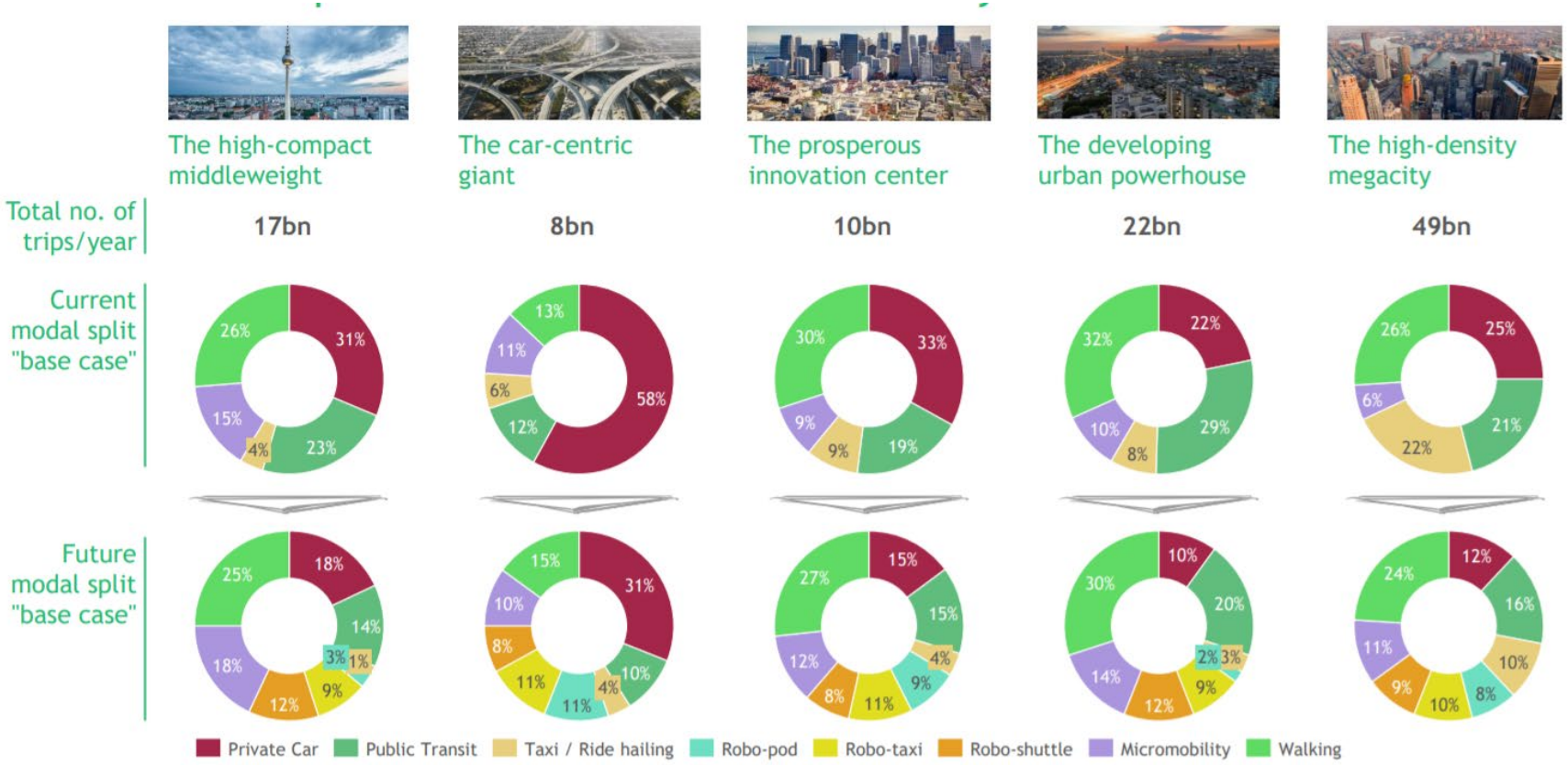
Sustainable AV Framework Development Process





•Backup

Archetypes @ BAU



http://www3.weforum.org/docs/WEF_Reshaping_Urban_Mobility_with_Autonomous_Vehicles_2018.pdf