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**European Week  
Brussels 7-10 October 2019**



# A critical reflection on large-scale implementation of electric vehicles in Europe

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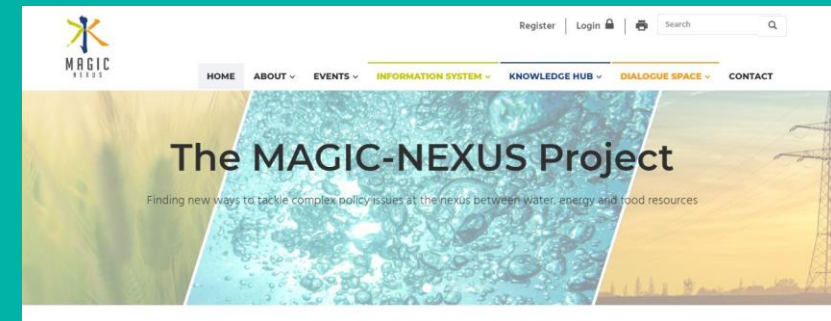
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 689669.



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## MAGIC – DOING THINGS DIFFERENTLY?

- **M**oving towards **A**daptive **G**overnance **I**n **C**omplexity: Informing Nexus Security (MAGIC) - H2020 Water-2b-2015
- Duration: 01 June 2016 – 31 May 2020
- MAGIC proposes a novel approach to the use of scientific information in the process of governance by replacing the narrowly technocratic and disciplinary research paradigm with Quantitative Story-Telling (QST)





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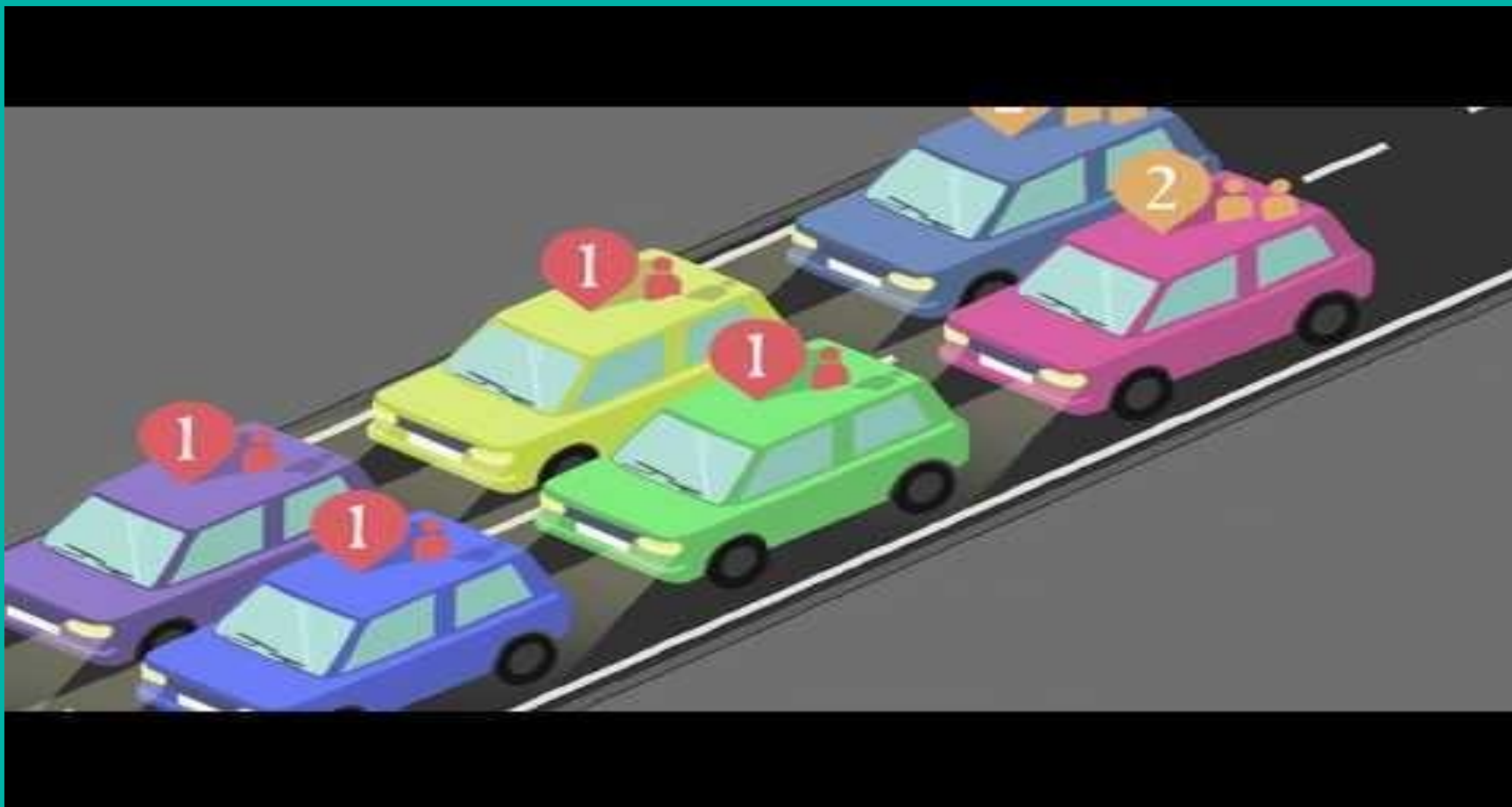


## How to deal with:

- ***Unknown unknowns*** – deep uncertainty coming from situations that cannot be predicted or even imagined
- ***Known unknowns*** – knowledge that is ignored either unwillingly or purposefully → **Uncomfortable knowledge**



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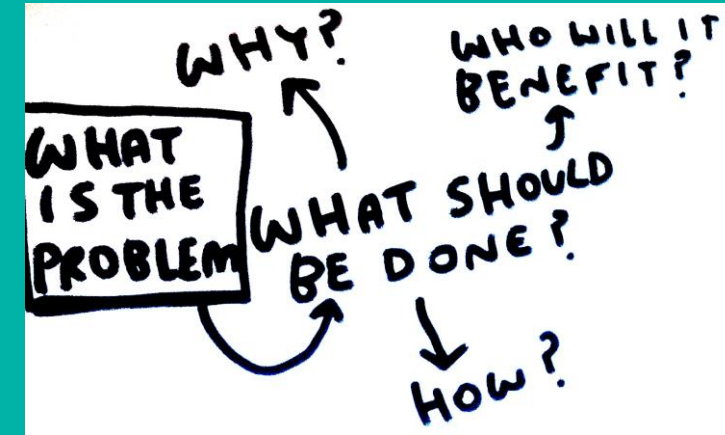


**Video Series on Uncomfortable Knowledge:**

<https://www.youtube.com/playlist?list=PLIZrkdjNiMaWa0Gq3RT2NRQHPTkrARVmH>

## Policies are dominated by three types of narratives\*

- **Justification narratives** - Why does the EU want to increase the number of electric vehicles?
- **Normative Narratives** – What are the solutions chosen for the selected problems
- **Explanation Narratives** – How to achieve the proposed results





## Justification narrative

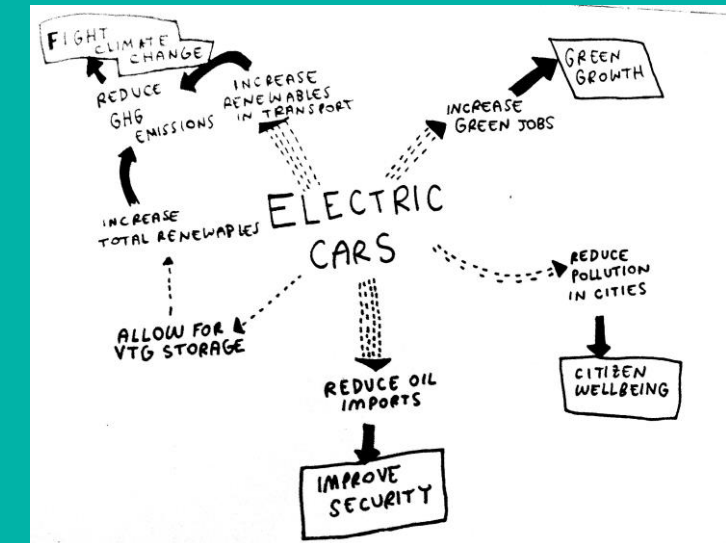
To get a more sustainable mobility the EU want to dramatically increase the number of electric vehicles

WHY

## Quality Check

Which problems are EVs aiming to solve? Mobility (changes in social practices) or Technological issues (changes in technology)?

Why should a massive implementation of EVs in the EU by 2050 be considered better than a massive move to public transport and/or car-sharing?



## Normative narrative

The EU must increase dramatically the number of electric vehicles

## Quality Check

What are the main constrains and potential problems that we should expect with a massive implementation of EV? Should we just do “More of the same” but with a different technology?



## Explanation narrative

The evidence used to inform policies when defining targets and select the strategy to achieve them

## Quality Check

How robust are current knowledge claims about: mobility, EV technology and CAVs?

Who will benefit from a transition to electric vehicles? Are EVs a plaything of the wealthy?

HOW

MIND THE GAP



## Are we talking of a 'plausible' narrative?

- What about the additional electricity required by a scaling up of EV? Given the current problems with renewables, what if this scaling up would cause a big ramp-up in fossil fuel use (and would not lower CO2)?
- Are we sure that we can scale up storage capacity for both cars and electric grids?

Vaclav Smil's "Energy Myths and Realities" - A review (2010)



### Storage for all-renewable systems

By 2021 the largest announced storage system (more than 18,000 Li-ion batteries) will be in Long Beach for Southern California Edison: it will be capable of running at 100 MW for 4 hours. But 400MWh is still **three orders of magnitude lower than what a large Asian city would need in just one day if deprived of its intermittent supply**

Tokyo at 25 GW for just one day under typhoon = 600 GWh  
 $600 \text{ GWh} / 400 \text{ MWh} = 1,500$





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# Thank you!

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<http://magic-nexus.eu/>

<https://www.facebook.com/MagicNexusEu/>

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# World café (60 min)

Which problems are E-C-A vehicles aiming to solve?

What are the main challenges, incoherences and trade-offs that we could expect with a massive implementation of E-C-A Vehicles?

Imagine 'future mobility'...