## Session 4 Panel Discussion



**URAF** T ID

### Materials Efficiency in Portable Energy Storage

#### Session's theme

# No doubt that the market will grow, the questions are

- pace
- sustainability
- materials efficiency



### **Issues of efficiency solutions**

All actors along the supply chain are strongly investing in

- energy efficiency
- substituting critical elements
- product designing for recycling
- high quality recycling at lower cost



#### Smarter

- Higher usage rate of clean mobility
- Improved safety & battery performance to weight
- Regionalization of global supply chains

#### Less

- Reduced usage of critical materials (less Co. etc.)
- New and thinner design of battery components
- Recycling the metals along the battery life

#### Longer

- Number of cycles (additives and electrolytes for long cycling)
- Longer life of batteries (improvement of separators etc.)
- Second life: reuse of batteries whether for same or different usage



#### **Cooperation along the value chain & better use of Al**



# Should we wish for more regulations or better / internationally coordinated regulations?

#### Examples:

proper allocation of costs along the supply chain
use of easy recycling materials

#### legal framework

ex: Home Appliances Recycling Law in Japan

- washing machines' recycling rate :
- 56% **•** 90% (in 16 years)
- less illegal dumping, enhance technologies by aid
  - sound economical system

international harmonization



Key challenges of materials efficiency for portable energy storage



Besides Above: Safety, Cost, Network of charging spots



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#### **Target for Efficiency Challenge by 2025**

Smarter >2025 (new generation batteries)

 – 80% charge in 15 minutes current level is typically from 15% to 80% in 30 minutes

– energy density of >1000 Wh/L ou bien >350 Wh/kg specific currently 700 Wh/L and 250 Wh/kg are best-in-class

Less in 2035 (used batteries)

- collect and recycle or reuse 80% of used EV batteries



#### Target for recycling rate from cells by 2030

Mn

90%

Li

50%



Ni

90%

- an optimized dismantling and crushing system of the batteries and cells focusing on elimination of the illegal dumping, safety standard and efficiency (including necessary regulations),
- II. consensus among the people as to who bears the cost for the collection recovery and dismantling
- III. metal recovery from cells (original cathode and anode materials) taken out from the crushed batteries in an economically feasible way
- IV. the institutional consistency in this respect among the jurisdictions



**Co** 90%



# Let's discuss together!

