INEA

Innovation and Networks Executive Agency

Energy Efficiency in Electric Vehicles

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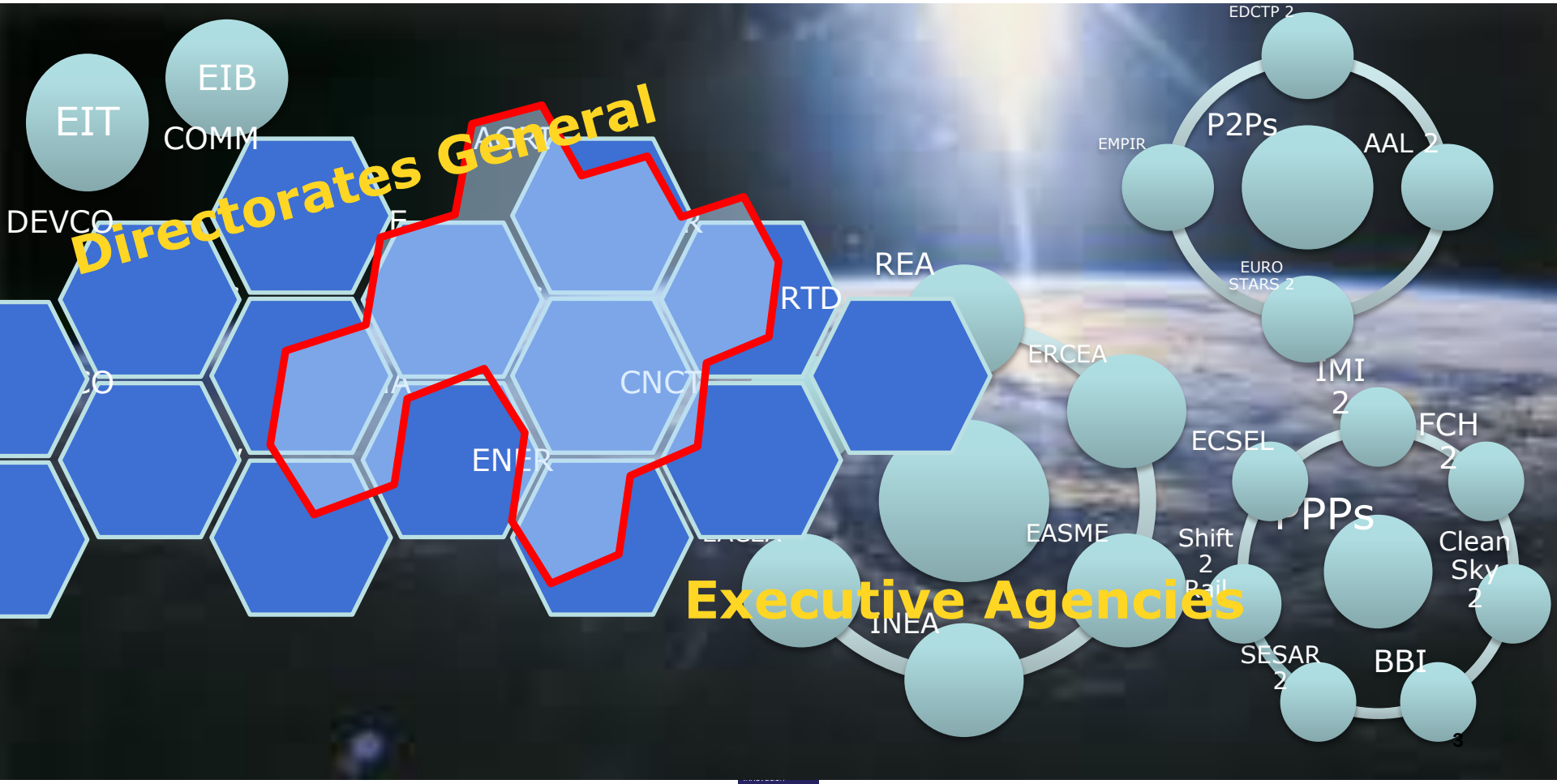
OUTLINE

- **INEA**
- **Transport Societal Challenge**
- **Green Vehicles/Electric Vehicles in H2020**
- **Electric Batteries in H2020 – Perspectives**
- **Conclusion**

Implementation of H2020 - Overview



Partnership with the Commission

European Commission	INEA (Executive Agency)
Defines the policy	**Turns policy into action**
• Defines strategy, objectives and priority areas/work programmes	• Organises Calls for proposals
• Selects projects for co-financing	• Monitors the technical and financial implementation of projects
• Makes programme decisions	• Manages project lifecycle
• Evaluates the programme and the Agency's performance	• Ensures sound financial management

INEA

Executive Agency with **4 Commission Parent DGs:** ENER, MOVE, RTD, CNECT

- **€34 billion**: largest budget of all EAs for 2014-2020
- Solid experience in **programme implementation and project management**
- Rapid expansion from 100 staff in TEN-T EA to around **300 staff** managing around **2000 + projects** by **2020**
- Currently **>220 staff** in a team of **27** EU nationalities

Added value of INEA

- Single access point for programmes
- Full coverage of the R&I life cycle (H2020, CEF)
- Increased services and targeted flow of information
- Improved visibility for EU support

In summary:

- **objectives (work programme) set by the Parent DGs**
- **all implementation activities performed by INEA**

INEA's programmes

- **CEF Transport** (€22.4 billion)
- **CEF Energy** (€4.7 billion)
- **CEF Telecom** (€0.3 billion)

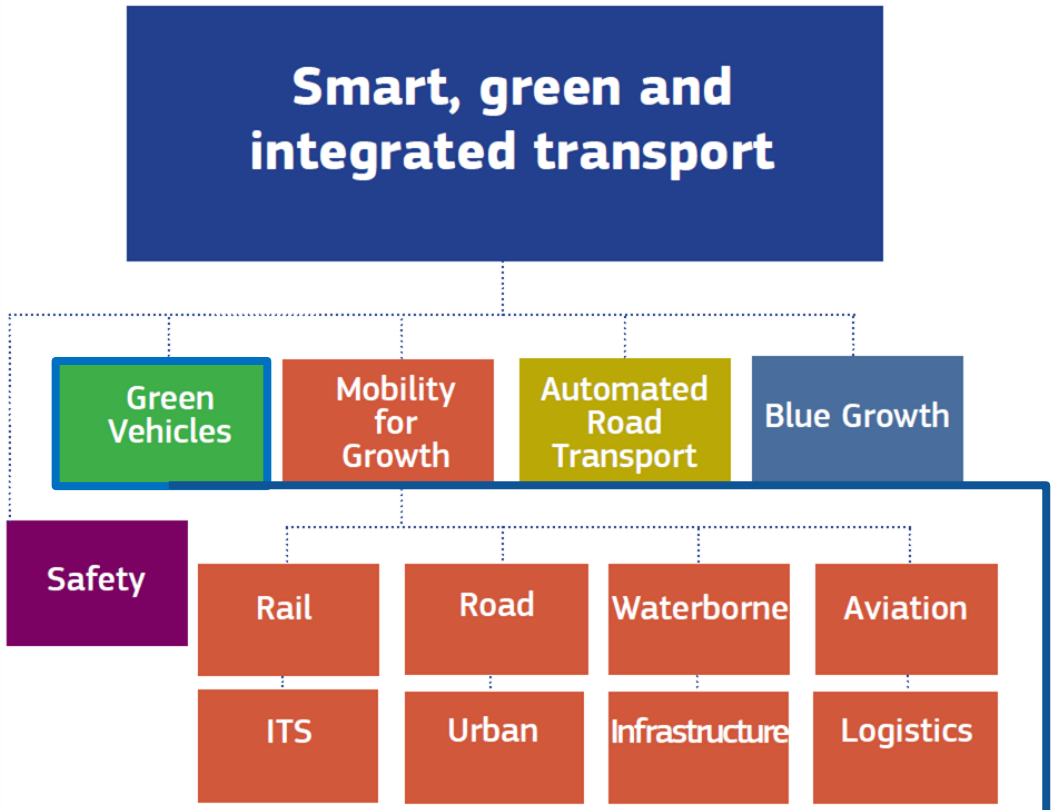
- **H2020 Transport** (€2.9 billion)
- **H2020 Energy** (€3.8 billion)

Marco Polo legacy from 2007-2013
(before managed by EACI – now EASME)

TEN-T legacy from 2007-2013

(Total budget: €34 billion)

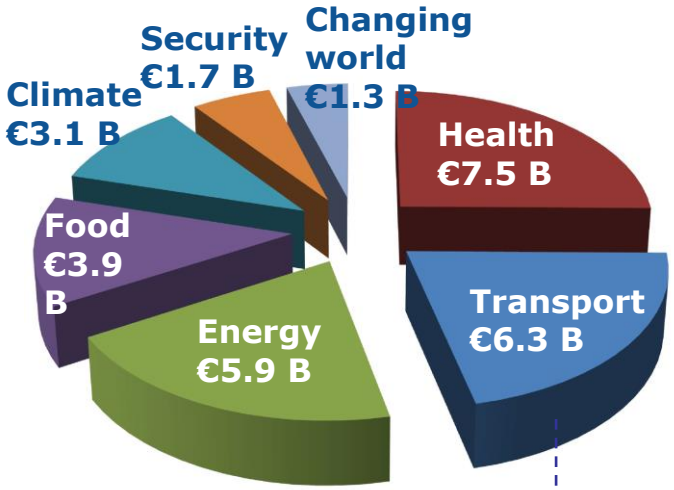
Transport Societal Challenge



Topics & Scope

- Batteries & Battery Management Systems
- Electric Vehicles
- Hybrid Vehicles
- Internal Combustion Engines
- Urban freight logistics
- Architectures
- Concepts

H2020: Seven societal challenges



Share in H2020:

- Health - 9.7%
- Transport - 8.2%
- Energy - 7.7%
- Food - 5%
- Climate - 4%
- Security - 2.2%
- Changing world - 1.7%

H2 – Societal challenge Smart Green and Integrated Transport

At present the total EU budget managed by H2: € 809 M€

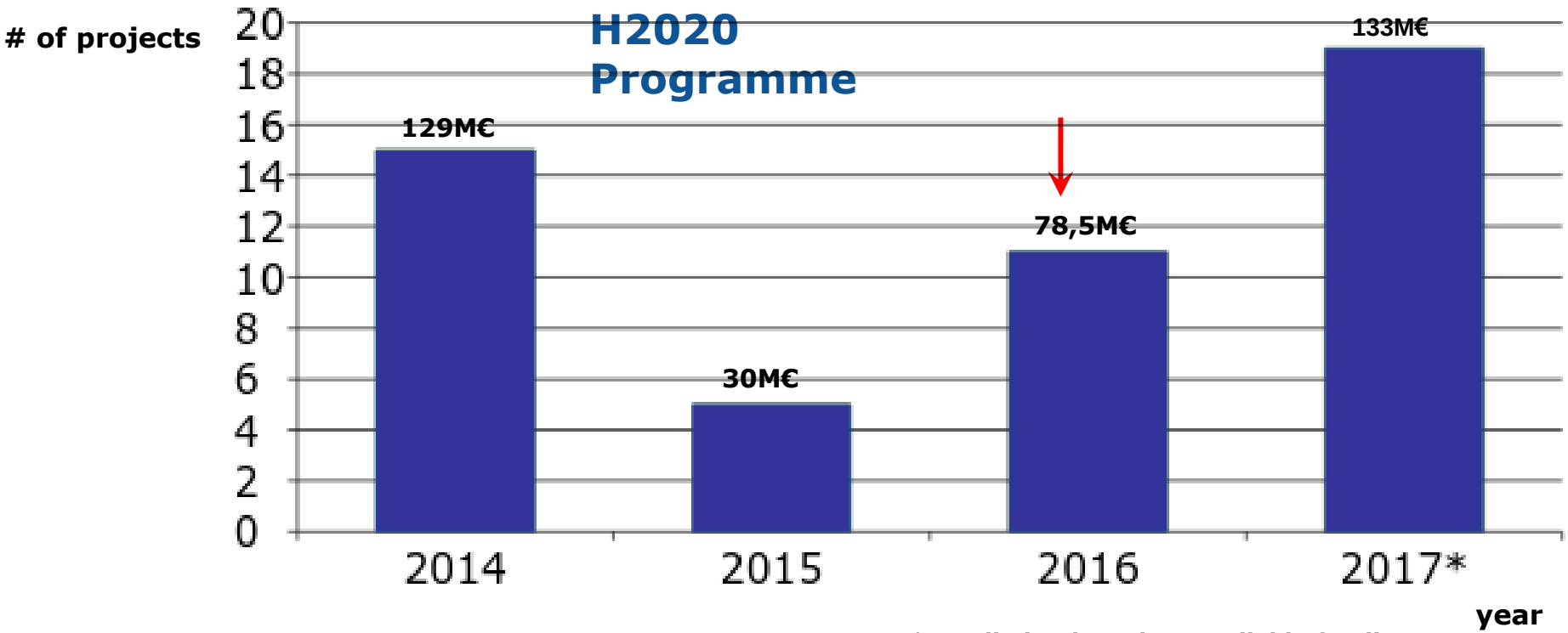
Smart, green and integrated transport

- Total budget € 6.3 billion
- INEA budget € 2.9 billion
- 137 on-going projects
- circa 400 projects by 2020

INEA's contribution to Green Vehicle research in H2020

Implementing a budget of 370 million € - 31 projects running

Currently funding **of 284 unique beneficiaries**



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Electric Vehicles in H2020 Workprogramme 2016-2017

2016 (65M€):

GV-02-2016. Technologies for low emission light duty powertrains:

* ***New generation of non-hybrid engines based on existing engine technologies***
* ***Future combustion engines for electrified powertrains***

Research and Innovation Actions (RIAs)

Electric Vehicles in H2020 Workprogramme 2016-2017

2016:

GV-03-2016. System and cost optimised hybridisation of road vehicles:

* ***System integration of hybrid powertrains***
* ***Identify potential for cost reduction***
* ***Power-train system optimisation***
* ***Improved after-treatment operation, control of emissions***

Innovation Actions (IAs)

Electric Vehicles in H2020 Workprogramme 2016-2017

2017 (133M€):

GV-04-2016. Next generation electric drivetrains for fully electric vehicles, focusing on high efficiency and low cost:

* ***Functional system integration of electric machines (e.g. high speed motors)***
* ***Lower cost electric machines***
* ***Integration of power electronics with battery charging functions***
* ***Modular electric power train components compatible with both full electric and hybrid applications***
* ***NVH.***

Research and Innovation Actions (RIAs)

Electric Vehicles in H2020 Workprogramme 2016-2017

2017 (133M€):

GV-06-2017.Physical integration of hybrid and electric vehicle batteries at pack level aiming at increased energy density and efficiency:

- ***Thermal, electrical and mechanical design of battery systems based on Li cells***
- ***Design for manufacturing, recycling and second use.***
- ***Prototyping and mass-production technologies for battery systems.***
- ***Demonstration of performance, lifetime and safety behaviour***

Innovation Actions (IAs)

Electric Vehicles in H2020 Workprogramme 2016-2017

2017 (133M€):

GV-07-2017 (1 of 2). Multi-level modelling and testing of electric vehicles and their components:

- ***scalable real-time models for e-drive components (e-motor, batteries, inverters, fuel-cell, etc.)***
- ***Development of heterogeneous testing facility for electric traction drive and storage system***
- ***Development of systems and methods to assess reliability, energy content and commercial certainty for battery systems***

Electric Vehicles in H2020 Workprogramme 2016-2017

2017 (133M€):

GV-07-2017 (2 of 2). Multi-level modelling and testing of electric vehicles and their components:

- ***Investigation on reliable and automated methods and procedures for parameter identification of physical and/or empiric models of batteries (state of charge and health, lifetime, etc.).***
- ***New tools and methods integrated with control development for improving safety analysis and reducing costs.***

Research and Innovation Actions (RIAs)

Electric Vehicles in H2020 Workprogramme 2016-2017

2017 (22M€ with MG-4.1-2017):

MG-4.2-2017. Supporting 'smart electric mobility' in cities

* ***Development of integrated approaches and testing of "business" models for the local production and distribution of electricity together with electric vehicles fleet, to create the conditions for market take up in urban and sub-urban areas.***
* ***Approaches include e.g. charging at work places, private parking places, homes, public spaces, transport intermodal hubs, system integration of large fleets of electric vehicles (BEVs and PHEVs), multimodal platforms, etc.***

Innovation Actions (IAs)

For more information

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Look for INEA!

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