A strategic research and innovation agenda for effective material recycling from ELV, WEEE and plastic packaging waste streams – an overview

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The project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement no 642231.
Provide guidance for EU policy makers regarding needs in research and innovation to support material recycling towards and within a circular economy
The project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement no 642231.
“By the year 2030 the potential of recycled materials is fully unleashed in Europe by achieving high rates of materials recovered from end of life vehicles (ELV), waste electrical and electronic equipment (WEEE) and plastic packaging waste (PPW) and the use of recycled materials as quality input for a wide range of applications, including high-grade ones”
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**Effective collection - proposed research and innovation actions**

**Vision**

By the year 2030 the potential of recycled materials is fully unleashed in Europe by achieving high rates of materials recovered from WEEE, ELV and PPW and the use of recycled materials as quality input for a wide range of applications, including high-grade ones.

**Waste streams**

- **WEEE**
- **ELV**
- **PPW**

**Research and Innovation actions**

E.g. **Investigation and design for improved collection systems for PPW**
- Investigate the best solutions for collection systems
- Investigate and evaluate the behaviour of the end consumers
- Raise consumer awareness
- Incorporate measures in the collection systems to meet the requirements of recyclate users

**Expected impact:**
- Increase the amounts to material recycling
- Increase quality of recycled plastic materials
Optimized sorting and recycling - proposed research and innovation actions

Vision
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Waste streams

E.g. Use of robotics in sorting and disassembly of valuable and hazardous materials

- How to deal with the diversity of waste products for robotic sorting/disassembly
- Improve the speed of detection/sorting through the introduction of robotics
- Development of self-learning systems for analysis and sorting/disassembly

Expected impact:
- Reduction of disassembly/sorting costs
- Increased value of recycled materials
- Increased functional material recycling

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Well-functioning market - proposed research and innovation actions

Vision
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Waste streams
- WEEE
- ELV
- PPW

Research and Innovation actions
E.g. Investigate material ownership by the producer
- Investigate the potential consequences of material ownership by producers
- Propose actions that support material ownership by producers

Expected impact:
- Increased knowledge of the potential effects of material ownership
- New business models that would allow more effective recycling
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Supporting policies and legislation—proposed research and innovation actions

E.g. Increase the demand for recycled plastics
- Promote green procurement, which encourages the use of recyclates
- Promoting or demanding use of post-consumer recycled content in new products
- Offer financial incentives for design for circularity of plastic products and components, e.g., avoiding multilayer and multi-material whenever possible

Expected impact:
- Establishment of up a functional recycled raw material market for plastic waste.
- Better basis for policy decisions in the Commission and in the Member States.
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**E.g. Design of packaging for effective recycling**
- Exploring the possibilities of using single material for the application
- Development of specific additives enabling different polymer blends that also support recyclability
- Development of recyclable, multi-layered structures that are easy to separate/recycle

**Expected impact:**
- The recycling of the packaging applications is improved through reduced need for separation of different material fractions
- Improved recyclability of multi-layered structures
- Preventing contamination of the resulting secondary raw materials.
The full version of the research and innovation agenda will be published on
http://www.newinnonet.eu/ by July 2017
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Helsinki, Unleashing the Power of Recycled Metals and Plastic in a Circular Europe, New_Innonet final conference