Report on the Kick-off & Network meeting
- Boosting synergies on EU WASTE Research and Innovation projects'' -
8th December 2015
(Final Version – 2nd February 2016)

Executive Agency for Small and Medium-sized Enterprises (EASME)
Unit B.2 - H2020 Environment and Resources
Sector B.2.1 H2020 Eco-innovation
Sector B.2.4 H2020 Raw Materials
About EASME

The Executive Agency for Small and Medium-sized Enterprises (EASME) is one of six Executive Agencies of the EU and manages European programmes and initiatives (significant parts of COSME, LIFE, Horizon 2020 and EMFF) on behalf of the European Commission. It works closely together with the respective parent DG’s, who focus on legislative and strategic tasks in policy making. We aim to help create a more competitive and resource-efficient European economy based on knowledge and innovation. We provide high quality support to our beneficiaries, turning EU policy into action. EASME Unit B2 implements the H2020 calls under the Societal Challenge 5 including the Waste Focus Area call. Our aim is to act as a knowledge broker\(^1\) between the actions we fund and the relevant EU policies and initiatives. Knowledge brokering\(^1\) is essential to improve results for on-going and future projects. Sharing knowledge and experiences can lead to the creation of new knowledge, to ensure wider applicability of the project results and reduce unnecessary duplication of efforts of on-going and past projects.

\(^1\) Knowledge Brokering (KB): a two-way exchange of knowledge about an issue, which fosters collective learning and usually involves knowledge brokers or ‘intermediaries’.

Figure 1. Participants at the Kick-off & Network meeting “Boosting synergies on EU WASTE Research and Innovation projects” organized in Brussels on 8\(^{th}\) December 2015

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Report on the Kick-off & Network meeting – Boosting synergies on EU Waste R\&I projects, 8\(^{th}\) December 2015, COV2 Building, Brussels
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Abbreviations

**EC** European Commission

**DG RTD** European Commission Directorate General for Research and Innovation

**DG ENV** European Commission Directorate General for Environment

**DG GROWTH** European Commission Directorate General for Internal Market, Industry, Entrepreneurship and SMEs

**EASME** Executive Agency for Small and Medium-sized Enterprises

**H2020** Horizon 2020, EU Framework Programme for Research and Innovation

**FP 7** 7th Framework Programme for Research and Technological Development

**CIP** Competitiveness and Innovation Programme 2007-2013

**LIFE** EU Funding Programme for the Environment and Climate Action

**EIP** European Innovation Partnership

**SPIRE PPP** Public Private Partnership for Sustainable Process Industry and Resource Efficiency

**EIT KICs** Knowledge and Innovation Communities from the European Institute of Innovation and Technology

**SMEs** Small and Medium-sized Enterprises

**EEN** Enterprise Europe Network

**Waste Projects** Projects that received a grant under the H2020-Waste1/Waste3/Waste4a/Waste4c/Waste4d/Waste5 2014 topics from the call "A resource to Recycle, Reuse and Recover Raw Materials"

This report was prepared by EASME Unit B.2, sectors B.2.1 H2020 Eco-innovation and B.2.4 H2020 Raw Materials.
1. Executive Summary

On December 8th 2015 the Executive Agency for Small and Medium-sized Enterprises (EASME) hosted a kick-off & networking meeting for projects from the H2020 Waste 2014 call "A resource to Recycle, Reuse and Recover Raw Materials" to promote the transition towards a near-zero waste society by boosting innovative, systemic, environmentally friendly and cross-sectorial waste prevention and management solutions, in order to reduce environmental depletion, impacts on health and Europe's dependency on the import of raw materials, and to reinforce its position as a world market leader.

Some of these projects on Waste are carried out through the new "innovation action" instrument where important actors from different economic sectors work together to demonstrate on the ground the feasibility of innovative solutions.

We have invited to the event representatives from several related on-going and completed FP7, CIP Eco-innovation and LIFE projects, beneficiaries from SME Instrument, representatives of the SPIRE PPP, EIP Raw Materials, EIT KICs on Climate and on Raw Materials, Enterprise Europe Network and European Commission services from DG GROW, DG RTD and DG ENV. With a view to making synergies happen and to accelerate knowledge exchange,

The one-day meeting was divided into five sessions looking for maximizing the exchange of information: i) Setting the scene from H2020 Work Programme ii) contributions and benefits to build up synergies from H2020 Waste projects iii) Networking and pitch session, iv) two parallel round table-sessions to identify potential synergies and collaboration grounds among projects and initiatives and v) eco-innovation towards Circular Economy.

The synergies identified among the projects participants are mainly in the areas of knowledge sharing, communication and dissemination, stakeholder engagement, business models and exploitation of results. Related actions were agreed upon.

Furthermore, the Waste projects took lessons learned from the on-going and past projects represented in the meeting and identified possible actions to transfer knowledge to maximize their impact. Several actions on creating synergies and networking among all projects, and linking actions to the EU instruments were also defined.

The event succeeded at facilitating the collaboration and knowledge sharing among project beneficiaries and EU instruments boosting synergies for effective project implementation and coordinated results looking for maximizing their impact and better support EU waste policies in the transition to a Circular Economy. In this context, it was presented the Circular Economy package adopted on 2nd December 2015 and the H2020 2016-2017 Work Programme which includes a new Focus Area on 'Industry 2020 in the Circular Economy'.

The meeting was overall very positively perceived and gathered 61 participants who made constructive recommendations and requested that meetings of this type recur in the future.
2. Key Messages and Information shared

2.1. H2020 Projects on Waste

The H2020 projects on Waste were presented in four different thematic panels based on potential contribution to build up synergies: stakeholders' engagement; communication; business models; exploitation. The main points addressed were:

Stakeholders Engagement:

Contributions to build synergies with other projects…

**PPI4WASTE**

- To give answers to real needs expressed by public purchasers
- To create a critical mass of procurers purchasing eco-innovative waste solutions
- To create new markets in the area of resource efficiency in the short and medium term
- Leverage additional investment in research and innovation
- To make a demonstrable contribution to public sector innovation and increased mobilisation of SMEs and industrial partners
- Move from product purchase to service delivery

**PROSUM**

- Membership of the Information Network
- Membership of Special Interest Groups: WEEE, ELVs, Batteries, Mining Wastes, Recycling, Sampling and Analysis
- To share methodological approach to create harmonised and interoperable data (other waste streams)

**NEWINNONET**

- To have a voice in developing the EU circular economy
- To know the points of view of other stakeholders
- To have your views promoted to EU policy makers
- To gain visibility as a frontrunner in the circular economy
- For targeted networking and project development
- To benefit from knowledge on funding opportunities and business opportunities related to bottlenecks in the material loops

… Benefit from other projects to build synergies.

**PPI4WASTE**

- Enlargement of stakeholder’s group
- Detect innovative solutions in line with common needs from inputs of other projects (bio-waste...)
- Engage participation in market events
- Enlarge critical mass to answer new Circular Economy Package

**PROSUM**

- Provision of data which helps to characterise the CRM content of WEEE, batteries, ELVs or mining wastes
- Provision of expertise to help support methodological approach and protocols to produce future harmonised data
- Cohort of end users to test the services of the EU-UMKDP
- Join our Information Network and join the dialogue!

**NEWINNONET**

- Input on how the near-zero waste economy should look like, e.g.:
  - Which technologies are technically and economically challenging?
  - What do the business models look like?
**Communication:**

Contributions to build synergies with other projects...

- **HISER**
  - Exchange of knowledge
  - Access to measured data from prototypes and case studies
  - KPIs identification and comparison
  - Difficulties and how they were faced
  - Discuss outcomes and see whether further projects/actions
  - Publication of results and collaborations in other projects newsletters
  - Invitation/Attendance to project meetings & workshops
  - Organization of workshops/meetings in known events

- **CLOSEWEEE**
  - Testing trials for identification of best combination of technologies for optimized characterization and separation of plastic from WEEE streams
  - Analysis of European and local legal and non-legal limitations, barriers and standards for using recovered materials in second-life applications
  - Analysis of the needs and requirements for recovered plastic streams
  - Selection, conditioning and characterization of WEEE plastics mixtures
  - Optimization of CreaSolv® formulations for separation of target polymers
  - Development of RIC platform and Project website

- **SMART GROUND**
  - To create a digital “bridge” between demands and availability of secondary raw material. In this scenario, synergies with the other projects will focus on:
    - Sharing information available till today.
    - Identify industrial needs to improve the use of Secondary Raw Materials.

... Benefit from other projects to build synergies.

- **HISER**
  - State-of-Art knowledge
  - Technical discussion/support
  - Collaboration in dissemination events
  - Exchange of experiences / Good practices

- **SMART GROUND**
  - Information available
  - Data Base structure
  - Communication and dissemination activities
**Business models:**

Contributions to build synergies with other projects…

**CABRISS**
- Identify projects which can add value to CABRISS: Methodologies, tools for Life Cycle Analysis (i.e. SPIRE-4-2014: Methodologies, tools and indicators for cross-sectoral sustainability assessment of energy and resource efficient solutions in the process industry: STYLE, SAMT). Representative can be a member of CABRISS User Group
- Methodologies comparison, environmental impact (i.e. LIFE+12: FRELP (Full Recovery End Life Photovoltaic); SPIRE-7-2015: Recovery technologies for metals and other minerals: REE4EU - Participation to open workshop organized within CABRISS
- Synergies with the SPIRE-PPP network: May we welcome a SPIRE representative in the CABRISS Advisory Board?

**RESYNTEX**
- Share Information on Studies & Testing Results (limited to IP-protection criteria)
- Share know-how and experience in Project Management as well as Recycling Technologies

**FISSAC**
- Establishment of networks of stakeholders
- Living Labs concepts will be set up in order to gather stakeholders to define common visions, share knowledge, facilitate innovation process and encourage more sustainable behavior across the sector for the co-development and co-testing of transition process from linear to circular business models.
- Establishment of a website that will include an online subscription to FISSAC Newsletter and access to interactive and communication activities.

… Benefit from other projects to build synergies.

**CABRISS**
- EIT Raw Materials
- Support to the industrialization: inancing industrial pilot line associated to the selected business model (TRL8/9)
- Educational: anticipation of new profession: introducing degree courses for business future
- Support for entrepreneurship of the KIC in case of the creation of company on waste recycling

**RESYNTEX**
- Information on Studies & Testing Results (limited to IP-protection criteria)
- know-how and experience in Project Management, Recycling Technologies and Market introduction of new products.
- Additional Recycling Technologies that could be tested for the use in our Project

**FISSAC**
- Improving mutual added value regarding:
- Interchange of information and common relevant needs of the stakeholder value chain
- dissemination and training strategies
- collaborations in business models development
- common participation in conferences or workshops
- New opportunities
Exploitation:

Contributions to build synergies with other projects...

**BAMB**
- Industrial & dissemination board
- Governance Platform
- Link the governance platform with other EU and international platforms
- Assure complementarity with other research projects

**RESLAG**
- Industrial symbiosis has been identified by the SPIRE PPP as one of the solutions to be addressed to achieve more efficient processing, resource and energy efficient systems for the process industry.
- Synergy scope: Common proposals with similar aim to demonstrate and analyze innovative processes and services that enable product and material reuse, recycling, recovery and reduce the overall generation of waste along product chains in different production processes
- Dissemination & informative events
- Networking

**IMPACT PAPEREC**
- Keep the contact and key information
- Inviting other projects to our project meetings related to innovation node and best practices
- Additional stakeholders in the platform
- Presence of some partners in other projects and vice versa
- Participating in other projects’ conferences
- Creating specific working groups for similar needs (i.e. LINKEDIN)

**MSP-REFRAM**
- The Multi-Stakeholders Platform is open!
- External experts can contribute to the working group meetings, bring their expertise and take back new ideas home!
- Coordinators of Projects dealing with refractory metals are welcome!

... Benefit from other projects to build synergies.

**RESLAG**
- Opening new collaborative frames with common interest regarding the waste recycle and reuse in EU.
- Finally, the global benefit from this activities should be an optimum management of the waste products, working in the direction of a green economy with minimized ecological impact with a maximized exploitation of the available resources

**IMPACT PAPEREC**
- Identification of: other waste collection models applied; synergies in some processes; common needs
- Implementation experiences; barriers, stakeholders...
- Working together in specific areas identified
- Networking for novel ideas, solutions ...

**MSP-REFRAM**
- Through their contribution as External Experts in MSP-REFRAM
- Coordinators of Projects dealing with refractory metals are welcome!
- Their expertise is needed
- Contact already established with a few of them
2.2. Outcome from Networking Session and Concrete Project Collaboration Offerings

The event produced different outcome during the several sessions organized, namely the Networking Session and the Round Tables on potential synergies and knowledge exchange:

The projects and initiatives were grouped in four sectors to facilitate discussions: Construction & building sectors; industrial sectors; WEEE & raw materials sectors; urban mining.

The session started with the pitch presentations of the Climate-KIC start-up PENDULA and the SME Instrument beneficiary ECOSHEET-PRO. This helped to create the networking environment around the previously mentioned groups:

**Construction & building sectors**

Several potential actions were identified during the discussions between the participants on this networking group (*CB to reference the actions*):

- **CB1.** **H2020 Waste-1 projects BAMB and HISER:** collaboration on the list of materials and on the BIM for selective demolition
- **CB2.** **H2020 Waste-1 projects BAMB and FISSAC:** collaboration on the development of "Living Labs"
- **CB3.** **H2020 Waste-1 project FISSAC and EIT Climate-KIC start-up PENDULA:** common identification of technical solution to access materials; collaboration on complementary software.
CB4. **H2020 Waste-1 project BAMB and EIT Climate-KIC**: collaboration on urban transition, building technology acceleration and exploitation & dissemination of results.

CB5. **H2020 Waste-1 project BAMB and EIT Climate-KIC start-up PENDULA**: common collaboration on materials quality (materials passports), market identification for reuse and identification of buyers.

CB6. **H2020 Waste-3 project CLOSEWEE and EIT Climate-KIC**: collaboration on partnerships for their waste platforms.

CB7. **H2020 Waste-1 projects and EIT Climate-KIC**: common collaboration with start-up PENDULA to increase commercialization of waste recycling in the EU; to evaluate potential interests and/or synergies with Climate-KIC SPS Theme and BTA Flagship.

**Industrial sectors**

Some other potential actions were identified during the discussions between the participants on this networking group (**I to reference the actions**):

**I1.** **H2020 SPIRE-4 projects and H2020 Waste-1 projects CABRISS and RESYNTEX**: collaboration on common methodologies and toolkits for LCA.

**I2.** **PPP SPIRE and EIT Climate KIC**: share priorities and gap analysis

**I3.** **H2020 Waste-1 project RESLAG and EIT Climate-KIC**: exchange information on heat recovery in petrochemical processes

**I4.** **H2020 Waste-1 projects CABRISS and RESYNTEX**: exchange information on recycling market structure for textile and PV Waste.

**WEEE and Raw Materials**

This networking group identified the following potential actions during their discussions (**WR to reference the actions**):

**WR1.** **H2020 Waste-1 project CABRISS and EIT Climate-KIC start-up PENDULA**: collaboration to set up a start-up in the framework of Climate-KIC with the outcomes of the H2020 project for exploitation of results; explore common collaboration in a sourcing platform for accessing larger quantities of PV panel waste.

**WR2.** **H2020 Waste-4c project SMART GROUND and H2020 Waste-5 project PPI4WASTE**: collaboration to share and disseminate their platforms.

**WR3.** **H2020 Waste-4c projects SMART GROUND and PROSUM**: collaboration for common data harmonization and common data platform

In addition some general recommendation came from the discussions:

- To organize common workshops on Waste collection logistics, on communication with stakeholders and on business models.
- To explore the possibility to develop common LCA and LCC methods.
- To collaborate on IPR management services to facilitate synergies between Research Innovation Actions (RIA) and Innovation Actions (IA).
Urban mining

The following potential actions were identified during the discussions of this networking group (UM to reference the actions):

**UM1.** H2020 Waste-5 project PPI4WASTE and H2020 Waste 4d project ImpactPaperREC: collaboration to enlarge critical mass of actions for PPI Waste paper collection systems.

**UM2.** H2020 Waste-3 project CLOSEWEE, H2020 Waste 4d project SMARTGROUND, H2020 Waste-4c project PROSUM and FP7 project RECLAIM: CLOSEWEE, RECLAIM and SMARTGROUND to join the special interest group for recycling in PROSUM (the WEEE cluster that was suggested).

**UM3.** H2020 Waste-4c project PROSUM and FP7 project RECLAIM: to share information on analytical methods.

**UM4.** H2020 Waste 4d project ImpactPaperREC and EIT Climate-KIC start-up PENDULA: to collaborate in the purchase process of a paper-waste platform.

In addition a general recommendation came from the discussions:

- To share and discuss project policy recommendations to ensure they are joined up.

**2.3. Outcome from Round tables and Synergies identified**

The potential synergies and knowledge exchange discussed among the participants of these round tables addressed the following questions:

- Which of your activities and tasks could benefit from collaboration with other projects/initiatives?
- What are your strengths and available resources that can be useful to share with other project beneficiaries and what are your needs that other projects might be able to meet?
- How can you establish collaboration among yourselves in the next two years and beyond and what form should this collaboration have?
Round Table I – Discussion on identifying synergies and collaboration among Waste projects and EU Instruments:

The potential synergies and knowledge exchange among the following projects and initiatives was discussed in this roundtable:

- H2020 Projects: PPI4WASTE, PROSUM, New InnoNet, HISER, CloseWEEE, SMARTGROUND
- FP7 projects: RECREATE, STOICISM, RECLAIM, RECYVAL-NANO, REMANENCE, EURARE
- LIFE Project GYMPUM TO GYPSUM
- EIP Raw Materials (DG GROW)
- Enterprise Europe Network (EASME)
- EIT Raw Materials

**Actions identified (S to reference the synergy):**

**S1.** Knowledge base on raw materials: putting in place cooperation with projects creating a database on primary and secondary raw materials to enhance consistency and coherence.

**S2.** Networking: investigating synergies between projects and instruments to support exploitation and market uptake of developed waste related technologies.

**Commitments (Co to reference them):**

**Co1.** EIP Raw Materials/EASME to co-organize a smaller meeting in March-April 2016 on knowledge base involving FP7 and H2020 projects to explore the creation of a database on primary and secondary raw materials.

**Co2.** EIT Raw Materials/EEN/EIP Raw Materials/EASME to investigate possible supporting activities to maximize projects' impact.

See complementary information from this session in Appendix C.
Round Table II – Discussion on identifying synergies and collaboration among Waste projects and EU Instruments:

The potential synergies and knowledge exchange among the following projects and initiatives was discussed in this roundtable:

- H2020 Projects: CABRISS, RESYNTEx, FISSAC, BAMb, RESLAG, IMPACT PAPER-REC, MSP-REFRAM
- FP7 projects: ILLUMINATE, REECOVER
- CIP Eco-Innovation (EASME)
- SME Instrument (EASME) and beneficiaries ECOSHEET-PRO
- SPIRE PPP
- EIT Climate-KIC, pathfinder project PECREST and start-up PENDULA

Actions identified (S to reference the synergy):

S3. Education: EIT Climate-KIC, SPIRE PPP and H2020 projects on waste to explore common interest on education activities for their communities (i.e. masterclass on business model development for waste recycling industry).

S4. Innovation: EIT Climate-KIC and EASME to identify a concrete example of complementary projects from WASTE portfolios, looking for maximizing impact of their actions thanks to the synergies in place.

S5. SMEs: networking session to be organized following the SPIRE PPP workshops organized with SMEs to increase awareness about the synergies of the SMEs in the waste industry with different instruments such as the SME instrument, Climate-KIC and SPIRE.

Commitments:

Co3. Climate-KIC/EASME to discuss on possible masterclass on exploitation and business models for H2020 projects on Waste to be co-organized in 2016 Q3.

Co4. Climate-KIC/PPP SPIRE/interested H2020 projects on WASTE meeting, to further discuss potential opportunities for collaboration on single topics, education and start-ups.

Co5. SPIRE/Climate-KIC/H2020 SME Instrument meeting, to further discuss the opportunity to organize a networking session with SMEs and start-ups from waste industry.

See complementary information from this session in Appendix D.
3. Conclusions and Network Actions

The meeting gathered 61 participants representing different projects, initiatives and instruments. The meeting was considered to be very successful in achieving its objectives.

The potential actions from which projects could contribute or take benefits from/to other projects have been identified in the areas of stakeholders’ engagement, communication, business models and exploitation.

The synergies have been further investigated during the Networking Sessions resulting in concrete individual project collaboration offerings (Figure 3).

Figure 3. Network actions identified among H2020 projects on Waste within the four thematic sectors.

Actions to maximize projects’ impact have been discussed and identified during the round tables sessions. Commitments involving EU instruments and initiatives have been defined as well (Figure 4).
Synergies Map from Round Table sessions

Figure 4. Networking actions defined among EU instruments and initiatives.

Feedback from projects participants have been analysed and will be taken into account for the preparation of future events (see more detailed information in Appendix F).
Appendix A: Background of the Kick-Off & Networking Meeting

13 Grant Agreements have been signed under the H2020-2014 Waste-1, Waste-3, Waste-4 and Waste-5 topics and actions have / are about to start in 2015. Importantly, H2020 waste and raw materials actions are fully in line and contribute directly to the Europe 2020 Strategy for smart, sustainable and inclusive growth in particular the flagships Resource Efficient Europe, Industrial Policy for the Globalisation Era and Innovation Union as well as other key policy initiatives such as the Resource Efficiency Roadmap, the 7th Environment Action Plan, the European Industrial Renaissance, the Raw Materials Initiative and the European Innovation Partnership on Raw Materials, the European Innovation Partnership on Water and the Circular Economy Package.

The proposed joint kick-off and networking meeting is considered an effective approach for ensuring the streamlining implementation of these actions funded by H2020 programme and the new knowledge generated by them thus maximizing their impact.

Main objectives and expected results

Overall it is expected that this meeting will facilitate the collaboration and knowledge sharing among project beneficiaries and contribute to the exploitation of synergies for more effective project implementation. In addition and considering the agenda planned, further interaction at sectorial level and in the field of stakeholders' engagement, communication, business models and exploitation of results, is foreseen.

The main objectives of this joint kick-off and networking meeting were:

- Share knowledge and experiences that will enhance the creation and exploitation of new knowledge, ensure wider applicability of the project results in a synergetic way and reduce unnecessary duplication of efforts with on-going and past projects;
- Provide participants with good understanding of the content of the other projects of different Waste topics from the same call, thus facilitating identification of commonalities and the potential co-ordination/collaboration on certain activities;
- Foster better understanding between H2020 projects and other EU instruments or networks of potential interest;
- Improve the efficiency and effectiveness of the actions’ lifecycle.

This intends to bring the impact maximization of the projects which include:

- Significant increase in European and global market up-take and replicability of eco-innovation solutions contributing to an important reinforcement of the eco-industry landscape in Europe in support to the implementation of SPIRE PPP Roadmap.
- Conversion of wastes or raw materials not currently exploited into valuable resources, in line with the objectives of the EIP on Raw Materials.
- New market opportunities for European businesses and facilitation of exchange of information and increased knowledge.
- A more integrated community of innovators and entrepreneurs in line with EIT KICs dealing with Circular Economy and Raw Materials.
- Leverage of additional R&I investment and identification of new markets in the area of waste and resource efficiency.
### Final Agenda

**Morning session**

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<tr>
<th>Time</th>
<th>Activities</th>
<th>Participants</th>
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<tr>
<td>8:30 – 9:00</td>
<td><strong>Registration</strong></td>
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<td>9:00 - 9:30</td>
<td>Chair: Arnoldas Milukas, Head of Unit, H2020 Environment and Resources, EASME</td>
<td>Didier Gambier, Head of Department, LIFE and H2020 Energy, Environment, Resources, EASME</td>
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<td></td>
<td><strong>Opening and Welcome</strong></td>
<td>Vincenzo Gente, DG RTD I.2</td>
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<td>Setting the scene from H2020 Work Programme</td>
<td>Magnus Gislev, DG GROW C.2</td>
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<td>9:30 - 10:30</td>
<td>Chair: Marcin Sadowski, Head of Sector, H2020 Raw Materials, EASME</td>
<td>Panel 1 projects: PPI4WASTE, PROSUM, New InnoNet</td>
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<td>• Panel 1: Stakeholders engagement</td>
<td>Panel 2 projects: HISER, CloseWEEE, SMARTGROUND</td>
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<td>• Panel 2: Communication</td>
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<td>10:30 - 10:45</td>
<td><strong>Q&amp;A</strong></td>
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<td>10:45 – 11:00</td>
<td><strong>Coffee Break</strong></td>
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<td>11:00 – 12:10</td>
<td>Chair: Carmen Mena Abela, Head of Sector, H2020 Eco-Innovation, EASME</td>
<td>Panel 3 projects: CABRISS, RESYNTEX, FISSAC</td>
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<td>• Panel 3: Business models</td>
<td>Panel 4 Projects: BAMB, RESLAG, IMPACT PAPER-REC, MSP-REFRAM</td>
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<td>• Panel 4: Exploitation</td>
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<td>12:10 – 12:25</td>
<td><strong>Q&amp;A</strong></td>
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<td>12:25 – 12:30</td>
<td><strong>Introduction of the networking and afternoon sessions</strong></td>
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12:45 - 14:15  Lunch & Networking session

Pitch introductions (SME Instrument beneficiary and Climate-KIC start-up) and 4 thematic tables:
- Construction & building sectors - Facilitator: Marie-Christine Van Wunnick, EASME
- Industrial sectors - Facilitator: Keti Medarova-Bergstrom, EASME
- WEEE & raw materials - Facilitator: Marco Recchioni, EASME
- Urban mining - Facilitator: Jonas Hedberg, EASME

Afternoon session

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<tr>
<th>Time</th>
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<tr>
<td>14:30 - 15:30</td>
<td>Potential synergies and knowledge exchange (2 Round tables running in parallel)</td>
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<td>Round Table 1 - Moderator: Marco Recchioni, EASME ; Participants:</td>
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<td></td>
<td>• H2020 Projects from Panels 1 &amp; 2 (morning session)</td>
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<td></td>
<td>• FP7 projects: RECREATE, STOICISM, RECLAIM, RECYVAL-NANO, REMANENCE, EURARE</td>
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<td>• LIFE Project GYMPUM TO GYPSUM</td>
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<td>• Enterprise Europe Network (EASME)</td>
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<td>• EIT Raw Materials</td>
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<td>Round Table 2 – Moderator: Manuel Irun, EASME ; Participants:</td>
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<td>• H2020 Projects from panels 3 &amp; 4 (morning session)</td>
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<td>• FP7 projects: ILLUMINATE, REECOVER</td>
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<td>• CIP Eco-Innovation (EASME)</td>
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<td>• SME Instrument (EASME) and beneficiaries WASTETORESOURCE, ECOSHEET-PRO</td>
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<td>• SPIRE PPP</td>
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<td>• EIT Climate-KIC officers, pathfinder project PECREST and start-up</td>
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<td>PENDULA</td>
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<tr>
<td>15:30-15:45</td>
<td>Coffee Break</td>
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<td>15:45 - 16:00</td>
<td>Synergies wrap-up in plenary</td>
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<td>16:00 – 16:15</td>
<td>Eco-innovation Economy towards Circular Economy</td>
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<td></td>
<td>Lana Žutelija, Policy Officer, DG ENV A.1 Eco-Innovation &amp; Circular Economy</td>
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<td>16:15– 16:30</td>
<td>Closing Remarks</td>
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<td>Carmen Mena Abela, Head of Sector, H2020 Eco-Innovation, EASME</td>
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<td>Marcin Sadowski, Head of Sector, H2020 Raw Materials, EASME</td>
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### Projects Participants List

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<thead>
<tr>
<th>Project</th>
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<td>CABRISS</td>
<td>H2020 Waste-1</td>
<td>David PELLETIER</td>
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<td>RESYNTEX</td>
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<td>Pailak MZIKIAN</td>
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<td>BAMB</td>
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<td>Carolina HENROTAY</td>
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<td>Molly STEINLAGE</td>
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<td>RESLAG</td>
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<td>Javier RODRIGUEZ</td>
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<td>FISSAC</td>
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<td>Daniel HINIERSTO MUNOZ DE LA TORRE</td>
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<td>CloseWEEE</td>
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<td>Antonio BARONA</td>
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<td>Gergana DIMITROVA</td>
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<td>Sarah DOWNES</td>
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<td>Marco DE LA FELD</td>
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<td>Stephane BOURG</td>
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<td>Anne-Dominique FURPHY</td>
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<td>STOICISM</td>
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<td>Maretva BARICOT</td>
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<td>STOICISM</td>
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<td>Aurela SHTIZA</td>
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<td>RECYVAL-NANO</td>
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<td>Luis MARTINEZ DE MORETIN</td>
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<td>RECLAIM</td>
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<td>David GARDNER</td>
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<td>ILLUMINATE</td>
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<td>Toon ANSEMS</td>
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<td>RECREATE</td>
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<td>Edward JONES</td>
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<td>Daniel GEHRT</td>
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<td>RECYVAL-NANO, REMANENCE and RECLAIM</td>
<td>FP7</td>
<td>Peter BREWIN</td>
<td>PTA</td>
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<td>EURARE</td>
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<td>Ragnhild ELIZABETH AUNE</td>
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<td>GYPSUMTOGYPSUM</td>
<td>LIFE</td>
<td>Luigi DELLA SALA</td>
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### EU Instruments Participants List

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<td>Climate-KIC</td>
<td>Sira SACCANI</td>
<td>Theme Sustainable Production Systems</td>
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<td>Matteo MORANDIN</td>
<td>Coordinator Project PECREST</td>
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<td>Gary LEWIS</td>
<td>start-up PENDULA</td>
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<td>Catherine LAURENTZ-POLZ</td>
<td>Innovation Officer</td>
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<td>EIT Raw Materials</td>
<td>Karen Hanghøj</td>
<td>Chief Technology and Education officer</td>
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<td>PPP SPIRE</td>
<td>Loredana GUINEA</td>
<td>Executive Director</td>
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<tr>
<td>SME Instrument</td>
<td>Turul TASKENT</td>
<td>Coordinator SME Instrument ECOSHEET-PRO</td>
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## European Commission Participants List

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<tr>
<td>DG GROW C.2</td>
<td>Slavko SOLAR</td>
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<tr>
<td>DG GROW C.2</td>
<td>Magnus GISLEV</td>
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<td>DG RTD I.1</td>
<td>Verena FENNEMANN</td>
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<td>Wojciech KLIMEK</td>
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<td>DG RTD D.2</td>
<td>Soren BOWADT</td>
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<td>DG ENV A.1</td>
<td>Lana ZUTELIJA</td>
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<td>EASME B</td>
<td>Didier GAMBIER</td>
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<td>EASME B2</td>
<td>Arnas MILUKAS</td>
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<td>Carmen MENA ABELA</td>
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<td>Sara SORRIBES RODRIGUEZ</td>
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<td>Gunnar MATTHIESEN</td>
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<tr>
<td>EASME A.2</td>
<td>Anne-Karin RUNEMO</td>
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Appendix C: Information from Discussion in Round Table I

To better frame the discussion, the following instruments introduced their main activities:

1. Enterprise Europe Network (EEN)\(^2\)

Gunnar MATTHIESEN, Senior Project Advisor, and Nancy Herrera, Project advisor have presented the main relevant European Enterprise Network features.

- The Network helps small and medium-sized enterprises (SMEs) make the most of business opportunities in the EU and beyond. Have a look at the many services offered free of charge by our 600 member organisations, including chambers of commerce and industry, technology centres, universities and development agencies.

- Experts in 17 key sectors from all across the Enterprise Europe Network have teamed up to provide customised support. The Network’s Sector Groups combine international business expertise with local knowledge. The EEN can help businesses to grow through tailored support and new partnerships. The Sector group can also act as facilitator to connect H2020 projects partner in order to facilitate the creation of synergies.

2. EIT Raw Material\(^3\)

The Chief Technology and Education officer of the EIT Raw Material, Karen Hanghøj, has introduced the EIT characteristics. EIT Raw Materials was designated as an EIT Knowledge and Innovation Community (KIC) by the EIT Governing Board on 09 December 2014.

EIT Raw Materials has the ambitious vision of turning the challenge of raw materials dependence into a strategic strength for Europe. Its mission is to boost the competitiveness, growth and attractiveness of the European raw materials sector via radical innovation and entrepreneurship.

This KIC will integrate multiple disciplines, diversity and complementarity along the three sides of the knowledge triangle (business, education and research) and across the whole raw materials value chain.

EIT Raw Materials aims on acting as an accelerator in order to bridge the gap between research and innovation and market uptake. Some actions that have been presented are the following:

- RawMatTERS Matches: Events organised to create links between existing technologies and new business models for licensing, joint ventures, linking students to jobs and internships, matching SME needs for skills & expertise.

- Up-scaling: For innovation projects that are a higher Technology Readiness Level and need an additional step for up-scaling and/or implementation. These projects aim to integrate existing technology, de-silo and foster value-chain co-operation and bring technologies to the market.

- Network of Infrastructures: Mapping service aimed to provide overview and access to facilities available within the consortium including pilot plants, technical centres and analytical and modelling infrastructure.

\(^2\) http://een.ec.europa.eu/

\(^3\) Knowledge and Innovation Community (KIC) on Raw Materials funded by the European Institute of innovation and Technology (EIT) http://eitrawmaterials.eu/
3. The European Innovation Partnership (EIP) on Raw Materials

The European Innovation Partnership on Raw Materials is a stakeholder platform that brings together representatives from industry, public services, academia and NGOs. Magnus Gislev, DG GROW policy officer and Slavko Solar, SNE in DG GROW have been present to provide details on the EIP on the raw materials.

- The EIP on Raw Materials represents a new approach to EU research and innovation. By bringing together actors from the entire research and innovation value chain they aim at streamlining efforts and accelerating market take-up of innovations that address key challenges for Europe.
- The EIP's Strategic Implementation Plan (SIP) set out specific objectives and targets. Actions to achieve these include research and development, addressing policy framework conditions, disseminating best practices, gathering knowledge and fostering international cooperation.
- Raw Material Commitments are joint undertakings by several partners, who commit to activities aimed at achieving the EIP's objectives. They aim to deliver innovative products, processes, services, technologies, business models or ideas that can be brought to the market or that would bring wider societal benefits. The EIP's commitments are essential to achieve the objectives set out in the EIP's Strategic Implementation Plan.

4. Project representatives

The input provided by the participants was:

- SMART GROUND: its coordinators present their interest in participating to the meeting as starting point for enhancing cooperation among projects on a technological scale, dissemination and communication activities and the definition of business models
- GtoG: the project has been briefly presented; the coordinator has provided the example of LIFE+ program where networking activities are legal provisions.
- PPI4WASTE: the coordinator explained how some EU projects aiming at creating a knowledge base on EU raw materials. More coordination among projects would be needed in order to increase coherence and interoperability of databases.
- EURARE: supported the idea of having smaller focus groups meeting on the data topic.
- RECREATE: the project objectives have been briefly presented. The coordinator invited all participants to submit case studies related to newly developed technologies with market potential and to participate to project annual workshops to identify business opportunities.

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Appendix D: Information from Discussion in Round Table II

To better frame the discussion, the following instruments introduced their main activities:

1. SPIRE PPP

PPP Executive Director (Ms. Loredana Guinea) presented the main priorities of SPIRE based on their road map which provides the pathway for the process industry to decouple human well-being from resource consumption and achieve increased competitiveness in Europe. SPIRE will implement its research and innovation roadmap, thanks also to the H2020 SPIRE projects where their community is involved, through six Key Components that are at the core of a resource and energy efficient process industry:

1. Feed: Increased energy and resource efficiency through optimal valorisation and smarter use and management of existing, alternative and renewable feedstock.
2. Process: Solutions for more efficient processing and energy systems for the process industry, including industrial symbiosis (e.g. cross-sectorial application of technologies).
3. Applications: New processes and materials for market applications that boost energy and resource efficiency throughout the value chains.
4. Waste2Resource: Avoidance, valorisation and re-use of waste streams within and across sectors, including recycling of post-consumer waste streams and new business models with the ambition to closing the loop.
5. Horizontal: Accelerated deployment of the R&D&I opportunities identified within SPIRE through e.g. robust sustainability evaluation tools, skills and education programmes, as well as enhanced sharing of knowledge and best practices.
6. Outreach: Reach out to industry (especially SMEs), policy makers, investors and citizens to support the realisation of impact through awareness, stimulating societal responsible behaviour.

2. EIT Climate-KIC

Climate-KIC Innovation Office (Ms. Catherine Laurent-Polz) and Climate-KIC responsible for the Theme Sustainable Production Systems (Ms. Sira Saccani) briefly introduced the main three areas of expertise in Climate-KIC: innovation, education and entrepreneurship, creating new partnerships to integrate research, business and technology to transform innovative ideas into new products, services and jobs:

- Innovation: creating successful partnerships between business, public bodies and the academic world to drive climate innovation though flagship initiatives or innovation and pathfinder projects. In building these relationships their focus is on identifying, developing and linking market potential with business ideas and initiatives. It has created new products, services and jobs in Europe with global impact on climate change.

- Education: recruiting and developing entrepreneurs to become agents of change. Their training programmes instil climate change entrepreneurship into hundreds of students and

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6 Climate Knowledge and Innovation Community (KIC) on funded by the European Institute of innovation and Technology (EIT) http://www.climate-kic.org/
leading professionals. Their courses combine climate change science and entrepreneurship with an emphasis of learning-by-doing and exposure to real life challenges and their innovation projects.

- Entrepreneurship: opening up market opportunities for small businesses and start-up companies with climate change innovations; Connecting with their experts to help entrepreneurs develop their ideas into climate change products and services. Climate-KIC provides entrepreneurs with the opportunities and practical tools required to transform their ideas into commercial success.

### 3. SME Instrument

SME Instrument officer at EASME (Ms. Anne-Karin Runemo) presented the instrument and its three phases, with the aim of transforming disruptive ideas into concrete, innovative solutions with a European and global impact. SMEs are recommended to apply for Phase 1, but may also apply for subsequent phases depending on the progress done:

- **Phase 1. Concept & Feasibility Assessment: idea to concept (6 months).** The EU will provide €50 000 in funding, and carry out a feasibility study to verify the viability of the proposed disruptive innovation or concept. The SME will draft an initial business proposal (around 10 pages).

- **Phase 2. Demonstration, Market Replication, R&D: concept to Market-Maturity (1-2 years).** Assisted by the EU, the SME will further develop its proposal through innovation activities, such as demonstration, testing, piloting, scaling up, and miniaturisation. It will also draft a more developed business plan (around 30 pages). Proposals will be based on a business plan developed on phase 1 or otherwise. The EU aims to contribute between €0.5 million and €2.5 million.

- **Phase 3. Commercialisation: prepare for Market Launch.** SMEs will receive extensive support, training, mentorship and facilitating access to risk finance as the project is further polished into a marketable product. Additional support and networking opportunities will be provided by Enterprise Europe Network (EEN). The EU will not provide additional direct funding in this phase.

In addition, some facts and figures were presented on the SME instrument funded in 2014 and 2015, especially in the Societal Challenge 5 thematic priority, in particular those related to waste recycling.

### 4. Project representatives

The input provided by the participants was:

- **RESLAG:** its coordinators presented their interest to build up collaboration for the business models development and the exploitation strategy within the steel sector.

- **FISSAC:** Hifab AB is a partner of this H2020 Waste-1 project and has been leading a pathfinder project within Climate-KIC called IS-COM – INDUSTRIAL SYMBIOSIS FOR STRONG COMMUNITIES.

- **The PECREST Climate-KIC Project:** its coordinator presented their activity on identification of process concepts and technologies for thermochemical recycling of plastic

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waste streams for production of chemical intermediates at the Stenungsund site, also in combination with gasification of forest residues, and to access the relative potential for GHG emission reduction.

- **CABRISS**: their coordinator expressed their expertise on EIT KICs and questions the possibility for organizations outside their community (i.e. H2020 projects) to participate in KICs projects and activities.

- **BAMB**: its coordinator commented the interesting opportunity identified with Climate-KIC to collaborate in urban transition, building technology acceleration and exploitation & dissemination of results.

- Project representatives have also shown interest to introduce the SME Instrument opportunities and beneficiaries working on waste recycling to the SMEs in their consortia.

- Project representatives commented also the opportunity to link their industry actors to PPP SPIRE and vice-versa. More clarification was requested about the criteria to join SPIRE, particularly for SMEs.
Appendix E: Short description of projects participating

I. Horizon 2020 Waste-1 Projects

(Brussels)

BAMB

Title: Buildings as Material Banks: Integrating Materials Passports with Reversible Building Design to Optimise Circular Industrial Value Chains

Description: The aims of BAMB (Buildings as Material Banks) are the prevention of construction and demolition waste, the reduction of virgin resource consumption and the development towards a circular economy through industrial symbiosis, addressing the challenges mentioned in the Work Programme on Climate action, environment, resource efficiency and raw materials. The focus of the project is on building construction and process industries (from architects to raw material suppliers).

The BAMB-project implements the principles of the waste hierarchy: the prevention of waste, its reuse and recycling. Key is to improve the value of materials used in buildings for recovery. This is achieved by developing and integrating two complementary value adding frameworks, (1) materials passports and (2) reversible building design.

These frameworks will be able to change conventional (cradle-to-grave) building design, so that buildings can be transformed to new functions (extending their life span) or disassembled to building components or material feedstock that can be upcycled in new constructions (using materials passports). This way, continuous loops of materials are created while large amounts of waste will be prevented.

Activities from research to market introduction are planned. Fundamental knowledge gaps should be bridged in order to introduce both frameworks on the market. Advanced ICT tools and management models will enable market uptake and the organization of circular value chains in building and process industries. New business models for (circular) value chains will be developed and tested on selected materials. The inclusion of strategic partners along the value chains in an industrial board will maximize market replicability potential, while several (mostly privately funded) building pilots will demonstrate the potential of the new techniques. Awareness will be raised to facilitate the transition towards circularity by policy reform and changing consumer behaviour.

Project coordinator:
Caroline HENROTAY - Bruxelles Environnement (IBGE)
Molly Steinlage – msteinlage@environment.brussels

CABRISS

Title: Implementation of a CirculAr economy Based on Recycled, reused and recovered Indium, Silicon and Silver materials for photovoltaic and other applications

Description: The main vision of CABRISS project is to develop a circular economy mainly for the photovoltaic, but also for electronic and glass industry. It will consist in the implementation of: (i) recycling technologies to recover In, Ag and Si for the sustainable PV technology and other applications; (ii) a solar cell processing roadmap, which will use Si waste for the high throughput, cost-effective manufacturing of hybrid Si based solar cells and will demonstrate the possibility for the re-usability and recyclability at the end of life of key PV materials. The developed Si solar cells

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8 Contact details of project coordinators are only provided for those for those agreeing to share their contact info
will have the specificity to have a low environmental impact by the implementation of low carbon footprint technologies and as a consequence, the technology will present a low energy payback (about 1 year). The originality of the project relates to the cross-sectorial approach associating together different sectors like the Powder Metallurgy (fabrication of Si powder based low cost substrate), the PV industry (innovative PV Cells) and the industry of recycling (hydrometallurgy and pyrometallurgy) with a common aim : make use of recycled waste materials (Si, In and Ag). CABRISS focuses mainly on a photovoltaic production value chain, thus demonstrating the cross-sectorial industrial symbiosis with closed-loop processes.

**Project coordinator:**
Dr Luc FEDERZONI - CEA  
David PELLETIER – CEA david.pelletier@cea.fr

**FISSAC**

**Title:** Fostering industrial symbiosis for a sustainable resource intensive industry across the extended construction value chain  
**Description:** To develop and demonstrate a new paradigm built on an innovative industrial symbiosis model towards a zero waste approach in the resource intensive industries of the construction value chain, tackling harmonized technological and non-technological requirements, leading to material closed-loop processes and moving to a circular economy, in particular on the industrial symbiosis synergies between industries (steel, aluminium, natural stone, chemical and demolition and construction sectors) and stakeholders in the extended construction value chain.

**Project coordinator:**
Blanca JUEZ – ACCIONA  
Daniel HINIESTO MUNOZ DE LA TORRE Daniel.hiniesto.munoztorre@acciona.com

**RESLAG**

**Title:** Turning waste from steel industry into a valuable low cost feedstock for energy intensive industry  
**Description:** To prove that there are industrial sectors able to make an effective use of the 2.9 Mt/y of landfilled slag, if properly supported by the right technologies. In making this prof, the RESLAG project will also prove that there are other very important environmental benefits coming from an “active” use of the slag in industrial processes, as CO2 saving (up to 970 kt/y from CSP applications, at least 71 kg/ton of produced steel from heat recovery applications), and elimination of negative impacts associated with mining (from the recovery of valuable metals and from the production of ceramic materials).

**Project coordinator:**
Dr Bruno D'AGUANNO – CiCe  
Lola MALDONADO lmaldonado@cicenergigune.com  
Javier RODRIGUEZ jrodriguez@cicenergigune.com

**RESYNTEX**

**Title:** A new circular economy concept: from textile waste towards chemical and textile industries feedstock
Description: To design, develop and demonstrate new high environmental impact industrial symbiosis between the unwearable blends and pure components of textile waste and the chemical and textile industries. The project comprises:- a strategic design of the whole value chain from textile waste collection, until the new marketable feedstock for chemical & textile industry, by which the symbiosis opportunities are evaluated (by public authorities and the private sector) in terms of their social, technical, economic, environmental and legislative aspects- the improvement of collection approaches particularly for non-wearable textiles for recycling by changing citizen’s behaviour and creation of tools for higher social involvement and recycling promotion. This will ensure a greater accessibility to textile waste as resource and increase the textile waste rates destined for recycling.

Project coordinator:
i.V. Pailak MZIKIAN pmzikian@soexgroup.com

II. Horizon 2020 Waste-3 Projects
(Research and Innovation Actions)

CloseWEEE

Title: Integrated solutions for pre-processing electronic equipment, closing the loop of post-consumer high-grade plastics, and advanced recovery of critical raw materials antimony and graphite

Description: Integrates three interlinked research and innovation areas for an improved, resource-efficient recycling of polymer materials and critical raw materials from electrical and electronics equipment (EEE):

(1) Efficient and effective disassembly of EEE is key for high quality material fractions, separation of materials but also for reuse of components and parts. An information system for dismantlers will be developed, accessing webbased dismantling instructions, to ease the dismantling process, reduce destruction of reusable parts and components and to allow for a deeper dismantling level for better economics of the Recycling process.

(2) Developing resource-efficient and innovative solutions for closing the loop of post-consumer high-grade plastics from WEEE, for new EEE through advanced recovery of valuable plastic streams which do not have a recycling system yet, and subsequent replacement of halogenated flame retardants by halogen-free flame retardants in new EEE.

(3) Improved recycling of Lithium-ion batteries through increasing the recovery rates of cobalt and researching a recovery technology for the critical raw material graphite from those batteries.

Project coordinator:
Karsten SCHISCHKE
Gergana DIMITROVA gergana.dimitrova@izm.fraunhofer.de

HISER

Title: Holistic Innovative Solutions for an Efficient Recycling and Recovery of Valuable Raw Materials from Complex Construction and Demolition Waste

Description: - Harmonized procedures complemented with an intelligent tool and a supply chain tracking system, for highly-efficient sorting at source in demolition and refurbishment works.
- Advanced sorting and recycling technologies for the production and automated quality assessment of high-purity raw materials from complex C&DW.

- Development of optimized building products (low embodied energy cements, green concretes, bricks, plasterboards and gypsum plasters, extruded composites) through the partial replacement of virgin raw materials by higher amounts of secondary high-purity raw materials recovered from complex C&DW.

These solutions will be demonstrated in demolition projects and 5 case studies across Europe. Moreover, the economic and environmental impact of the HISER solutions will be quantified, from a life cycle perspective (LCA/LCC), and policy and standards recommendations encouraging the implementation of the best solutions will be drafted.

**Project coordinator:**
David GARCIA  david.garcia@tecnalia.com

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### III. Horizon 2020 Waste-4 Projects

**New Innonet** (Waste 4a)

**Title:** The Near-zero European Waste Innovation Network

**Description:** Europe generates around 3 billion tonnes of waste yearly, which is expected to grow further. Despite the introduction of innovative waste and recycling technologies, market uptake varies drastically amongst the 27 Member States. New-InnoNet is the new stakeholder platform initiative by 12 European consortium members active as entrepreneurs, researchers and policy makers. These recognise that in order to reach a European near zero waste economy, all value chain stakeholders must cooperate, exchange generated knowledge, insights and hands-on experience and enforce changes to the value chain structure together. Previous initiatives were unable to achieve actual, large scale results towards a sustainable growth of the European economy. The reason is that they either focussed on a specific waste area or they lacked the involvement of the competent industries. This project includes various waste value chains which enable exchange of information and technology transfer from one chain to another. In addition, the consortium’s network includes over 2000 relevant industrial stakeholders and several already expressed their interest in this new stakeholder platform, its goals and actions. During the project, key stakeholders will be mobilised to participate in the platform and road mapping workshops, as only an active involvement of industrial organisations will lead to the desired changes in the structure of the value chain.

The many letters of support show the consortium's strength in mobilising stakeholders. NEW_InnoNet’s main objective is to mobilise stakeholders towards building a circular economy by developing and reinforcing solid foundations for building the European Near-Zero Waste Platform through: 1. Set-up and maintain near zero waste stakeholder platform 2. Analyse selected waste streams and develop innovation roadmaps per waste stream 3. Develop an integrated near zero waste strategic research and innovation agenda 4. Stakeholder mobilisation and interaction

**Project coordinator:**
Paul VAN BEEM paul.vanbeem@pnoconsultants.com

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**PROSUM** (Waste 4c)

**Title:** Prospecting Secondary raw materials in the Urban mine and Mining waste
**Description:** The ProSUM project will establish a European network of expertise on secondary sources of critical raw materials (CRMs), vital to today’s high-tech society. ProSUM directly supports the European Innovation Partnership (EIP) on Raw Materials and its Strategic Implementation Plan calling for the creation of a European raw materials knowledge base. Data on primary and secondary raw materials are available in Europe, but scattered amongst a variety of institutions including government agencies, universities, NGOs and industry. By establishing a EU Information Network (EUIN), the project will coordinate efforts to collect secondary CRM data and collate maps of stocks and flows for materials and products of the “urban mine”. The scope is the particularly relevant sources for secondary CRMs: Electrical and electronic equipment, vehicles, batteries and mining tailings. The project will construct a comprehensive inventory identifying, quantifying and mapping CRM stocks and flows at national and regional levels across Europe. Via a user-friendly, open-access Urban Mine Knowledge Data Platform (EU-UMKDP), it will communicate the results online and combine them with primary raw materials data from the on-going Minerals4EU project. To maintain and expand the EU-UMKDP in the future, it will provide update protocols, standards and recommendations for additional statistics and improved reporting on CRM’s in waste flows required.

**Project coordinator:**
Pascal LEROY
Sarah DOWNES SDownes@repic.co.uk

**SMARTGROUND (Waste 4c)**

**Title:** SMART data collection and inteGRation platform to enhance availability and accessibility of data and information in the EU territory on SecoNDary Raw Materials

**Description:** EU is dependent on the import of Raw Materials, if we consider that in Europe there are between 150K to 500K highly variable landfills, it is easy to understand that the SRM potential of various landfills is significant. Valuable Raw Materials disposed in landfills are mostly lost due to inefficient waste management practices. Existing knowledge, reporting standards and inventory on SRM seems to be inefficient. In this context, the SMART GROUND project intends to foster resource recovery in landfills by improving the availability and accessibility of data and information on Secondary Raw Materials (SRM) in the EU, while creating synergies among the different stakeholders involved in the SRM value chain. SMART GROUND involves the 3 main players of the process: End-users (waste management companies),RTD institutions (Research centres, Universities, SMEs), and Technology Transfer providers (Networking, training organizations and public authorities). Thus, the consortium will integrate all the data from existing databases and new information retrieved in a single EU databank. SMART GROUND will respond to the needs of coordination, networking and cooperation between stakeholders, through the creation of a databank enabling the exchange of information among them. It will improve data gathering on SRM from different types of waste, by defining new and better data acquisition methods and standards; it will cooperate with other EU ongoing activities and support the implementation of the EIP on RM. The project also aims at improving the SRM economic and employment potential, by i) providing training on the assessment of landfill sites material recovery targeting end-users, ii) forming a dedicated network of academic, industrial and other stakeholders and regulators committed to cost-effective research, technology transfer and training; iii) developing and implementing a dissemination and exploitation plan to maximise the impacts and benefits of the SMART GROUND action

**Project coordinator:**
Marco DE LA FELD m.delafeld@enco-consulting.it
ImpactPaperREC (Waste 4d)

**Title:** Boosting the implementation of participatory strategies on separate paper collection for efficient recycling

**Description:** The European paper industry is at the core of the bioeconomy, using wood, a renewable material, and Paper for Recycling (PfR) as its main raw materials for producing paper products. This industry is a strategic sector in the EU economy, actively contributing to the re-industrialisation of Europe. Currently, the production of paper and board in the EU is 91 tonnes per year, while PfR represents 63%. The contribution of PfR has increased over the last few years (from 25 t to 40 t). This increase in the availability of PfR has not taken place in all EU states, and this is especially true in Eastern European countries. Besides, although high collection rates are achieved, the quality of this material does not always meet the requirements of paper recycling. Both facts make difficult to keep up with the increases in PfR collection rates observed over the last few years if specific actions are not taken. IMPACTPapeRec aims to put Europe at the forefront of PfR collection, ensuring raw material procurement from mainly European sources through an innovative approach based on the participation of the whole paper value chain including citizens and municipalities, which is also open to other sectors. Main objective is to provide an innovative and common knowledge platform, which will enable present and future cooperation. Analysis on best practices in PfR collection and assessment procedures are delivered, considering specific local conditions. They will encourage reliable decisions and make solutions available to decision-makers ensuring the procurement and supply of PfR in Europe through the improvement of municipal paper collection. Medium-long results are: increases in PfR collection (up to 75%); 1.57 Mt/year and raw material savings of €385 million. This proposal has positive support from the EU of the commitment approved within the EIP on raw materials “IMPACT - Introduction and Improvement of Separate Paper Collection to avoid landfilling and incineration”.

**Project coordinator:**
Carmen SÁNCHEZ REIG itneur@itene.com

MPS-REFRAM (Waste 4d)

**Title:** Multi-Stakeholder Platform for a Secure Supply of Refractory Metals in Europe

**Description:** Refractory metals (tungsten, tantalum, rhenium, molybdenum and niobium) are highly strategic metals today mainly imported from a few countries. The European primary production remains below a few percentage. However, resources exist in Europe, as primary resources but mainly as secondary resources (industrial waste, urban mines). Valorizing these resources requires coordination and networking between researchers, entrepreneurs and public authorities to harmonise technologies, processes and services, develop standards, create new potential for export of eco-innovative solutions and for seizing new markets. MSP-REFRAM will address these challenges by creating of a common multistakeholder platform that will draw the current refractory metals value chains and identify its innovation potential in order to support the implementation of the EIP on Raw Materials. Coming from industry, research, public sectors and civil society, both Consortium Members and External Experts have joined forces with expertise covering the whole value chain including mining, processing, recycling, application. The outputs of MSP-REFRAM will help Europe improve the supply value chain of refractory metals in the coming years, optimising the use of external resources as energy and water and at the same time reducing the amount and the toxicity of waste. MSP-REFRAM will share its conclusions widely and efficiently, in a long lasting way thanks to the support of the PROMETIA association. To ensure the systemic change, the outcomes of the project will be made available to the stakeholders and to the public through different tools and reports. In the medium term, MSP-REFRAM will contribute to better-informed decision-making at EU and national level as well as industry by proposing innovative value chains that will boost the refractory metals sector. In the longer term, this should improve the
availability of these refractory metals, while creating greater added value to the economy and more jobs.

Project coordinator: Stéphane BOURG stephane.bourg@cea.fr

IV. Horizon 2020 Waste-5 Project
(Coordination and Support Actions)

PPI4WASTE

Title: Promotion of Public Procurement of Innovation for Resource Efficiency and Waste Treatment

Description: Integrated approach which will permit to define needs, targets, improvement of functional performances, and monitor the complete cycle of preparation activities for PPI process to be implemented in the waste sector, while making know-how on procedures for innovation procurement widely available through the establishment of buyer’s group, making state-of-the-art solutions accessible to other procurers, capacity building and assessment of feasibility plan of uptaking PPI in the waste sector.

Project coordinator:
Anne Dominique FURPHY - IAT (Andalusian Institute of Technology) afurphy@iat.es

V. Horizon 2020 SPIRE Projects

DISIRE (SPIRE-1) (Research and Innovation Action)

Title: Integrated Process Control based on Distributed In-Situ Sensors into Raw Material and Energy Feedstock

Description: The DISIRE project has been inspired by the real existing needs of multiple industrial sectors, including the world leading industrial partners in the non-ferrous, ferrous, chemical and steel industries that are highly connected and already affiliated with the SPIRE PPP and its objectives. The overall clear and measurable objective of the DISIRE project is to evolve the existing industrial processes by advancing the Sustainable Process Industry through an overall Resource and Energy efficiency by the technological breakthroughs and concepts of the DISIRE technological platform in the field of Industrial Process Control (IPC). With the DISIRE project the properties of the raw materials or product flows will be dramatically integrated by their transformation in a unique inline measuring system that will extend the level of knowledge and awareness of the internal dynamics of the undergoing processes taking place during transformation or integration of raw materials in the next levels of production. In this approach, the Integrated Process Control system, instead of having external experts to tune the overall processes, based on the DISIRE concept will enable the self-reconfiguration of all the production lines by the produced products itself. Specific DISIRE Process Analyzer Technology (PAT) will be able to define quality and performance requirements, that for the first time in the process industry will be able to be directly applied on the physical properties of the developed products and thus enabling the overall online and product specific reconfiguration of the control system. In this way, the whole production can be fully integrated in a holistic approach from the raw materials to the end product, allowing the multiple process reconfigurations and an optimal operation based on the product’s properties that can be generalized in a whole product production cycle being spanned in multiple cross-sectorial processes.
RECOBA (SPIRE-1) (Research and Innovation Action)

**Title:** Cross-sectorial real-time sensing, advanced control and optimisation of batch processes saving energy and raw materials

**Description:** In many aspects batch processes are superior to continuous. Therefore it is worthwhile to take advantage of recent progress in sensor technologies, modelling and automation to develop a new paradigm for the design and conduction of batch processes: a) operation at maximum efficiency, b) dynamic, quality driven process trajectories rather than fixed schedules c) detailed analysis and tracking of all relevant process and product parameter. The main objective of the proposed project is the maximization of efficiency (reg. quality, energy, raw materials, and costs) of batch processes. Integrated process control is essential for an efficient operation of industrial batch processes: it tracks the evolution of product properties, detects deviations from the target values for product quality and derives corrective actions at a stage when an automatic compensation of deviations from an optimal trajectory is still possible. This contributes to optimal energy and raw material utilisation, shortens production time and enhanced the product quality. With the ambition to deliver solutions with relevance to all sectors of the process industries, the RECOBA consortium represents a selection of batch processes operating industries and partners across the value chain of batch process control, among them 3 global players from the polymer industry (BASF), the steel industry (TKSE), and the silicon metal industry (ELKEM). Within RECOBA there will be developed and validated: (1) new & innovative solutions for the measurement of different types of quality aspects, (2) new models to realise integrated process control of batch processes & suitable online parameter adaptation technologies to keep these models valid, (3) control modules to realise concepts for real-time, model based & closed loop process control, which are easily adaptable to existing batch processes in various industrial sectors, (4) business models to approach relevant industrial sectors for a future market entry.

STYLE (SPIRE-4) (Coordination and Support Action)

**Title:** Sustainability Toolkit for easY Life-cycle Evaluation

**Description:** The SPIRE Roadmap calls for an industry-focused study of current sustainability assessment approaches across the process industries, with the aim of identifying and promoting a suitable ‘toolkit’. Project STYLE is an industry-led consortium representing a broad spread of process industry sectors with numerous products that cross sector boundaries through their value chains. Partner organisations (Britest, ArcelorMittal, Carneuse, Holcim, RDC Environment, IVL, Solvay, Tata Steel, Utrecht University and Veolia) bring together a wealth of knowledge and experience in the use of tools for sustainability assessment. Active stakeholder engagement/support from public and private sector organisations, national standardisation bodies and industry associations from project inception, will ensure focus and clarity in addressing the challenges identified in the call. Project STYLE has three key objectives, to: 1. Identify best practice in sustainability evaluation, across sectors and through value chains via inventory and classification of established approaches. 2. Test and deliver a practical toolkit for sustainability evaluation of processes and products, spanning multiple sectors and easily usable by non-practitioners of LCA. 3. Determine gaps, through critical assessment and validation, and identify future research needs to improve the toolkit and ensure broad applicability across sectors. Industrial partners in the project will provide the cross-sectoral case study opportunities for testing existing partner tools and
selected tools identified through the inventory and classification stages. The research and consultancy partners will ensure that the project methodology is rigorous, sufficiently wide-ranging and that recommendations are validated and consistent with the best world-wide standards. Dissemination of project outputs via and in collaboration with the stakeholder groups will promote uptake and increase the EU knowledge base for sustainability evaluation.

VI. FP7 Projects

RECREATE (FP7-ENV-2013-one-stage)

Title: REsearch network for forward looking activities and assessment of research and innovation prospects in the fields of Climate, Resource Efficiency and raw mATerials

Description: RECREATE is a policy support network that will collect strategic and analyse information about medium and long term research and innovation trends and prospects. The aim of RECREATE is to overcome this fragmentation, and to create a clear cut research agenda for the Horizon 2020 priority of climate change, raw materials and resource efficiency using an RTD perspective for a transition management strategy that (a) looks at the trade-offs and synergies between raw materials, resource efficiency and climate change mitigation, (b) engages key stakeholders in a pro-active manner, and (c) has a perspective beyond the year 2020. RECREATE seeks to: • Engage a wide range of stakeholders (industry, academia, research, etc) to create an effective, dynamic and sustainable network. • Provide policy makers with a detailed mapping of the most relevant actors and initiatives in the fields of Climate Change, Resources Efficiency and Raw Materials across Europe and overseas. • Provide the policy makers with detailed information regarding medium and long term research and innovation trends and prospects, and carry out forward looking analysis in the areas of Climate Change, Resources Efficiency and Raw Materials. • Propose, deploy and monitor indicators for assessing the impact (in terms of policy, economy, society, sustainability) of EU R&I cooperation both within the EU and overseas. • Produce regular quantitative and qualitative briefings with information, trends and strategic options for R&I addressed to EU research managers and policy makers. RECREATE is a balanced partnership that combines key players in the areas of raw materials, resource efficiency and climate actions, at scientific and industry levels, with strong methodological knowledge partners, ensuring that the network: • has in depth knowledge about the issues, the challenges and the R&D policies in these fields of the Commission and globally, • has access to the essential stakeholders outside the direct consortium, from academia • has sound proven state of the art methods for collecting data, building sets of indicators, developing a scoreboard, building scenario’s, carrying our foresight analyses and impact assessments.

Project coordinator:
Daniel GEHRT Daniel.gehrt@jiip.eu

ILUMINATE (FP7-ENV-2013)

Title: Automated Sorting and Recycling of Waste Lamps

Description: In order to facilitate lamp waste treatment, maximize the recovery rates and improve working environment, an automated, sealed sorting unit will be required. The concept of the ILLUMINATE proposal is to develop automated systems that are able to effectively sort bulbs into different classes and remove foreign objects. This is essential for an economically viable process. The unit will be based on a sensor system combined with self-learning processing unit and will be able to recognize shapes, colours materials, and/or weight. To remedy the current situation where
there is little or no separation of mercury containing from non mercury containing materials from bulbs at end of life, the ILLUMINATE project will develop methods and processes for two main areas of the supply chain: collection of the waste streams and sorting of the waste. Once the identification and separation has been achieved the materials from both mercury containing and non mercury containing waste streams can then be handled by the appropriate processing steps in order to cost effectively recycle the waste bulbs. This proposal aims at enhancing the current recycling chain by providing a complete process from collection to pre-processing of waste lamps. In addition to sorting the lamps into proper fractions, the sorting unit will be able to register the number and types of lamps (or other objects) passing through the unit, thereby enabling well-defined statistics on treated lamps and process disturbances due to non-lamp objects received. The statistics provide a basis for more accurate waste treatment costs, other compensation models for producer responsibility, market/sales data and a basis for production planning.

**Project coordinator:**
Jones EDWARD, C-TECH INNOVATION LIMITED ed.jones@ctechinnovation.com

**STOICISM (FP7-NMP-2012)**

**Title:** Sustainable Technologies for Calcined Industrial Minerals in Europe

**Description:** Europe is a major global producer of industrial minerals. Around 180 million tonnes per year of products are extracted in the EU, with an estimated contribution of 10 billion to European GDP and offering direct employment to some 42,500 people. A secure supply of sustainable mineral products is essential to maintaining the European mining, mineral and manufacturing industries. The main objective of STOICISM is to enhance the competitiveness of the European industrial minerals industry by developing cleaner, more energy efficient extraction and processing technologies. STOICISM is an industry-led project with a specific focus on calcined industrial minerals which are presently energy intensive to produce. Most calcining uses the direct combustion of fossil fuels, contributing to up to 85% of their carbon emissions. To meet the overall aim, three key calcined industrial minerals have been identified: diatomaceous earth; perlite and kaolin. The processes implemented can also then be directly transferable to many other industrial minerals. In global terms, the EU produces one third of the worlds production of perlite, 20% of calcined kaolin and 20% of diatomite. Key markets for these minerals are beverage filtration, coatings, plastic, rubber, cosmetics, insulation and construction materials. STOICISM will research, develop and demonstrate a range of new innovative technologies along the industrial minerals value chain. This will include developments in extraction, beneficiation, drying, calcining and waste recycling. STOICISM is expected to impact significantly on the sustainability of the EUs industrial minerals industry by decreasing the use of natural resources (both mineral deposits and energy resources) leading to the sustainable production of better and purer products with less waste and lower environmental impact.

**Project coordinator:**
Maretva Baricot, IMERYS MINERALS LTD
Aurela SHTIZA a.shtiza@ima-europe.eu

**RECLAIM (FP7-NMP-2012)**

**Title:** Reclamation of Gallium, Indium and Rare-Earth Elements from Photovoltaics, Solid-State Lighting and Electronics Waste
**Description:** Prospective global supply and demand for gallium, indium and other key metals show an increasing discrepancy, amongst others due to the explosive growth of green technologies such as photovoltaics (PV) and solid-state lighting (SSL). While their primary production is highly controlled by a few countries, recycling systems to reclaim these materials from discarded products are not yet in place. This makes Europe susceptible for the provision of materials that are crucial for meeting policies on energy saving and renewability, as well as challenges the further development of the concerned industrial sectors. Hence there is a strong need to establish recycling systems for PV, SSL and other electronic waste and capitalise on these as yet unexploited and growing deposits of key materials. The bottlenecks are in the disconnection and sorting of the parts with the targeted materials from the waste and in the release, concentration and purification of the reclaimed metals. More in particular, the concerned materials tend to be used as compounds (gallium arsenide, gallium nitride, indium tin oxide) rather than in their elemental form and to be applied as thin layers on substrates in overall very low amounts. Objectives of the proposed project are (1) technological solutions that relieve current bottlenecks in the recycling of gallium, indium and rare-earth elements, and (2) demonstration of their application potential by means of a pilot implementation in an industrial setting. The project is to result in separation methods for electronic assemblies that reduce manual work (>80% automation) as well as in subsequent recovery methods that yield recycled materials of commercial-grade quality (>99-99.99%, depending on the element), apt to fit an industrial context and being environmentally compliant. To this end, (thermal) disconnection methods, part recognition methods and hydrometallurgical refining processes will be developed. Impact assessments will also be included.

**Project coordinator:** Toon Ansems, Nederlandse organisatie voor toegepast natuurwetenschappelijk onderzoek – TNO toon.ansems@tno.nl

**RECYVAL-NANO (FP7-NMP-2012)**

**Title:** Development of recovery processes for recycling of valuable components from FPDs (In, Y, Nd) for the production of high added value NPs

**Description:** Waste Electrical and Electronic Equipment is considered to increase drastically in the coming decades. WEEE contains considerable quantities of valuable components used in high-tech applications that currently are not recycled. Europe needs to improve and develop Recovery, Recycling and Reuse of critical materials in order to avoid the dependency on imports, high prices and risk of supply imposed by countries owning mineral reserves. RECYVAL-NANO project will develop an innovative recycling process for recovery and reuse of indium, yttrium and neodymium metals from Flat Panels Displays (FPD), one of the most growing waste sources. The project will be addressed not only to the recovery of these critical elements, but also the recycling process developed will result in the direct extraction of metallorganic precursors for direct reuse in the production of high added value nanoparticles that is ITO, Y2O3:Eu3+ and Nd-Fe-B. The project will develop an integral study of the recycling process, starting with logistic issues of the waste collection, optimising mechanical sorting technologies and developing innovative ones for the recovery and concentration of smaller fractions containing indium, yttrium and neodymium, developing simplified solvent extraction routes based on tailored chemical extraction agents able to extract a 95 % of the key metal in a metallorganic extracted solutions, and using these extracted solutions as precursors in the direct production of advanced nanoparticles. RECYVAL-NANO will validate the recycling process developed through the construction, optimisation and demonstration of full pilot lines for mechanical recycling of FPDs (500 kg/h) and hydrometallurgical metal recovery processes (500 g/h). Finally, the demonstration of the superior performance application of ITO, Y2O3:Eu3+ and Nd-Fe-B nanoparticles in electronic applications of transparent conductors, LEDs and permanent magnets respectively will complete the entire cycle of the project.
REMANENCE (FP7-NMP-2012)

**Title:** Rare Earth Magnet Recovery for Environmental and Resource Protection

**Description:** The REMANENCE concept is to develop new and innovative processes for the recovery and recycling of rare earth (RE) containing neodymium iron boron magnets (NdFeB) from a range of waste electronic and electrical equipment (WEEE). Advanced sensing and mechanical separation techniques combined with innovative processes based on hydrogen decrepitation will recover the rare earth magnets in the WEEE. Significantly with the REMANENCE concept, the aim will be to recover material in a form that can easily re-enter the primary magnet manufacturing production route, so providing large energy savings and production costs.

There is no existing process for the recovery of NdFeB magnets from waste streams and this highly valuable material is lost to land fill with no prospect of commercial recovery. The material recovered in the REMANENCE concept will have a substantial economic value, which considering current virgin material costs, is estimated to be €80-120 per kg. If fully implemented REMANENCE will provide a secondary source of materials for the EU, large enough to supply the entire EU bonded magnet manufacturing industry and a significant proportion of the EU’s high value sintered magnet production.

REMANENCE brings together Europe’s leading experts in; sensing, disassembly, recycling technology and materials processing with a group of innovative SMEs in a multi-disciplinary project able to deliver significant technical advances. The key technical roles of the SMEs as either equipment manufacturers (CTECH, OPTI, BEST) or direct end users of the recovered materials (MAG) will focus the project towards commercial outputs that will result in excellent exploitation opportunities for the developed processes.

EURARE (FP7-NMP-2012)

**Title:** Development of a sustainable exploitation scheme for Europe’s Rare Earth ore deposits

**Description:** With numerous European industries heavily depended on imported REE raw materials, there is a need for EU to secure a viable supply of REE minerals as well as develop from the ground up the currently non-existent European REE extraction and processing industry. The goal of the EURARE project will be (i) to characterize the potential REE resources in Europe; and (ii) to research, develop, optimize and demonstrate technologies for the efficient and economically viable exploitation of currently available European REE deposits with minimum consequences to the environment.

In the EURARE project, the mineral processing technologies currently used for the REEs minerals will be investigated for representative European REE ores, with a tendency for improvement by adopting new approaches for the complete ore utilization and minimal environmental consequences, establishing integrated mineral processing systems, with zero or close to zero tailings.

The current state-of-the-art processes for REE extraction follows complicated, energy and resource intensive technologies. The EURARE project aims in developing novel cost-effective and resource-efficient REE extraction process, tailored specifically for European REE ore deposits as well as for European health, safety and environmental protection standards.

As an added value to the work already described, EURARE will seek to demonstrate new sources for REE exploitation from industrial metallurgical waste which will not only be financial lucrative but will minimize the overall environmental footprint of the primary European metallurgical industry.

Special attention in all cases will be given in health, safety and social issues, in light of naturally occurring radioactive elements.
At the end of the EURARE project it is expected that a novel sustainable exploitation schema for Europe's REE deposits will have been established.

**Project coordinator:**
Ioannis PASPALIARIS
Efthymios BALOMENOS thymis@metal.ntua.gr

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**VII. CIP ECO-INNOVATION**

**ECO-SANDWICH**

**Title:** ENERGY EFFICIENT, RECYCLED CONCRETE SANDWICH FACADE PANEL

**Description:** Specific objectives: Development of a marketing strategy for the introduction of an innovative, environmentally friendly and sustainable product, Set up a mechanism to exploit across Europe, Encourage the re-use and recycling of construction and demolition waste (CDW) in order to shift CDW management from disposal to recycling and reduce utilization of natural resources thus preventing landscape degradation, Promote the substitution of conventional thermal insulation materials by mineral wool produced using innovative and sustainable technology, leading to a reduced environmental impact, Promote implementation of prefabricated, energy efficient products in order to enable reduction of primary energy consumption in residential and commercial buildings, Reduce embodied energy, embodied carbon and production of by-product wastes. ECO-SANDWICH is a ventilated prefabricated wall panel utilising recycled CDW and sustainable Ecose® technology mineral wool for reduction of primary energy consumption in building stock. The concept incorporates three priorities of the eco-innovation call; it uses recycled material to create innovative sustainable building product which contributes to greening the business of SMEs through decreasing their environmental impact accompanied by the use of less non-renewable or natural resources, and energy efficiency of final products (buildings). The ECO-SANDWICH represents a significant improvement over the existing prefabricated wall panel products, aligning itself with the mandatory targets of the EU Directives targets - EPBD, its Recast EPBD II and Waste Framework Directive (recycled CDW in concrete production, mineral wool based on Ecose® Technology, reduction of primary energy use in buildings where the ECO-SANDWICH is installed). Contribution to innovation of the ECO-SANDWICH project is the development of a ventilated prefabricated concrete wall panel that uses mineral wool as core insulation and modification of concreting technology.

**CANDY**

**Title:** CompAct highly mobile Next generation construction, Demolition and excavation waste recoverY system

**Description:** The enclosed project focuses on the Sustainable building products and the Materials recycling priority of the 2011 CIP ECO-INNOVATION call and is focused on the development and validation of an advanced Aggregate washing system for the construction and recycling sector. At present the CD&E Waste recycling sector is dominated by contractors employing traditional crushing and dry screening methods. This results in poor quality aggregate, highly variable product quality standards and lost commercial opportunity for the EU construction and demolition sector. Aggregate washing enables effective recycling, creates commercial product with added value and diverts material away from landfill. The CANDY project will focus on the development of the next generation of washing plant for the recycling of Construction, Demolition & Excavation (CD&E) waste. The project will see the implementation of advanced liquid / solid separating technology and the creation of a genuine mobile road transportable washing system. A key element of the project will be to replicate the high level of aggregate recycling that takes place in the UK (in 2009 23% of
aggregates were from recycled sources) into a wider European context where aggregate recycling ranges from 0-19%. If we achieve this level of replication we would prevent the extraction of 560m tonnes of virgin aggregate per year. The application is led by a leading UK SME developer of aggregate washing systems (CDE Global), to develop the next generation of washing system. The lead SME requires the support from European partners that provide critical system component technologies and access to waste streams in continental Europe. The key output for this project will be the development and demonstration of the CANDY Aggregate washing system operating in different continental setting on differing (C,D&E) waste steams to fully validate the system performance against ambitious commercial and environmental objectives.

**INSUL-ECO (ECO/13/630185)**

*Title:* Eco-innovative insulating thermal and acoustic panels made with recycled textile fibres  
*Description:* Introduction of a new insulation panel made of recycled textile fibres coming from end-of-life tyres.

**WOOL4BUILD (ECO/13/630249)**

*Title:* Improved isolation material for eco-building based on natural wool  
*Description:* The solution proposed will be based on the development of panels made of wool by-products and waste coming from tannery industry, which will be combined in appropriate quantities with fibres in order to obtain the final solution. Several combinations and qualities of wool will be analysed and obtained to determine the best performance from acoustics and thermal level. Specific treatments will also be applied to the products in order to optimise their additional features. Additionally, due to the natural origin of the raw material and the intrinsic heterogeneity in its properties, a prediction tool will be developed in order to determine the best proportions of each product. Once obtained the product, all required certifications and standards will be obtained, developing a wide replication plan at international level, including pilot sites in Spain and Italy.

**REWASTEE**

*Title:* Recycling steel making solid wastes for added value Energy Efficiency building products  
*Description:* The REWASTEE project aims at the industrial validation, market deployment and replication of a patent protected manufacturing process for the valorization of steelmaking wastes into multifunctional building products that provide acoustic insulation and enhanced thermal inertia. In specific, REWASTEE offers an alternative for the inertization, stabilization and valorization of Electric Arc Furnace Dust (EAFD), a hazardous waste according to the European Waste Catalogue (EWC). The REWASTEE approach will reduce the economic costs associated with steel waste, the environmental impact of its entry into landfills, and provide added value as a product for sustainable construction which demonstrates a better use of resources and raw materials. Market demand is present for such a material as the insulation, retrofit and construction markets are recovering following the economic downturn in 2008/2009. Indeed, energy saving and sustainable products are recovering first. Furthermore, government efforts to reduce energy consumption will lead to the adoption of new building codes and increased energy saving standards. The manufacturing and market deployment of REWASTEE materials will start in Spain followed by the identification and construction of opportunities in the Italian, French and UK markets. In doing so, business models and stakeholder relationships will be established for REWASTEE products across key European markets.
TAIMEE (ECO/11/304444)

Title: Thermal and Acoustic Insulating Material from Finished Leather Waste

Description: The TAIMEE project aims at the production and market implementation of an innovative leather composite material to provide acoustical isolation properties for immediate application in construction sector. The material is elaborate with the waste generated in tanneries at the end of tanning process (finished leather) and the companies that use leather to elaborate its products at very low energy consumption. The project contributes to a better use of resources and raw materials for the insulation industry and to the reduction of the environmental impact in leather industries. In addition, contributes to the implementation of eco friendly insulation material in the construction sector that improves noise pollution and the reduction of CO2 emissions.

WINCER (ECO/13/630426/WINCER)

Title: Waste synergy in the production of INnovative CERamic tiles

Description: The project aims to develop innovative ceramic tiles containing about 70 wt% of recycled materials from urban and industrial wastes. The specific objectives are related to: - contribution to sustainable waste management by recovery of the amount of soda lime glass (SLG) cullet waste that today is not re-introduced in glassware (about 30% of the total glass waste); - reduction of the use of natural resources thanks to: the use of SLG, coming from urban collection; the reuse of exhausted lime (EL) and its diversion from landfill disposal; the reuse of green scrap tiles, generated during the industrial process; - improvement of the environmental performances of the ceramic tiles sector by reducing CO2 emissions, energy consumption and methane use. The combination of these different wastes with natural clays enables the production of innovative ceramic tiles with similar or improved mechanical properties respect to the traditional ones. The productive cycle is similar apart two main innovation aspects concerning the body mix preparation (70wt% of recycled wastes in substitution of natural raw materials) and the firing cycle (the maximum sintering temperature is reduced more than 150°C).

VIII. LIFE

AUTOPLAST-LIFE (LIFE13 ENV/IT/000559)

Title: Recyling of special plastic waste from the automobile industry

Description: The AUTOPLAST-LIFE project aims to develop a system for the recovery and recycling of special plastic waste from the automotive sector. The system will include a network for the selective collection of vehicles’ waste tanks and reservoirs, as well as a pilot recycling plant to generate recyclable secondary material. The project will design, construct and start up a large-scale industrial plant for treatment of waste tanks and reservoirs from the recovery and recycling of ELVs. The plant will granulate the special plastic waste for transformation into material with the chemical and technological properties appropriate for recycling. Innovative techniques will include replacing commercial additives with sodium bicarbonate (NaHCO3) to provide better hydrocarbon adsorption performance and the use of finely-ground coffee dregs – obtained from business activities – for odour neutralisation of the tanks’ cleaning waters and the adsorption of a fraction of hydrocarbons. These techniques will significantly reduce processing costs for the recycled fraction. The project will create a network responsible for the collection, selection and recovery of special plastic waste from ELVs in the Italian province of Brescia. The network will include large and small waste collection centres and the active involvement of social co-operatives in the recovery, selection and separation of the ELV wastes. The project will also explore new commercial networks for valorisation of the reusable material generated.
INSPIRE4LIFE (LIFE13 ENV/FR/001483)

*Title:* Innovative sorting process plastic recycling

*Description:* The INSPIRE4LIFE project aims to demonstrate, at a pilot scale, an innovative automated sorting process to improve the quality of recycled industrial plastic materials and the reuse of large plastic pieces. The new process will aim to significantly increase the productivity of industrial plastic waste sorting compared to the average of 0.25-0.3 tonne/hour achieved by the current best available technology. This innovative sorting system will allow an initial fast processing of large plastic pieces at the dismantling stage of the end-of-life object. Improved sorting will then lead to a higher quality recyclate, for example, as granulate, as the output of the process. This will be immediately exploitable by compounders to produce and sell secondary materials to polymer producers. The quality of the recycled material achieved should open the way to its use in a greater range of products and markets. The project will pave the way for the scaling-up of this demonstration plastic waste treatment process in industrial-scale installations across Europe after the project ends. This would achieve a significant increase in the volume of recycled industrial plastic and the range of polymer types processed.

LIFE GREENZO (LIFE13 ENV/ES/000173)

*Title:* Demonstrative pilot plant for the valorisation of non-ferrous metal waste

*Description:* The project aims to develop and test, at pre-industrial scale, a pilot plant using plasma technology to obtain zinc oxide from zamak waste (mainly foundry slag and sludge). The zinc oxide obtained will meet all the technical specifications required to allow for its reuse. The processes will be tested and validated in two industrial sectors: the manufacture of rubber and chemical catalysts. The new technology will enable significant reductions in the quantity of hazardous and non-hazardous waste that is currently sent to landfill. It will also increase the competitiveness and sustainability of this type of industrial process.

LIFE+ NOWASTHEM (LIFE13 ENV/FR/000234)

*Title:* Innovative solution demonstrating effective and complete valorisation of mixed solid coarse waste in a cement plant

*Description:* The project will demonstrate an innovative cogeneration method to unite cement production with the recycling of mixed coarse solid waste. The energy produced by a thermal waste pre-treatment process (pyro-gasification) will be used for cement production purposes, which will result in substantial fossil fuel savings. The technology will work alongside sorting and recycling activities, which generate a significant volume of coarse waste (up to 70%). The solution will be demonstrated at the industrial scale, in a fully operational cement kiln, by converting four tonnes/hour of residual waste into gas and char, directly fed to the main burner. The whole process will be disseminated to cement production plants across the European Union.

LIFE GYPSMTOGYPSUM (LIFE11 ENV/BE/001039)

*Title:* GtoG - GtoG: From Production to Recycling, a Circular Economy for the European Gypsum Industry with the Demolition and Recycling Industry

Report on the Kick-off & Network meeting – Boosting synergies on EU Waste R&I projects, 8th December 2015, COV2 Building, Brussels
Description: The overall aim of the C2CGYPSUM project is to transform the gypsum demolition waste market to achieve higher recycling rates of gypsum waste, thereby helping to achieve a resource efficient economy.

Expected results
- A European handbook of best practices for controlled deconstruction of gypsum systems;
- A European manual of best practices for auditing buildings;
- A European specification/qualifications for recycled gypsum;
- Setting of a recycling target for gypsum waste, if feasible;
- Adaption the Green Public Procurement Wall Panels Sheet to require that there is at least 5% recycled gypsum in the panel; and
- Assessment of the carbon footprint of gypsum waste recycling.

Project coordinator:
Luigi DELLA SALA project@eurogypsum.org

IX. Climate-KIC projects

Pecrest (Climate-KIC pathfinder program, BP2015)

Description: To identify process concepts and technologies for thermochemical recycling of plastic waste streams for production of chemical intermediates at the Stenungsund site, also in combination with gasification of forest residues, and to access the relative potential for GHG emission reduction.

Project coordinator: Matteo Morandin, CHALMERS matteo.morandin@chalmers.se

BTA (Climate-KIC Flagship, BP2015)

Title: Building Technologies Accelerator

Description: BTA aims to create highest measurable, sustainable impact climatologically and economically at European scale thanks to: Extend and operate the BTA Living Labs Network which address and provide solutions for climate and sustainability issues for the built environment. Demonstrate the national, European and global relevance of the network. Demonstrate and build on the uniqueness of this new generation of Living Labs that integrate sustainability, engineering & social sciences and design. The Living Labs will be the community of practice for companies to get involved in and the platform of choice for climate innovation; Carry out projects for the Living Labs and real world test beds that demonstrate at least 20 new products, services and innovations for European companies. The projects will show why this is a superior approach and a platform for companies and academia alike in close collaboration; Validate the innovative building technologies in a scientific manner under the realistic testing conditions and formal engagement of users and industry partners which results realistic business models and thus accelerated market entry in the realistic data for solid calculation of the climate impact; Create networks where technology companies, researchers, architects, engineers, end users, property owners, decision takes in the property management and construction value chain as well as policy makers are brought together. This facilitates the communication among the key players for research interaction, joint innovation, knowledge sharing and technology dissemination; Create the technology pool of building technologies where the information is to be found regarding cutting-edge technologies and its application, calls for project proposals, activities of research institutions and testing facilities and so
on; Rollout of sustainable, behaviour changing and energy saving certification systems; At least one new project partner in a new market.

**Start-up PENDULA**

![Image of PENDULA solution]

**CEO:** Gary Lewis  
gary.lewis@pendula.de

**CMO:** Melina Munoz  
melina.munoz@pendula.de

### X. SME Instrument projects

**ECOSHEET-PRO** (Phase 1 - 17/12/2014)

**Title:** An Environmentally-Friendly Alternative to Plywood made from Co-mingled Waste Plastic

**Topic:** Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

**Project beneficiary:** ETE, NEWCASTLE UPON TYNE (UK)

Turul TASKENT  
turul@2kmail.com

**ELASTOMER RECYCLING** (Phase 1 - 18/06/2014)

**Title:** World’s first innovative method for recycling of elastomers and plastics from industrial waste

**Topic:** Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

**Project beneficiary:** HLW TEC, Hildesheim (Germany)
WASTE TO RESOURCE (Phase 1 - 17/12/2014)

Title: Commercialisation of WarwickFBR™ technology which can recycle Mixed Plastic Waste into a hydrocarbon product, the Plaxx™

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiaries: Crapper & Sons, OXFORD (UK) ; Recycling Technologies, Swindon (UK)

TYREC PROCESS (Phase 1 - 17/12/2014)

Title: TyRec process: Whole Tyre Recycling within 30 Minutes with Molten Zinc – towards a circular economy

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiary: Composite Recycling Ltd, Cork (Ireland)

ULTROSLAG (Phase 1 - 18/06/2014)

Title: A new integrated sustainable processing system for ‘metal from slag’ recovery with higher technical, economic, energy and environmental performance than existing recovery processes.

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiary: Ultromex, Bromborough (UK)

WHEY2VALUE (Phase 1 - 24/09/2014)

Title: Valorising waste whey into high-value products

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiary: ACIES BIO LJUBLJANA (Slovenia)

INSUWASTE (Phase 1 - 18/06/2014)

Title: Recycling of hard-to-treat, post-consumer textile wastes and conversion to insulation material for construction industry using a novel conversion technology.

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiary: James Robinson Fibres Limited, Bradford (UK)

VIRTUCRETE (Phase 1 - 17/12/2014)

Title: A new integrated process to valorise hazardous leaded glass from CRTs and transform it into highperformance geopolymer blocks

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiary: Virtus Projects, Southport (UK)
CLIPP PLUS (Phase 2 - 17/12/2014)

Title: Manufacture and commercialization of high quality recycled polyolefin films using an innovative continuous extrusion recycling process assisted by sc-CO2 for printed plastic waste

Topic: Boosting the potential of small businesses for eco-innovation and a sustainable supply of raw materials

Project beneficiary: SKYMARK PACKAGING INTERNATIONAL LIMITED, ILKESTON (UK)

XI. EU Initiatives participating in the meeting

EIP Raw Materials

Description: The European Innovation Partnership on Raw Materials is a stakeholder platform that brings together representatives from industry, public services, academia and NGOs. Its mission is to provide high-level guidance to the European Commission, Members States and private actors on innovative approaches to the challenges related to raw materials.

The European Innovation Partnerships (EIPs) are a new approach to EU research and innovation. By bringing together actors from the entire research and innovation value chain they aim at streamlining efforts and accelerating market take-up of innovations that address key challenges for Europe.

The EIP on Raw Materials' aim is to help raise industry's contribution to the EU GDP to around 20% by 2020. It will also play an important role in meeting the objectives of the European Commission flagship initiatives ‘Innovation Union’ and ‘Resource Efficient Europe’. It will do this by ensuring the sustainable supply of raw materials to the European economy whilst increasing benefits for society as a whole.


SPIRE PPP

Description: SPIRE is a contractual Public-Private Partnership (PPP) dedicated to innovation in resource and energy efficiency and enabled by the process industries. Its objective is to develop the enabling technologies and solutions along the value chain, required to reach long term sustainability for Europe in terms of global competitiveness, ecology and employment.

More specifically, SPIRE is addressing three fundamental European challenges:

- urgency to create growth and increase the competitiveness of Europe in a global market,
- need to rejuvenate the European process industry that is at the basis of the European economy in terms of turnover, employment and generation of technologies for all industrial sectors,
- imperative to reduce resource and energy inefficiency and the environmental impact of industrial activities Strong industry engagement, large participation, commitment across sectors and boundaries.

No fewer than 8 industry sectors have contributed to the development of SPIRE, via European Technology Platforms and Industry Associations. Sectors such as cement, ceramics, chemicals, engineering, non-ferrous metals, minerals, steel and water representing big and small companies, have joined forces and set up common aspirations for innovations in resource and energy efficiency in their sectors and beyond. Through purposeful cooperation, SPIRE has developed into a practical
roadmap, to help ensure that EU innovation projects address the right needs and achieve optimal impact from 2014 to 2020.

SPIRE is one of the first innovation-driven public-private partnerships in Europe - the European objectives of 'Smart, Sustainable and Inclusive growth' and the national growth programmes can only be achieved through innovation and depend more than ever on joined public-private initiatives that help direct innovation to meeting societal needs.

**Website:**  [http://www.spire2030.eu/](http://www.spire2030.eu/)

**EIT Climate-KIC**

**Description:** Climate-KIC is one of three Knowledge and Innovation Communities (KICs) created in 2010 by the European Institute of Innovation and Technology (EIT). The EIT is an EU body whose mission is to create sustainable growth. Climate-KIC supports this mission by addressing climate change mitigation and adaptation.

Climate-KIC integrates education, entrepreneurship and innovation resulting in connected, creative transformation of knowledge and ideas into economically viable products or services that help to mitigate climate change.

**Website:**  [www.climate-kic.org/](http://www.climate-kic.org/)

Sira SACCANI, Theme Sustainable Production Systems  [sira.saccani@climate-kic.org](mailto:sira.saccani@climate-kic.org)

Catherine LAURENTZ-POLZ, Innovation Officer  [catherine.laurent-polz@climate-kic.org](mailto:catherine.laurent-polz@climate-kic.org)

**EIT Raw Materials**

**Description:** Making raw materials a major strength for Europe by:

- Creating and developing new game changing businesses across Europe: Providing the sustainable supply of raw materials is vital, but the EU is highly dependent on imports of raw materials that are crucial for these core industrial activities. The challenge for the EIT RawMaterials is thus to fully utilize the potential of industrial symbiosis through applying a systemic perspective and to revitalize the human capital in the raw materials sector.

- Boosting the existing raw materials sector: Through the market introduction of new materials, investment in new production and processing units, system integration and the setting up of new partnerships across the value chain using innovative ICT solutions and smart product design.

- Creating new entrepreneurial education approaches: Addressing the development needs of graduates and professionals in the Raw Materials sector to support the effective transformation of ideas into businesses and contribute to a resource and cost-efficient.

- Tackling European resources sustainably: We want to actively tackle the challenge ahead of us. Sustainability and the efficient use of all natural resources are of central importance in everything we do.

**Website:**  [http://eitrawmaterials.eu/](http://eitrawmaterials.eu/)
ENTERPRISE EUROPE NETWORK (EEN)

Description: EEN is the world's largest support network for SMEs with international ambitions with close to 600 member organisations in over 50 countries. Based in each region, EEN international business experts have the right advice to support SME growth ambitions.

Whichever Network contact point the SME get in touch with, EEN will either assist them on the spot or put them in touch with a specialised branch in their region even better placed to serve. The Enterprise Europe Network helps ambitious SMEs innovate and grow internationally. Through direct access to Europe's largest database of business opportunities, EEN helps SMEs forge new international partnerships with excellent growth potential. EEN also recognise innovation potential and help SMEs shape it into international commercial success.

Website: [http://een.ec.europa.eu/](http://een.ec.europa.eu/)

EEN Sector group on Environment

Description: The Group's services for the environment sector are:

- Finding business and cooperation partners;
- bringing together enterprises, institutes, stakeholders and public bodies;
- advising on funding opportunities from EU research programmes;
- identifying and promoting innovative technologies, products and services, and matching technology supply and demand;
- organising brokerage events, company missions, symposia, conferences and workshops;
- assisting in EU legislation matters such as Directives and Regulations;
- making eco-innovation visible, attractive and available to all industries.

Website: [http://een.ec.europa.eu/about/sector-groups/environment](http://een.ec.europa.eu/about/sector-groups/environment)

EEN Sector group on Sustainable Construction

Description: The Group's services for this sector are:

- Information on local markets. More than 25 Enterprise Europe Network branches are building a knowledge and expertise centre on sustainable construction. They pool their knowledge on research, development and innovation as well as on standards and good practices in the Group's member countries and make it available through regional fact sheets.
- Access to European initiatives. The Sector Group functions as a gateway for SMEs to important European platforms in the sector, such as the European Construction Technology Platform (ECTP), to research funding programmes such as the European Commission's 7th Research Framework Programme, ERANET (ERACOBUILD) and EurekaBuild and to the European Commission's Lead Market Initiative.
- Partnerships. The Sector Group offers small companies a forum for exploring business and innovation partnership opportunities and helps them to channel their offers and requests. As a crossroads of multiple disciplines and technologies, it also collaborates with other Enterprise Europe Network Sector Groups.

Website: [http://een.ec.europa.eu/about/sector-groups/sustainable-construction](http://een.ec.europa.eu/about/sector-groups/sustainable-construction)
EEN Sector group on Materials

**Description:** Our main services are:

- Finding innovative technological solutions to complement your product development
- Finding clients and co-operation partners for your products and processes
- Promoting your innovative technologies in our database of technology profiles
- Arranging one-on-one meetings with potential partners at Materials related trade fairs and company missions to visit potential partners
- Communicating your interests and concerns in regard to European Union policies to EU policy makers
- Informing you about research programmes of the European Union and assisting you in applying for EU grants
- Finding out about laws and regulations concerning the sector in other Network countries

**Website:** [http://een.ec.europa.eu/about/sector-groups/materials](http://een.ec.europa.eu/about/sector-groups/materials)
Appendix F: Feedback from the participants on the meeting

I. Rating the meeting and its impacts

II. Responses to open questions:

4. In your opinion how could the morning session be improved?

We have received a suggestion to improve the morning session by allocating more time for discussion on each project. It was also suggested to ensure presentations respect the time allocated, asking them to be clearer, and to be more focused on synergies/outcomes from the project.

6. In your opinion how could the networking session be improved?

For the networking session some suggestions received included the need for a more open space to facilitate mobility and networking, starting with a brief introduction of each project within the networking groups. In addition, it is recommended to include the name of the "waste stream" together with project acronym or structure the session based on synergies with other initiatives.
8. In your opinion how could the afternoon session be improved?
To improve the afternoon session, it is suggested that the roundtables should take place in different rooms. It is also suggested the need to better illustrate the link between actors in innovation projects (i.e. consortium of industry leaders, public bodies, universities,...).

11. What were the main benefits for you from this meeting?
Various benefits were reported by participants including: networking, identification of opportunities for further dialogue on sampling analysis, data and base knowledge, collaboration in the future knowledge of other projects, sharing information on projects and gather information from relevant initiatives, finding out all EU initiatives in waste sector that we did not know about before, better know the people behind the project names, meet potential project partners and networking, global view of project portfolio, establishment of contacts/synergies with actors (programme & projects), getting insights into concrete technologies and business models and realizing link with related projects and synergies regarding interested parties, data management and possible forms of long-term exploitation.

12. Do you have any further comment/suggestions?
The comments were positive for the meeting, indicating that these type of activities should definitely continue in the future. It was also commented that more focused meetings on specific waste streams and/or similar interested industrial sectors gathering industry opinion should be promoted, to encourage periodic networking between projects with concrete actions such as: create a unique website including information on all projects funded and all funding instruments, an annual conference or mandatory networking report for all projects funded. This report should include a list of real dissemination activities undertaken by the beneficiaries (i.e. private meetings, ppt to fair events, conferences, list of projects contacted…).