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Annual Monitoring Report 2018

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[1] DG GROW: EIP monitoring and evaluation scheme, see: https://ec.europa.eu/growth/sectors/raw-materials/eip/monitoring-evaluation_en

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Acronyms

AMR	Annual Monitoring Report
CfC	Call for Commitments
EIP	European Innovation Partnership
EIP-RM	European Innovation Partnership on Raw Materials
EIT	European Institute of Innovation and Technology
EU	European Union
KIC	Knowledge and Innovation Community
MoU	Memorandum of Understanding
MEP	Member of European Parliament
RMC	Raw Material Commitment
SIP	Strategic Implementation Plan
SME	Small and medium-sized enterprise
WEEE	Waste electrical and electronic equipment

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Executive Summary

Based on a survey launched in the second half of 2019 for the year 2018, the "AMR2018 Survey", this Annual Monitoring Report 2018 provides an overview on the **state-of-play of Raw Material Commitments (RMCs) of the European Innovation Partnership on Raw Materials** (EIP-RM). Commitments are joint undertakings by several partners, who commit themselves to carrying out activities that contribute to achieving actions and targets of the EIP-RM.

KEY DATA ON THE COMMITMENTS ACTIVE IN 2018

To date **the EIP-RM counts around 550 unique partners**, including 27 partners from non-EU countries. Overall, Spain remains with 88 unique partner organisations the best represented country in EIP Commitments, followed by Italy with about 60 unique partners.

Taken together, the Commitments have reported a **total indicative budget** of **€1979 million**.

In early-2019, the EIP-RM counted 62 Commitments, 28 from the 2013 Call for Commitments, and 34 from the 2015 Call for Commitments. So far, **the Commitments had covered all Priority Areas of the EIP-RM in a relatively balanced way**, even though the 2015 Call for Commitments attracted very little Commitments on framework conditions for waste management. However, the completion of several Commitments, and also disqualifications, progressively led to smaller number of active commitments, and thus to an imbalance on the level of priority areas, or themes. For example, in 2017 the number of active Commitments on ´Raw materials research and innovation coordination' and on ´Improving Europe's raw materials framework conditions' decreased significantly. In 2018 the decrease in the number of active Commitments generally slowed down. Nevertheless, due to strongly reduced numbers, the last Commitment stopped on ´Raw materials research and innovation coordination' while only a single Commitment continues on theme ´Deep Sea Mining´.

FUNDING

After several successful years regarding funding, the Commitments increased further the cumulative secured budget, although modestly, reaching a level of about €635 million. Accordingly, the share of budget secured in the total indicative budget reached its maximum with **32% in 2018** (compared to 29% in 2017, 25% in 2016, 23% in 2015, and 15% in 2014). EU funding is the largest source of funding secured (€277 million), mostly through Horizon 2020, while the growth of its share further slowed down. **Alternative EU funding sources** such as the European Investment Bank, the European Development Fund and Cohesion Policy Funds account for a **very small fraction** of funding to the Commitments. Since 2014 the funding volume that the RMCs have received increased continuously, adding up to **€113 million.** While the number of countries providing national or regional funding increased slowly in the past, this number escalated in 2018 now comprising **25 different countries**[2]. Finally, in 2018, four RMCs secured **private funding** totalling **€2** million**.** The total number of Commitments having received private funding since 2014 stays 61, totalling now **€124 million**.

ACTIVITIES

With few exceptions, all the active Commitments reported to have undertaken activities towards their objectives since 2014. Commonly reported activities are of an **organisational nature**, such as enlarging their partnership, securing funding, and

[2] 24 member states (Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom), plus Norway.

profiling. Increasingly, implementation of the Commitments is in the focus, in particular **research and dissemination** activities.

Outputs

Many Commitments are delivering tangible outputs. Most outputs contributed to **target 3: Framework conditions for primary raw materials** (53%) followed by **target 4: Framework conditions for materials efficiency and waste management** (12%), and **target 1: Innovative pilot actions** (11%). Similar to 2017, prominent examples of outputs delivered by the Commitments are **knowledge sharing outputs** (publications, events, websites etc.), **innovative actions or pilots** (technological processes, new business models, new products etc.), and **international cooperation** (sharing/dissemination of information and best practices, participation in joint collaboration projects, event/workshop/conference organisation, technology exchange, etc.).

UN Sustainable Development Goals

In order to follow-up on contributions in the raw materials sector to the 17 Sustainable Development Goals (SDG) adopted in 2015 by the UN General Assembly, the Annual Monitoring Report 2016 demonstrated for the first time to what extent the UN Sustainable Development Goals have been addressed by the activities of the diverse RMCs. The Annual Monitoring Report of this year updates the analysis, showing for each of the SDGs, how many individual Commitments address the related targets.

Almost 240 linkages between the RMCs and the SDGs were identified, based on the responses of 70 Commitments to the surveys of the Annual Monitoring Reports 2016, 2017 and 2018. The analysis illustrated that all the SDGs are addressed by the activities of the Commitments. The focus of the EIP-RM Commitments is concentrated on the following Sustainable Development Goals:

- Ensure sustainable consumption and production patterns (SDG 12);
- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG 8);
- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (SDG 9).

Further SDGs frequently addressed by Commitments are:

- Strengthen the means of implementation and revitalize the global partnership for sustainable development (SDG17);
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (SDG15);
- Make cities and human settlements inclusive, safe, resilient and sustainable (SDG11);
- Ensure availability and sustainable management of water and sanitation for all (SDG6).

Table 1 provides an overview of the report's **key performance indicators.**

Table 1: Key performance indicators (December 2018) for Raw Material Commitments (RMC)

Key performance indicator	2013 Call for Commit-ments	2015 Update on RMCs from 2013	2015 Call for Commit-ments	2016 Update	2017 Update	2018 Update	Total at begin-ning of 2019
				on RMCs from 2013 /2015			
Number of commitments	80	- 4	+ 47	-24	-37	-12	50
Number of unique partners	699	+ 56	+ 223	-125	-210	-92	551
Total indicative budget	€1744 million	- €58.4 million	+ €294 million	n.a.	n.a.	n.a.	€1979 million
Budget secured[3]	€268 million	+ €123 million	n.a.	+ €113 million	+ €71 million	+ €61 million	€635 million
Share of indicative budget secured	15%	23%	n.a.	n.a.	25%	29%	32%
Outputs, cumulative	ca. 200	ca. 500	n.a.	ca. 900	ca. 1300		

Source: JRC analysis

[3] The "Budget secured" in the table included approximately €115 million of EU funding that RMCs had already secured at the time of the 2013 Call for Commitments (cf. EIP-RM Annual Monitoring Report 2014,p.8). Values shown are rounded, therefore the total can deviate from the sum of the annual values.

1 Introduction

1.1 The European Innovation Partnership on Raw Materials

The European Innovation Partnership on Raw Materials (EIP-RM) 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 **Strategic Implementation Plan** (SIP)[4] of the EIP-RM sets specific objectives and targets, to be achieved through a range of proposed actions including research and innovation coordination, technologies for raw materials production, substitution, framework conditions, knowledge and skills and international cooperation.

To implement these actions – which cannot be done by the European Union (EU) institutions alone – the European Commission launched two **Calls for Commitments**[5] to Member States, industry, academia and other relevant stakeholders in October 2013 and December 2015, and opened a third and last **Call for Commitments** in late spring 2018. The **'Raw Material Commitments'** (RMCs) are joint undertakings by several partners, who commit themselves to carrying out activities that will contribute to achieving the actions and targets of the EIP within the period 2014-2020.

1.2 The EIP Annual Monitoring Report

The purpose of the Annual Monitoring Report (AMR) is to provide an overview on the **state-of-play of the Commitments**, based on indicators that measure the RMCs' inputs and outputs. The data used come from the information provided during the Calls for Commitments and from the **mandatory annual AMR surveys**. The results of this monitoring exercise will feed into the SIP Implementation Document and the Strategic Evaluation Report[6].

[4] https://ec.europa.eu/growth/sectors/raw-materials/eip/strategic-implementation-plan_en

[5] https://ec.europa.eu/growth/sectors/raw-materials/eip/commitments_en

[6] See the EIP Monitoring and Evaluation scheme: https://ec.europa.eu/growth/sectors/raw-materials/eip/monitoring-evaluation_en

2 Overview of the Commitments

The EIP-RM organised **two Calls for Commitments**, in **2013** and **2015**, and opened a third and last **Call for Commitments** in late spring 2018. From the 2013 Call for Commitments the EIP Sherpa Group accepted **80** Commitments, while the 2015 Call led to **47** additional Commitments. The third call did not result in new Commitments so far.

Commitments that do not fill in the annual monitoring survey for two consecutive years lose their recognition as a Raw Materials Commitment. In 2018 this was the case for seven Commitments[7]. Moreover, the number of Commitments having finished their mission increased by five in 2018[8], after four in 2017 and six in 2016. This way the EIP counts **50 Commitments** at the beginning of 2019[9]. This means that the annual decrease slowed down to 10 in 2018, after 22 in 2016 and 45 in 2017.

This section presents an overview on the coverage of the SIP, the Commitment partners and their indicative budgets.

Further details on all of the endorsed Commitments can be found on the EIP website:

https://ec.europa.eu/growth/sectors/raw-materials/eip/commitments_en

2.1 Commitments and coverage of the SIP

>> The coverage of the different Priority Areas is relatively balanced

Table 2 displays the coverage of the SIP Priority Areas, attributing each RMC to one Priority Area.

From the beginning of the EIP-RM, all Priority Areas were relatively well covered, taking into account that some Priority Areas (e.g. I.C on substitution) are more specific than others. The 2015 Call for Commitments attracted very few Commitments on framework conditions for waste management (Priority Area II.B), while there were quite a lot of new Commitments covering biotic materials. The successive cessation of numerous Commitments has caused significant drops in the total number of recognised Commitments, which is intensified for single priority areas due to statistical reasons. In the AMR 2018 Survey, 43 RMCs responded by filling the AMR 2018 Survey online, or indicating the status of the Commitment; this results in a response rate of 69%. This is almost one and a half times the response rate of last year. However, for certain analyses only a subset of Commitments (33; 53 percentage points) was available, as the remainder includes those Commitments reported in 2018 to be finished or idle, respectively.

Annex 1 further provides an overview of the coverage of the EIP's Action Areas, based on Commitments' selection of up to 5 relevant Action Areas.

At the AMR2018 Survey, the following additional information have been gained on the status of Commitments:

- five Commitments reported to have finished their mission. These are RMCs CRAM, CRM Recovery, HydroWEEE, NATUREUROSTONES, Stand4Mines;
- five Commitments reported no advancements were undertaken in 2018.

[7] BioIron, EPR-C Commitment, InTrain4RM, PROFIBRE, RAW-NANOVALUE, SAFEMIN, SustainableMiningStandard.

[8] Finished in 2018: CRAM, CRM Recovery, HydroWEEE, NATUREUROSTONES, Stand4Mines.

[9] This number considers that RMC Mineland and RMC MIREU are active in 2018.

Table 2: Number of RMCs covering each Priority Area in 2018. The Commitments that responded to the AMR 2018 Survey are put in bold, those that finished in 2018 and/or lost their recognition are in *italics* (number indicated in brackets).

Priority Area or theme	Relevant Raw Materials Commitments	Number of RMCs
Priority Area I.A. 'Raw materials research and innovation coordination'	none	0 *(0)*
Priority Area I.B. 'Technologies for primary and secondary raw materials production' >> Land mining (exploration/mining)	**BioMOre**, EUROASSET, **ExECRoMe**, **NEXT**, **SIMS**, SmartExploration, **SOcRATES**, **SOLSA**	8 *(0)*
>> Deep sea mining (exploration/mining)	Blue Nodules	1 *(0)*
>> Processing	**BioAlMinore**, *BioIron*, **CuBES**, EUROPEM, **INCOMES**, **MetGrow**, **Mud2Metal**, **PolymetOre**,	8 *(1)*
>> Waste management	**C&D-WRAM**, **EARTH 2020**, ENCRAM, **EURELCO**, *HydroWEEE*, **ITERAMS**, **pHMine**, Reclaim, **TailingsDamScavenger**, **WeCARE**, **ZeroWaste-NoI**	11 *(1)*
Priority Area I.C. 'Substitution of raw materials'	**EQUATOR**, **EU-NARS-G**, *RAW-NANOVALUE*, **RESET**, SUBST-EXTREME	5 *(1)*
Priority Area II.A. 'Improving Europe's raw materials framework conditions'	**BioDIMA**, **EMD**, **ENSQM**, **Mineland[10]**, **MIREU[10]**, *SAFEMIN*, *Stand4Mines*, **SUMAN2000**, **SUSMINE**, *SustainableMiningStandard*,	10 *(3)*
Priority Area II.B. 'Improving Europe's waste management framework conditions and excellence'	*CRM Recovery*, *EPR-C Commitment*, IMPACT,	3 *(2)*
Priority Area II.C. 'Knowledge, skills and raw materials flows'	*CRAM*, **EUMINET**, *NATUREUROSTONES*, WEEE 2020	4 *(2)*
Priority Area III. 'International cooperation'	**IMAGINe**, **INTERMIN**, *InTrain4RM*, **MINSPIRE**	4 *(1)*
Biotic materials	Effiwood, EHIA, GENTLE, **NOWMOB**, *PROFIBRE*, **RUBB-ENDURE**, **RUBBERTOMARKET**, **WRING**	8 *(1)*

Source: JRC analysis

[10] Mineland and MIREU are RMCs active in 2018, in contrast to the information shown in AMR2017.

2.2 Partners

>> The EIP on Raw Materials counts 650 unique partners

In 2013, about 700 unique partners related to 80 commitments belonged to the EIP-RM[11]. Between 2013 and 2015, one third of these RMCs reported through the AMR 2015 Survey an evolution of their partnership. In spite of the disqualification of four RMCs and the consequential loss of 27 partners, the updated by the AMR 2015 Survey showed a net increase by 56 new unique partners of the EIP-RM. Moreover, the 2015 Call for Commitments attracted another 223 unique partners, related to 47 commitments, bringing the overall EIP partnership to a peak of about 980 unique partners.

The 2016 AMR survey resulted in the disqualification of 5 RMCs and a consequential reduction of 27 partners. In addition, 13 RMCs finished in 2016, resulting in a decrease of a further 141 partners. The evolution in the partnerships of the remaining RMCs caused the leaving of 4 extra partners, and an entering of 46 partners. The **overall EIP partnership** thus decreased **in 2016** by 126 partners to about **850 unique partners**.

This trend continued in 2017, when the 2017 AMR substantiated in the disqualification of 35 RMCs with a subsequent reduction of 366 partners; further, 10 RMCs had finished since the AMR2016, thus leading to a decrease of additional 46 partners by the end of 2017[12]. As a consequence, the **overall EIP partnership** thus **in 2017** decreased significantly by 200 partners to about **650 unique partners**.

While the trends from the past two years also continued in 2018, the cessation of RMCs significantly slowed down. The 2018 AMR resulted in the disqualification of only seven RMCs, which is less than 20% compared to that of the 2017 AMR; further five RMCs reportedly finished since the AMR2017, thus leading to an overall drop to 50 RMCs[13]. In terms of partnership, these developments resulted in a decrease of additional 150 partners by the end of 2018. In summary, the **overall EIP partnership in 2018** lessened by 485 partners[14] to about **493 unique partners** (table 1).

>> Member State participation remains uneven

Figure 1 presents the distribution of the **unique partners per Member State**. Overall, **Spain** remains further the best represented in the EIP Commitments (with almost 90 different partner organisations), followed by **Italy** with 60 unique partner organisations. Further countries with good representation in the RMCs are Germany, France, Belgium and Sweden with circa 40 unique partner organisations. For most countries, the number of unique partners decreased significantly, in average about a sixth. The number of **partners from non-EU countries**[15] **decreased by 40%, now counting in 27 partners**.

[11] The 80 commitments are the ones accepted after the 2013 Call for Commitments.

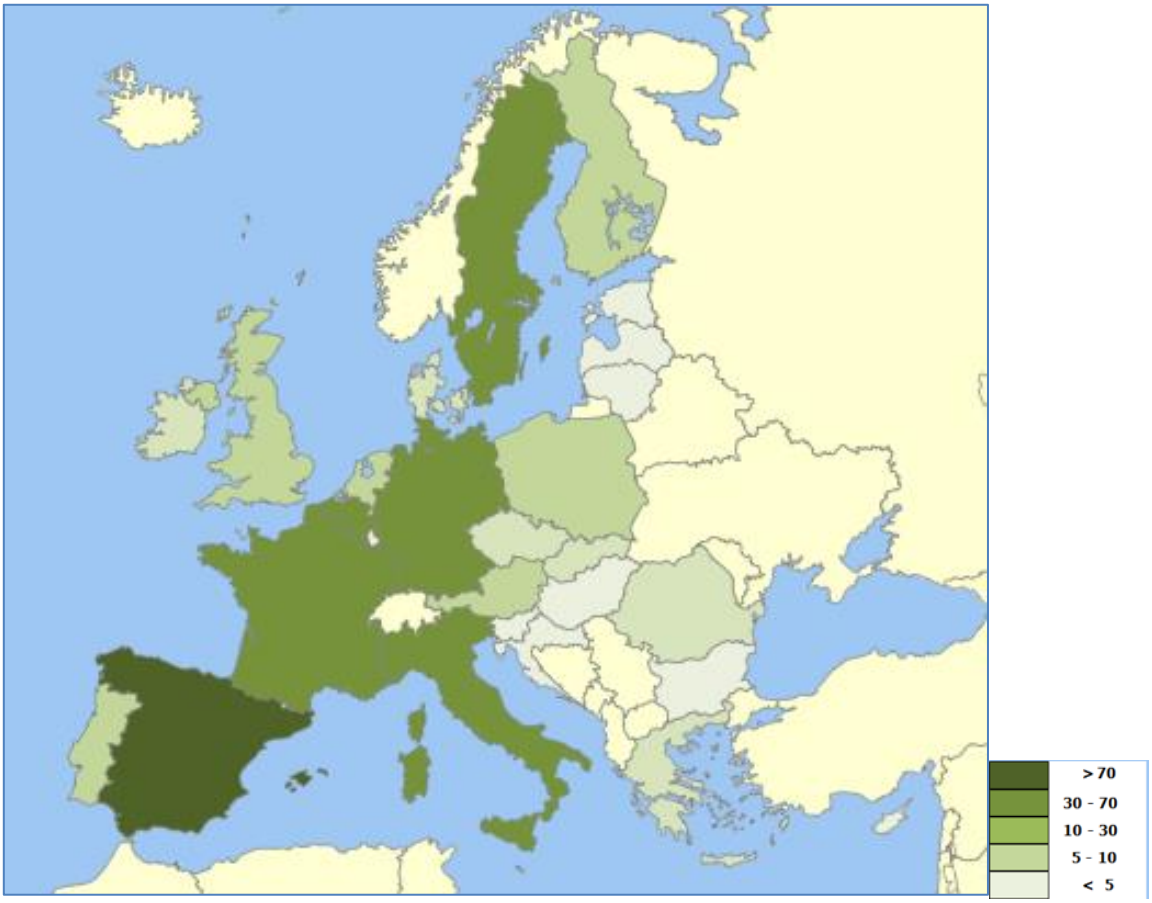
[12] There is a multi-metering in these figures.

[13] Two commitments were added due to a reactivation of their status during 2018 see table 2.

[14] minus 125 in 2016, minus 210 in 2017, minus 150 in 2018

[15] Non-EU countries with three or more different unique partners include Chile, Norway Switzerland, and the United States.

Figure 1: RMC partner coverage, total number by Member State



Source: JRC analysis

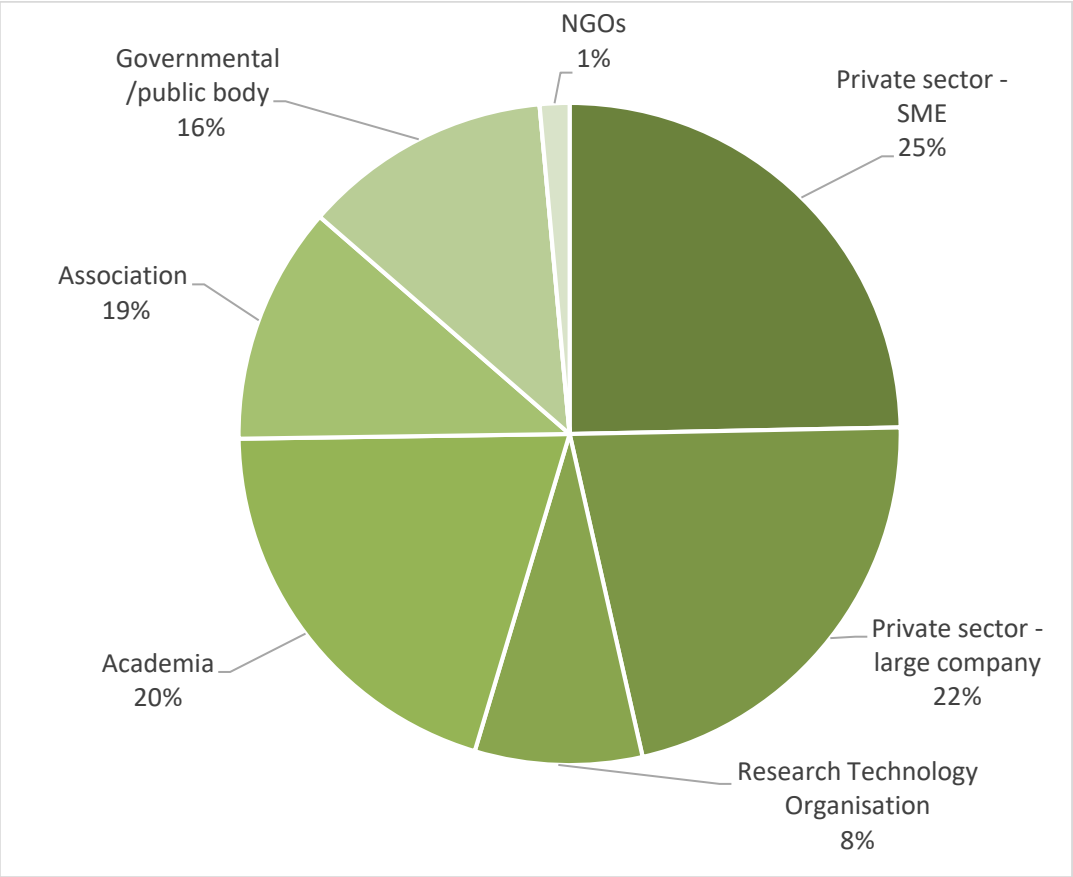
Spain (7), Italy (6), Finland (6), and France (5) are well represented also in **RMC leadership**, with pan-European organisations (11) also leading a significant number of RMCs.

>> There is a balanced participation from organisations from the public and the private sector, yet NGOs are relatively under-represented

Figure 2 presents that, in terms of RMC partners, **participation in the EIP is relatively evenly balanced between the public and private sectors**. Almost half (47%) of the organisations that participate in Commitments come from the private sector, both large companies, and small and medium-sized enterprises (SMEs); the latter representing over one quarter (25%) of all organisations that participate in Commitments. In addition, associations representing the private and non-private sector make account for around 12 %.

In essence, the distribution by type of RMC partners is very stable, with the exception of a modest shift from SME towards large companies.

Figure 2: Type of RMC partners, in %, 2018



Source: JRC analysis

The indicative budget remained constant at €1979 million since 2015.

3 Monitoring Progress of Commitments

This chapter presents **the progress made by the Commitments** of both the 2013 and the 2015 Call for Commitments that are recognised at the beginning of 2018. Almost 70% of these Commitments responded to the AMR 2018 Survey.

Indicators for monitoring, measuring and mapping the state-of-play of the ongoing EIP-RM Commitments are presented in three sections:

(1) inputs (human resources, funding, etc.)

(2) activities undertaken in the year

(3) outputs (pilot actions, documents, meetings, etc.).

3.1 Inputs

The purpose of this section is to analyse the overall state-of-play of the adopted Commitments with respect to total funding secured, and to identify the proportion of projects that are on track versus those at risk, e.g. those lacking funds.

Overview

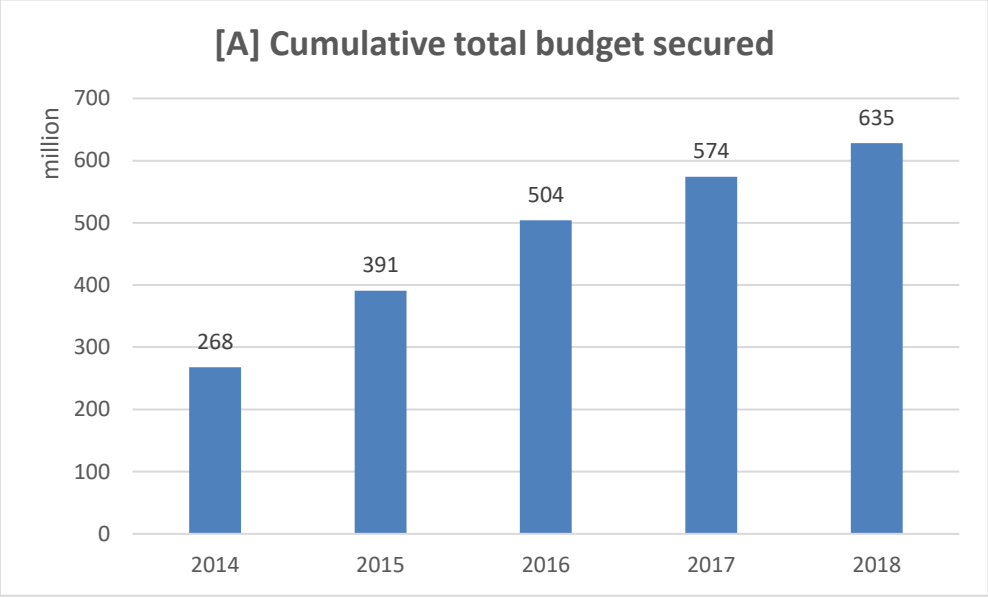
>> On average the RMCs have now secured almost a third (32%) of their total indicative budgets

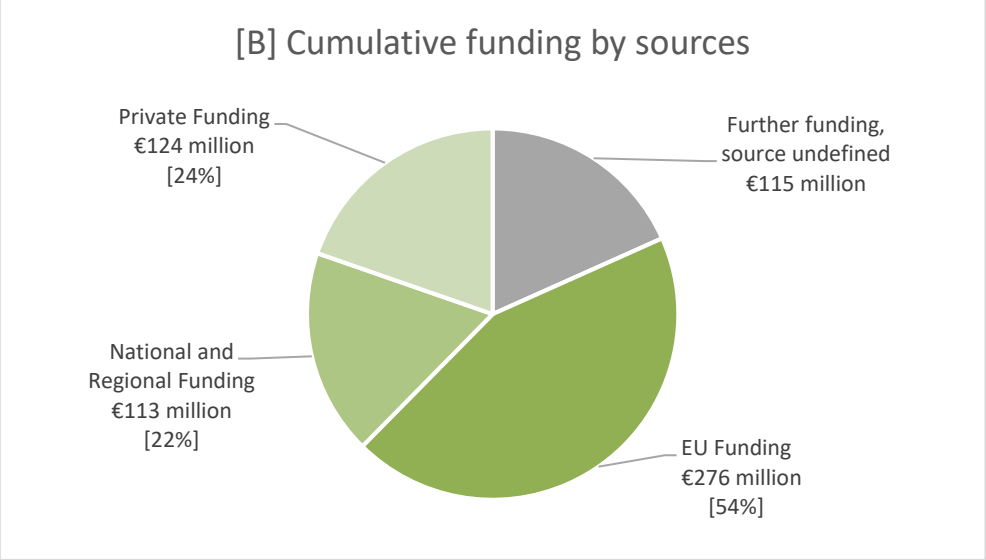
Prior to the Annual Monitoring Report 2018 Survey, RMCs had reported the securing of €574 million[16]. **At the time of the Annual Monitoring Report 2018 Survey, the RMCs reported to have further secured €61 million**. This means that the EIP Commitments have now secured approximately **€635 million** out of the updated total indicative budget of €1979 million, or **32%** of their total indicative budgets (compared to 15% in 2014, 23% in 2015, 25% in 2016, and 29% in 2017).

The **trend of the total budget secured**, cumulative for the years 2014-2018, is summarised in **Figure 4A**, while the reported budget secured for the period 2014-2016 is shown by type of resources in **Figure 4B**.

[16] This includes the budget indicated by the 2013 Call for Commitments.

Figure 4: Secured funding for EIP Commitments: [A] Cumulative total budget secured in the period 2014 to 2018, in €; [B] Cumulative budget secured split by type of sources since 2014, in € million[17] and % (disregarding "Further funding" category). Budgets given in nominal values.





Source: JRC analysis

The **cumulative total budget secured grew rather evenly** over the period 2014-2018, starting from a total budget of €268 million and reaching now €628 million. The absolute annual increase is significantly slowing down, with a marked drop in both absolute and relative terms in 2017.

Since 2014, the largest proportion of funding comes from the EU (Figure 4B); for the period 2014-2018 the EU funding amounts to more than half of the total **(54%),**

[17] The "Cumulative budget secured" in Figure 4B excludes approximately €115 million of EU funding that RMCs had already secured at the time of the 2013 Call for Commitments.

equivalent to €277 million. Private funding of €124 million represents about a quarter (24%) of the total funding secured since 2014. Funding from public national and regional sources is more than €113 million over the same period, representing about a fifth (22%).

In contrast to the cumulative shares, the shares of annual funding sources vary significantly. Following the overall trend from the beginning of the EIP, the annual private funding continued to shrink in 2018, now reaching its low at 5%. The share of the annual public national and regional funding reached in 2018 a high with 40% of the total annual budget secured, after it more than doubled compared to the years before (ranging between 5 and 20%).

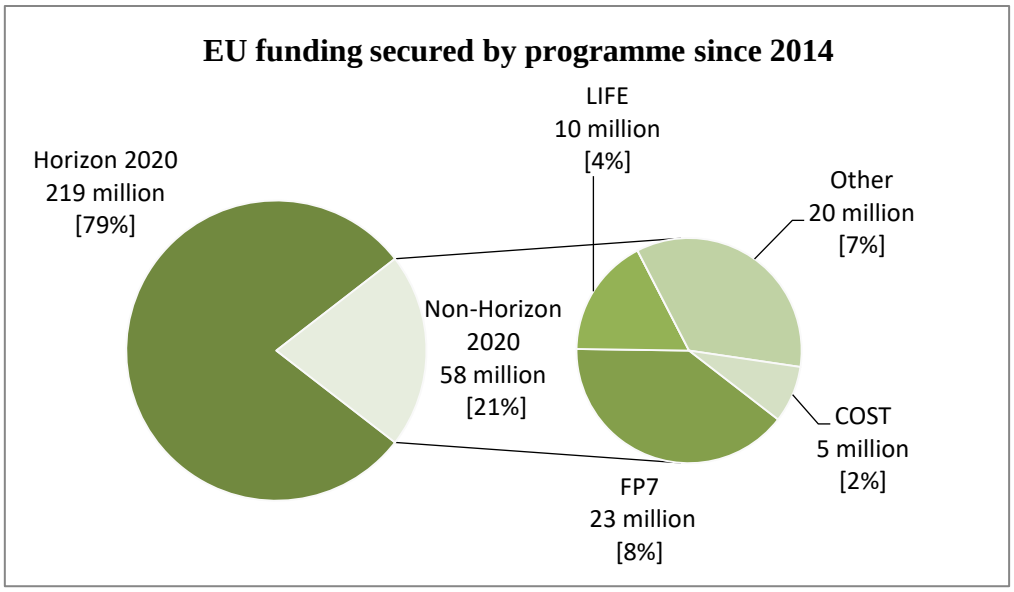
EU Funding

>> The Horizon 2020 programme clearly stays the biggest source of EU funding for RMCs, worth €219 million

Since 2015, the Horizon 2020 programme has become the biggest source of EU funding. **In 2018, 13 RMCs reported securing about €36 million of additional EU funding**. This brings EU funding to €277 million since 2014.

The **Horizon 2020** research and innovation funding programme stays clearly the **biggest source of EU funding** that Commitments received. For the period from 2014 on, Horizon 2020 extended its dominance of cumulative funding also in 2018, in absolute and relative terms, reaching 79% (**Figure 5**). The **FP7** research and innovation funding programme is the second largest EU funding source for EIP Commitments since 2014, with 8% of the total, followed by **LIFE with** 4% of the total.

Figure 5: Type of EU funding[18] received by EIP Commitments since 2014, in € million and %. Budget from the EIT Raw Materials is included in the Horizon 2020 category



Source: JRC analysis

[18] Other funding comprises funding from European Regional Development Fund, Cohesion Policy Funds and further unspecified funding.

>> Alternative EU funding sources account for a minor fraction of funding to the EIP Commitments, while the EIT RawMaterials has become a significant source of EU funding

It is notable that no EU funding has been secured from the **European Investment Bank** or the **European Development Fund**; and that only limited funding has so far been received from **Cohesion Policy Funds**. As of 2018, the **EIT on Raw Materials** appears as a steadily growing source of funds, contributing now with approximately €15 million (compared to 13 million in 2016 and €0.75 million in 2015) in RMCs including the BioFlex, SolvoFlex, Electroflex, Pyroflex, Residuflex, Preflex, SSIC, ERMAT, GATEWAY and Metnet, PilotMet KAVA Networks of Infrastructures, AMCO, SUPRIM, Mineral products from Petrit-T sidestream, HARSHWORK, and newly also for projects Circular TP and SUPRIM.

Public National/Regional Funding

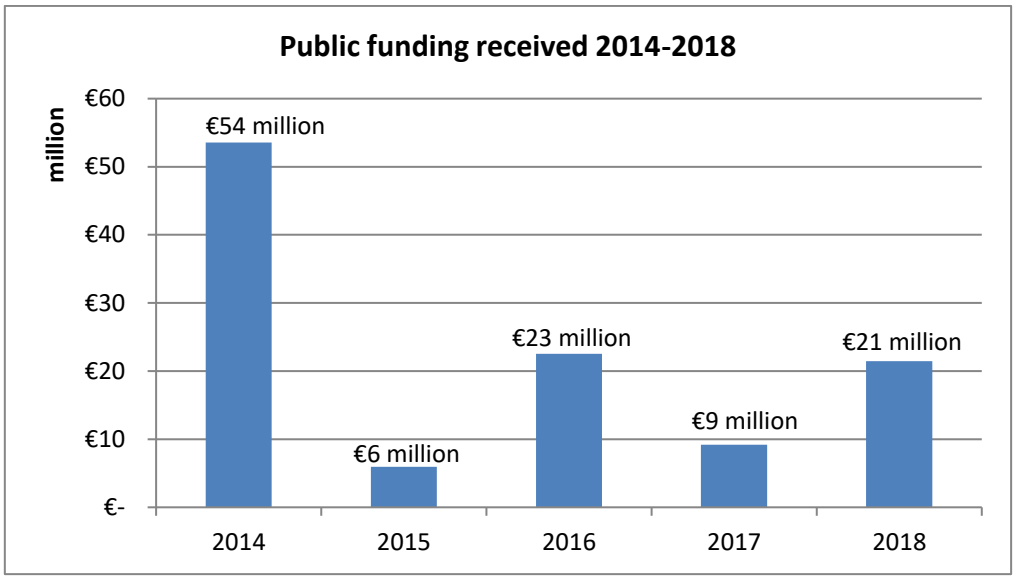
>> Since 2014 the RMCs have received more than €113 million; the annual fluctuation of the reported volumes of national or regional funding is significant

In 2018, **6 RMCs received €21 million in direct funding or in-kind contributions from public or regional bodies** across Europe and internationally (compared to 7 RMCs in 2017).

This large volume in 2018 originated **from a group of 21 countries.** At the member state level, **Finland and Belgium** provided the biggest contributions from public or regional bodies (each €4.0 million). However, due to the massive increase of the **overall volume**, the relative share of **Belgium** more than halved compared to 2017 and now accounts for 19%, after reaching a high in 2017 (almost 45%). The countries following were **Portugal**, **France** and **Sweden** (each €3.7 million), **Spain** (€0.6 million), and **Italy** (€0.3 million). These seven countries together make up 94% of the total, while the remainder is split across 14 further member states with €0.1 million or less. RMC NOWMOB, which is funded by Belgium, Finland, France, Portugal and Sweden (the five leading countries), secured the highest funding from all Commitments active in 2018.

In comparison to private funding and EU funding, which are rather stable over time, **national/regional funding appears to be fluctuating more intensely** (Figure 6) according to the reports**.**

Figure 6: Trend of National or Regional Funding received by EIP Commitments since 2014, in € million



Source: JRC analysis

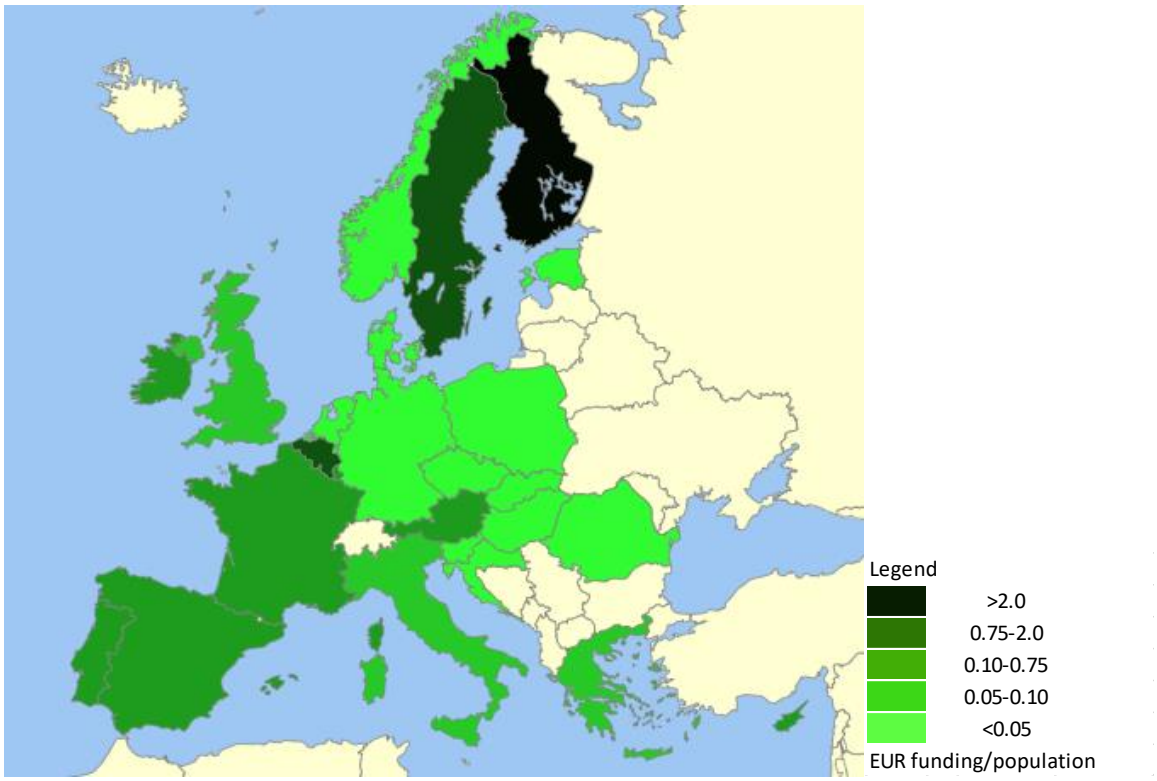
Over the whole reporting period 2014-2018, **35 EIP Commitments received €113 million from 25 different countries** in direct funding or in-kind contributions from public and regional bodies (Figure 7). As expected, most countries providing funding were member states, complemented by few non-EU countries (Europe and overseas).

As in former years, funding comes mainly from national authorities. In 2018 the only contribution on regional level reported was from the Portugal Centre Region for RMC BioAlMinore.

Nine member states provided national or regional funding for the first time in 2018. RMC Euminet is funded by 20 member states, including 8 ones contributing for the first time[19]. RMC EARTH 2020 is supported by another first-time contributor, Estonia. Consequently, in total 24 member states provided national or regional funding within the period 2014-2018.

[19] In addition, in-kind contributions were provided by the two regions Baden-Württemberg (Germany) and Umbria (Italy), as well as from the non-EU countries: Albania, Bosnia & Herzegovina, Norway, Serbia, Ukraine.

Figure 7: Sources of national or regional funding for EIP Commitments since 2014[20]. Population reference year is 2018.



Source: JRC analysis

With the large fluctuations in annual funding from regional and national sources, also the share of contributions per Member State varies from year to year. Finland and Belgium and Finland, however, were the biggest contributors in total funds not only in 2018 (€4 million each), but also in the two previous years.

From **outside the EU**, about **€3 million** of financial contributions to EIP Commitments were provided by **Gabon, Norway, Turkey, South Africa and Argentina**.

Private Funding

>> Since 2014 almost every second Commitment (48%) received private funding, worth together €124 million.

In 2018, like in 2017, 4 RMCs reported to have secured private funding. The total private funding received in 2018 was more than €2 million. The cumulative funding over the 2014-2018 period thus increased to €124 million.

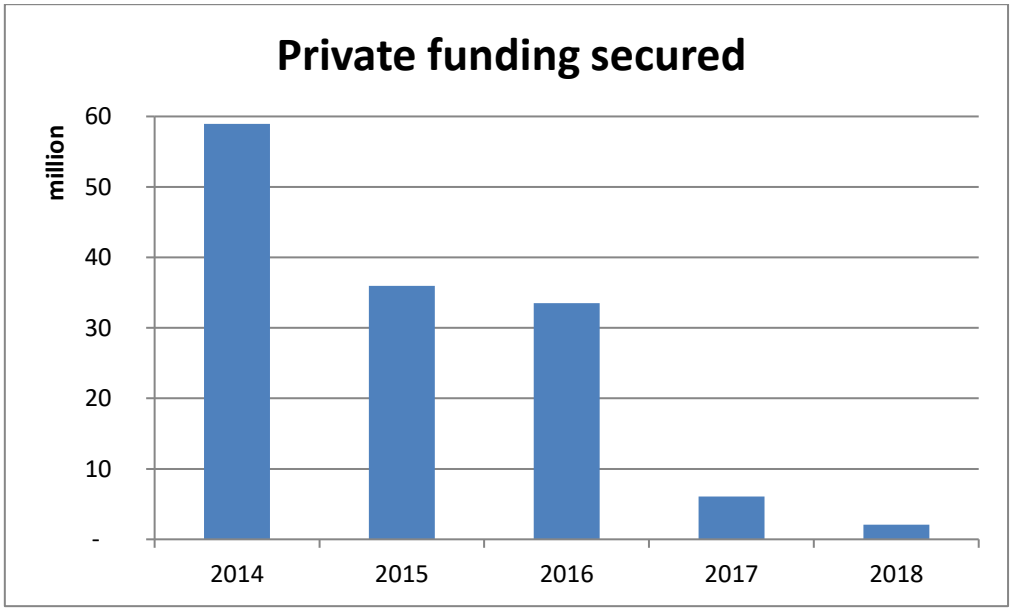
The annual volume of private funding has continuously decreased since 2014, even after a significant drop in 2017 (Figure 8). Further exploration is required to understand to what degree this result is influenced by decreasing response rates, the incidence of the final phase of the European Innovation Partnership, or other factors.

The funding volume of this category is dominated by large capital-intensive RMCs: Out of the 61 RMCs that secured private funding between 2014 and 2018, the funding volumes

[20] In the map, the colour-scheme for Member States has been scaled to show funding relative to population.

of the upper 30%, i.e. those 19 RMCs securing over €1 million each from private sources, add up to €115 million (93% of the total private funding).

Figure 8: Trend of Private funding received by EIP Commitments since 2014, in € million



Source: JRC analysis

3.2 Research, dissemination and coordination activities

Most of the Commitments covered in this reported progress towards the planned activities, defined by documentation of outputs. Commonly mentioned activities are **research and dissemination, organisational nature** (re-structuring, securing funding, enlarging partnership etc.), while further increasing focus is put on the implementation of Commitments. **Few Commitments reported that they have not undertaken any significant activities** towards their Commitment goals. The reasons were: (1) lack of resources (funding), (2) the commitment joined another commitment, or (3) the project is still under development.

The following sub-sections highlight some of the research, dissemination and coordination activities undertaken by specific Commitments since the 2017 annual monitoring survey.

3.2.1 Research activities

Research activities performed by the Commitments can be grouped into primary resources, recycling, substitutes, and harmonisation and modelling of raw materials stocks and flows. Key achievements, sorted by topic, include the following:

Primary resources

- RMC SOLSA developed a multi-technique expert system that integrates quantitative data on the chemistry, mineralogy and texture of drill cores. The outputs of this commitment including the implementation of this system is expected to significantly speed up the drilling stage. Another important output of the commitment was the construction and filling of the open-access database libraries for specific instruments, allowing the determination of mineralogical and chemical analysis of

the cores in real time. RMC SOLSA also applied a patent of the prototype ID and published at least ten scientific articles in international journals.

- RMC PolymetOre conducts research activities aiming to develop sustainable and efficient technological solutions to benefit polymetallic, complex, and low grade ores from diverse mines located in Spain, Portugal, Poland and Serbia. The activities progressed with a new-mining metallurgical project in Cobre Las Cruces, Spain, an existing atmospheric leaching industrial plant. The project aimed at increasing leaching efficiency.
- RMC ITERAMS (Integrated mineral technologies for more sustainable raw material supply), whose objective was to increase resource efficiency in the mining and metallurgical industry through a more efficient water recycling and waste handling developed methods for closing the water loops and for geopolymerization. Together with these methods, the outputs of the RMC included validation of geopolymerization and of water treatment technologies at the mine sites.
- RMC NEXT developed exploration technologies and data analysis methods expected to be cost-effective, environmentally safe and potentially more socially accepted. Among the outputs of this RMC were Unmanned Aerial Vehicle (UAV) survey system and the related initial version of the software, the implementation of the self-organizing-maps (SOM) algorithm along with data pre- and post-processing for data integration, and the realization of a field electrochemical probe prototype

Recycling

- RMC C&D-WRAM continued to work on developing recovery and recycling solutions towards near-zero waste for construction and demolition waste.

Substitutes

- RMC EU-NARS-G has been working on diversifying alternative sources of supply of natural rubber (polyisoprene), a critical raw material, on which the European tyre industry is fully import dependent. The project investigated in particular the potential of Guayule *(parthenium argentatum)*, a bush well adapted to semi-arid and Mediterranean areas and Dandelion *(Taraxacum kok-saghyz* or *Russian Dandelion)* as alternative sources of natural rubber. The project concluded the possibility to plant Guayule in the EU, and to extract its latex. The project also identified the demand and marketability for this alternative source from downstream users.

Harmonisation and modelling of raw materials stocks and flows

- RMC EARTH 2020 with its project "PCREC" published a database of European infrastructures dedicated to product centric recycling with the main idea to organize and integrate relevant existing competences, infrastructures, knowledge and experience, to improve the exploitation of European secondary resources from Hi tech end-of-life products.

3.2.2 Dissemination activities

Among the most relevant dissemination activities are those activities addressing knowledge, skills and raw material flows as well as waste. Moreover, some commitments organized dissemination events such as conferences and workshops in 2018.

Waste area

- RMC BioAlMinore (Innovative bio-mining and bio-mineralization technologies applied to extraction of low-grade ores deposits, mine by-products and recycling of man-made products) conducted a publication on quantification of secondary raw materials of an abandoned tailings dam.

Knowledge, skills and raw materials flows

- RMC WeCare (Wastes from Construction industry As a ResourcE), did activities in knowledge sharing by means of scientific publications and the presentation of results at a training course at university.
- RMC ENSQM (European Network for Sustainable Quarrying and Mining) organized workshops in various locations to discuss sustainable quarrying and mining practices with national, local stakeholders and EU policy-makers (Madrid, Seville, Berlin). RMC ENSQM participated actively in various conferences (e.g. Quarries Alive), including the Raw Materials Week, presenting examples of sustainable quarrying and mining activities.
- RMC SIMS organized several demonstration activities, on technologies for underground mining application. RMC SIMS also presented a virtual mine 3D demonstrator to the general public, including at schools at the various levels.
- RMC Euminet, in collaboration with the PanAfGeo project (Geoscientific knowledge and skills in African Geological Surveys), organized trainings on mineral resources assessment, environmental management of mines, and artisanal and small-scale mining.
- RMC Mud2metal (Recovery of Critical Metals from the Bauxite Residues-red mud- of the primary alumina refining industry) constructed a pilot plant for the extraction of Scandium (critical raw material) from bauxite residue. Multiple processing flowsheets for bauxite residue valorisation were developed and expected to be demonstrated across six pilots in Europe for four different European bauxite residues.

Events: conferences, workshops, and meetings

- RMC EMD who organised the European Minerals Days since 2013, continued to explore the possibility of organising an exhibition in the European Parliament and developed a promotional video on the pan-European open days initiative. The 2019's edition was held in September 2019.
- RMC RESET (Raw Elements Substitution in Electronic and optoelectronic Technologies), whose aim is to create efficient platform serving any private and public actors, is dedicated to the substitution of Rare Earth Elements (REE) in photo devices application field. RMC RESET organized an international conference with the title "Substitution of critical raw materials: synthesis, characterization and processing of new advanced materials in optoelectronic and magnetic devices II" in Strasbourg, June 2018. The conference was participated by more than 100 participants from 26 different countries.
- RMC IMAGINe (Industrial Minerals Associations' Global Innovative Network) organized a number of conferences, workshops, and project meetings in 2018.

3.2.3 Coordination activities and proposals

The following commitments reported the implementation of coordination activities and proposals:

- RMC IMAGINe (Industrial Minerals Associations' Global Innovative Network) was involved in collaboration project planning, execution and reporting between the RMC partners.
- RMC C&D-WRAM proposed an innovative concept for recycling WEEE and batteries, which materialised in a H2020 project proposal.

3.2.4 International cooperation

Several RMCs were involved in joint collaboration projects at international level, such as:

- RMC SIMS (Sustainable Intelligent Mining Systems), whose aims was to test and exhibit relevant technologies for a sustainable intelligent mining system
- RMC INTERMIN (International network for training centres on mineral resources) organized an international-level conference on substitution in 2018, participated by 26 different countries. The conference focused on substitution of critical raw materials.
- RMC Mud2metal (Recovery of Critical Metals from the Bauxite Residues-red mud-of the primary alumina refining industry) presented its project, INTERMIN, in Ecuador and created a network of experts and listed all the skills and training centres involved in the INTERMIN web portal. The INTERMIN portal, was created to serve as a starting point for future activities and networks in Latin America.
- RMC MIREU actively participated in the OECD Mining regions and cities-project. Following this participation, RMC MIREU organized MIREU-OECD pre-conferences and workshops, at which international panel members also attended.

3.2.5 Other activities

- RMC PHMine (addressing environmental remediation of soils affected by mining activities), reported a R&D project with the Public University Of Navarra. The project is addressing soil stabilisation with sulphates, providing magnesium oxide dosing.

3.3 Outputs

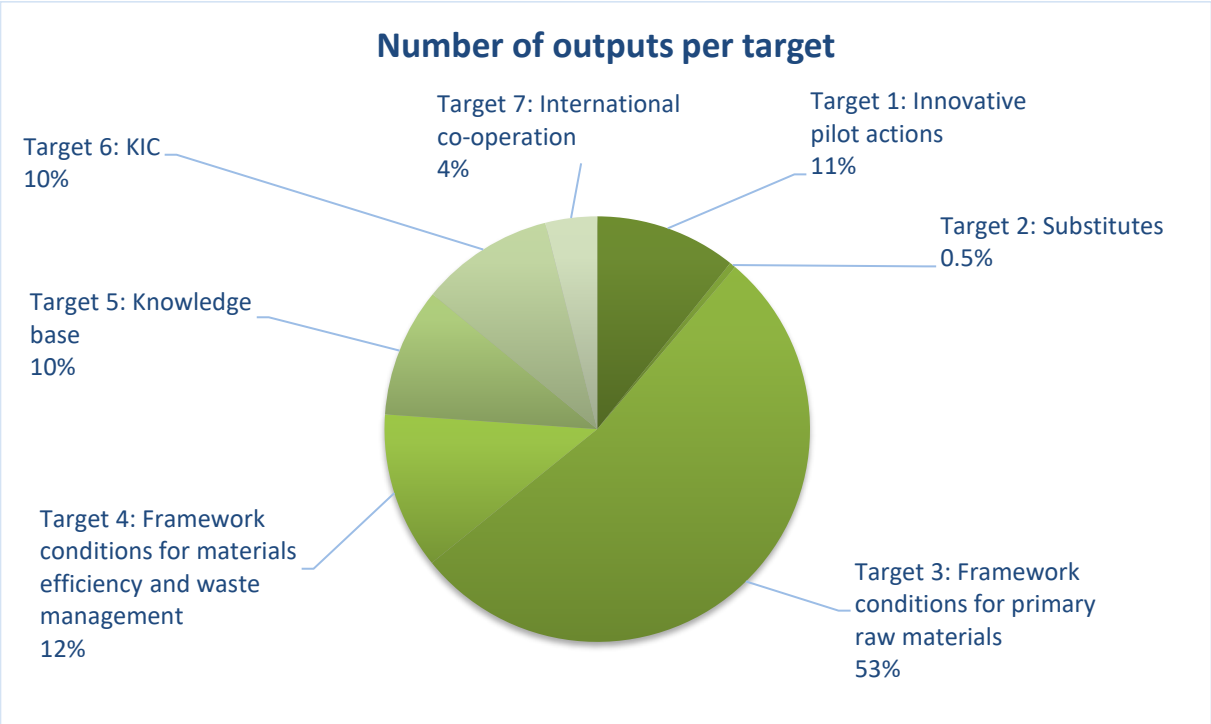
>> Many Commitments are delivering tangible outputs, of which the largest shares contribute to Target 6 Knowledge and Innovation Community and Target 3 Framework conditions for primary raw materials

This section focuses on outputs delivered by Commitments. **28 EIP-RM Commitments** (out of the 33 RMCs that filled in the AMR2018 Survey) **reported achieving at least one output since the launch of the RMCs.** Although five Commitments have been reported to have finished since the AMR2017 Survey, the number of outputs reported remain relatively stable compared to the AMR2017.

Figure 9 presents an overview of **how these outputs relate to the EIP targets**[21]. Most Commitments contributed to Target 3: Framework conditions for primary raw materials (53%) followed by Target 4: Framework conditions for materials efficiency and waste management (12%), and Target 1: Innovative pilot actions 11%). This picture is slightly different compared to the AMR 2017 where most of the commitments contributed to Target 6: KIC (27%), followed by Target 3: Framework conditions for primary raw materials (17%) followed by Target 4: Framework conditions for materials efficiency and waste management (17%).

[21] As defined in the EIP Strategic Implementation Plan

Figure 9: Contribution to the EIP targets by the outputs delivered by EIP-RM Commitments, as reported for 2018. The shares in the number of targets, here shown as %, is weighted by the number of targets quoted per RMC.



Source: JRC analysis

>> Commitments continued to achieve innovation-related outputs with a reduced intensity

Similar to 2017, several Commitments have developed **new technological processes** such as the following RMCs (**Figure 10**):

- RMC EARTH2020 developed a new process to recover raw materials from end-of-life photovoltaic panels (ReSiELP project funded by EIT RM in 2016 – output delivered in 2018)
- RMC NEXT developed a technology in mining exploration, among their submitted technological deliverables were prototypes of a ground based electromagnetic measurement device, several tools for mapping-related software, libraries and geochemical data on the targeted areas, and an automated downloader for satellite data.
- RMC SIMS (Sustainable Intelligent Mining Systems), whose aim was to test and exhibit relevant technologies for a sustainable intelligent mining system, achieved a demonstration on a sustainable battery powered underground mining machinery, a virtual mine 3D demonstrator, and a demonstration of digital solutions for situational and safety awareness in underground mining applications.

In the new business models category, RMC SOLSA with its exploration system conducted a market evaluation in February 2019 to assess possible new needs and associated markets.

Under **Joint R&D category through pooling of competences/resources**, RMC ITERAMS advanced its activities for improved water recycling performance, valorisation of tailings, and minimisation of the environmental footprint in mines. RMC ITERAMS is a joint

R&D project with partners from seven EU Member States (Finland, France, Austria, Germany, United Kingdom, Spain and Portugal), plus Turkey and South Africa.

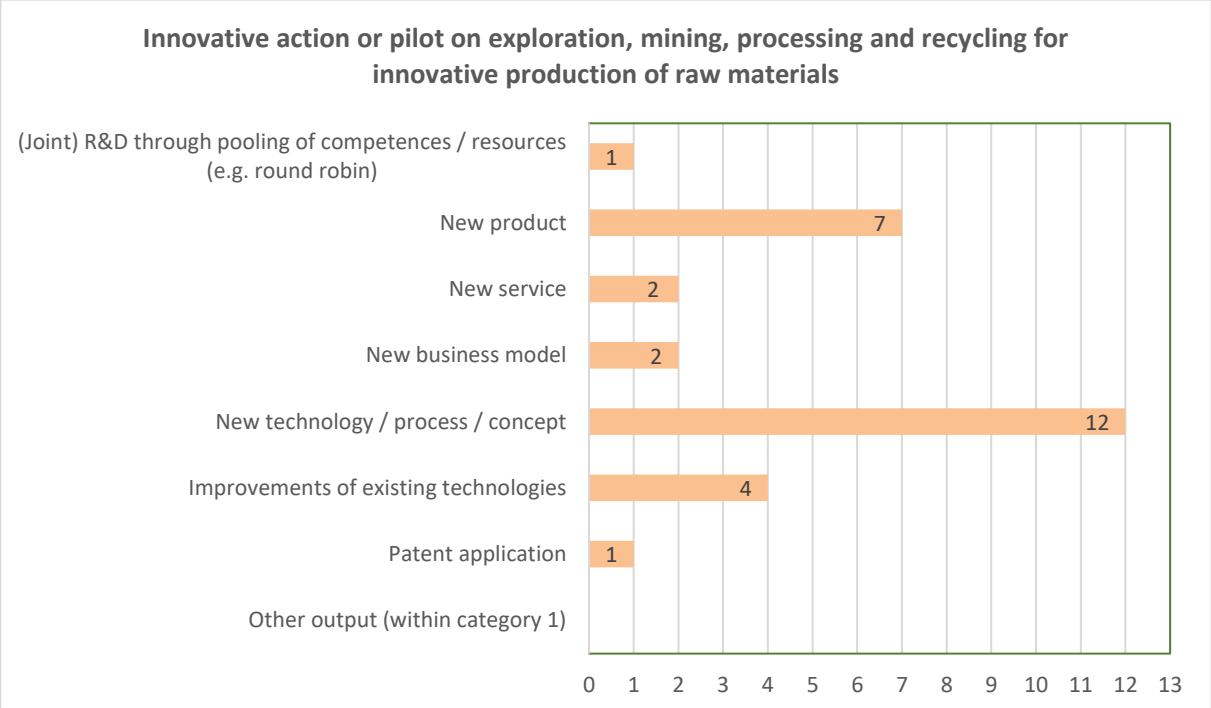
Regarding the **new product** sub-category, three RMCs produced outputs:

- RMC SIMS, whose main aim was to test and demonstrate relevant technologies for supporting the development of an intelligent mining system, had several achievements, such as 5G radio network in an operational underground mine, the use of an autonomous drones for underground mining inspection, high performance rock bolt and mesh installation for underground mine.
- RMC C&D-WRAM, whose focus was on Construction and Demolition Waste management for a circular supply chain for a better recovery of Raw Materials, produced Calcium Sulpho-Aluminate (CSA) cement, and blended concrete, both with the collaboration of different industries, demonstrating a successful industrial symbiosis network.
- RMC SOLSA built a lab-scale version of a robotic field laboratory for analyzing drill samples. The aim of SOLSA project was to develop an automated expert system for on-site cores analysis.

Several RMCs were involved in the **improvement of existing technologies** sub-category, such as RMC EARTH2020, which developed an extension and improvement of the industrial symbiosis methodology at European level (through the STORM project, funded by EIT Raw Materials in 2016). RMC C&D-WRAM made a technological improvement for construction and demolition waste stream treatment. RMC SOLSA, dealing with mining exploration activity, developed a prototype of an automated expert system for analysing drill samples. MetGrow developed several existing technologies in the metallurgical sector through its METGROW+ project. RMC PolymetOre worked on increasing the chalcopyrite leaching efficiency to be eventually applied in an existing atmospheric leaching industrial plant in a mine.

In the patent application sub-category, RMC SOLSA produced a patent in exploration technology for multi-sensor analysis of complex geologic materials.

Figure 10: Specific innovation outputs since 2014



The graph shows the number of specific innovative outputs since 2014, as reported by the Annual Monitoring 2018 Survey. Source: JRC analysis

>> *Several Commitments developed alternative solution for critical raw materials*

In the sub-category **material substitution**, RMC EU-NARS-G (EUropean NAtural Rubber Substitute from guayule) obtained an international patent covering five countries (Spain, France, Italy, USA and Mexico) on aqueous extraction of guayule latex, in a project aiming to substitute rubber. In the sub-category **more resource-efficient use**, RMC Cubes, RMC Mud2Metal, and RMC BioAlminore produced several outputs. RMC Cubes (Copper Based Electrochemical Solutions) developed an innovative concept for recycling WEEE and batteries, which materialised in a H2020 project proposal. RMC Mud2Metal developed a new hydrometallurgical pilot project for processing bauxite residue or bauxite residue slags. The technology demonstrations were expected to start in December 2019. RMC BioAlminore has developed a bioaccumulator of tungsten; a solution to extract low grade ores, to utilise by-products from mining, and to recover rare metals from production waste.

>> *Commitments published increasingly strategic documents supporting implementation measures*

For the category **strategic document**, RMC Mineland produced 45 deliverables in the sub-category **guidelines/reference document**, addressing the need for harmonised land use and mineral policy strategies within Europe. At the same time these deliverables contained also **policy recommendations**.

>> *The largest number of the outputs achieved by the Commitments continues to relate to knowledge sharing / dissemination of information and best practices*

Under the category "knowledge sharing / dissemination of information and best practices, the categories for which the highest number of outputs are reported are the sub-categories **event/workshop/conference" and "websites** (**Figure 12**). The major part of the outputs reported for this category is contributed by RMC BioMore that organised and participated to a number of project meetings, conferences, and workshops. RMC NOWMOB continued to hold several practical and scientific dissemination activities and conferences, with the participation from the stakeholder networks.

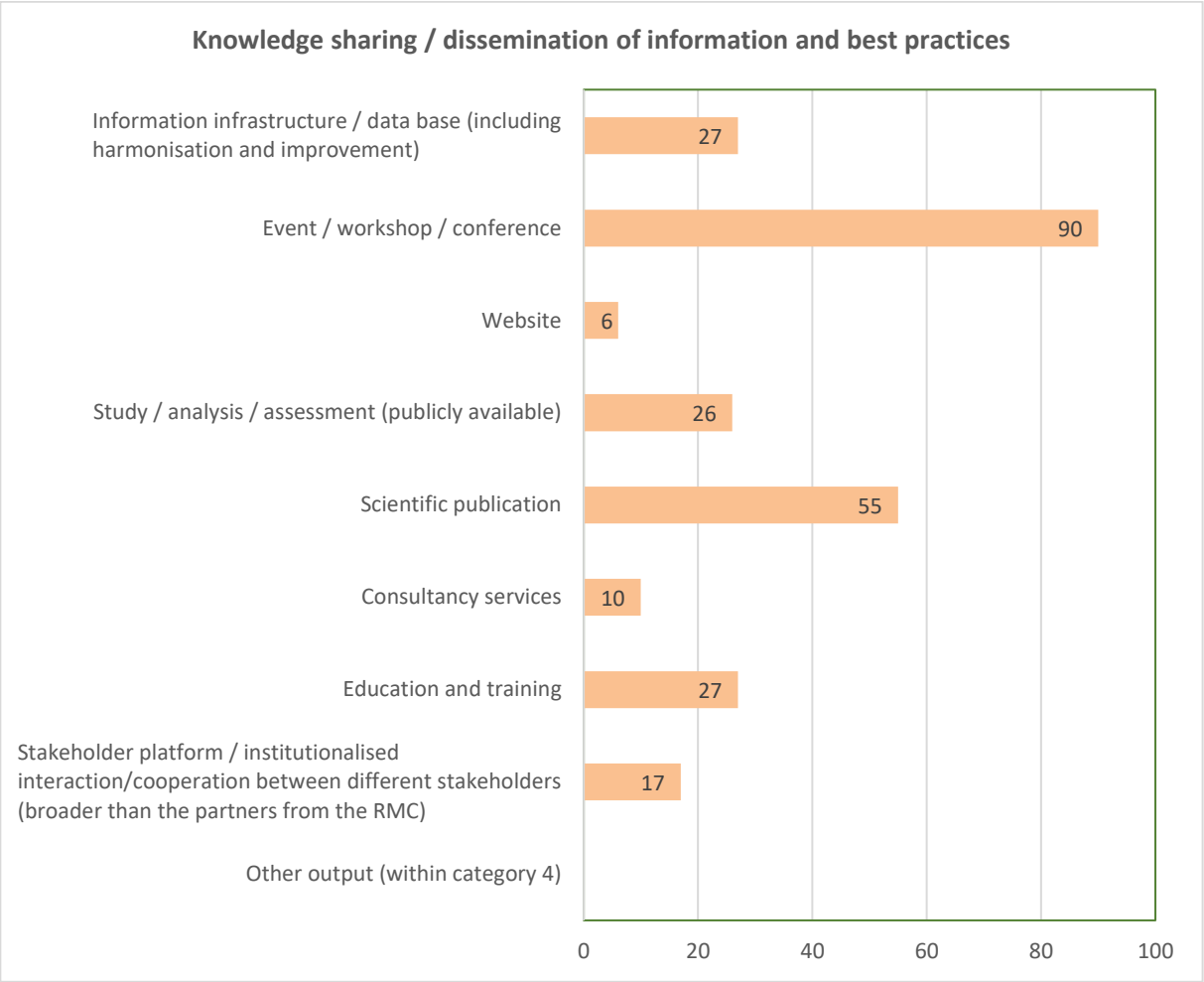
The second highest number of outputs comes from the sub-category **scientific publications.** The biggest contributor for scientific publications is RMC NOWMOB, which has reportedly published approximately 50 scientific publications in European, global, and national forums. Other scientific publications were contributed by RMC WeCARE (Wastes from Construction industry As a ResourcE).

The third highest number of outputs were resulted by the sub-category **information infrastructure/data base** and **education and training.** In the former sub-category, RMC Mineland was the major contributor of outputs. In the **education and training sub-category**, RMC NOWMOB organized various courses and training materials for practitioners and white papers and policy briefs for decision makers, generating the most output for this sub-category.

In the sub-category **study / analysis / assessment (publicly available)** and RMC BioDIMA publicly promoted SDG report and specific case studies, part of the BioDIMA project in multiple events. RMC MIREU (Mining Regions of EU) reported to have published several deliverables, which are published on their website.

The **website outputs** sub-category shows lower activity than last year (6 outputs in 2018 compared to 43 outputs in 2017).

Figure 12: Specific knowledge outputs since 2014



The graph shows the number of specific knowledge outputs since 2014, as reported by the Annual Monitoring 2018 Survey. Source: JRC analysis

>> The Commitments achieved a high number of outputs in international cooperation, especially on knowledge sharing/dissemination of information and best practices

In terms of advancements in the category **international cooperation**, the sub-category **knowledge sharing and dissemination of best practices** continues to be the one with the highest numbers of outputs, followed by **events/workshops/conference organisations** (**Figure 13**).

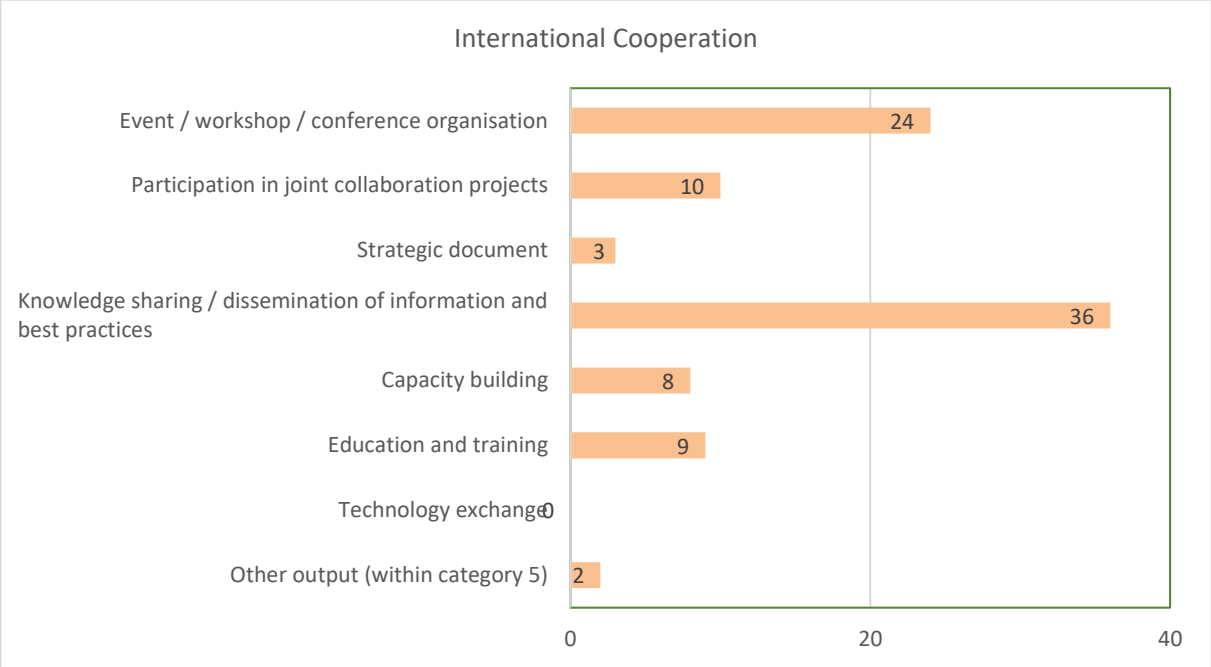
The predominant contributors to the sub-category "**knowledge sharing and dissemination of best practices**" was RMC MIREU. RMC MIREU participated in a number of conferences, workshops, project meetings, at European and international level such as the International SAP Conference for Mining and Metals. RMC NOWMOB, as second highest contributor, also held a number of dissemination actions and good practices sharing as part of their research projects.

RMC MIREU also contributed to the high number of outputs in the sub-category **events/workshops/conference organisations**. RMC MIREU had an active participation in cooperation with OECD mining regions, in organizing several pre-conferences. RMC MIREU also organized several international workshops. RMC INTERMIN held a couple of meetings at international level, both of which the objectives were to increase their international visibility and to create a network of knowledge exchange. RMC SIMS and RMC BioMore also participated in international conferences.

RMC NOWMOB continued to be the biggest contributor in **joint collaboration** sub-category through their involvement in several collaboration project planning and execution between the RMC members.

Three Commitments reported outputs in the sub-category **education and training activities**. For instance, RMC NOWMOB organized short courses in the member countries and Innovawood network.

Figure 13: Specific international cooperation outputs since 2014



The graph shows the number of specific knowledge outputs since 2014, as reported by the Annual Monitoring 2018 Survey. Source: JRC analysis

3.4 RMCs and UN Sustainable Development Goals

In 2015, the UN General Assembly adopted a set of 17 Sustainable Development Goals (SDG) and 169 related SDG targets. As the EU has committed to implement these SDGs both in its internal and external policies, it is important to follow up on general and sectoral contributions. This applies also for the raw materials sector. The Annual Monitoring Report 2016 demonstrated for the first time to what extent and in which way UN Sustainable Development Goals have been addressed by the activities of the diverse RMCs. The analysis was updated and the results consolidated by the AMR2017 Survey and the AMR2018 Survey[22].

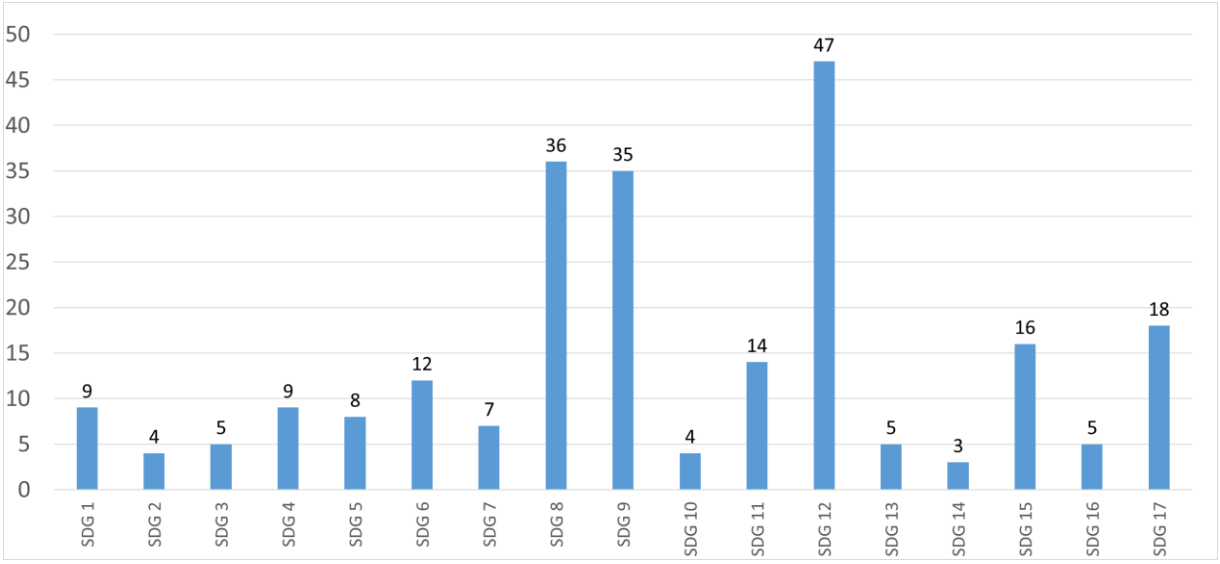
Figure 14 shows for each of the 17 SDG, how many individual Commitments address the related targets, providing an indication on what UN Sustainable Development Goals the Raw Materials sector contributes predominantly.

Firstly, almost 240 linkages were identified by the respondents of the three consecutive AMR surveys. These linkages refer to all the 17 SDGs, while there are significant differences between them. While all SDGs are addressed by at least three Commitments, half of the linkages (50 %) are concentrated on three SDGs (SDG8, SDG9, SDG12). SDG12 is addressed by two out of three respondents (67%). A second group of frequently addressed

[22] Relevant updates were reported for RMC INTERMIN and RMC Mineland, extending the coverage for the SDGs 4, 8, 9 and 13. Almost 90% of the 33 respondents of this section did confirm that the existing data is up-to-date. No new RMCs were added while four RMCs provided updates to their linkages.

SDGs comprises four SDGs (SDG17, SDG15, SDG11 SDG6), with each SDG showing 5% or more of the total linkages.

Figure 14: Commitments addressing the Sustainable Development Goals (N=70)[23].



Source: JRC analysis

Obviously, the RMCs address as expected primarily economic development, and the related environmental performance, employment, and research and innovation.

3.5 Future Plans for 2019-2020

The Commitments have various future plans corresponding to the differing degrees of commitment maturity. Many of the Commitments have been entering or executing their implementation phase, accompanied by coordination or dissemination activities. The most common activities of the Commitments include the execution of funded projects, continuous support of commitment ideas and goals (with or without relation to funded projects), participation in thematic discourse and discussions, dissemination, and search for new funding opportunities.

>> Funding opportunities

To sustain their commitment activities, the following RMCs intend to complete and submit funding applications in 2019 and/or 2020:

- at EU level (EIT Raw Materials, H2020, FP9): RMCs BioAlMinore, CuBES (proposals in 2019 and 2020), NOWMOB, RUBB-ENDURE (stage 2, PolymetOre, WeCARE, ZeroWaste-NoI;
- at national or regional level: ZeroWaste-NoI.

RMC NOWMOB will initiate and launch RDI consortia during 2019-2020 on roundwood mobilization, including ERANET Forest Value Chains, Interreg Europe and other regional programs.

[23] The number of Commitments considered did not increase (N=70), but four commitments provided an updated assessment.

>> *Execution of funded projects*

Commitments that **obtained funding** through successful applications **begin working in 2019 or early 2020.** RMC Euminet is implemented by the GeoERA project (theme on raw materials) via the projects FRAME, Mintell4EU, MINDeSEA, and EuroLithos. In Mintell4EU, the Minerals Inventory Report, and a comparative analysis of KDP's resources versus the needs of RMIS are executed, as well as recommendations on how the results can be integrated in the GeoERA Information Platform (EGDI).

Several RMCs including BioDIMA, INCOMES, ITERAMS, MIREU, SIMS, SOLSA and WeCARE continue the execution the related research activities. RMC NEXT is advancing and consolidating the development of new analytical procedures on various deposit types.

BioAlMinore starts the H2020 project Biorecover[24] and continues the FCT project MicroMineR[25]. Further examples are the various Commitments involved in the implementation of the EIT Raw Materials.

RMC PolymetOre will support the new Iberian Pyrite Belt projects, in particular the Poly Metallurgical Refinery (PMR) project, owned by the coordinator of RMC PolymetOre "Cobre las Cruces". There are serveral new projects in development or evaluation in the Iberian Pyrite Belt (in the south of Spain and Portugal), the PMR project being the most important one under development. The PMR Project is a pioneer and unique in the world, advancing the mine-to-metal concept, to produce in situ copper zinc, lead and silver as refined metals. For the first time, a poly-metallurgical refinery will be installed worldwide treating polymetallic bulk concentrates. The PMR Project is pending to receive legal permits from the authorities. The start of the project is expected by mid-2020.

RMC CuBES will start the CuBER project[26] in January 2020, running for 48 months with a budget of €4 million, exploring copper redox flow batteries.
RMC INCOMES participates in the project Biorecover, whose objective is the R&D of a new sustainable and safe biotechnology-based process for the selective extraction of a range of critical raw materials from primary and secondary sources. For example, the recovery of magnesium from magnesium wastes of low grade minerals (magnesite, dolomite).

>> *Thematic Discourse and Discussions*

Almost all of the **network and co-ordination Commitments** plan to continue a range of activities through 2019, for example RMCs ENSQM, EU-NARS-G, ITERAMS, MIREU, Mud2Metal, NOWMOB, PolymetOre, WeCARE, ZeroWaste-NoI, BioAlMinore, Effiwood, MINSPIRE. RMC BioAlMinore participates in three operational groups of the EIP-RM. Further, RMC BioAlMinore conducts work meetings with the Cluster Portugal Mineral Resources, and organised the congress Microbiotec'19[27] in Coimbra, Portugal. Several Commitments, including RMC WeCARE, contribute to the Raw Materials Weeks (2019, 2020) in Brussels.

The European Minerals Days (EMD) are continued to be organised by IMA Europe, and its EMD partner organisations. The main theme in 2019 is "Minerals in the Value Chain", with a focus on the integration of our minerals in the local (and broader) economies and the job opportunities the industry provides. The event comprises 130 activities at 109 sites.

A key objective of RMC MIREU is to establish a network supporting regions to share knowledge and experiences when facing the challenges to establish and maintain an extractive industry. The MIREU H2020 project plans to conduct six stakeholder workshops in 2019-2020, three Clustering Workshops and then to conduct the opening meeting of the Council of Mining and Metallurgy Regions of Europe (CoMMER) in autumn 2020.

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[24] H2020, Topic: CE-SC5-06-2018

[25] The full name of this national project is: Microbiological technologies in mining and recycling of high-tech critical metals

[26] Horizon 2020 call H2020 LC-BAT-4-2019

[27] https://microbiotec19.net/en/

RMC EARTH 2020 is going to strengthen the integration of raw materials related initiatives to support the Circular Economy, while RMC C&D-WRAM aims to develop and advance recovering and recycling solutions towards near-zero waste.

A key area of interest of RMC NOWMOB is to propose and launch novel value chains and stakeholder networks based on wood-based materials, building with wood, set-up of biorefining industries, intensify resource mobilization. To achieve this, planning, scenario and policy making platforms for enhanced wood mobilization and innovative utilization will be discussed, as well as the actions for defining the target areas of FP9 in EU Commission and DGs. Members support and realize also national and regional project planning and adoption of good practices from different countries and regions. NOWMOB members participate actively to further discussions on LULUCF and REED+ with European Commission in order to bring out objective research-based arguments to the decision-making process from the viewpoint of wood-based industries and wood mobilization. This will include industry-driven conferences. RDI organisations prepare White papers and Policy briefs to impact EU and national decision makers on economic, rural, regulation, public support and research policies and incentives.

RMC INTERMIN strives for supporting next steps towards (a) Network of Research, Education and Training Centres on sustainable raw materials management organized as a Knowledge and Innovation Community; (b) a pro-active international co-operation strategy of the EU at bilateral and multilateral level, promoting synergies with countries such as the US, Japan, Australia, Canada, Latin America and African Union across the different areas covered by the EIP; (c) framework conditions for primary raw materials that would provide a stable and competitive supply from EU sources and facilitate its public acceptance; (d) framework conditions for enhanced efficiency in material use and in waste prevention, re-use and recycling, and raw materials efficient product design.

>> Dissemination and Promotion

The Commitments will use various events in 2019 and 2020 to strengthen the cooperation and dissemination.

RMC NOWMOB puts emphasis on the dissemination of its project results and organises promotion events. RMC IMAGINe organises another IMAGINe Conference for industrial mineral member companies. RMC WeCARE participates at various events to disseminate its project results, including the Raw Materials Week 2019 in Brussels, the conferences Remediate 2018, EGU 2019, AMS 2019. Also RMC ENSQM continues to put emphasis on the dissemination of its results, after its workshop in Seville in 2018, workshops follow in Berlin (March 2019) and in Romania (June 2020). RMC BioDIMA will be promoted at the Quarry Alive international conference in Liege at June 24-26, 2020, with support from IMA Europe.

Advanced dissemination is also foreseen by upgrading and updating, respectively, the ENSQM website (RMC ENSQM) and the ITERAMS website, where the public deliverables of the ITERAMS project are published.

RMC PolymetOre will disseminate the first results from new Iberian Pyrite Belt projects, in particular the Poly Metallurgical Refinery (PMR) project. Progress on this and other projects are presented at the Mining and Metal Hall (MMH-2019), 3rd edition, held in Seville on October 2019 (10,000 attendees).

During 2019 and 2020, RMC SUMAN 2000 focuses on supporting public and institutional awareness of the role of mineral resources, and the goal to increase harmoniy between mineral extraction activities and biodiversity. While dissemination in 2019 is concentrated on the European Mineral Day, various different activities are foreseen in 2020 including visits to mining sites and photographic exhibitions of biodiversity in environments with mining activity in natural network areas.

RMC WRING aims to involve European stakeholders in the area of wood recycling and recovery through its communication and dissemination activities. To achieve this, it will disseminate project results and organise events that support the assessment of public and

industrial needs in the field of wood processing and recycling. Further, it will organise workshops, and events targeted to focus groups.

RMC BioAlMinore continues to support science communication by its participation in three high school projects related to the circular economy concept.

>> Research and Development

RMC PolymetOre plans to promote the application of developed technologies within EU projects, in particular, it will continue to support the new Poly Metallic Refinery Project from Cobre Las Cruces, which is expected to extend its life of mine beyond 2030.

In 2019 and 2020, the projects SCALE and REMOVAL will demonstrate in pilot scale several technologies for the valorisation of the bauxite residue produced at alumina refineries in Europe. Following the various demonstration, a techno-economical assessment and a feasibility study will conclude in the optimum processing route for achieving a near-zero waste and near break-even processing flowsheet for bauxite residue valorisation.

RMC WeCARE pushes forward the efficient use of raw materials in the construction sector mainly by individual research activities of the Commitment partners on the related topics. A PhD thesis on the recovery of stone sludge from cutting of ornamental stone is discussed in 2019.

RMC ZeroWaste-NoI set up in 2018 an overall network of infrastructure, i.e. a Zero Waste Cluster (ZWC) 'virtual' laboratory that is optimally used within and beyond the operations of the EIT Raw Materials, in order to boost the development, testing and implementation of new residue based products. This information from the network of infrastructure, including the 'virtual lab' concept, will be transferred to the infocentre of the EIT RawMaterials in 2019.

RMC EU-NARS-G explores options for diversifying the sources of supply of natural rubber by various activities. Firstly, the start-up VALORHIZ (Graine-ADEME project), which looks together with CIRAD, CLIER, NIMAPLANTS, BIO ORB PPAM at practical issues of guayule farming (2018-2021). It advances recovery of polluted soils, or vineyard wasteland, for the plantation of guayule plants. Further, a harvesting machine for guayule crops is developed. The project also includes aspects on improved guayule germination and genetics. Secondly, the GUAYULE-SIM project (2017-2019) models guayule plant growth. Thirdly, the SATT project is planned to address the extraction of resins from guayule (funding pending). Fourth, the biorefinery cluster IAR Pole is planned to provide providing an in-depth economic assessment of guayule valorisation. Last, Nokian Tires is working on the installation of an innovation centre for tyre testing, also with guayule components, in the vicinity of Santa Cruz de la Zarza, Spain.

Annex 1. Number of RMCs contributing to each Action Area[28]

Pillar	SIP Action Area	Coverage
Technology	I.1 Improving R&D&I coordination in the EU	26
	I.2: Exploration	14
	I.3: Innovative extraction of raw materials	30
	I.4: Processing and refining of raw materials	25
	I.5: Recycling raw materials from products, buildings	27
	I.6: Materials for green technologies	5
	I.7: Materials for electronic devices	3
	I.8: Materials under extreme conditions	6
	I.9: Applications using materials in large quantities	4
Non-Technology	II.1: Minerals Policy Framework	40
	II.2: Access to Mineral Potential in the EU	18
	II.3: Public Awareness, Acceptance and Trust	23
	II.4: Product design/optimised use/increased recycling	12
	II.5: Optimised waste flows for increased recycling	18
	II.6: Prevention of illegal shipments of waste	4
	II.7: Optimised material recovery	22
	II.8: EU Raw Materials Knowledge Base	17
	II.9: Possible EIT Knowledge & Innovation Community	4
	II.10: Optimised materials flows along value chains	22
International Cooperation	III.1: Technology	23
	III.2: Global Raw Materials Governance / Dialogues	5
	III.3: Health, Safety and Environment	12
	III.4: Skills, Education and Knowledge	14
	III.5: Investment activities	4

Source: JRC analysis

[28] This table summarises the results from the AMR Surveys 2015 to 2018. The colour coding relates to the coverage of the Action Areas divided into 3 tiers, from high coverage (dark green) to low coverage (light green). The table is not altered since the AMR2017 because no Commitments reported at the AMR2018 Survey that did not report earlier.

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