Executive Summary:
The establishment of the critical mass of scientists and engineers to support the REE exploitation, processing and manufacturing industry has resulted to great advancements on the European REE exploitation sector. Under EURARE:
✓ Several occurrences and advanced projects of REE resources have been explored in Europe. The EURARE website will remain available at www.eurare.org and holds a map of all deposits and occurrences identified by the project. EURARE has created also an online open access database combining geographical, mineralogical and technological data, termed “Integrated Knowledge Management System” or IKMS. At the time of this publication the EURARE dataset in IKMS (http://EURARE.brgm-rec.fr/download/dataset) contains 156 REE occurrences across Europe. The IKMS contains over 150 documents related to these occurrences and REE processing technologies.
✓ A freely available brochure provides an overview of the European REE supply chain and the work of the EURARE project, and can be downloaded from www.eurare.org along with links to all EURARE publications.
✓ It has been established that the REE resources from each of the projects Kvanefjeld, Kringlerne, Norra Kärr, Aksu Diamas and Fen complex could potentially secure European REE supply for decades to come.
✓ Conventional and innovative metallurgical treatment of REE European resources starting from beneficiation leaching and REE separation ending to metal production, were developed successfully, resulting into 3 patents and several publications. Ionic liquids have been applied in leaching, separation and metal production leading to a more sustainable and innovative REE metalurgy. Surface modified nanoparticles have also been successfully used to achieve robust REE separation.
✓ Metal production of REE and particularly Nd has been achieved in an optimized molten salt electrolysis cell with automated process realization.
✓ Under EURARE, pilot testing “from ore to metal” took place, demonstrating the potential to develop a European-based REE extractive industry from 3 different European ores.
Two dedicated European REE conferences have been organized by the project

In the view of the EURARE project, public domains RTD projects in conjunction with legislative/regulatory support for establishing new REE mines and processing facilities are the main keys that will help to establish a sustainable REE industry in Europe.

Project Context and Objectives:
The main goal of the EURARE project is to set the basis for the development of a European REE industry that will safeguard the uninterrupted supply of REE raw materials and products crucial for the EU economy industrial sectors, such as automotive, electronics, machinery and chemicals, in a sustainable, economically viable and environmentally friendly way. This goal will be achieved through:
- The mapping, characterization and technological and economic evaluation of the REE resources in Europe
- The development, optimization and demonstration of innovative technologies for the efficient exploitation of European REE resources with minimal impact on the environment. This will be done in compliance with the EU environmental legislation and in a manner acceptable to European citizens
- The establishment of the critical mass of scientists and engineers to support the REE exploitation, processing and manufacturing industry
- The development of an Integrated Knowledge Management System (IKMS) for EU REE resources, which will provide information on REE and build up the knowledge to be developed within the frame of the project.

Thus the EURARE project sets about to achieve the following scientific and technical objectives
1. Definition and assessment of exploitable REE mineral resources and REE demand in Europe.
2. Development of sustainable and efficient REE Ore Beneficiation Technologies, that will lead to the production of high grade REE concentrates and minimization of produced tailings.
3. Development of sustainable REE Extraction and Refining Technologies, to produce pure REE oxides, REE metals and REE alloys suitable for use in downstream industries.
4. The development of a strategy for safe REE mining and processing.
5. Field Demonstration of the novel EURARE REE exploitation technologies.

Within the EURARE project REE mineral deposits from 4 different European regions will be mined and beneficiated with novel sustainable technologies at GTK's EURARE beneficiation pilot plants. The concentrates produced along with the Red Mud by-product from primary aluminum production will be used in two Processing pilot plant set up in RWTH (Aachen) and NTUA (Athens) respectively. The final products, REE compounds, REE metals and REE magnets will be evaluated by appropriate European End-Users.

The EURARE project is co-funded by the European Commission (EC) under the 2012 Cooperation Work Programme for Nanotechnologies, Materials and new Production Technologies and specifically the raw materials topic NMP.2012.4.1-1 "New environmentally friendly approaches in minerals processing". The project began on the 1st of January 2013, and will run for five years. It has a 13,845,950 EUR total budget of which up to 9,000,000 EUR may be funded by the EC.

Project Results:
1. Introduction
REE are not currently exploited in Europe, but several REE projects are being explored or being technically and/or economically assessed currently, with some having reached an advanced stage of exploration and development (for example, pilot beneficiation and extraction studies to pre- and/or final feasibility studies). Examples include the alkaline igneous rock-hosted deposits Kvanefjeld and Kringlerne, in South Greenland, and the Norra Kärr deposit in Sweden, and the heavy mineral ash fall/placer deposit, Aksu Diamas in Turkey. A number of carbonatite-hosted REE projects are also being explored, including Fen in Norway and Sarfartoq in Greenland, but have not yet reached an advanced stage of development.

Several REE occurrences and deposits across Europe have been identified in the course of the EURARE project, and an overview of the REE-occurrences and deposits in Europe has been compiled by the EURARE project and published [2]. EURARE project partners have carried out research on several potential REE deposits in Europe. These include a number of deposits in the Nordic countries, such as the Basnäs skarn-hosted REE mineralisation [3] and REE enrichment in the magnetite-dominated ore of the Kiruna deposit [4] in Sweden. In Norway, research has included characterisation of the apatite resources and their potential for REE mineralisation [5] and the investigation of REE anomalies in the Nordkinn Peninsula [6]. The potential for REE mineralisation in Greenland was highlighted in several papers and reports [7] while new discoveries of REE mineralisation in the Ilmaussaq Intrusion have also been identified[8, 9]. Additional research has been undertaken in Turkey and Greece, where the potential for REE resources in bauxites and red muds has
been investigated [10]. The link between alkaline volcanism and the potential for REE deposits in related ash falls has also been explored [11].

EURARE has created an online, open access, database combining geographical, mineralogical and technological data, termed the "Integrated Knowledge Management System" or IKMS. At the time of publication the EURARE dataset in the IKMS (http://EURARE.brgm-rec.fr/download/dataset) contains data for 156 REE occurrences across Europe. The IKMS contains over 150 documents related to these occurrences and REE processing technologies.

The data gathered through the EURARE project highlights key issue such as the 'balance problem' between demand and natural abundance of the REE [12] and has been used to aid the development of a methodology for assessment of REE demand, which is of particular importance for European policy makers [13, 14].

2. European REE resources

The EURARE project studied some of the most advanced and promising REE resources in Europe:

Norra Kärr: Leading Edge (formed in August 2016 via the merger of Tasman Metals Ltd with Flinders Resources Ltd), is the license holder of Norra Kärr, located in south-central Sweden, reported a probable NI 43-101 compliant resource of 23.6 Mt, grading at 0.592% TREO. The preliminary feasibility study (PFS) suggests an annual mining operation of about 1.150 M tonnes per annum (tpa), equivalent to about 6,800 tpa total rare earth oxide (TREO), of which 3,611 tpa are HREO. The estimated lifetime is 20.5 years.

Kvanefjeld: Greenland Minerals and Energy Ltd (GME), the license holder of the Kvanefjeld REE-deposit, located in southern Greenland, reported a measured JORC 2012 compliant resource of 143 Mt, grading at 1.2% TREO, 303 ppm U3O8, and 0.24% Zn, equivalent to about 1.72 Mt TREO. GME signed a Memorandum of Understanding (MoU) with the Chinese REE-group, Shenghe, aimed at technical and commercial collaborations. GME applied for the exploitation lease in 2015.

Kringlerne: Tanbreez Mining Greenland A/S, the license holder of the Kringlerne project, located ca. 10 km south of Kvanefjeld, South Greenland, reports "the current inferred resource is more than 4.7 billion tonnes of eudialyte bearing ore, which contains variable contents of extractable rare earth". Tanbreez reports grades as follows: light rare earth elements (LREE): 0.5% and heavy rare earth elements HREE: 0.15%. In addition they report the presence of valuable metals such as 1.8% ZrO2; 0.2% Nb2O5; and 0.02% Ta2O5. The detailed geological data are not disclosed. An estimated mine throughput of about approximately 1 Mtpa is envisaged to generate about 6,500 tpa TREO. The mining license for the Kringlerne project is currently under application.

Fen: REE Minerals AS holds exploration rights on Fen carbonatite deposit in southern Norway. It is reported to contain 486 Mt, of søvite rock type only, grading about 0.9% TREO, and is therefore considered among the largest REE-deposits in the world.

Aksu Diamas: This is heavy mineral ash-fall/placer deposit in eastern Turkey. It contains a reported 495 Mt with a grade of 0.1% TREO. The REE would be produced as a by-product of magnetite production from this deposit. Pilot plant production of the rare earth-bearing minerals using gravity and flotation methods were established, however, exploration and development of this project halted in summer 2014.

Other European projects that have been explored to the stage of informal resource estimation, but now been put on hold include Sarfartoq (REE in pyrochlore) and Motzfeldt (REE in bastnaesite, columbite, eudialyte) in Greenland, Olserum (REE in fluoroapatiet, monazite, xenotime) in Sweden, and Storkwitz (REE in parasite, rontgenite, apatite) in Germany. The REE resources of each of the projects Kvanefjeld, Kringlerne and Norra Kärr alone could potentially secure European REE supply for decades to come (EURARE WP1-Market analysis report; Machacek & Kalvig, 2016).

Other European projects that have been explored to the stage of informal resource estimation, but now been put on hold include Sarfartoq (REE in pyrochlore) and Motzfeldt (REE in bastnaesite, columbite, eudialyte) in Greenland, Olserum (REE in fluoroapatiet, monazite, xenotime) in Sweden, and Storkwitz (REE in parasite, rontgenite, apatite) in Germany. The REE resources of each of the projects Kvanefjeld, Kringlerne and Norra Kärr alone could potentially secure European REE supply for decades to come (EURARE WP1-Market analysis report; Machacek & Kalvig, 2016).

Going to secondary REE resources, the Bauxite residue from Greece, the metallurgical by-product from Alumina refining through the Bayer process, was found to contain about 0.14% of TREO. Taking into account the bauxite residue production per year it is estimated that a full REE exploitation just from Greece can contribute to 6-12% of the REE European demand in REE like Nd, Y, Ce and La whereas simultaneously contribute to solve the Bauxite residue landfill issue [15].

3. Metallurgical exploitation of selected European REE ores

3.1 Ore Beneficiation studies

The beneficiation techniques of available European REE ores were optimized targeting the production of mineral concentrates with minimal environmental consequences at GTK Finland and IGME Greece. The following tasks were generally completed for each of the REE ores: chemical analysis; mineralogical characterization; beneficiation testing by gravity, magnetic separations, flotation and hydrometallurgical leaching, followed by general beneficiation flowsheet research and amenability evaluations. Meanwhile, technologies which minimize the consumption of energy and materials, and the environmental impact were investigated with laboratory testwork. European REE hosting minerals that were studied for metallurgical exploitation during this project include Kvanefjeld, Olserum, Kringlerne, Norra Kärr, Peramos Placer Deposit and Rödberg.

The novel beneficiation technologies developed/optimized for the three European REE ores from Kvanefjeld, Kringlerne and Norra Kärr
deposits were demonstrated at the pilot plant of GT Mintec in Outokumpu Finland.

3.2 Hydrometallurgical studies
In Europe the majority of the REE deposits and resources host REE mineralisation in silicate minerals. In literature, hydrometallurgical studies of REE extraction from silicate minerals are scarce. The dissolution of eudialyte has been the focus of past research [16] however, further results of these studies are difficult to attain. Studies of metallurgical extraction of REE from the steenstrupine mineral at Kvanefjeld also is not covered in the literature. The main issue upon dissolving REE silicate minerals is the formation of silica gel which hampers further solid liquid separation, resulting in an incomplete process.

During extensive research and experimentation in RWTH and NTUA it was found that the silica gel issue can be surpassed by controlling the silica gel formation during leaching with various ways. Treatment of eudialyte concentrate was performed with hydrochloric acid in the demonstration plant at the IME Process Metallurgy and Metal Recycling lab of RWTH Aachen (Germany). The fuming process developed [17] represents the first use of this hydrometallurgical strategy in order to process rare earth elements from concentrate into solution whilst avoiding silica gel formation.

Direct acid leaching of Rödberg ore from Fen minerals (currently REE minerals SA), successfully resulted in high REE extraction yields, however, the presence of acid consumable minerals such as calcite remains an issue. An innovative process developed by National technical university of Athens (NTUA)[18] based on the functionalised ionic liquid (IL) betainium bis(trifluoromethylsulfonyl)imide, [Hbet][Tf2N] [19] was also developed for leaching REE from Rödberg ore. The key aim of using ionic liquid solvents is to develop a process for low grade REE resources that results in the generation of a final aqueous REE-enriched pregnant solution for further purification.

[Hbet][Tf2N] leaching was first applied to bauxite residue, the metallurgical by-product of alumina production from Greece. The great innovation of [Hbet][Tf2N] is its ability to selectively dissolve REE versus iron (Fe), silica (Si) and titanium (Ti) from complex metal matrices. Additionally the metals dissolved in the ionic liquid solution can be extracted upon contact with an acidic solution producing a pre-concentrated REE solution for further purification. The ionic liquid subsequently regenerates and can be reused for the leaching step [18]. The IL-based process was further validated at a bench scale of 4L applied to both bauxite residue and Rödberg ore.

3.3 REE separation
The EURARE project developed procedures for the separation and extraction of REE from mixed carbonates, the result of the initial processing. MEAB Chemie Technik GmbH (MEAB), Sveriges Lantbruksuniversitet (SLU) and KU Leuven (KUL) worked on three different approaches. MEAB worked on the separation of REE through conventional solvent extraction employing standard organic phases, SLU investigated the REE separation through innovative ion exchange, applying magnetic modified nano-adsorbents [20] whereas KUL studied the REE separation through innovative solvent extraction using ionic liquids as both diluents and source of coordinating anions [21]. MEAB has successfully commissioned their solvent extraction demonstration plant in Aachen, Germany (fig.5). Working with REE carbonate produced from hydrometallurgical studies, has resulted in the separation of heavy (HREE Ho-Lu,Y), medium (MREE Sm-Dy) and light (LREE La-Nd) rare earth elements. Yttrium (Y) was separated from the HREE fraction and a mixture of praseodymium (Pr) and neodymium (Nd) was separated from the LREE fraction. Finally, Y was successful separated from the LREE fraction (the raffinate arising after undergoing split-anion extraction). The main process uses bases for conditioning the organic phase and controlling the pH of the aqueous phase, acidic extractants for extracting the targeted REE into the organic phase, 0.5-1.5 M HCl for scrubbing unwanted REE from the organic phase at high organic/aqueous volume ratios (o/a) and 4 M HCl for stripping the required REE from the organic phase. The process was been tested by MEAB in continuous extraction demo tests using a multi stage arrangement of mixer settler units.

Additionally the innovative ion exchange work performed by SLU has resulted in the preferential extraction and separation of dysprosium, yttrium, neodymium and LREE. In one step, the sum of REE is first separately extracted from the other major metals, like iron, zirconium, aluminium, calcium that usually present as impurities in the pregnant solution. The next steps in the process exploit magnetic silica based nano-particles (SiO2) functionalized by different organic ligands for selective separation of individual REE. The nanoadsorbents are then easily separated from solution by magnet. Back extraction (stripping) of the wanted REE from the adsorbent is made by controlled decrease in pH. For improving selectivity of the adsorbents in stripping and controlling the pH of the aqueous phase, 0.1 to 1 M of HNO3 and 5 wt% of NH3 are employed, permitting to strongly reduce the volumes of employed acids and bases. The process is green, employing only the aqueous media and enjoys recycling of the adsorbent phase.

Split-anion extraction is a new method of solvent extraction developed at KU Leuven for the separation of REE, without changing the aqueous phase. The extraction of REE from aqueous chloride feed solutions is carried out using a neutral extractant dissolved in an ionic liquid (diluent) which contains the REE-coordinating anions. The anion of the ionic liquid (NO3- or SCN-) coordinates and
transports the REECl$_3$ from the aqueous phase into the water-immiscible ionic liquid. The work performed by KUL has resulted in the separation of HREE and MREE from LREE and yttrium from the chloride route without using acidic extractants. This created major improvements on the current solvent extraction technology with particular regard for cost, health, safety and environmental issues such as:

- The selective separation of REE into groups from chloride aqueous solutions requires less capital expenditure and an easier waste-water treatment, than from nitrate aqueous solutions.
- The replacement of organic solvents by non-fluorinated ionic liquids involves low volatility, non-flammability and no accumulation of static electricity.
- Using neutral extractants means little to no need pH control and easy stripping by water, and this is reflected in less consumption of chemicals, lower operating costs and easier waste-water treatment.

3.4 REE metal production

The challenges of applying REE molten-salt electrolysis under European environmental standards lead RWTH to develop an automated new cell design (closed system) with the main goal of improving current molten salt technology. Key concerns are the reduction of energy losses, improved cost efficiency and reducing impurity interferences. The developed cell resulted to process parameter optimization, automation, reduction of green-house gasses evolution, and high purity metal production for neodymium and didymium (Nd-Pr) metal.

During the EURARE project, the production of metallic rare earths by the use of novel electrolytes, such as the ionic liquids, was researched in National Technical University of Athens (NTUA). The main goal was to resolve a metallurgical process based on ionic liquids for the production of rare earths by avoiding the currently used technology of high temperature molten salts electrolysis. In the first phase of the project, various kinds of ionic liquids were tested, in order to find the most suitable among them that would permit the reduction of rare earths prior to their decomposition. In the second phase, the most promising ionic liquids were investigated. More precisely, the reduction of rare earth cations La$^{3+}$, Sm$^{3+}$, Nd$^{3+}$, Dy$^{3+}$ to the metallic state and their subsequent electrodeposition in the ionic liquids N-butyl-N-methylpyrrolidinium bistriimide ([BMP][TFSI]) and trimethyl butylammonium bistriimide ([Me3NBu][TFSI]) were studied. These hydrophobic ionic liquids present a wide electrochemical window and a suitable ionic conductivity rendering them promising electrolytes for rare earths reduction. Scanning Electron Microscopy (SEM) and Electron Dispersive Spectroscopy (EDS) analysis, reveal that rare earths electrodeposition is feasible with the use of ionic liquids as electrolytic media. An non-ionic organic solvent was also used successfully for Nd electrorecovery at low temperature. Bench-scale tests were performed for Nd production based on the best developed process, where 4g metallic Nd with a specific energy consumption 3.3KWh/Kg was produced. The deposit was identified by XPS analysis.

3.5 Pilot plants

The developed technologies on REE metallurgical extraction from European resources are further being evaluated on a pilot scale starting with 1-5 tons of ore concentrate to produce 5-50 kg of REE.

In the Kvanefjeld deposit 3 t of the Kvanefjeld ore (with 1.3 % REO ) was mined and beneficiated at the GTK Pilot plant producing a mineral concentrate of 250 kg of 15% REO content. The mineral concentrate of was then leached at the Outotec Pori Research Laboratories, Finland producing ~25 kilograms of mixed rare earth carbonate with 50% REO content. This was then processed by MEAB Chemie Technik GmbH, Aachen to produce separate streams of La/Ce, Nd/Pr, Y and HREE chloride fractions.

Over 5 tonnes of drill core material of ore sample was mined from Norra Kärr deposit in southern Sweden by Tasman Metals Ab and shipped to GTK in June 2015 in 12 pallets. The total weight of the crushed material was 5 643 kg. The Slon magnetic separators were used for magnetic separation of REE minerals in September 2015, producing a 500 kg of concentrate which was delivered in RWTH-Aachen.

Over 1.5 tonnes of Kringlerne ore were processed at the TANBREEZ facilities in Australia using an Eriez 24” Salient Pole Rare Earth Drum magnetic separator, producing a 200 kg concentrate which was delivered in RWTH-Aachen.

Both eudialyte concentrates concentrates (Norra Karr and Kringlerne) were leached at RWTH pilot plant in Aachen, based on the two step fuming flowsheet developed in EURARE, producing a REE-carbonate (about 31 % REE) after treatment of the 500 kg eudialyte concentrate (about 1-2 % REE) with an additional iron removal using a strategy developed by MEAB Chemie Technik GmbH, Aachen. In total 24kg of REE mixed concentrate was produced which again was separated into streams of La/Ce, Nd/Pr, Y and HREE chloride fractions at MEAB facilities.

4. Road map for sustainable REE exploitation and REE material supply autonomy in Europe

The overall aim of the EURARE project is to develop a sustainable exploitation scheme, or road map, for Europe's REE ore deposits that will result in REE supply autonomy in Europe. This requires an economically viable REE ore resource, effective beneficiation,
Hydrometallurgy and separation techniques, and efficient metal production techniques. However, it also means that the best available techniques should be applied with regard to emissions and impacts on the environment as a whole.

Activities in the EURARE project relating to sustainability and environmental impact assessment will therefore contribute to the road map. The European legislation in place to limit the environmental impacts of the REE industry has been reviewed and compared with international best practice [22]. Life cycle assessment is being used to quantify the energy and resources used in the processes and the waste, emissions and greenhouse gases produced, per unit mass product. This will be supported by a compilation of the hazards associated with the chemicals used. The tailings, tailings water and process water generated during the beneficiation of selected EURARE ores have been characterised, and wastes from the EURARE hydrometallurgical and separation processes are now being characterised. These characterisations allow the wastes to be defined in terms of European legislation and therefore identify the waste management options available. The data from the beneficiation processes will also be used to evaluate stabilisation methods for the tailings, waste water treatment technologies to allow the reuse or discharge of waste water and whether the tailings are suitable for use in the construction industry.

5. Conclusion

The three most advanced EURARE REE-projects (Kvanefjeld Kringlerne and Norra Kärr) could be put into production around 2020 (depending always on the state of the global REE market, the existence of other projects, etc.) and ramping up over a few years. In this case they may or may not become new suppliers to the European REE-market with various types of REO-products. In addition to the primary resources, the potential of the red mud waste from alumina plants are investigated to assess the technical possibilities for exploiting the REE-content of these resources. In the global annual red mud production is about 150 Mt, and carries the potential to generate up to about 172,500 tpa TREO (Deady et al. 2016). Therefore, EURARE has proven that within Europe exist primary and secondary REE sources available and which technologically exploitable.

However significant roadblocks have been identified in both launching new mining operations as well as in processing the produced REE concentrates within Europe. The conventional and innovative metallurgical treatment of REE European resources starting from beneficiation leaching and REE separation ending to metal production, developed in EURARE have proven the technical feasibility but would require significant investments in order to set up the respective REE processing plants.

In the view of the EURARE project, public domains RTD projects in conjunction with legislative/regulatory support for establishing new REE mines and processing facilities are the main keys that will help to establish a sustainable REE industry in Europe.

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Potential Impact:
The overall aim of the EURARE project is to develop a sustainable exploitation scheme, or road map, for Europe's REE ore deposits that will result in REE supply autonomy in Europe. The establishment of the critical mass of scientists and engineers to support the REE exploitation, processing and manufacturing industry has resulted to great advancements on the European REE exploitation sector, such as:

✓ Mapping of the REE resources in Europe: Several occurrences and advanced projects of REE resources have been explored in Europe. EURARE has created an online open access database combining geographical, mineralogical and technological data, termed "Integrated Knowledge Management System" or IKMS. At the time of this report the EURARE dataset in IKMS (http://EURARE.brgm-rec.fr/download/dataset) contains 156 REE occurrences across Europe. The IKMS contains over 150 documents related to these occurrences and REE processing technologies.

✓ Raw material autonomy for Europe: The REE resources for each of the projects Kvanefjeld, Kringlerne, Norra Kärr, Aksu Diamas and Fen complex could potentially secure European REE supply for decades to come.

✓ New Technologies Conventional and innovative metallurgical treatment of REE European resources starting from beneficiation leaching and REE separation ending to metal production, were developed successfully providing efficiency and selectivity in the various steps.

✓ Pilot testing: Under EURARE, pilot testing “from ore to metal” are took place, demonstrating the potential to develop a European-based REE extractive industry.

✓ European REE RTD community: The EURARE consortium organized the 1st European Rare Earth Resources Conference on September 2014 (http://eres2014.conferences.gr/). More than 150 people attended the conference which featured 72 oral presentations on REE importance for Europe, REE supply and demand issues, European perspective for a REE industry , REE Exploitation policy issues , REE occurrences in Europe, REE processing (advances, new technologies, ), REE recycling and Environmental Impacts (gains and losses through REE utilization and REE extraction). The second ERED conference was held in Santorini from the 28th to the 31st of May 2017 within the fourth and last reporting period. More than 220 people attended and 101 oral presentation where given. Moreover there was a Round Table Session having the title: Roadmap to a European REE industry, where all stakeholders and experts are invited to close the conference with an outlook to the future, defining the steps that can evolve the REE industry beyond its current resource, economic, technological and social constraints. More details are available at http://eres2017.eresconference.eu/

✓ Way forward: A road map is being developed for sustainable REE exploitation in Europe based on the resources identified, technologies developed and the environmental benefits and risks associated with the technologies.

In terms of knowledge generation the project resulted in 3 Patents (all on REE separation), 28 publications in peer reviewed journals, 4 PhD studies, more than 100 conference presentations and 1 EURONEWS video segment.

List of Websites:
http://www.eurare.org/
EURARE website, www.eurare.org has been kept up-to-date and refreshed in appearance. The website includes information about the project, slideshows, downloads and links. Statistics show that the website has an excellent reach, with over 800,000 total hits and over 160,000 total visitors in the period 1 Jan – 1 Nov 2017. At the end of the project, the website will be finalised and will remain available.
on the same address for several years

For any enquiries about the EURARE project, please contact the appropriate person from the list below:
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