European Commission

European Innovation Partnership on Raw Materials

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Foreword

By European Commission Vice President Antonio Tajani, responsible for Industry and Entrepreneurship

The EU is highly dependent on many important raw materials. Key economic sectors such as the automotive sector, aerospace and chemicals require a secure and stable flow of raw materials. And yet, raw materials supply and demand have recently come under increased pressure. Demand for raw materials is growing not only in Europe but around the globe, driven by the growth of emerging economies and the development of certain technologies, notably 'green technologies'. On the other hand, their supply necessitates long-term investment periods and export restrictions are applied by some producing countries. This situation has lead to supply bottlenecks and shortages and might get worse in the future. Whereas no country in the world is self-sufficient for all raw materials, the EU, due to its high dependency on imports, is particularly vulnerable. Beside this could negatively affect the EU's competitiveness and even jeopardise our ability to develop the new technologies we need, for example, to fight climate change.

The Commission has therefore adopted a reinforced strategy in response to these key challenges for the EU in the area of non-energy non-agricultural raw materials, followed on by the setting up of a European Innovation Partnership on Raw Materials. These two important initiatives are presented in this Brochure.

On 2 February 2011, the European Commission adopted a new strategy document which sets out targeted measures to secure and improve access to raw materials for the EU. Based on the first Communication on the Raw Materials Initiative, published in November 2008, this new strategy document further pursues and reinforces the 3-pillar-based approach to improving access to raw materials for Europe. These pillars are: 1) Fair and sustainable supply of raw materials from international markets; 2) Fostering sustainable supply within the EU; 3) Boosting resource efficiency and promoting recycling.

Within the Europe2020 Flagship on Innovation Union, the Commission is launching different partnerships covering various challenges of relevance for our societies. In this vein, on 29 February 2012 the Commission adopted a Communication proposing the European Innovation Partnership on raw materials. Innovation along the raw materials value chain can be a key driver for progress within each of the three pillars of the Raw Materials Strategy. For example, in many cases cost effective technologies for the recycling and recovery of certain materials do not exist yet or are not in mainstream use. We also need to foster innovation in exploring, mining and processing. Time has now come to bring together all relevant stakeholders and to start developing its Strategic Implementation Plan and bring innovation closer to the market, be it in the fields of exploration, extraction, via processing, to recovery and recycling or in the area of substitution.

I encourage you to explore these pages and to be inspired.

Antonio Tajani

Tackling the challenges in commodity markets and on raw materials

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 2 February 2011

COM(2011) 25 final

1. Introduction

Commodity markets have displayed increased volatility and unprecedented movements of prices in recent years. Prices in all major commodity markets, including energy, metals and minerals, agriculture and food, increased sharply in 2007 to reach a peak in 2008, declined strongly from the second half of 2008 and have been on an increasing trend again since the summer of 2009. To varying degrees, these price swings have been reflected in consumer prices, at times leading to social unrest and deprivation.

At the heart of current developments lies a series of changes in global supply and demand patterns as well as short term shocks in key commodity and raw material markets. The years 2002 to 2008 were marked by a major surge in demand for raw materials, driven by strong global economic growth, particularly in emerging countries such as China. This increase in demand will be reinforced by the further rapid industrialisation and urbanisation in countries such as China, India and Brazil. China is already the largest consumer of metals in the world – its share of copper consumption, for example, has risen from 12 % to about 40 % over the last 10 years[1]. Price movements have been exacerbated by various structural problems in the supply and distribution chains of different commodities, including the availability of transport infrastructure and services. These developments occur at a time when the competitiveness of European industry requires efficient and secure access to raw materials.

In addition, markets are experiencing the growing impact of finance, with a significant increase in financial investment flows into commodity derivative markets in recent years. Between 2003 and 2008, for example, institutional investors increased their investments in commodities markets from 13 billion euro in 2003 to between 170 and 205 billion euro in 2008. While the financial crisis interrupted the upward trend, financial positions approached or even exceeded their 2008 peaks on many markets in 2010 and investment by index traders in particular has increased strongly. While the debate on the relative importance of the multiple factors influencing commodities prices is still open, it is clear that price movements across different commodity markets have become more closely related, and that commodities markets have become more closely linked to financial markets[2].

These developments have led to increased calls for policy responses to mitigate the negative effects of such movements on both producers and consumers, especially the most vulnerable ones. They have generated attention at the highest political level including the latest G20 summits.

The challenges of commodity prices and raw materials are closely intertwined and touch on policies in the areas of financial markets, development, trade, industry and external relations. The European Commission has therefore taken a number of initiatives. In 2008 it already drew attention to the strategic importance of defining policies for raw materials by launching the raw materials initiative[3]. Since then, it has taken actions within this framework to address sustainable access to raw materials both within and outside the EU, as well as on resource efficiency and recycling. It also began an in-depth reflection on commodities market in general and on food prices and security of food supply in particular[4]. In response to the financial crisis, it has launched a range of measures to improve the regulation, integrity and transparency of financial markets, and most recently it has made a proposal for the regulation of energy markets.

This Communication presents an overview of what has been achieved in each of these areas and of the steps which are planned to take the work forward. This work is part of the Europe 2020 strategy to ensure smart, sustainable and inclusive growth and is closely linked to the flagship initiative for a resource efficient Europe[5]. It will feed into the work of the G20 which agreed at the Pittsburgh summit 'to improve the regulation, functioning, and transparency of financial and commodity markets to address excessive commodity price volatility'[6]. This commitment was reinforced in November 2010 by the G20 summit in Seoul which pledged to address food market volatility and excessive fossil fuel price volatility[7].

1 World Metals Statistics Bureau – 2009 Yearbook.
2 CFTC 'Staff report on commodity swap dealers and index traders with Commission recommendations', Washington, 2008. American Economic Review; Commission Communication COM(2008) 821 'Food prices in Europe' and its accompanying staff working document SEC(2008) 2971 'Task force on the role of speculation in agricultural commodities price movements - Is there a speculative bubble in commodity markets?'.
3 COM(2008) 699 'The raw materials initiative - meeting our critical needs for growth and jobs in Europe'.
4 COM(2009) 591 'A Better Functioning Food Supply Chain in Europe' and COM(2010) 127 'An EU policy framework to assist developing countries in addressing food security challenges'.
5 COM(2010) 2020 'Europe 2020', and COM(2011) 21 'A resource-efficient Europe: flagship initiative under the Europe 2020 strategy'.
6 See http://www.pittsburghsummit.gov/mediacenter/129639.htm
7 See http://www.g20.org/Documents2010/11/seoulsummit_declaration.pdf

2. Developments on global Commodities markets

Fundamentals, including unexpected changes in global economic conditions linked to the strong growth in demand of emerging market economies, have played a key role in driving developments on commodity markets[8]. Other factors that have also played a role are supply shortfalls and monetary policy, and in recent years, various ad hoc policy interventions. Export restrictions, border measures, and shifts in storage policies had an impact on food prices in the run up to the 2008 food price crisis. Increased use of agricultural land for the production of renewable energy has strengthened the link between developments in agricultural and energy prices. Price movements have also been exacerbated by various structural problems in the supply and distribution chains of different commodities[9].

Each commodity market functions differently depending on the nature of the commodity, the needs of traders and historical developments. There is no single model for the organisation of commodity markets and hence of how prices evolve. Some commodity trading exhibits a high degree of standardisation, while on other markets the way in which trades are done may change according to the particular needs of individual market participants. Derivative markets[10] based on commodities have existed for a long time and play a role in the hedging of exposures of both producers and users of various commodities. Just as the underlying commodities can be traded in different ways, derivatives can be traded on a bilateral basis, generally called over the counter or OTC, or using organised exchanges. Additionally, the role of financial institutions as well as the importance of derivatives is very different from one market to another. The following sections examine specific developments on the markets for energy and agricultural commodities and the increasing interdependence of commodities and related financial markets.

2.1. Developments on the physical markets

2.1.1. Energy (oil, electricity, gas)

Oil and petroleum markets are integrated, liquid and global, and are widely considered to be driven notably by economic fundamentals, but also by geo-political considerations, the role of the Organization of the Petroleum Exporting Countries (OPEC), and by non-physical trades. There have been significant developments in terms of financial and derivative investment instruments and trading technologies. The G20 at the Seoul summit has highlighted the importance of well-functioning and transparent energy markets for economic growth. It has been working on physical market transparency, fossil fuel price volatility, and the phasing out of inefficient fossil fuel subsidies.

The gas market, which is increasingly influenced by the development of non-conventional sources, has traditionally been based on long-term over-the-counter (OTC) contracts. As a result of the proliferation of Liquefied Natural Gas (LNG), gas is also increasingly traded on a global and liquid market which is being commoditized. Electricity is the least global energy market as its transport over long distances is restricted for physical reasons of non-storability and energy loss. The geographic scope of the market is therefore smaller than for other energy commodities.

EU electricity (and gas) markets are increasingly integrated as a result of the internal market. They have seen the development of energy exchanges or other organised markets and broker facilitated OTC markets which can be used both for physical delivery and hedging. It remains the case that market prices are highly sensitive to the availability of actual and expected generation as electricity cannot be stored on an industrial scale.

8 See for example, IOSCO, Task Force on Commodity Futures, Report to the G20. November 2010.
9 COM(2009) 591 'A Better Functioning Food Supply Chain in Europe'.
10 A derivative can be defined as a financial asset, generally a contract between two or more parties, that derives its value from other assets, securities or even indices.

2.1.2. Agriculture and security of food supply

Most agricultural commodities, in particular crops, are subject to strong seasonal production patterns, and their supply cannot always adjust rapidly to changes in prices or demand. This means that agricultural markets are characterised by a certain degree of variability. Structural factors such as demographic growth, pressure on agricultural land and the impacts of climate change may add to growing tensions on agricultural markets. However, the volatility of prices of agricultural commodities has recently increased to unprecedented levels. This is the case both on the EU and international markets, and on spot and futures markets. Within the EU, successive reforms of the Common Agricultural Policy (CAP) have significantly reduced support prices and related measures. As a result, commodity producers and traders are more exposed to market price developments and, although it is not the case in all agricultural sectors, are thus more prone to use futures markets to hedge risks. Trade in options and in over-the counter derivatives is also growing. These factors explain to some extent the increased activity on European-based exchanges and raise two issues in particular: security of food supply and the need for increased transparency on agricultural derivatives markets.

Security of food supply has been identified as one of the main drivers for future reform in the CAP[11]. A strong agricultural sector is vital for the highly competitive food industry to remain an important part of the EU economy and trade and a major contributor to international markets. This is why, in the context of the Doha Development Round, the EU has agreed to an important agricultural package, conditional on reaching an ambitious, balanced and comprehensive overall agreement.

Excessive volatility of food prices affects producers and consumers alike, and has serious effects on security of food supply for food importing developing countries. During food price spikes — such as in 2007–08 — many of the poor in developing countries reduced their food intake[12]. The 2010 food price increases may lead to another increase in malnutrition, humanitarian needs and social tensions and unrest among the weaker consumers in the world. While higher global prices could stimulate agricultural production, price transmission mechanisms are often imperfect. In many developing countries, commodity markets are often disconnected from world markets or, at best, world price signals are transmitted to domestic markets with considerable lags so that a domestic supply response is often delayed.

Several analyses by the Food and Agricultural Organisation, OECD, Commission and others have focused on supply and demand developments, exacerbated by short-term economic and policy factors (including restrictions on exports) that explain part of the observed extreme price volatility, including factors specific to financial markets that may have amplified price changes. Despite remaining uncertainties, based on the outlook for agricultural commodities established by several organisations, including the latest Commission medium term projections, three conclusions are clear for agricultural commodities:

- agricultural commodity prices are expected to stay higher than their historical averages, reversing their long-term downward trend, at least for the foreseeable future;
- price volatility is also expected to remain high, although uncertainties with respect to its causes and duration persist;
- the level of input prices used in agriculture is also likely to remain higher than its historical trends.

The combination of the above factors implies that higher prices for agricultural commodities will not necessarily result in higher incomes for farmers, especially if their margins are squeezed by increased costs. In addition, potential problems for net food importing countries and more generally for the most vulnerable consumers are evident, stemming from price impacts on food inflation. While a certain degree of variability is an intrinsic part of agricultural markets, excessive volatility does not benefit producers neither users.

2.1.3. Raw materials

Raw materials include metallic minerals, industrial minerals, construction materials, wood, natural rubber. Unlike electricity, raw materials are traded globally. In relation to prices and markets, the key distinction is between those that are traded on stock exchanges and those that are not. For example, base metals such as aluminium, copper, lead, nickel, tin and zinc are traded on stock exchanges of which the London Metals Exchange (LME) is a global leader. However, many of the EU's critical raw materials, such as cobalt, gallium, indium and rare earths, are not traded on the LME. The market for these materials is less transparent and the volumes traded are very small in comparison to other materials.

11 COM(2010) 672 'The CAP towards 2020'.
12 FAO, WFP, The State of Food Insecurity in the World, October 2010.

The global metal and mineral markets generally follow a cyclical pattern based on supply and demand. However, the period 2002–08 was marked by a major rise in demand for raw materials driven by strong global economic growth, in particular in emerging countries. This was reflected in unprecedentedly high price levels. Recent trends indicate that demand for raw materials will be driven once more by the future development of emerging economies and by the rapid diffusion of key enabling technologies.

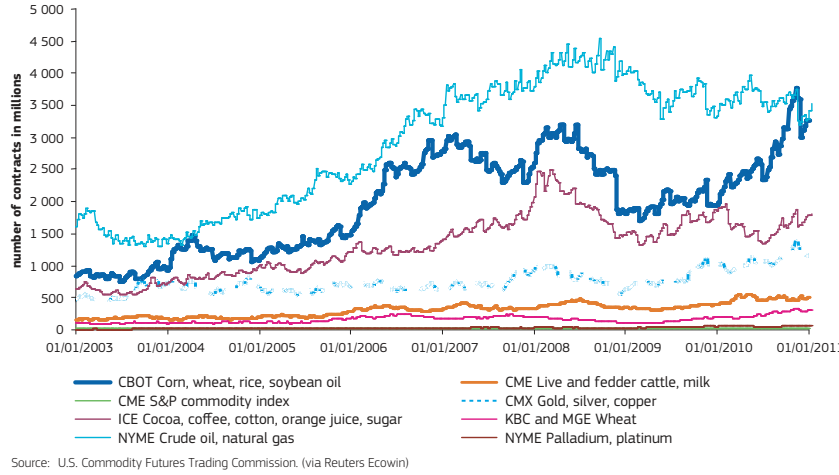
A growing concern in these markets relates to measures imposed by certain countries to ensure privileged access to raw materials for their domestic industry including through export restrictions. These measures create distortions in the global markets and uncertainties in the regular flows of commodities. Such measures may affect developed and developing countries alike as virtually no economy is self-reliant for all raw materials. Least developed countries in particular can be particularly dependent on commodity imports and therefore can be negatively affected by the absence or inadequacy of multilateral rules in some disciplines such as export duties. Furthermore, companies respond to price fluctuations in various ways, such as stockpiling, negotiating long-term contracts or price hedging in the form of futures contracts. Some of these reactions may exacerbate the tightness of supply.

2.2. Growing interdependence of commodities and related financial markets

Commodity derivatives allow producers and users to hedge the risks associated with physical production and price uncertainty. They are also increasingly seen purely as financial investments. In this context, financial investment flows into commodity derivative markets have grown significantly in recent years (see graph 1).

Commodity and financial markets are thus increasingly intertwined sharing a growing number of participants in search of risk management tools and investment opportunities. The liquidity, efficiency and accessibility of spot markets are strengthened by well-functioning derivative markets, and vice versa. Adequate and reliable information on market fundamentals such as volumes of production and consumption, network and pipeline capacity etc., as well as the amount of trading that takes place in the commodity is necessary for transparent and orderly price formation both on the spot and derivative markets. Derivative markets are however not only used by commercial companies for risk management purposes, but also by financial institutions as part of their risk allocation strategies. In addition prices of commodity futures (i.e. derivatives listed on organised trading venues) often serve as benchmarks for example influencing retail energy and food prices for EU consumers.

Graph 1: Transactions on commodity derivative markets (Total open interest of futures and options)



Source: U.S. Commodity Futures Trading Commission. (via Reuters Ecowin)

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The very nature of a derivative contract is that its value depends on the value of the underlying market to which it refers. This is particularly the case where the underlying market is a physical market. The prices of commodity derivatives and underlying physical commodities are therefore interlinked. Commodity derivatives markets therefore cannot be regarded in isolation from commodity markets and vice versa.

Identifying which way causation flows in the interaction between financial and physical markets is, however, a complex issue. Establishing these correlations is complicated by the fact that not all physical markets have the same features. A variety of factors have an impact, some of which are specific to individual markets and, as a result, different market dynamics are at play in the different sectors. At this stage, assessing the exact nature and extent of the links between the price formation process on commodity markets and the growing importance of derivatives markets is made even more difficult by the lack of transparency in these markets.

While it is clear that there is a strong correlation between positions on derivative markets and spot prices, it is still difficult to assess fully the interactions and the impact of movements in the derivative markets on the volatility of the underlying physical markets. Establishing these correlations is further complicated by the fact that not all physical markets have the same features and different market dynamics are at play in the different sectors. Further work is therefore needed to deepen understanding of these developments[13].

At this stage, however, it is already clear that the degree of transparency and reporting obligations on both the underlying physical markets and the derivative markets should be enhanced. Increased transparency and easily accessible information on the physical markets will allow investors to make informed decisions, contribute to an appropriate price finding process and facilitate the identification and prevention of any abuse. But in addition, the recent price volatility has shown that for physical market actors the possibilities to hedge their price risks must be maintained, while close and efficient monitoring of market developments needs to be ensured. This is particularly important for food-importing developing countries. Additional targeted regulatory measures, such as the introduction of position limits when deemed necessary, could also be considered in this context.

13 Part of which is already under way (see section 3.2) in close cooperation with the relevant international counterparts, in particular the United States, with a view to ensure regulatory consistency.

3. EU Policy response to developments on Commodities markets

At EU level, there has been an initiative to increase oversight, integrity and transparency of trading in energy markets[14]. There have also been a number of initiatives to improve the functioning of the food chain and transparency on agricultural commodities markets. As part of the ongoing reforms of the regulatory framework for financial markets, the Commission has also identified measures to increase the integrity and transparency of commodity derivatives markets.

3.1. Physical markets

3.1.1. Energy (oil, electricity, gas)

The Commission has shown its readiness to act to ensure the orderly functioning of energy markets in its proposal to establish clear rules prohibiting market abuse on wholesale electricity and gas markets backed up by an EU-wide market monitoring framework and new enforcement powers for energy regulators[15]. This approach will help to ensure that the benefits of the internal market are realised for Europe's businesses and citizens, and provides a good model for how to address the challenges resulting from the growing interdependence of commodity and related financial markets. The proposed Regulation on Energy Market Integrity and Transparency[16] will provide European and national authorities with the tools to identify instances of market abuse in traded wholesale markets for electricity and gas:

- the European Agency for the Cooperation of Energy Regulators (ACER) Market will be responsible for monitoring to uncover possible cases of abuse;
- traders will be prohibited from using inside information to benefit from their transactions or manipulate the market by artificially causing prices to be higher than would be justified by the availability, production cost or capacity to store or transport energy;
- cooperation will be enhanced between physical (ACER) and financial (ESMA) market regulators.

The Commission is committed to ensuring that transparency requirements for fundamental data in gas and electricity markets are effective and meet market needs.

3.1.2. Agriculture and security of food supply

Given that there are many causes of price volatility, there is no single and simple solution to the identified problems. This is even more the case given the specificity of agricultural production (links to security of food supply, the environment, and the latter including the dependency of agricultural production on life cycles, weather and seasons, sanitary and pest conditions) which complicates the potential impact of policy options further.

Nevertheless, one key area of work concerns improving market information. The agricultural sector benefits from a wealth of information on agricultural production, consumption and stocks from public sources (WB, FAO/OECD, USDA, EU, ABARE) or commodity bodies (especially the International Grains Council). This is in clear contrast to information in commodities such as metals, minerals and energy, where market information is proprietary and mainly available from industry.

However, the quality and timeliness of information on national and regional food stocks, and on projections for food production and consumption could be improved further. The G20 has requested the 'World Bank to work with other relevant international agencies to develop measures to improve information on national and regional food stocks

14 The market in allowances within the carbon Emissions Trading System for the EU is not dealt with in this Communication as the allowances are not commodities in the generally understood sense. The Commission has produced a Communication on this issue; COM(2010) 796 'Towards an enhanced market oversight framework for the EU Emissions Trading System'.

15 This section does not address other energy related issues such as the safety and security or the overall consistency and effectiveness of EU external energy policy. They are dealt with in the Communication 'Energy 2020 A strategy for competitive, sustainable and secure energy' - COM(2010) 639.

16 Proposal for a Regulation of the European Parliament and of the Council on energy market integrity and transparency — COM(2010) 726, December 2010.

and food production projections' and this is work which the Commission will fully support.

Given the increasing market orientation of its Common Agricultural Policy, information and transparency on commodity market developments have become key features in efforts to ensure the proper functioning of the agri-food chain:

- Member States regularly communicate a wide range of data to the Commission which is published on the internet[17] and discussed with advisory committees of stakeholders;
- a food price monitoring tool has been set up by the Statistical Office of the Commission to increase price transparency[18] and discussions are on-going on how to improve this tool;
- the Commission services regularly produce and publish a medium-term outlook for major agricultural commodity markets[19].

The Commission has established a High Level Forum for a better functioning Food Supply Chain[20]. While it does not deal with price volatility as such, it addresses the transmission of price developments throughout the supply chain, examining business to business relations, the competitiveness of the food industry, agri-food logistics and the food price monitoring tool.

The food price spikes have highlighted the underinvestment in agriculture in many developing countries in recent decades[21]. EU development policy has recognised the need to reverse this trend. As indicated in the Green Paper on EU Development Policy[22], it can play an important role in reducing the impact of price volatility on the most vulnerable. The Commission has already adopted a policy framework on food security[23], indicating that the EU and Member States should contribute to improved food market functioning at global, regional and national levels, including through improved market transparency. This would entail support in developing countries to strengthen farmers' organisations, to improve price transparency, to increase agricultural productivity on a sustainable basis, and to develop and apply regulatory frameworks.

Developing agricultural production will increase resilience and adaptability to food shocks.

Finally, given that unilateral actions by certain governments are also a factor that can affect physical markets and cause price volatility, there is a need for improved governance and international dialogue in this area.

3.2. Regulation of financial markets

There is a broad agreement that it is desirable to increase the integrity and transparency of commodity derivatives market. In line with G20 principles and conclusions, the Commission has launched a number of initiatives to do so:

- It has adopted a proposal for a regulation on OTC derivatives trading[24], which aims to reduce systemic risk and improve transparency for regulators in all derivatives, including commodity derivatives.
- The review of the Market Abuse Directive[25] in spring 2011 will aim to clarify what trading in commodity markets constitutes abuse, and to ensure that all venues and transactions where abusive practices can occur are properly covered under pan-EU rules.
- The review of the Packaged Retail Investment Products (PRIPS)[26] will examine the need for additional rigour and enhanced quality of information when retail investors are offered structured commodity investment products.
- The Alternative Investment Fund Management Directive[27] will increase transparency of these funds for investors and national supervisors, and give a better insight of the impact of these funds on the markets for commodity derivatives.

17 See for instance http://ec.europa.eu/agriculture/markets/prices/monthly_en.pdf
18 See http://epp.eurostat.ec.europa.eu/portal/page/portal/hicp/methodology/prices_data_for_market_monitoring
19 http://ec.europa.eu/agriculture/publi/caprep/prospects2010/index_en.htm
20 See http://ec.europa.eu/enterprise/sectors/food/competitiveness/forum_food/index_en.htm
21 Fewer than ten African States meet the Maputo target set in 2003 of ten percent of public investment to agriculture.
22 COM(2010) 629 'EU development policy in support of inclusive growth and sustainable development. Increasing the Impact of EU development policy'.
23 COM(2010) 127 — An EU Policy Framework to assist developing countries in addressing food security challenges.
24 COM(2010) 484, 15.9.2010.
25 Directive 2003/6/EC (OJ L 96, 12.4.2003).
26 A public consultation on PRIPS was launched on 26th November 2010, http://ec.europa.eu/internal_market/finservices-retail/investment_products_en.htm#consultation
27 COM(2009) 207, 30.4.2009.

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- The review of the Markets in Financial Instruments Directive[28] in spring 2011, will aim to improve further the transparency of trades and prices in commodity derivatives by setting conditions for when commodity derivative products should trade exclusively on organised trading venues. It will also explore the need for more systematic and detailed information on the trading activities of different types of market participants in commodity derivatives, more comprehensive oversight by regulators of commodity derivative positions, including the need for imposing position limits when deemed necessary.
- Finally the creation of the European Securities Markets Authority (ESMA) will ensure consistency of technical rules applicable to these markets and be instrumental in strengthening collaboration with regulators of the underlying physical markets[29].

3.3. The interaction between physical and financial commodities markets

The measures described above will help to ensure that increasing investment flows are more transparent, are better accounted for, and are less able to distort the functioning of commodity markets. However the Commission acknowledges that a better understanding of the interaction between physical and financial commodities markets is needed. Against this background, the Commission will:

- carry out further analysis of developments on financial and physical commodities markets to improve understanding of the relationships between them, support similar efforts underway at global level (G20, IOSCO, IEA, FAO, UNCTAD, OECD, IMF etc.);
- promote further improvements in the transparency and accessibility of information on the physical commodity markets, including through the relevant regulators and institutions, to ensure the proper functioning of these markets.

28 Directive 2004/39/EC (OJ L 145, 30.4.2004).
29 Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority, amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC (OJ L 331, 15.12.2010, p. 84).

4. The European Raw Materials Initiative

Beyond developments related to price volatility and the interaction between physical and financial commodities markets, the question of physical supplies of raw materials remains essential. In 2008 the Commission launched the 'Raw Materials Initiative'[30] (RMI) which established an integrated strategy to respond to the different challenges related to access to non-energy and non-agricultural raw materials.

The RMI is based on three pillars: ensuring a level playing field in access to resources in third countries; fostering sustainable supply of raw materials from European sources, and boosting resource efficiency and promoting recycling. An element of the strategy is the need for a 'raw materials diplomacy' anchored in wider policies towards third countries such as promoting human rights, good governance, conflict-resolution, non-proliferation and regional stability. This section examines results to date on identifying critical raw materials, and in the areas of trade, development, research, and resource efficiency and recycling. Section 5 looks at next steps.

4.1. Identifying critical raw materials

The Commission has identified 14 critical raw materials at EU level (see annex), with Member States and stakeholders, and has developed a transparent, innovative and pragmatic methodological approach to defining 'criticality'[31].

Critical raw materials are those which display a particularly high risk of supply shortage in the next 10 years and which are particularly important for the value chain. The supply risk is linked to the concentration of production in a handful of countries, and the low political-economic stability of some of the suppliers. This risk is in many cases compounded by low substitutability and low recycling rates. In many cases, a stable supply is important for climate policy objectives and for technological innovation. For example, rare earths are essential for high performance permanent magnets in wind turbines or electric vehicles, catalytic converters for cars, printed circuit boards, optical fibres, and high temperature superconductors.

The EU is completely dependent on imports, with China accounting for 97 % of world production in 2009. At the same time, no recycling or substitution processes for rare earths are currently commercially viable.

The work on identifying critical raw materials also revealed the need for better data and knowledge, and on the need to update regularly the list of raw materials to take into account market developments, technological developments (for example, lithium, hafnium and nickel), or new information on the environmental impact of a material. It further concluded that policy actions should not be limited to critical raw materials exclusively.

4.2. Implementing the EU trade strategy for raw materials

There have been a number of achievements under the trade policy chapter since 2008. An EU trade strategy for raw materials has been defined and a first annual report has been published[32]. To date the following results can be reported in the three main areas:

- The EU proposed trade disciplines on export restrictions (including bans, quotas, duties and non-automatic export licences) in all relevant negotiations, bilateral or multilateral (for example in the Free Trade Agreement with Korea and in provisions on export duties on a series of raw materials, including wood, in the context of Russia's WTO accession).
- Regarding enforcement, the Commission has continued to tackle barriers primarily through dialogue, but when no progress was registered has been ready to use other tools including WTO dispute settlement.
- In terms of outreach, the Commission has addressed the raw materials issue in various bilateral dialogues and in the OECD. Following the co-organisation of a workshop dedicated to the issue at the end of 2009, the topic was put on the OECD's work programme for 2011–12.

30 COM(2008) 699 Communication 'The raw materials initiative — meeting our critical needs for growth and jobs in Europe'.

31 'Critical raw materials for the EU'. Report of the RMSG Ad-hoc working group on defining critical raw materials June 2010.

32 DG Trade — Raw materials policy — 2009 annual report (http://ec.europa.eu/trade/creating-opportunities/trade-topics/raw-materials/).

4.3. Development instruments

Actions have been launched under the 10th EDF mainly within the good governance approach ('strengthening states'). Projects were also financed by the EU-Africa Infrastructure Fund, through the EIB lending to mining projects or the Seventh Framework Programme for Research and Development for geological surveys. The Commission is also supporting a sound investment climate through initiatives such as country-specific technical assistance for greater revenue transparency through the Extractive Industries Transparency Initiative, and work to promote good governance in tax matters[33].

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4.4. New research, innovation and skills opportunities

The EU has taken steps to improve its knowledge base on actual and future deposits of many important raw materials and to stimulate the extractive industry to deliver new products to the manufacturing industry through the Seventh Framework Programme for Research and Development. The project ProMine, launched in 2009 with a € 17 million budget, will develop the first pan-European satellite-based mineral resources database and a 4D computer modelling system to help to assess the value of European mineral resources. Funding has been provided to projects on advanced underground technologies for intelligent mining, on substitution of critical raw materials such as rare earths and platinum group metals, and on coordination of activities in Member States in the area of industrial handling of raw materials through ERA-NET. Support has been provided for the development of the biorefinery concept, that will contribute to provide new high value added products, and the European Technology Platforms on Sustainable Mineral Resources and Forest-Based Sector Technology are important drivers of new research efforts in relation to raw materials.

The European Regional Development Fund also provides funding for research, innovation and business support measures for raw material exploration and extraction, while the Erasmus Mundus Minerals and Environmental Programme (2009–13) supports the generation of new skills in the area of raw materials.

4.5. Guidelines on the implementation of Natura 2000 legislation

In response to concerns about how to manage the sometimes competing objectives of ensuring a high level of environmental protection in Natura 2000 areas and the development of competitive extractive activities, the Commission has developed guidelines on how to apply the Natura 2000 decision-making framework. This underlines, for example, that there is no automatic exclusion of non-energy extraction activities in or near Natura 2000 areas[34]. The Commission has also provided guidance that presents examples of good practice for exploiting wood resources while ensuring sustainable forest management[35].

4.6. Increased resource efficiency and improved conditions for recycling

The concept of sustainable use of natural resources is increasingly being mainstreamed into EU policy initiatives to promote growth and competitiveness[36]. Member States have implemented various policies and practical instruments to improve resource efficiency. A major policy issue is the need for legal clarity for defining when reprocessed waste can be reclassified as a product. The Commission under the Waste Framework Directive is developing 'End-of-Waste' criteria for specific waste streams, and work is advancing on rules for ferrous metals and aluminium, copper, recovered paper and glass.

Since 2008, the Commission has worked to prevent illegal export, or dumping, of waste by supporting Member States in implementing the Waste Shipment Regulation. It is considering guidelines for the shipment of used and waste vehicles. Concerning the stream of waste from electrical and electronic equipment (WEEE), the Commission has proposed an ambitious new collection target which would ensure that 85 % of the WEEE stream would be available for the recovery of valuable raw materials contained, instead of being lost through improper treatment. In addition it has proposed stricter rules for the categorisation for shipment of 'used' electronics and electrical goods which will require exporters of such equipment to provide proof of functionality for every item exported for re-use.

33 COM(2010) 163, 'Co-operating with Developing Countries on Promoting Good Governance in Tax Matters'.

34 http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

35 Good practice guidance on the sustainable mobilisation of wood in Europe. European Commission, Forest Europe, FAO 2010.

36 See COM(2011) 21 'A resource-efficient Europe: flagship initiative under the Europe 2020 strategy'.

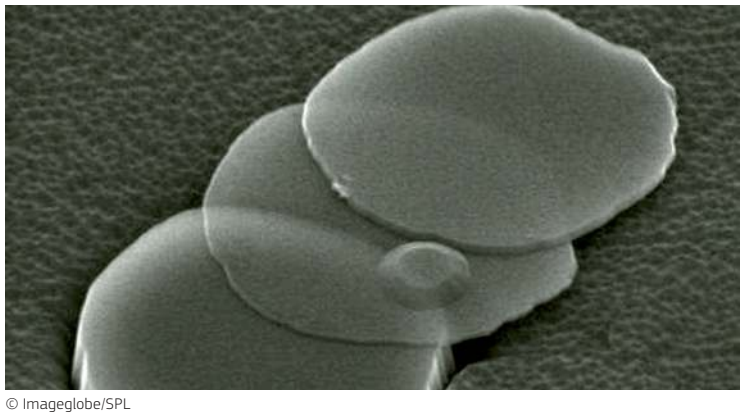
5. Future orientations of the Raw Materials Initiative

While significant progress has been made in implementing the RMI, further improvements are necessary. An integrated approach based on the three pillars is essential, as each contributes to the objective of ensuring a fair and sustainable supply of raw materials to the EU.

5.1. Monitoring critical raw materials

Securing supplies of raw materials is essentially the task of companies and the role of public authorities is to ensure the right framework conditions to allow companies to carry out this task. The Commission intends to explore with the extractive, recycling and user industries the potential for targeted actions, notably with regard to recycling. It is also ready to examine with Member States and industry, the added value and feasibility of a possible stockpiling programme of raw materials. At EU level, the stockpiling programme for oil aims to protect public security for Member States and EU[37]. The Commission will:

- monitor the issues of critical raw materials to indentify priority actions, and will examine this with Members States and stakeholders;
- regularly update the list of critical raw materials at least every 3 years.



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5.2. Fair and sustainable supply of raw materials from global markets (pillar 1)

The EU will actively pursue a 'raw materials diplomacy' with a view to securing access to raw materials, in particular the critical ones, through strategic partnerships and policy dialogues.

5.2.1. Development policy and sustainable supply of raw materials

Sustainable mining can and should contribute to sustainable development. However, many developing countries — especially in Africa — have not been able to translate their resource wealth into sustainable and inclusive growth, often because of governance issues related to regulatory frameworks or taxation. Enhancing governance and transparency, as well as the trade and investment climate, in the raw materials sector, is essential for achieving inclusive growth and sustainable development in resource-rich countries. The EU, through its development policies and in partnership with developing countries, can play a crucial role in creating win-win situations where both developed and developing countries benefit from the sustainable supply of raw materials, and in using domestic financial resources from the mining sector for sustainable development to support the objectives of inclusive growth and poverty reduction strategies.

The Commission will consider further these issues in the context of the Green Paper consultation process on the future of EU development policy and budget support as well as in its public consultation on country-by-country reporting[38]. The EU will encourage partner governments to develop comprehensive reform programmes that clearly identify objectives such as improving mining taxation regimes or enhancing revenue and contract transparency, or enhancing the capacity for using revenues to support development objectives. Greater transparency will help society at large and national supervisory bodies to hold governments and companies to account for revenue payments and receipts, and thus decrease fraud and corruption and ensure a more predictable trade and investment climate.

In Addis Ababa in June 2010 the Commission agreed with the African Union Commission (AUC) to establish bilateral co-operation on raw materials and development issues based on the RMI and the AUC's policy on mining and minerals, i.e. the 2009 'African Mining Vision'. This co-operation will

37 Council Directive 2009/119/EC of 14 September 2009.

38 http://ec.europa.eu/internal_market/consultations/2010/financial-reporting_en.htm

focus on three areas: governance, investment and geological knowledge/skills. Under the Africa-EU Joint Strategy 2011–13, agreed at the Africa-EU Summit held in November 2010, actions on raw materials are foreseen under the Trade, Regional Economic Integration and Infrastructure Partnership. The EU and its Member States will work jointly on these issues. The Commission proposes to:

- enhance European financial and political support for the Extractive Industries Transparency Initiative (EITI), and help developing countries to implement it;
- share best practice with international organisations such as the World Bank, IMF, and the African Development Bank;
- examine ways to improve transparency throughout the supply chain and tackle in co-ordination with key trade partners situations where revenues from extractive industries are used to fund wars or internal conflicts;
- promote more disclosure of financial information for the extractive industry, including the possible adoption of a country-by-country reporting requirement. The Commission will take into account progress made by the International Accounting Standards Boards on an International Financing Reporting Standard for extractive industries, as well as the current status of legislation of third countries active in the region[39];
- promote the application of EU standards by EU companies operating in the developing countries and the application of the Best Available Technique Reference document and by developing a code of conduct of EU companies operating in third countries; and
- support the work by the OECD on due diligence in the mining sector;
- continue to assess — with African countries — the feasibility of assisting further co-operation between both continents' geological surveys and to promote co-operation in this area in multilateral fora such as UNESCO's Geosciences Programme.

Resource-rich developing countries often suffer from a lack of transport, energy and environmental infrastructure which limits their ability to harness their mineral wealth for the benefit of their populations.

The European Commission, the European Investment Bank (EIB), and other European development financing institutions, in co-operation with African national and regional authorities, will continue to assess how to promote the most appropriate infrastructure, and related governance issues, that can contribute to the sustainable use of the resources of these countries and facilitate raw materials supply, using respective sector dialogues to steer this process. In particular, the European Commission will assess (a) the feasibility of increasing lending (which may include grant-loan elements) to industry, including mining and refining projects and in particular post-extractive industries and (b) investigate the possibility of promoting financial instruments that reduce risk for operators on the basis of guarantees supported by EU, including by the European Development Fund. The existing EU-Africa Infrastructure Trust Fund[40] could also assist African countries in this task.

Development policy should also target the creation of linkages from the extractive industry towards local industry, by improving the value chain and maximising diversification. Therefore, an enabling business capacity building should be fostered and trade agreements provide the necessary flexibility to achieve this aim. The EU can also help developing countries increase their geological knowledge[41] to allow them to better estimate national mineral reserves, better plan budgets based on expected revenues from these reserves and give increased bargaining power vis-à-vis mining firms.

5.2.2. Reinforcing the raw materials trade strategy

The Commission intends to reinforce the Raw Materials Trade Strategy[42] as set out in section 4.2 in line with development and good governance objectives. The Commission considers that the EU should:

- continue to develop bilateral thematic raw materials dialogues with all relevant partners, and strengthen ongoing debates in pluri – and multilateral fora (including e.g. G20, UNCTAD, WTO, OECD); carry out further studies to provide a better understanding of the impact of export restrictions on raw materials markets, and foster a dialogue about their use as a policy tool;
- further embed raw materials issues, such as export restrictions and investment aspects, in ongoing and future EU trade negotiations in bilateral, plurilateral and multilateral frameworks;
- pursue the establishment of a monitoring mechanism for export restrictions that hamper the sustainable supply of raw materials, and will continue to tackle barriers distorting the raw materials or downstream markets with dialogue as the preferred approach, but using dispute settlement where justified;

39 For example on due diligence and reporting requirements by companies which are part of the supply chain of raw materials e.g. US Dodd Frank Wall Street Reform and Consumer Protection Act.

40 The purpose of the Trust is to benefit cross-border and regional infrastructure projects in sub-Saharan Africa.

41 For example, the AEGOS project brings the EU's and Africa's geo-surveys together to improve the level and quality of resource data available for Africa.

42 DG Trade — Raw materials policy — 2009 annual report.

- encourage in OECD activities the inclusion of relevant non-OECD members in the work on raw materials, and explore further multilateral and plurilateral disciplines including consideration of best practices;
- use competition policy instruments to ensure that supply of raw materials is not distorted by anti-competitive agreements, mergers or unilateral actions by the companies involved;
- take forward the above mentioned actions, and further analyse priorities for raw materials in relation to third countries through autonomous measures, bilateral and multilateral frameworks and dialogue; and continue to pursue a consistent EU trade policy on these priorities.

5.3. Fostering sustainable supply within the EU (pillar 2)

The Europe 2020 strategy underlines the need to promote technologies that increase investment in the EU's natural assets. Extractive industries fall under this category but its development is hindered by a heavy regulatory framework and competition with other land uses. Many regulatory issues in this area are the competence of Member States. The Commission therefore acts mainly as a facilitator for the exchange of best practices.

At the same time, extraction in the EU must occur in safe conditions. This is important both for the image of the sector and as a precondition for the public acceptance. The Commission considers that the following practices[43] are particularly important in promoting investment in extractive industries:

- defining a National Minerals Policy, to ensure that mineral resources are exploited in an economically viable way, harmonised with other national policies, based on sustainable development principles and including a commitment to provide an appropriate legal and information framework;
- setting up a land use planning policy for minerals that comprises a digital geological knowledge base, a transparent methodology for identifying mineral resources, long-term estimates for regional and local demand and identifying and safeguarding mineral resources (taking into account other land uses) including their protection from the effects of natural disasters;
- putting in place a process to authorise minerals exploration and extraction which is clear, understandable, provides certainty and helps to streamline the administrative process (e.g. the introduction of lead times, permit applications in parallel, and one-stop-shop).

The Commission proposes to assess with the Member States, in full respect of the subsidiarity principle, the feasibility of establishing a mechanism to monitor actions by Member States in the above area, including the development of indicators.

It is also important to further enhance the knowledge base necessary for an efficient raw materials strategy. In the short term the Commission proposes to assess with the Member States the scope for increased synergies between national geological surveys, that would allow for economies of scale, reduced costs and increased potential to engage in joint projects (e.g. harmonised minerals database, European Raw Materials Yearbook). In the medium term, any synergies should contribute to an improved European raw materials knowledge base in a co-ordinated way, in particular taking into account future opportunities within the GMES programme. For some raw materials, such as wood, the growing demand for renewable energy continues to increase competition for them. Increased demand is not always matched by a corresponding supply increase, thereby leading to higher prices.

The Commission intends to:

- promote the work of UNECE in the area of standardisation concerning reporting of reserves and resources at EU level;
- carry out an appropriate analysis on the availability of wood and recovered paper taking into account the potential demand from both the forest based industries and the renewable energy sector (biomass);
- continue to support the creation of sectoral skills councils at European level when an initiative comes from stakeholders such as social partners or the relevant observatories;
- promote research and development in the raw materials value-chain including extraction, processing and substitution.

43 'Improving framework conditions for extracting minerals for the EU'. Report of the RMSG Ad-hoc working group on exchanging best practices on land use planning, permitting and geological knowledge sharing. June 2010.

5.4. Boosting resource efficiency and promoting recycling (pillar 3)

As worldwide demand for raw materials increases, greater efforts will have to be made on recycling. Higher recycling rates will reduce the pressure on demand for primary raw materials, help to reuse valuable materials which would otherwise be wasted, and reduce energy consumption and greenhouse gas emissions from extraction and processing. In the framework of the Europe 2020 flagship initiative on resource efficiency, the Commission will present in 2011 a roadmap for a resource-efficient Europe. It will set out a vision of structural and technological changes required to move to a low-carbon, resource-efficient and climate-resilient economy by 2050 and how we can make this transition happen through policies delivering most benefits for the EU's growth, jobs and energy security.

'Urban mining', which is the process of extracting useful materials from urban waste, is one of the main sources of metals and minerals for European industry. The use of secondary raw materials contributes to resource efficiency, to the reduction of greenhouse gas emissions and to the preservation of the environment. However, the full potential of many of these resources is not being exploited and although recycling of municipal waste in the EU has doubled in 10 years, there are large differences in the situation in the Member States. Given pressures to reduce carbon emissions, protect human health and reduce external dependence, the barriers which prevent recycling need to be further addressed. The Commission considers that these barriers fall into three broad categories: 'leakage' of waste to sub-standard treatment inside or outside the EU; obstacles to the development of the recycling industry; and inadequate innovation in recycling.

Better implementation and enforcement of existing EU waste legislation is essential for promoting a more resource-efficient Europe. The Commission proposes therefore to:

- review the Thematic Strategy on waste prevention and recycling in 2012 to develop best practices in collection and treatment of key waste streams, in particular those which contain raw materials with a negative impact on the environment. When necessary, the availability of recycling statistics will be improved;
- support research and pilot actions on resource efficiency and economic incentives for recycling or refund systems;
- carry out an an ex-post evaluation of the EU waste ***acquis***, including an assessment of areas where legislation in the various waste streams could be aligned to improve coherence. This would include the effectiveness of deterrents and penalties for breaches of EU waste rules;
- review the action plan on sustainable consumption and production in 2012 to identify what additional initiatives are necessary in this area;
- analyse the feasibility of developing ecodesign instruments (i) to foster more efficient use of raw materials, (ii) ensure the recyclability and durability of products and (iii) promote the use of secondary raw materials in products, notably in the context of the Ecodesign Directive; and
- develop new initiatives to improve the competitiveness of EU recycling industries notably by introducing new market based instruments favouring secondary raw materials.

The problem of environmental dumping of waste products also occurs in cases of illegal shipment of waste to third countries. To further strengthen the enforcement of the Waste Shipment Regulation, the Commission proposes to:

- ensure precise and workable inspection standards for waste across the EU in 2011. This will allow for further efforts in 2012 to facilitate the control of shipments by customs authorities;
- consider using FP7 research funding to help improve technologies for detection, identification, tracking and location of illegal shipments;
- examine the feasibility of applying a global certification scheme for recycling facilities to the export of waste streams, building on environmentally-sound management criteria;
- build on IMPEL[44], work with Member States to assess the feasibility of a formal EU-level mechanism for the enforcement of the EU *acquis*.

5.5. Innovation: a cross-cutting issue

Raw materials are essential inputs for the competiveness of industry and for the development of many environmentally-friendly, clean-technology applications. Innovation is key to the EU's potential in this area and can play a role in addressing the challenges of the three pillars of the RMI. There is a need for innovation along the entire value chain, including extraction, sustainable processing, eco-design, recycling, new materials, substitution, resource efficiency and land use planning. The Commission will assess whether to launch an Innovation Partnership on raw materials within the Europe 2020 Flagship on Innovation Union[45].

44 European Union Network for the Implementation and Enforcement of Environmental Law.
45 COM(2010)546.

6. Way forward

Access to commodities and raw materials is essential to maintaining the productive capacity of the economy and securing the well being of citizens. These commodities and raw materials are sourced from across the globe as well as from within Europe. The challenge is to ensure that commodity and raw materials needs are met in a way which supports wider goals for development in source countries, environmental protection, open trade and stable markets which do not pose risks to the wider economy.

Across all classes of commodities and raw materials, there has been an increase in financial activity. Ensuring that this development supports and does not undermine access to commodities and raw materials or destabilise the European economy or the economies of developing countries is therefore a key policy concern at European level and international level. These markets must continue to serve the real economy by helping price formation and allowing the hedging of market risk.

The prices of commodity derivatives and underlying physical commodities are interlinked. Their dynamics are challenging established paradigms and understanding commodity prices is becoming increasingly difficult. The integrity and transparency of commodity derivative markets needs to be enhanced and the Commission considers there is a need to promote greater understanding of these developments. For this reason, the Commission has launched several initiatives in the field of financial services, as referred to in section 3.2, and will examine the extent to which further improvements are necessary on the transparency and accessibility of information on physical commodity markets. This increased transparency of financial as well as physical trading activities should allow regulators and market participants to better understand the interaction between financial and physical commodity markets, and help to prevent abusive practices.

The Commission will also consider further policy options to strengthen security of food supply. It will feed its work on each of these issues into G20 activities this year, in particular in the light of the priority given by the French presidency to addressing commodity prices and food security.

Given that a sustainable demand and supply of raw materials is a major on-going challenge, the Commission also intends to reinforce implementation of its raw materials initiative in an integrated strategy based on its three pillars. Furthermore, the Commission will hold regular public discussion through an annual thematic event that would promote the awareness of the challenges ahead and take stoke of the progress made.

Annex

Concentration of production of critical raw materials, and recycling and substitution rates

The 14 raw materials listed below are critical because the risks of supply shortage and their impacts on the economy are higher compared with most of the other raw materials. Their high supply risk is mainly due to the fact that a high share of the worldwide production mainly comes from a handful of countries: China (antimony, fluorspar, gallium, germanium, graphite, indium, magnesium, rare earths, tungsten), Russia (platinum group metals), the Democratic Republic of Congo (cobalt, tantalum) and Brazil (niobium and tantalum). This concentration of production is in many cases compounded by low substitutability and low recycling rates.

Raw materials	Main producers (2008, 2009)	Main sources of imports into EU (2007 or 2006)	Import dependency rate	Substitutability	Recycling rate
Antimony	China 91%	Bolivia 77%	100%	0.64	11%
	Bolivia 2%	China 15%			
	Russia 2%	Peru 6%			
	South Africa 2%				
Beryllium	USA 85%	USA, Canada, China, Brazil (*)	100%		
	China 14%				
	Mozambique 1%				
Cobalt	DRC 41%	DRC 71%	100%	0.9	16%
	Canada 11%	Russia 19%			
	Zambia 9%	Tanzania 5%			
Fluorspar	China 59%	China 27%	69%	0.9	0%
	Mexico 18%	South Africa 25%			
	Mongolia 6%	Mexico 24%			
Gallium	NA	USA, Russia (*)	(*)	0.74	0%
Germanium	China 72%	China 72%	100%	0.8	0%
	Russia 4%	USA 19%			
	USA 3%	Hong Kong 7%			
Graphite	China 72%	China 75%	95%	0.5	0%
	India 13%	Brazil 8%			NA
	Brazil 7%	Madagascar 3%			
		Canada 3%			
Indium	China 58%	China 81%	100%	0.9	0,30%
	Japan 11%	Hong Kong 4%			
	Korea 9%	USA 4%			
	Canada 9%	Singapore 4%			
Magnesium	China 56%	China 82%	100%	0.82	14%
	Turkey 12%	Israel 9%			
	Russia 7%	Norway 3%			
		Russia 3%			
Niobium	Brazil 92%	Brazil 84%	100%	0.7	11%
	Canada 7%	Canada 16%			
	South Africa 79%	South Africa 60%	100%	0.75	35%
Platinum group metals	Russia 11%	Russia 32%			
	Zimbabwe 3%	Norway 4%			
Rare earths	China 97%	China 90%	100%	0.87	1%
	India 2%	Russia 9%			
	Brazil 1%	Kazakhstan 1%			
Tantalum	Australia 48%	China 46%	100%	0.4	4%
	Brazil 16%	Japan 40%			
	Rwanda 9%	Kazakhstan 14%			
	DRC 9%				
Tungsten	China 78% (6.1)	Russia 76%	73%	0.77	37%
	Russia 5% (6.5)	Bolivia 7%			
	Canada 4%	Ruanda 13%			

(*) subject to strong fluctuations

Note: import dependence is calculated as 'net imports / (net imports + production in EU)'

Source: compiled on the basis of Report 'Critical raw materials for the EU' by the Ad-hoc working group on defining critical raw materials of the Raw Materials Supply Group. June 2010.

Making raw materials available for Europe's future well-being

Proposal for a European Innovation Partnership on Raw Materials

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 29 February 2012

COM(2012) 82 final

1. Introduction

The strategic importance of a sustainable supply of raw materials to the EU — for its industry and society as a whole — has been well recognised in different strategic policy documents such as the Raw Materials Initiative[1] proposed by the European Commission, related Council Conclusions[2] and Report from the EP[3]. The Europe 2020 strategy highlighted the importance of this issue both within the 'Industrial policy'[4] and 'Resource efficiency'[5] Flagship initiatives. Moreover, the importance of an efficient use of resources has been highlighted in the associated Roadmap on Resource Efficiency[6]. These documents clearly outlined the new challenges and risks related to supply shortages and of an inefficient use of resources faced by the EU in view of the mounting global competition for raw materials. Paradoxically, for some decades, Europe has seen its role as a supplier of raw materials being progressively reduced. The complexity and urgency of the issues at stake have made it very clear that a continuation of 'business as usual' is no longer an option for Europe.

This is where innovation comes into play. A new paradigm is emerging in the 21st century which points us to innovation as a driving force that has, so far, remained largely untapped in Europe in the area of raw materials. In 2010 the Commission has set out, as part of the Innovation Union flagship initiative[7], the appropriate framework of European Innovation Partnerships (EIPs). Such Partnerships will be launched in cases where the combined strength of public and private efforts at regional, national and EU level in innovation and R&D and demand-side measures are needed to achieve societal targets quicker and more efficiently. This is the case for raw materials as presented in this Communication.

This Partnership will target non-energy, non-agricultural raw materials, including but not limited to the EU's list of critical raw materials[8]. Hence it also covers other metallic ones, industrial and construction minerals as well as other industrial raw materials such as natural rubber and wood. Many of these materials are vital inputs for innovative technologies that offer environmentally-friendly, clean-technology applications. They are also essential for the manufacture of crucial alloys, new and innovative products required by our modern society like, for instance, batteries for electric cars, photovoltaic systems and devices for wind turbines, which enable meeting the renewable energy objectives. The common objective of this Partnership will be that, by 2020, Europe will have made a great step in reducing its import dependency on raw materials. This will be achieved through accelerating innovations that ensure secure, sustainable supplies of both primary and secondary raw materials or prevent wastage of key raw materials during all their life cycle.

This proposal takes into account the lessons learnt in the context of the pilot EIP 'Active and Healthy Aging'. It also builds on various inputs from Member States, research communities and other stakeholders gathered in the context of different meetings, workshops and events as well as a public consultation which were organised throughout 2010 and 2011.

1 COM(2008) 699 and COM(2011) 25.
2 Council Conclusions 6909/11 of 10 March 2011.
3 European Parliament resolution of 13 September 2011.
4 COM(2010) 614.
5 COM(2011) 21.
6 COM(2011) 571 final.
7 COM(2010) 546.

8 As defined in COM(2011) 25.

2. Opportunities for **innovation** along the raw materials **value chain**

For many years the basic geological **exploration** and mapping in the EU has been carried out by national geological surveys that have to operate within the constraints of national frameworks and regulations. Today, the full benefits of an appropriate coordination or even integration of some of the activities of the EU's different 27 geological surveys has not been achieved. Yet, innovative thinking based on increased networking and cooperation offers a huge potential to move forward. Setting European standards will facilitate the creation of a uniform EU geological knowledge base, and can also lead to a more cost-effective development and use of required modern technologies, such as satellite-based resource information and advanced 4D computer modelling systems.

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Over the last 50 years the EU's share in global **mining** has decreased substantially. This has resulted in a loss of essential expertise and skills. However, such skills are required to ensure the safety of mining activities and to meet the potential growing need to extract more deeply, in remoter areas and under harsh conditions (e.g. seabed, Arctic region). While high standards for safer and more environmentally-friendly extraction techniques create new challenges, they also create new market opportunities. It would also help reduce the risk of major accidents in the mining sector. However, these expertise and skills are not only requested in extraction, but along the whole value chain (exploration, processing, recycling, substitution).

Even if Europe, as a whole, has made significant progress, notably in terms of waste recycling, more can be done to avoid the wastage of valuable raw materials at all stages of their life cycle. A full application of the first steps of European 'waste hierarchy' (prevention, followed by preparation for re-use and recycling) could avoid irremediable loss of valuable resources and create new business and job opportunities in the EU.

Innovation can be a powerful vehicle in meeting these challenges. Expertise in engineering and processing has developed in other emerging areas such as in robotics and in other key enabling technologies (KETs). The introduction of advanced remote-controlled operations and automation in underground mines and the innovative use of bioleaching to extract nickel and other metals in an eco-friendly and cost-effective way render mining in the EU more competitive and sustainable. New monitoring techniques including the use of satellite based technologies could allow preventing major accidents. Innovation is also very important for the **processing** stage where advanced technological solutions are needed for efficient water management, energy consumption and recycling (as for example in the case of critical raw materials like indium and gallium which are derived from base metals).

The more advanced the EU becomes in developing this innovative approach, the better equipped it will become in playing a leading role in introducing new environmentally-friendly and resource-efficient technologies, in Europe and in third countries. This may have an additional positive side-effect through the dissemination of best practices, which will in turn contribute to a better preservation of the environment worldwide. Sustainable and resource-efficient management of raw materials, increasing preparation for re-use and recycling, harvesting and mobilisation of wood-based materials can contribute not only to halt biodiversity losses, to reduce worldwide Green House Gas emissions but also to secure supply of raw materials and address scarcity of, for example, wood-based fibre for recycling, in Europe.

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The huge increase in sales of modern communication devices — such as mobile phones and laptops — that tend to have a high replacement rate, has created a huge potential of valuable waste ('our Urban mines'). A mobile phone contains today more than 40 different raw materials, such as cobalt, gallium, platinum and rare earths elements. Nowadays, each citizen in the EU generates around 17 kg of electrical and electronic equipment waste (WEEE) annually, a figure which is predicted to rise to 24 kg by 2020[9]. However, the **recycling** of rare earths elements from electronic devices, for example, is currently challenging from a technological but also an economic point of view. Separate collection of waste has to be further encouraged and markets need to be supported to move ahead. Moreover, preventing illegal exports and inappropriate treatment of waste can lead to considerable environmental benefits and recuperation of valuable materials (e.g. metal scrap, recovered paper for recycling).

New cost-effective and environmentally-sound recycling techniques and best practices regarding the collection and treatment of waste offer the possibility to improve the recycling of key raw materials. As an illustration, the recent development of special adhesives that contain encoded information on the basis of unique chemical identifiers may contribute to the fight against illegal trafficking and theft of metal products and scrap. In addition, some Member States have substantially increased their collection and recycling rates by putting in place appropriate economic instruments including performing producer responsibility schemes to support separate collection, re-use and recycling.

Moreover, many applications rely on key raw materials that are currently very difficult, or even virtually impossible, to substitute due to their specific physical and chemical properties. **Substitution** can be used to either develop alternative materials in certain applications, or to replace those applications by an equivalent technology that does not rely on the key raw materials. For example, the development of ceramic high-temperature superconductors could become a substitute for permanent magnets in wind turbines which currently use rare earth elements such as neodymium and dysprosium.

In a nutshell, the above examples show that:

- innovation is a necessary condition for Europe to regain a role and a presence in the resource-efficient use and sustainable supply of raw materials, without which the sustainability of its entire economy will be undermined;
- innovation is needed to maintain and improve the competitiveness of the EU industry and to ensure an efficient use of resources in the European Union;
- innovation is needed along the entire raw materials value chain, thus requiring a comprehensive approach to tackle the different challenges the EU will face in the coming years.

This situation calls for targeted innovation and research efforts, breakthrough technologies and multidisciplinary approaches to bridge the gaps in our knowledge.

9 Source IPA (International Platinum Group Metals Association): www.ipa-news.com

3. Added value of the European Innovation Partnership in Raw Materials

The support already provided by the Council and the European Parliament to the EU raw materials and resource efficiency strategies put forward by the Commission demonstrates that there is a growing awareness of the need to tackle the above-mentioned challenges at both European and national levels. Closer cooperation in the EU between public bodies, but also between public and private players, will provide the impetus needed to overcome the major obstacles.

These obstacles include (see also section 1.3 in annex):

- insufficient critical mass towards a single objective;
- insufficient co-operation between Member States in different domains related to raw materials;
- lack of integrated approach to 'value chains' from extraction and process of raw material, product design and use to end of life;
- very limited co-operation between national research organisations and high fragmentation of the European Research Area in the field;
- under-developed EU geopolitical role in ensuring access for European companies to raw materials in the world while respecting as far as possible European environmental standards.

The EIP's real added value will therefore be to provide a platform that aims to put together the relevant policies and actors at Community level, but without replacing the existing legal decision-making process at EU level.

3.1. Scope and objectives

This EIP will contribute to the mid- and long-term security of sustainable supply of raw materials (including critical raw materials, industrial minerals and wood-based materials) that are required to meet the fundamental needs of a modern resource-efficient society. It is an essential contribution to the competitiveness of European industries, to increased resource efficiency in the EU, and to the development of new European-based recycling activities.

The EIP has an overall target of reducing Europe's import dependency on the raw materials that are critical to Europe's industries. This will be achieved by providing Europe with enough flexibility and alternatives in the supply of important raw materials, whilst taking into account the importance of mitigating the negative environmental impacts of some materials during their life cycle, thus making Europe the world leader in the capabilities related to exploration, extraction, processing, recycling and substitution by 2020. As part of its Strategic Implementation Plan (SIP), the EIP will be expected to set out impact targets to measure its success, for example in terms of major reductions in the import dependency of some of the most critical raw materials.

In addition, the Commission proposes some specific, concrete targets to be achieved by 2020 at the latest, such as:

- European standardised statistical instruments for the survey of resources and reserves (land and marine) and a 3D geological map;
- a dynamic modelling system linking trends in supply and demand with economical exploitable reserves and a full lifecycle analysis including an assessment of the environmental, economic and social impacts of various scenarios;
- up to ten innovative pilot actions (e.g. demonstration plants) for exploration, extraction and processing, collection and recycling;
- substitutes for at least three key applications of critical and scarce raw materials;
- a Network of Research, Education and Training Centres on Sustainable Mining and Materials Management (M^3), whilst ensuring appropriate coordination with the possible European Institute of Innovation and Technology (EIT) - Knowledge and Innovation Community (KIC) on sustainable exploration, extraction, processing and recycling;

- enhanced efficiency in material use and in prevention, re-use and recycling of valuable raw materials from waste streams, with a specific focus on materials having a potentially negative impact on the environment;
- identified opportunities and develop new ideas for innovative raw materials and products with market potential;
- a pro-active strategy of the EU in multilateral organisations and in bilateral relations, such as the US, Japan, Australia in the different areas covered by the EIP.

These targets will also allow for adequate follow-up and monitoring of the functioning of the EIP, including the work to be carried out and the results achieved.

3.2. Mechanisms

The added value of the EIP is that it will apply major innovation mechanisms[10] including the following broad categories, to deliver common objectives (as stated above in section 3.1):

- support to the development of innovations; both technology-based and non-technology-based, such as new combinations of products-services, new services, better design of products in order to ensure their recyclability at the end of their life, user-driven design, new policy tools for research and innovation;
- stimulating excellence in the science base and investing in people (skills);
- support to targeted innovative regulatory action and/or cooperation with Member States to improve innovation-friendly regulatory framework conditions;
- promotion of targeted standardisation and public procurement instruments;
- bringing policy-tools and organisations (policy makers, agencies, industry, researchers) working on supply and on demand-sides together to speed up time-to-market and dissemination of innovations.

The above instruments may act either in the supply or in the demand side of the market. However, on both sides, an adequate monitoring of results must be assured.

SUPPLY-SIDE		DEMAND-SIDE	
National R&I funding by MS and regions Skills and training in MS **International (EU level)** Eureka, Eurostars, ERANet Framework programmes by EU *FP7 (Cooperation, PPPs, Cost, JTIs, ERANet, ESFRI...)* *EIT KICs* *CIP* EIB tools Structural Funds	SCIENCE, RTDI	**National** Regulation (incl. regulatory implementation) Procurement in MS and regions **International (EU level)** Standards / Labelling Regulation (incl. regulatory implementation) Public procurement IP and knowledge transfer Market monitoring **International (worldwide)** Trade policy Policy dialogue	MARKET, CONSUMERS

On the 'supply side', investments in research on mining, substitution, resource efficiency and recycling need to be better aligned with the common objectives of the Innovation Partnership in order to create the necessary critical mass, because no national or European research programme can cover all aspects and the research investments and risks are too large for many private companies. This calls for a strong involvement of existing networks (e.g. ERANET in materials, European Technology Platform on Sustainable Mineral Resources, Forest-based Sector Technology Platform and other ETPs) and the promotion of new networks of researchers and funding organisations, both public and private, in Europe. For the future EU research and innovation programme, Horizon 2020, the Commission has proposed a specific objective to address the societal challenge of 'climate action, resource efficiency and raw materials'.

While Europe has had some tradition in funding research and innovation in this area, there is further significant potential[11] on the demand-side for bringing new products and services to the market. Accelerating the 'time-to-market' of innovations is particularly important for SMEs. Therefore, this EIP should incentivise innovation through both supply and demand-sides, when possible and appropriate via tools such as legislation, public procurement, life cycle analysis, IPR and standards. Innovation

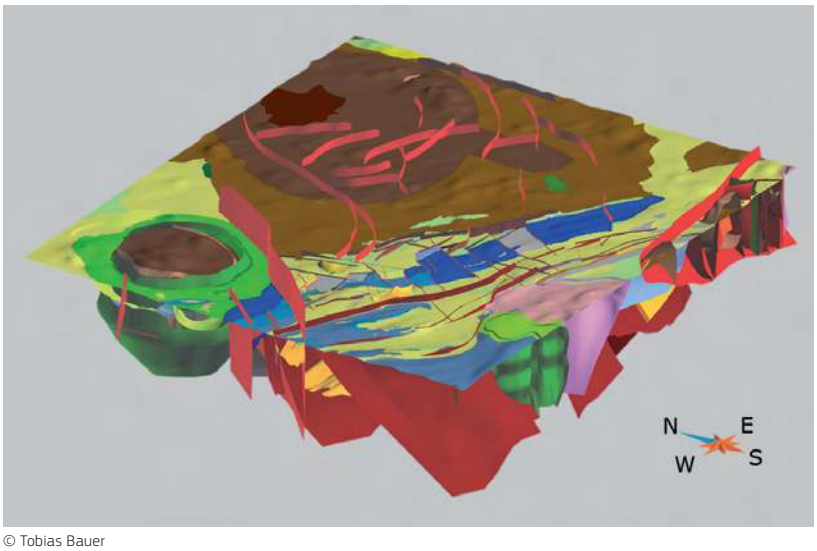
10 As defined in COM(2010) 546..

11 See 2006 Aho Report 'Creating an Innovative Europe, the 2007 Lead Market Initiative and the 2010 OECD Innovation Strategy.

related to Sustainable Consumption and Production policies should be particularly relevant. Incentives for sustainable and innovation-friendly public procurement already exist in Europe, and Lead Market Initiative's type networks of public procurers[12] could be established and the wider use of EU Green Public Procurement criteria[13] applied in this EIP to promote the uptake and dissemination of (eco-) innovations.

3.3. Work packages

Based on inputs from stakeholders and from policy-makers, the possible actions to be taken have been grouped under five headings or 'work packages' (WPs). These WPs, which will include actions both on the supply and on the demand-side, will not work on a stand-alone mutually-exclusive basis. Rather, the individual WPs will interact with one another and there is even some intentional overlap between them. Moreover, they can be adapted to address changing needs and to capture new opportunities.



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The governance structure will encourage cooperation, thereby breaking down walls between policies, sectors, geographical distance or organisational cultures. For example, some mining technologies could also be applied in recycling, or vice versa. It will also be a way to introduce better cooperation between large companies and SMEs, as well as among SMEs themselves, for example through regional clusters.

The following work packages for the EIP are proposed (a detailed description of each WP is outlined in section 2 of annex):

Technology-focussed policy areas

WP 1 — Developing innovative technologies and solutions for sustainable and safe raw materials supply; extraction, processing and recycling. Complementing technology development, this WP aims to produce standardisation roadmaps for these areas, while having in mind costs for business.

WP 2 — Developing innovative and sustainable solutions for the appropriate substitution of critical and scarce materials. The first set of priority actions may be derived from the list of critical raw materials and from the most economically-important and ecologically-sensitive applications.

Non Technology-focussed policy areas

WP 3 — Improving Europe's raw materials regulatory framework, knowledge and infrastructure bases. This WP aims to build and standardise geological data, and to identify and exchange best practices in defining policies for minerals, land planning and regulation thereof in the Member States. It will also support actions to promote technical excellence and skills needed in Europe.

WP 4 — Improving the regulatory framework conditions, notably by promoting excellence and prevention, preparation for re-use and recycling through public (e.g. procurement) and private initiatives. This WP aims at optimising the raw materials added value, improving the profitability and reducing the cost of recycling by enhancing efficiency in the collection, sorting and recycling of valuable raw materials from waste streams. It will also apply product, standardisation and certification policies as well as economic instruments for this aim.

International cooperation – horizontal approach

WP 5 — recognises the global market place of securing access to raw materials and promoting the use of environmentally-friendly extraction and processing technologies, and may deal with research and innovation, improving the knowledge base, trade policy and policy dialogue with international organisations, such as the African Union, OECD, World Bank, G20, and in bilateral relations. A particular attention will be paid to the possibility of better synergies between this initiative and the different policies related to Overseas Countries and Territories (OCTs).

12 http://ec.europa.eu/enterprise/policies/innovation/policy/public-procurement/pp-networks_en.htm
13 http://ec.europa.eu/environment/gpp/gpp_criteria_en.htm

3.4. Governance structure

The EIP's governance structure will follow the principles set out in the Innovation Union; it aims to balance the need for high-level commitment and functional coordination on the one hand, with strong decentralised operational responsibilities to ensure effective ownership by practitioners and other key stakeholders on the other. Lessons learnt in the pilot EIP 'Active and Healthy Aging'[14] on defining governance, scope, planning and stakeholder involvement have been applied to meet the needs of this EIP.

This EIP will bring together representatives of the public sector (from EU to national, regional and local levels), industry (including SMEs), civil society and other stakeholders, to support both the development of innovation and its take-up and dissemination in the market. However, the underlying principle is that the EIP will provide a pragmatic, flexible, non-bureaucratic setting that will allow for different interests to be represented.

This approach is reflected in the following working methods at operational level (more details in section 3 in annex):

The **High Level Steering Group** (HLSG) will provide strategic advice and guidance for this EIP on the basis of a well defined mandate. The HLSG will, however, not impinge on the formal decision-making process outlined under Community law. Its composition will reflect the key constituencies in this Partnership, including representatives, appointed in their personal capacity, of Member States, the EP, companies, academics, research centres, NGOs and other institutions. At the same time, the group will be limited in number in order to ensure effectiveness. The HLSG will be entrusted to develop a SIP, recommending priority lines of action. Following the response to this plan, the HLSG will help ensure progress during the start-up phase of the implementation, will steer and report on progress, and will update the SIP. In order to monitor progress, the work of the HLSG will also involve developing impact targets to be achieved by the EIP.

The linkage between the strategic level and the operational level will be provided by the **Sherpa Group** made up by personal representatives of the HLSG. Its main task will be to ensure a smooth running of the partnership including planning of major actions, overall coordination of work packages and preparation of the meetings and follow-up of the High Level Steering Group.

Operational groups will be set up according to specific topics in order to provide advice to the HLSG and to convert the strategic implementation plan into tasks and actions. They will operate on the basis of flexible structures, a temporary time horizon and in close interaction with each other, where needed. In order to ensure that the EIP can benefit fully from existing excellence within the EU, operational groups should aim to have the widest possible coverage (geographical coverage of 27 Member States and from different areas of required expertise), following a transparent nomination procedure. Meetings will be organised in such a way as to maximise the contributions provided by experts.

3.5. Outreach

To maximise a transparent, circular flow of information and accountability throughout the lifetime of the EIP, it will be essential to interact with both the political level as well as with society at large (see also annexes 4 and 5). This will be achieved in two ways. At the political level, the Commission intends to report on an annual basis to the Council and EP. At societal level, the EIP will seek the participation of a wide audience through the organisation of a yearly public event. Thus it will meet a major objective of the Innovation Partnerships, which is to ensure the broadest level of societal engagement.

3.6. Timeline

The Commission welcomes the further views of the European Parliament and Council, as well as wider stakeholders, on this European Innovation Partnership. Subject to the views received, the following milestones are envisaged (details in section 6 in annex):

- from mid-2012: Nomination of HLSG, Sherpa Group and operational groups by EC;
- early 2013: Strategic Implementation Plan finalised by HLSG, and which will be presented by the Commission to the EP and Council (first semester of 2013);
- from mid-2013: implementation started and first annual conference held;
- state of progress assessment (including the governance structure): late 2014 (to take into account the new 2014-20 Multiannual Financial Framework and the new Commission that will be in place).

To underpin the work of this EIP, a number of preparatory actions and studies have already been initiated in 2011. The first deliverables will be completed during 2012 and 2013, so that the EIP can show concrete progress at an early stage. The Commission will organise a review of EIPs during 2013 to take stock of progress.

14 SEC(2011) 1028 final.

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