Policy Research Centre 3rd generation

Sustainable Materials Management

# INTERNATIONAL DISCOURSES AND PRACTICES OF SUSTAINABLE MATERIALS MANAGEMENT

Sander Happaerts

The Policy Research Centre for Sustainable Materials Management brings together six renowned knowledge institutes: KU Leuven, Universiteit Antwerpen, Universiteit Gent, Universiteit Hasselt, HUBrussel and VITO.


Report number: n° 5

Category: Research paper

Leuven, January 2014

**Please refer to this publication as follows:**
Happaerts S. (2014), *International Discourses and Practices of Sustainable Materials Management* (Research Paper n° 5). Leuven: Policy Research Centre on Sustainable Materials Management.

**For more information** sander.happaerts@kuleuven.be

This publication was sponsored by the Flemish Government, under the 2012-2015 Policy Research Centre Programme.

# Contents

# List of abbreviations

| | |
|---|---|
| 10YFP | 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns |
| CLRTAP | Convention on Long-Range Transboundary Air Pollution |
| COP | Conference of the Parties |
| DG Entreprise | Directorate-General for Entreprise and Industry (of the European Commission) |
| DG Environment | Directorate-General for Environment (of the European Commission) |
| DTIE | Division of Technology, Industry and Economics (of UNEP) |
| EAP | Environment Action Programme (of the European Union) |
| EEA | European Environment Agency |
| EIA | Environmental Impact Assessment |
| EIP | European Innovation Partnership |
| ERECON | European Rare Earths Competency Network |
| EREP | European Resource Efficiency Platform |
| EU | European Union |
| EUSDS | EU Sustainable Development Strategy |
| G20 | Group of Twenty Major Economies |
| G8 | Group of Eight |
| IPP | Integrated Product Policy |
| MEA | multilateral environmental agreement |
| OECD | Organisation for Economic Co-operation and Development |
| OVAM | Flemish Public Waste Agency (Openbare Vlaamse Afvalstoffenmaatschappij) |
| POPs | persistent organic pollutants |
| RMI | Raw Materials Initiative |
| SMM | sustainable materials management |
| UN | United Nations |
| UNECE | United Nations Economic Council for Europe |
| UNEP | United Nations Environment Programme |

# Executive summary

This paper analyzes the discourses and practices of international organizations regarding sustainable materials management. It is situated in a broader project that aims to give policy recommendations to the Flemish Government, which has defined high ambitions on that topic.

Sustainable materials management emerged on the international agenda out of environmental concerns, as the soaring use of natural resources generated ever more environmental impacts throughout their life-cycle. In recent years, the concept received a boost due to economic and geopolitical developments related to the global economic crisis and rising and volatile commodity prices.

Under the label of 'resource efficiency', **UNEP** covers a broad programme of initiatives. It designs policy options for countries that still have to take their first steps towards the sustainable management of natural resources. Furthermore, it seeks partnerships with a variety of actors, and is a source of innovative studies. Another important role of UNEP lies the coordination multilateral environmental agreements on natural resources, such as the Minamata Convention.

The **OECD** caters to a more restricted audience and its activities (gathered under the label of 'sustainable materials management') are less varied than UNEP's. Most actors view the OECD as a very useful report-producing organization, with a strategy aimed at knowledge-building. The substantive focus of the OECD's studies is governance-related: the OECD offers general and specific support for policies aimed at sustainable materials management. However, the long tradition of the work on waste weighs heavily on sustainable materials management and in some instances prevents it from reaching its ambitions.

The output of the **G8** and the **G20** is less specific and much more vague. Their role is that of an agenda-setter. Often the first to signal new trends in global economic governance, the G8 and the G20 played a role in shaping the framing of sustainable materials management. When rising commodity prices first caused concern, they helped forge a robust link between an environmental issue and the short-term global economic agenda, the impact of which reached to all other major actors.

The **EU**'s sustainable materials management activities are the broadest and deepest. In the EU, 'resource efficiency' was bombarded as a new environmental policy-making priority, hiding under the camouflage of an economic and internal market agenda. The significance of the European resource efficiency policy lies in its ability to influence or steer new legislation or ongoing legislative reviews. The EU is also the organization where those activities are most deeply rooted in existing policy traditions. That has the advantage that a number of instruments are already in place, but it also bears the risk of being stuck in path dependencies and in policy incoherence.

The paper shows that the global governance on the sustainable management of natural resources contains a multitude of international discourses and practices, and is characterized by **fragmentation**. Two of the most visible oppositions in the policies promoted by international bodies relate to the focus on different types of decoupling and to the diverging perception of scarcity as a problem for global governance.

The study is complemented by provisional policy recommendations for Flanders, to be refined in the remainder of the project. The recommendations propose that the Flemish Government aims for an integrated approach of sustainable materials management, advances its own priorities and a sufficiently high level of ambition internationally, invests in a visibility strategy, and endows the *Flanders' Materials Programme* with a European dimension.

# 0. Background and scope

This paper is part of a project of the Policy Research Centre on Sustainable Materials Management (2012-2015), a multidisciplinary consortium funded by the government of Flanders. The project looks at the global and European context of the transition towards sustainable materials management (SMM), a policy priority of Flanders, that is coordinated by the Flemish Public Waste Agency (OVAM). The project understands SMM as shifting society's behaviour toward meeting its material needs, without destabilizing the natural system nor mortgaging its future. In other words: to preserve the natural capital and reduce the environmental impacts of the materials life-cycles (SuMMa 2011).[1]

In this project's first work package, the discourses and practices of the major international organizations at the global and European level regarding SMM are identified and comparatively analyzed. In my selection of international discourses and practices, the above-mentioned definition of SMM is used as a non-precluding starting point, in order to study those initiatives that appear focused on those goals. In later phases of the project, it could be meaningful to reconsider the definition of SMM, based on the findings of this paper and on other parts of the project.

That analysis is meant to give input to the consequent phases of the project, which look *inter alia* into the practices by selected organizations to propel a genuine transition to SMM, and to the case studies that the multidisciplinary consortium investigates (e.g. Dubois et al. 2014, forthcoming). In addition, this paper and the project as a whole are intended to result in policy recommendations for the Flemish government, with respect to the complex relationship between Flanders's proper ambitions on SMM and the international discourses and practices that relate to it.

[1] In principle, the consortium deals with "all tangible materials extracted from the biosphere or technosphere as resource for human use" (SuMMa 2011: 6).

# 1. Introduction

Since the mid-2000s, political attention for raw materials and natural resources has grown exponentially (see also Andrews-Speed et al. 2012; Buijs & Sievers 2011; Lee et al. 2012; PBL 2011; HCSS 2011). That is the consequence of sharpening volatility of global markets and the sudden price increases of a number of materials, and a concern for potential scarcities. The price increases are an effect of an expanding demand for raw materials, especially originating from the emerging economies such as China, India, Brazil and others, who are faced with a growing population and rising affluence, while the price volatility follows from incongruences between supply and demand. Those developments not only coincide with a global financial and economic crisis, but they are also situated in a larger trend towards a multipolar geopolitical landscape. In that context, volatile global markets and perceived scarcities can become a cause of international economic and political tensions, and possibly even conflicts.[2] Regions and countries that are dependent on the import of different materials become ever more vulnerable in those dynamics. A sustainable management of natural resources or materials is then seen as a strategy for competitiveness or even as a matter of economic survival.

As this paper shows, SMM policies were boosted in recent years due to those economic and geopolitical developments. However, SMM emerged on the global political agenda well before those resource concerns materialized. Environmental concerns lay at the origin, as the soaring use of natural resources generated ever more impacts throughout their life-cycle. As a concept, SMM largely developed in the context of waste and product policies, out of the idea that a life-cycle perspective on materials (e.g. by using waste as a resource) could not only mitigate the exploitation of natural resources but also lesson their impacts on the environment and on human health.

This paper analyzes how different international bodies take up the concept of SMM and initiate practices in that regard. It looks especially at how they develop different discourses and practices on SMM, and assesses those differences in the light of an emerging global governance on the sustainable use of natural resources.

The data underpinning this paper are retrieved from different sources. A broad document analysis was conducted for the different international organizations that are passed in review here. It was supported by a study of the academic literature with respect to SMM, to the international organizations in general, and to their resource-related policies where possible. Moreover, interviews with thirteen policy-makers at the global, European, federal (Belgium) and subnational (Flanders) level were conducted (see list at the end of this paper), to gain deeper insights into the specific policy processes and the Flemish government's involvement in them. Finally, I conducted non-participant observation at two informal workshops of EU member states on resource efficiency (April 2012, Brussels and November 2012, Berlin).

The next section presents the main results of the mapping exercise of international discourses and practices related to SMM (section 2). Afterwards, patterns and trends are identified in a comparative analysis (section 3). The analysis then gives rise to the formulation of provisional policy recommendations for the Flemish government (section 4).

[2] Different forms of scarcity can be distinguished (PBL 2011; Shields & Šolar 2011). Concerns for genuine physical scarcities, most experts say, are often unfounded. In this paper, the *perception* of scarcity is mainly approached as a political issue.

# 2. Mapping international discourses and practices

This section presents the results of a mapping exercise that analyzed the discourses and practices related to SMM of international intergovernmental organizations at the global and European level. The mapping exercise is not exhaustive, but offers a deep analysis of the main initiatives. Guided by the definition of SMM (see above), I conducted a document analysis and interviews with policy officials to identify the major international organizations that are of importance in this debate. The focus is on organizations that develop comprehensive policies or strategies to govern natural resources more sustainably (irrespective of the question whether they use the label 'SMM'), not on each international initiative that develops only a minor part of it or is concerned with only one specific material.

At the **global level**, four institutions are covered:

- the United Nations Environment Programme (UNEP), as the principal body of the UN system dealing with matters related to SMM (2.1);
- the Organisation for Economic Co-operation and Development (OECD), often considered as the 'club' of rich nations, but encompassing by now 34 members from different continents (2.2);
- the Group of Eight (G8) (2.3), as the traditional forum of the world's largest economies;
- the Group of Twenty Major Economies (G20) (2.3), which includes the rising powers and recently emerged as the mail global economic forum.

In addition, I looked at existing global regimes that govern issues of SMM. As UNEP is the coordinating actor of those regimes, they are discussed as part of the analysis of UNEP (2.1.4).

The discussion of **regional organizations** is limited to the European Union (EU) (2.4). That part of the paper has the longest elaboration, because the EU has been active in SMM policies for many years, and because it potentially has the strongest tangible influence on Flanders, especially in matters that belong to exclusive EU competences.

For each organization, the analysis is structured into three parts. First, a historical overview sketches when and how SMM policies came onto the agenda of the global or regional body, and which initiatives are taken under its heading. Second, I look at how SMM is 'framed' by international organizations. 'Policy framing' refers to the process of interpreting a concept and of giving meaning to a problem. It involves the use of available knowledge and information in order to select, name, emphasize or organize certain aspects of a policy problem (Daviter 2007; Schön & Rein 1994). In a policy context, framing takes the form of 'problem-setting stories', which are told with two aims in mind: to persuade others in policy debates, and to concretely shape the policies that are designed. The importance of policy framing cannot be underestimated, because it has important consequences for the solutions that can be chosen for it and thus limits the policy choices that actors can make (Hajer & Versteeg 2005; Mazey & Richardson 1997; Peters & Hoornbeek 2005). Third, the paper looks at the concrete practices that originate from the SMM policies, and that can potentially have the most relevance for the Flemish government and other actors.

## 2.1 UNEP

### 2.1.1 Historical overview

UNEP, the UN's main environmental body, prominently comes into the picture in November 2007, when the **International Resource Panel** (IRP) was established under its guardianship. The IRP was originally an initiative of the European Commission. In the context of its Thematic Strategy on the Sustainable Use of Natural Resources (see 2.4.1.1), the Directorate-General (DG) for Environment wanted to establish an independent, international panel to provide science-based evidence and information about the global aspects of resource use and its environmental impact (European Commission 2005b: 10). As it wanted such a panel to have a global reach, discussions were initiated with UNEP in 2005.

The IRP is a 27-member scientific group that produces independent, peer-reviewed reports about different topics of resource use and the environmental impact of materials during their full life-cycle in order to formulate authoritative information about sustainable resource management (IRP 2013). The fact that the EU took the initiative is still visible in the structure of the IRP's Steering Committee. Made up mostly of national governments (e.g. the intergovernmental Coordination Committee for International Environment Policy in the Belgian case) and some international and non-governmental organizations, the Steering Committee is co-chaired by UNEP and the European Commission.[3]

Of course, UNEP has been conducting activities related to SMM since many years, probably since its very establishment.[4] For instance, UNEP has taken a lead role globally in the management of **chemicals** and other hazardous substances. It does so, *inter alia*, by catalyzing and facilitating multilateral negotiations on chemicals and providing the secretariat of multilateral environmental agreements (MEAs), most recently of the Minamata Convention on mercury (see 2.1.4).

Another area where UNEP has been working on before 2007, is **waste management**, a topic that is now being handled mostly by the International Environmental Technology Centre, a UNEP branch located in Osaka, Japan.[5]

Important to mention here as well is **sustainable consumption and production**, a concept that already has a long tradition within the UN system (mostly coordinated by other bodies than UNEP).[6] At Rio+20 (the UN Conference on Sustainable Development, held in June 2012 in Rio de Janeiro, Brazil), the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) was adopted (UNCSD 2012: §226), thus giving continuation to the activities held under this umbrella within the UN system.[7] A recent decision by the UN General Assembly granted UNEP the coordination of 10YFP (UNGA 2012a), which boosts its ability to work on several topics related to SMM.

---

[3] As interviewees explain, discussions have been held about making the IRP's Steering Committee more intergovernmental and rotating the chairmanship between national governments, but the co-chairmanship of UNEP and the EU has been confirmed.

[4] The Malmö Declaration of 2000 provides an early example for UNEP's attention to a life-cycle economy and resource-efficient technologies (UNEP 2000: §11).

[5] Japan's leadership with regard to waste management also becomes apparent in the context of the G8 (see 2.3).

[6] An example of action by UNEP in this early, is its co-founding of the Collaborating Centre on Sustainable Consumption and Production, together with the Wuppertal Institute in 2005.

[7] The 10YFP is a global action framework to promote the shift towards sustainable consumption and production worldwide, by offering capacity-building and technical and financial assistance and encouraging innovation and multi-stakeholder cooperation, both in industrialized and developing countries (UNEP 2013a).

Building upon those different traditions, the activity of UNEP in the area of SMM was strengthened with the adoption of the Medium-Term Strategy 2010-2013. That strategy advanced the six thematic priorities around which UNEP's efforts would be centred during that four-year period. One of them is 'harmful substances and hazardous waste', which is in accordance with UNEP's expertise in chemicals and waste. Another theme, which was new in 2010, is '**resource efficiency** – sustainable consumption and production'.[8] The emergence of resource efficiency on UNEP's agenda coincides with the increasing popularity of this concept within other organizations, notably the EU, as other parts of this paper show. Yet a specific rationale explains why UNEP engages in this debate, as pointed out by interviewees. In an era where it becomes increasingly difficult to regulate specific pollutants in a top-down manner at the global level (with the stagnation of climate negotiations and the disappointment of the Copenhagen Climate Conference in 2009 as the iconic example), it occurred to UNEP that it should find innovative—and, if possible, proactive—ways to work on environmental protection. Targeting the drivers of environmental impact offers such a track, and resource efficiency does just that. By promoting the sustainable management of natural resources, several form of environmental impact can be mitigated or prevented. In that sense, resource efficiency fits perfectly at the heart of UNEP's mission.

Resource efficiency is one of the themes that significantly weighed on the green economy debate. The '**green economy**' is a concept elaborated and promoted by UNEP, especially in the preparation of Rio+20, and in the context of the global economic crisis. In an attempt to redefine that crisis in an opportunity for sustainable development, UNEP's *Green Economy Report* proposed to invest 2% of global GDP in the greening process of a number of key sectors, in order to create jobs, eradicate poverty and support the transition to a low-carbon, resource-efficient and socially inclusive economy (UNEP 2011b). Both that report and UNEP's activities in the context of the green economy in general focus to a large extent on the needs of developing countries. That is not only in accordance with UNEP's global mandate, but it is also in reaction to the South's traditionally conservative attitude vis-à-vis concepts such as resource efficiency or SMM, which developing countries fear might jeopardize their rights to further economic development.

'The green economy within the context of sustainable development and poverty eradication' was one of the core themes of **Rio+20**. Several issues mentioned in Rio's outcome document, *The Future We Want*, are of direct relevance to resource efficiency and SMM, such as the 10YFP (see above) or the focus on a life-cycle approach. But for UNEP, Rio+20 was above all significant because it symbolically put to rest the debate about the reform of international environmental governance and reconfirmed and strengthened the role of UNEP (UNCSD 2012: §88).[9]

At the time of writing, UNEP's new Medium-Term Strategy 2014-2017 is about to enter into force. The new strategy advances the same priority themes as the previous one, but adds 'environment under review' as a seventh theme (UNEP 2013b). This time, the issues and topics to be prioritized are based on an extensive foresight process, reflected in the *21 Issues for the 21st Century* report. Some emerging issues identified by that report are 'minimizing risks of novel technologies and chemicals' (e.g. nanotechnology) and 'solving the impending scarcity of strategic minerals and avoiding

[8] The other four themes are climate change, disasters and conflicts, ecosystem management and environmental governance (UNEP 2010b).

[9] Since the 1980s, a debate has been held in academic and policy circles about transforming UNEP and other bodies (e.g. the secretariats of MEAs) into a fully-fledged UN environment organizations (Biermann 2012: 7).

electronic waste' (UNEP 2012a). The continuation of the theme 'resource efficiency' shows the extended attention for this issue within UNEP. According to interviewees, UNEP's activities in this field will gradually encompass more materials, and will increasingly turn to science-based capacity-building. Furthermore, UNEP's uptake of 10YFP will strengthen the body's voice in the broader area of SMM.

### 2.1.2 Framing

'Resource efficiency' is thus the central concept of UNEP's current SMM activities, although both the term and the subprogramme that is attached to the thematic priority have many linkages with other processes and concepts that UNEP engages in. Detailing what the concept means, "UNEP defines resource efficiency from a life cycle and value chain perspective. This means reducing the total environmental impact of the production and consumption of goods and services, from raw material extraction to final use and disposal" (UNEP 2010a).

Although UNEP's agenda in this field is wide, three core problems are at the basis of its commitment to resource efficiency.

First, UNEP denounces the **unsustainability of the world's current consumption and production patterns**, being at a level higher "than our planet can replenish" (UNEP 2010a), thus referring to the question of planetary boundaries. This first problem is systematically coupled to the issue of poverty eradication, as it is observed that a large part of the world's population still struggles to meet basic needs (UNEP 2010a: 9; 2013c).

A second problem underpinning the choice of resource efficiency, is the **impact of resources** (and the *risk* of impact in the case of hazardous substances). UNEP refers to the impact both on the environment and on human well-being, that emerges across the entire life-cycle of resources (UNEP 2010b; 2013b).

Thirdly, the question of the **scarcity of resources** is emphasized in UNEP's framing of resource efficiency. While scarcity is not immediately related to environmental harm, it is advanced as a risk faced by key economic sectors, such as manufacturing, in the context of the green economy, and as a limitation to meet the basic needs of a large part of world population (UNEP 2011b: 244; 2013c: 9). In addition, this problem is advanced in the context of food resources, and thus related to the theme of food security (UNEP 2013b: 4).[10]

As the solution to resource efficiency, UNEP propagates a vision of a resource-efficient economy that is based on decoupling, on life-cycle management and on transitions. The notion of **decoupling** is systematically emphasized and focuses both on *impact decoupling* (i.e. reducing negative impacts of resource use on the environment) and on *resource decoupling* (i.e. reducing the amount of resources used per unit of production) (UNEP 2010a; 2010b: 12; 2013c: 9). It requires changes in government policies, in private sector practices, and in consumer awareness (UNEP 2010b: 13; 2011b: 245). The other central perspective is the **life-cycle approach**, which guides UNEP's goals with respect to production and consumption, in relation to chemicals and other resources (UNEP 2013c: 8). Finally, in UNEP's framing of resource efficiency, the challenge is often related to a '**transition**' to sustainable

[10] As SuMMa focuses on non-food resources, the activities of UNEP and other organizations in the area of food security are not considered in this paper. While from a trade perspective, food commodities can be confronted with the same types of issues as other commodities, the challenges of food resources are very different from the perspective of sustainable materials management.

development or a green economy, or to a 'transformation' of economies and societies (UNEP 2010a; 2013c). UNEP states its ambition to "catalyse transformative change in human behaviour affecting the environment" (UNEP 2013b: 5).

Taking a closer look at the operational solutions that can be found in UNEP's framing, a number of activity areas in which UNEP can be significant are advanced. First, efforts should go into better **assessments**, e.g. of resource extraction and use, and more comprehensive scientific and macroeconomic analyses. That should then be translated into information and tools that can be used as direct policy input (UNEP 2013c: 9). Second, UNEP sees a role for itself in the **capacity-building** of actors, by improving their knowledge and skills and supporting them in the implementation of concrete measures (UNEP 2010a: 8; 2013c). Capacity-building is particularly aimed at governments (both at the national as well as at the city-level), businesses and other stakeholders (UNEP 2013c: 9).

In the context of the green economy, UNEP targets the phases of investment, production and consumption for resource-efficient solutions. UNEP will seek to identify **investment** opportunities for alternative business models (e.g. leasing or remanufacturing), *inter alia* by promoting public-private partnerships (UNEP 2010a: 9; 2011b: 244; 2013c). Cleaner **production** is especially encouraged, by promoting cleaner technologies, waste minimization and integrated waste management, and market incentives (UNEP 2010a; 2010b). The manufacturing sector is specifically mentioned in that regard, but UNEP also targets the supply chain of services (UNEP 2013c: 9). Of course, the sound management of chemicals is also framed within this focus on cleaner production (UNEP 2013c: 8). UNEP additionally considers the role of **consumer behaviour** in the transition towards resource efficiency. Consumers need knowledge and skills in order to engage in more sustainable lifestyles and smarter choices, which is why information tools should be developed and framework conditions enhanced (UNEP 2010a: 9; 2013c).

A final operational solution lies in UNEP's preferred role as a **catalyst** of change. This is the governance-related aspect of UNEP's framing. It means that UNEP should take the initiative to convene various efforts and build partnerships, both within the UN system as well as with external actors, to assemble support and take action on resource efficiency (UNEP 2013c: 8, 9).

While resource efficiency is one of seven subprogrammes that UNEP will carry out between 2014 and 2017, **green economy** is considered as a transversal challenge. In the study on UNEP's discourse related to SMM, it is clear that the green economy has been the overarching narrative ever since the preparatory phase of Rio+20. As a consequence, in the framing of the solution for resource efficiency, UNEP places systematic emphasis on win-win opportunities, cost savings, direct and indirect job effects and other benefits, while always situating this debate within the challenge of the fight against global poverty (UNEP 2010a: 244-245; 2011b).

To achieve those different benefits in the context of resource efficiency, a number of **key sectors** are considered a priority by UNEP, notably 'building and construction' and 'metals and manufacturing' (UNEP 2010a; 2011b).

### 2.1.3 Concrete practices

At Rio+20, UN member states agreed to "strengthen and upgrade" UNEP (UNGA 2012b: §4a). As the "leading global environmental authority" (UNCSD 2012: §88), UNEP has a three-fold mandate: setting the global environmental agenda, being an advocate of the global environment, and implementing

the environmental dimension of sustainable development within the UN system (UNCSD 2012: §88). The body's concrete practices with regard to resource efficiency can be situated within that mandate.

First, as a global agenda-setter, UNEP is mandated to promote a **science-policy interface**, monitor the state of the global environment and provide comprehensive assessments to inform decision-making (UNCSD 2012: §88d; UNGA 2012b: §2). By providing up-to-date information about the state of the environment, for example in the authoritative *Global Environment Outlook* (2012b),[11] or advancing priority fields for international action, such as in the above-mentioned *21 Issues for the 21st Century* report, UNEP in effect tries to steer international policy and decision-making. It therefore has a hand in moving action on resource efficiency high on the international agenda, all the while emphasizing its own policy accents, such as minimizing environmental impact and poverty eradication. This happens to an even greater extent through the publication of specialized, high-profile reports such as the *Green Economy Report*, by which UNEP singlehandedly promotes new development paradigms within the UN system and beyond.

UNEP's assessment task with regard to resource efficiency culminates in the creation and provision of the IRP (see above). Since 2007, the IRP has published nine reports, but others are in the pipeline. It analyzes technical issues with regard to specific materials (e.g. metal stocks, recycling rates), broader political and economic issues (e.g. trade, innovation) and general conceptual and methodological questions (e.g. integrated scenario analysis). Its report on decoupling has been most widely distributed (UNEP 2011a). Occupying a prominent position in the science-policy interface, the IRP is a prime instrument for UNEP in the development of policy options and capacity-building for members. The Panel's reports do not necessarily represent UNEP's opinion, but some of its results clearly find their way into the organization's publications (e.g. the distinction between impact decoupling and resource decoupling) and the Panel is used by UNEP as an instrument in its other activities, as interviews show. For instance, members of the Panel regularly accompany UNEP officials to capacity-building events in the South. It is therefore likely that the IRP will continue to be supported by UNEP (although research time and personnel costs of IRP members are not covered) and that efforts will be made to strengthen its policy impact. Yet, the ambition ventilated by some to become 'an IPCC of resources' is far-fetched. For instance, interviewees point out that universal membership of the Steering Committee (encompassing all members of the UN Environment Assembly) is not on the table.

As an agenda-setter, one of UNEP's most important achievements in global environmental politics has been the promotion of negotiations on **MEAs** and the provision of the secretariat of those agreements once they have been concluded. This role has been particularly important in the field of natural resources in general and chemicals in particular (see 2.1.4). Research suggests that UNEP's 'activist' role in this process has helped to strengthen its role as a global agenda-setter, particularly within the chemicals cluster (Andresen et al. 2013).

Second, UNEP's role as an advocate for the global environment is strongly related to the activities elaborated above. With the objective of catalyzing global environmental change, activities such as the promotion of MEAs or the publication of reports on resources and the green economy can go a long way.

[11] In that report, the consumption of raw materials is considered as one of the main drivers of global environmental impact. Furthermore, 'chemicals and waste' are advanced as one of the core themes.

Third, watching over the implementation of the environmental dimension of sustainable development within the UN system gives UNEP a strong **coordination mandate**. As its low budget and its status as a 'programme' give it a rather junior position, UNEP's strategy since its creation has been to link up with other UN bodies and with private and civil society organizations to launch initiatives and promote its agenda. With regard to resource efficiency, UNEP is seen to seek alliances and partnerships with different actors. While an exhaustive overview is impossible to give here, two examples are worth mentioning. The Life Cycle Initiative is a partnership between UNEP and the Society for Environmental Toxicology and Chemistry. It aims to improve methodologies for life cycle management, one of UNEP's continuous priorities in resource efficiency. In the Finance Initiative, UNEP joins forces with financial institutions, aiming to increase the financial sector's investment in resource efficiency projects (UNEP 2010a).

This third role is also related to the goal of assisting countries in the implementation of international environmental policies and to the provision of **capacity-building**. UNEP's Division of Technology, Industry and Economics (DTIE), based in Paris, specializes in the development of policy instruments for resource efficiency, adopting two simultaneous approaches. On the one hand, DTIE focuses on the development and improvement of data, indicators and methodologies, providing a knowledge base for resource efficiency (e.g. with regard to input-output models or life-cycle management). On the other hand, UNEP wants to advance the implementation of resource efficiency by presenting 'policy options' to member states. Those ensue from UNEP's knowledge base, but are also derived from 'best practices' in certain countries (mostly from the North). Those options should not be seen as clear-cut policy recommendations, but rather as possible strategies that countries (mostly from the South) could envisage, in a form that is adapted to their own political and socio-economic context. UNEP's capacity-building activity happens through publications and at specific national or regional events where those issues are discussed. When resource efficiency became a priority in the Medium-Term Strategy 2010-2013, the allocation of UNEP's resources to DTIE more than doubled (UNEP 2012c).

### 2.1.4 Global regimes

Besides the discussion of the SMM activities of specific international organizations, it is also useful to look at international treaties that govern issues within that field. In this context, scholars speak of 'international regimes', or "sets of implicit or explicit principles, norms, rules, and decisionmaking procedures around which actors' expectations converge in a given area of international relations" (Krasner 1982: 186), the explanatory value of which reaches beyond the legal commitments of international treaties.

An essential observation is that there is no single global regime that covers natural resource management. Rather, a fragmented set of regime elements gradually arose out of the consideration for the **environmentally sound management of specific materials or wastes**, to a large extent related to MEAs on chemicals.

The first treaty, in 1989, was the **Basel Convention on the Transboundary Movement of Hazardous Wastes and Substances**. It emerged out of a concern by developing countries that the industrialized world was dumping hazardous waste upon them, but it also built upon existing decisions made within the OECD (see footnote 15). While in the current context, the EU is increasingly tending to avoid that some waste flows leave Europe (because of the value of certain

materials embedded in them, see also 2.4.3), the industrialized countries at the time of Basel were strongly defending the possibility of exporting waste to developing countries under certain conditions, despite accusations of dumping being "a crime against Africa" (Birnie et al. 2009). The Basel Convention did therefore not evolve into a trade ban of hazardous waste, but it provided a strict regulation of it.[12] The materials covered are household and hazardous waste (not including radioactive waste) disposed of or intended for disposal; but 'disposal' is defined in a very wide way and also includes waste intended for recycling. The Convention emphasizes the sovereignty of import states to determine the level of impact that they accept within their territory, thereby allowing countries to *de facto* ban imports. Most importantly, it promotes disposal of waste at the source, by allowing export only if the exporting state does not have the facilities for disposal in an environmentally sound manner (Birnie et al. 2009). The Basel Convention in fact codified many provisions that were already customary law or enshrined in domestic legislations. On the other hand, the Convention still leaves developing countries vulnerable to dumping practices, by not fully restraining exports (Birnie et al. 2009). In addition, much of the transboundary movement of hazardous waste happens illegally.

In 1998, the **Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade** was adopted. It deals with trade of the most dangerous chemicals. Those are listed in an annex to the treaty, which is occasionally updated, and they include pesticides and industrial chemicals. The Rotterdam Convention details procedures whereby countries must give their consent when those chemicals are exported to them. Countries have the right to ban the import of certain chemicals, but then they are obliged to also stop domestic production those materials. The Rotterdam Convention also stipulates rules on how substances should be labelled. It does not include provisions for illegal trade (Birnie et al. 2009).

Thirdly, the **Stockholm Convention on Persistent Organic Pollutants** (POPs), adopted in 2001, deals with a certain type of toxic chemicals that have a persistent and bio-accumulative character, and thus pose a long-term hazard to human and animal health (e.g. PCBs or DDT). The Convention aims at the phase-out of the production and consumption of those POPs, and thus builds further upon the 1998 Århus Protocol to the Convention on Long-Range Transboundary Air Pollution (CLTRAP).[13] In addition, it calls for the sound management of existing stocks and the replacement of existing POPs (through the use of the best available technology), it restricts trade of POPs with non-parties and includes provisions for technology transfer and assistance to developing countries.

Recently, the three conventions merged their secretariats. Those are administered by UNEP, which gives that body a central role in global chemicals management. In Spring 2013, the conventions held their Conferences of the Parties (COPs) together, finding synergies between the three regimes (Earth Negotiations Bulletin 2013). That is a result of the non-binding **Strategic Approach to International Chemicals Management**, adopted at the International Conference on Chemicals Management in 2006 in Dubai. The goal of that process is to achieve an integrated regime on the use of chemicals worldwide by 2020 (UNEP et al. 2013).

While giving a full overview of global regimes related to materials management lies outside the scope of this paper, a few trends are pertinent to discern (see also Yang 2013). In total, about 40

[12] However, parties to the Convention introduced the Basel Ban Amendment, prohibiting the export of hazardous waste to developing countries. The amendment not yet entered into force under the Convention, but several countries already introduced it in their domestic legislation, including the EU in the Waste Shipment Regulation (see 2.4.1.1).

[13] The CLRTAP is not a global regime, but encompasses the UN Economic Council for Europe (UNECE) region (broadly: Europe, Russia, the United States and Canada).

multilateral environmental agreements deal with chemicals. An increasing number of materials are included, but each agreement deals with either a very specific aspect of materials management or only a particular substance or resource. A precautionary approach is common to those regimes, mostly aiming at reducing release of substances through cleaner production, at eliminating the most harmful materials and at controlling their trade.

The adoption of the **Minamata Convention on Mercury** in October 2013 breaches with some of those historical trends. Also in this case, UNEP launched the negotiations for the convention, provided knowledge-based leadership and personal diplomacy by its Executive Director, and now administers the treaty secretariat. The Minamata Convention seeks to reduce releases of mercury and mercury compounds into the environment (Selin 2013a). As life-cycle management was one of the leading principles during the preparatory negotiations, the treaty regulates different elements of the life-cycle of mercury. Substantive provisions cover direct atmospheric emissions of mercury, but the convention also controls impacts upstream, by banning new mercury mining, phasing-out the use of mercury in specific types of products, and introducing restrictions on trade and consumption (Selin 2013b). While this life-cycle approach is a promising new method for global regimes on natural resources, the importance of the Minamata Convention will probably be of a more symbolic and political nature, as it is not expected to have a significant impact on mercury emissions in its current form (and should be strengthened by the COP in coming years and decades) (Selin 2013a; Selin 2013b).

## 2.2 OECD

### 2.2.1 Historical overview

The OECD is a global organization with a selected membership of high-income, democratic countries (34 at the time of writing).[14] It is not a supranational organization that pools the sovereignty of its member states or produces legislation,[15] but it aims at harmonizing policies within the industrialized world and promoting economic cooperation. Economic policies and analyses are therefore at the core of its activity (OECD 2011a: 9), and the OECD is renowned to have a staff composed largely of economists. Yet, other policy fields receive attention as well. For instance, natural resources, and their position in national economies, are a topic of interest (OECD 2007: 2).

Environmental policies have had their place at the OECD since 1971, when the Environment Directorate was created (OECD 2011a). One of the main areas of work is waste, which is the focus of a member-state working group since the 1980s. In 1994, **sustainable waste management** tentatively appeared on the organization's agenda, under the heading of 'waste minimization' (OECD 2013e). Waste and natural resources became increasingly important in the OECD's environmental

[14] The OECD's membership was traditionally restricted to rich, Western democracies. In recent years, with the accession of countries such as Chile, the organization became more politically and economically diverse. Its cooperation with emerging economies such as China and India is also increasing. However, the new and more 'inclusive' logic is still very selective and, certainly in terms of membership, does not go beyond rich and semi-rich countries (Clifton & Díaz-Fuentes 2011).

[15] Nevertheless, OECD Council Decisions are legally binding for those member states that voted for them. A good example is the 1986 Decision on the export of hazardous waste to non-OECD countries. In addition, legally binding treaties can be negotiated by national governments within the framework of the OECD (OECD 2011a: 9, 52).

programmes: the effective management of natural resources was set as the first objective in the OECD's Environmental Strategy in 2001 (OECD 2001).[16]

The OECD work programme on **SMM** was started in 2005, when a thematic workshop on the issue was held in Seoul.[17] After two decades of working on waste, with a predominant end-of-life perspective, the launch of this programme shows the OECD's commitment to focus on innovative solutions, for instance by considering waste as a potential economic resource (OECD 2013d). That follows the call for integrated solutions for decoupling, made in the 2001 Environmental Strategy (OECD 2001: 11), and it is in accordance with how the most ambitious OECD members already tried to tackle waste at that time.

The SMM work programme took shape through more workshop and an increasing number of reports and publications on the topic (see below). It was also boosted by a recommendation by the OECD Council, the executive body composed of member states, in 2008 (see below). After 2008, the OECD's focus was on implementing that recommendation through the elaboration of general policy options and case studies of particular materials (OECD 2013c: 1). Currently, the focus is shifting towards the study of specific (economic) instruments.

As the work on SMM evolved, new issues emerged on the agenda and were integrated in the activities. For instance, the OECD now also pays attention to the benefits that SMM can bring in the area of greenhouse gas reductions (OECD 2013a). Another recent example is the consideration of the full life-cycle of nanowaste, for which discussions and research have been started (OECD 2013b).

The OECD's work on SMM thus followed naturally from its focus on waste, situated within the field of environmental policies. Besides that, another OECD policy process is of importance. In 2011—during the same period that UNEP broke a lance for the green economy—the OECD launched its *Green Growth Strategy*. While that strategy stresses the benefits of the Western economic model, upon which future progress should be built, **green growth** is about reinvigorating growth after the global economic crisis, in an environmentally friendly way. That means that regulations, fiscal policies and pricing mechanisms should make pollution more expensive, and resource use more efficient. The strategy also aims at rethinking the definition and measurement of economic progress, and looks at natural resources in that regard, through the lens of natural capital (OECD 2011b).

### 2.2.2 Framing

At the first OECD workshop, members adopted a 'working definition' of SMM that has not changed since: "Sustainable Materials Management is an approach to promote sustainable materials use, integrating actions targeted at reducing negative environmental impacts and preserving natural capital throughout the life-cycle of materials, taking into account economic efficiency and social equity" (OECD 2007: 5).

In the OECD's framing of SMM, four main problems are commonly invoked. First and foremost, SMM is seen as the answer to a problem of **environmental impact** that is intrinsically linked to the

[16] That strategy, which was originally meant for the first decade of the 20th century (OECD 2001), has not been renewed since and is still in force.

[17] It is unclear when the new work area was effectively launched, as some OECD sources mention 2004 (OECD 2011a: 51; 2012b: 3; 2012c: 15; 2013c: 1), although older sources use 2005 as a reference year (OECD 2007: 2; 2008a: 2). In any case, the Seoul workshop in November 2005 was the first milestone.

economic activity of OECD countries, and to the material consumption and waste generation that are a part of that (OECD 2007; 2008a; 2012b: 1; 2013d).[18] A form of impact decoupling, which appears difficult to establish (OECD 2010a: 2), is thus required. More specifically, the OECD (2012c: 3) attaches the greatest urgency to the environmental impacts of the overexploitation of renewable resources, such as water and biomass, which generate more serious impacts. Non-renewable resources seem to pose somewhat less of a threat, and their potential scarcity is rarely invoked in an OECD context. That is also why the decoupling of the amount of resources used from economic activity is not considered as a goal (OECD 2007: 5). Interviewees point out that there is no consensus within the OECD about the need for resource decoupling, in contrast to impact decoupling.[19] The focus on environmental impact is systematically linked to a **life-cycle perspective**: the impacts of resources on the environment should be considered throughout the full life-cycle of natural resources, and within a global context in order to avoid the 'outsourcing' of impacts (OECD 2007: 5; 2012b: 4).

The second problem that gives rise to SMM is the broader **macro-economic context** in which the OECD operates. Especially in the context of the crisis, reference is made to the growing world population and its increasing affluence, and the consequence that those trends have on materials use (OECD 2010a; 2012b: 2).

A third problem is the **knowledge gap** that is associated with the issue of SMM. It is said that we still do not have a sufficient understanding of material flows and their different forms of impact (OECD 2009b: 11). Of course, that becomes particularly apparent in the case of newly emerging issues such as nanowaste (OECD 2013b).

Fourthly, SMM is related to a broad **governance problem**. As more efforts are made to effectuate a transition towards SMM, more difficulties are encountered because broad parts of society, such as industry, are still unfamiliar with the concept and structures and organizations are maladjusted to it (OECD 2008a). Existing regulations, for instance, do not offer the necessary incentives for a right economic behaviour (OECD 2009b: 52). In addition, waste policy, from which SMM originated, does not solve the above-mentioned problems (OECD 2007; 2008a; 2013d). The OECD even denounces the fact that SMM is predominantly approached through waste, as that is not the key policy process through which solutions can be found (OECD 2012b: 2).

The OECD emphasizes a number of elements in the solution for SMM. As a general objective, decoupling and increased **resource productivity** are advanced, while stating that this will be needed to achieve green growth (OECD 2012b: 4).

An important part of the solution of SMM, in the OECD's framing, is found in the strengthened implementation of the waste hierarchy. The OECD often refers in that regard to the '3R' concept, which advocates the reduction, reuse and recycling of waste (OECD 2012b: 2). For a number of OECD countries, a focus on **better waste management** offers significant low-hanging fruits in terms of reducing environmental impacts (OECD 2010a: 2), which justifies that focus. But at the same time, the OECD promotes the vision of waste being used as material input, for instance in a cradle-to-cradle perspective (OECD 2013d).

Moving beyond waste management, the application of a consistent **life-cycle approach** is needed (OECD 2009b; 2010a: 2). Such an approach needs to be built into the design of products, where it should lead to detoxification, dematerialization and better recovery (OECD 2009b; 2010a). But it also

[18] In a single instance, the OECD also refers to social impacts of resource use (OECD 2010a: 2).
[19] On occasion, a reference to resource decoupling is made (OECD 2010a: 2).

needs to permeate consumption patterns and the overall management of resources (OECD 2001: 11; 2008a), which requires the cooperation between a chain of different partners. The OECD stresses a life-cycle perspective, because it generates the right priorities, and because it avoids shifting the burden to later generations or other parts of the globe (OECD 2009b: 51; 2010a; 2012b: 4, 9).

Good solutions depend in part on **better data and information**. The OECD and its member states should therefore work on different methodologies, share their info and coordinate their research activities, in order to gain more knowledge about material flows and increase the traceability of materials throughout their life-cycle (OECD 2007; 2010a: 3; 2013b).

In accordance with the OECD's problem-setting, the framing of the solution accords much significance to **governance**. SMM requires better cooperation within governments, leading to increased policy coherence (OECD 2008a: 8; 2009b; 2012b: 1). Governments should deploy a varied range of policy instruments for SMM (e.g. regulatory, economic, information and voluntary instruments), including the removal and reform of certain subsidies (OECD 2001: 7; 2009b; 2010a: 3). They should also move away from an exclusive orientation of waste in the context of SMM, despite the gains that can be reaped there, and look beyond environmental policies in favour of natural resource policies and integrated product policies (OECD 2010a: 4; 2012b: 13-14). Another task for governments is to provide the long-term direction that is needed for SMM (OECD 2010a: 5). In accordance with the life-cycle perspective, increased collaboration with industry and civil society is needed, and all societal stakeholders should be engaged (OECD 2009b; 2010a). Industry, for its part, needs to work on new business models, which can be facilitated by providing it with simple targets and indicators (OECD 2008a: 13). Yet, also new lifestyles will be part of the solution (OECD 2010a: 5). The OECD's role in governance for SMM should focus on creating awareness at the political level and providing policy guidance for member states (OECD 2007: 9; 2010a: 5).

Finally, the OECD emphasizes a number of indirect **economic benefits** that could result from SMM, besides mitigating environmental impacts. Those benefits include new sources of profits for companies, increased competitiveness and innovation, a lower demand for natural resources, more resource security and the avoidance of international tensions over raw materials (OECD 2008a: 12; 2012b: 1, 4, 8). Finally, the OECD also mentions that SMM might produce growth and jobs (OECD 2012b: 8), but it does not provide any convincing argument. Interviewees point out that there is no consensus within the OECD Secretariat that SMM would create more economic activity that would not be at the expense of other economic sectors.

### 2.2.3 Concrete practices

In general, the OECD is not a rule-making organization and lacks any enforcement power. Rather, it should be seen as a think tank (OECD 2011a) or an "ideas-mongering institution" (Rose 1993: 69). Such institutions can still have considerable normative and ideational power, through the development and promotion of new policy ideas, that can gain the status of 'soft law' (Bernstein & Cashore 2000: 83; Marcussen 2004a; 2004b).

The concrete activities undertaken at OECD level under the denominator of SMM are four-fold. The most visible practices have been the three **expert-level events** that have consecutively taken place after SMM was installed as a new working area. Those events systematically deepened the knowledge about SMM and its different challenges. This type of activity is especially applied by the OECD when much conceptual work still needs to be done on a specific issue.

The first workshop took place in Seoul (South Korea) in November 2005. It adopted the working definition of SMM and defined the topics that should be the focus of the OECD's work on SMM in the years to follow (OECD 2007). The second workshop was organized in Tel Aviv (Israel) in April 2008. It shifted the focus on the roles that different actors have to play in the governance of SMM, such as international organizations, business and civil society (OECD 2008a). A first inventory of their different activities was made to substantiate the discussion (OECD 2008b). Based upon an initial state of the art, challenges for those different actors were outlined. The culmination of this work was the Global Forum held in Mechelen (Belgium) in October 2010. It built upon studies that were made on principles, targets and instruments, to make further progress on SMM, for instance by focusing on indicators to measure SMM. New issues also emerged on the agenda, such as the social impacts of resource use and the role of consumers (OECD 2010a).

Secondly, an important and well-known amount of the OECD's work is the publication of **studies and reports**. The OECD Secretariat can perform or commission studies itself, or member states can propose to take that initiative at their own expense. In the area of SMM, a number of different studies have been produced. Some have explored conceptual and policy-oriented guidance with regard to principles, targets and instruments, as mentioned above (OECD 2009a; 2009b; 2009c). Others zoom in on specific cases of materials, such as aluminium, wood fibres, plastics or critical metals in mobile devices (OECD 2009d; 2009e; 2010b; 2012a). Those case studies are meant to show with concrete examples why a SMM perspective is useful, for instance to identify which policy domains need to be involved in the policy process. Currently, as mentioned above, the focus of the OECD studies is shifting towards innovative economic instruments for SMM, which arouses the interest of all OECD members.

The studies published by the OECD should be seen as general **policy guidance** for national governments and other interested stakeholders. They usually accentuate principles that ought to be taken into account or approaches that could be applied in SMM policies, without giving strict policy recommendations. Interviewees explain how the OECD Secretariat, in the future, aims at producing tailor-made advice for countries on specific policy issues of SMM, if those countries have a specific demand for such advice.

The OECD's work on SMM is completely driven by the member states. They take their decisions within the **Working Party on Resource Productivity and Waste**.[20] The Working Party is composed of one to three representatives of each OECD member, complemented by candidate countries, other interested countries and observers. It is currently chaired by Sweden, but Flanders (Belgium) chaired it between 2010 and 2011.[21] The Working Party meets once a year, and holds occasional conference calls between meetings. It discusses draft versions of the studies that are made, prepares future work programmes, debates which issues should receive more or less attention in the context of SMM within the OECD and shares domestic experiences. It needs to be emphasized, however, that an important part of the discussions within the Working Party (80% according to some interviewees) are still about 'traditional' issues of waste management, and that SMM, although it is the common denominator of all topics covered by the Working Party, *de facto* receives only a marginal focus in the bulk of OECD member states.

[20] Before 2010, that body was called the Working Group on Waste Prevention and Recycling.

[21] According to an agreement made in the Coordination Committee for International Environmental Policy, OVAM represents Belgium in the Working Party.

A final type of concrete practices coming out of the OECD's work on SMM, are the non-legally binding **recommendations** by the OECD Council, which can be adopted when the Environmental Policy Committee, one of the OECD's specialized committees, meets at ministerial level. In the past, such recommendations have been issued, for instance, on material flows and resource productivity (OECD 2004a) or on the environmentally sound management of waste (OECD 2004b). The latest recommendation on SMM dates from 2008. It covers data, measurement and indicators of resource productivity and gives advice about making policies more coherent (OECD 2008c). The OECD's current work on SMM can be seen as the implementation of that recommendation. It is likely that a new recommendation on SMM will be issued in the near future, as further progress is made in the area.

Before closing this section, it is useful to note, in the context of the broader institutional landscape of SMM, that the OECD frequently **collaborates with other international organizations**. Fine-tuning with the EU happens on a regular basis, as DG Environment is represented in the Working Party and both organizations try to find synergies, for instance in the studies that are commissioned. The OECD also has a special relationship with the G8. Under the leadership of Secretary-General Ángel Gurría, the OECD has sought a rapprochement with the G8 in past years. SMM has been one of the areas in which the two organizations found synergies (see 2.3). Cooperation with the G20 is also on the rise (Wouters & Van Kerckhoven 2011).

## 2.3 G8 and G20

The G8 is, in essence, an annual gathering of the heads of state of eight important industrialized countries,[22] complemented by the presidents of the European Council and the European Commission. The presidency of the group rotates annually, and it is the presiding country that hosts the meeting and decides whether additional meetings at ministerial will take place during that period. As the group does not have a permanent secretariat, the host country has a very large hand in setting the agenda.

The G20 is composed of 19 major economies[23] and the EU, and convened since 1999 at the level of finance ministers and central bank governors, to discuss international financial matters. However, after the global financial and economic crisis broke out in 2008, the G20 has convened at the level of heads of state and gradually replaced the G8 as the main global economic forum (Cooper & Bradford 2010; Drezner 2012; The Stanley Foundation 2010). That shift needs to be understood in conjunction with the rising political power of the emerging economies on the world stage (Happaerts & Bruyninckx 2013b). Throughout the years, the G20 has widened its topics of discussion to virtually all issues of current international importance. Its role can therefore be circumscribed as a global agenda-setter (Hilpert & Mildner 2013: 8).

Because initiatives and issues related to SMM, and the overall interpretation given to them, have changed continuously in the cases of the G8 and the G20, the historical overview and the framing are analyzed together.

[22] Member states are Canada, France, Germany, Italy, Japan, Russia, the United Kingdom and the United States. At the time of the G8's creation, they were considered to be the world's richest countries, but that is no longer the case.

[23] Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom and the United States.

### 2.3.1 Historical overview and framing

Without a secretariat or a fixed agenda, the G8 can basically cover all topics of international affairs that it considers relevant. The environment has emerged on the G8's agenda regularly. Climate change, for instance, was already discussed in 1979 (G8 1979: §3), before any other organization had handled it. As a consensus only needs to be sought between a handful of countries, and as the G8's declarations are no binding decisions, its positions on environmental issues are often much less vague than those of broader multilateral settings (Kwok et al. 2008: 105).

Materials first come into the G8's range of vision in 2004, at the Sea Island Summit (United States). It is then that the leaders agreed to adopt the *3R Action Plan*, based on a background paper prepared by Japan (Government of Japan 2005). In the action plan, the G8 agreed to promote technology and multi-stakeholder cooperation and to reduce international trade barriers to boost the reduction, reuse and recycling of materials, "to the extent economically feasible" (G8 2004). The **3R Initiative** was then officially launched at a meeting of G8 Environment Ministers in 2005 in Japan. The initiative aims at "a sound material-cycle society", mainly out of a concern for impact decoupling, and looks into different instruments that can be used at the national and international level to achieve that vision (Government of Japan 2005). It looks for cooperation with the OECD, for instance in undertaking appropriate research activities (Government of Japan 2005: 19).

In 2006, at the Saint Petersburg Summit (Russia), global energy security was one of the core issues of the agenda. Materials were invoked in that context, when leaders confirmed their commitment to the 3R Initiative, "[a]s part of an integrated approach to the entire resource cycle" (G8 2006: §19). They also promised to adopt **resource productivity targets** (G8 2006: §19).

The following year, the issue of **raw materials** was one of the priorities of the Heiligendamm Summit (Germany). That was occasioned by a series of sharp price increases of commodities on world markets (see section 1). Because the primary concern of G8 leaders is the ensured supply of raw materials as input into their economies, the issue was mainly addressed as a problem of relations between resource-rich countries and importing countries. The emphasis was on stable markets, the reduction of trade barriers, transparency in extractive industries, certification schemes in the mining sector in developing countries, good governance in exporting countries, etc. (G8 2007). In addition, environmental standards and concerns were invoked, and the "conservation, recycling and substitution of raw materials, including rare metals" was promoted to achieve sustainable growth, "based on sound life cycle analyses" (G8 2007: §82). The Heiligendamm Summit thus linked the G8's earlier environmental commitments with regard to materials to emerging concerns about commodity prices.

In 2008, the efficient use of resources receives attention in the context of the multiple food riots that the world witnessed that year, as a consequence of rising food prices and speculation with food commodities. At the Hokkaido-Toyako Summit (Japan), the problem of **food supply** was added to the G8's framing of SMM. Overall, environmental issues were very important at the summit (Kwok et al. 2008). The Japanese presidency also hosted a meeting of Environment Ministers that adopted the **Kobe 3R Action Plan**, in which previous commitments on that topic were reaffirmed and specified, including setting targets on resource productivity based upon previous work by the OECD (G8 2008: 117; Kwok et al. 2008).

After a few years of decreased attention for materials,[24] the issue again figured prominently on the G8's agenda at the Deauville Summit (France) in 2011. One of the priorities of the French presidency was to address the **volatility of commodity prices** (see also 2.4.1.2). One of the initiatives taken in that regard was a G8/Africa joint declaration with stressed the leaders' commitment for good governance in resource management and for transparency in the extractive industries (G8 2011b). However, SMM concerns were not invoked in that regard. Rather, "resource efficiency" was discussed under the denominator of **green growth** (G8 2011a: §31). At the Summit, the OECD reported about its work on resource productivity. The G8 invited the OECD to continue its efforts on that issue (G8 2011a: §3).

In the **G20**, especially the topic of raw materials has found acceptance. Ever since the G20 convenes at heads-of-state level in 2008, raw materials regularly surface on its agenda. In some cases, the issue is then clearly framed as an environmental issue, for instance when the Pittsburgh Summit (United States) in 2009 mentioned the "sustainable consumption, production and use of resources that conserve our environment and address the challenge of climate change" as a core value (G20 2009: 20), or when the Seoul Summit (South Korea) in 2010 advanced investments in resource efficiency as a necessity for green growth (G20 2010: §68). But in most instances, the focus is on the increase and volatility of commodity prices and their impact on economic stability (G20 2009; 2011; 2012).

Summarizing the framing of SMM by the G8 and the G20, it must be mentioned that the concept of SMM itself is never mentioned. Issues central to SMM appear under various denominators, of which resource efficiency is the most well-known. There is a clear evolution in the framing, that goes from a predominantly environmental problem to a more economic problem. When the issue first emerged in relation to the 3R concept, it was very much framed as a solution to environmental problems. This framing persists, and in later years natural resources are regularly invoked in relation to climate change and energy policies. But when the economic crisis breaks out, the attention of both the G8 and the G20 narrows to economic stability and interprets all issues in that perspective. In combination with volatile commodity prices, raw materials dominate the G8 and the G20's discussion of materials, with a focus on the functioning, transparency and stability of global commodity markets. On occasion, those problems are explicitly framed within the debate on green growth.

When compared to other issues, the sustainable management of natural resources appears one of the best suited topics through which the G8 and the G20 can combine their economic and environmental agendas.

### 2.3.2 Concrete practices

The G8 and G20 disappoint when one looks for very specific outcomes. The **Kobe 3R Action Plan**, adopted by the G8 Environment Ministers in 2008, is the most concrete result of the work related to SMM. It is a non-binding declaration that contains nine specific actions that G8 countries and the European Union promise to deliver, ranging from setting targets for resource productivity to promoting multi-stakeholder cooperation.

[24] "Resource efficiency" was mentioned once at the Muskoka Summit (Canada) in 2010, in the context of climate change (G8 2010: §24).

More interesting are the references that the G8 and the G20 make to **other international organizations**. With regard to SMM, the efforts of the OECD and UNEP are regularly welcomed. Furthermore, the leaders frequently request further work to be undertaken by the OECD. In doing so, high-level political backing from the world's most powerful countries is given to the otherwise low-profile OECD activities on SMM.[25]

As mentioned above, the G8's positions on environmental issues are sometimes bold and straightforward. The group's declarations abound with promises and commitments—and the same goes for the G20 (Happaerts & Bruyninckx 2013b: 8-10). Assessing the **implementation** of those commitments is a very pertinent but difficult challenge. The analyses by the G8 Research Group at the University of Toronto are the best source of information on the compliance by G8 members. For instance, while the discussion of raw materials at the Heiligendamm Summit in 2007 receives a fairly good performance score, because many things have been discussed (Chow et al. 2007: 13), there is a lack of compliance as only the European Union undertakes any concrete steps to fulfill the commitments that were made (Logarajah 2007). The compliance with regard to the 3R Initiative receives a good score, mainly because of the fact that the Kobe Action Plan was eventually adopted (Kwok et al. 2008: 115-118).

The G8 and the G20 should not be considered as forums where concrete practices on SMM or related issues emerge. Rather, feeling the pulse of the global market, they function as a **barometer of global political and economic affairs**. They are useful in giving early signals about which issues merit international attention, and are likely to appear on the agenda of other organizations in the years that follow.

## 2.4 EU

### 2.4.1 Historical overview

In order to situate the EU's policies regarding SMM in its historical context, a three-step approach is chosen. First, the early sectoral and transversal policies that could be considered to contain the 'seeds' of SMM are presented (2.4.1.1). Second, attention is given to the topic of raw materials, that prominently came into the picture in 2008 (2.4.1.2). Third, the paper turns to the EU's current flagship of resource efficiency (2.4.1.3). Some trends are drawn in a concluding part (2.4.1.4).

#### 2.4.1.1 Early steps

At the origin of the current EU activities regarding SMM, we find achievements in both sectoral and transversal policies.

A first current of precursor policies is the EU's **waste** policy. Waste is one of the first topics to receive attention in the EU's environmental policy before a legal basis for environmental action was established at EU level (European Commission 2005a: 8; Hildebrand 1993). The first legislative

[25] Regarding the links to other organizations, it is interesting to mention here that the European Parliament suggested the creation of a 'Raw Materials and Rare Earths Stability Board' within the G20 (European Parliament 2011a: §47), thereby implying Europe's confidence in the G20 as a body to govern global economic issues.

initiatives were taken in 1975, with the first Waste Framework Directive and the Hazardous Waste Directive, which were later followed by the Waste Shipment Regulation. At that time, the challenges of waste policy in Europe were self-evident: poorly managed waste produced risks for human health and was potentially harmful for the environment (European Commission 2005a: 8). In those early years, the policies did not contain binding targets or strict treatment obligations for member states (with the exception of waste oil), but were largely restricted to administrative and reporting requirements (Fischer 2011: 3).

Waste policy-making in the EU has evolved significantly since the 1970s. It received an important boost after 'natural resources and waste' was formulated as one of the four priorities of the 6th Environment Action Programme (EAP) (European Parliament & Council of the European Union 2002: §1.4). The policy's focus was broadened and its ambition heightened. The 6th EAP was followed in 2005 by a Thematic Strategy on the Prevention and Recycling of Waste. That strategy promoted the vision of the EU as a recycling society, and it laid the foundation for the renewal of the Waste Framework Directive in 2008. The renewed directive not only established the European waste hierarchy,[26] but it also introduced prevention obligations and new recycling measures (Fischer 2011: 2).

As a result of those developments, the waste *acquis* is now a comprehensive set of framework legislation (the Waste Framework Directive), waste management and treatment legislation (e.g. emission standards related to incineration, landfill restrictions, etc.), and legislation on specific waste streams (e.g. batteries, end-of-life vehicles, electrical and electronic waste, packaging waste, etc.). It imposes binding minimum recycling targets, but does not contain quantitative targets for reduction or reuse. The importance of the *acquis* derives from the fact that in many member states, waste management exclusively follows from EU obligations (Fischer 2011: 3-4). The evolved policy reflects a changed vision at the EU level and the consideration of more complex challenges. With the basic measures to mitigate environmental and health impacts in place, the waste policy needs to deal to an increasing extent with different economic interests and sustainability concerns, and waste is increasingly seen as an economically valuable resource (European Commission 2005a). Currently, the Commission is preparing a substantive review of the EU waste policy, which should be presented in 2014.

Since the late 1990s, **product policy** has been another precursor to the EU's activities related to SMM. It consists on the one hand of legislation designed for specific product groups, mostly to limit their impact on human health and the environment. The 2006 REACH Regulation is a prominent example, aimed at the evaluation and progressive substitution of (an increasing amount of) dangerous chemicals and at the management of risks related to their use. Another example is the revised RoHS Directive on the restriction of hazardous substances in electrical and electronic equipment. On the other hand, the EU has made attempts at developing an Integrated Product Policy (IPP), out of a concern for sustainable development (see below). The Commission's 2003 IPP Communication intended to stimulate greener products by consolidating and reorienting a number of existing policy tools (Watson & Herczeg 2012: 5). Those tools consist to a large extent of information instruments to influence consumer choices—such as ecolabels and energy labelling—but they also relate to economic instruments, substance bans or product design guidelines (such as those on chemicals), and they include both mandatory and voluntary instruments. Because of its broad

[26] The Waste Framework Directive considers waste prevention as the priority option, followed by reuse, recycling, incineration and landfill.

reach, IPP also has an impact on the EU's approach to waste policy, blurring the lines between the two sectoral approaches.

The EU's product policy resulted in several legislative and other initiatives. The Commission's 2008 Communication on green public procurement, for instance, recommends the application of governments' procurement policies to stimulate as much as possible environmentally friendly products, and establishes criteria for 'green' products in specific sectors. But it is a voluntary EU policy and only a handful of member states—including the Flemish government (Happaerts 2011: 129)—has taken noteworthy initiatives to implement it (Watson & Herczeg 2012: 2). Another dominant approach is the focus on the entire life-cycle of products, for instance by supporting life-cycle assessments. It means that the EU's product policy looks at the environmental impacts that products have from the cradle to the grave, which requires efforts by governments, producers and consumers (European Commission 2005a). A final result of the EU's product policy that deserves mentioning here is the Ecodesign Directive. Formally an instrument of industrial policy, it regulates the performance of energy-using and energy-related products, and ultimately wants to bar the most inefficient products from the European market. For the time being, however, it only focuses on the products' impact on energy use, ignoring the other environmental impacts of the products' life-cycle.

A first transversal impulse for a policy oriented towards SMM was the **EU Sustainable Development Strategy** (EUSDS), which was developed in 2001 in preparation of the Johannesburg Summit (Tanasescu 2006: 54). Through the formulation of actions in six priority fields (including 'managing natural resources more responsibly'), the EUSDS offers an overarching framework for the EU's legal objective to promote sustainable development, included in the treaties since 1997 (European Union 2010: §11). It urges, among other things, for a new vision on the connections between natural resources, waste and economic growth (European Commission 2005a), and proposes the development of IPP.

The impulses given by the EUSDS also helped to advance the development of a European **resource policy**. The first step was the Thematic Strategy on the Sustainable Use of Natural Resources, which is also situated in the 6th EAP (see above). In that strategy, the Commission looked into the environmental impact of natural resources, and concluded that the only way to advance progress on this issue, was to integrate it into the concerns of other policy areas. It also highlights the need to decouple resource use from economic growth and it adopted a 25-year time horizon. Fundamentally, the 6th EAP and the thematic strategy call forth the increased coherence of waste, product and resource policies (European Commission 2005a).

In 2006, the **second EUSDS** made the first prominent mention in EU documents of 'resource efficiency' (within the priority area 'conservation and management of natural resources'), i.e. using renewable resources at a rate that does not compromise their regeneration and reducing the use of non-renewable resources (Council of the EU 2006: 13). Moreover, it gave a boost to the concept of life-cycle thinking (which was then integrated in the renewed Waste Framework Directive) and moved to lift the EU's product policy into a broader strategy on sustainable consumption and production, a popular theme on the global policy agenda at that time. The focus on sustainable consumption and production, and the publication of an action plan on that topic in 2008, was a stimulus for the establishment of the green public procurement policy, and it guided the further development of the Ecodesign Directive and of several of the information instruments in the EU's product policy (Watson & Herczeg 2012: 5).

In conclusion, several streams of sectoral policies have laid important foundations for the EU's activities in SMM. The waste and product policies have the longest tradition, complemented by the more recent resource policy. Those sectoral policies were often redirected or boosted by transversal strategies, such as the EUSDS, which focused on natural resources among other priority objectives. That means that a European SMM (or resource efficiency) policy sprouted from a long existing policy-making tradition in the EU. It also means that the existing context and background of current policies need to be fully understood if one wants to assess the value of seemingly new concepts that arise on the EU agenda.

#### 2.4.1.2 Raw materials on the agenda

In the early years, EU initiatives related to SMM were largely situated within the realm of EU environmental policies. As the extraction and exploitation of natural resources is not an EU competence, a more economic view on materials was lacking at the European level. That changed when a global financial crisis broke out in 2008 and the EU was hit by an economic crisis and a subsequent sovereign debt crisis. At that point, the high-level political attention for the crisis at the global level, and for the sudden shortages and dramatic price increases for a number of materials (see sections 1 and 2.3.1), led to a comprehensive response to raw materials at the level of the EU. Both the Council and the Parliament requested the Commission to develop a strategy on the issue (Council of the European Union 2007: 6; European Parliament 2008a: §9). The Commission as a response launched the Raw Materials Initiative (RMI) at the end of 2008. It brought together ongoing but fragmented EU initiatives in the field of non-energy raw materials, and is thus the start of a comprehensive raw materials policy at European level.[27] The RMI's significance lies above all in its ability to address and reformulate the diverse challenges the EU faces into three fundamental ambitions (the three 'pillars' of the RMI): (1) raw materials supply from outside the EU, (2) exploitation of raw materials in the EU and (3) the efficient use of raw materials.

The RMI put a number of things in motion. The Raw Materials Supply Group—an expert group established in the 1980s that comprises EU and member state officials, industry associations, NGOs, trade unions and research institutes—set up two working groups. The first group focused on the framework conditions for extracting raw materials within the EU and made recommendations in the fields of land use planning and geological information sharing, among others (European Commission 2010d). The second group had the task of defining which raw materials are most 'critical' for the EU, with regard to economic importance and risks of supply shortages. It thus elaborated a list of fourteen critical raw materials (European Commission 2010a), which will be revised by mid-2014 (European Commission 2013a: 3). The group's approach is one of many to determine the criticality of materials (Erdmann & Graedel 2011). The RMI also brought the Commission to develop guidelines on how to reconcile the promotion of extracting raw materials with the provisions set by the EU's biodiversity policy, most importantly the Habitats and Birds Directives (European Commission 2010b). Another visible outcome was the launch in 2011 of a trilateral dialogue with the US and Japan on critical raw materials. The Trilateral Meeting has taken place annually since then. At the EU side, the initiative is organized by DG Research and Innovation (and had a predominant research-oriented interpretation), but will be taken over soon by DG Entreprise.

[27] Previously, the Commission had launched isolated initiatives on metals and mineral resources and on the competitiveness or environmental performance of the extractive industry.

As Commissioner Tajani (who took office early 2010) wanted to keep the RMI on the radar and the Commission had promised to report to the Council within two years on the RMI's implementation, it was decided to issue a second RMI Communication early 2011 after a public consultation in 2010. However, the original 2011 Communication was blocked at the highest political level, reportedly because French president Nicolas Sarkozy disputed the Commission's finding that there was no proven correlation between speculation and price increases of commodities (Henshaw 2011). Taking on the 2011 presidency of the G8 and the G20, France made stability and transparency of **commodity markets** one of its priorities (see 2.3.1), in the opinion that the speculation with commodities was one of the chief obstacles for global economic growth (Henshaw 2011; Wishart 2012). Despite concerns that it would divert political attention away from raw materials supply, the French move was backed by Commission president Barroso (Willis 2011), and the planned Communication was merged with a trade policy document on commodity markets. As a result, the RMI now focuses both on raw materials and on commodity markets, marrying an industrial issue with a trade issue. Concretely, biotic (but non-agricultural) raw materials, such as timber and rubber, are now included in the RMI (and it refers to the EU's existing agriculture policy for its strategy regarding agricultural raw materials). EU regulation of commodity markets is under way, through the revision of the Markets in Financial Instruments Directive (Wishart 2012). Other than that, the 2011 RMI Communication was mainly aimed at reporting on the implementation of the 2008 Communication and on further steps to enhance it. Currently, the two principal developments within the RMI are its integration into other policies and the European Innovation Partnership (EIP) on raw materials (see 2.4.3).[28]

Concluding, the problem of high and volatile raw materials prices and the eruption of the global financial and economic crisis have fundamentally changed the debate on materials in Europe. Although raw materials had previously been on the political agenda in one form or another, the RMI crystallized a number of concerns in the EU and pushed them towards specific ambitions with respect to the supply and use of raw materials. As a result, any debate on SMM in Europe will now be intricately linked to the EU's raw materials policy (although that link is not always coherent, see below). Whereas before 2008, issues related to SMM sprouted from waste or product policy and were explicitly situated in the environmental realm, now it cannot be seen as a purely environmental issue anymore.

#### 2.4.1.3 Europe 2020 and resource efficiency

EU action on SMM received a new impulse in the context of Europe 2020. That is the successor of the Lisbon Strategy, the EU's response to the challenges of globalization in light of diminishing European competitiveness at the start of the 21st century. The strategy received much criticism over the years, *inter alia* because of its lack of attention to social and environmental issues (and its poor relation to the EUSDS) and because of weak monitoring mechanisms (Natali 2010; Steurer & Berger 2011). For Europe 2020, an effort was made to include sustainable development concerns directly into the strategy, which now aims at 'smart, sustainable and inclusive growth' (European Commission 2010).[29] In order to give a more prominent place to social and environmental goals and indicators, Europe

[28] In addition, several specific actions have been undertaken within each of the three pillars of the RMI. The Commission's latest implementation report especially mentions realizations with regard to the EU's external policies (European Commission 2013a).

[29] For a critical discussion of the integration of sustainable development into Europe 2020, see Pisano et al. (2013).

2020 is operationalized into five very concrete targets and seven flagship initiatives that are meant to catalyze progress in a number of headline areas.[30]

In the period that Europe 2020 was developed, which coincided with the start of the second Barroso Commission, a significant institutional shift occurred in EU environmental policy-making. Since 2010, climate change falls under the newly created DG Climate Action within the European Commission. Previously, climate change was arguably the chief policy-making issue of DG Environment, for instance because the EU had a leadership role in global climate change discussions until 2009 (Bäckstrand & Elgström 2013). As a consequence, when Janez Potočnik took office as the new European Commissioner for the Environment in 2010, he had to look for a new 'grand story' if he wanted to play a prominent role within the Commission, after his 'loss' of climate change. Data from interviews suggest that Potočnik connected several policy streams to create a window of opportunity for 'resource efficiency' to become a major policy priority of the European Commission. Those streams were the existing waste and product policies of the EU, in which natural resources became increasingly prominent since the early 2000s (see above), and the focus on raw materials within the industrial policy.[31] Interviewees explain that Potočnik was explicitly looking for an issue that had the chance to weigh on the EU's economic agenda in times of crisis. Linked to the perception of scarcity of raw materials and to the problem of European competitiveness—i.e. the same economic challenges of the RMI—resource efficiency is such an issue. The result was that resource efficiency was advanced as one of the seven flagship initiatives of Europe 2020 (European Commission 2011c). In parallel, it is consistently advanced as the number one priority of DG Environment and the Environment Commissioner, and as the number one environmental priority of the EU (Potočnik 2010; 2012).

The Commission first issued a general Communication on the flagship initiative (European Commission 2011c), and then established an interdepartmental task force led by DG Environment to draft the Roadmap to a Resource Efficient Europe (European Commission 2011e). Several interviewees emphasize the unprecedented intensity of those interdepartmental consultations. The Roadmap sets out policy goals that are aimed at shaping EU policies in the years to come, in eighteen thematic and transversal 'milestones'. It has the particularity of supplementing the goals and targets of the Europe 2020 strategy with a long-term vision aimed at 2050.[32] Accompanying the goals is a spectrum of governance strategies that should be used to achieve a more resource-efficient Europe. Those strategies include addressing markets and prices, promoting new business models and production patterns, stimulating innovation, integrating lifecycle thinking, adequately informing consumers, boosting knowledge and information-sharing, and developing indicators. After the publication of the Roadmap, consultations started between the Commission and member states, inter alia on formulating specific targets for the milestones. In June 2012, the European Resource

[30] The targets are largely copied from already existing EU policies, such as the 20-20-20 goals of the Climate and Energy Package. The flagship initiatives are Innovation Union, Youth on the Move, A Digital Agenda for Europe, Resource Efficient Europe, An Industrial Policy for the Globalisation Era, An Agenda for New Skills and Jobs, and the European Platform against Poverty (European Commission 2010c: 5-6). Resource Efficient Europe and An Industrial Policy for the Globalisation Era are the flagship initiatives of the 'sustainable growth' dimension.

[31] The focus on SMM of the Belgian Presidency in the second half of 2010 did not play a specific role in that agenda-setting, since the seven flagships were already defined at that point (Council of the EU 2010; European Commission 2010c). But according to interviewees, it did help in facilitating discussions about resource efficiency among member states, once the Roadmap to a Resource Efficient Europe was published.

[32] While the adoption of long-term policy strategies oriented towards 2050 is a recent trend in the European Commission (2011b; 2011d; 2011g), the Roadmap is the only one of Europe 2020's flagship initiatives that genuinely looks beyond 2020.

Efficiency Platform (EREP) was launched, as one of the actions announced by the Roadmap (see 2.4.3).

It is remarkable how resource efficiency achieved such a high place on the EU's political agenda. As one of the flagship initiatives of the high-profile Europe 2020 strategy, backed at the highest level by national leaders through the European Council, it achieved a position unprecedented by any other initiative proposed by DG Environment. My analysis shows that the raw materials agenda and its challenges, which received much attention and visibility in 2008 and afterwards, were to a certain degree responsible for that process.

#### 2.4.1.4 Concluding remarks

Three general trends emanate from this brief historical overview. First, the policy issues that refer to SMM show a growing complexity. The landscape evolved from targeted initiatives within the separate domains of waste and product policies, which each have their own established traditions, towards an integrated nexus of waste-product-resource policies, in which policy-making is becoming increasingly intricate. Second, the global financial and economic crisis that erupted in 2008 profoundly changed the way SMM initiatives are considered in the EU, with regard to their context, their visibility, their framing (see 2.4.2) and the political importance attached to them. Third, the attention for natural resources and their policies, which took flight at different levels of society because of the crisis and other factors, crystallized into the Europe 2020 strategy as one of the chief priorities of the executive branch. As the Commission's main policy strategy, Europe 2020 and the related initiatives on resource efficiency are therefore, in principle, elevated to the highest political level and can potentially benefit from a significant political leverage.[33]

### 2.4.2 Framing

The study of framing focuses on the EU's current activities related to SMM. It distinguishes between the framing of raw materials (2.4.2.1) and of resource efficiency (2.4.2.2). The two are briefly contrasted in a concluded section (2.4.2.3).

#### 2.4.2.1 Raw materials

The problem-setting of the EU's raw materials policy, centres around the economic importance of raw materials and on contextual difficulties of gaining access to them.

In the policy framing, it is systematically emphasized how raw materials are a crucial input for the European economy on the one hand, and how the sector is significant for the amount of people it directly or indirectly employs (European Commission 2008: 2). Not coincidentally, **economic growth and jobs** have been two of the key priorities of both the Lisbon Strategy and Europe 2020. They are also the most critical economic problems of the crisis that has hit Europe. Whenever the Council formally discusses raw materials, the crisis receives most attention (e.g. Council of the European Union 2009). Therefore, the political salience of the RMI lies in its link with the crisis and its potential contribution to growth and jobs.

[33] The European Parliament (2011b: 5), however, suggests that a political battle must still be fought inside the Commission on the position of resource efficiency on the EU's political agenda.

That means that the perceived scarcity of resources, justified or not (see footnote 2), does not primarily motivate the RMI. In the framing of the RMI, it is more about **unfavourable conditions** in the external and internal context that make it hard for the EU to access this crucial input. In the global context, prices, markets and geopolitics are not conducive to easy access. The price problem refers to the soaring and especially to the volatility of prices since the mid-2000s (Council of the EU 2011; European Commission 2011f: 2; European Parliament 2008b). As for the market situation, intransparency, unfair price-setting and other distortions are invoked. It is observed that protectionism with regard to raw materials increases globally (European Commission 2008: 7), especially at the hand of the emerging powers who have a very different view on governmental intervention in the economy (Carlson 2008). Since 2011, the concern for speculation with raw materials adds to this problem (European Commission 2011f: 2). Political problems with the global context refer to the fact that the EU's geopolitical role is underdeveloped and that European companies are not active enough in third countries (European Commission 2012b: 4; European Parliament 2008b), while supply countries are increasingly being approached by rising powers (European Commission 2008: 5). All the while, the political situation of some of the export countries is very unstable (European Commission 2008: 3). In addition to those political problems, the European Parliament sometimes draws the attention to the precarious situation of the population of developing countries, who are often involved in the extraction of raw materials but do not benefit from their country's resource abundance (European Parliament 2008b). The consequences of this unfavourable global context, according to the RMI, are supply constraints and threats to the EU's competitiveness (European Commission 2008).

The internal, **European context** is also problematic for raw materials. Besides certain metals or construction minerals, the EU depends on imports for most of its material needs, especially with regard to critical high-tech metals (European Commission 2008: 2). The Commission regrets that the political attention for that import dependence is low, certainly compared to the attention for energy dependence (European Commission 2008: 2). Also, the extractive industry that manages the materials that Europe does have, is in a difficult position. That is due to competing land use claims, public protests, heavy regulation (e.g. protected areas) and the gaps in technology and skills (e.g. for extraction in complex areas such as the deep sea) (European Commission 2008: 2). Other limitations concern the use of secondary materials. Too many secondary materials still leave the EU, in part illegally, there are a number of policy failures at member state level (e.g. in waste policies) and there is still a general lack of knowledge about secondary materials (European Commission 2008: 3; 2012b). According to the Commission, the EU does have a policy strategy for several of those problems, but the policies are incoherent, sometimes badly coordinated and often not well implemented (European Commission 2008: 2; 2012b; European Parliament 2011a). The European Parliament, on the other hand, states that EU policies are underdeveloped to tackle all of those problems (European Parliament 2011a).

The solution that we find in the RMI's policy framing is its three-pillar strategy for access to raw materials, coupled with some horizontal governance priorities. The first pillar refers to **raw materials supply** from outside the EU and puts the emphasis on developing and strengthening global markets. The RMI aims at reliable and undistorted access to raw materials, transparency, a level-playing field, predictable long-term prospects and (as from 2011) the regulation of financial markets (Council of the EU 2011; European Commission 2008; 2011f). The European Commission and especially the Council stress a market-based approach. Looking at the second pillar, the **exploitation within the EU**, the RMI's main objective is in increasing the domestic capacity for extracting raw materials

(European Commission 2008: 3). The third pillar includes everything that can be related to **lowering the demand** for primary materials, such as the efficient use of materials, recycling and reusing them, and substitution (European Commission 2008). The European Parliament, in addition, is in favour of an approach based on the concepts of sufficiency and sustainability (instead of a narrower market-based approach), and underlines the needs for decoupling and for a different consumption model (European Parliament 2008b).

For all three pillars, a need for more **epistemic work** is emphasized. That includes more research and analysis about the topic, increased monitoring of material use in Europe and promoting innovation (European Commission 2011f; 2012b; European Parliament 2008b). Another horizontal point of attention is the demand for a **common global strategy**, that the EU should promote in the UN (e.g. with UNCTAD), the WTO, the G8, the G20 and the OECD (Council of the EU 2011; European Commission 2008: 2; European Parliament 2008b). Mostly international bodies aimed at economic governance are mentioned. Since 2011, also the need for good governance within the first pillar is stressed by the EU. In addition to a common global approach, the European Parliament demands a real political strategy towards key third countries (European Parliament 2011a).

The different elements of the solution cited above should be incorporated into one policy strategy (Council of the EU 2011), that needs to have sufficient political weight (European Commission 2008: 5, 12). The Parliament asks that this strategy would aim at 2050, and that specific legislative changes follow from it (European Parliament 2011a).

Although the RMI does not apply an explicit hierarchy among the three pillars, the policy framing suggests an **implicit hierarchy** favouring pillars one and two, especially when one looks at the Commission and the Council. Interviews suggest that DG Entreprise sees most added value in European action when it comes to those two pillars. That partly stems from the conviction that secondary materials will never account for enough to rule out the input of new primary resources, certainly on the short and middle term, and that the priority should thus be on securing access to primary raw materials from inside and outside the EU. Interviewees especially acknowledge the added value of new European action in the second pillar, in which EU competences are the smallest. But the measures proposed by the Commission in that pillar do not go much further than improving framework conditions for raw materials extraction in Europe. Most new measures relate to the first pillar (see European Commission 2013a), and that is also the one to which the Council pays most attention. The Parliament does not follow this general trend in the policy framing, as it is mostly attentive to the third pillar and least to the first pillar (European Parliament 2011a). The Parliament's discourse on raw materials in general deviates somewhat from the other institutions', and especially contrasts with the Competitiveness Council when it comes to the importance of the third pillar.

#### 2.4.2.2 Resource efficiency

In the policy framing of resource efficiency,[34] the EU's resource problem is very clearly an **economic** one. The Roadmap stresses different forms of scarcity that follow a rising demand for a number of resources at a global scale and a volatility of resource prices (European Commission 2011a: 3-4; 2011c: 2; 2011e: 2-3). Besides global economic trends, the Roadmap deals with market distortions or systemic construction errors within Europe. Those are situated in three domains. First, the EU addresses the problem of **externalities** (such as pollution or waste) that are not reflected in the

[34] For the European Commission (2011c: 2), *natural resources* entail not only raw materials (minerals, metals and fuels), but also food, air, soil, water, biomass and ecosystems.

prices of resources. As a consequence, signals of scarcity are not perceived, and unsustainable exploitation and inefficient consumption are promoted (European Commission 2011a: 20; 2011e: 2, 4-5, 9-11, 23). Second, the Roadmap denounces the exclusive orientation of **financial markets** towards short-term interests, whereas the long-term gains of resource efficiency are not sufficiently rewarded (European Commission 2011a: 19; 2011e: 20). In a working document of the European Parliament, it is argued that this "vested interest focussed on short-term economic gains needs to be defied" (European Parliament 2011b). Third, a related distortion is the unfamiliarity of **investors** with the returns of resource efficiency, which functions as an obstacle for sustainable investments (European Commission 2011e: 9, 12, 20). In its framing of resource efficiency as an economic problem, the Commission refers to several studies and uses many numerical data in order to underpin its arguments with a reliable scientific base.

Although the Roadmap is an initiative of DG Environment, environmental problems take a backseat in the economic policy framing. Only limited attention is given to the pressure of the EU's extensive resource use on ecosystems and to its contribution to climate change (European Commission 2011a: 4-6; 2011e: 2). The same goes for social and demographic changes (European Commission 2011a: 2). Moreover, when problems related to environment, energy or health are invoked, they are framed as economic problems and expressed in, for instance, the loss of working days (e.g. European Commission 2011e: 14). Another element of the problem framing is the fact that other actors on the international stage are taking steps towards resource efficiency and that it all fits in a global transition (European Commission 2011a: 9-10; 2011c: 8-9; 2011e: 3, 22). Finally, the transition towards resource efficiency is also presented as a policy problem, and explained as the result of policy failures and inconsistencies, e.g. inefficient subsidies (European Commission 2011a: 20-22; 2011e: 9-11; Potočnik 2011).

The solution to the resource problem is framed as an economic story as well. The EU sees for itself a significant role in what it calls "**transforming the economy**" (European Commission 2011e: 23). The Roadmap proposes a number of adjustments that can be made in the system's *policy* framework (of which the EU controls a significant part) in order to eliminate the distortions and construction errors of the *market* framework. The solutions for a new policy framework mostly revolve around the principle of 'getting the prices right'. Policies must create economic opportunities, offer the right incentives for investments, reward innovation and resource efficiency, and ensure the security of supply. The way to do this is on the one hand by conducting policies that promote product redesign and increased reuse, recycling and substitution of materials, and on the other hand by improving the coherence among existing policies, which "shape our economy and our lifestyles" (European Commission 2011e: 2). An improved policy framework, in short, offers long-term certainty to businesses and investors about the future policy direction of Europe, which is aimed at resource efficiency.

The solution advanced by the Roadmap is presented as a blessing for the European economy. The multiple **economic advantages** of resource efficiency are systematically emphasized: it will lower the EU's import dependence and boost the competitiveness of its economy (European Commission 2011e: 4, 6, 8, 10-11, 19-20), it will be a source of growth, profit and jobs (European Commission 2011e: 2, 4-5, 8, 10, 20), it will offer opportunities for businesses to capitalize on the commercialization of their innovations and to use waste as a resource, and it will help consumers to save money (European Commission 2011e: 2, 4-6). With all those economic benefits, the Roadmap to a Resource Efficient Europe is actually presented as a guidebook out of the European economic crisis.

The Roadmap's solutions suggest a firm belief in the market's ability to steer itself, provided that policies offer the right incentives. The EU's confidence in the functioning of **improved market mechanisms** should not be surprising and can partly be explained by the fact that the strongest EU competences relate to the internal market. In several domains, the European Commission tends to invoke its competences with respect to the internal market as the legal basis of policy proposals (e.g. Pollack & Shaffer 2005: 331). Already during the recession of the late 1970s, the EU's environmental policies were framed as economic measures (Lenschow 2005: 307, 312). During public events in 2011, Commission officials were heard explaining how the Roadmap can be seen as an attempt to 'resell' the EU's environmental and climate objectives as an economic agenda. It should be highlighted here that the Commission, an actor with its own preferences and interests, is known to use its right of initiative in EU policy-making to frame proposals as much as possible to its advantage (Hix & Høyland 2011: 212).

#### 2.4.2.3 Concluding remark

Looking at the problem framing of both the raw materials and the resource efficiency policies, a high degree of similarity is observed. Although resource efficiency is a strategy led by DG Environment and explicitly presented as the 'environmental' flagship of Europe 2020, the EU's resource use is completely framed as an economic problem, and its answer is framed as an economic solution. While that is not a new strategy, it deviates from the basic mission of the EU's environment policy, i.e. to protect and improve the environment, when environmental concerns take a back seat to the economic policy framing. My analysis suggests that DG Environment learnt from the experiences of the RMI and largely copied the framing of that initiative for its own roadmap. The reason is that the European Commission's environmental branch, and Environment Commissioner Potočnik, wanted to create a story that would receive high political backing at a time of economic crisis. Interviewees explain that the economic problem-setting should be considered as the Roadmap's greatest success, as it is probably the reason why it was accepted as one of the EU's central goals at such a high level (with its integration in Europe 2020). At a time when a global financial and economic crisis—revealed by, for instance, high commodity prices—coincides with escalating environmental crises, it is indeed a first that an environmental strategy is so broadly recognized as a core economic problem. The underlying argumentation that this is the best way to achieve progress in the EU's environmental policy, has yet to be proven.

The differences in the framing of the two initiatives relate mostly to specific accents, such as the larger emphasis on physical scarcities in the Roadmap to a Resource Efficient Europe, and to the priority weight that is given to the different 'pillars' of the strategies.

### 2.4.3 Concrete practices

The most important elements of the EU's SMM activities are, by definition, not very concrete practices. Roadmaps (such as the one on resource efficiency, and the RMI can also be considered as one) are proposals by the European Commission that should be seen as overarching frameworks and as an '**announcement**' of the initiatives that the Commission, with its exclusive right of initiating EU legislation, is likely to take in the years that follow. Of course, every concrete initiative that is taken in the framework of such roadmaps, then needs to be negotiated with the member states and within the European Parliament, before it can be adopted.

As resource efficiency was stated to be Commissioner Potočnik's first priority, and the Commission's number one environmental goal (see above), it also became the umbrella concept of EU activities on SMM. For instance, it permeates **other plans and strategies** for which DG Environment has taken the lead. Most importantly, resource efficiency is firmly embedded into the Union's 7th EAP—of which one of the key objectives is "to turn the Union into a resource-efficient, green and competitive low-carbon economy" (European Commission 2012a)—, the impact of which reaches at least until 2020.

Since a firm legislative body is already in place in fields important to SMM, such as waste, product and resource policies (see above), another significant difference that the new strategies can make is in the **review of existing legislation**. For instance, when the Roadmap to a Resource Efficient Europe came out, many reviews were ongoing or planned. A significant share of the goals included in the Roadmap was to influence those reviews by integrating resource efficiency concerns into the process. Two examples are the review of the waste policy and legislation and the expansion of the scope of the Ecodesign Directive to non-energy related products (European Commission 2011e).

Similarly, DG Enterprise wants to integrate the considerations of the RMI into other policy processes. The waste policy review is targeted (especially with regard to the specific targets of the key directives), as well as the Ecodesign Directive. Raw material concerns should be integrated in the latter through its extension to new product groups, and the setting of specific targets of, for instance, recycled content. DG Entreprise also wants to weigh on the reform of Environmental Impact Assessment (EIA) Directive and on the revision of the Waste Shipment Regulation (European Commission 2013a: 18). From the perspective of the RMI, the shipment of certain forms of waste might best be avoided, although that idea can clash with free trade principles (see also Van Calster 2014).

The success of those influence attempts can only be judged when they have come to an end. In the case of the Ecodesign Directive, the integration of raw materials and resource efficiency concerns have not reached the result that DG Environment and DG Entreprise had intended. The Commission eventually decided after its review that a revision of the directive is not appropriate and that there is no need for extending it to non-energy-related products. The reason is that energy continues to have the largest environmental impact, and that non-energy environmental impacts occur mostly at earlier stages of the life-cycle and should not be addressed in the final product (European Commission 2012d).

Other processes are still ongoing. The revision of the Waste Shipment Regulation, for instance, is still running (European Commission 2013d). Moreover, the results of the review of the waste policy and legislation will be presented in 2014. It is at least the Commission's aim to integrate both the objectives of the Roadmap to a Resource Efficient Europe as well as the consideration of easy access to raw materials (European Commission 2013c). But it remains to be seen how the public consultation process and subsequently the Parliament and the Council will put their mark on the final result. The review of the EIA Directive is in a final stage. The last Commission proposal contains many references to resource efficiency and explicitly states that the new directive is a measure to implement the Roadmap to a Resource Efficient Europe. Raw material concerns are not mentioned (European Commission 2012c).

However, in processes that are more remote to the EU's environmental policies, it was proven much more difficult to attempt the integration of such concerns. Both in the case of the RMI as well as resource efficiency, interviewees explain that an integration of resource considerations into the reform of the Common Agricultural Policy failed.

A detailed analysis of the goals and instruments of the Roadmap to a Resource Efficient Europe will be done at a later stage of this project (see also Happaerts & Bruyninckx 2013a). While the Roadmap depicts a spectrum of governance strategies that could be used to achieve a more resource-efficient Europe—such as addressing markets and prices, promoting new business models and production patterns, adequately informing consumers or developing indicators—it does not really create new instruments. An exception is the **EREP** (European Commission 2011e: 21). That is a high-level consultation group, composed of Commissioners, MEPs, Environment Ministers, international organizations and representatives of different stakeholder groups, that meets at least twice a year and is meant to give guidance to the implementation measures of the Roadmap and monitor its progress (European Commission 2012e). The Platform in July 2013 adopted a series of recommendations to advance the implementation of the Roadmap, such as setting targets for resource productivity, promoting non-financial company reporting, phasing out environmentally harmful subsidies and developing instruments for SMEs (EREP 2013).

The RMI led to a similar consultation mechanism. The **EIP on Raw Materials** was launched as a result of both the RMI's 2011 Communication and Europe 2020's flagship initiative *Innovation Union*. It brings together all relevant actors at the European, national and regional levels to discuss required strategies to boost research and investments in key sectors. The partnership is meant to identify and reduce obstacles for research and innovation promoting the exploration, extraction, processing, recycling and substitution of raw materials (European Commission 2013b). It wants to do so, for instance, by setting up ten innovative pilot actions (e.g. demonstration plants) that target the various aspects of the value chain of materials (European Commission 2013a: 4-5). In addition to the EIP, the Commission established a European Rare Earths Competency Network (ERECON), bringing together different experts to think about the supply security of those critical materials.

Research and innovation are advanced as solutions for a raw materials strategy and for resource efficiency. It is therefore pertinent to assess the degree to which resource efficiency concerns are integrated into **Horizon 2020**, the EU's new framework programme for research and technological development. In that new framework, 'climate action, environment resource efficiency and raw materials' are included as one of the key societal challenges. It will receive 2.81 billion euros (ranking fifth among the seven societal challenges), or about 4% of the total funding of Horizon 2020, but that represents almost a 50% increase in total funds in comparison to the previous framework programme.[35]

Some other concrete practices will be studied in the next phase of this project, when the EU's efforts to propel a genuine transition towards SMM will be gauged.

[35] The figures are derived from internal KU Leuven calculations.

# 3. Comparative patterns and concluding analysis

This third section departs from a comparative perspective and identifies some significant patterns and trends. First, I discuss three significant events that shaped SMM debates throughout all international bodies (3.1). The paper subsequently zooms in on meaningful dissimilarities among the analyzed discourses and practices and reflects upon the question of fragmentation in SMM governance (3.2). Finally, some areas for future research are suggested (3.3).

## 3.1 Milestones in SMM discourses and practices

The analysis has demonstrated that concepts and issues related to SMM emerged onto the agenda of various organizations at the global and European level in the past decade. In some cases, it evolved naturally out of a tradition of policy-making in areas such as waste. In others, SMM activities were triggered by external factors. In the environmental field, SMM has gained a firm place on the political agenda. And although meaningful differences exist in the approaches taken by various organizations, three defining events were commonly significant throughout the ten-year history of SMM.

A first defining moment took place in the second half of the 2000s, when multiple commodity crises pitchforked the **issue of raw materials** to the highest ranks of geopolitics. While governmental intervention with raw materials was rare or low key before 2007, the sudden high and volatile prices of a number of commodities radically changed the political debate on raw materials. Some international bodies took the advantage of linking their SMM practices, which beforehand were purely an affair of low-level environmental politics, to the new issue of raw material governance. This historical change of mindset was closely followed by the outbreak of the global economic and financial crisis in 2008, which gave a major blow to long-term sustainability thinking, and centred political attention even more so than before on economic considerations on the very short term, focusing on economic recovery. The consequence of those events is that SMM can never be considered as a purely environmental concept anymore. Since the mid-2000s, the framing of SMM and the practices that ensue from it are, to a varying degree, infused with an economic and market-driven logic.

A second landmark in the short history of SMM is the emergence of the concept of '**resource efficiency'** in 2010. While that term carries a different connotation than SMM, the precise interpretation of either concept strongly depends on the priorities of each international body (see 3.2). But the issue was presented under a new denominator in order to give a new impetus to the debate. Both UNEP and the EU champion in giving substance to this new policy concept. The agenda-setting is closely related to the issue of raw materials, and wants to benefit from the economic crisis in order to attract political capital to a new issue in environmental policy-making, which is presented as having a very economic rationale. In my view, the popularity of the concept is motivated by two considerations. First, resource efficiency takes advantage of the void left by climate change, which had been the world's number one environmental priority since a couple of years, but received a blow on the international agenda after the perceived failure of the Copenhagen conference. Second, resource efficiency presents itself as an integrating concept: a more efficient use of resources allows

connections with a broad spectrum of environmental problems, of which climate change is only one example, and provides an effective solution to several forms of environmental impact.

Finally, the further impact of the economic crisis effectuated a third defining moment for SMM, when the preparation of Rio+20 put sustainability issues in the spotlight. In 2011, UNEP, the OECD and other international bodies crafted the **green economy** as a new paradigm for sustainable development, combining economic and environmental concerns. Although not central to the endeavour, resource efficiency (and, by extension, SMM) received a new boost in that discourse, as it offers both ecological gains and economic savings in win-win scenarios for various sectors. The consequence of this event is that the economic advantages of SMM are highlighted, to the extent that the environmental necessities of SMM, for which the concept emerged in the first place, risk being neglected.

## 3.2 Global governance of natural resources: a puzzle with different pieces

As SMM appeared on the agenda of various global and European bodies in the past decade, it gave rise to a complex policy puzzle. In that puzzle, each organization offers a piece with distinct characteristics and priorities. The different foci are a product of the idiosyncratic traits of each organization, emanating from their membership and mandate, and of the way SMM evolved on their agenda.

Under the label of resource efficiency, **UNEP** covers a broad programme of initiatives. The policy options for SMM that are designed in that context, are predominantly useful for countries that still have to take their first steps towards the sustainable management of natural resources. Nevertheless, UNEP's varied activities offer benefits for more advanced actors too. Most importantly, it seeks partnerships with a variety of actors, and is a source of innovative studies in the form of the IRP. Another important role of UNEP is the coordination of MEAs (and their secretariats), and catalyzing the development of new MEAs. Out of the long tradition of chemicals regimes, UNEP was the leading force behind the Minamata Convention, the new treaty for mercury that advances a life-cycle approach, which, if successful, is a promising approach for the future governance of natural resources.

The **OECD**, although it reaches out to middle-income economies in recent years, caters to a more restricted audience. Its activities—which the OECD, as the only multilateral body, gathers under the label of SMM—are less varied than UNEP's. Most actors view the OECD as a very useful report-producing organization, with a strategy aimed at knowledge-building. The substantive focus of the OECD's studies is governance-related: the OECD offers general and specific support for policies aimed at SMM. However, the long tradition of the work on waste weighs heavily on SMM and in some instances prevents it from reaching its ambitions.

The output of the **G8** and the **G20** is less specific and much more vague. Their role is that of an agenda-setter. Often the first to signal new trends in global economic governance, the G8 and the G20 played a role in shaping the framing of SMM. When rising commodity prices first caused concern, they helped forge a robust link between an environmental issue and the short-term global economic agenda, the impact of which reached to all other major actors.

The **EU**'s SMM activities are the broadest[36] and deepest and can in many instances not be compared to those of the other organizations, because of the unique characteristic of the EU as a regional organization with supranational powers. In the EU, 'resource efficiency' was bombarded as a new environmental policy-making priority, hiding under the camouflage of an economic and internal market agenda. The significance of the European resource efficiency policy lies in its ability to influence or steer new legislation or ongoing legislative reviews, and in the fact that such legislation is binding for 28 member states. The EU is also the organization where those SMM activities are most deeply rooted in existing policy traditions. This has the advantage that a number of instruments are already in place to work towards SMM. But it also bears the risk of being stuck in path dependencies and in existing sectoral fragmentation. The opposing priorities (perceived or not) and different implicit hierarchies of the Roadmap to a Resource Efficient Europe and the RMI are therefore a cause of concern.

A very visible difference across the studied organizations is the concept that is used ('resource efficiency', 'sustainable materials management' or other), the types of resources that it covers and the precise definition that is given to it. At a purely conceptual level, the **different labels** carry other connotations and priorities. 'Sustainable materials management' implies a more holistic perspective, taking into account all forms of impact of material use and integrating economic, social and environmental considerations. 'Resource efficiency' and 'resource productivity'—although the focus on resources can suggest a broader scope than a focus on materials—promote a more instrumental view of natural resources, as an input for economic development. The latter puts the emphasis fully on an economic finality, while the former places the focus somewhat more on environmental protection. Other terminologies, such as the circular economy, are derived from those concepts.

However, international discourses and practices do not necessarily obey those conceptual connotations. For what international policy-making is concerned, it is much more important to look at what organizations actually advocate or promote when using those labels. For instance, although they support the same label, UNEP and the EU undertake very different 'resource efficiency' activities with other priorities. UNEP's interpretation of the label is much more focused on environmental impacts, while the EU's conception is closer to resource productivity. Furthermore, the OECD's actions are not necessarily more holistic because they take place under the umbrella of 'SMM'.

When looking at what organizations actually advocate, many differences are therefore identified. Most significantly, UNEP is the only organization that explicitly targets both **impact decoupling and resource decoupling**. The OECD, the G8 and the G20 limit their goals to impact decoupling, while the EU remains vague on that front. The claim that UNEP, on a discursive level, sponsors the broadest interpretation of SMM is not only supported by its consideration of the broadest range of impacts caused by resource use, but also by the fact that it systematically looks at the consumption side of the picture and at human behaviour, which other organizations not always do. Also, UNEP takes the concept much further than waste issues, while for instance the OECD, although its concept of SMM appears most advanced, often remains stuck in waste discussions. These observations are nuanced by the fact that UNEP's concrete practices have a less direct or tangible impact than some other bodies.

[36] The very wide definition of resources by DG Environment makes that it entails many different things that are far from a strict interpretation of SMM, such as water management, clean air or ecosystem services.

It is also striking that UNEP is the only organization that explicitly departs from the observed unsustainability of our current system in order to justify SMM. On the other hand, it refers the least to the short-term economic consequences of resource use, and its SMM activities are less strongly embedded in an economic agenda than the other organizations. That agenda is most apparent in the OECD, for which the economy always takes centre stage, and in the case of the EU, which appears to focus exclusively on issues that can be handled through stronger European cooperation within the single market.

Following the divergent focus on the two types of decoupling, some opposing recommendations can be identified. For instance, the OECD advocates reduced consumption especially for renewable resources (see 2.2.2), which is not the case elsewhere. Those differences can be attributed to a **diverging view on the issue of scarcity**. In some international policy processes, scarcity is seen as a pressing economic problem (e.g. the G8 or the EU's resource efficiency policy) and sometimes as a derived environmental issue, while other organizations follow a stricter economic logic that scarcity is never a problem in itself but a market driver (e.g. the OECD). Another example is that some strategies in the context of SMM demand that economic growth needs to be rethought (e.g. the EUSDS), while others do no such thing. For governments trying to pursue SMM by following international guidelines, the lack of uniform and unambiguous priorities can be more than confusing.

It has been observed that global environmental governance is characterized by increasing **fragmentation** in many fields (e.g. Biermann et al. 2009). Whereas others have concluded that there is no multilateral policy for raw materials (Hilpert & Mildner 2013: 7), this paper shows that the field of SMM is characterized by a multitude of international discourses and practices. Many of those, for that matter, are interlinked: UNEP's IRP is co-chaired by the EU, the EU cooperates closely with the OECD, the OECD offers assistance to the G8, etc. The multitude of discourses and practices shows a growing interest by the international community in the issue of the sustainable governance of natural resources. But the many different priorities and accents form a complicated puzzle.

## 3.3 Further research

As this paper studied a wide thematic issue and covered a broad range of international organizations, the analysis was clearly limited in a number of regards. Several issues and problems that were touched upon should form the object of further research, and some of them will be addressed in the remainder of this project.

I claimed that the outbreak of the global economic and financial crisis in 2008 structurally impacted on international discourses and practices of SMM. A regained focus on short-term (and narrow?) economic interests was one of the consequences visible at both the international and the national level. Further research, possibly at a later point in time, should look at the **precise impact of the economic crisis** in terms of agenda-setting, governance strategies and political will for SMM and related environmental issues. Especially the opportunities for long-term policies aimed at sustainability transitions should be the focus of that research.

The emergence of green economy discourses is related to the economic crisis. Current research has not sufficiently addressed the **added value of the green economy** for issues such as SMM. On the one hand, researchers should look into the evolution of the green economy concept on the global environmental agenda and how issues are framed in that regard. On the other hand, it is unclear until now what the position of SMM is or can be within the green economy. For instance, resource

efficiency receives a central place in UNEP's green economy strategy while SMM is only marginal in the OECD's green growth policy. That question is related to the identification of the real (net) economic benefits of SMM, on which much uncertainty still exists. It is obvious that such research will entail both political, economic, sociological and other disciplines.

In this project, a subsequent object of analysis will be the **contribution of international discourses and practices to a transition towards SMM**. Following the Flemish ambition to effectuate such a sustainability transition, I will look deeper into a selected number of international cases to analyze to which extent such a transition is supported at the international level, and how the linkage with Flemish policy processes can best be made. That analysis will also embed those international initiatives more strongly in a theoretical framework of sustainability transitions.

Finally, while this paper dealt with international SMM discourses and practices in the governmental sphere, this project will next zoom in on **non-governmental initiatives for SMM at the international level**. As it is commonly understood that a multi-stakeholder approach is needed to achieve the transition towards SMM, and more and more observation confirm the significance of bottom-up initiatives, better knowledge is needed on the nature and significance of those non-governmental activities.

# 4. Relevance for Flanders

While this project is intended to result in policy recommendations for the Flemish Government in 2015, it is significant to already reflect at this stage on the relevance for Flanders of the international discourses and practices of SMM. It is Flanders's ambition to be a European pioneer with regard to SMM by 2020 (Vlaamse Regering 2012), and the Flemish Government is traditionally susceptible to international policy-making in sustainability issues (cf Happaerts 2012). In this final section, I first address the issue of leadership in the field of SMM (4.1). Subsequently, the added value of each of the international organizations for the Flemish SMM strategy are discussed (4.2). I conclude with a number of provisional recommendations for the Flemish Government (4.3).

## 4.1 Frontrunners of sustainable materials management

According to the *Flanders' Materials Programme*, "the current frontrunner role" of Flanders should be consolidated and Flanders should be "positioned by 2020 in the top 5 of European regions in the field of the sustainable management of materials" (Vlaamse Regering 2012: 4). Put differently, "[b]y 2020, [Flanders] wants to establish a basis for a green circular economy with the lowest possible use of raw materials, energy, materials and space, and the smallest possible impact on the environment in Flanders and in the rest of the world. Flanders is a pioneer in the field of materials management and materials technology and valorises this know-how on an international level" (Flanders in Action 2012). That ambition is in accordance with the general goal of the socioeconomic programme *Flanders in Action* to elevate the region among the 'top five' in Europe in almost all domains (Vlaamse Regering 2009). It is, however, not specified how that leadership position can be verified—which is related to the lack of consensual indicators for SMM.

A first, tentative indicator would be the existence of a vision or policy strategy for SMM. According to the European Environment Agency (EEA), only Austria, Germany and Flanders have a resource efficiency strategy in the EU (EEA 2011). Within the G20, only a handful of countries, such as Germany, the UK, the US and the EU, pay attention to innovation for sustainable management in their resource policies (Hilpert & Mildner 2013: 21-22).

As a rough and inaccurate indication for SMM leadership, I asked my interviewees which countries or governments they considered to be SMM frontrunners or pioneers. Those interviews again made clear that there is no uniform idea about what SMM leadership looks like or how it could be gauged. Nevertheless, Belgium (or Flanders) is by many considered to be situated among a group of well-performing countries. Following the Flemish Government's pilot position in this issue within Belgium (see footnote 21), the image of Belgium with regard to SMM can almost be equated with that of Flanders. But other countries, particularly the Netherlands and Germany, are more systematically mentioned as frontrunners. Moreover, the Flemish performance is strongly linked to its well-known experience with regard to waste management, more so than with anything else. It is also striking that interviewees associate a form of Flemish leadership with the concept of SMM, but much less so in the case of resource efficiency, although this paper has shown that those different labels do not

necessarily relate to very different issues (see 3.2). Finally, interviews point out that an important handicap for Flanders to be considered as an SMM leader, is that it does not have a good overall reputation with regard to environmental policies.

## 4.2 The added value of global and European organizations for the Flemish strategy

In accordance with its ambitions, Flanders has been active at the global and European level since a number of years. International SMM activities are mostly followed-up by the European Policies Team of OVAM, and the International Environmental Policy Division of the Environment, Nature and Energy Department. Those officials are not only concerned with the transposition and implementation of global and European policies in Flanders, but also with the promotion of SMM in international decision-making. Many of those efforts culminated in the Belgian presidency of the EU in the second half of 2010, during which Flanders was responsible for the environmental agenda and OVAM for instance organized the global forum on SMM (see 2.2.3). The Flemish Government continuously seeks to keep pace with international developments, as illustrated by the support for this research project.

For a region with the ambition to consolidate a frontrunner position, international discourses and practices are indeed of utmost importance. When an issue, such as SMM, appears on the global political agenda, the existence of pioneers or frontrunners, or the identification of best practices at the national or subnational level becomes extremely relevant. It is those frontrunners that are then best placed to put their mark on the global issue, and potentially become a model for others (Jänicke 2013). Governments that are already a frontrunner or that have the ambition to become one, should thus continuously seek connections between international discourses and practices and their own policies. That is precisely where the added value of global and European SMM activities for the Flemish Government lies. Furthermore, leaders pioneer both domestically and externally. Multilateral policies and the international arena in general should therefore be used to convince others to adopt the right priorities and to keep moving the issue forward.

But in a complex SMM landscape, what can the different global and European organizations exactly offer to the Flemish Government, and what should be the Flemish position towards them?

In the case of **UNEP**, the policy guidance that is developed might not be of direct relevance for the Flemish materials strategy. But frontrunners such as Flanders can try to weigh on the formation of the advice that is given to others, and make sure it is in line with a true transition towards SMM. Nevertheless, Flanders can be inspired by UNEP's genuine multi-stakeholder approach, and attempt to integrate aspects of that approach in the OECD's activities and, where possible, in the EU's resource efficiency policy. The most useful aspect of UNEP's work for Flanders is without a doubt the studies produced by the IRP, which should be closely followed-up.

The **OECD** can be a very useful forum to valorize the Flemish leadership ambitions externally. OECD reports, which are widely used, offer broad visibility to good practices and interesting cases. It is striking that Belgium/Flanders is only rarely mentioned in those reports, certainly compared to a country like Japan. Whereas the good Flemish experiences are well-known inside (narrow, mostly waste-related) OECD circles, appearances in OECD reports would carry a much wider recognition. For instance, as this paper shows, the OECD's activities reach to G8 summits and can thus receive an even greater political weight. Besides the use for visibility purposes, the OECD is interesting for

Flanders because it offers a forum that goes beyond the well-known EU context but also includes other global players. In addition, compared to other organizations, the OECD allows emerging issues (e.g. nanowaste) to be discussed quite easily, and can thus be used to put new priorities on the agenda of the international community.

Also **the G8 and the G20** are important from the perspective of agenda-setting. Moreover, those organizations are useful to create global support for new policy concepts. As this paper has shown, G8 and G20 discussions influence other international policy processes. It is therefore of utmost importance that SMM is never countered by the G8 or the G20, but always supported by the issues on its agenda. Flanders, of course, cannot directly impact on the G8 and the G20, but it can indirectly weigh on it through its involvement in the EU and the OECD.

In the **EU**, especially the permeation of resource efficiency into existing or new policies and legislation is important (see 2.4.3 for an overview). It is also the area where Flanders, through national channels, has the most potential to influence the debates. As many of those processes result in legislation that is binding for Flanders, it is in the interest of the Flemish Government to strive as much as possible for the integration of resource efficiency considerations in those different debates, and to do so in such a way that it is in accordance with the proper Flemish SMM ambitions.

## 4.3 Recommendations

To conclude this paper, a number of provisional policy recommendations are given with regard to the Flemish materials strategy and its connections to international policy-making. These recommendations will form the object of further reflection in the remainder of the project.

First, this paper has drawn attention to the risk of exclusively emphasizing the economic benefits of SMM. That strategy has indeed been useful to engage a larger number of actors and to increase the political visibility of SMM, as especially the EU case has shown. But the strategy also bears risks, for instance if subsequent experiences would demonstrate that the net economic benefits of SMM (e.g. job gains) are smaller than anticipated or compensated by losses elsewhere. To avoid that support for SMM completely disappears if that would happen, SMM policies should be built on both economic and environmental arguments. Not only prices, potential scarcities and import dependence should motivate investments in SMM, but also wasteful consumption and environmental impacts.

Social considerations receive surprisingly little explicit attention in international SMM policies, except for some often invoked (socio-)economic side effects such as employment, and UNEP's attention to poverty eradication. But both from a North-South perspective and from a more inclusive idea that many environmental or health impacts touch more vulnerable populations first, social considerations should also have their place in an integrated SMM concept.

**The Flemish Government should thus aim for an integrated approach that combines both a socio-economic and an environmental discourse of SMM, and defend that integration at the international level**. One possible way to achieve (part of) such an integration, and to make sure that SMM gains enough support even without exclusive economic arguments, is to emphasize the idea that SMM addresses multiple environmental problems at the same time. Therefore, investing in a more sustainable management of natural resources would facilitate the solution for related environmental issues and merits more significant political support.[37]

[37] This does not imply that in certain specific cases a choice will not have to be made between different environmental priorities.

Second, as international SMM policies are fragmented, much efforts remain to be done in goal-setting and framing. The frontrunners will be the ones that weigh on the definition of international priorities, e.g. with regard to how much attention is given to reduced consumption, which targets will be adopted, which materials are given precedence, etc. **The Flemish Government should thus actively attempt to advance its own priorities within international SMM policies, and make sure that global and European processes have a sufficiently high level of ambition**. That also means that Flanders should defend the adoption of broad and holistic SMM concepts and definitions at the international level. Although the Flemish ambitions are not always unequivocal, especially with regard to how it wants to excel internationally, a number of areas should especially be targeted: decreasing and dematerializing consumption, reducing all forms of environmental impacts, questioning current structures, and promoting new business models and social practices that have the potential to initiate a transition towards SMM.

This recommendation also extends to the studies and reports that are commissioned by international bodies. Where possible (e.g. within the IRP Steering Committee), the Flemish Government should stress that the objects of analysis correspond with the priority issues mentioned above. Flanders should also continue to seek connections between those international reports (not only by the OECD, but also by the IRP and others) and its own policy strategies.

In realizing this recommendation, the Flemish Government should of course cooperate as much as possible with like-minded governments and other intended pioneers.

Third, to become a leader in SMM, the existing efforts to be active at the global and European level should be sustained and strengthened. **The Flemish Government should invest in a true visibility strategy**. That means that Flanders, even more so than today, should take advantage of every opportunity to put the Flemish experiences and policies in the spotlight. As mentioned above, Flanders should lobby to be mentioned among the best practices in reports by the OECD and other bodies. It could also do so by volunteering to finance certain reports itself (and have a greater impact on the topics) or develop specific cases of other reports.[38] Furthermore, the Flemish Government should increasingly use opportunities to present the progress of its policies at both internal (e.g. within the OECD) or external events (e.g. the European Resources Forum or the World Resources Forum). As a true leader, Flanders should invest in each available channel. Only then can it hope to be considered as an indisputable reference partner, and thus also aspire to gain a seat in platforms such as EREP.

As a fourth and related recommendation, **the Flemish Government should endow the *Flanders' Materials Programme* with a true European dimension**. Capitalizing on the different international discourses and practices analyzed in this paper, the *Flanders' Materials Programme* should become the answer to the various challenges addressed by those international processes. That will mean that Flanders is careful to make the right linkages between its SMM ambitions and international strategies that do not carry that label, thus avoiding that the Flemish ambitions become imprisoned by a single concept. Flanders should also turn the *Flanders' Materials Programme* into a showpiece of its policies. That can be done by developing, in first instance, an attractive English website of the initiative, and by giving it a central place in its visibility strategy suggested above.

[38] Related to that idea, the presence of strong knowledge institutions is an important characteristic of a pioneer and should thus receive sufficient attention in Flanders.

# Bibliography


Andresen S., Rosendal K. & Skjærseth J. B. (2013), 'Why negotiate a legally binding mercury convention?'. *International Environmental Agreements: Politics, Law and Economics*, 13 p. 425-440.

Andrews-Speed P., Bleischwitz R., Boersma T., Johnson C., Kemp G. & VanDeveer S. D. (2012), The Global Resource Nexus. The Struggles for Land, Energy, Food, Water, and Minerals. Washington, DC: Transatlantic Academy.

Bäckstrand K. & Elgström O. (2013), 'The EU's role in climate change negotiations: from leader to 'leadiator''. *Journal of European Public Policy*, DOI:10.1080/13501763.2013.781781.

Bernstein S. & Cashore B. (2000), 'Globalization, Four Paths of Internationalization and Domestic Policy Change: The Case of EcoForestry in British Columbia, Canada'. *Canadian Journal of Political Science*, XXXIII (1) p. 67-99.

Biermann F. (2012), Curtain Down and Nothing Settled. Global Sustainability Governance after the 'Rio+20' Earth Summit (Earth System Governance Working Paper No. 26). Lund & Amsterdam: Earth System Governance Project.

Biermann F., Pattberg P. H., van Asselt H. & Zelli F. (2009), 'The Fragmentation of Global Governance Architectures: A Framework for Analysis'. *Global Environmental Politics*, 9 (4) p. 14-40.

Birnie P., Boyle A. & Redgwell C. (2009), *International Law & the Environment*. Oxford University Press, Oxford & New York.

Buijs B. & Sievers H. (2011), Critical Thinking about Critical Minerals. Assessing risks related to resource security (CIEP-BGR Briefing Paper). Bundesanstalt für Geowissenschaften und Rohstoffe & Clingendael.

Carlson A. (2008), *Unifying China, Integrating with the World: Securing Chinese Sovereignty in the Reform Area*. National University Singapore Press, Singapore.

Chow J., Apestéguy-Reux H., Cation A. F., Hood C., Kolenda B., Gianella S., Rafiquddin S., Mildenberger M., Muravska J., Khazaeli S., Kinley K., Lapin A., Meers J., Takaya M. & Vanderlinden C. (2007), G8 Summit Analysis Part II: Issue Objectives Assessment. G8 performance at the 2007 Heiligendamm Summit in selected issue areas. University of Toronto: G8 Research Group.

Clifton J. & Díaz-Fuentes D. (2011), 'From 'Club of the Rich' to 'Globalisation à la carte'? Evaluating Reform at the OECD'. *Global Policy*, 2 (3) p. 300-311.

Cooper A. F. & Bradford C. I. J. (2010), The G20 and the Post-Crisis Economic Order (CIGI G20 Paper No. 3). Waterloo: The Centre for International Governance Innovation.

Council of the EU (2006), Review of the EU Sustainable Development Strategy (EU SDS) − Renewed Strategy. Brussels: Council of the European Union.

——— (2010), Sustainable Materials Management: Presidency's Summary of the Informal Environment Council on Sustainable Materials Management, 12th and 13th July 2010. Brussels: Belgian Presidency.

——— (2011), Council conclusions on tackling the challenges on raw materials and in commodity markets (adopted 14.03.2011). Brussels: Council of the European Union

Council of the European Union (2007), Outcome of proceedings of the Council (Competitiveness Council, 21-22.05.2007). Brussels: Council of the European Union.

——— (2009), An integrated approach to a competitive and sustainable industrial policy in the European Union (Council Conclusions, 28.05.2009). Brussels: Competitiveness Council.

Daviter F. (2007), 'Policy Framing in the European Union'. *Journal of European Public Policy*, 14 (4) p. 654-666.

Drezner D. W. (2012), The Irony of Global Economic Governance. The System Worked (working paper). New York: Council on Foreign Relations. Available from http://relooney.fatcow.com/0_New_15012.pdf.

Dubois M., Christis M., Crabbé A., De Römph T., Happaerts S., Hoogmartens R., Huysman S., Vermeesch I., Bergmans A., Craps M. & Van Acker K. (2014, forthcoming), Duurzaam beheer van vlakglas in de bouw. Een stand van zaken (Case Report). Leuven: Steunpunt Duurzaam Materialenbeheer.

Earth Negotiations Bulletin (2013), Summary of the ordinary and extraordinary meetings of the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions: 28 April - 10 May 2013. International Institute for Sustainable Development.

Erdmann L. & Graedel T. E. (2011), 'Criticality of Non-Fuel Minerals: A Review of Major Approaches and Analyses'. *Environmental Science & Technology*, 45 p. 7620-7630.

European Commission (2005a), EU Waste Policy – The Story behind the Strategy. Brussels: European Commission, DG Environment. Available from http://ec.europa.eu/environment/waste/strategy.htm.

——— (2005b), Thematic strategy on the sustainable use of natural resources. Brussels: Commission of the European Communities. Available from http://ec.europa.eu/environment/natres/index.htm.

——— (2008), The raw materials initiative — meeting our critical needs for growth and jobs in Europe. Brussels: Commission of the European Communities. Available from http://ec.europa.eu/enterprise/policies/raw-materials/.

——— (2010a), Critical raw materials for the EU (Report of the Ad-hoc Working Group on defining critical raw materials). Brussels: European Commission, Enterprise and Industry. Available from http://ec.europa.eu/enterprise/policies/raw-materials/.

——— (2010b), EC Guidance on undertaking new non-energy extractive activities in accordance with Natura 2000 requirements. Luxembourg: Publications Office of the European Union. Available from http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm.

——— (2010c), Europe 2020. A strategy for smart, sustainable and inclusive growth (COM(2010) 2020 final). Brussels: European Commission. Available from http://ec.europa.eu/europe2020/index_en.htm.

——— (2010d), Improving framework conditions for extracting minerals for the EU. Exchanging best practice for land use planning, permitting and geological knowledge sharing. Brussels: European Commission, Enterprise and Industry. Available from http://ec.europa.eu/enterprise/policies/raw-materials/.

——— (2011a), Analysis associated with the Roadmap to a Resource Efficient Europe. Part I (Commission Staff Working Paper). Brussels: European Commission. Available from http://ec.europa.eu/environment/resource_efficiency/pdf/working_paper_part1.pdf.

——— (2011b), Energy Roadmap 2050 (COM(2011) 885 final). Brussels: European Commission. Available from http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm.

——— (2011c), A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy. Brussels: European Commission. Available from http://ec.europa.eu/resource-efficient-europe/.

——— (2011d), A Roadmap for moving to a competitive low carbon economy in 2050 (COM(2011) 112 final). Brussels: European Commission. Available from http://ec.europa.eu/clima/policies/roadmap/index_en.htm.

——— (2011e), Roadmap to a Resource Efficient Europe (COM(2011) 571 final). Brussels: European Commission. Available from http://ec.europa.eu/resource-efficient-europe/.

——— (2011f), Tackling the challenges in commodity markets and on raw materials (COM(2011) 25 final). Brussels: European Commission. Available from http://ec.europa.eu/enterprise/policies/raw-materials/.

——— (2011g), White Paper. Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (COM(2011) 144 final). Brussels: European Commission. Available from http://ec.europa.eu/transport/themes/strategies/2011_white_paper_en.htm.

——— (2012a), Living well, within the limits of our planet. Proposal for a general Union Environment Action Programme. Brussels: European Commission, DG Environment.

——— (2012b), Making raw materials available for Europe's future wellbeing. Proposal for a European Innovation Partnership on Raw Materials (29.02.2012). Brussels: European Commission.

——— (2012c), Proposal for a Directive of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (COM(2012) 628 final, 26.10.2012). Brussels: European Commission.

——— (2012d), Review of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast). 2012 Review (COM(2012) 765 final, 17.12.2012). Brussels: European Commission.

——— (2012e), Terms of Reference of the European Resource Efficiency Platform. Brussels: European Commission, Directorate General Environment. Available from http://ec.europa.eu/environment/resource_efficiency/re_platform/index_en.htm.
——— (2013a), On the implementation of the Raw Materials Initiative (COM(2013) 442 final). Brussels: European Commission.
——— (2013b), Reducing the EU's dependency on raw materials: European Innovation Partnership launched (Memo, 12.02.2013). Brussels: European Commission.
——— (2013c), Review of Waste Policy and Legislation. DG Environment [cited 5 December 2013]. Available from http://ec.europa.eu/environment/waste/target_review.htm.
——— (2013d), Waste shipments. DG Environment [cited 5 December 2013]. Available from http://ec.europa.eu/environment/waste/shipments/news.htm.
European Environment Agency (EEA) (2011), Resource efficiency in Europe. Policies and approaches in 31 EEA member and cooperating countries (EEA Report No 5/2011). Copenhagen: EEA.
European Parliament (2008a), European Parliament resolution of 20 May 2008 on trade in raw materials and commodities (2008/2051(INI)). Brussels: European Parliament. Available from http://www.europarl.europa.eu/.
——— (2008b), Trade in raw materials and commodities (Resolution, adopted 20.05.2008). Brussels: European Parliament.
——— (2011a), Report on an effective raw materials strategy for Europe (Rapporteur: Reinhard Bütikofer, 25.07.2011). Brussels: European Parliament.
——— (2011b), Working Document on the Roadmap for a Resource Efficient Europe (Rapporteur: Gerben-Jan Gerbrandy). Brussels: European Parliament, Committee on the Environment, Public Health and Food Safety. Available from http://www.europarl.europa.eu/.
European Parliament & Council of the European Union (2002), Sixth Community Environment Action Programme (Official Journal of the European Communities, 10.09.2002).
European Resource Efficiency Platform (EREP) (2013), Action for a resource efficient Europe. Brussels: European Resource Efficiency Platform.
European Union (2010), Consolidated Version of the Treaty on the Functioning of the European Union (Official Journal of the European Union, 30 March 2010). Luxembourg: Publications Office of the European Union.
Fischer C. (2011), 'The development and achievements of EU waste policy'. *Journal of Material Cycles and Waste Management*, 13 p. 2-9.
Flanders in Action (2012), Materials Management - Sustainable Materials Management [cited 27 December 2013]. Available from http://www.vlaandereninactie.be/en/topics/materials-management-sustainable-materials-management.
G8 (1979), Report (29 June 1979). Tokyo: G8.
——— (2004), Science and Technology for Sustainable Development: "3r" Action Plan and Progress on Implementation (10 June 2004). Sea Island: G8. Available from http://www.g8.utoronto.ca/summit/2004seaisland/sd.html.
——— (2006), Global Energy Security (16 July 2006). St. Petersburg: G8 Presidency of the Russian Federation. Available from http://www.g8.utoronto.ca/summit/2006stpetersburg/energy.html.
——— (2007), Growth and Responsibility in the World Economy (Summit Declaration, 7 June 2007). Heiligendamm: G8 Summit 2007. Available from http://www.g8.utoronto.ca/summit/2007heiligendamm/index.html.
——— (2008), G8 Environment Ministers Meeting 2008. Kobe 3R Action Plan. Kobe: G8.
——— (2010), Recovery and New Beginnings (G8 Muskoka Declaration, 25-26 June 2010). Muskoka: G8.
——— (2011a), Renewed Commitment for Freedom and Democracy (G8 Declaration, 26-27 May 2011). Deauville: G8 France 2011.
——— (2011b), Shared Values, Shared Responsibilities (G8/Africa Joint Declaration, 27 May 2011). Deaville: G8 France 2011.
G20 (2009), Leaders' Statement. The Pittsburgh Summit (24-25 September 2009). Pittsburgh: G20.
——— (2010), The G20 Seoul Summit Leaders' Declaration (11-12 November 2010). Seoul: G20.
——— (2011), Building Our Common Future: Renewed Collective Action for the Benefit of All (Cannes Summit Final Declaration, 4 November 2011). Cannes: G20. Available from http://www.g20.utoronto.ca/2011/2011-cannes-declaration-111104-en.html.
——— (2012), G20 Leaders Declaration. Los Cabos: G20.

Government of Japan (2005), Ministerial Conference on the 3R Initiative. Ministry of the Environment [cited 4 December 2013]. Available from http://www.env.go.jp/recycle/3r/en/info.html.
Hajer M. & Versteeg W. (2005), 'A Decade of Discourse Analysis of Environmental Politics: Achievements, Challenges, Perspectives'. *Journal of Environmental Policy & Planning*, 7 (3) p. 175-184.
Happaerts S. (2011), 'Sustainable development between international and domestic forces. A comparative analysis of subnational policies', PhD dissertation, Katholieke Universiteit Leuven, Leuven.
——— (2012), 'Are you Talking to us? How Subnational Governments Respond to Global Sustainable Development Governance'. *Environmental Policy and Governance*, 22 (2) p. 127-142.
Happaerts S. & Bruyninckx H. (2013a), 'The discourse and practice of transitions in global governance. An exploration of the international transition towards sustainable materials management'. Paper read at the ISA Annual Convention, 3-6 April, at San Francisco.
———, with the cooperation of De Man, A., Langens, J., Vandamme L., Van Dyck, L. & Wintmolders, T. (2013b), Rising Powers in Global Climate Governance. Negotiating in the New World Order (Working Paper No. 124). Leuven Centre for Global Governance Studies. Available from http://ghum.kuleuven.be/ggs/publications/working_papers.html.
Henshaw C. (2011), Regulating Commodity Speculation Back In EU Spotlight, Wall Street Journal.
Hildebrand P. (1993), 'The European Community's Environmental Policy, 1957 to «1992»: From Incidental Measures to an International Regime?', in D. Judge (Ed.), *A Green Dimension for the European Community. Political Issues and Processes*, Abingdon: Frank Cass.
Hilpert H. G. & Mildner S.-A. (2013), Fragmentation or Cooperation in Global Resource Governance? A Comparative Analysis of the Raw Materials Strategies of the G20 (SWP Research Paper 1). Berlin: Stiftung Wissenschaft und Politik & Federal Institute for Geosciences and Natural Resources.
Hix S. & Høyland B. (2011), *The Political System of the European Union*. Palgrave Macmillan, Basingstoke.
International Resource Panel (IRP) (2013), International Resource Panel. UNEP [cited 12 November 2013]. Available from http://www.unep.org/resourcepanel/Home/tabid/106603/Default.aspx.
Jänicke M. (2013), 'Accelerators of Global Energy Transformation: Horizontal and Vertical Reinforcement in Multi-Level Climate Governance'. Paper read at the Thematic Workshop of the Multi-Level Climate Governance Research Network, 20-22 November, at Kolkata.
Krasner S. D. (1982), 'Structural causes and regime consequences: regimes as intervening variables'. *International Organization*, 36 (2) p. 185-205.
Kwok A., Seleanu D., Vanderlinden C. & Guebert J. (2008), 2008 Hokkaido Toyako G8 Summit Issue Area Assessment Report. University of Toronto: G8 Research Group.
Lee B., Preston F., Kooroshy J., Bailey R. & Lahn G. (2012), Resource Futures. London: Chatham House.
Lenschow A. (2005), 'Environmental Policy. Contending Dynamics of Policy Change', in H. Wallace, Wallace W. & Pollack M. A. (Eds.), *Policy-Making in the European Union*, New York: Oxford University Press, p. 305-327.
Logarajah S. (2007), Final Compliance Report. Raw Materials. University of Toronto: G8 Research Group.
Marcussen M. (2004a), 'Multilateral surveillance and the OECD: playing the idea game', in K. Armingeon & Beyeler M. (Eds.), *The OECD and European Welfare States*, Cheltenham & Northampton: Edward Elgar, p. 13-31.
——— (2004b), 'OECD Governance through Soft Law', in U. Mörth (Ed.), *Soft Law in Governance and Regulation. An Interdisciplinary Analysis*, Cheltenham: Edward Elgar, p. 103-126.
Mazey S. & Richardson J. (1997), 'Policy Framing: Interest Groups and the lead up to 1996 Inter-Governmental Conference'. *West European Politics*, 20 (3) p. 111-133.
Natali D. (2010), 'The Lisbon Strategy, Europe 2020 and the Crisis in Between', in E. Marlier & Natali D. (Eds.), *Europe 2020: Towards a More Social EU?*, Brussels: P.I.E. Peter Lang.
OECD (2001), OECD Environmental Strategy for the First Decade of the 21st Century. Paris: OECD.
——— (2004a), Recommendation of the Council on Material Flows and Resource Productivity (Adopted by the OECD Council on 24 April 2004). Paris: Meeting of the Environment Policy Committee (EPOC) at Ministerial Level.

——— (2004b), Recommendation of the Council on the Environmentally Sound Management of Waste (Adopted by the OECD Council on 9 June 2004). Paris: Meeting of the Environment Policy Committee (EPOC) at Ministerial Level.
——— (2007), Outcome of the first OECD workshop on sustainable materials management (Seoul, Korea, 28-30 November 2005). Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2008a), Front-runners' experience on sustainable materials management (SMM) (Report of the 2nd SMM Workshop, Tel-Aviv, Israel, 7-9 April 2008). Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2008b), Inventory of international initiatives related to Sustainable Materials Management. Paris: OECD Environment Directorate.
——— (2008c), Recommendation of the Council on Resource Productivity (Adopted by the OECD Council on 28 March 2008). Paris: Meeting of the Environment Policy Committee (EPOC) at Ministerial Level.
——— (2009a), Policy Instruments for Sustainable Materials Management. Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2009b), Policy Principles for Sustainable Materials Management. Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2009c), Setting and Using Targets for Sustainable Materials Management. Opportunities and Challenges. Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2009d), Sustainable Management and Recovery Potential of Non-Packaging Plastic Waste from the Commercial and Private Household Sectors. Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2009e), A Sustainable Materials Management Case Study. Wood Fibres. Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2010a), OECD Global Forum on Environment. Focusing on Sustainable Materials Management. Chair's Summary (25-27 October 2010, Mechelen, Belgium). Paris: OECD Environment Directorate.
——— (2010b), A Sustainable Materials Management Case Study. Aluminum. Paris: OECD, Working Group on Waste Prevention and Recycling.
——— (2011a), Celebrating 40 Years of the OECD Environmental Policy Committee 1971-2011. Paris: OECD.
——— (2011b), Towards Green Growth. OECD. Available from http://www.oecd.org/greengrowth.
——— (2012a), Case Study on Critical Metals in Mobile Phones (Final Report). Paris: OECD.
——— (2012b), Sustainable Materials Management (Green Growth Policy Brief). Paris: OECD.
——— (2012c), Sustainable materials management. Making better use of resources. OECD Publishing. Available from http://dx.doi.org/10.1787/9789264174269-en.
——— (2013a), Greenhouse Gas Mitigation and Materials Management. OECD [cited 26 November 2013]. Available from http://www.oecd.org/env/waste/ghg-materialsmanagement.htm.
——— (2013b), Nanowaste. OECD [cited 26 November 2013]. Available from http://www.oecd.org/env/waste/nanowaste.htm.
——— (2013c), OECD's Work on Sustainable Materials & Waste Management. Paris: OECD.
——— (2013d), Sustainable Materials Management [cited 26 November 2013]. Available from http://www.oecd.org/env/waste/smm.htm.
——— (2013e), Waste Prevention and Minimisation. OECD [cited 26 November 2013]. Available from http://www.oecd.org/env/waste/prevention-minimisation.htm.
PBL Netherlands Environmental Assessment Agency (PBL) (2011), Scarcity in a sea of plenty? Global resource scarcities and policies in the European Union and the Netherlands. The Hague: PBL.
Peters B. G. & Hoornbeek J. A. (2005), 'The Problem of Policy Problems', in P. Eliadis, Hill M. M. & Howlett M. (Eds.), *Designing Government. From Instruments to Governance*, Montreal & Kingston: McGill-Queen's University Press, p. 77-105.
Pollack M. A. & Shaffer G. C. (2005), 'Biotechnology Policy. Between National Fears and Global Disciplines', in H. Wallace, Wallace W. & Pollack M. A. (Eds.), *Policy-Making in the European Union*, New York: Oxford University Press, p. 329-351.
Potočnik J. (2010), Opening remarks of Janez Potočnik, Commissioner-Designate for Environment, European Parliament Hearing, 13 January 2010.

——— (2011), "Without public action, some resources will never have a price nor a market", Speech made at the Conference of Confederation of British Industry and the Green Alliance, London, 12 December 2011.
——— (2012), The role of resource efficiency for Europe's future, Speech made at the European Resources Forum, 13 November 2012, at Berlin.
Rose R. (1993), *Lesson-drawing in Public Policy. A Guide to Learning Across Time and Space*. Chatham House Publishers, Chatham.
Schön D. A. & Rein M. (1994), *Frame Reflection. Toward the Resolution of Intractable Policy Controversies*. Basic Books, New York.
Selin H. (2013a), The Minamata Convention and the Future of Mercury Abatement (Issues in Brief n° 28). Boston University: The Frederick S. Pardee Center for the Study of the Longer-Range Future.
Selin N. E. (2013b), 'Global change and mercury cycling: challenges for implementing a global mercury treaty'. *Environmental Toxicology and Chemistry*, DOI: 10.1002/etc.2374.
Shields D. J. & Šolar S. V. (2011), 'Responses to Alternative Forms of Mineral Scarcity: Conflict and Cooperation', in S. Dinar (Ed.), *Beyond Resource Wars. Scarcity, Environmental Degradation, and International Cooperation*, Cambridge & London: The MIT Press.
Steurer R. & Berger G. (2011), 'The EU's double-track pursuit of sustainable development in the 2000s: how Lisbon and sustainable development strategies ran past each other'. *International Journal of Sustainable Development & World Ecology*, 18 (2) p. 99–108.
SuMMa (2011), Multi-annual programme of the Policy Research Centre Sustainable Materials Management. Brussel: Vlaamse overheid, Departement EWI. Available from http://www2.vlaanderen.be/weten/steunpunten/.
Tanasescu I. (2006), 'The Political Process Leading to the Development of the EU Sustainable Development Strategy', in M. Pallemaerts & Azmanova A. (Eds.), *The European Union and Sustainable Development*, Brussels: VUBPress, p. 53-77.
The Hague Centre for Strategic Studies (HCSS) (2011), Op weg naar een Grondstoffenstrategie. Quick scan ten behoeve van de Grondstoffennotitie. The Hague: HCSS.
The Stanley Foundation (2010), Evolution of the G Groupings: A Progress Check (Policy Dialogue Brief). Warrenton: The Stanley Foundation.
United Nations Conference on Sustainable Development (UNCSD) (2012), The Future We Want. Rio de Janeiro: United Nations.
United Nations Environment Programme (UNEP) (2000), Malmö Ministerial Declaration (31 May 2000). Malmö: First Global Ministerial Environment Forum. Available from http://www.unep.org/malmo/malmo_ministerial.htm.
——— (2010a), Resource efficiency (Factsheet). Paris: UNEP.
——— (2010b), United Nations Environment Programme Medium-term Strategy 2010-2013. Environment for Development. Nairobi: UNEP.
——— (2011a), Decoupling Natural Resource Use and Environmental Impacts from Economic Growth (A Report of the Working Group on Decoupling to the International Resource Panel). Available from http://www.unep.org/resourcepanel/Publications/Decoupling/tabid/56048/Default.aspx.
——— (2011b), Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. UNEP. Available from http://www.unep.org/greeneconomy.
——— (2012a), 21 Issues for the 21st Century. Results of the UNEP Foresight Process on Emerging Environmental Issues. Nairobi: UNEP.
——— (2012b), GEO5 Global Environment Outlook. Environment for the Future We Want. Nairobi: UNEP. Available from http://www.unep.org/geo/geo5.asp.
——— (2012c), Mid-Term Evaluation of UNEP's Medium-term Strategy 2010-2013 (Working Paper). Nairobi: UNEP.
——— (2013a), The 10 Year Framework of Programmes on Sustainable Consumption and Production. UNEP: 10YFP Secretariat.
——— (2013b), Proposed medium-term strategy for the period 2014-2017. Report of the Executive Director. Nairobi: Governing Council of the United Nations Environment Programme.
——— (2013c), Proposed medium-term strategy for the period 2014-2017. Report of the Executive Director. Addendum. Nairobi: Governing Council of the United Nations Environment Programme.
United Nations Environment Programme (UNEP), IOMC & WHO (2013), Strategic Approach to International Chemicals Management [cited 7 December 2013]. Available from http://www.saicm.org/.

United Nations General Assembly (UNGA) (2012a), Resolution adopted by the General Assembly on 21 December 2012. Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development (Resolution 67/203). New York: United Nations.

——— (2012b), Resolution adopted by the General Assembly on 21 December 2012. Report of the Governing Council of the United Nations Environment Programme on its twelfth special session and the implementation of section IV.C, entitled "Environmental pillar in the context of sustainable development", of the outcome document of the United Nations Conference on Sustainable Development (Resolution 67/213). New York: United Nations.

Van Calster G. (2014, forthcoming), 'Opportunities and pitfalls for sustainable materials management in EU waste law'. *Revue des Sciences humaines, éthique et société*.

Vlaamse Regering (2009), Pact 2020: Een nieuw toekomstpact voor Vlaanderen. 20 doelstellingen. Hasselt: Vlaamse Overheid. Available from http://www.vlaandereninactie.be/nlapps/docs/default.asp?fid=179.

——— (2012), Actieplan Vlaams Materialenprogramma (Vlaanderen in Actie). Available from http://www.vlaamsmaterialenprogramma.be/documents/19/92b7f316-c069-4377-b4b1-35aa5f4ab55e;jsessionid=neDZ91VczZ78PleRJKvbYzvk.

Watson D. & Herczeg M. (2012), Sustainable consumption and products (Analytic paper for the Danish Ministry of the Environment). Copenhagen: Copenhagen Resource Institute.

Willis A. (2011), EU pulls raw materials paper amid squabbling over commodity speculation, EUobserver.

Wishart I. (2012), 'Appetite for commodities'. *EuropeanVoice*, 18 (12) p. 18.

Wouters J. & Van Kerckhoven S. (2011), 'The OECD and the G20: An Ever Closer Relationship?'. *The George Washington International Law Review*, 43 (2) p. 345-374.

Yang T. (2013), The Top 10 Trends in International Environmental Law. Santa Clara Law Digital Commons. Available from http://digitalcommons.law.scu.edu/facpubs/769/.

# List of interviewees

| | | |
|---|---|---|
| Peter Börkey | 27 November 2013 | Principal administrator; Environment Directorate; OECD |
| Werner Bosmans | 11 December 2012 | Policy officer; Chief economist, Instruments and Impact assessment Unit; Directorate-General for Environment; European Commission |
| Sofie Bouteligier | 2 December 2013 | Policy officer; European Policies Team; Unit Policy Innovation; Division of Waste and Materials Management; Public Waste Agency of Flanders (OVAM); Flemish Government |
| Mieke De Schoenmakere | 15 June 2012 | Head of service; European Policies Team; Unit Policy Innovation; Division of Waste and Materials Management; Public Waste Agency of Flanders (OVAM); Flemish Government |
| Nancy da Silva | 7 December 2012 | Policy officer; Directorate-General for Environment; Federal Public Service Health, Food Chain Safety and Environment |
| Magnus Gislev | 22 July 2013 | Policy officer; Raw materials, Metals, Minerals and Forest-based industries; Directorate-General for Entreprise and Industry; European Commission |
| Milan Grohol | 22 July 2013 | Policy officer; Raw materials, Metals, Minerals and Forest-based industries; Directorate-General for Entreprise and Industry; European Commission |
| Shaoyi Li | 11 November 2013 | Head; Integrated Resources Management Unit; Sustainable Consumption and Production Branch; Division of Technology, Industry and Economics; UNEP |
| Chris Van den Bilcke | 21 November 2012 | Head; Liaison Office to the EU in Brussels; UNEP |
| Jan Van Roo | 6 November 2012 | Head of service; Natural Resources Service; Land and Soil Protection, Underground, Natural Resources Division; Environment, Nature and Energy Department; Flemish Government |
| Griet Verhaert | 6 November 2012 | Policy officer; Natural Resources Service; Land and Soil Protection, Underground, Natural Resources Division; Environment, Nature and Energy Department; Flemish Government |

| | | |
|---|---|---|
| Frans Vollenbroek | 21 November 2012 | Policy officer; Sustainable Consumption and Production Unit; Directorate-General Environment; European Commission |
| John Wante | 15 June 2012 | Head of unit; Unit Policy Innovation; Division of Waste and Materials Management; Public Waste Agency of Flanders (OVAM); Flemish Government |