



Policy Guidance on Resource Efficiency

POLICY HIGHLIGHTS

This report responds to the request by G7 Leaders at the Schloss Elmau Summit in June 2015 for the OECD to develop policy guidance on resource efficiency and provides an input to the G7 Toyama Environment Ministers' Meeting as well as to the G7 Leaders Summit in Ise-Shima in May 2016. Establishing a resource efficient economy is a major environmental, development and macroeconomic challenge today. Improving resource efficiency by putting in place policies that implement the principles of reduce, reuse, recycle (the 3Rs) is crucial to improving resource use, security and competitiveness while diminishing the associated environmental impacts.

Key Messages

Going for green growth and establishing a resource efficient economy is a major environmental, development and economic challenge today. In this context, improving resource productivity and putting in place policies that implement the principles of reduce, reuse, recycle (the 3Rs) is crucial. Increased resource productivity can help both to improve the environment, by reducing the amount of resources that human economic activity requires as well as diminishing the associated environmental impacts, and to improve resource security and competitiveness.

Although resource efficiency is first and foremost a matter of national policy decisions, only collective action and co-ordinated efforts will ensure widespread benefits amongst countries. The G7 has an important role to play in this regard.

1. The G7 can highlight best practices and provide a platform for sharing experiences both within and beyond its membership. Two key messages from this Guidance are that:
 - Resource efficiency policies should target the entire life-cycle of products.
 - National policies should put more emphasis on aligning sectoral policies in diverse areas like innovation, investment, trade, education and skills development with resource efficiency objectives.

These broader messages on the life-cycle approach and policy coherence could be explicitly supported by the G7.

2. The G7 can also strengthen co-ordination and cooperation at the international level by:
 - Facilitating the integration of resource efficiency considerations in Global Value Chains by supporting businesses in their supply chain management efforts.
 - Addressing trade and investment related obstacles to resource efficiency in supply chains, including export restrictions on secondary raw materials, restrictions on trade in used products, and barriers to trade in environmental goods and services.
 - Calling for some degree of harmonisation in the growing field of environmental labelling and information schemes, with the aim of maintaining high standards, allowing for increased mutual recognition of schemes, and countering increased costs associated with scheme multiplication across international markets.
3. Finally, the G7 can help address key information gaps related to material flows and resource efficiency. These gaps include harmonised data on indirect material flows associated with international trade, information on flows of secondary raw materials, disaggregated information on resource use by industry, and information on the quality and deterioration of natural resource stocks. Similarly, the G7 can support internationally co-ordinated efforts to improve economic analysis of resource efficiency, an area that has currently received very little attention in research.

1 Key trends and outlook

While G7 and other OECD countries have gradually decoupled their use of material resources from economic growth, their per capita material consumption remains significantly above the world average. Decoupling in developed countries has also been insufficient to compensate for increased demand for material resources in the rest of the world.

Recent decades have witnessed an unprecedented growth in demand for resources. This has been driven by the rapid industrialisation of emerging economies and continued high levels of material consumption in developed countries. Since 1990, the global use of material resources has grown slightly slower, but broadly in line with global GDP: a trend known as relative decoupling. In the same period, most OECD countries have decreased the use of material resources while their economies grew: this is absolute decoupling (Figure 1). However, the annual per capita material consumption in OECD countries remains high, about 60% above the world average.

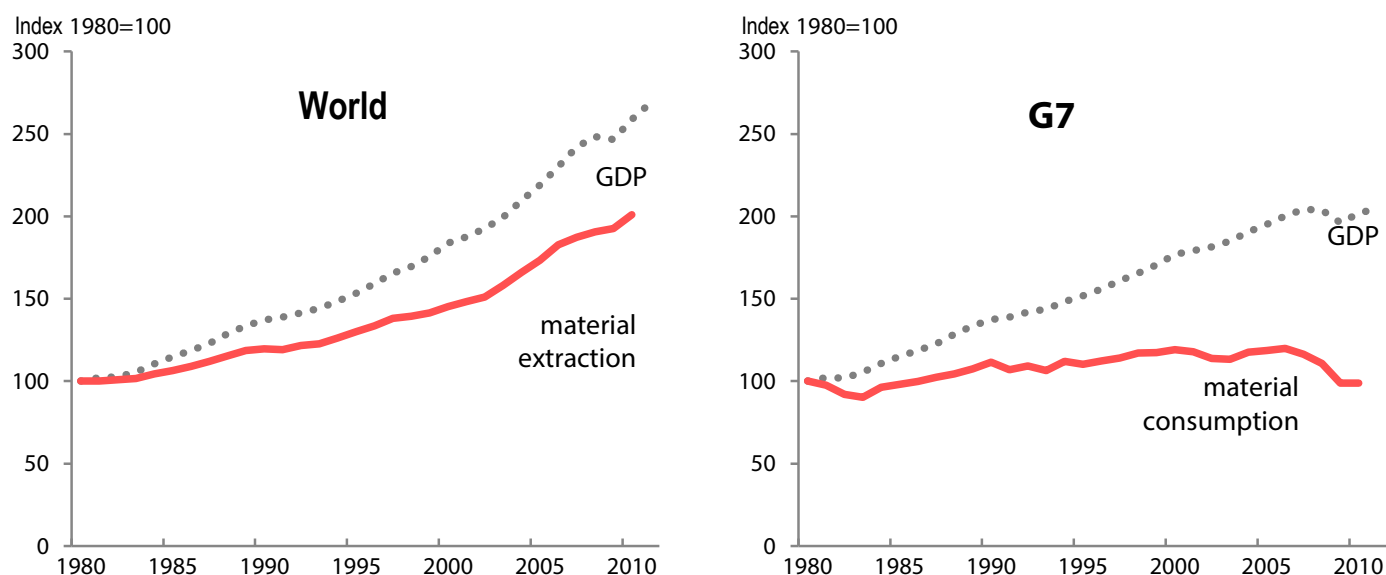
There is evidence that policy has contributed to decoupling in developed countries, even though performance among countries varies widely. However, several other factors have also played an important role, though it is difficult to disentangle their contributions from those of policy. Examples of factors that have contributed to decoupling in recent years include: volatile and relatively high resource prices; technological change; the increased share of the less material-intensive service sector in national economies; the substitution of material-intensive domestic production by imported products; and reduced demand for resources due to the global financial crisis.



On current trends of population and economic growth, global material resource consumption is expected to double by 2050, with potentially significant negative impacts on the environment.

By 2050, the world population is expected to increase from about 7 to more than 9 billion, and the per capita income of the world's population to roughly triple. This will substantially increase demand for energy, food and natural resources, especially if global production and consumption patterns converge with those in OECD countries. Global material resource consumption is projected to double by 2050 (Figure 2). The associated environmental impacts of harvesting resources, using them, and disposing of waste will also increase. Unless environmental management and resource efficiency are significantly improved, natural assets will continue to degrade and become scarcer, with potentially serious adverse economic, social and environmental consequences.

Figure 1: Progress in decoupling materials consumption from economic activity



Source: OECD (2016a), "Material resources", OECD Environment Statistics (database).

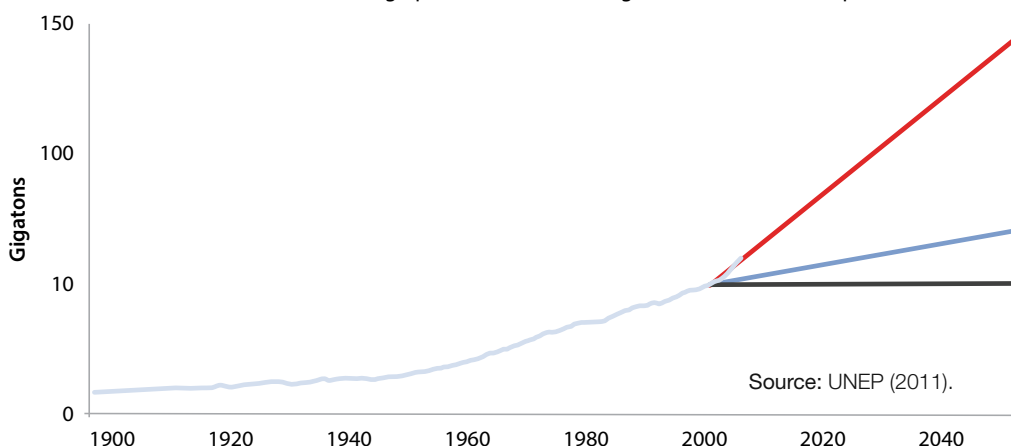
Resource efficiency policies can help to counteract these trends and generate significant positive impacts for the economy and the environment.

G7 countries are increasingly committed to developing a circular economy where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised. There is evidence that policies that aim to enhance resource efficiency can deliver multiple benefits, including lower production costs, increased competitiveness, jobs, reduced dependency on commodity imports and fewer adverse effects on the environment. Resource efficiency improvements also support climate mitigation objectives, as well as contributing to the implementation of a number of the recently agreed Sustainable Development Goals.



Figure 2: UNEP IRP scenarios on global resource consumption 2050

- Development 1900-2005
- Factor 2 and catching up
- Freeze and catching up
- Freeze global material consumption



Source: UNEP (2011).

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To realise the benefits, resource efficiency policies need to be further developed and mainstreamed

Realising the benefits of resource efficiency requires concerted and coherent policy action by governments in order to respond to the systemic challenge that is posed. This report provides policy guidance that can help governments achieve this goal, organised around four main areas (i) the choice and design of policy instruments; (ii) how to combine them into an effective policy mix that covers the whole of the product lifecycle; (iii) integrating resource efficiency into cross-cutting and sectoral policies; and (iv) strengthening of data and analysis to support policy development and evaluation. While the focus is mostly on the measures that governments can take at the domestic level, the report concludes by identifying a number of areas where international co-operation, including in the G7 framework, could make an important contribution in moving this agenda forward.

2.1 Apply mixes of policy instruments so as to provide a coherent set of incentives for resource efficiency along the product value chain.

Policy instruments are needed to internalise environmental costs and to provide incentives for efficient resource use. To do this without simply displacing environmental burdens across the lifecycle of products or from one environmental medium to another requires the application of policy mixes that create a coherent set of incentives. The main types of instruments available to policy makers are economic instruments, regulations, information-based approaches, including environmental labelling, voluntary approaches, and public financial support.

Policy instruments have generally been applied further downstream in the product lifecycle rather than upstream. For instance, the number of countries reporting the use of economic instruments such as landfill taxes increased significantly in the past 15 years and this has led to the



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diversion of waste away from landfills into material and energy recovery. Efforts upstream of end-of-life management have been more modest: an example is waste prevention, which includes policies that encourage greener product designs and measures to change consumer behaviour.

Policy mixes would benefit from strengthening instruments that target product design and that increase demand for resource-efficient products. Effective policy mixes should be based on a coherent and complementary set of policy instruments, and avoid overlapping or conflicting interventions. Designing policy mixes and selecting individual instruments should be guided by well-established criteria: increasing environmental effectiveness; enhancing economic efficiency; strengthening incentives for innovation; minimising administrative costs of compliance for business and government; addressing potential impacts on low-income households and vulnerable sectors.

2.2 Implement policies that promote resource efficiency across the lifecycle of products.

- **Extended Producer Responsibility (EPR)** involves producers taking responsibility for collecting, sorting and treating end-of-life products, following the polluter-pays principle. This approach is now used by a majority of OECD countries for electric and electronic equipment, packaging and tyres. In France, EPR schemes exist for 14 different product groups and Japan has EPR in place for home appliances, packaging and end-of-life vehicles. While these policies have helped to reduce landfilling of waste and increase material recovery, incentives for eco-design can be further strengthened. Further efforts are also needed to ensure that EPR systems operate according to good governance principles, strengthening their transparency with a view to enhancing accountability, improving performance assessment and identifying good practices. The ambition of EPR systems should be increased, better internalising environmental costs, broadening their scope to encompass a larger number of products where possible, and strengthening their enforcement.
- **Green Public Procurement (GPP)** aims to establish resource efficiency criteria for public purchases and can stimulate innovation and increase demand for green products. General government procurement accounts for 12% of gross domestic product and nearly one third of government expenditures in OECD countries. Today, 84% of OECD countries have policies encouraging green procurement at the central government level, such as Japan with its Green Purchasing Act that has been in place since

2000. However, much remains to be done to integrate resource efficiency considerations – including the use of lifecycle analysis – into public procurement programmes. This will require a review of GPP criteria to ensure that they reflect resource efficiency objectives and that they build upon lifecycle analysis. Furthermore, it is crucial that appropriate capacity is built in relevant agencies at national and sub-national level. The OECD Council Recommendation on Public Procurement can serve as an important reference point.

- **Partnerships involving businesses working along value chains.** Several G7 countries have co-operated with businesses working along specific value chains to help develop more innovative approaches to resource efficiency. For instance, the United Kingdom, France and Germany have been actively supporting industrial symbiosis, which engages economic actors in a network to foster eco-innovation and knowledge sharing in order to make one operator's waste another one's material input. Japan is supporting the integration of industrial and urban symbiosis and through its eco-town programme. OECD countries and other adherents to the Guidelines for Multinational Enterprises are also working as a group to promote responsible supply chains and are developing guidance for specific sectors. Given the multiple and diverse challenges along value chains, these partnerships are potentially useful approaches that could be broadened and scaled-up. However, they are a complement to public policy, not an alternative, and their progress should be regularly monitored.



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2.3 Treat resource efficiency as an economic policy challenge and integrate it into cross-cutting and sectoral policies.

The transition to a circular economy also requires a comprehensive set of policy measures at the macroeconomic and sectoral level. Opportunities should be sought to exploit synergies with other policies, including climate change: there are many win-win opportunities in pursuing low-carbon and resource efficiency objectives, such as in the area of sustainable mobility. At the same time, some of the main barriers to achieving resource efficiency goals are linked to the incentives embedded in policies in other sectors. Analysing the major resource-consuming sectors – agriculture and food, transport, energy – can help to identify policy misalignments with resource efficiency objectives and how they might be overcome. Unless this analysis is performed, resource efficiency policies may be ineffective.

Governments can also support resource-efficient structural change by mainstreaming the pursuit of resource efficiency into cross-cutting policies:

- **Innovation** is an essential means for decoupling resource consumption and growth. Some governments are targeting innovation support on SMEs, often the source of radical innovation. An example is the green action plan for SMEs in Europe, which supports SMEs with information and advice, and facilitates access to finance. A sector-specific example of a pro-innovation initiative comes from Canada: the Canada Mining Innovation Council launched a zero waste initiative which prioritises innovation that is expected to lead to significant reductions in mining waste. Another area where innovation could improve resource efficiency is through the development of new business models, such as sharing platforms (e.g. cars, accommodation, power tools) or circular supplies. These approaches can be up-scaled and broadened if improving resource efficiency is integrated into national innovation policies, research partnerships are promoted and barriers to the entry of new firms and to the development of new business models are removed.

- **Investment.** The global economy requires around USD 90 trillion of investment in infrastructure between 2015 and 2030. This will translate into significant amounts of resource consumption, creating an important opportunity to ensure that new investment helps to support low carbon and resource efficient development, provided that obstacles to investment in these directions are removed. Public investors should set the example by integrating resource efficiency objectives into standards for buildings and other infrastructure. Private investors should be incentivised to integrate resource efficiency objectives into their investment strategies.
- **Education and vocational training.** The transition to a resource efficient economy will stimulate the emergence of some sectors and the decline of others. While this may or may not lead to a net increase in employment, it will change the skill profile of the workforce. Governments should therefore assess new job skill requirements and adjust education and training programmes accordingly.

These efforts need to be supported by effective governance arrangements at a sufficiently high level of government. This could help to co-ordinate efforts by engaging key stakeholders, to monitor progress, and generally to provide the political impetus needed to achieve ambitious policy objectives. France is attempting to do this through its circular economy roadmap and Finland and the Netherlands have established an overarching mechanism to support coordination and coherence of resource productivity policies.



2.4 Strengthen policy development and evaluation through better data and analysis.

Many OECD countries have now established material flow accounts and are developing indicators for resource efficiency. These efforts have been supported by initiatives at the international level, such as the guidance and reference materials for measuring material flows and resource productivity developed by the OECD and the database on international material flows developed by the UNEP International Resource Panel. However, progress has been insufficient when measured against objectives established over the last decade. Adoption of the Sustainable Development Goals (SDGs), which contain a number of objectives and targets related to resource efficiency, has reinforced the need for strengthened efforts on data collection and the development of indicators, including through enhanced international co-operation in this area.

Better economic data and analysis is also needed to support policy development, and to help make the case for more ambitious resource efficiency policies. Such analysis should focus on the environmental externalities associated with current resource consumption patterns and the economic benefits of addressing them. Appropriate indicators should be developed so that economic policy makers can track the contribution that resources make to economic development.

Many studies have claimed that improving resource efficiency generates macroeconomic benefits such as higher output and more jobs, cost savings for companies, and reduced damage to the environment. Moreover, it is argued that some of these benefits can be achieved at no or low cost to the companies that implement them. There is some evidence to support these claims but this line of research should be deepened. Thus, to ensure that these benefits are realised, the design of resource efficiency policies should be guided by an assessment of their costs and benefits, particularly when establishing objectives and targets.

Finally, policy evaluation should be significantly strengthened: identifying good (and bad) practices and sharing experience can play a key role in designing better policies for resource efficiency and promoting the transition to a circular economy.



3 Strengthen co-operation at the international level, including among the G7

Many of the measures that are required to support the transition towards greater resource efficiency need to be implemented by governments at the domestic level, but as the globalisation of our economies continues and value chains stretch across multiple jurisdictions, there is an increasing need for co-ordinated approaches at the international level. The G7 can play an important role in this respect, including by supporting businesses in their supply chain management efforts, addressing trade and investment related obstacles, using official development assistance to support resource efficiency efforts, and improving environmental labelling and information schemes, as well as resource efficiency data and indicators more broadly.

While it is difficult for national governments to influence the way supply chains are managed due to their limited jurisdictional reach, this can be done more effectively at the international level. For instance, within the framework of the OECD Guidelines for Multinational Enterprises, the

OECD promotes responsible supply chains in a number of industrial sectors including the minerals, garment and footwear, as well as agricultural sectors.

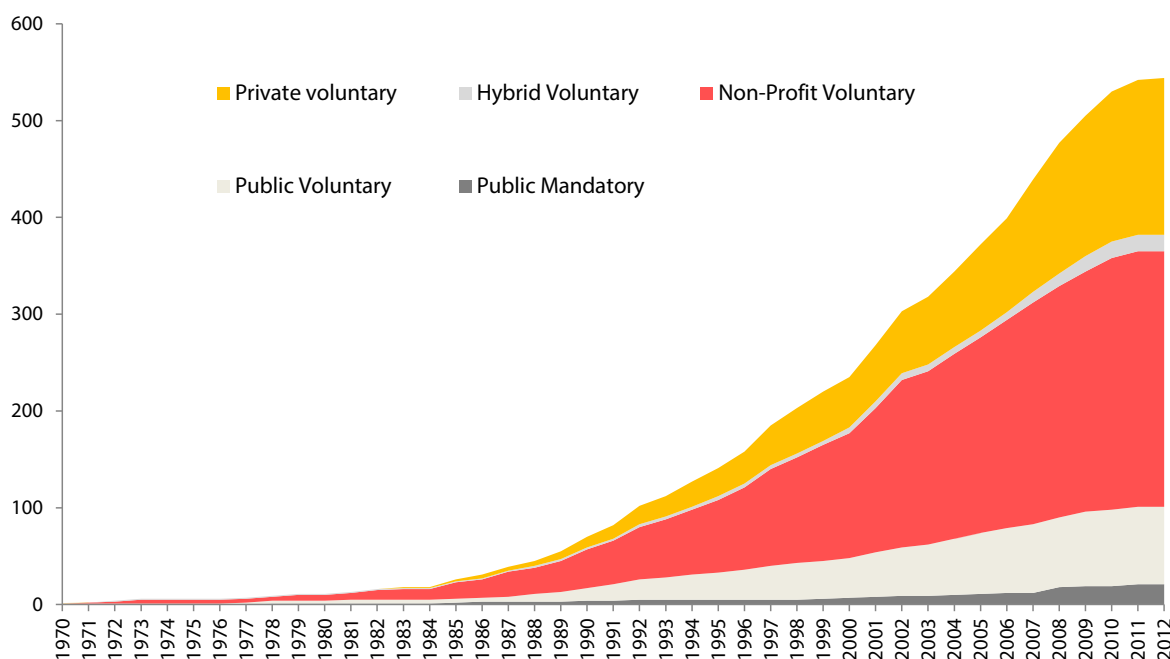
Trade and investment is another area of potential focus as international value chains are typically connected through trade and investment in goods and services and restrictions to trade may affect the efficiency with which resources can be used. The OECD and other organisations have identified export restrictions on raw materials as a source of friction and trade disputes among governments and trading partners affected by them. Similarly, restrictions on trade in used products can hamper reuse and remanufacturing activities. Barriers to trade in environmental goods and services such as local-content requirements and trade remedies are limiting the diffusion of the best available environmental technologies and reducing the scope and scale of resource efficiency improvements globally.

Official development assistance provided by the members of the OECD Development Assistance Committee accounted for more than USD 131 billion in 2015, and it is assumed that only a very small share of this currently provides support for resource efficiency improvements. For instance, only about 0.3% is currently related to solid waste management. Significant effects could be achieved if resource efficiency was mainstreamed into development assistance more systematically, leading to more capacity development and technology transfer than is currently the case.

As **environmental labels and information schemes** are increasingly used to encourage consumers to opt for less environmentally harmful products, this is another area where international cooperation could be helpful. There are a number of concerns linked to the proliferation of information schemes, including that this could lead to consumers and procurers finding it harder



Figure 3: Evolution of the number of ELIS by modes of governance and ownership (1970-2012)



Source: Gruère (2013).

to distinguish good from bad labels and that firms may bear excess costs in certifying to multiple labels. A range of government and non-government stakeholders have recognised that information schemes multiplication is happening and that there could be benefits to acting at the international level to seek some degree of harmonisation of labels and mutual recognition, reducing their duplication and associated costs across international markets.

Improved **resource efficiency data**, and more robust **economic analysis** of resource efficiency challenges and policies could also be supported by international cooperation. The OECD has identified a number of data-related gaps and many of these require international cooperation to ensure the compatibility of datasets and common definitions and methods. Similarly, there is a need for co-ordinated efforts to improve economic analysis of resource efficiency, an area that has received very little attention in research for the moment and where internationally co-ordinated research efforts could be helpful.



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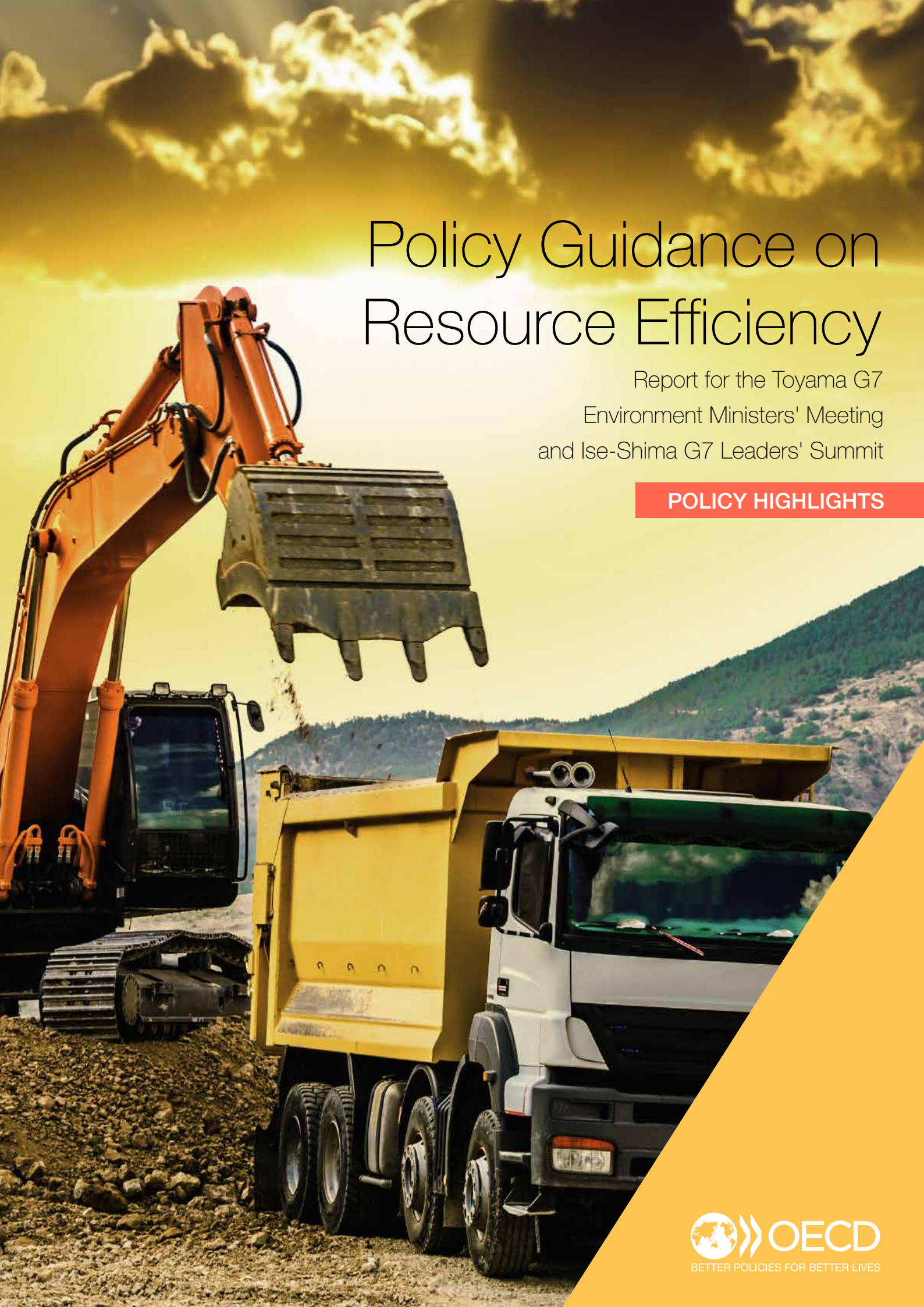
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