
PREAMBLE



Dear Sir or Madam,

those of us who wish to sustainably preserve the climate and environment have to efficiently deal with finite and natural resources such as materials, energy, auxiliary and working materials.

Resource efficiency is not merely an environment-politically necessity, but also a clear economic competitive edge – particularly for a heavy industry oriented state like North Rhine-Westphalia.

With this brochure, the Ministry's Effizienz-Agentur NRW would like to provide you with a first impression of the approaches, potential and methods for the reduction of material and energy consumption in the manufacturing sector.

One thing is clearly apparent –resource efficiency is worth the effort! The efficient handling of resources and energy saves money, strengthens the economy, protects the environment whilst simultaneously improving the quality of life.

Let us become resource efficient together!

Johannes Rimmel

Minister for Climate Protection, Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia

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“There will only be a future if we manage to turn the clock back on resource consumption.”

Prof. Dr. Friedrich Schmidt-Bleek
President of the Factor 10 Institute: “Green Lies”, Ludwig Verlag, 2014



THE FUTURE IS RESOURCE EFFICIENT

How will we be living tomorrow? How will the economy and the quality of life develop? How can we sustainably protect our climate and environment? Questions which touch on one issue: the handling of raw materials and energy which are becoming scarcer and more expensive. It has to do with material and energy efficiency – to get more from less. In short, we need more resource efficiency in order to protect the environment whilst retaining competitiveness.

What does resource efficiency mean?

Not only energy or energy sources such as oil and coal but also materials such as metals, chemicals and water belong to the category of “resources”. The German Federal Environmental Agency defines resource efficiency as the relation of a certain usage or result to the necessary resource application. It is all about achieving the same or a better result with a lower resource application.

various methods such as the improvement of production structures, the application of efficient technologies, the development of resource efficient products, the closure of the cycle of materials as well as quality and efficiency standards beyond the total value chain.

The global need is growing

The demand for raw materials and energy sources is growing worldwide. The increasing resource consumption is reducing the availability of raw materials whilst burdening the environment. This makes the efficient usage of resources urgently necessary – in particular, in a raw material poor industrial nation such as Germany. One thing is clear – through the increase of resource efficiency, companies can strengthen their competitiveness whilst simultaneously easing the burden on the environment.

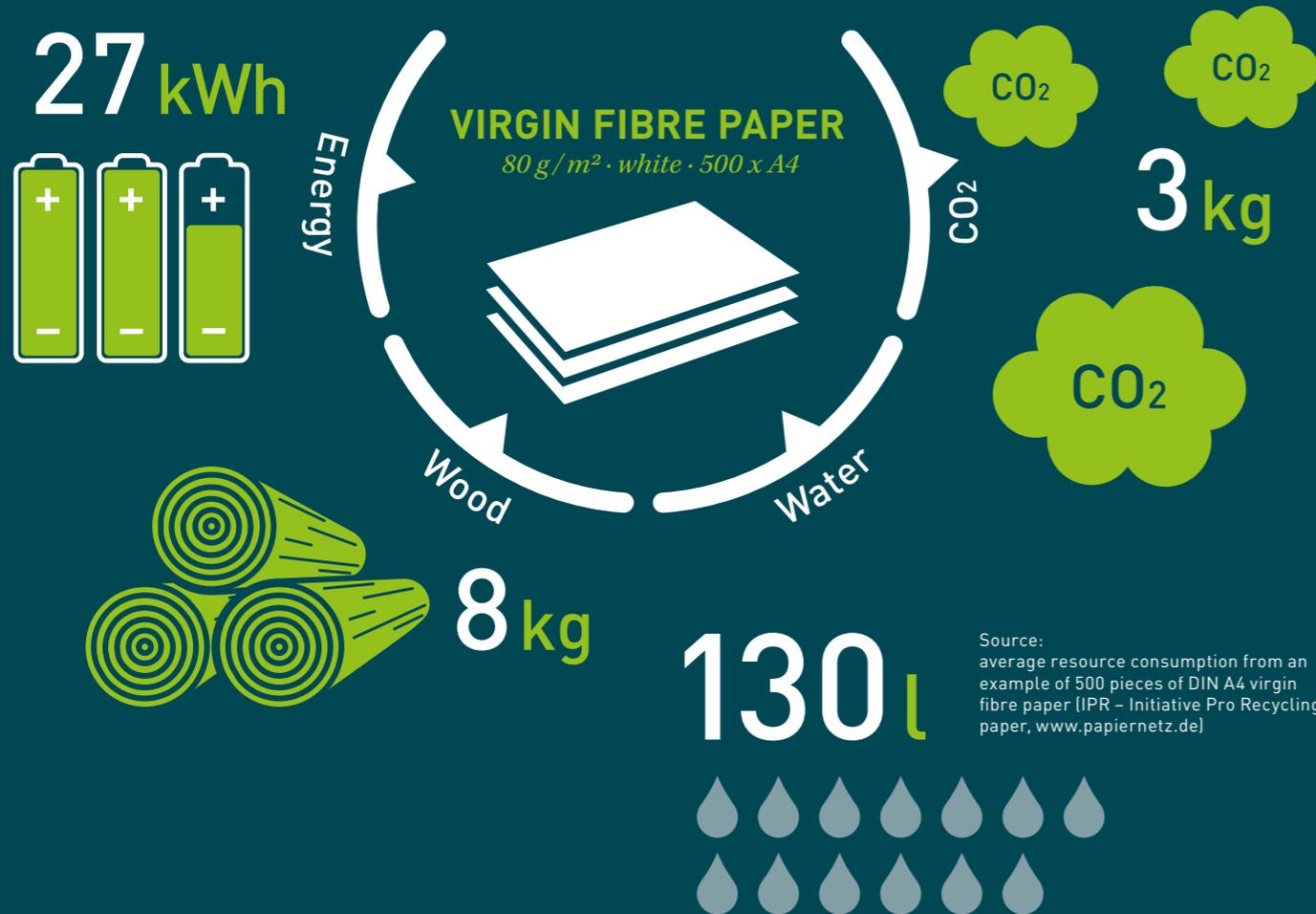
More from less

The increase in resource efficiency means securing the future: the intelligent handling of raw materials and materials is now more necessary than ever before. For this purpose, there are



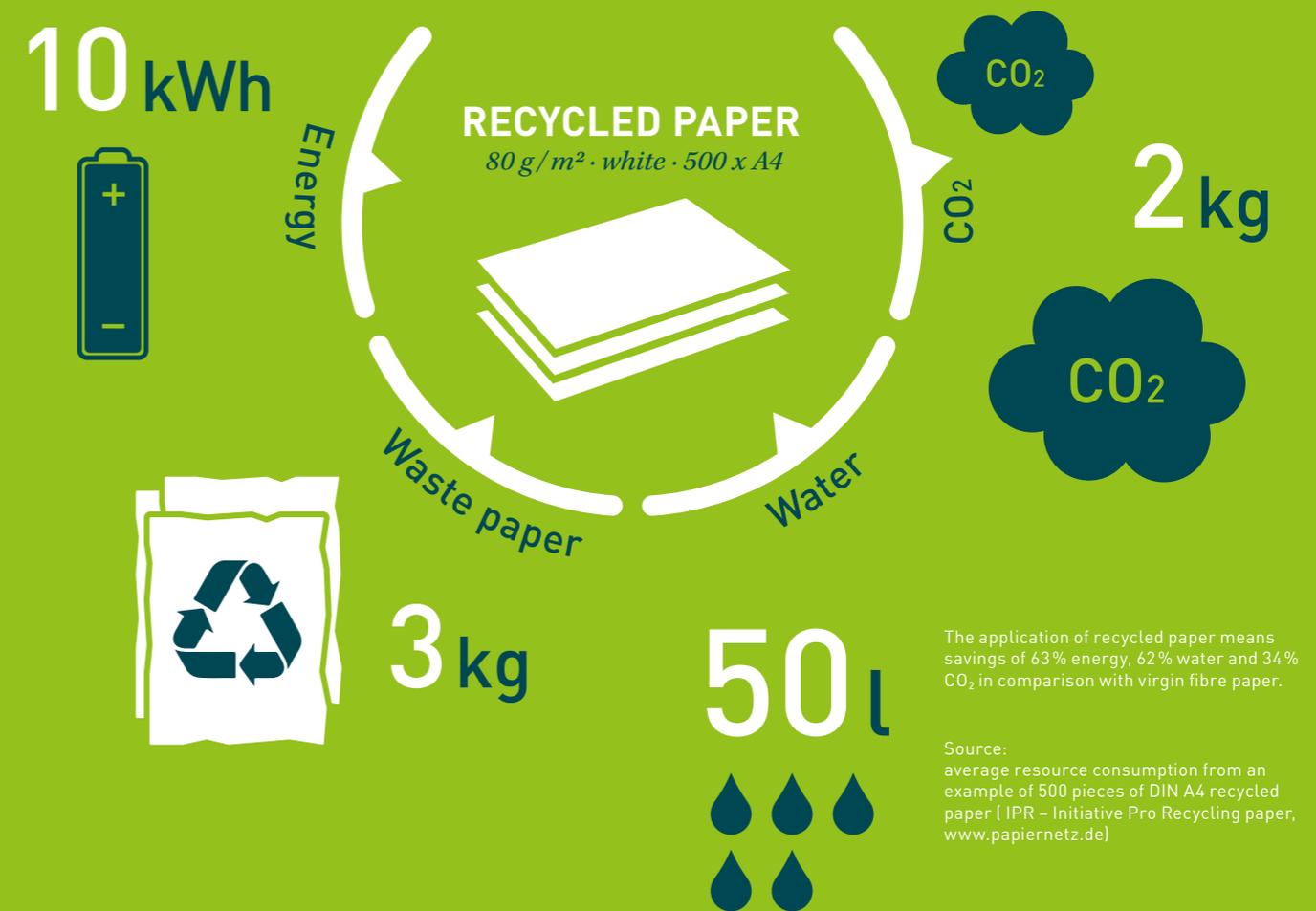
RESOURCE CONSUMPTION MORE THAN MEETS THE EYE

An apparently lightweight product such as paper can weigh a lot with regard to resource consumption. Efficient material and energy application helps to preserve resources and protect the environment.



RESOURCE EFFICIENCY ACHIEVE MORE WITH LESS

Recycled paper now has the same quality as virgin fibre paper and a considerably better environmental balance: production and usage are resource efficient.



“Resource productivity must become a guiding principle of our time.”

Prof. Dr. Ernst Ulrich von Weizsäcker, Karlson Hargroves, Michael Smith:
From working productivity to resource productivity in “Factor Five:
the formula for sustainable growth”, 2010

RESOURCE EFFICIENT PRODUCTION

Material costs in production have been constantly falling in the last few years in Germany. Resource productivity is rising but not to a degree which will effect a trend reversal. Through targeted measures for the increase in resource efficiency in production, companies can meet growing costs and the environmental burden, improve their competitiveness and enter new business fields.

Recognize and exploit savings potential

Measures for the reduction of material consumption are particularly worthwhile for businesses. With an average of 45 per cent, the material costs in manufacturing companies are by a long way the highest cost factor today and even more than personnel costs of around 18 per cent.

by an average of 50,000 euros per year per business – this is illustrated by Effizienz-Agentur NRW’s consulting projects. The total savings as a result of the improved resource efficiency such as reduced storage, transport and waste disposal costs – are even higher for business.

More resource preservation through efficient processes

Material, water and energy costs can be reduced through transparent production planning and order processing as well as efficient production processes. Not only companies benefit from this: resource preservation means environment and climate protection. This once again rewards customers and also employees and neighbours.

With a low investment to meet your target

Resource efficient production can be achieved in many different ways. Frequently it is simply a slight temperature reduction, a more precise measurement of the chemical application or a different cutting method of a material. With resource efficient measures, the costs for materials and energy can be lowered



“Products inevitably need valuable resources. In order to utilise them at least sensibly and sustainably, designers are more in demand than ever before.”

Anke Bernotat, Designer and Professor for industrial design, conception and drafting at the Folkwang University of the Arts in Essen: factory-magazine “Separate”, 2012

RESOURCE EFFICIENT PRODUCTS

It all starts with the design: the product design determines the choice of the applied materials, it also defines the production process, the raw material and energy expenditure during the process, the durability and recycling. Environmentally – friendly product design is the key factor in sustainably reducing material and energy consumption.

Considering the complete product life cycle

Environmentally-friendly product design [Ecodesign] takes the complete life of a product into account. Besides raw material extraction and production, distribution, usage and recycling are assessed prior to the product design in order to minimize the environmental impact at the earliest possible stage.

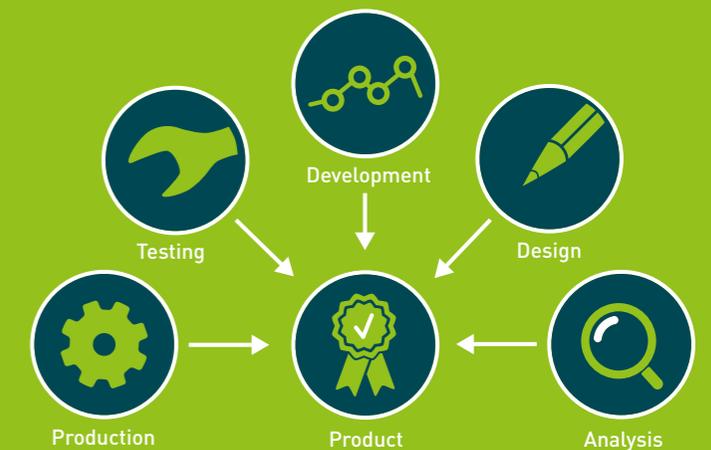
not only consumer goods but tools and intermediate products as well. According to the German Federal Environmental Agency, German consumers spent around 36 bn euros just on sustainable consumer goods in 2011 – and this trend is increasing.

A win-win situation for the environment and consumers

Resource efficient products consume fewer raw materials and energy in both production and usage; use renewable raw materials; have a long life span and are easy to maintain, to repair and recycle whilst protecting the climate, environment and consumers' wallets.

Green products with growth potential

Lower material cost, high performance, functional aesthetic: resource efficient product design also rewards the customer,



“Resource efficient profits can often only be achieved with the value chain; this requires the intense cooperation of multiple players.”

Holger Rohn, Nico Pastewski, Michael Lettenmeier
[Publishers]: “Resource Efficiency”, Fraunhofer Verlag, 2013

RESOURCE EFFICIENT VALUE CHAIN

When we unpack and use a product, the raw materials included and necessary for the production have already travelled along way. At first the view of a product’s value chain – from the raw material extraction to the supply industry and the manufacturing, usage and disposal – illustrates the genuine raw material and energy consumption and is the key to comprehensive resource efficiency.

At the beginning there’s a conversation

The first step in improving resource efficiency in the value chain is a conversation: the talk between the supplier and the producer or between the supplier and customer makes it possible to identify the initial starting point for the reduction of material and energy consumption and to set common goals.

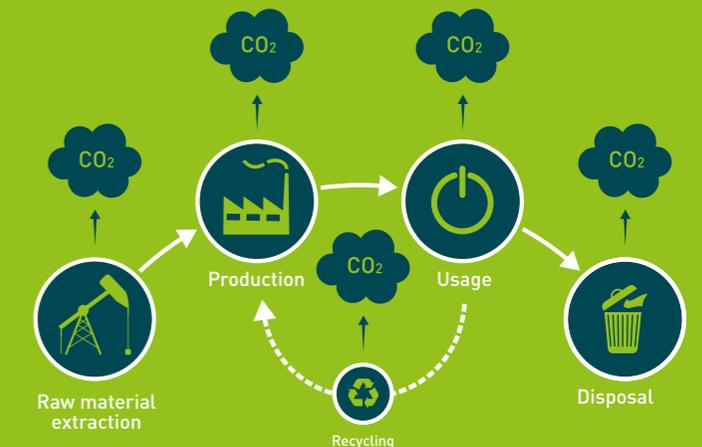
The prerequisite for your success is the close cooperation of the parties involved as only working together enables the sustainable reduction of material and energy consumption.

Resource consumption made measurable

The analysis of resource consumption helps to collect sound figures concerning the actual material consumption along the chain. The balancing of greenhouse gases illustrates which emissions accompany the production. The collected figures form the basis of formulating and implementing successful resource efficient measures.

The whole is the sum of many parts

There are sound approaches for increasing resource efficiency in the value chain. Environmentally-friendly product development, efficient production processes and the application of recycled materials are just a few examples of this.



“The development of resource efficient products and processes must be pushed on more forcibly than ever before. This will make an important contribution to the strengthening of NRW as a key industrial location in the future.”

Johannes Remmel, Minister for Climate Protection, Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia: Opening speech at the 4th “Forum for Resource Efficiency OWL”, 2014

EFFIZIENZ-AGENTUR NRW FOR MORE RESOURCE EFFICIENCY

The potential for the increase in resource efficiency is not always easy to discover in the daily operations of a business. Frequently an outside view of production and products by experienced experts can help. With the Effizienz-Agentur NRW (EFA) the state of North Rhine-Westphalia provides industrial companies and tradesman with concrete support in the identifying and implementation of efficiency potential.

Protect resources. Strengthen the economy.

The Effizienz-Agentur NRW is the centre of competence for resource efficiency of the North Rhine-Westphalian Ministry of the Environment. As an independent institution, it has established a wide consulting range for the improvement of resource efficiency over a 17 year period. Its range of services encompasses consultation on resource efficiency, financing activities and putting on events and training courses for companies in North Rhine-Westphalia.

Resource efficiency consulting

With resource efficiency consulting EFA provides a simple introduction to resource efficient business practices in the areas of production, product design, maintenance, cost accounting, CO₂ balancing and the value chain.

Grants and Incentives

EFA's financial experts help their clients in identifying and obtaining financial support via the use of the most appropriate funding programme and support companies through to the implementation.

Information and further education

Within the framework of events, training sessions and workshops, EFA provides an overview of current technical developments for SMEs in NRW, best practice solutions, consulting offers as well as funding options concerning the topic of resource efficiency.

National and international expert partners

Effizienz-Agentur NRW is also a nationally and internationally valued expert partner for the subject of resource efficiency. For example: EFA is Founder member of the European network of Ecodesign Centres (ENEC) and member of the Focus Group on European resource efficiency self-assessment tool for SMEs.

Take advantage of our specialised knowledge. Don't hesitate to get in contact with us for

- Organisation and strategic development
- Method development
- Training consultants

EFFIZIENZ
AGENTUR
NRW

eFAd+

DID YOU KNOW?

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PLANETS

In the meantime, mankind is consuming natural resources to the value of 1.5 planets per year. If we continue to live like we have been doing so far, we will require two planet earths by 2030 to cover our need for food, water and energy.

Living Planet Report 2014, World Wildlife Fund (WWF)
www.wwf.de

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PER CENT

In the last 30 years, global raw material extraction has risen by 85 per cent. Only 25 per cent of raw materials are extracted in the EU and North America.

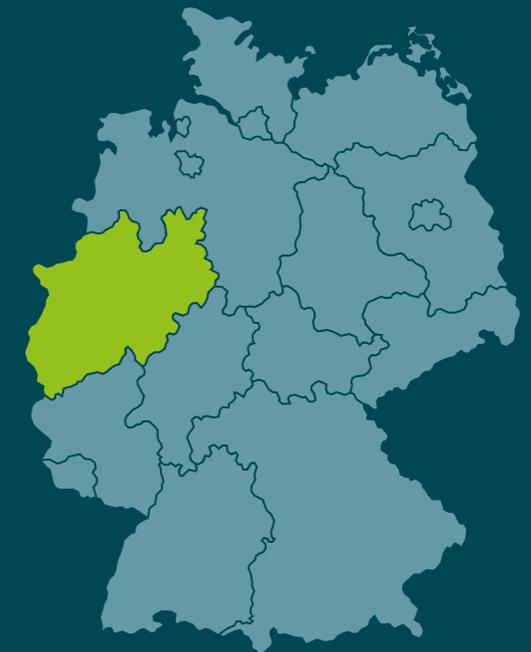
Sustainable Europe Research Institute (SERI) | www.seri.at

NORTH RHINE-WESTPHALIA DYNAMIC IN EUROPE

With 18 million inhabitants, North Rhine-Westphalia (abbreviated as NRW) has the largest population of Germany's 16 states. NRW has a gross domestic product of 600 billion euros – 22 percent of the entire German and 4.6 percent of the European gross domestic product. That makes it the strongest economy in Germany.

Beyond this, NRW profits from a wide range of favourable factors, among them its central location in Europe, its excellent infrastructure and high educational standards. Industrial production is the heartbeat of economic activity in North Rhine-Westphalia. Finally, almost one-quarter of the foreign companies working in Germany have their headquarters in North Rhine-Westphalia. That makes it one of the trailblazers in international environmental technologies.

More Information:
www.land.nrw/en



BEST PRACTICE FROM NRW

BENEFIT FROM OUR EXPERIENCE

The identification of savings potential is the first step on the road to efficient production processes and products. Nevertheless, only the implementation actually reduces material and energy consumption and this protects the environment and our climate.

Effizienz-Agentur NRW's Best Practice database provides an overview of successful resource efficiency projects from North Rhine-Westphalia. Numerous examples can also be seen in English.

*More Information:
www.efa.nrw/en*



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Publisher

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www.ressourceneffizienz.de | www.efa.nrw/en

Layout

Oktober Kommunikationsdesign | www.oktober.de

Print

Druckerei Lokay e.K. | www.lokay.de

Picture Credits

S. 2: MKULNV NRW | www.umwelt.nrw.de
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Contracted by

Ministry for Climate Protection, Environment,
Agriculture, Nature Conservation and Consumer
Protection of the State of North Rhine-Westphalia



Printed on RecyStar Polar, 100 recycled paper awarded with the "Blue Angel" quality seal



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