HiCE

SHAPING THE
CIRCULAR ECONOMY

Immense global and ecological challenges

Everywhere in the world, we are seeing ecological wrongdoings and undesirable developments. These require concrete actions. Governments, NGOs, companies and, of course, every single individual – we are all called upon to act.

1

In 2050, our planet will have nearly 2 billion people more to shoulder than in 2020 (7.79 billion)[1]. Worldwide waste production will then rise from 2.02 billion tonnes in 2016 to 3.4 billion tonnes[2]. Global consumption of natural, limited resources is irresponsibly high. Only a functioning circular economy can stop this dramatic development. A revolution is more than past due.

2

Only a resolute and long-overdue switch from fossil to renewable energy will reduce the ruinous effects of climate change and conserve our natural resources. Here, too, is where a functioning circular economy can achieve positive results. In 2016, more than 50 per cent of all waste worldwide was deposited in landfills, and only about one-fourth of all waste was reused for generating materials or thermal heat[3]. Thanks to effective material/energy use of largely biogenic fractions – in combination with hydrogen strategies – we can make a significant contribution to the energy transition and thus to climate protection and resource conservation. The exploding amount of climate-relevant corrosive gases can only be halted with drastic measures – and uncontrolled waste disposal stopped.

3

Packaging and composites not suitable for recycling, product design which hasn't been well thought through, over-production, the poor quality and high costs of recycled products, or inefficient collection, stand in the way of an effective and sustainable circular economy. In 2017 in Germany, only about 15 per cent of plastic waste, a total of 5.2 million tonnes, was reused[4]. More than half of the world's plastic produced between 1950 and 2015 (8.3 billion tonnes) have ended up in landfills or the environment. About 2.5 billion tonnes are still in use, 0.8 billion tonnes have been incinerated and only 0.1 billion tonnes have been recycled[5]. For material groups such as paper, glass, wood and metal, the numbers are just as disappointing.

4

Ten rivers flushed more than 44 million tonnes of plastic waste into the world's oceans in 2017 – the Yangtze Kiang in Asia contributed nearly one-third of this amount[6]. Sustainability measures to combat the destruction of the global ecosystem are demanded of all responsible parties and individuals worldwide. Additional irreparable damage to the areas significant to our livelihood – air, earth and water – are to be stopped immediately. The waste management industry must act urgently and set a global example, with sustainability concepts centred on prevention, collection and treatment.

5

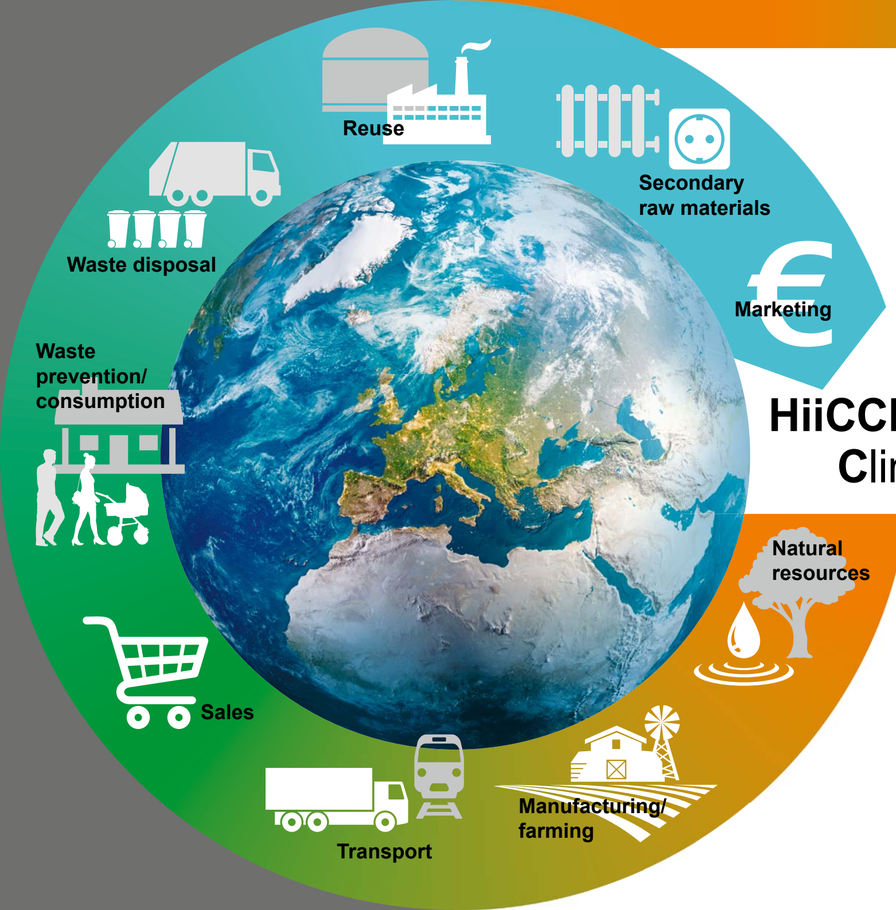
When it comes to the much-discussed mobility transition, we are lagging behind the original forecasts in the areas of electric mobility, fuel cells and synthetic fuels. The waste management industry is therefore actively working on its own alternative solutions for the long term, such as the use of electric or hydrogen-powered cleaning, transport and collection vehicles. Pioneering examples and previously tested mobility concepts can serve as the blueprint for the future. This also includes the use of waste itself as the basis for a synthetic fuel type.

6

Artificial intelligence in the waste management industry? For many, this is hardly imaginable, yet for industry experts, it is the future. Industry 4.0 – this stands for a new era of industrial manufacturing, which is currently being driven forward on both a scientific and a political level. The ongoing linking of value-added chains is also an important step for the circular economy. For instance, digital platforms, automated processes, autonomous driving and new technologies in treatment and reuse have already been making an impact on waste management practices in some cases.

References

[1] © Statista 2020/UN DESA (Population Division), World Population Prospects: the 2019 Revision
[2] © Statista 2020/World Bank, What a Waste 2.0, 2018
[3] © Statista 2020/World Bank, What a Waste 2.0, 2018
[4] Plastikatlas 2019, Heinrich-Böll-Stiftung and Bund für Umwelt und Naturschutz Deutschland (BUND)
[5] © Statista 2020/Special interest magazine AAAS (Science Advances), 2019
[6] © Statista 2020/Helmholtz-Zentrum für Umweltforschung, 2018



HiiCCE **H**amburg **I**nstitute for **I**nnovation, **C**limate Protection and **C**ircular **E**conomy GmbH

The skyrocketing growth of the world's population and the resource-intensive change in lifestyle are forcing humanity to face enormous challenges, especially on an ecological level. We have to steer our actions globally in such a way that waste is never even produced, and valuable resources can be used time and time again. The circular economy takes on a key role when it comes to sustainability answers to the global waste problem, by carefully using non-renewable raw materials and supporting sustainable climate protection.

The new institute HiiCCE, with headquarters in Hamburg, Germany, is a pioneer, initiator and thought leader alike in the area of circular economy. Thanks to the excellent competence of all players – in terms of the topic, science and real-life practice – HiiCCE offers a unique spectrum of services and, at the same time, a high degree of design and innovation abilities, both nationally and internationally.

> Our planet is our home, our only home. Where shall we go if we destroy it?"
>
> **Dalai Lama**

Integrated consultancy competence sets new standards in the circular economy

HiiCCE unites hands-on and practical state-of-the-art solutions with a new definition of circular economy, which is shaped by creative ideas and concepts, as well as long-term, sustainable and measurable results and effects.

The ambition of HiiCCE is to bundle decades-long scientific expertise, technical know-how and operative powers and to act as a hub in such a way as to enable companies and firms, economic organisations and NGOs, as well as state governments and international organisations, to profit over the long term from a circular economy on a completely new level.

HiiCCE combines a unique competence and decades-long experience in the areas of waste management, environmental consultancy and science under a single roof for our clients. What's more, the institute is supported by a high-calibre, ten-person Advisory Board whose renowned members contribute both diverse and profound expertise in the areas of climate and resource conservation – thus ensuring clients notably profit from HiiCCE in the long term.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Prof. Dr Peter Quicker
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Advisory competence at the highest level

Managing Director Michael Zahlten

Managing Director Gudrun Raelert

In 2021, JOMA Umwelt-Beratungsgesellschaft mbH became **HiiCCE GmbH**. JOMA was previously active in the circular economy for 30 years, particularly in the waste and energy management as well as renewable energy sectors. With its broad partner network, the company was and is a leading service provider of strategic consultancy, material flow management, project development and execution.

Pioneer in sustainability

Stadtreinigung Hamburg AöR (SRH), Germany's second-largest municipal waste disposal company since the country's first city waste collection system in 1886, can look back at more than a century of experience in waste management. Since the start of the 2000s, SRH has become known even beyond the city's borders as a pioneer in everything centred round sustainability. Defining collaborations and engagements in national (VKU) and international organisations (ISWA) mark the all-encompassing work and actions of the company.

Holger Lange (Managing Director, left) and Prof. Dr Rüdiger Siechau (Spokesperson for the Management Board, right)

STADTREINIGUNG.HAMBURG

Worldwide scientific know-how

The research group Sustainable Resource and Waste Management at the **Hamburg University of Technology** is highly renowned on both a national and international level, and has been a member of the worldwide research network for many years. The 25-person team sets standards in the research areas of recycling, circular economy, bioresources and bioeconomy. The institute features an excellently equipped technical centre as well as generous laboratories with cutting-edge gas, water, solids and trace analyses.

Prof. Dr Kerstin Kuchta, Head of the research group Sustainable Resource and Waste Management, and Scientific Head of HiiCCE

Our spectrum of services

HiiCCE stands for identifying global ecological challenges and providing customer-specific proposals and concepts for solving problems, especially in the context of developing waste management measures. Depending on the task at hand, the HiiCCE team supports the entire process – from concept development to planning to execution.

The special expertise of HiiCCE is based on the bundling of decades-long experience in science, planning and operations, enabling us to find holistic solutions to complex challenges. The focus on the sustainability of solutions is just as important as on their innovative science approach, profitability and feasibility.

In this respect, HiiCCE sees waste and disposal management not only as part of the problem, but as a significant player most of all in the development of sustainable answers to global challenges.

Lighthouse projects

The three partners Stadtreinigung Hamburg (SRH), HiiCCE (formerly JOMA Umwelt-Beratungsgesellschaft) and Hamburg University of Technology (TUHH) are making a mark with their respective key competences in the areas of climate protection and resource conservation as well as sustainability. Numerous projects document their excellent shaping and innovation abilities.

Climate-neutral mobility

As a pioneer, SRH has been relying on alternative, emissions-free drive technologies since 2009. A total of 100 electric vehicles, weighing up to 3.5 tonnes and thus 50 per cent of the vehicles in service, are currently driven by power from renewable sources – and the numbers are rising. The company is also working on the development of heavy-duty large machines that work without the use of fossil fuels, collaborating closely with manufacturers and leading in-use tests with prototypes for fully electric large sweepers, rubbish lorries and electric excavators.

A glimpse into the future of the SRH fleet: a fully electric, large sweeper with ZERO emissions

Climate protection and resource conservation through the use of energy and material resources during waste treatment

Location development

Effective climate protection and resource conservation in the area of waste management also requires a targeted development of new and existing sites, particularly when it comes to energy and resource efficiency (reuse based on material flow and the treatment of waste with high energy efficiency and the use of material and energy potential).

The development encompasses, in addition to the organisational development of structures, the planning of suitable technical measures based on the site – from the permit to the contract to the execution.

HiiCCE (formerly JOMA) has executed projects in the area of organic waste treatment with energy use and material reuse at various waste management sites.

A new laundry detergent bottle made of 100% recycled plastic – thus completely closing the material cycle

The Hamburg bottle

Facing the challenges posed by the “flood of plastic” with sensible steps and creating a true circular economy in Hamburg, Germany – this is the goal of Hamburgs Wertstoff Innovative. This joint project with the Hamburg-based eco partners Unilever, Veolia, Budnikowsky and Stadtreinigung Hamburg showcase that a circular economy in Hamburg works – based on a brand-new prototype product: a laundry detergent bottle made of 100 per cent recycled materials from the yellow recycling bins in Hamburg. Regional, tangible and real.

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