

GGR (and its partners working for Hamburg University of Technology) developed several software tools used in projects with clients, such as

REFINA Kostentransparenz: Cost estimation tool for new housing development recommended by four state governments to their respective municipalities.

FIA RegioProjektCheck and Planspiel Flächenhandel

GIS-based Travel Demand Models for different cities and regions (e.g. Hannover Region, Kassel Region, ...)

Development of a GIS-based accessibility tool for the Frankfurt RheinMain Metropolitan Area

GIS-based small scale analysis and forecasts of population and jobs for different regions

An agent-based simulation of landuse and transport for the metropolitan region of Hamburg within the project €LAN funded by the German Ministry of Research

Participant 12 - OVAM - Public Waste Agency of Flanders (OVAM)

The **Public Waste Agency of Flanders, better known as OVAM**, is a dynamic Flemish Government institution that was established in 1981. OVAM prepares legislation on waste, material and soil management on behalf of the Flemish Minister for the Environment. Once the legislation has been approved by the Flemish Government, OVAM implements the legislation and supervises the implementation thereof. More important, however, is that the Agency also supports and acts as a partner for universities and institutes, companies, industries or citizens committed to working towards a better living environment for the future.

Over the past 30 years (the first Waste Decree dates from 1981), the way in which we handle waste has fundamentally changed. The policy advocated by OVAM is continuously evolving. Whereas this policy initially focused on cleaning up waste and setting up an efficient waste management infrastructure, the focus has now shifted to waste prevention and sustainable material use.

Today, Flanders' waste management and its waste management policy are among the most successful in Europe. About 71% of the household waste in Flanders is collected separately at the source in order to be reused, recycled or composted. Some 27% is incinerated in incinerators equipped with state-of-the-art flue gas cleaning systems and energy recovery systems. Less than 1% of all household waste is being landfilled.

To achieve these objectives, the Flemish Government and OVAM developed a whole host of policy instruments, including levies, takeback obligations, voluntary environmental agreements, landfilling and incineration bans, waste management plans, awareness raising and information campaigns, financial schemes, etc.

Despite the excellent results of our waste management policy and systems, we are still wasting materials and energy on a massive scale. The obvious solution is to produce and consume in a more sustainable way. Traditional waste management focuses mainly on the end-of-life phase, the phase where a product becomes waste. Recently OVAM has broadened its horizon towards sustainable material management. The idea behind this is to manage the entire material chain, from "cradle to cradle". As primary raw materials are becoming more and more scarce, the aim is to close the material loop and to become a green circular economy where discarded products are reused and recycled to replace primary raw materials.

With this goal in mind, we actively go for the transition towards a sustainable materials management. Since 2012, the new Materials Decree stands for the new policy direction, with the development and support of a number of instruments and measures to help producers, designers and consumers to apply principles of cleaner production, eco-efficiency, ecodesign and innovation. The Flanders' Materials Program was initiated by OVAM to work towards a sustainable materials management, together with a broad group of stakeholders. 45 actions make the transition concrete, Plan C is a network that continuously develops the long term vision. And the Policy Research Centre (SuMMA) studies sustainable materials management and provides academic support.

List of Relevant Projects

OVAM was a partner in the Interreg IVC project "C2C network" (www.C2Cnetwork.com). In this project several EU regions shared regional cradle to cradle good practices.

OVAM was also a partner in the Regions for Recycling (R4R www.regions4recycling.com) project. This Interreg IVC project was

a 3-year European project (2012-2014) aiming to enable its partners to improve their recycling performance through consistent comparisons and an exchange of good practices.

OVAM was lead partner of a InterregIb project 'CityChlor' (www.citychlor.eu) that aimed to improve the quality and minimize the pollution of soil and groundwater.

Key personnel being involved in REPAiR

Elmar Willems (male) As a policy officer at the department of Policy Innovation Elmar is responsible for taking up specific projects and exploring new policy-solutions with regard to sustainable materials management. Elmar has been working on and with local governments (eg. Ghent), innovative and sustainable business models, the sharing economy, ecodesign, policy evaluations, and more. He has been coordinating the realization of new legislation like the Materials decree up until February 2012. He has actively pursued new ways of policy-making through the concept of Multi-actor governance. Elmar has a strong expertise on end-of-waste legislation and practices. During a previous job at OVAM, as policy officer organic waste, Elmar was specialized in bioplastics and animal-by-products.

Veerle Labeeuw (femal) (Master in Political and Social Sciences – Communication) is Program Manager in the Flanders' Materials Program. Her expertise lies in project management and in motivating and inspiring multidisciplinary groups to work together. Specific topics Veerle is working on are: increasing the knowledge on circular economy in educational programs and the transformation of urban metabolism from its current operation as an inefficient and wasteful linear input-output system into a resource-efficient and regenerative, circular system. In her previous function at OVAM VL was the Project Manager of an Interreg IVB NWE project named CityChlor. In this project Veerle had the final responsibility for all the results and publications and for the smart cooperation between the 9 partners from Belgium, France, Germany and The Netherlands. With her background as communication expert she will assure a good dissemination of the results and a straight forward communication throughout the project.

Hans Maes (male) studied Ecology at the University of Antwerp and Environmental Technologies at the University of Leuven. He is a policy officer responsible for creating new types of cooperation between the Flemish Government and several local governments (eg. Ghent) in Flanders. The good results of the past regarding waste management was a result of the strategic partnership between the different local governments and the OVAM. New challenges in the field of circular economy demand a renewal of this partnership. A shared, intergovernmental ambition is the first step for testing/puzzling out new contemporary solutions, realizing a change in real terms. Hans creates a starting point, a fundament for realizing new partnerships with different Flemish cities. His active support is crucial for reaching a state of trust between the partners. Trust is a key concept for reaching a win-win prospect. Hans has a profound interest in communication techniques, eg. cooperated aimed negotiations, and 4th generation time management. On a previous job at OVAM, Hans worked as policy officer on the topic of ship waste.

Eline De Rocker (female) is expert environmental management & coordination and in her function at the OVAM Eline advises citizens, industry and governments on all aspects of building waste (eg asbest). Eline is also project leader of a project on closing the material loop for mineral wool, in which she collaborates with the sector, the local governments (Gent en Destelbergen) and the intercommunal(?) IVAGO.

Ann Braekevelt (female) (master in geography and environmental sanitation) is project manager in the waste and material policy. She has launched the separate collection and quality control on the treatment of bio- and greenwaste in Flanders in the nineties. She is still envolved with the optimization of it and with actions and (European) research projects for e.g. the prevention and reduction of the food waste in the Flemish region. She coordinated several Flemish household and biowaste management plans. Recently she has realized a compromise between environment and energy targets with all stakeholders (from municipalities to private sector) and the Flemish government for the execution of the first biomass action plan 2015-2020. Her expertise lies in policy analyzes based on local data, reaching (bio)waste policy agreements, and results on the field in closing the bio(material) circular system based on good communication with different groups of stakeholders. She introduces often the principle of "learning by doing" and focus on realistic goals in several study projects with e.g. municipalities.

Participant 13 - Municipality of Haarlemmermeer (GHM)

Municipality of Haarlemmermeer is a municipality in the Netherlands, in the province of North Holland. It is a polder, consisting of land reclaimed from water. GHM is home to 145.000 inhabitants and an economic strong region with the (economic) powerhouse of Schiphol Airport in its boundaries. Over 9.000 locally, nationally and globally operating companies, pose challenges towards resource management. With projects like the par 2020 GHM is a frontrunner in the field of circular economy among Dutch municipalities. The more rural characteristics of the polder (lowlands) and therefore peri-urban characteristics which are in strong contrast to the urban area of Amsterdam. Makes it a perfect showcase for Repair.

Key personnel being involved in REPAiR

Joost van Faassen (male) is strategic spatial planner and urban designer, working for the municipality of Haarlemmermeer. He is involved in spatial planning and economic-/ airport-affairs, projects dealing with urban design, economic development and sustainability both on meta- and micro level. Van Faassen is directly involved in the decision-making process concerning Amsterdam Airport Schiphol. His focus is on creating innovative policies and noise-ascending measures, to redefine governance around Schiphol. Main policy and research related developments are the spatial and economic development of the Schiphol region (REVS, project leader, with B. de Jong), member of the integral design team of the Schiphol corridor, core member of the team working on the development around sustainability and economics in accordance with the Ellen MacArthur foundation (as a regional member), co-creator (with B. de Jong), of the fundamentals of the Internationale BauAusstellung Airport Region (in progress and early stage), aiming at defining social, economic, spatial policy in another way than is established now. Furthermore, creating positive awareness, innovation and governance models to become the new sustainable order of an airport region. Van Faassen was also a member of the Better Airport Regions (BAR) team for the municipality. He has given guest lectures in Zurich (Swiss) and in the Netherlands. He obtained a BSc in traffic engineering and urban design at the Polytechnic University of Leeuwarden and studied at the Academy of Architecture Amsterdam. Van Faassen has been affiliated with various architecture firms in The Netherlands and United States.

Participant 14 - Campania Regional Authority (CRA)

Campania Region is an Italian region situated in the South of Italy. It has 5.856.649 inhabitants.

Campania Regional Authority is an orientation and planning authority. It sets laws and its administrative functions can be either delegated by State or exerted by itself. In order to develop laws application activities it has a proper administrative organization. It is divided in 8 Areas (Assessorati). Each Area comprehends Departments (Dipartimenti) which include Head Directorates (Direzioni Generali). Each Head Directorate is divided in Offices (U.O.D.). Head Directorate of Territorial Government (hereafter referred to as DG09) is a part of the Territorial Policies Department.

DG09 is going to take part to REPAIR Project, considering its institutional roles and all its directives included in the Regional Territorial Plan (PTR Pianificazione Territoriale Regionale). It is going to identify urban and regional model of planning to find eco-innovative solutions to prevent "waste" generation and to promote recycling approaches. Its main application field is a dynamic and efficient resources management especially in the peripheral areas. Final research target will be to facilitate the transformation of the waste-areas in the peripheral areas into instruments for re-naturing cities. Through its Territorial Informative System (SIT – Sistema Informativo Territoriale) DG09 will be able to provide, in digital version, maps, data and information about Campania Region.

Key personnel being involved in REPAiR

Pietro Angelino (male) – graduated in Engineering. He has attended a course of energy management. At present he's Head Executive Officer of DG09.

Previous regional roles: Executive Officer of Civil Engineering Directorate in Caserta; Executive Officer of Civil Engineering Directorate in Naples; Executive Officer of State Project Directorate.

Donata Vizzino (female) – Architect and Executive Officer of U.O.D. 04 (Planning and Monitoring of urban and environmental requalification).

Antonella Calligaris (female)– Officer of UOD 04 – Architect and Expert in Regeneration and Urban Quality.

Flora Guida (female)– Employee in the Administrative Office of DG09. Graduated in Foreign Languages.

List of relevant publications:

Regional Territorial Plan (PTR Piano territoriale Regionale) published on BURC nr. 45 bis , 10th november 2008;

Guideline about Urban Quality ratified through as per Resolution nr. 572 – 22nd July 2010 published on BURC n. 52 , 2nd August 2010.

Participant 15 - Pheno Horizon (PHH)

PHENO HORIZON (a brand of OLP Sp. z o.o.) aims at creating a better life space within cities, communes, districts, provinces and whole regions. This is a consulting company which joins specialist knowledge on urban planning, economic analysis and developing strategies. In our projects we focus a lot on social participation. So far we have carried out projects in Poland, taking advantage of our perfect knowledge of social conditions. We base on global strategic guidelines. The stakeholders are included in the project development process – main trends are developed with their participation. We think that each of the partners invited for cooperation on various stages of the process brings in an inestimable value.

Key personnel being involved in REPAiR

Małgorzata Grodzicka-Kowalczyk (female) – a town-planner, deals with space planning processes. Małgorzata is a cofounder and the main designer of Pheno Horizon. She has graduated Faculty of Architecture, Civil Engineering and Environmental Engineering of the Institute of Architecture and Urban Planning at Lodz University of Technology. She has also completed post-graduate studies at Warsaw University of Technology – Spatial Planning, and at University of Lodz – The Real Estate Market –Valuation. Since 2006 a manager of a multidisciplinary team developing acts of local law. Author and co-author of many planning documents – including documents for Lodz province region.

Maciej Kowalczyk (male) – a sociologist mainly focused on cities and regions development strategies. Pheno Horizon cofounder and director. A graduate of Faculty of Economics and Sociology at University of Lodz. He manages projects related to appointing new directions of development – using their specific potential and current economic and social conditions, and development trends. Author of brand strategies and numerous promotional campaigns in marketing of places. Responsible for social participation in projects developed by the team.

Lukasz Pancewicz (male) - Pheno Horizon partner, PhD, member of the International Society of City and Regional Planners, Northern Chamber of the Town Planners, Society of Polish Town Planners, Graduate of the Gdansk University of Technology (Msc and PhD), since 2013 a chief urban planner at the Municipal Planning Bureau of Lodz, where he prepares Lodz Structure Plan 2030. Lukasz taught at Faculty of Geography and Oceanography University of Gdansk, he currently is an Assistant Professor at the Faculty of Architecture, GUT. Lukasz worked as a town planner in Poland (PPR DOM sp. z o.o.), Ireland (RPS Planning and Environment Dublin), and as intern for Boston Metropolitan Area Planning Council (MAPC). In 2011-2012 he took part in SPURS at the Department of Urban Studies and Planning, Massachusetts Institute of Technology (MIT).

Katarzyna Hess (female) – Pheno Horizon partner. She has graduated Faculty of Civil Engineering at Częstochowa University of Technology. She manages preparation and implementation of strategic documents, economic and development programmes as well as technical and urban infrastructure plans. Responsible for managing investment processes in the province of Łódź. She perfectly knows aspects of cities functioning and local law conditions.

All key personal has either an employment contract with PHH or under a direct contract of PPH.

Participant 16 - Bauer Umwelt GmbH (BMU)

Bauer Umwelt GmbH is one of many subsidiaries of the BAUER Group, and it is held under the Resources division of the company. Bauer Resources' GmbH Headquarter is located in Schrobenhausen, Germany and was established in 2007. It is focused on a number of very important key fields for the future: water, environment and natural resources. Bauer Umwelt provides a comprehensive range of services including planning and consulting in several areas of the environmental industry.

The company's expert remediation work is backed by strong in-house manufacturing facilities that build the necessary equipment to complete the work in the field. As well as treating contaminated soil and water, the company also specializes in landfill site remediation and waste disposal. Bauer Umwelt operates its own soil treatment centres in the states of Bavaria, Thuringia, Saxony and Hamburg, which treat and recycle materials from around Germany and neighbouring European countries.

Key personnel being involved in REPAiR

Manuel Sakowski (male) is the Head of Waste Management Department at BMU since 2013. He holds a diploma degree in Logistics with a specialization in quality and environmental management, circular economy, planning of logistic systems and transportation. From 2006 to 2009, he was a research assistant at RIF e.V. in the field of quality management. He has many years of working experience as a project manager in the area of plant technology, substitute fuels, waste treatment and waste storage installations, as well as in the area of setting up key performance indicator systems that enables operational business controlling. In his current position at BMU he is responsible for all development related issues as well as for financial concerns.

Gregor Schmid (male) holds a PhD in Geoscience with specialization in Geomicrobiology and Analytical Microscopy. He worked on the immobilization of heavy metals by biogenic iron minerals during his PhD. Since 2016 he is employed as a development manager at the BMU, responsible for the development of (bio-)remediation and treatment techniques of contaminated soils.

Both will contribute towards the development of specific solution for challenges related with remediation within REPAiR. BMU will also contribute with their expertise and facilities in the data collection, specifically in the Italian and German case studies.

List of relevant publications:

Schmidt-Modrow, Thomas; Mesch, Johann: Constructed wetlands to clean up poisonous cocktails. In: E.L.B.W., March 2011.

Schmidt-Modrow, Thomas; Karius, Michael: Hot-Spot remediation with replacement borings Diameter 2300 mm. In: TerraTech, Zeitschrift für Altlasten und Bodenschutz (WLB), 3/2012.

Schmidt-Modrow, Thomas; Haidacher Dominic: BAUER executes complex soil remediation in Milano (Project City Life). In: TerraTech, Zeitschrift für Altlasten und Bodenschutz (WLB), May 2012.

Schmidt-Modrow, Thomas; Meißner, Torsten: Zugunglück Bleicherode – schnelle Hilfe und anschließende Sicherungsmaßnahmen. In: TerraTech, Zeitschrift für Altlasten und Bodenschutz (WLB), 1/2013, p. 16.

(Translation: Train accident in Bleicherode – rapid assistance followed by technical safeguards)

Schlenker, Uwe: Industriestandort Leuna, Mikrobieller Abbau von organischen Schadstofffrachten in Böden eines ehemaligen Hydrierwerks. In: TerraTech, Zeitschrift für Altlasten und Bodenschutz, 4/2013, p. 10-11.

(Translation: Microbial reduction of organic contamination of polluted soils)

Richter, Rüdiger B.; Hosemann, Peter; Schmülling, Marcus: Behandlung und Deponierung natürlicher radioaktiver Abfälle (NORM) der Erdöl- und Erdgasindustrie - ein Überblick. In: Altlasten Spektrum, 1/2014, p. 22-31. *(Translation: Disposal methods for natural radioactive waste yielded in the oil and natural gas industries)*

Tidden, Frank, Schlenker Uwe: Mikrobieller Abbau von organischen Schadstoffen in Böden und Grundwasser im Umfeld der „Alten Raffinerie Leuna“ in Sachsen-Anhalt. In: 14. Karlsruher Altlastenseminar (ICP), July 2014. *(Translation: Microbial reduction of organic contamination of polluted soils and groundwater in the area of “Alte Raffinerie Leuna” in Saxony-Anhalt)*

Mair, Willi: Grundwasserreinigung unter „explosiven“ Bedingungen. In: bbr, Fachmagazin für Leitungsbau, Brunnenbau und Geothermie, 3/2015, p. 10. (*Translation: Groundwater purification under explosive conditions*)

Tidden, Frank, Illing Sebastian: Sanierung eines LHKW-Grundwasserschadens über Tiefdrainage im Hebeverfahren. In: ITVA Altlastensymposium, June 2015. (*Translation: Decontamination of LHKW-groundwater damage using drainage and lifting procedure*)

List of relevant projects:

Brownfield Remediation: Soil Remediation and Disposal – Wedel

- **Client:** City of Wedel
- **Location:** Wedel, Germany
- **Execution:** Nov. 2011 – Dec. 2012
- **Scope of performance:** 160.000 m³ contaminated soil
- **Contaminants:** PAH

Brownfield Remediation “Sattleraltlast”: Schonungen, Germany

- **Client:** District Administration of Schweinfurt
- **Location:** Schonungen, Germany
- **Execution:** Oct. 2013 – Sep. 2015
- **Contaminants:** Heavy metals and LHKW

Landfill Restoration: Biological Soil Treatment – Nimr Hazardous Waste Yard

- **Client:** Petroleum Development Oman
- **Location:** Nimr Oilfield, Oman
- **Execution:** Sept. 2011 – July 2012
- **Scope of performance:** 167.000 m³ contaminated soil
- **Contaminants:** TPH

Brownfield Remediation: Grenzach-Whylen

- **Client:** Roche and BASF
- **Location:** Grenzach-Whylen, Germany
- **Execution:** Sept. 2015 - 2020
- **Scope of performance:** 310.000 m³ of highly contaminated soil
- **Contaminants:** mixture of hazardous substances of chemical and pharmaceutical Industry

Participant 17 - IVAGO (IVAGO)

IVAGO is a public private inter-municipal association. IVAGO manages the household waste for more than 275.000 inhabitants and more than 5000 small enterprises. The city of Ghent and the municipality Destelbergen are the government partners. ECOV is the private partner. IVAGO is the first inter-municipal waste management company which was established in Flanders. Since 1996 IVAGO is operating as a future-oriented and modern waste collecting, management and recycling company. IVAGO runs a high-tech incinerator with energy recovery. IVAGO annually processes 100.000 tons of combustible household waste and provides for its own need for electricity and heat, but also delivers electricity to the public grid. Through an underground steam pipe IVAGO helps to provide for the heating of the Ghent University Hospital. IVAGO runs six recycling parks for 40 different waste streams and is therefore the ideal Partner for REPAiR's case study in Flanders. One of the key projects the coming years is the introduction of a system of waste collection using containers equipped with 'diftar'-system that are placed partially under the surface. The plan is to install the coming 3 to 5 years more than 225 containers and is therefore the ideal Partner for REPAiR's case study in Flanders.

Key personnel being involved in REPAiR

Alain Neels (male) has a degree in industrial maintenance engineering and started his career in the automotive business. After working as a plant manager in a metal packaging company he is now director of operations at IVAGO with 15 years of

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experience in managing waste management companies. Besides the operations he is the project manager of the 'diftar-container' project.

Relevant Infrastructure to the project

- Separate collection of organic waste in the city of Gent and Destelbergen since 1998
- Operation of the combined heat and power plant since 2005
- More than 170 trucks for the waste collection and transport
- More than 50.000 collection points using small diftar-containers (2 - wheels)
- One incineration plant for residual waste with a capacity of 100.000 tons/a

Participant 18 - Stadtreinigung Hamburg (SRH)

With a population of 1.8 million residents and more than 120.000 businesses, the Free and Hanseatic City of Hamburg is one of the most attractive economic centres in northern Europe. Hamburg's cosmopolitan character is also evident in the promotion of innovative growth sectors, such as the renewable energy sector. The SRH is a public waste management organisation that offers not only environmentally friendly waste collection and recycling services, but also cleaning services such as keeping roads, walkways and public areas clean and safe in summer and also in winter. The SRH is a public-law company with approximately 2.600 employees, which has performed services as prescribed by state law. This structure creates the framework as a public law disposal company and, at the same time, ensures that SRH has the flexibility of a modern service company. SRH is owned by the Free and Hanseatic City of Hamburg. SRH guarantees responsible and sustainable waste management, while decisively contributing to the protection of the climate and resources. In order to promote waste sorting, SRH launched a recycling offensive that has been underway since 2011, thereby maximising the amount of recycled materials. To collect the maximum amount of organic waste for the production of renewable energy, SRH offers all private customers green bins for organic and green waste. The company selects the most effective recycling methods for all recyclable waste types. For this reason, SRH has a network of waste treatment plants to truly get the best out of waste in consideration of ecological and economic criteria. SRH is in charge of material flow management for over a million tonnes of waste and has now achieved a recycling quota that eliminates nearly 400.000 tonnes of carbon dioxide annually.

Key personnel being involved in REPAiR

Dr. Stefan Lübben (male), agricultural scientist, is the climate protection manager of SRH since 2007. As project director, he implemented the separate collection of bio-waste in Hamburg and has given his expert opinion on compost quality in the first years of composting at the SRH. In the role of project leader, he managed several scientific projects about energy, from organic waste (biogas / gasification) and resource management to resource efficiency (organic matter / strategic metals). In his role as expert and consultant to the company, he evaluates the action of the SRH in the matter of climate protection and he reports annually to the Hamburg Ministry of Urban Development and Environment.

List of relevant publications:

Gasification of urban biomass residues for SNG production.- 22nd European Biomass Conference and Exhibition 2014

Household and garden waste in the city of Hamburg – Their energetic potential and integration possibilities into a biorefinery approach.- 3rd International Conference on Engineering for Waste and Biomass Valorisation 2010

Biomass material flow management of Bergedorf district in the city of Hamburg.- Müll und Abfall, 3, 2015, 112-122

Neue Methoden zur Erfassung von organischen Abfällen aus Haushalten – Vorstellung und Bewertung.- www.berbion.de – Symposium 2011

5) Beitrag der Stadtreinigung Hamburg zur Erreichung der Klimaschutzziele der Freien und Hansestadt Hamburg.- Abfallwirtschaft in Städten und Ballungsräumen, ANS-Symposium 2010

6) Hamburg's experiences with the collection of organic waste via underground systems.- Müll und Abfall, 3, 2015, 123-125

7) Maßnahmen zur besseren Potenzialerschließung kommunaler und gewerblicher Bioabfälle.- Hamburg T.R.E.N.D 2011

Relevant activities to the project

Since 2011, SRH has operated a dry fermentation plant upstream of its composting plant – this biogas- and compost plant is one of the largest of its kind in Germany. Every year, up to 70.000 tonnes of organic waste are pre-treated in a fermentation process making it possible for up to 28 million kilowatt hours of environmentally friendly energy to be produced. This would be enough electricity for approximately 10.000 households. The volume of organic waste, which is reduced by nearly half during fermentation, is then composted into a nutrient-rich soil fertiliser. SRH has also been significantly involved in another wet fermentation plant since 2006. There, enough biogas to generate more than ten million kilowatt hours of electricity and district heating, is produced based on decomposition of foodstuffs and leftover meals. Waste combustion in modern incineration plants in Hamburg also produces climate-friendly energy. The amount of electricity and heat produced at proprietary and contract plants totals more than one million megawatt hours annually. For more than 20 years, a combined heat- and power plant built at a former landfill for household waste, converts landfill gas into energy.

SRH will continue to play its role as a pioneer in its sector, by implementing concepts for the benefit of the citizens of Hamburg and the environment, now and in the future. For example, SRH is one of the co-initiators of a platform where representatives from large German urban centres exchange information and experience on the topic of climate protection of a city cleaning company. As a member of national and international organisations, it also utilises forums for exchanging information and experiences. Amongst others, the SRH is a member of the German Association of Municipal Companies (VKU) as well as the International Solid Waste Association (ISWA). Electro-mobility, in the form of economising or completely eliminating conventional fuels for operating a fleet of more than 600 vehicles, is becoming a topic of increasing importance at the SRH. In this way, SRH has successfully saved up to 250.000 litres of fuel and prevented the emission of over 600 tonnes of carbon dioxide every year. SRH is taking part in various tests and projects exploring the use of electric vehicles. Currently, more than 20 electric vehicles are in use at the SRH.

SRH was a member in the BERBION-project (www.berbion.de). The main goal was the production of energy from organic waste from households, gardens and the maintenance of parks and dykes

Relevant Infrastructure to the project

- Separate collection of organic waste in the city of Hamburg since 1994
- Operation of the combined heat and power plant on a landfill since 20 years
- Operation of the wet fermentation plant together with a CHP-Plant since 2006
- Operation of a compost-plant with an annual input of 32,000 Mg organic waste since 1994
- Operation of a dry fermentation plant with an annual input of 70,000 Mg organic waste since 2011
- More than 200 trucks for the waste collection and transport
- One incineration plant for pure organic matter with a capacity of 160.000 tons/a

4.2 Third parties involved in the project (including use of third party resources)

Participant 1 - Delft University of Technology (TUD)

Table 4.2a Direct costs of subcontracting

1: TUD	Cost (€)	Justification
Subcontracting	€ 27.000	Reprogramming and development of different features of the open earth data platform in relation to the adaptation and further development of the open earth data platform towards the specific needs of REPAiR. This very specific knowledge from the field of computer sciences is not existing within the REPAiR consortium and will therefore be subcontracted.

5 Ethics and Security

5.1 Ethics

The consortium adheres to the principles laid down in the European Code of Conduct for Research Integrity, the Charter of Fundamental Rights and the Treaty on the Functioning of the European Union. All consortium members will receive a copy of the European Code of Conduct for Research Integrity.

All REPAiR researchers will adhere to their own institutions' and national ethical guidelines, for example the coordinator TU Delft is bound by the TU Delft Code of Ethics (last update 2012) and the Netherlands Code of Conduct for Scientific Practice, which defines the essential principles of research integrity, responsibility and transparency. All consortium members will avoid plagiarism of any kind and abide by the principle of intellectual property and joint data ownership in the case of research carried out in collaboration with other researchers. An open atmosphere in which researchers feel free to question each other's conduct and address issues about which they have doubts, will be encouraged at all times. The coordinator will act as ethical issues ombudsman and can be contacted confidentially to discuss any issues which may arise.

REPAiR researchers are aware that they are accountable towards their employers, funders, as well as, on more ethical grounds, towards society as a whole. They will adhere to the principles of sound, transparent and efficient financial management and cooperate with any authorised audits of their research, whether undertaken by their employers/funders or by ethics committees. Methods of collection and analysis, the outputs and, where applicable, details of the data will be open to internal and external scrutiny, whenever necessary and as requested by the appropriate authorities.

REPAiR researchers will at all times adopt safe working practices, in line with national legislation, including taking the necessary precautions for health and safety and for recovery from information technology disasters, e.g. by preparing proper back-up strategies.

REPAiR has the following three ethical issues:

- the research involves human participants;
- there are volunteers for social science research involved and
- personal data is collected and stored.

Research participants are identified in three different ways:

- Key stake holders for the development of circular economy will be identified through studies of , reports, planning documents, newspapers and via the network of the consortium partners.
- Students of the university, enrol to course that specifically state that they are part of REPAiR, and
- A representative sample of households, will be selected using existing data as well as random selection. Vulnerable individuals or groups are not a specific target group of the interviews.

To all three groups the following procedure of consent apply:

The following information will be provided to the research subjects before they participate:

- -The purposes of the research and information about what will happen with the results of the research.
- -The experimental procedures and a detailed description of the involvement of the participants, including the expected duration, and all the relevant procedures.
- -All benefits to the participants or to others which may reasonably be expected to occur. / That no benefits are expected to be connected to participation in the study.
- -A description of the procedures adopted to guarantee the participant's privacy:
- the levels of confidentiality, the measures to protect the data, the duration of the storage of the data and what will happen with the data or samples at the end of the research.
- -Contact details for researchers who can be contacted at any time to answer pertinent questions about the research and the participant's rights and that can be contacted in the event of a research related injury.
- -A clear statement that the participation is voluntary, that the refusal to participate will involve no penalty or loss of benefits to which the participant would otherwise be entitled and that the participant may decide, at any time, to discontinue participation without penalty.

- -Information about the organisation and funding of the research project

Data Protection and Privacy

The consortium adheres to the principles laid down in the Charter of Fundamental Rights and the Treaty on the Functioning of the European Union that privacy and data protection are fundamental rights which need to be protected at all time. The consortium will handle data in accordance with EU Directive 95/46/EC (Data Protection Directive) and the relevant national legislations for the countries where data will be collected, processed, and stored.

The essential national legislations for the case study areas are the Dutch regulations, as data will be stored in the Netherlands predominantly:

Personal data protection:

Data cannot always be collected anonymously because of the need to clearly locate possible synergies for the development of circular economy, this counts rather for business data but may also be true for personal data in rare cases . Data will be coded so that each respondent will be assigned a reference number. The key linking respondent and reference number will be stored separately to the data and only the PULL coordinator will have access to it. Data will be stored in a key-word protected database to which only the direct team members working with the data will have access. It will not be shared with any external parties. Were ever possible the data will be aggregated to levels (Block, Neighbourhood), so that individuals cannot be singled out easily. Datasets that contain personal information as referred to in the Personal Data Protection Act (Wet Bescherming Persoonsgegevens) may be used only for historical, statistical or scientific research. Persons who use datasets containing personal data are required to comply with the Code of Conduct for the Use of Personal Data in Scientific Research (Gedragcode voor gebruik van persoonsgegevens in wetenschappelijk onderzoek) published by the VSNU (Association of Universities in the Netherlands) or the respective legislation of their country..

During the research, the research data will be stored in the REPAiR DataLab, using the OpenEarth DataLab facilities of 3TU.Datacentrum. This is a closed online data management environment for scientific and monitoring data, where we will safely store, share, edit, process and visualise the most up-to-date research data. Raw data and scripts will be uploaded from partners laptops or workstations. Once uploaded, REPAiR members can run Python and Matlab scripts in the cloud on their data. This processed data can be shared again in standard formats. This enables us to review and improve the scripts that run on the data, increasing the overall quality of the data and analysis. The OpenEarth DataLab enables collaboration and data standardisation.

After the research: the data that is suitable to make open available (including necessary documentation, metadata, code, consent form, software, etc.) will be stored and made open available in 3TU.Datacentrum data archive under the Deposit License agreement. By doing so, 3TU.Datacentrum is granted a non-exclusive licence to store the data and make them available to third parties. For data users, the General Terms of Use applies. These terms specify that, when re-using the data, they will clearly state the name(s) of the original author(s) and that the data will not be used for commercial purposes. 3TU.Datacentrum data archive is a long term archive with a Data Seal of Approval. 3TU.Datacentrum will keep the data available for at least 15 years in an open and - if needed - closed data archive. This complies with The Netherlands Code of Conduct for Academic Practice: "Raw research data are stored for at least ten years. These data are made available to other academic practitioners upon request, unless legal provisions dictate otherwise."

5.2 Security

Please indicate if your project will involve:

- activities or results raising security issues: (NO)
- 'EU-classified information' as background or results: (NO)

6	Annex: Letters of Support User Board Members	79
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The member has access to the project knowledge under the agreement of confidentiality. The travel costs to the project meetings will be reimbursed by the project.

The members of this Group will have the following tasks (examples):

- To provide input and feedback on the roadmap which will draw a clear strategy and work plan to further the application of the technologies created, investigated and invented in the project>
- To join stakeholder workshops in order to test and further develop the software developed by REPAiR
- To provide direction and additional requirements as they deemed necessary
- To participate in the evaluation of the project results, such as progress reports, analysis of logistic processes
- To participate in the evaluation of the final project results

It is the intention of the REPAiR consortium to share test results and elements of the scientific and technical evidence with individual stakeholders and as such provide stakeholders with an insight in the developed models, and decision support tools.

Yours Sincerely,

Signature:



Place:

Amsterdam

Date:

07-09-'15

RE-CYCLE ITALY

HORIZON 2020 LETTER OF SUPPORT USER GROUP Participation in the REPAiR User Group

On behalf of the university research network "Re-cycle Italy" I hereby like to confirm our participation in the proposed REPAiR user group.

It is understood that this participation does not include any financial contribution or any contractual or other obligation, but will be limited to provide support, advice and guidance to the project management and project members of the REPAiR Consortium. The REPAiR proposal will be submitted by 08-09-2015 under the H2020 **Eco-innovative strategies WASTE-6b-2015 call**.

 Associat

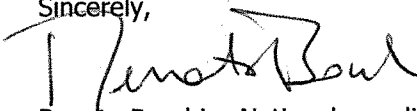
Members of the REPAiR User Group represent typical parties directly involved or interested in the results and deliverables of the REPAiR project due to their role in waste management and regional planning and design. The participation of this Group in REPAiR is essential for a successful completion and will be effected immediately after the start of the project. The REPAiR consortium recognizes the importance of the information and guidance provided by stakeholders and it is therefore the intention of the REPAiR consortium to involve the stakeholders on a case-by-case and bi-lateral basis in order to guarantee maximum confidentiality. At the same maximum effectiveness of the information exchange is provided. The member has access to the project knowledge under the agreement of confidentiality. The travel costs to the project meetings will be reimbursed by the project.

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- To participate in the evaluation of the final project results

It is the intention of the REPAiR consortium to share test results and elements of the scientific and technical evidence with individual stakeholders and as such provide stakeholders with an insight in the developed models, and decision support tools.

Sincerely,



Renato Bocchi National coordinator of the research network "Re-cycle Italy" – www.recycleitaly.it

Signature:

Place: Venice

Date: 26th August 2015

UNIwersYTET ŁÓDZKI
Wydział Nauk Geograficznych
Katedra Geografii Regionalnej i Społecznej
ul. Kopcińskiego 31, 90-142 Łódź

University of Lodz

Faculty of Geographical Sciences

Department of Regional and Social Geography

31 Kopcińskiego st., 90-142 Łódź

georeg@geo.uni.lodz.pl, +48 42 6354586

HORIZON 2020 LETTER OF SUPPORT USER GROUP

Participation in the REPAiR User Group

On behalf of **University of Lodz** I hereby like to confirm our participation in the proposed REPAiR user group.

It is understood that this participation does not include any financial contribution or any contractual or other obligation, but will be limited to provide support, advice and guidance to the project management and project members of the REPAiR Consortium. The REPAiR proposal will be submitted by 08-09-2015 under the H2020 **Eco-innovative strategies WASTE-6b-2015 call**.

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- To participate in the evaluation of the final project results

It is the intention of the REPAiR consortium to share test results and elements of the scientific and technical evidence with individual stakeholders and as such provide stakeholders with an insight in the developed models, and decision support tools.

Sincerely,

University of Łódź

Faculty of Geographical Sciences

Department of Regional and Social Geography

31 Kopcińskiego st., 90-142 Łódź

georeg@geo.uni.lodz.pl, +48 42 6354586

Signature:



Karolina Dmochowska-Dudek

Place:

Łódź

Date:

29.06.2016

UNIwersytet Łódzki

Wydział Nauk Geograficznych

Katedra Geografii Regionalnej i Społecznej
ul. Kopcińskiego 31, 90-142 Łódź