



“Agent 00Was7e: Licence to Recycle”
Erasmus+ Project: 2023-3-IT03-KA210-YOU-000171411

Stuttgart Meeting 19.09.2024 Commons Kitchen Stuttgart Research on Waste Management Policies Meeting Outcomes

Useful Links:

1. **Mängelmelder**
Website: maengelmelder.de
A platform to report and track public issues, including illegal dumping.
2. **Gelbe Karte**
A platform from the Municipality to report and track public issues, including illegal dumping
<https://service.stuttgart.de/lhs-services/stoerung/>
3. **Müll Weg**
Website: muell-weg.de
Allows users to report littering and illegal dumping incidents.
4. **Mängelmelder Stuttgart Search**
Website: [maengelmelder.de search](https://maengelmelder.de/search)
Filtered search for reports in Stuttgart.
5. **Stuttgart Waste Services**
Website: service.stuttgart.de
Information on waste management services in Stuttgart.
6. **Neckarpark Stuttgart**
Website: stuttgart.de
A page about sustainable development in the Neckarpark area.
7. **Biovergaerungsanlage Stuttgart**
Website: stuttgart.de
Information on Stuttgart's bio-digestion plant for waste.
8. **Circular Economy Strategy**
Website: stuttgart.de
Overview of Stuttgart's circular economy plan.



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1. Policy enforcement [Local: Stuttgart]:

AWS (Abfallwirtschaft Stuttgart - Waste management)

1.1. Waste management/ reduction

1.1.1. Management

- App and Website ([Service & Info](#))
- Event Management (e.g.: European championship)
- **[How-To:]** Waste Calendar, Schedule, Plan, Public disposal sites, bulky waste, pay extra fee for fast pick-up
- Waste removal (5 different waste sites: Hedelfingen, Münster, Plieningen, Weilimdorf and Vaihingen)
 - Mixed Waste/ Paper/ Bio waste/ green waste/ Bulky waste/ reusables
 - public toilets
- street cleaning (streets, pedestrian sites, parking spaces, tunnels)
- winter service; (955/1410km): 3 different priority tiers

1.1.2. Reduction

- Awareness (Stuttgart-machts-rein.de , 5000 cans/weekly)
 - Tips & Tricks
 - Separation guides

1.2. Illegal dumping

- Reporting
 - Yellow Card (Stuttgart website)
 - Report per Mail or phone
 - Examples: [Mängelmelder](#)/ [Müllweg](#) / [Cleanup network](#)
- Monitoring & Inspecting
 - New positions at regulatory office (municipality)



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- Monetary Fines, works very good
 - Feedback from people who got fined: need more garbage cans



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2. Techniques and innovation

The current consumption trend in society makes waste production and management one of the main issues. For example, according to the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety, and Consumer Protection (BMUV), around 340 million tonnes of waste are generated every year, with the vast majority related to construction and demolition waste .

Effective waste management is crucial to prevent negative environmental, social, and economic impacts (Interwaste 2021). In fact, waste management in Germany is one of the strongest systems, reinforced by legislation. The legal framework for waste management began in the early 19th century (Umwelt Bundesamt, 2014), and the system has developed into a highly structured and regulated process .

Germany’s waste management act is based on a five-level waste hierarchy that includes prevention, reuse, recycling, other recovery, and disposal. Prevention is the main target because of its benefits in reducing waste production. As the principle suggests, waste does not exist if it is not demanded .

One of the main strategies of the German government in terms of waste management is the circular economy, anchored in the Circular Economy Act (KrWG) of 2018 and the close substance cycle initiative. This strategy aims to protect the environment and combat climate change . As BMUV highlighted in 2016, one of Germany's goals is sustainable growth, defined as “A global circular economy with waste avoidance, reuse preparation, recycling, and energy recovery, with landfilling minimized, so that by 2030, waste is predominantly used as a resource” .

To reach the 2030 goals, Germany has invested in effective and innovative waste treatment technologies. For instance, around 79% of municipal waste is recovered, and approximately 65% is recycled, supporting the rise of an economic sector with a workforce of over 200,000 and an annual turnover of around 40 billion euros. Two pillars of German policy include resource efficiency and recycling.

In Germany, waste is classified into five main categories, each treated according to its nature:



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1. **Household Waste:** This includes everyday waste like organic materials, recyclables (plastic, paper, glass), and residual waste. Organic waste is composted or used to generate biogas .
2. **Hazardous Waste:** Comprising waste from industries, batteries, electronics, and chemicals, this waste requires specialized treatment processes like incineration or chemical neutralization to ensure pollutants are safely managed .
3. **Construction and Demolition Waste:** This type represents the largest proportion of waste in Germany, consisting of concrete, wood, and metals. These materials are often recycled and reused in new construction projects .
4. **Commercial and Industrial Waste:** Generated from businesses, this category includes packaging, production residues, and other materials that are often recycled or incinerated to recover energy .
5. **Electronic Waste (E-waste):** Comprising discarded electronics like phones, computers, and home appliances, e-waste is handled with specialized recycling techniques to recover valuable metals while safely disposing of hazardous components .

These categories, alongside the management hierarchy, define the measures necessary for waste treatment, including pre-treatment technologies and facilities. Two significant treatment technologies employed are composting and fermenting, as well as thermal treatment.

Thermal Treatment: Thermal treatment is a crucial aspect of waste management in Germany, primarily for disposing of and recovering residual waste. This process involves incinerating waste at high temperatures, significantly reducing its volume and converting it into energy. The energy generated can be harnessed for heating or electricity production, contributing to renewable energy objectives. According to BMU (2023.), thermal treatment facilities are equipped with advanced technologies to minimize environmental impacts, including strict emissions regulations that protect air quality. Additionally, residual ash from incineration can be processed for use in construction materials, thereby supporting resource recovery.

Biological Treatment: Biological treatment, including composting and anaerobic digestion, plays a vital role in managing organic waste. The recovery of biowaste has become essential in recycling efforts, where it accounts for 30 to 40 percent of municipal waste. The introduction of bio-bins has significantly increased the separate collection of biowaste since the 1990s, contributing to a considerable reduction in household waste volumes. Biowaste,



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which includes garden and food waste, is processed to improve soil quality and replace mineral fertilizers. Composts produced from separately collected biowaste contain 95% fewer contaminants compared to those made from mixed household waste (BMU, 2023). Proper management of bio-bins ensures they do not produce unpleasant odors or attract pests, minimizing health risks for waste collection workers.

Germany is also pioneering several innovative approaches to specific types of waste:

- Residual Waste Management:** Treatment of residual waste often involves advanced thermal treatment technologies that not only reduce waste volume but also capture energy for district heating or electricity generation. This is particularly important as Germany moves towards reducing landfill reliance.
- Packaging Waste Management:** The Packaging Act (VerpackG) mandates manufacturers to take responsibility for the collection and recycling of packaging materials. This legislation encourages recycling initiatives and enhances the efficiency of collection systems for packaging waste (BMU, 2023).
- Sludge Management:** Sewage sludge from wastewater treatment plants can either be incinerated or processed for agricultural use. The thermal treatment of sludge reduces its volume and can generate energy, while agricultural use involves careful management to ensure nutrient recovery without contaminating soils (BMU, 2023).
- Electronic Waste and Producer Responsibility:** The Electrical and Electronic Equipment Act (ElektroG) enforces producer responsibility for electronic waste, requiring manufacturers to manage the disposal and recycling of e-waste. This ensures valuable materials are recovered, and hazardous components are safely handled.
- Battery and Vehicle Waste Management:** Strict regulations govern the recycling of batteries and end-of-life vehicles. The Battery Act ensures that batteries are collected and recycled efficiently, while the End-of-Life Vehicles Directive mandates the recovery of materials from discarded vehicles, promoting resource efficiency (BMU, 2023).

links :

- <https://www.bmu.de/en/publication/waste-management-in-germany-2023>
- [en%2fabfallwirtschaft_2023_en_bf.pdf/RK=2/RS=E48QiHK_Kqu54jFPzFiziQ_NsIA-](https://www.bmu.de/en/publication/waste-management-in-germany-2023_en_bf.pdf/RK=2/RS=E48QiHK_Kqu54jFPzFiziQ_NsIA-)



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- <https://www.bmuv.de/en/topics/water-management/circular-economy-overview/waste-treatment-and-technology/waste-incineration>
- <https://www.retech-germany.net/en/themes/steps-to-modern-waste-management>
- <https://www.umweltbundesamt.de/en/topics/waste-resources/waste-management>
- https://www.destatis.de/EN/Themes/Society-Environment/Environment/Waste-Management/_node.html#266810
- <https://earth.org/waste-management-germany/>
- <https://www.sciencedirect.com/science/article/pii/S1878029616300901>
- <https://www.umweltbundesamt.de/en/publikationen/opportunities-limits-of-recycling-in-the-context-of>

Waste Separation and Recycling (Deniz TAS)

Germany is known for its strict rules for garbage and recycling. The system is complicated that sometimes even Germans are not sure what to do with certain things. We hope our guide will help you get things right – at least 98% of the time!

Although there are some regional differences, in general the following types of waste or recycling are sorted and picked up at private residences: used paper, packaging, organic waste, residual waste, and (by appointment) large items like furniture.



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Green Bin: Used Paper

Nearly all kinds of paper belong in this bin, including:

- printer & looseleaf paper
- correspondence
- newspapers
- magazines & catalogues
- books & notebooks



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- wrapping paper
 - paper and cardboard packaging

Please do NOT put beverage cartons (Tetra Pak) in the green bin – they belong in the yellow bag. In addition, the following items are considered residual waste and go in the grey bin:

- dirty or wet paper
- coated paper (for example with laminated foil)
- hygienic items like diapers or tissues

Yellow Bag: Packaging

Most packaging in which items are sold should be placed in the yellow bag (Gelber Sack). This includes a few main categories.

Plastics: bags, films, cups, dishes, bottles, tubes, pouches, nets, EPS packaging, etc.

Metals: food or beverage cans, aluminum foils or dishes, crown caps, screw caps, tablet packaging made from aluminum, etc.



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Composite materials: beverage cartons (Tetra Pak), vacuum cans for powdered foods, blister packs, composite packaging such as for instant soups, etc.

Articles for daily use made of plastic or metal do not belong in the yellow bag. If you no longer want things like toothbrushes, toys, buckets, and so on, please place them in the grey bin.

Brown Bin: Organic Waste

If you have a brown bin for organic material, the following types of waste belong inside:

- fruit and vegetable peelings
- other residue from fruits and vegetables
- egg shells
- solid leftovers from meals (stale bread, cheese, etc.)
- coffee and tea filters or bags
- leaves, grass cuttings, plant trimmings, weeds, flowers, etc.
- wood shavings

Do not use the brown bin for liquid or mushy food remains. If you do not have a brown bin, all of the above may be placed in the grey bin.

Grey Bin: Residual Waste



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Basically, the grey bin is where you put everything that doesn't have a designated pick-up spot. So, do NOT use it for:

- used paper
- packaging waste
- organic material (unless there is a brown bin on site)
- items too large for the bin
- glass
- hazardous materials

Otherwise, almost anything else goes in, including:

- leftover meat, fish, and bones
- liquid or mushy food leftovers
- paper towels soiled with chemicals
- cigarette butts
- sweepings and ash
- vacuum cleaner bags
- hygienic articles
- diapers and sanitary napkins
- daily use articles like toothbrushes, toys, buckets, and so on



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- eyeglasses
 - electric light bulbs
 - biodegradable plastic bags
 - dishes and china
 - wallpaper cutoffs or carpet remnants
 - treated wood
 - dried-up paint or varnish

Sperrmuell: Large Items

It is possible for large items like old furniture, household appliances, computers, or bicycles to be picked up by appointment. In most residences, you receive two coupons per year. You can contact AWS (Abfallwirtschaft Stuttgart) to receive an appointment. On the appointment morning, you simply leave the items on the curb. If you're in a rush, you can also pay for pick-up within 48 hours.

Alternatively, you can bring these items and any recyclables to a community recycling depot, or Wertstoffhof. Please note that while recycling is free to deposit, for large items you will either need to provide one of your two yearly coupons or pay per cubic meter.

One more tip: when you replace an appliance like a vacuum cleaner, the shop where you bought the new one is required to take your old one for recycling.



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Glass and hazardous waste are not picked up at private residences. Instead, they must be brought to specific locations.

Glass Collection Containers

Glass collection containers are located in every neighborhood. Glass jars and bottles can be dropped off with or without their lids. They should be sorted into three main categories: clear, brown, and green. There is a container for each one. If you have a glass jar or bottle that is another color, place it into the container for green glass.

Most other kinds of glass may not be disposed of in these collection containers. Window glass, car windows, and armoured glass must be specially disposed of. The following kinds of glass are categorized as residual waste and should be placed in the grey bin.

- mirrors
- electric bulbs
- eyeglasses
- fire-proof glass tableware
- lead glass and lead crystal



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Umweltmobil: Hazardous Waste

Hazardous materials are collected only in certain locations and must be deposited in airtight vessels with a maximum capacity of 5 liters (5.2 qt). The contents must be labeled on the outside of the containers.

The following materials are considered hazardous waste:

- batteries
- all kinds of chemicals
- mineral oil
- liquid paints and varnish (hardened or dried-out paints and varnish go in the grey bin)
- fluorescent tubes
- solvents and thinners
- pesticides
- wood preservatives
- broken mercury thermometers
- aerosol cans that aren't empty



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How to Separate Trash Correctly

How-to-Germany.com

BLUE Paper & Cardboard	YELLOW Plastic & Metal Packaging	BROWN Bio Waste	GREY Residual Waste	Glass – separated into White, Green & Brown glass
 Do's - Newspapers - Egg cartons - Cardboard boxes (flattened) - Office & writing paper - Paper bags - Beverage cartons - Paperback books - Envelopes (without plastic windows) - Bread bags (without plastic windows) Don'ts - Coffee-to-go cups - Paper towels - Handkerchiefs - Coated paper - File folders - Soiled paper - Soiled cellulose	 Do's - Plastic bottles & bottle caps (e.g., water bottles, soda bottles) - Plastic food containers (e.g., yogurt cups) - Plastic film, bags, plastic foil, aluminium foil - Metal food cans (e.g., aluminum cans, tin cans) - Aerosol spray cans (empty and depressurized) - Tetra packs (e.g., juice boxes, milk cartons) - Plastic trays (e.g., meat trays, fruit trays) - Bread bags (with plastic windows) Don'ts - All electrical appliances - Energy saving lamps and LEDs - Batteries and rechargeable batteries - Wood and textiles - Plastic construction waste - Data storage media, CDs, DVDs - Plastic folders	 Do's - Fruit and vegetable scraps - Egg shells - Coffee grounds - Tea bags (without the staple or string) - Paper towels and napkins - Biodegradable packaging, such as cardboard containers Don'ts - Raw meat - Plastic bags - Compostable plastic bags	 Do's - Diapers - Sanitary products - Broken glass (wrap it in newspaper to prevent injuries) - Non-recyclable plastics (e.g., plastic cutlery, toys) - Styrofoam - Vacuum cleaner bags - Cigarette butts - Pet waste (e.g., cat litter, dog waste) - Ashes from fireplaces or grills (once cooled) - Small household items that are not recyclable - Soiled food containers Don'ts - Construction waste - Waste containing hazardous substances - Bulky items, (small) furniture - Chairs - Recyclables - Items containing asbestos - Varnishes - Paints (not cured)	 Do's - Juice bottles - Champagne & wine bottles - Pickle jars - Compote jars - Jam jars - Vinegar and oil bottles etc. - Chemical bottles, cleaned Don'ts - Drinking glasses - Glass tableware - Fireproof glass tableware - Glass vases, glass ashtrays - Laboratory glass (heat-resistant) - Window glass - Mirror glass

Links;

<https://movingtostuttgart.com/waste-sorting-recycling/>

<https://www.stuttgart.de/abfall>

<https://www.usus.uni-stuttgart.de/en/blog/recycling/>

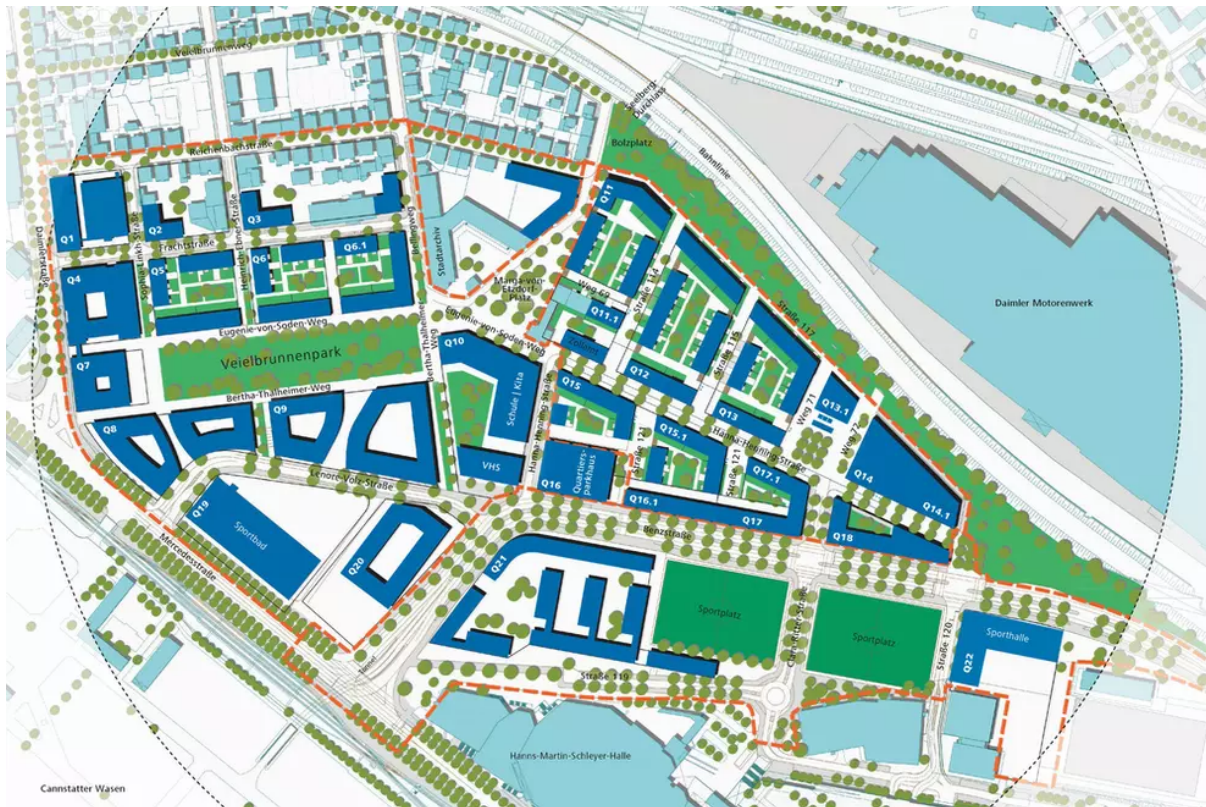
<https://www.how-to-germany.com/recycling-in-germany/>

<https://handbookgermany.de/en/waste-separation>



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Neckarpark



Construction plan for Neckarpark

The new Neckarpark residential area is being built on top of the former freight station, and will feature 850 new residential buildings (approx. 2,000 people). It includes commercial space as well as a school, VHS, swimming pool, and several parks.

The project was designed with two primary goals in mind: the first, to create a community that emphasises education, especially environmental education, by fostering a connection to the local environment. The second goal of the project is for the city area to be powered mostly by a 'future-oriented energy concept', using local renewable energy sources. The ones listed are solar, geothermal, and wastewater heat energy. Wastewater heat energy is a



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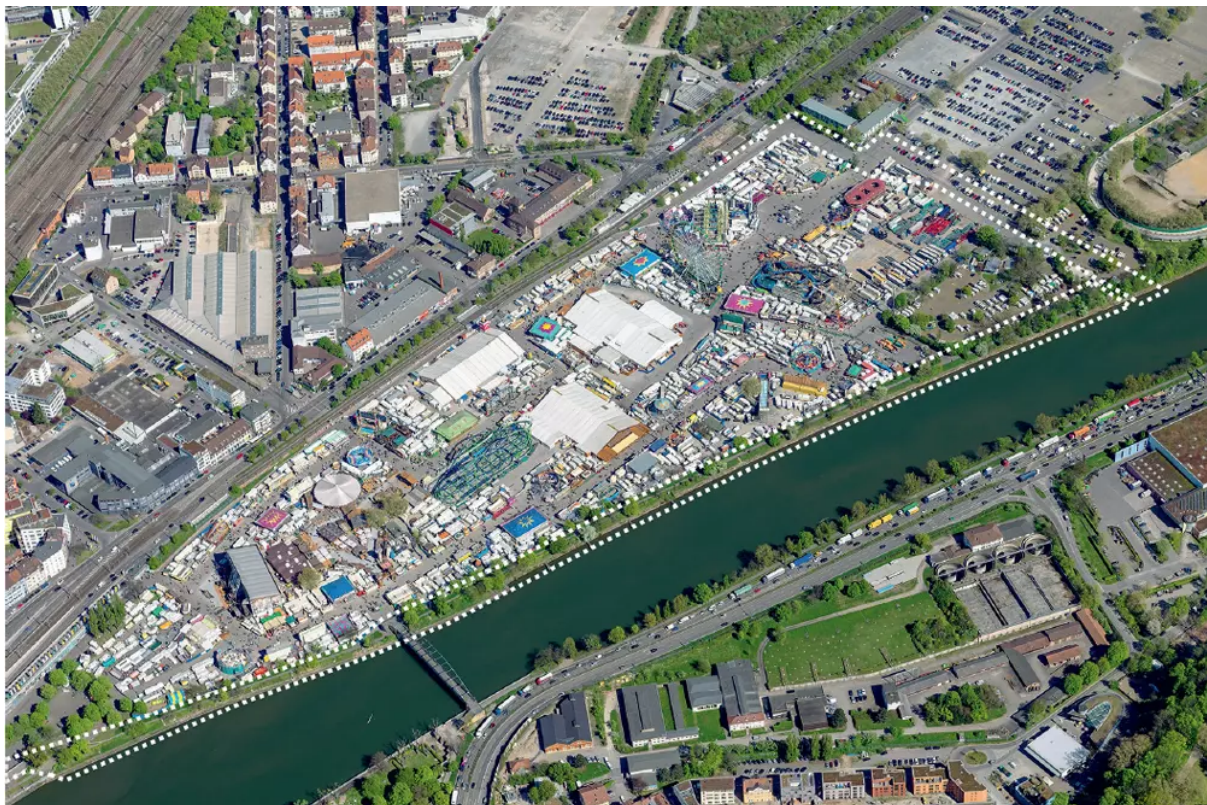
relatively new concept in the EU, based on harvesting heat energy (or, during hot times, storing heat energy) from wastewater using conductive metal panels.

Although it is not mentioned on the website, the currently constructed residential buildings feature both ivy latticing and living walls on the sides of the buildings, as well as patches of vegetation around the building. Plants help immensely with reducing building temperature, whether placed on the ground or on the building themselves, and can also reduce urban flooding by absorbing rainwater during wet seasons. However, I would like to know more about the projected water usage of these living walls, and what plants are included — I am not familiar with them, since the only plants I know are from the US. **If I have time I will try to identify them, but since they are domesticated plants it would be much easier to just get a list from someone.** There are also a good amount of newly planted trees on site, that are clearly planted with some sort of root barriers around them. Right now, they do not provide much, but in many years time they should provide ample shade during the summer.

The riverside along the Neckar near Neckarpark is slated to be converted into a walkable greenscape, although the project is in it's preliminary stages and it is unclear when this is going to occur.



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Highlighted area is planned for walkable greenspace.. Neckarpark Community is in the north-center part of the image.

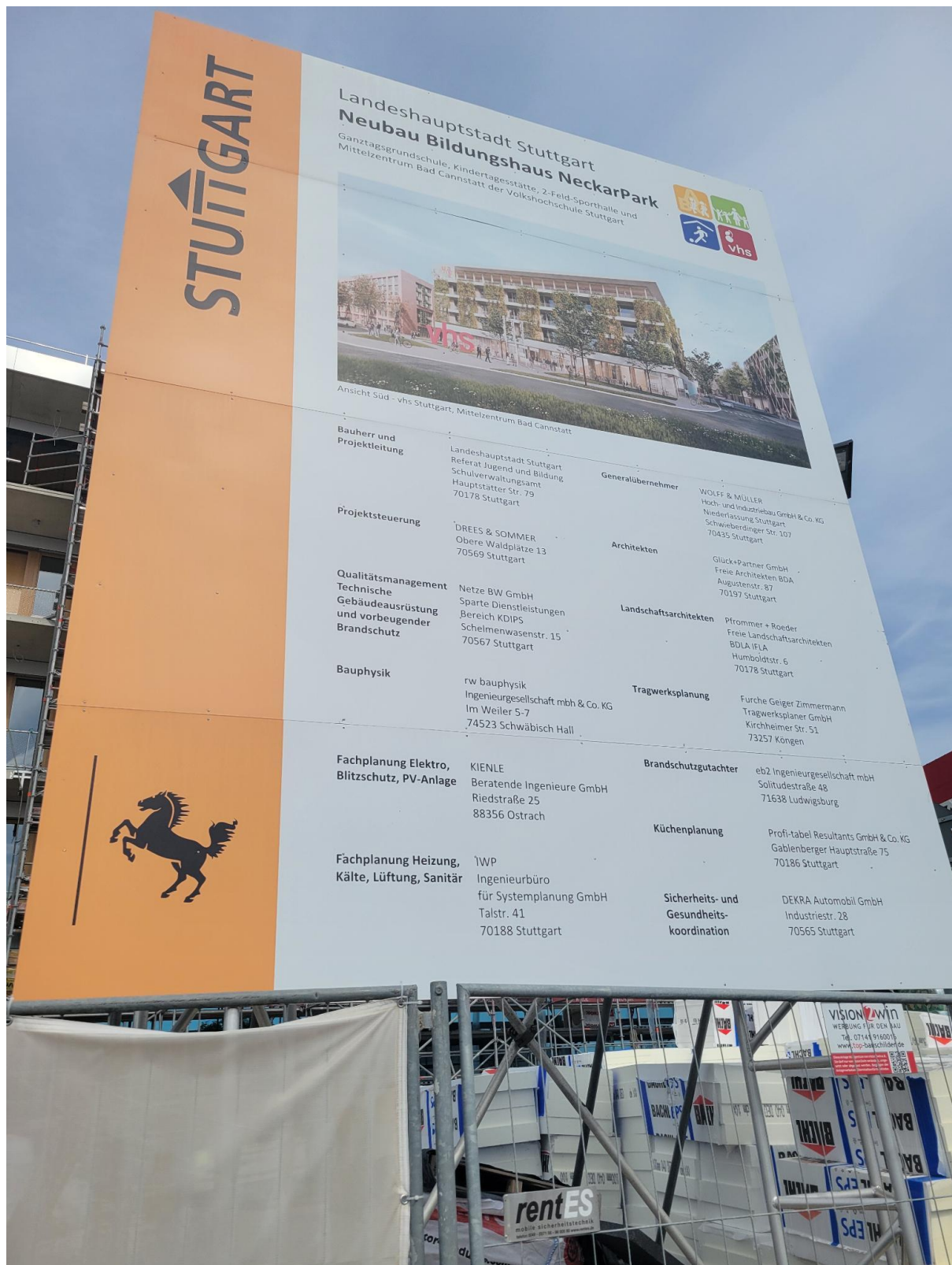
Links:

- (neckarpark) <https://www.stuttgart.de/leben/stadtentwicklung/neckarpark.php>
- (neckarpark) <https://www.stuttgart-meine-stadt.de/stadtentwicklung/neckarpark/>
- (energy) <https://www.stuttgart.de/leben/umwelt/klima/klimastrategie/klima-fahrplan-2035/kreislaufwirtschaft.php>
- (biogas) <https://www.stuttgart.de/leben/bauen/bauprojekte/aws-biovergaerungsanlage.php>
- (wastewater heat retrieval) <https://www.mdpi.com/2073-4441/13/9/1274>
- (wastewater heat retrieval) <https://www.youtube.com/watch?v=G-jKICoRvEM>
- (living walls) <https://www.sciencedirect.com/science/article/pii/S1876610211014792>
- (root barriers) <https://auf.isa-arbor.com/content/34/2/84>

Photos:



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