CIRCULAR BERLIN

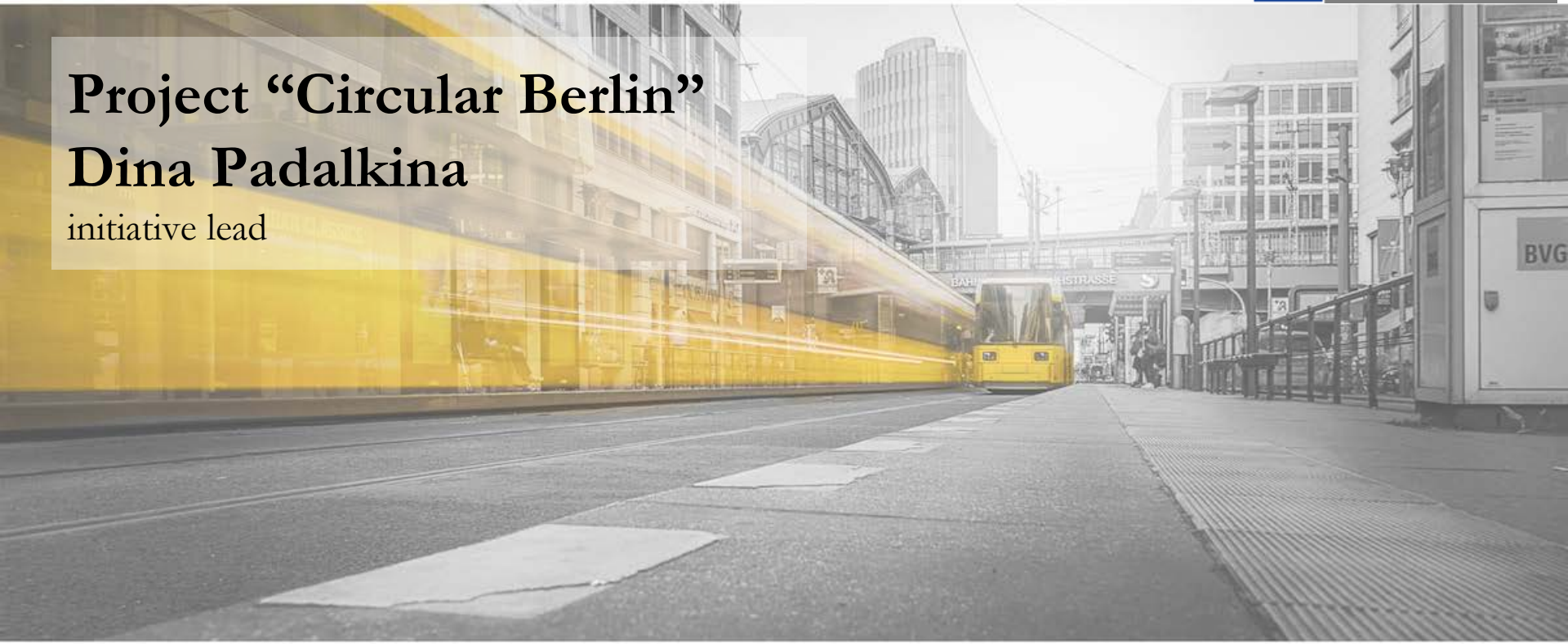
Climate-KIC

Climate-KIC is supported by the EIT, a body of the European Union

Project “Circular Berlin”

Dina Padalkina

initiative lead



www.circular.berlin

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Berlin Partner für Wirtschaft und Technologie

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Document structure

1. Circular Economy principles
2. Examples of Circular City strategies
3. Project “Circular Berlin”
4. Current Berlin specifics
5. Berlin case studies per sector

Circular Economy

Biomimicry	Regenerative design	Cradle to Cradle	Industrial ecology	Natural capitalism	Blue economy	Performance economy
Design inspired by nature	Design by regenerative processes	Materials and design	Material and energy flow	Stock of natural asset (soil, water, air, biodiversity)	Solutions deter. by local environment	Life time extension and services

Product and process design

Material use and localization

Ownership

Circular Economy

THE BASIC PRINCIPLE OF THE CIRCULAR ECONOMY IS

'To transition the economy towards use and re-use of products and materials, by enhancing performance based business models and supportive design of products and services. This translates into:

- **Preserve and enhance natural capital,** by controlling finite stocks and balancing renewable resource flows.
- **Optimize resource yields,** by circulating products, components, and materials at the highest utility at all times in both technical and biological cycles.
- **Foster system effectiveness,** by revealing and designing out negative externalities.

Circular Economy

The modern-day characterization of a circular economy is derived from key insights in the field of industrial ecology, including cradle-to-cradle design (McDonough and Braungart 2002) and biomimicry (Benyus 2002). It also draws upon Boulding's (1966) concept of "Spaceship Earth"; Daly's (1980) "steady-state economy"; and Stahel and Reday's (1981) "loop economy."

A shift to a circular economy presents the challenge of recirculating direct and indirect material flows in a manner that can promote eco-effectiveness (Webster 2013).

The shift requires changes at

- micro level (products, business processes, consumers)
- meso level (eco-industrial parks),
- macro level (city, province , region, country)

Examples of Circular City strategies

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Roadmap and CE Agenda | Networking collaboration | CE city initiative support | CE City dedicated projects | CE City transition center

Circular Amsterdam

Project "Circular Amsterdam" - link

In 2016 Amsterdam scan was developed to identify areas in Amsterdam that can make the most significant progress in realizing CE (report)

Outlined results and focuses

- Analysis city's system processes und urban metabolism
- Roadmap and action for change
- Focus on the energy, water, government & volarization, construction, food and organic stream, circular innovation

Initiators

- The City of Amsterdam
- Circle Economy
- TNO
- Fabric

Circular London

Project "Circular London" – link

Circular London brings wider stakeholder engagement, collaboration and reinforcement to the circular economy business support and investment opportunities provided by Advance London. Since 2017 outlined in London Route Map (report)

Outlined results and focuses

- Industry focus: build environment, food, textile, electronics, plastics
- Operational areas: communication, collaboration, policy, procurement and market development, finance, business support, use case demonstration, and innovation

Initiators

- London Waste and Recycling Board
- Mayer, incorporating into London Plan, Environmental Strategy, Transport and Economic Development Strategy

Circular Bilbao

Project "Circular Bilbao" – link

Initiated by Innobasque first as as a network project of Basque Circular Initiatives. In 2017 developed a strategy for around 6 critical topics (report)

Outlined results and focuses

- Project focus innovative technologies, telecommunications, agriculture and food, tourism, energy, transportation, construction, advanced manufacture
- Development of material flow data

Initiators

- Innobasque
- Local administration (Bilbao Bizkaia)
- Bilabo Ekintza
- Aclima

Roadmap and CE Agenda | Networking collaboration | CE city initiative support | CE City dedicated projects | CE City transition center

Project "Circular Glasgow" – link

Project aims to encourage Glasgow organizations to innovate through new circular design strategies. It involves a program of activity aimed at SMEs to provide support, tools and expert knowledge (report)

Outlined results and focuses

- Developed knowledge hub that offers Circle Assessment and City Insights on Circularity
- Supports projects on bio-waste (brewery residual waste), urban farming (aquaponics), heat recovery (from bakery), circular innovation and design, construction

Initiators

- Glasgow Chamber of Commerce
- Glasgow City Council
- Zero Waste Scotland
- Circle Economy

Project "Rotterdam Circulair" – link

Developed city roadmap to improve products, reduce and change attitude to waste, and increase jobs related to CE, by viewing local products, services, and designing city through circular concept. (report)

Outlined results and focuses

- Support different initiatives (e.g. BlueCity)
- Project focused on openness and collaboration approach: share the results of studies and focus on inclusion
- Agrifood and green energy, construction, consumer goods

Initiators

- Port of Rotterdam
- Rotterdam. Make it Happen (Municipality of Rotterdam, Rotterdam Port, Erasmus University)
- DCMR (environmental control)

Ljubljana – Circular Change

Project "Circular Change" – link

Focus on networking and development of roadmap transition to circularity for Slovenia (report). Ljubljana is also partner with EMF in circular city network

Outlined results and focuses

- Roadmap focus food system, forest based value chain, manufacturing, mobility
- Collect use cases in the city in circular economy area (more info)

Initiators

Ministry for the Environment and Spatial Planning; The Slovenian Chamber of Commerce, The Association of Municipalities and Towns of Slovenia, SPIRIT Slovenia; SRIP; Government Office for Development and European Cohesion Policy

Finnish road map to a circular economy 2016-2025

Finish roadmap – link

Focuses to create a shared mindset in Finnish society to promote the circular economy and determine the most effective means to do it.

(report)

Outlined results and focuses

- Sector focus: sustainable food system, forest-based loops, technical loops, transport and logistics
- These sectors go across action in use, consumer, B2B, retail, distribution, manufacture, material processing, primary sector
- Focus on supporting pilot projects from identified areas

Initiators

- The Finnish Innovation Fund Sitra
- Almost 50 different parties from public, private and third sectors were invited to draw up the road map

be circular be.brussels

Project "be circular be.brussels" – link

Government of the Brussels-Capital Region adopted the Brussels Regional Program for a Circular Economy 2016 – 2020 (BRPCE), with a budget of €12.8 million for the year 2016.

Outlined results and focuses

- Support innovative business ideas, identify projects that lever effect on the CE development, and advance public support (e.g. reuse of waste and the collaborative economy)
- Focus on construction, resources and waste, logistics, trade and food

Initiators

- 3 Ministers and 4 regional administrative bodies
- Impulse (Brussels Enterprise Agency)
- Innoviris (Innovation's promotion)
- Bruxelles-Propreté (cleaning & waste treatment)

Program Circular Region Utrecht

Circular Region Utrecht by 2030 – link

To increase renewable raw materials by reducing the import of virgin materials in the Utrecht region. To realize high quality recycling on prioritized material streams by redesigning product / material chains.

Outlined results and focuses

- Biomass, waste free areas, construction and disassembly, textile
- xx

Initiators

Municipality of Utrecht, Municipality of Amersfoort, Economic Board Utrecht, USI and Nature & Environment Federation Utrecht in cooperation with the Dutch Ministry of Infrastructure &Environment.

Gothenburg – smart map

Gothenburg won in 2017 won with the project "smart map"– link

Objective is to promote products life extension by combining shared economy and circular economy. Digitalized map that demonstrate local initiatives for swapping, renting, sharing, maintaining

Outlined results and focuses

- Developed open source map
- Citizens and community engagement

Initiators

- City of Gothenburg
- Lund university

Malmoe – circular neighborhood

Project focuses on the understanding of energy consumption patterns on the district level – link

Outlined results and focuses

- Underpinning Hyllie's brand of circular design is the concept of active consumerism, giving residents the ability to understand their energy needs and control their spend
- Focus on the changing citizens' consumption patterns

Initiators

- Local district municipality and city of Malmoe
- E.ON

Antwerp Circular South

Project "Circular South" – link

Circular South combines a series of district bound experimental initiatives that will bring into urban practice the circular economy. Spreading awareness and encouraging citizens to circular behavior is the focal point.

Outlined results and focuses

- Community building with data access for residents and developing circular living lab Reduction tap water, residual household waste, material use
- Replication among other district

Initiators

- City of Antwerp (info to project)
- VITO – (info to project)
- Imec -higher education and research institutes
- Ecopower
- Digipolis - infrastructure and service

Project “Circular Berlin”

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Berlin has a potential to become the first Circular City in Germany, due to its growing variety of initiatives, grass-roots and research work in the area circular economy.

Vision

7th February 2018

Circular Economy mapping event in Berlin was conducted to identify local Berlin initiatives, operating with the topic Circular Economy. The event was initiated by Circular Economy Club, and was conducted simultaneously in 60 locations globally.

Organizers: Dina Padalkina, Lars Zimmermann, Marilu Valente, Diana Suesser

Supporters: Climate-KIC Berlin, EIT Raw Materials, Berlin Partners für Wirtschaft und Technologie

Results:

- Around 40 local Berlin professionals took part in the event
- More than 120 Berlin initiatives were identified
- Industry specific challenges (City, Consumer goods, Textile, Food, Manufacture) in Circular Economy were specified

Project background

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What is the approach to “anchor” circular economy topic in Berlin?

What are the main drivers of Circular Economy in Berlin?

Where is the highest potential to start working with the circular economy in the City?

Questions for the feasibility study

Review of other city work on Circular Economy topic

Berlin actors (industry, research, administration)

Available Berlin strategies and development programs

Dynamic analysis of Berlin local events, trends and public discussions

Methodology

Current steps

Learning

Who are the local circular economy HEROS?

Dec ‘17 — Mar ‘18

Climate-KIC

RawMaterials Connecting matters

Berlin Partner für Wirtschaft und Technologie

Feasibility

How do the heros OPERATE within the circular economy?

April ‘18 — August ‘18

Climate-KIC

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Engagement

What is the way to MAXIMISE THE WORK of circular heros in Berlin?

October ‘18

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Project “Circular Berlin” consists of the 4 main phases

Completed

0 Project phase “Pre-assessment”

- Conduct first awareness meeting with Berlin Circular Economy Professionals
- Identify active berlin circular economy initiatives operating across diverse industries (around 100 initiatives)
- Determine preliminary city focus and maturity level within the topic Circular Economy
- Find partners and initiate first interviews

Next steps

I Project phase “Feasibility Check”

- Check project feasibility of Berlin local stakeholders in the project participation and plan their involvement
- Conduct meetings with potentials partners to establish cross-sectorial engagement
- Gather stakeholders’ requirements towards the project vision to identify common objective
- Raise awareness about topic Circular City and Circular Berlin
- Reach agreement and further work commitment among partners

II Project phase “Vision Development”

- Organize Kick off meeting with the selected stakeholders
- Define fitting roles for the different stakeholder within the project
- Define the vision, objective and roadmap for the project for short term (1 year) and middle term periods (3 years)
- Develop funding and financing strategy
- Define the project organization structure and timeline for the phase III

III Project phase “Implementation”

- Establish project consortium and main management structure and operational structure
- Ensure project transfer to the consortium
- Start work towards bring main project activities into practice such as
  - Knowledge creation
  - Transition measures
  - Collaboration and networking
  - Awareness raising

Circular Berlin

Industry oriented initiatives

Main focus is on internal business work within this work:

- Share deliverables useful for the Circular Programs
- Set requests that may support projects activities
- Share use cases helpful for transition
- Conduct life labs on circulatory (workshops / trainings with support of other partners)

Cross-sectorial organizations

- Define organizational structure, common vision, agenda
- Conduct organizational functions
- Ensure cross-collaboration
- Promote work of partners

Recycling companies

- Provide information on material flow
- Identify potential for waste managements together with other partners
- Ensure innovation promotion

Berlin circular research projects

Main focus is on research projects on circularity:

- Share deliverables useful for the Circular Programs
- Conduct scientific labs on circulatory (schedule educational programs)
- Together with partners search for research project deliverables implementation

Current Berlin specifics

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Question:

How to connect a circular economy with the **economy** on a city level?

Answer:

We need impactful projects to show case that Circular Economy is economically viable

In Berlin, Circular Economy evolves as a bottom-up heterogeneous system

Circular Economy (Kreislaufwirtschaft) is decoupled from the economy, remaining part of the waste industry

Zero Waste agenda has an important role for Berlin, but it focuses mostly on waste prevention strategies

Berlin Urban development strategy 2030 – 7 out of 8 areas (1/7)

1

Strengthening the economy with smart knowledge:

- Smart city
- Flourishing economy

Cornelia Yzer, Senator for the Economy, Technology and Research

➔ **Berlin's activities**

Intensifying knowledge and technology transfer
Implementing the idea of Berlin as a smart city
Improving networking between learning institutions
Developing multiple innovation hubs throughout Berlin
Safeguarding and developing important industrial and commercial sites
Promoting start-ups
Promoting measures to drive work and employment
Establishing a 'welcome culture'

The major programs and strategies in context

- **Berlin Industrial Master Plan (in process)**
- Berlin-Brandenburg Joint Innovation Strategy 2011
- Berlin-Brandenburg Joint Skilled Workers Study
- Berlin 2020 Electromobility Action Plan
- **Urban Development Plan for Commerce and Industry**
- Smart City Strategy (in process)
- Integrated Commercial Transport Plan (in process)

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

Berlin Urban development strategy 2030 – 7 out of 8 areas (2/7)

2

Unleashing strengths through creativity

- Creative Berlin
- Desired City

Moritz van Dülmen, CEO Kulturprojekte Berlin GmbH

➔ **Berlin's activities**

- **Maintaining and developing venues and premises for creative and cultural artists and businesses**
- **Facilitating the interim use of spaces**
- Improving the business skills of creative and cultural artists
- Broadening participation in publicly funded cultural activities
- Supporting the spatial diversification of tourism demand
- Organizing major events

The major programs and strategies in context

- **Creative Industry Reports 2005, 2008 and 2014**
- Promoting Culture Report 2011
- Cultural and Creative Industries Index 2011 and 2013
- Cultural Education Framework 2008
- Berlin Wall Commemoration Master Plan 2006
- Berlin Tourism Plan 2011+
  Berlin City of Sport Mission Statement Berlin Sports Economy Report

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

Berlin Urban development strategy 2030 – 7 out of 8 areas (3/7)

3

Safeguarding employment through education and skills

- Everyone qualified
- Everyone at work

Thomas Härtel, Chair of the Berlin Advisory Panel on Family Issues

➔ **Berlin's activities**

- Providing a high-quality educational infrastructure
- **Developing kindergartens and schools as the foundation of the educational landscape**
- Increasing educational standards
- Guaranteeing good jobs
- Reinforcing targeted in-company education and training
- Safeguarding and strengthening out-of-school educational venues
- **Transforming libraries into centres of out-of-school learning and educational partners**
- Turning educational establishments into inclusive establishments

The major programs and strategies in context

- Education in Berlin and Brandenburg, Education Report 2010
- Berlin-Brandenburg Joint Skilled Workers Study 2010
- Berlin-Brandenburg A Programme for the Future
- Demographics Concept Berlin Employment
- Local Libraries Programme (BIST I / BIST II)
- Berlin Skills Master Plan School Development Plan

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

Berlin Urban development strategy 2030 – 7 out of 8 areas (4/7)

4

Reinforcing neighborhood diversity

- A city of neighborhoods – city for all

Mario Czaja, Senator for Health and Social Affairs

➔ **Berlin's activities**

- **Supporting neighbourhood development**
- Developing the social city
- Creating living space
- **Consolidating and developing housing stock**
- **More environmental justice and better health by reducing environmental pollution**
- **Safeguarding local shops and services**
- **Sustainable renewal of utilities and urban infrastructure**
- Preserving and developing green and open spaces

The major programs and strategies in context

- **Urban Development Assistance**
- **Housing Promotion**
- **Urban Development Plan for Housing**
- **Urban Development Plan for Centres 3**
- Urban Development Plan for Transport
- Local Public Transport Plan, Pedestrian and Cycling Strategy
- Clean Air Strategy, Noise Action Plan 2013 – 2018
- Social Urban Development Framework Strategy
- Environmental Justice Analysis
- **Neighbourhoods of the Future Initiative (ZIS)**
- **School and Sports Centre Renovation Programme**
- **Neighbourhood Centres Infrastructure Programme**
- Family Report 2011
  Family Centres Programme
- Local Libraries Programme (BIST I / BIST II)
- Guidelines for Berlin's Senior Citizens Policy 2013
- Landscape Conservation Plan

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

Berlin Urban development strategy 2030 – 7 out of 8 areas (5/7)

5

City and green growing together

- From nature / urban

Prof. Dr.-Ing. Engelbert Lütke Daldrup, State Secretary for Building and Housing

➔ **Berlin's activities**

- **Careful development of the urban environment**
- **Advancing high-quality inner development**
- Enhancing the gateways to the city
- Connecting and enhancing free spaces
- **Safeguarding and improving ecological qualities**
- **Sustainable water supply management**

The major programs and strategies in context

- Berlin-Brandenburg Capital Region Mission Statement
- Landscape and Species Conservation Programme
- Urban Development Plan for Climate
- Berlin Cityscape Strategy
- Berlin Biodiversity Strategy
- Guidelines and List of Measures for Soil Conservation
- Plans and Drawings for the Inner City
- Berlin-Brandenburg State Development Plan

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

Berlin Urban development strategy 2030 – 7 out of 8 areas (6/7)

6

Laying the groundwork for a climate-friendly metropolis

- Full energy for environment and climate

Prof. Dr. Bernd Hirschl, Institute for Ecological Economy Research

➔ **Berlin's activities**

- Directing energy efficient housing stock renewal and new builds
- Increasing the share of renewable energies
- Adapting green and other open spaces to the requirements of climate change
- Continuing integrated settlement and transport development
- Attracting urban technologies
- **Launching and promoting neighbourhood-based climate protection and adaptation initiatives**

The major programs and strategies in context

- **Climate Neutral Berlin 2050 Feasibility Study**
- **Energy and Climate Protection Plan (in process)**
- **Carbon Neutral Administration Master Plan (in process)**
- **Urban Development Plan for Climate Cityscape Strategy**
- **Joint Energy and Climate Regional Development Plan for Berlin and Brandenburg**
- Landscape and Species Conservation Programme
- Berlin Forests Mixed Woodland Programme
- Urban Development Plan for Traffic Local Public Transport Plan 2014 – 2018
- **Berlin-Brandenburg State Development Plan**

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

Berlin Urban development strategy 2030 – 7 out of 8 areas (7/7)

7

Improving accessibility and city-friendly mobility

- Mobile Berlin – a city of short distance

Dr. Sigrid Evelyn Nikutta, CEO Berliner Verkehrsbetriebe (BVG)

➔ **Berlin's activities**

- Making public transport more attractive
- Increasing bicycle and pedestrian traffic
- Expanding and improving traffic infrastructure for the growing city
- Promoting sustainable post-fossil fuel forms of mobility
- **Developing an integrated commercial transport plan**
- Strengthening international connections

The major programs and strategies in context

- Urban Development Plan for Transport
- Local Public Transport Plan, Pedestrian and Cycling Strategy
- Accessibility Action Plan Transport Safety Programme
- Integrated Commercial Transport Plan (in process)
- Noise Action Plan 2013 – 2018 Berlin Clean Air Plan 2011 – 2017
- **Berlin-Brandenburg State Development Plan**

Relevant for Circular Economy

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

What else is already in place in Berlin

Specifications for Berlin environmental procurement for:

- Wood
- Car
- Biomethane
- Data centers / IT services
- Products for the building sector
- Passenger and goods lifts
- Office lighting
- Working clothes and flat linen
- Office equipment
- Recycled paper and toner
- White goods
- floor coverings

Specifications for environmental construction

Leitfaden Nachhaltiges Bauen 2013
http://www.nachhaltigesbauen.de/leitfaeden-und-arbeitshilfen-veroeffentlichungen/leitfaden-nachhaltiges-bauen-2013.html

Guideline for Sustainable Building 2015
http://www.nachhaltigesbauen.de/fileadmin/pdf/Systainable_Building/LFNB_E_160309.pdf
http://www.nachhaltigesbauen.de

BNB-Bewertungsmethodik
https://www.bnb-nachhaltigesbauen.de/bewertungssystem/bnb-bewertungsmethodik.html

ÖKOBAUDAT - platform is provided as a standardized database for ecological evaluations of buildings by the Federal Ministry of the Interior, Building and Community. Building materials, construction and transport processes are described regarding their ecological effects.
http://www.oekobaudat.de/en.html

WECOBIS (webbasiertes ökologisches Baustoffinformationssystem) bietet Informationen zu Umwelt- und Gesundheitsaspekten wichtiger Bauproduktgruppen an. Dabei spielt der Kontext des Nachhaltigen Bauens eine wichtige Rolle.
https://www.wecobis.de/#&slider1=3

Source:
https://www.berlin.de/senuvk/service/gesetzestexte/de/beschaffung/studien.shtml
https://www.berlin.de/senuvk/service/gesetzestexte/de/download/Endbericht_SenVBerlin_Umweltentlastung_kurzfassung.pdf

Berlin Waste management (Abfallwirtschaftskonzept 2010 – 2020)

- CO2 reduction of 1.2 million Mg / a achieved by waste management
- Exit from the landfill of municipal waste
- Establishment of an ecological procurement system at municipal institutions for the state of Berlin
- Creation of a waste prevention program for the state of Berlin
- Sustainable use of the recovery potential of waste
- Phosphate recovery in sewage sludge disposal as well as energy-efficient and climate-friendly use of sewage sludge
- The security of disposal of settlement and construction waste and sewage sludge arising in the state of Berlin is guaranteed for the planning period until 2020.
- In total, a total waste volume of 7,081,123 tonnes was calculated for the 36 investigated types of waste in the state of Berlin in the year 2016 (for example: around 6.7 million Mg in 2010, also around 7 million Mg in 2012 and 2014)
- The work on the new waste management concept will start in October 2018

The major programs and strategies in context

- Abfallwirtschaftskonzept für das Land Berlin 2011 (Abfallwirtschaftskonzept 2010 – 2020)
- Ressourcenschutz durch Verwertung gefährlicher Bauabfälle im Land Berlin - 2015

https://www.berlin.de/senuvk/umwelt/abfallwirtschaft/de/sonderabfall/ressourcenschutz/download/Grundlagenpapier-Ressourcenschutz-gef-Bauabfaelle.pdf

- Stoffstrom Umwelbalanzen 2016

https://www.berlin.de/senuvk/umwelt/abfall/entsorgung/download/stoffstrom_klimagas_umweltbilanz_2016.pdf

Source: https://www.berlin.de/senuvk/umwelt/abfall/konzept_berlin/download/AWK2010_Endfassung26_08_11.pdf

Different Berlin sustainability papers

Berlin does not have sustainability strategy, however in 2018 it is on the agenda of Berlin Senate to develop it.

➔ **Last sustainability profile focused on strategies in**

- Realization
  - Access to creative areas and spaces
  - Plan in accessible living
  - Culture and sustainability (repair cafes, social enterprises, co-working spaces etc)
- Productivity
  - Energy efficiency from the roof areas
  - Local resource production
  - Support in smart city projects
  - Support via Public procurement
- Access:
  - Open innovation support
  - Shared economy

The major programs and strategies in context

- Berliner Energie- und Klimaschutzprogramm 2030 https://www.berlin.de/senuvk/klimaschutz/bek_berlin/index.shtml
- The major programs and strategies in context Berliner Nachhaltigkeitsprofil - Berliner Potenziale und Begabungen für die nachhaltige Entwicklung nutzen http://www.stadtentwicklung.berlin.de/planen/foren_initiativen/nachhaltige_stadtentwicklung/download/Berliner-Nachhaltigkeitsprofil-barrierefrei.pdf#page=26
- Kernindikatoren zur nachhaltigen Entwicklung Berlins 2. Datenbericht | 2014 - Herausgeber: Amt für Statistik Berlin-Brandenburg
- Kernindikatoren zur nachhaltigen Entwicklung Berlins Datenbericht | 2012 - Herausgeber: Amt für Statistik Berlin-Brandenburg
- Kernindikatorensatz für eine nachhaltige Entwicklung Berlins, Oktober 2011
- Lokale Agenda 21 - Senatsbeschluss vom 23.02.2010

Source: http://www.stadtentwicklung.berlin.de/planen/foren_initiativen/nachhaltige_stadtentwicklung/de/download.shtml

Berlin development trends

Construction

- High focus on residential construction, focus on affordable living
- Reconstruction of the living areas via maintenance or repurpose
- Realization of efficient use of spaces, focus on reuse old constructions
- City development is driven via district development

Smart City and innovations

- Realization of the potential of Berlin technological scene and research aspects
- No clear actions so far

Social aspects and culture

- Acceptance of Berlin creative scene, also realization that it requires space for it
- Focus on inclusion
- City development is driven via district development

Green agenda

- A lot of discussions around CO2 reduction, energy savings, greening the areas, but no clear action
- Environment procurement is present (at least on paper)

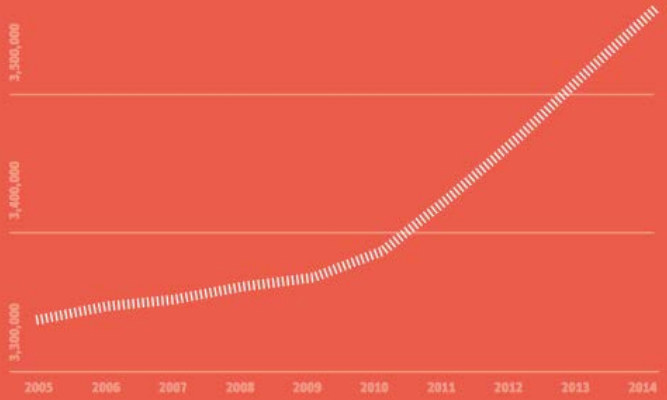
A lot of research and analysis were conducted since 90s for the city transformation, however it was very difficult to derive tangible actions

Abfallart	entsorgte Menge [Mg]	%-Änderung zu 2014	Behandlung/Verbleib	Recycling	Energetische Verwertung	Sonstige Verwertung	Beseitigung
Hausmüll und Geschäftsmüll	829.717	+1%	61% MHKW Ruhleben, 36,5% MPS, 1,4% MA, 1,4% sonstige	4%	73%	14%	1%
Sperrmüll	58.402	+12%	93% AAS, 6% MHKW Ruhleben, 0,6% sonstige	5%	93%	1%	-
Bioabfall (BIOGUT)	72.161	+8%	91% BSR Biogas West, 9% offene Kompostierung	96%	4%	-	-
Eigenkompostierung	100.939	0%	Eigenkompostierung	100%			
Weihnachtsbäume	1.960	+8%	Biomasse-HKWs	22%	78%		
Organikabfälle in Laubsäcken	7.572	-17%	offene Kompostierung	99,6%	0,4%		
Altpapier	169.797	-3%	Verwertung Papierfabrik	99%	1%		
LVP und StNVP	88.107	+3%	Verwertung Fraktionen	34%	59%	2%	0,1%
Altglas	64.877	+2%	Verwertung Glashütte	97%			3%
Alttextilien	33.248	+1%	Textil-Recycling	60%	40%		
Altreifen	19.151	+32%	53% Granulierung, 47% Mitverbrennung Zementwerk	47,9%	51,6%		0,5%
E-Schrott	14.321	+12%	EAR/BRAL	91%	8,4%		0,5%
Altmetalle	9.963	+16%	Verwertung Metallhütten	100%			
Boden und Steine	2.006.131	+12%	26% Baumaßnahmen, 25% Deponie/Altablagerung, 49% Verfüllung	26,5%		71,1%	2,4%
Bauschutt	813.828	-6%	13% Straßenbau, 64% Deponie/Altablagerung, 23% Verfüllung	12,7%		79,5%	7,7%
Beton	1.272.615	+1%	99,3% Straßenbau, 0,7% Deponie/Altablagerung, 0,0002% Verfüllung	99,3%		0,7%	0,03%
Gipsabfälle	34.767	-4%	Deponie				100%
Ziegel	108.273	*neu*	72,5% Wegebau, 9,6% Deponie/Altablagerung, 18% Verfüllung	72,5%		21,7%	5,7%
Asphalt	64.768	-33%	83% Straßenbau, 17% Deponie/Altablagerung	82,6%		6,4%	11%
Baggergut	13.844	+52%	Deponie			61%	39%
Hausmüllähnliche Gewerbeabfälle (HMG)	17.616	+36%	70% MHKW Ruhleben, 25% MPS Reinickendorf, 6% sonstige	3%	74%	16%	1%
Gemischte gewerbliche Siedlungsabfälle und Bau- und Abbruchabfälle	459.352	+1%	Berliner und Brandenburger Vorbehandlungsanlagen	4,4%	49,6%	28%	17%
Sonstige Abfallarten aus Gewerbe und Industrie	13.446	+23%	99% MHKW Ruhleben, 1% MPS Reinickendorf	2,3%	78%	19%	0,005%
Laub, Straßenlaub	62.141	-13%	offene Kompostierung	100%			
Ungefaulter Klärschlamm (Rohschlamm)	158.863 (45.149 Mg TS)	-1% (-2%)	KSVA Ruhleben				100%
Gefaulter und anteilig getrockneter Klärschlamm	165.127 (46.129 Mg TS)	0% (-2%)	Bezug TS: 12% KSVA Ruhleben, 72% gefault zu Kraftwerken, 16% gefault-getrocknet zu Zement- und Kraftwerken	0,1%	87,5%		12,4%
Straßenkehricht	51.465	-11%	gbav	0,02%	0,3%	6,2%	93,2%
Getr. gesammeltes Altholz	107.946	-15%	Biomasse-HKWs		100%		
Baum- und Strauchschnitt	48.305	+8%	20% Mulchung, 4% offene Kompostierung, 9% Kraftwerke, 67% Biomasse-HKWs	24%	76%		
Straßenbegleitgrün	8.176	+39%	offene Kompostierung	100%			
Mähgut	43.600	0%	offene Kompostierung	100%			
Speisereste	47.441	+2%	Vergärung	100%			
Fettabscheiderinhalte	18.646	+25%	Vergärung	100%			
Altfette	5.500	0%	Altfettmethylester-Biodiesel		100%		
Pferdemist	9.282	0%	offene Kompostierung	100%			
Rechengut	8.089	+13%	MBA ZAB Niederlehme		39%		
Summe	**7.009.437**	**+4%**		**40%**	**18%**	**34%**	**7%**

Differenz der Recycling-/Verwertungsquoten zu 100% durch Wasserverluste bei der Behandlung über MPS, MBS, MA (bei Rechengut auch Abbauverluste, Anteil nicht bekannt)

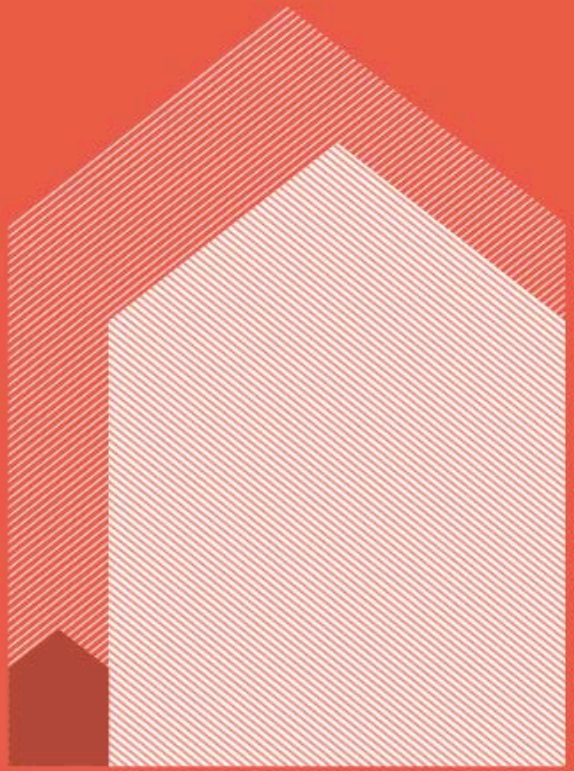
https://www.berlin.de/senuvk/umwelt/abfall/entsorgung/download/stoffstrom_klimagas_umweltbilanz_2016.pdf

POPULATION DEVELOPMENT



In **2014**, Berlin grew by **44,700 inhabitants**, reaching a total population of **3.562 million** on 31 December 2014. Between 2011 and 2014, the total number of inhabitants grew by 175,000, which is 1.1 times the population of Potsdam.

BERLIN IS A RENTAL CITY



15%
free-hold flats

85%
rented flats

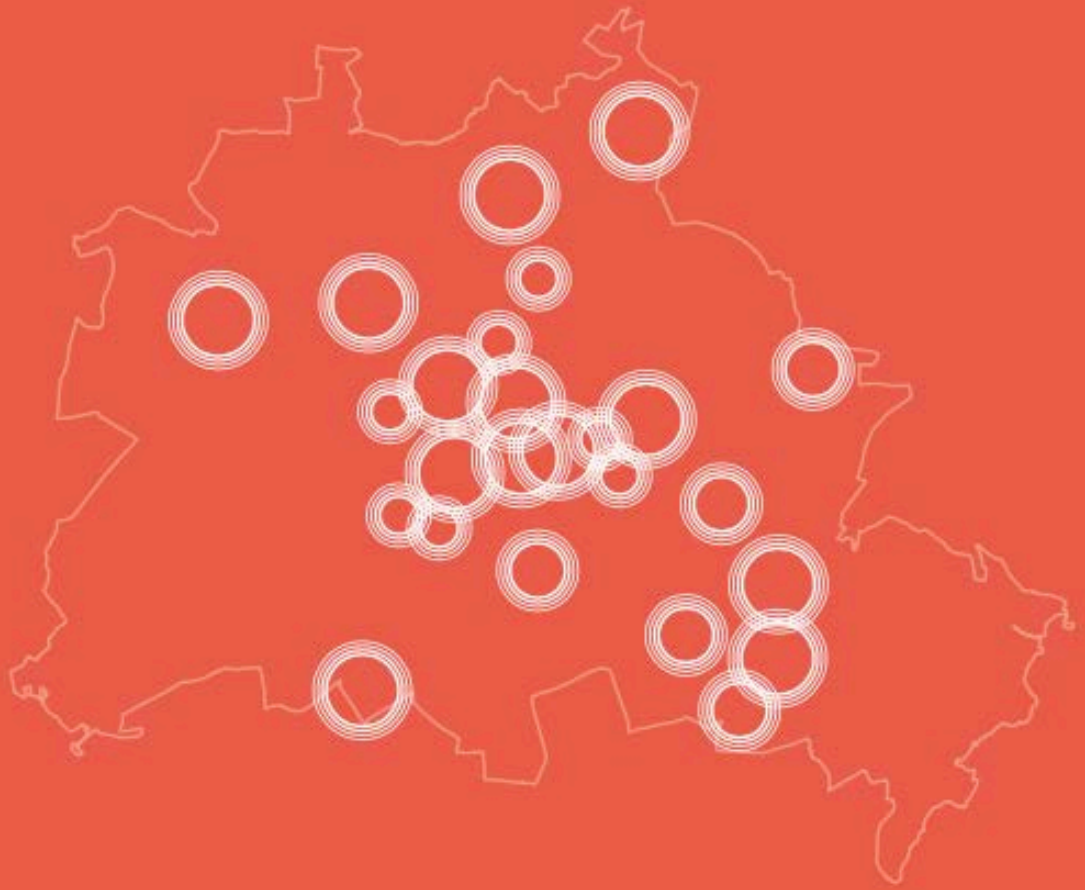
100%
A total of approx. 1.9 million dwellings
in residential and non-residential buildings, including residential homes and hostels

Together, state-owned housing associations and housing cooperatives manage about a quarter of all Berlin dwellings:
≈ 15% state-owned dwellings
(≈ 285,000 dwellings) and
≈ 10% cooperatively owned dwellings
(≈ 188,000 dwellings).

A large majority of dwellings are located in blocks of flats:
≈ 87% dwellings in blocks of flats
(≈ 1.639 million dwellings),
≈ 10% dwellings in one- and two-family units
(≈ 196,000 dwellings)

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

MAJOR NEW RESIDENTIAL DEVELOPMENT SITES



The 25 major new residential development sites set out in the Urban Development Plan for Housing offer the potential for some **50,000 dwellings**. In addition, there are other large and medium-sized individual sites with the potential for around 70,000 units. By 2025, an additional 30,000 dwellings could be constructed in smaller sites throughout the city.

> 2,000 dwellings

1,000 – 2,000 dwellings

< 1,000 dwellings

Source: http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungskonzept/download/strategie/BerlinStrategie_Broschuere_en.pdf

CIRCULAR BERLIN

Berlin ecological building blocks

Building block energy
- Energy Performance
- Structure: alignment, cubature
- Thermal insulation / thermal insulation
- Heating / room heating
- Hot water
- Ventilation
- Lighting
- exposure
- Indoor climate
- Waste heat recovery
- Use of renewable energies
- Machines, plants and drives

Building block water
- water conserving plants
- (Groundwater, surface water)
- Drinking water efficient installation
- Rainwater Management
- Service water utilization
- Heat recovery from wastewater
- Nutrient recycling from wastewater

Building block green
- Protect / preserve existing vegetation
- Greening (open spaces, trees)
- Structural / building greening, urban agriculture
- Species protection, biodiversity, biological Diversity

Building block building materials
- Building recycling
- Component and building material recycling
- Ecological demands on components and building materials
- Materials prohibitions
- Environmentally sound procurement

Building block waste
- Avoidance, recovery, elimination
- Conversion / reuse of existing buildings, facilities
- Preparation for reuse
- Construction waste, municipal waste, hazardous waste
- separate collection, recycling (material, energetic)
- Secure deployment areas (property / building)

http://www.stadtentwicklung.berlin.de/bauen/oekologisches_bauen/de/bausteine/energie.shtml
http://www.stadtentwicklung.berlin.de/bauen/oekologisches_bauen/de/bausteine/wasser.shtml

Conclusion from Berlin City focus in Circular Economy

Circular economy in general:

BS-UVK:

1. Circular economy as a concept is mostly present in the area of Abfallwirtschaft (Waste management sector), which is under responsibility of Berlin Council for Environment, Transportation and Climate (Fachbereich: Kreislaufwirtschaft und umweltverträgliche Beschaffung)
2. The topic of waste management is also decoupled from the a) urban development b) industrial development c) environmental development. The focus is only on waste prevention (elimination) and recovery of secondary raw materials. However the understanding that circular economy should be part of industry transformation is there.
3. Research basis for innovative concepts for circular economy were visible to Senate, at least in water management, energy efficiency, green facades and roofs.

BS-W:

1. From Berlin Council for Economic development the main agenda is connected with topic of energy efficiency. Currently Circular Economy Network for Berlin / Brandenburg is developing
2. The latest strategy plan is
3. Energie- und Abfallwirtschaft are bound together for Berlin Energy and Klimawandel programm, but here is what written in the paper: *Auch wenn im Handlungsfeld in der Zukunft Anpassungsmaßnahmen erforderlich werden können, wurden derzeit keine konkreten Maßnahmen identifiziert, die im Umsetzungszeitraum bis 2021 veranlasst werden müssen.*

Conclusion from Berlin City focus in Circular Economy

Construction

1. In construction area there is no connectivity between industry and waste management, no material / building refurbishment is in place
2. No analysis on the different business models for construction, however at least there is a plan for waste management of construction waste. As for other industries, no consideration was made at all
3. BNB standards, and open eco material database is in place, thus the challenge to use it in the implementation on the big scale
4. There is an understanding for development need of new directives for the construction field. And the challenges they face were very much the same I identified on my own. So basically the level topic understanding was good.

Textile

1. The only reflection for textile was found in environmental procurement strategy

Food

1. The main focus is food waste prevention in catering. The objective would be to identify 2 districts where the projects could be developed and implemented.
2. Berlin Council interest is to work with big scale projects, however currently there is a challenge to specify the waste stream from biomass.

Berlin City Interest across the topics

Product re-use approaches	New waste management concept, bringing industries and waste management system closer	Waste prevention / Zero-Waste approach (consumer & industries)	Food waste and bio-waste
Eco-construction and circular construction planning	Connection of Circular Economy and energy efficiency	Improvement of eco – procurement (down to material use)	District oriented work

Berlin case studies

CIRCULAR
BERLIN

CIRCULAR BERLIN

Coordination of the project activities right now is organized around following topics

Built environment

Textile and fashion

Food and agriculture

Materials & Products

Approach for Berlin as a Circular City


Built environment


Textile and fashion


Food and agriculture


Materials & Products

Industrial Ecology methods of material flows view

- Considering input/output
- Gathering current city material flow information

Circular Economy Value Chain analysis

- Through value chain understand the competencies of Berlin initiatives

Existing partnership through project work

- Practical project implementations helps to narrow down definition of CE

CIRCULAR BERLIN

Methods for the analysis

The approach was to understand what circular value chain could be developed across the industry, in order to evaluate the main already existing competences in the city.
Each value chain steps and focus area is reflected in the excel (see separated file).

Another view was provided to identify current collaborative partners in Berlin, who were realizing common project related to the topic circular economy. The results are reflected as well in the excel (see separated file).

The stakeholders groups were selected in broad way: commercial projects, non-commercial projects (research or non-profit), possible network that already play an active role with promotion circular economy.
Also the overview was conducted who finance mostly the topics, and how the projects are supported by the Berlin city.

CIRCULAR BERLIN

86 project cases were described operating directly or indirectly with the topic circular economy

22

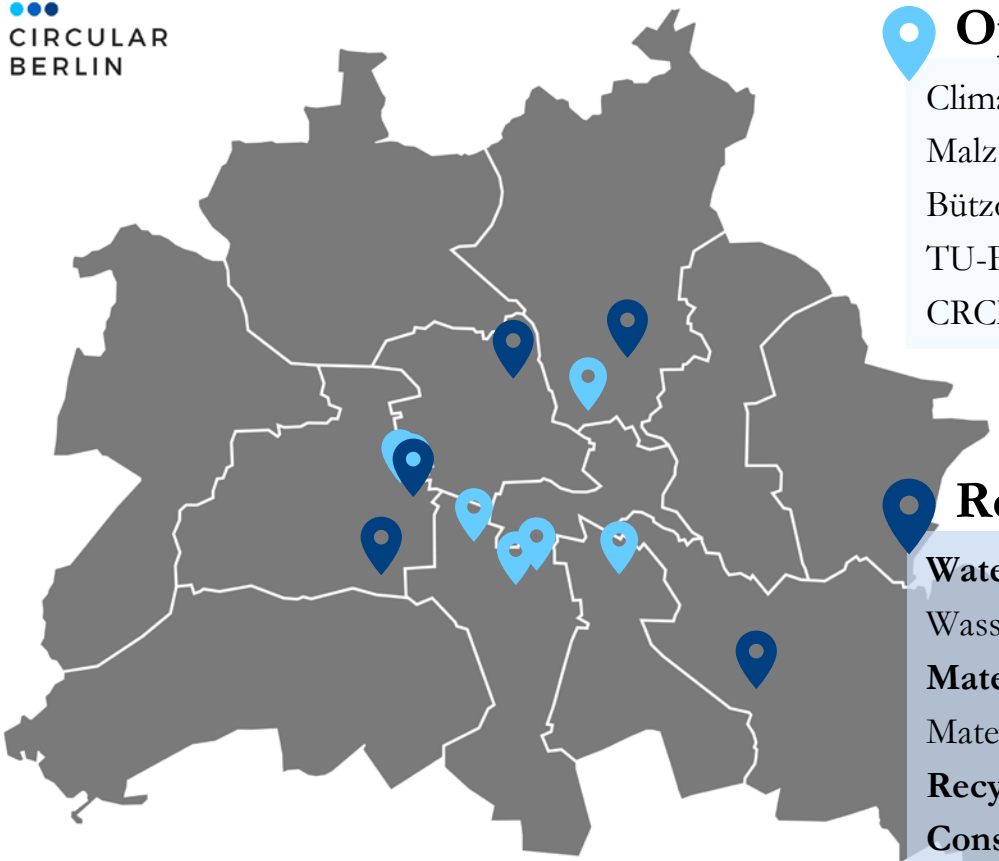
21

23

20

5 open spaces projects are mentioned where the topic could be actively co-created

CIRCULAR BERLIN



Open Labs

Climate-KIC (Schoeneberg)
Malzfabrik & Ufa Fabrik (Schoeneberg)
Bützow Fabrik (Prenzlauberg)
TU-Berlin - Natural Building Lab (Charlottenburg)
CRCLR House (Neukoelln)

Research centers

Water and Nutrition for agriculture - Kompetenzzentrum Wasser
Material development - Bundesanstalt für Materialforschung
Recycling - TU Berlin Circular Economy
Construction and infrastructure specifics – TU Berlin
High value e-Recycling - Fraunhofer IZM
Design & Materials- Weißensee Kunsthochschule

CIRCULAR BERLIN

Commercial and non-commercial projects, and dedicated networks

Construction and Built environment (construction, water, energy, recovery)

Materials

Supply chain

CE Business model

Design, Planning

Realization, Production

End of life

CIRCULAR BERLIN

Built environment - construction

Organizations	Research centers	Networks / Open Labs	Finance
EDGE Technologies	TU Berlin - Natural Building Lab	Internationales Kultur Centrum ufaFabrik e.V	Horizon 2020
CRCLR GmbH	TU-Berlin - Fachgebiets Bauphysik und Baukonstruktionen	CRCLR GmbH	
IGG MALZFABRIK MBH	TU-Berlin - Institut für Architektur	IGG MALZFABRIK MBH	
Drees & Sommer		Die Nachwachsende Stadt	
ARUP		TU Berlin - Natural Building Lab	
Hütten & Paläste			
Partner und Partner Arhitekten			
ZRS - Berlin			
Zublin			

Built environment – infrastructure (water and energy)

Organizations	Research centers	Networks / Open Labs	Finance
Dachfarm	Kompetenzzentrum Wasser Berlin	Aquanet Berlin Brandenburg	Umwelt Bundesamt
Nolde und Partner	inter 3 GmbH		Deutsche Bundesstiftung Umwelt
Solaga	Bundesanstalt fuer material forschung und pruefung		Berliner Wasserbetriebe
Energie und Biotechnik GmbH	TU Berlin - Institut für Stadt- und Regionalplanung		Senat verwaltung UVK
			BMBF
			Veolia Water
			ERDF
			Horizon 2020

Construction and built environment

~

Non-commercial project

BUILDinG CYCLE

Description:

A circular building from waste materials was realized, which offers an answer to questions relating to resource-positive construction in an urban context and embodies a new method of architectural production for a post-consumer society. The roof structure is formed from a pre-stressed grid of layered and interlocking re-used timber beams, while the wall elements utilize a system of upcycled cardboard boxes and posters designed to last for at least one year.

Possible implications:

- Input: Old timber roof construction – paper waste
- Output: Sustainable Building with upcycled paperwaste

Partners in Berlin (Germany):

- TU Berlin Fachgebeiten TEK (Tragwerksentwurf und -konstruktion) und GtE (Gebäudetechnik und Entwerfen)
- RE4 (EU Forschungsvorhaben)
- VOLLGUT
- ABeG und Hütten und Paläste
- Geko Berlin
- Zuhause e.V.
- CRCLR Economy House

Duration:

2017-2018

BUILDinG CYCLE

LifeCycle KMF

Description:

The LifeCycle KMF project examined the extent to which artificial mineral fibers (KMF) can be reused after the end of the use phase of the buildings where they are installed. Almost all dismantled KMF, also because they often can not be separated by type, deposited, whereby they are lost as a valuable resource. Therefore, an optimization of the life cycle of this product group is suggested, whereby the recycling should be investigated.

Possible implications:

- **Input:** Status quo of the mineral fibers in the buildings, volumes and current disposable methods
- **Output**: Process description of an optimized life cycle in comparison to the previous handling of KMF products
  Solutions to the required technology and logistics
  Necessary boundary conditions or parameters (procedural, legal and health aspects).
  Estimates of economy and ecological impact.
  Estimation to change the acceptance of products from KMF

Partners in Berlin (Germany):

- TU Berlin - FG Bauphysik und Baukonstruktionen
- Rockwool and the Future Construction research initiative

Duration:

2014-2017

LifeCycle KMF

Construction and built environment

~

Non-commercial project

UFOPLAN BaSaR

Description:

This project focusses on the pollution sources from construction and renovation in urban environment. A combination of test and onsite-investigations are being carried on 2 chosen sites. The studies include leaching test of construction materials on contact with storm water, monitoring of concentration of pollutants in storm water runoff and modeling of pollutant release using COMLEAM based on weather data. The results will be used to develop guideline for stakeholders such as planners, architects, builders, etc, along with recommended control measures.

Possible implications:

- Input: Construction and redevelopment sites, rain runoff, storm water runoff from construction waste (roofs, façade..)
- Output: Mitigation for avoidance or reduction of pollutants from construction environment.

Partners in Berlin (Germany):

- Kompetenzzentrum Wasser Berlin
- Hochschule für Technik Rapperswil
- Berliner Wasserbetriebe
- BIM (Berliner Immobilien Management GmbH)
- Financing: Umwelt Bundesamt, Berlin Senatsverwaltung für Umwelt, Verkehr und Klimaschutz

Duration:

2017 - 2019

UFOPLAN BaSaR

OgRe – Relevance of Trace Organic Substances in Berlin's Storm water Runoff

Description:

In Berlin 74% of rainwater runoff are discharged in surface waters untreated, thus being a largest source with high levels of trace (fuels, PAHs) elements. The project OgRe elaborates substance list of relevant substances in rainwater runoff, estimation of the annual loads and supports to build a strong trace substance mitigation strategy for Berlin. The project helps to detect and build a list of locally relevant substances in the runoff, along with comparison from other pathways.

Possible implications:

- Input: Rainwater runoff with organic trace elements
- Output: Removal trace organic contaminants, Guidelines for Mitigation of trace elements

Partners in Berlin (Germany):

- Kompetenzzentrum für Wasser Berlin
- Berliner Wasserbetriebe
- Financing: Berlin Senatsverwaltung für Umwelt, Verkehr und Klimaschutz, EFRE , Veolia water

Duration:

2013 - 2015

OgRe

Construction and built environment

~

Non-commercial project

Roof Water Farm (Block 6)

Description:

Block 6 is the project, which is currently part of Roof Water Farm project, focusing on the recycling system for grey water. Grey water - fecal-free wastewater - with a total of approx. 50-70 liters per person per day represents the largest proportion of domestic sewage. It comes from from bathtubs, showers and hand basins, while the higher-loaded portions come from the washing machine and the kitchen. Greywater recycling must ensure that users do not take any hygienic risks and suffer no loss of comfort.

Possible implications:

- Input: gray water (sewage water from bathtubs, showers and hand basins)
- Output: water with the better quality then bathing for toilet flushing, washing machine or irrigation of green areas.

Partners in Berlin (Germany):

- Nolde und Partner
- Terra Urbana
- Fraunhofer KUBUS
- TU-Berlin Institut für Stadt- und Regionalplanung
- Inter 3
- Berlin Senate

Duration:

Since 2006

Project link 1 Project link 2

Gray water recycling and heat recovery in passive house, Berlin

Description:

Use of decentralized technology for the gray water recycling together with energy recovery system. The technology allows to get energy recovery also during the winter, when most energy consumption takes place. It allows to decrease building operation costs significantly. The system requires 2nd pipeline network, which should be considered by the construction of every new building or during building maintenance.

Possible implications:

- Input: gray water (sewage water from bathtubs, showers and hand basins)
- Output: water with the better quality then bathing for toilet flushing, washing machine or irrigation of green areas; energy recovery

Partners in Berlin (Germany):

- Nolde und Partner
- Heinhaus Architekten
- Lokus Gmbh
- Funding: Deutsche Bundesstiftung Umwelt

Duration:

2011-2014

Project Link

Construction and built environment

~

Non-commercial project

PowerStep – energy from waste water

Description:

The municipal wastewater in Europe contains an available chemical energy of about 87,500 GWh per year. This corresponds to the capacity of 12 large power plants. Due to the currently used technologies and the associated energy loss, sewage treatment in Europe instead consumes primary energy of more than two power plants. The use of the available chemical energy represents a great opportunity for municipalities, wastewater associations and operators of sewage treatment plants to evolve from an energy user to an energy producer.

Possible implications:

- Input: waste water treatment
- Output: production energy based on treatment for sewage water treatment

Partners in Berlin (Germany):

- Kompetenzzentrum für Wasser Berlin

Horizon 2020 project with Belgium, Netherland, Denmark, Sweden, Austria and Switherland, Fraunhofer IPM Germany

Duration:

2015-2018

http://powerstep.eu

Towards a Next Generation of Water Systems and Services for the Circular Economy

Description:

The consortium of project NextGen develops innovative technological systems and circular economy related concepts in the water sector involving 10 case studies focusing on topics such as water reuse, nutrient recovery and energy production. The special investigation is carried out to recover nutrients from wastewater and to enhance energy production from sewage sludge using a thermal-pressure hydrolysis through association with living labs & communities, in order to gain public acceptance for the technologies. The solutions are made on the aspects of innovative business model and service marketability.

Possible implications:

- Input: Rain/Gray/Black/Waste water, sludge, construction structures such as pipes and tanks
- Output: treated water, energy, nutrients

Partners in Berlin (Germany):

- Kompetenzzentrum Wasser Berlin
- Abwasserverband Braunschweig, KWR
- Comprises 30 Partners from 11 countries

Duration:

2018 - 2022

NextGen

Construction and built environment

~

Non-commercial project

Re4

Description:

Main Goal is the development of an innovative RE4 building concept that creates flexible floor plans through an intelligent structure which as a result increases the lifespan of buildings significantly. The use of prefabricated reversible elements deriving from demolition (up to 65%) allows an efficient construction but also gives the possibility of reusing the individual components at the end of the building's lifespan and reduces the waste volume of the building sector substantially.

Possible implications:

- Input: roof tiles, timber beams, clay, binder, silt, wood fibers, bricks, tiles, concrete aggregates, wood flakes – Sorted from CDW
- Output: structural/non-structural Partition walls, facades, skeleton prefab - supporting structures, prefab ceilings, roofs
- Process: Casting, Extrusion, Molding

Partners in Berlin (Germany):

- ZRS Architekten Ingenieure
- Finance: Horizon 2020

Other Partners

Fenixtnt (Czech), Creagh concrete (UK), Cetma (Italy), Rise (Sweden)

Duration:

2015-2018

http://re4.eu

reusecity

Description:

A Urban recycling network model-project of the federal program for National Urban Development Policy focusses on the local circular economy through alternative value chains for local recycling and direct use of reusable materials. The network aims to offer recycling service for event locations, trade fair construction, events, and booth builders providing possibility to dispose re-usable materials on a sustainable, green and local way and also for lower costs. The model for value chain consists of 3 level of actors: Material source, Recyclers and Customers & Consumers. The service can be requested during set up phase or dismantling phase. The material obtained are upcycled in reusable form, thus giving alternative access to materials for consumers, crafts, creative industries and socio-cultural institutions.

Possible implications:

- Inputs & Outputs: Booth building structures, boards, tables, chairs, white screens, wooden boards, other associated materials & equipment for event/ fairs, etc.

Partners in Berlin (Germany):

- Zunkunftgeraeusche, TU Berlin, Zuständiges Ministerium im Bundesland Berlin, DMY, ABC, Kennzeichen
- District offices - Friedrichshain Kreuzberg, Tempelhof-Schöneberg, Neukölln

Duration:

2013 - 2016

http://reusecity.com

Construction and built environment

~

Non-commercial project

Ufa Fabrik

Description:

Re-purposed old factory as a cultural location. The green roofs insulate the buildings, filter rainwater and absorb around 500 grams of dust from the air per square meter, as a preferred choice than rain-water retention. To seal the green roofs, nontoxic foils made out of recyclable polyolefin were used. The substrate consists of soil, expanded clay and shale, which is lighter than regular soil when containing water, but is able to contain more water at the same time. All rainwater is collected and used to flush the toilets now, the roofs are rarely watered. Planted facades filter dust out of the air and protect the façades against weathering. Water storage facility was developed to collect all sewage and rain water, through several filter system. Local energy production is made by the PV-system. To provide sound isolation walls out recycled materials and bio-materials were constructed.

Possible implications:

- Input/Output: roof greening, water storage facility, biowaste, use of building management system to evaluate the streams, water and nutrition recovery, own composting sites, use of sheep skin for insulation as a natural material, wood construct.

Partners in Berlin (Germany):

- Internationales Kultur Centrum ufaFabrik e.V.; TU Berlin - physics; Fachhochschule Neubrandenburg

Duration:

Since 1990

https://www.ufafabrik.de

IGG Malzfabrik

Description:

Re-purposed building, which started with the green roofs, they create humid green biotop. The first project focused on the development of effective use of water and energy resources, as well as re-use existing materials. Among others also focused on concept for sustainable property management. Started change with energy saving approach and existing material re-use, rebuilding and centralizing energy system. Community renting the area is also selected.

A lot of old factory materials were also re-used in the construction of interior space, infrastructure, and surrounding furniture

Possible implications:

- Input/ Output: water re-use, roof greening, material re-use and repurpose.

Partners in Berlin (Germany):

- IGG Malzfabrik mbH, Real Future AG, TU Berlin, Hochschule für Wirtschaft und Recht Berlin, Grün Berlin GmbH

Duration:

Since 2005

Malzfabrik Green Steps

Construction and built environment

~

Commercial project

Information center at the IGA Park

Description:

Concept for the Building for integration of the district tourist information in Marzahn-Hellersdorf . The building is planned in wood construction. The supporting structure in the exhibition and event area is laid completely in the ceiling area and in the façade and thus offers the possibility of flexible use of the premises. The relation to the circular economy is mostly on the material choice and energy supply

Possible implications:

- Input: wood construction
- Output: building

Partners in Berlin (Germany):

- Partner und Partner Architekten
- Bezirk Marzahn-Hellersdorf
- Grün Berlin
- HDH Berlin
- ZRS-Berlin
- ee concept
- JUCA Berlin

Duration:

Since 2016, the construction year suppose to be in 2017

Information center at the IGA Park

Supermarket with living and roof greenhouse

Description:

The concept is developed together with DACHFARM Berlin and innovative Berlin companies and research institutions from the fields of architecture, agriculture, energy and water management in order to unlock the potential of unused building and roof areas for the professional cultivation of crops and for participatory community gardens. The operation of a building-integrated farm has a positive effect on the cost-effectiveness of buildings and their eco-balance. Savings are achieved through the use of building resources such as rainwater, gray and black water, organic waste and building heat.

Possible implications:

- Input: rainwater and processed gray and black water, nutrients from organic waste and black water, waste heat, photovoltaics, wind power or solar energy
- Output: water for crops irrigation, crops fertilizer, heat recovery

Partners in Berlin (Germany):

- Die Nachwachsende Stadt
- Partner und Partner Architekten
- Dachfarm Berlin

Duration:

- Since 2016

Project link 1 Project link 2

Construction and built environment

~

Commercial project

Holzmarkt Dorf

Description:
The guiding principle of village planning is the development of a structural-constructive and spatial structure that serves the users as a framework for potential spaces. It is flexible and can be developed over the long term. By means of attachment, conversion and further construction, it enables a permanent transformation process and thus guarantees the preservation of creative freedom. The construction objective was to develop cost-effective building to ensure cost-effectiveness for the startup and creative scenes.

Possible implications:
- New construction with the objective of "flexible construction" with the needs adjustment over the time
- Wooden material use

Partners in Berlin (Germany):
- Holzmarkt plus eG
- Hütten und Paläste
- Carpaneto Architects,
- Urban Affairs

Duration:
2012-2013

Holzmarkt Dorf

Circular Building CRCLR

Description:
The CRCLR is open, experimental space for local production systems, collaborative ways of working, smart use of resources and circular business models.
In the long-term use, the concept will be further developed and supplemented by set up residential units, which will create new, cost-effective living space for a broad population cross-section. Vertical housing extension - funded by the SIWA program of the Berlin Senate. Long-term preservation of a historic warehouse as a cultural and business center, as well as a vertical extension with residential units, in a modular timber panel construction. Residential and commercial uses are linked in a variety of ways through circular processes.

Possible implications:
- New construction with the objective of "flexible construction" with the needs adjustment over the time

Partners in Berlin (Germany):
- Hütten und Paläste
- Trnsfrm eG

Duration:
Since 2015

Agora wohnen-Celab

Construction and built environment

~

Commercial project

Solaga

Description:
Solaga designs and produces services associated to bioreactor systems which includes adapted process technology, phototrophic biofilms involving microorganisms like algae & bacteria. One of the services is sustainable solar biogas production, which involves innovative, climate friendly alternative for conventional energy making consumers cost savings and self sufficient powered air pollution reduction. Also, the other service involves in air pollution reduction system using algae.

Possible implications:

- Input: Microorganisms: Algae, Bacteria; Materials resistant to light & water; metals, bioplastic, wood, fleece
- Output: Algae Façade installations, biogas, dry biomass, other by-products-medical/cosmetic use

Partners in Berlin (Germany):
Funding : GASAG, Kic innoenergy; Claasstiftung; ERDF (Others)

Duration:
2015 – Present

http://www.solaga.de

Energie und Biotechnik GmbH

Description:
The biotechnology company is specialized in planning, developing, and designing vendor friendly high yield - biogas projects. The organization has expertise in Energy recovery from plant residue materials and organic waste. Solutions are designed as per the customer needs utilizing viable components and technically adapted to the substrates used by the customer. It currently develops a specially adapted biogas technology for the urban employment and for energetic recovery of urban plant residue materials, such as tree leaves, as the seasons biomass waste, for that biotechnological fermentation process is developed

Possible implications:

- Inputs: Metals, Glass & Other materials for plant construction, Controlling components for stirring, temperature, etc. Plant residues, organic waste, biomass, Microbes
- Output: Biogas, Compost

Partners in Berlin (Germany):

- Waste management companies, Operators, Municipality, University
- “Adapted biogas technology for the urban employment and for energetic recovery of urban plant residue materials” – Bundesministerium für Wirtschaft und Energie / ZIM

Duration:
1995 - Present

http://energie-biotechnologie.com/

Construction and built environment

~

Network

Die NachwachsendeStadt

Description:
The network of architects targeting on building with wood. On this basis, it addresses issues of growth, re-densification, resource consumption, ownership, participation and participation of the city of Berlin. It is an initiative of architects and engineers dedicated to the ecological development of the city with renewable resources. The participating offices all work with wood and other natural building materials and use them in different ways in innovative projects.

Possible implications:

- Input: social dialog, knowledge transfer, development of simple construction for livable environment
- Output: urban transformation towards for sustainable society, environmental materials and natural resources, research and education

Partners in Berlin (Germany):

- Hütten und Paläste
- Partner und Partner Architekten
- ZRS Architekten Ingenieure
- Natural Building Lab - TU Berlin
- Dachfarm Berlin
- IFUH

Duration:
Since 2010

http://www.dienachwachsendestadt.org

Natural Building Lab

Description:
The NATURAL BUILDING LAB accompanies students on their way to learning in times of social upheaval, empowers them to engage in dialog work in interdisciplinary and trans-disciplinary teams, introduces them to scientific work and networks them internationally. Developed the project Infozentrale auf dem Vollgut.

Possible implications:

- Input / Output : system thinking education combining architecture, building materials and resource use

Partners in Berlin (Germany):

- TU Berlin - Institut für Architektur
- RE4 Research project
- Gebeudetechnik und entwerfen (GTE)
- Hütten und Paläste

Duration:
Since 2017

https://nbl.berlin

Construction and built environment ~ Network

Flussbad Berlin e.V.

Description:
The canal section on Fischerinsel is to be reshaped into an ecological regeneration zone, similar to an old arm. The shore-side shallow water zones are to create living and reproduction areas for flora and fauna. Between Gertraudenbrücke and the Federal Foreign Office, an ecological plant filter is to clean the spilled water flowing through, which is essentially contaminated by occasional discharges from the combined sewage system. The water flows over a length of about 400 meters through a layer of gravel covered with water plants. In this passage, a microbiological cleaning takes place

Partners in Berlin (Germany):
Alles im Fluss, Berlin Brandenburgische Schifffahrtsgesellschaft (Historischer Hafen,), Haus der Statistik, Initiative offene Gesellschaft, Panther Ray - Alles im Floß, Radbahn, Raumlabor , Stiftung Zukunft Berlin, Zentrum für Kunst und Urbanistik, Berlin, ZK/U, HTW Berlin, TU Berlin

Duration:
Since 2015

http://www.flussbad-berlin.de

Aquanet Berlin Brandenburg

Description:
The networking between the very different water skills of the partners and the combination of different expertise is the main aim of AQUANET. As a result, competencies relating to the topic of water and wastewater from a wide variety of areas come together. The focus is on tackling current issues and the development and realization of joint research. Main focus is Raw water extraction or drinking water production, Wastewater treatment / recycling of purified wastewater, water quality Planning and projecting, drinking water analysis wastewater treatment, environmental analysis, Automation, software for water and wastewater systems, Weather monitoring, disaster prevention, Drinking water

Partners in Berlin (Germany):
- AQUANET has more than 30 members from SMEs and research institutes in the water sector of Berlin-Brandenburg

Duration:

http://www.aquanet.berlin

Components of circular construction value chain

Real estate	Design and planning for CE	Material for CE	Building as Material DB*	Execution/ construction	Utilization	Deconstruction
		Possible to import, but in no local production			Different approach into utilization	No high valued building refurbishment

Global trend - premature demolishing (up to 75 years) to give life a new construction, but in Berlin a lot of buildings repurpose

Berlin stakeholders have understanding of work with Circular Economy

CIRCULAR BERLIN

* DB – data bank

CIRCULAR BERLIN

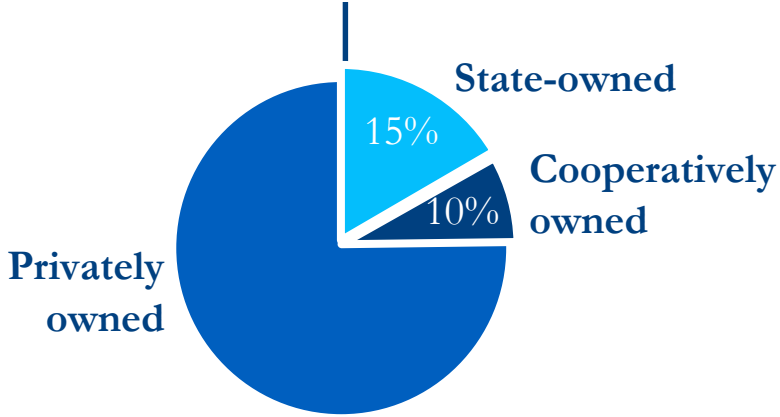
The role of ownership is crucial

Population

3,5
million

Dwelling (residential & non-residential)

1,9
million



Berlin construction focus

Affordable living ~ minimization construction costs

The city role

… if it wants to be a CE driver

1. Building repurpose policy instead of demolishing – preferences for modular construction / flexible building structures
2. Standards for building construction also for privately owned building
3. Use existing green building regulations also for privately owned building

CIRCULAR BERLIN

Main outcomes

Most projects related to Circular Economy are with building refurbishments, non-for-profit or research

Circular economy in water sectors is developed, at least on the research phase: mainly for nutrition and energy recovery, and fertilizers development

No projects were identified with the innovative business model development or business model for circular construction

Some planning projects with the sustainable material use (like wood), however not all of them consider circular value chain in mind

CIRCULAR BERLIN

Berlin commercial and non-commercial projects, and dedicated networks

Textile and Fashion

Materials

Supply chain

CE Business model

Design, Planning

Realization, Production

End of life

CIRCULAR BERLIN

Textile and Fashion

Organizations

Komm & Sieh gGmbH
Circular.Fashion
Studio Hilo
Still Garment
erie Berlin
Ecoalf
Kaliko
Algalife
Good Garment Collective
Dzaino
Natascha von Hirschhausen
Schmidttakahashi
Ting Ding Atelier
Meyburg Taschen
Zazi Vintage
SHIO
Cradle to Cradle e.V.

Research centers

Weißensee kunsthochschule Berlin
Akademie für mode und design

Networks / Open Labs

SourceBook
Cradle to Cradle e.V.
NeoNyt

Finance

wear sustain
Bundespreis Eco Design
Next economy award
Launch Nordic
Berlin Best
Lavera green fashion award
Start green award
Europäischer sozialfond für Detuschland
Existensgründungen aus der wissenschaft
Start next

Textile / Fashion ~ Non commercial project

Textile Prototyping Lab Berlin

Description:
Germany's first open laboratory for the development of trend-setting textiles is being created in Berlin. Location is FutureLab Bötzow. A platform is created for designers, engineers and researchers from various disciplines. With the help of the material library, digitally supported prototyping machines - e.g. in weaving and knitting - and an easy-to-use electronics station, interdisciplinary collaborations can be optimally implemented.

Possible implications:

- Input: knowledge, processes, machines for industrial and indivualised textile production
- Output: textile tech workshop and a textile library

Partners in Berlin (Germany):

- Fab Lab Berlin by Makea Industries GmbH
- Weißensee kunsthochschule berlin
- Fraunhofer Institut für Zuverlässigkeit und Mikrointegration
- Sächsisches Textilforschungsinstitut Chemnitz e.V.
- Textilforschungsinstitut Thüringen-Vogtland e.V.
- Finance: Bundesministerium für Bildung und Forschung, Future TEX

Duration:
2018-2021

http://www.tpl.berlin

Water to Wine - Komm & Sieh gGmbH

Description:
Non-profit project in Berlin that provides location, containers and collect clothing donations in Berlin for sorting, repair and cloth upcycling the cloths for the people in needs, such as the emergency clothing chambers of the emergency overnight, station mission and the projects of the homeless and refugee assistance. employ at least 40% of people with a proven disability in our neighborhood shops. Some of the permanent employees were previously in need of the cloths themselves and have been able to find their way back into a regular life with the support of the Berlin City Mission. Berlin City Mission, developed own Brand Water to Wine for the upclycled cloths items. Water To Wine Corporate Fashion specializes in corporate merchandising that transports the sustainable action of your company through the reuse of unused materials and thoughtful design.

Possible implications:

- Input: old cloths, labor,
- Output: upcycled cloths

Partners in Berlin (Germany):

- Komm & Sieh, neighboring shops, berlin tailors

Duration:
Since 2012

Komm & Sieh

Textile / Fashion ~ Non commercial project

Stop micro waste e.V.

Description:
A non-profit initiative from Berlin with intention to reduce plastic pollution of rivers and oceans. Initiatives involves ideas and awareness to avoid, reduce and reuse plastics efficiently. The knowledge awareness and implementation is created through STOP! ACADEMY tours, washing guide and Ocean College program. The ocean college program operates a research sailboat which trains people to become certified Coaches. A cooperated research is carried out focusing Fiber Loss Quantification Standard (FLQS) and "Guppyfriend bag" to address washing based microfiber issue.

Possible implications:
- Input: Knowledge creation, Awareness, Microfiber, Washing microfiber filter
- Output: Avoidance of microfiber to water resource, Reduced & Reused plastic consumption

Partners in Berlin (Germany):
- Fraunhofer Institute UMSICHT and the German Textile Research Institute (DTNW)

Duration
Since 2016

https://www.stopmicrowaste.com/

Mimycri

Description:
Mimycri is truly innovative in that it uses "waste" material to tell an emotional story and to raise awareness for what is currently happening at the borders of Europe. Material used had a past life as a refugee boat and by that we encourage people to think about the relation of the subject and the object: the object (material) is used to create another way of experiencing the subjective. The main strength is also that we duplicate the idea that waste is often not really waste, but can be used to create something new by applying this to the people who are fleeing to Europe.

Possible implications:
- Input: Broken rubber boat material, logistics, shipping, marketing, design, funding
- Output: Bags and backpacks, knowledge about migration, integration and upcycling

Partners in Berlin (Germany):
- CRCLR House,
- Green Fashion Tours,
- Fab Lab,
- Fashion Sustain
- SEND
- Start Social, Start next

Duration
Since 2015

https://mimycri.de

Textile / Fashion ~ Commercial project

Circular.fashion

Description:
The circular.fashion system is an industry connecting platform for all stakeholders to collaboratively realize a cradle to cradle inspired circular economy for textiles.
The Circular Design Platform supports fashion brands to design circular and sustainable products in a lean and efficient process. Through a unique circularfashion.ID the Product Circulation Platform provides customers information of how to increase the useful life of products by circular retail models and orchestrates a partner network to enable material specific recovery for fibre to fibre recycling.

Possible implications:
- Input: Database information on materials and recycling processes, SAAS,
- Output: Circular Design Guidelines, Circularfashion.ID, Circular Material Database, Customer Interface, Circular Product Check, Sorting Interface

Partners in Berlin (Germany):
- Various designers and tailors
- Part of networks: Sourcebook, Textilstammstisch, Greenfashion tours, Future Fahion forward

Duration
Since 2014

https://circular.fashion

Schmidttakahashi

Description:
The company initiates new aesthetic high fashion garments through new ways in fabrication of used garments with innovative production cycles supported with digital media. The products are desired to be returned to it's own custom made container again after a pleasant usage, and will be treated as material for the further new products. Donators receive an ID number which enables to provide history & track the afterlife of used clothes, stored in the digital database. This database also helps in easy redesigning process to choose choice of materials. The redesigned or reprocessed (cuffs, holes, etc) new product is tagged and registered in database. The new owners can find out the background of the pieces, comment and carry on the history.

Possible implications:
- Input: Used garments, Digital platform, Custom containers, Redesign processes
- Output: New fashion garments

Partners in Berlin (Germany):
- Recycling Design preis 2010
- "Start Your Fashion Business" Sonderpreis 2010
- BerliNordik Award
- Mart-Stam-Förderpreis 2009 award

Duration
2010 - Present

http://schmidttakahashi.de/

Textile / Fashion ~ Commercial project

Natascha von Hirschhausen

Description:
Natascha von Hirschhausen is a designer, who creates innovative patterns to combine these virtues with a premium design.
The pattern pieces intervene with each other to significantly minimize the clippings compared to industry standard. The so called no-waste patterns minimize the production waste of the garments to under 1%. Therefore the precious resources are used way more efficient compared to conventional patterns. An impeccable fit is guarantied by the complex puzzling of the curves of the patterns.

Possible implications:
Input: natural materials (organic cotton, natural rubber, cashmere, organic wool, garment
Output: fashion items, design techniques, cloth production

Partners in Berlin (Germany):
- German federal Ecodesign Award 2017

Duration
Since 2016

https://www.nataschavonhirschhausen.com

Good Garment Collective

Description:
Good garment collective is a clothing production company with its own model studio. We stand for sustainable and transparent production processes. They create an economic concept with the highest creative standards. In socially and ecologically responsible process chains, pioneering textile solutions of excellent quality. They support fashion start-ups who want to further educate and professionalize themselves in the areas of material procurement, textile finishing, production for sustainable clothing as well as PR and sales.

Possible implications:
Input: designer work, garment, accessories for the cloths creation, product suppliers
Output: clothes made of silk, pants made of leather, collection creation, material procurement, pattern production, grading, initial sampling, production, services in processing techniques, finishing processes, as well as on sustainability concepts

Partners in Berlin (Germany):
- Designers, suppliers and manufacture, circular.fashion

Duration
XX

http://goodgarmentcollective.com

Textile / Fashion ~ Commercial project

Studio Hilo

Description:
The spinning machine HILO focuses on the yarn production processes making it more efficient, personalized, and sustainable. HILO enables the user to determine the textile properties at the very beginning of its manufacturing process, the yarn spinning. Digital spinning machine (HILO) produces on-demand, local and individualized yarn. It support local manufacturing

Possible implications:

- Input: Local yarn provider network, Yarn Recycling, Recycling Materials
- Output: Textile/Yarn Manufacturing, Digital Fabrication, Textile Research

Partners in Berlin (Germany):

- UdK Berlin,
- Weißensee Textile Lab Berlin,
- Fab Lab Berlin/Barcelona

Duration:
Since 2017

http://www.studiohilo.com

Still Garment

Description:
Still Garment is a Berlin based clothing designer studio specializing in sustainable fashion design strategies with a focus on natural dyeing, textile techniques, fair trade and zero waste pattern construction. Apart from this, Workshops are being organized for city based people including children interested in the holistic approach for growing the local & seasonal dye yielding plants in their garden, due extraction from them and further dye storage.

Possible implications:
Input: Plants – flowers, seeds, leaves, etc, water, mixers
Output: Natural dye

Partners in Berlin (Germany):

- Goethe Institut Dhaka's programme "Local International"

Duration
Since 2016

https://www.stillgarments.com/

Textile / Fashion

~

Commercial project

Algalife

Description:
Algalife is a cleantech innovation on holistic and sustainable development of new materials for fabrics from Algae. These materials have a zero chemicals & pesticides having a positive effect on environment and human skin rather conventional fabrics. Algae are renewable with fast growth rate, biodegradable, along with valuable substances such as proteins, vitamins etc, are released to the skin moisture when worn and offers nourishing and protection to our body and skin. The fabric materials from the algae through the supply chain provides zero waste.

Possible implications:

- Input: Algae, Water, Renewable energy, Tailoring equipment's
- Output: Natural fibers, natural environmental and skin friendly pigments, biotech textiles, nutrients such as proteins, vitamins, anti-inflammatory and antioxidants

Partners in Berlin (Germany):

- Global Change Award - Winner 2018

Duration
XXX

https://www.alga-life.com/

Kaliko

Description:
Kaliko is a Berlin-based brand offering natural textile products. They work with certified organic fabrics that we dye in our studio using local plants and food waste, focusing on resources that can be obtained locally.

Possible implications:
Input: Organic or fair-trade fibers from Europe (GOTS cotton, linen, wool), Vintage / dead stock natural fabric, Plant pigments from plants grown in Europe, Local food waste (avocado stones, onion skins, pomegranate skins, etc.)
Output: Plant dyed fabric offcuts.

Partners in Berlin (Germany):

- looking for food production partners, who'd like to donate onion skins or wood producers who'd have leftover chopped wood from oak / apple tree / etc.

Duration
Since 2016

https://www.kaliko.co

Textile / Fashion ~ Commercial project

Meyburg Taschen

Description:
Meyburg Taschen implements resource-saving work and sustainability as consistently as possible. Old leather sofas and armchairs are picked up and taken off in Berlin. Their frame moves together with upholstery to the recycling yard. The straps and handles of our models consist partly of old packing straps or belts, which are reworked or made to fit. Selected lining materials - mostly remnants of tailoring - are used as well as recycled belt buckles. The rest of the accessories, such as zippers or rivets, are new. In this way, not only does something unique and unmistakable arise, but there is also a meaningful reuse and renewal of existing material. Leather, such as wood and other natural material, ages beautifully and thus gains in character.
For us, upcycling also means individuality and diversity in the design of our models, which are assembled and produced with great care.

Possible implications:
- Input: leather from sofas, old packing straps or belts, wood
- Output: upcycled cloths

Partners in Berlin (Germany):
- Green Fashion tours

Duration
Since 2006

https://www.meyburg.biz/

Ting Ding Atelier

Description:
Berlin Upcycling fashion label works with the donated garments. The discarded garments are brought as a donation to the TingDing shop / studio and inspected and sorted locally, then further processed at the tailor's dummy and exhibited in the shop, sold and adapted to the wishes of the respective customer.
Also conducts upcycling workshops.

Possible implications:
- Input: donated garment
- Output: upcycled cloths

Partners in Berlin (Germany):
Green Fashion tours
Duration
Since 2006

Ting Ding Atelier

Textile / Fashion

~

Commercial project

erie Berlin

Description:
The brand is exploring on ways to work with the environment and with people in a way that not just eliminates negative influence but actually supports everything and everyone involved in the processes.
A main strength is the focus on completely natural and organic products, so that all products are compostable and represent a circular movement, which is supported by a circular business model.

Possible implications:
Input: Plant-based organic fabrics (cotton, hemp, linen, nettle, etc.), cruelty-free organic/wild silk, organic wool from local farms (we are not using wool yet because we haven't found a supplier that works with the values of reciprocal relations with the sheep), dyeing material from plants (madder, golden rod, onion skins, avocado peel & seed, elder berry, dyer's woad, log wood, etc.), organic sewing thread
Output: colored materials, cloths, cartons of packages from return sending, Sometimes there are a few fabric scraps left over - which usually we also use for designing other items

Partners in Berlin (Germany):

- Studio Hertzberg, SIC, Still Garments

Duration
Since 2015

http://www.erieberlin.com

Dzaino

Description:
Berlin upcycling label focusing on production the bags out of used materials. The choice of bags is as it is mostly long used product and it is not bought so often. The production happens locally in Berlin. Dzaino found our unique design approach by combining traditional patchwork techniques with used denim fabric, rearranging the material to a clean look. We update craft techniques to create handmade, resource-friendly one of a kind pieces

Material choice, jeans without polyester, as it keeps the product more robust and not strach.

Possible implications:

- Input: used jeans, some other collected materials
- Output: bags.

Partners in Berlin (Germany):

- Green Fashion Tour
- Berlin Stadt Mission, Delphin, Faktura

Duration
Since 2017

http://dzaino.com

Textile / Fashion

~

Commercial project

SHIO store

Description:
SHIO is focused on sustainability and believe that clothes should be made with care, to last. We are on a mission to minimize both waste and environmental impact. We use eco linen, upcycled cotton and all our jersey is GOTS Certified Organic. The entire collection is made by Kate Pinkstone at SHIO Studio (behind SHIO store). Producing clothing on site allows to keep track of stock and only produce what is necessary.

Possible implications:
- Input: GOTS certified organic
- Output: cloth production

Partners in Berlin (Germany):
- TRECHES, Pastperfect, Pulp Papier

Duration
Since 2012

http://www.shiostore.com

Zazi Vintage

Description:
ZAZI is a luxury fashion label with a focus on sustainability and women's economic and social independence. Working with both vintage and organic materials, the aim is to give new life to traditional vintage and also create new pieces in partnership with women and artisans worldwide. Our collections pay fair wages, fund girls' education, and support local artisans

Possible implications:
Input: vintage and organic materials
Output: cloth production, support educational projects

Partners in Berlin (Germany):
artisans in Uzbekistan, Mongolia, Turkmenistan, Tajikistan, India and Afghanistan

Duration
XX

https://www.zazi-vintage.com

Textile / Fashion ~ Commercial project

Ecoalf

Description:
Spanish fashion brand focused cloth design, production, and sale made of waste materials collected in the ocean. The mission is on sustainable ocean upcycling.
Operates globally with 2 collection and production spot in Taiwan and S. Korea, store in Madrid and Berlin.
Has a project on upcycling the ocean - The Ecoalf Foundation has managed to involve Spanish companies that are leaders in their respective areas (from waste management companies, technological centers and recyclers, to thread and fabric manufacturers) that will collaborate in this project and share their experience in recycling different types of debris (PET bottles, fishing nets, used tires, etc…) and the R+D accumulated through their international alliances with specialized technological recycling specialists. Production does not happen in Berlin.

Possible implications:
Input: ocean plastic waste
Output: up-cycled cloth from waste-materials

Partners in Berlin (Germany):
- Circular Economy Tours
- Partner in Spain,

https://ecoalf.com/de/

Textile / Fashion ~ Networks

SourceBook

Description:
Sourcebook connects fashion brands with garment manufacturers, service providers and fabric mills. The Berlin-based company founded in 2013, brings together a trusted network of industry experts with a fast growing community of makers and designers – currently with more than 2 000 businesses registered.

Possible implications:
- Potential partner to develop strong ecosystem along circular economy value chain in textile

Partners in Berlin (Germany):
- Diver partner network in Berlin
- Textil Stammtisch

Duration:
Since 2013

https://sourcebook.eu/

NeoNyt

Description:
NEONYT is the global platform for tomorrow's fashion and sustainable innovation. NEONYT brings together Greenshowroom and the Ethical Fashion Show Berlin. NEONYT is backed by a vision for the fashion sector based on sustainable growth. As a global hub, NEONYT provides a broadly-based platform for a sustainable lifestyle. Neonyt stands for communication, exchange, business, and the creation of a fashion world with a new awareness of sustainability

Possible implications:
- Includes circular economy experts as part of the network, and organizing events including this topic

Partners in Berlin (Germany):
- Greenshoroom
- Ethical Fashion Show
- Textil Stammtisch

Duration:
Since 2016 (?)

https://neonyt.messefrankfurt.com

Components of circular fashion (textile) value chain

Materials	Garment production	Design for circularity	Coloring	Cloth production	Return and sorting	Right end of life
!	Innovative approaches for local production				!	✕

In Berlin most of the stakeholders can cover the whole value chain, but it is small entities

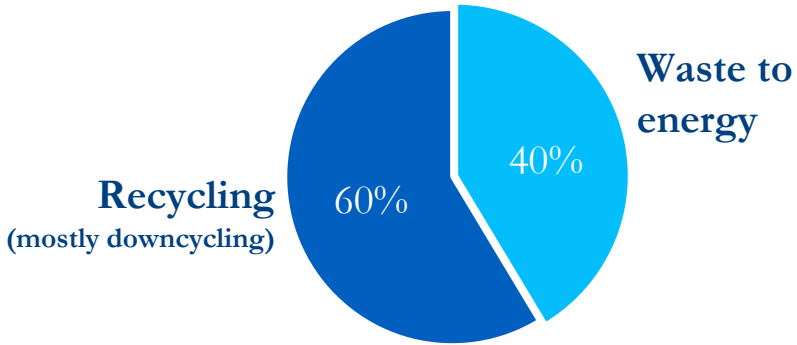
CIRCULAR BERLIN

The role of local ecosystem is crucial

German import

2nd largest textile importer after the United States

Berlin old textile recycling rate



Berlin average entity size

2-7 people

The city role

… if it wants to be s CE driver

1. No organizations individually in Berlin can close the loop, it is possible only via collaboration and eco-system
2. Collective procurement vs. singular company
3. Impose collection and sorting points (no official return stream, currently conducted by non-governmental org.)

CIRCULAR BERLIN

Main outcomes

Most projects related to Circular Economy are commercial project, not many research or non-for profit projects were identified

Textile and fashion industry is well self-organized. Organizations can provide feedback on materials needed, design techniques, product development, business model development

No real alternatives for collection, sorting, and high value recycling in the city

Upcycling is currently the mostly developed approach for end of life

CIRCULAR BERLIN

Berlin commercial and non-commercial projects, and dedicated networks

Food and agriculture

Materials

Supply chain

CE Business model

Design, Planning

Realization, Production

End of life

CIRCULAR BERLIN

Textile and Fashion

Organizations

Dycle
Infarm
Stadtfarm
ECF Farmsystems
Cafe Botanico
Sirplus
Querfeld
Das Tiffin Projekt (ECO Brotbox)
Original Unverpackt
HALM
Kaffeeform
Chidos
GreenLab
SeloDrinks
Isla Coffee
BSR Biogas anlage
Culinary misfits
restlos-gluecklich e.V.

Research centers

Kompetenzzentrum Wasser
TU-Berlin - Department of Urban and Regional Planning
TU Berlin - Institute of Urban and Regional Planning

Networks / Open Labs

NA

Finance

Next organic startup award
Social impact startup
Deutschland Land der Ideen
Stiftung Naturschutz Berlin
TrennStadt Berlin
Horizon 2020
Zeit Wissen Preis
SAP
Impact HUB
Strasheg Center of Enterpreneurship

Food and agriculture

~

Non-commercial project

nurec4org

Description:
Nutrient Recyclates for Organic farming was initiated in the aim to reduce the consumption of nutrients obtained from finite resources (Phosphates) for organic farming, with a focus on circular nutrient cycle regionally. It examines to what extent phosphorus-containing products, which can be obtained through currently available recovery and recycling methods, will be acceptable and approved for organic farming. Promoting nutrients obtained from bio-based and wastes for sustainable agriculture transformation. Nurec4org examines farming market potential of recyclates, stakeholder acceptance, characterization of recyclate quality and product & process based organic farming assessments.

Possible implications:

- Input: bio based products, waste, fossil based phosphate
- Output: Fertilisers - Nutrient products

Partners in Berlin (Germany):

- Kompetenzzentrum für Wasser Berlin
- Institute of Agricultural and Urban Ecological Projects affiliated to Berlin Humboldt University (IASP)
- Bioland Beratung
- Deutsche Bundesstiftung Umwelt (Financing)

Duration:
2017 - 2018

nurec4org

CLOOP – Closing the Global Nutrient Loop

Description:
Project CLOOP was designed to demonstrate that mineral nutrient recyclates have higher use efficiencies than conventional fertilizers. This is crucial to ensure the protection of surface waters and an efficient use of resources. The project focuses on testing a new generation of secondary fertilizers (NextGen fertilizers) that feature high plant availability and low water solubility at the same time.

Possible implications:

- Input: sewage treatment plant (water)
- Output: Water cycle and Waste water, resource use, secondary fertilizer

Partners in Berlin (Germany):

- Kompetenzzentrum für Wasser Berlin
- Bundesanstalt für Materialforschung und –prüfung Berlin

Partners from Austria, Brazil, Australia

Duration:
2017-2020

CLOOP

Food and agriculture

~

Non-commercial project

Waste management in Tierpark by use of CO2-potential from Bio Char

Description:

The basis of the project is the development and establishment of a low-emission and environmentally friendly waste management in Tierpark Berlin by applying bio char technology. In addition to the use of energy and the production of bio char from the woody residual biomass in the zoo, the carbonization of the extensive deciduous biomass (16,000 m3 / year) will be tested, which also represents a high potential for CO2 sequestration. As the most promising form of bio char application, the combination of bio char and biowaste has emerged for joint composting. During composting, biochar additions can reduce methane, ammonia and nitrous oxide emissions.

Possible implications:

- Input: biomass, CO2
- Output: biochar, reduce methane, ammonia and nitrous oxide emissions

Partners in Berlin (Germany):

FU Berlin, Tierpark, Botanischer Garten

Duration:

2016-2020

http://carbotip.felix-vogel.com

Terra Boga Project

Description:

Terra Preta Sanitation (TPS) evaluated in the framework of the interdisciplinary research project TerraBoGa at the Botanic Garden in Berlin. It manages the organic resources and nutrients from the garden and from a public toilet facility according to the principles of closed loop recycling economy as effective and efficient as possible and to address also energy aspects related to organic waste occurring in the botanic garden in Berlin. The liquid phase is led through a so-called 'charcoal nutrients activator'. An opening at the top of the chamber facilitates the removal and exchange of the barrel with pre-fermented solids and the charcoal loaded with nutrients. The Bio-Char is produced by means of pyrolysis in a so-called 'carbonizer' from woodchips, which are waste products from plants growing in the botanic garden. The occurring heat, a byproduct from the pyrolysis process, is used for district heating on neighborhood level within the botanic garden.

Possible implications:

Input: wastewater from toilets , green wastes, bio waste

Output: solids and nutrients in the TPS system, pre-fermented in the barrel, bio char - energy for heat, clean water treatment, Terra Preta

Partners in Berlin (Germany):

Botanischer Garten, HATI GmbH, FU AG Geökologie

Duration:

2010-2015

www.terraboga.de

Food and agriculture

~

Non-commercial project

Roof Water Farm (farming system)

Description:

Roof Water Farm research network identifies and develops innovative routes for potential urban food production and water management. Thus, contributing to multifunctional and sustainable infrastructure development in urban environment. The system involves integrated water treatment for cultivating rooftop farms with aquaponics and hydroponics system. The research also focusses on the quality conformity of the associated farm products according to national and European specifications.

Possible implications:

- Input: Fish, rain/gray/black water, energy, construction materials like glass, metals, plastics;
- Output: Fresh vegetables, fruits, herbs, fish, biomass, NPK fertilizer

Partners in Berlin (Germany):

- BMBF, TUB – ZEWK, Fraunhofer UMSICHT
- inter 3 GmbH, Senatsverwaltung für Stadtentwicklung und Wohnen
- TERRA URBANA, Nolde und Partner

Duration:

2013 – Present

www.roofwaterfarm.com

Culinary misfits

Description:

Culinary misfit carries out food activism specially to counteract vegetables and fruits rejected & disposed mainly for their aesthetic standards for sale, E.g curled, oversized, tuberous potatoes, carrots, etc. These products are sourced directly from local organic farms. Culinary misfit has a catering service with a store at Berlin. Also, they hold workshops to raise awareness on the food appreciation and familiar their activity for people, children, private groups and companies. This initiative contributes to valuing food, producers and resources.

Possible implications:

- Input: Non-aesthetic vegetables and fruits
- Output: Meals, Individual fresh products

Partners in Berlin (Germany):

- Local farmers around the region
- Restlos Glücklich, Querfeld, The Good Food

Duration:

Since 2013

http://www.culinarymisfits.de/

Food and agriculture

~

Non-commercial project

The real Junk food project

Description:
The Real Junk Food Project is a global network that brings a radical change in our food system using surplus food, which rescues food waste from supermarkets, restaurants and businesses, and turns them into nutritious meals. The vision of this network is to raise awareness on food waste mainly on the nature of appearance and age, rather considering its consumable value. The work plan was in three phases such as café operation for utilizing rescued food along with awareness, Café as distribution center and Restaurant which serves food with policy of "Pay as you feel" policy, thus encouraging people to support this project to be financially sustainable.

Possible implications:

- Input: Surplus food products, Cooking items, Restaurant surplus food
- Output: Meals with a nutritional value

Partners in Berlin (Germany):

- Vostel
- Yakuzuzu

Duration:
2015 - Present

Realjunkfood Berlin

restlos-gluecklich e.V.

Description:
The association works in projects towards the food appreciation. It runs projects focusing to raise awareness on food waste and encouraging conscious consumption. The awareness involves workshops and cooking classes for school children adolescents and people. The projects also involve themed dining's and catering services utilizing surplus food, crooked vegetables/ fruits, incorrectly labelled goods, etc., thus giving a second chance.

Possible implications:
The awareness among the targeted audience helps in increasing the value of food irrespective of their appearance and encourages conscious consumption, thus resulting in sustainable resource usage.

Partners in Berlin (Germany):

- Denns biomarkt, Fritz kola, quito berlin, coffee circle, vanilla campaign,
- Awards – Fairwandler, Price green table, social impact lab berlin

Duration:
Since 2017

http://restlos-gluecklich.berlin

Food and agriculture

~

Commercial project

Stadtfarm

Description:

Stadtfarm is a smart urban organic farming. Thus, supplying farm fresh products regionally, seasonally and in sustained manner. This urban farming uses a method called ”AquaTerraPonik”, which involves cycle of rearing fish and plants. The attention is made more for the substrate, which provides nutrients and holds up microorganisms. The substances contained in aquaculture wastewater are made available to the plants. The plants convert the substances into biomass and thus purify the water, which then returns to aquaculture. This method saves 80% of water & land consumption and 85% of CO2 (equivalent) output on comparison to conventional methods.

Possible implications:

- Input: Water , Energy, African Cat Fish, plant seeds, fish nutrition, bacteria for nutrition processing biomass, Construction materials such as glass, metals, tubes etc.
- Output: Fresh fish, salads, herbs, vegetables, compost

Partners in Berlin (Germany):

- Biokohle
- Bioland, Grains & Berries, Bock & Gardener
- Märkische Kiste, Lindenhof, Sternhof, Chidos, Berlin beer factory

Duration:

2017 – Present

https://www.stadtfarm.de

GreenLab

Description:

GreenLab Berlin is a spin off company of Humboldt- Universitat Berlin, which develops organic fertilizing and plant strengthening products utilizing waste from food industry in a environmental friendly manner. Their product BLÜMCHENFUTTER and PIMP MY GÄRTCHEN utilizes processed waste of Cocoa, which is largely used in Germany. The processing of the Cocoa waste to garden products are did in environmental guidelines compliance, thus upcycling the waste. The company also uses sustainable packing materials for its products. The products are well suitable for urban home gardeners.

Possible implications:

- Inputs: Compost, Cocoa waste, plant residues, water, Wood Planks
- Output: Fertilizer, Nutrients, Plant strengtheners

Partners in Berlin (Germany):

- Taspo Award 2014 "Business Idea of the Year"
- Green Alley Award 2014
- Grand Prize of the Berlin Environmental Festival 2015
- Ben & Jerry's Join our Core 2015

Duration:

2013 - Present

http://greenlab.berlin

Food and agriculture

~

Commercial project

Infarm

Description:

Infarm is a revolutionary vertical urban farming in Berlin utilizing controlled environment supported by AI system. It aims to produce farm fresh products within the urban space eliminating long transports, making 100% regional, flavored and pesticide free. The development of farm were made involving biologists, architects, farmers and chef, thus making farm production all along the year irrespective of season or draught.

Possible implications:

- Inputs: Metal/Glass based structures, nutrients, controlled light spectrum and temperature
- Output: Fresh vegetables and fruits

Partners in Berlin (Germany):

- EDEKA
- Funding from Horizon 2020

Duration:

2013 - Present

https://infarm.de/

ECF Farming system

Description:

ECF expertise is in consulting, planning & construction of tailor made aquaponics farm systems along with Post-commissioning monitoring. The aquaponics systems offered by ECF are environmental friendly, cost efficient, resource saving and high quality farm harvest products. The system utilizes 2 circuit cycle: Aquaculture and Hydroponics, ECF Control technology, apart from resource efficiency system such as UV filters, CO_2 - greenhouse exchange system and rainwater cistern use. The system can utilize building heat, roof tops, industrial areas, etc. The 2 circuit ECF farming system involves 7% reduction in the operating cost.

Possible implications:

- Input: Metals, Plastics, Glass, fish, water, energy, rainwater, plants.
- Output: Fish, biomass, vegetables, fruits, herbs (basil).

Partners in Berlin (Germany):

- REWE
- Food producers, entrepreneurs, retailers, architects, energy companies, individual companies interested in resource efficient food production.

Duration

2012-Present

http://www.ecf-farmsystems.com/en/

Food and agriculture

~

Commercial project

Das Tiffin Projekt

Description:

Das Tiffin Projekt offers reusable stainless steel boxes for take-away meals. It operates through partner model with the restaurant owners. The clients can order the food with Tiffin box for deposit 50 cent per day and then return accordingly. The boxes are borred from Das Tiffin Project, and could be return back if no longer needed. Also possible to buy own "Eco BrotBox"

Possible implications:

Saving: 100 take-away meals per month and you are already using eco-friendly disposable packaging which costs around 0,35€ per piece. If borrow 20 Tiffin Boxes instead and use every box 5-times a month you end up with 100 waste-free meals and total cost of 30€, thats a saving of 5€ per month. Only 4 customers per day are enough to cover the cost of the rental fee.

Partners in Berlin (Germany):

- Globus Naturkost
- Barbaras Küche
- DABBA WALLA
- Café Tschüsch
- Kantine Kreuzberg
- ANAVEDA

Duration:

Since 2014

http://dastiffinprojekt.org/en/home/

Original Unverpackt

Description:

Original Unverpackt was the first supermarket in the world dedicated to zero-waste lifestyle. It has a shop in berlin and online which offers organic, natural and sustainable products. Products such as organic certified, fairtrade and local produce are promoted to keep ecological and social footprint of products low, along with less packaging. The food products are stored in bulk containers, where the customers can transfer them to the self brought containers or containers purchased on spot. The containers provided are glass, cloth bag and recycled paper bags. They also provide a online based course for owing zero waste shop.

Possible implications:

- Input: Containers made of Metals, glass, wood, recycled paper
- Output: The store has about 600 products covering food, sweets, spirits, cosmetics, detergents, books, containers for transport and the kitchen at home

Partners in Berlin (Germany):

- HALM, EcoBrotBox, KaffeeForm

Duration:

Since 2014

https://original-unverpackt.de

Food and agriculture

~

Commercial project

Cafe Botanico

Description:

Café Botanico is the mix of traditional Italian gastronomy and modern concepts of urban agriculture, permaculture and food sovereignty. The selection of dishes is based on the seasonal selection of vegetables, salads, herbs and fruits from the local permaculture. It focuses on 0 Kilometer approach for sowing, planting, harvesting, preparing cooking, serving and eating. The main strength is showcasing a mature Permaculture forest garden in the City and giving People the Chance to TASTE instead of just listening or seeing. Café operates on the low waste case and organic agriculture with certificate.

Possible implications:

Input: labour, water, sunlight, soil, compost, pollinating insects, seeds

Output: Food, a beautiful and inspiring place to visit, high diversity of species and varieties

Partners in Berlin (Germany):

- GreenMe Berlin, CAS Trips
- TU Berlin
- HNE Eberswalde
- Permakultur Akademie

Duration:

Since 2012

https://www.cafe-botanico.de

Sirplus

Description:

Sirplus is a savior market and online store that sells rescued surplus, salvaged food and several other products that is sorted out elsewhere because it's quantity, look and age. Sirplus works towards the goal of reduction of food waste with food rescue as its mainstream activity. The recued food are given a value and paved back into a life cycle under the legal norms. They offer the service to consumers to access surplus food and producers, as well as non-profit institutions, in order to sustainably reduce waste and overproduction. The products are majorly obtained from wholesalers, retailers and farmer in the region.

Possible implications:

- Inputs: Surplus products from various distributors, retailers etc.
- Outputs: Food products, cosmetics, kitchen products, bathroom products

Partners in Berlin (Germany):

- ResQ club, fregie, good food, selo, soul bottles, etc
- Climate kic, bio company, Metro, Recycling berlin, sum up, etc, - Premium partners

Duration:

Since 2017

http://sirplus.de

Food and agriculture

~

Commercial project

Querfeld

Description:
Querfeld sources organic/ bio fruits and vegetables that are avoided for their non-standard size and structure for sale from the farmers. These sourced products are again put their health value in plate without being influenced by the aesthetic flaws, thus contributing to reduction of food waste from source. The products are sourced directly from producers thus making them a financial benefit and sold at reasonable price along with the support of online platform. The products are ensured for quality control requirements of Querfeld. The customers are common consumers, canteens, caterers and refectories.

Possible implications:
Input and Output: Organic/Bio fruits and vegetables rejected for their size and shape

Partners in Berlin (Germany):
- DBU, SAP, Impact Hub
- Strascheg Center for Entrepreneurship, Culinary Misfits

Duration:
Since 2014

https://www.querfeld.bio

HALM

Description:
Halm is an glass alternative to plastic drinking straw which is causing an huge environmental impact. Halm is made of extremely stable special Glass. Thus, making consumers free from plasticizers like BPA and environmental friendly with values of washable, reusability & recyclability causing zero waste. In contrast to plastic, stainless steel, bamboo or straw, glass is absolutely hygienic and tastes 100% neutral. Halm production involves 70% energy consumption from renewable energy with future developments to 100%. Halm also involves mineral oil free materials in its business from production to packaging. The cleaning brush provided by Halm is made of natural fiber.

Possible implications:
- Input: Raw materials for glass, energy, packaging materials
- Output: Halm straw

Partners in Berlin (Germany):
- Ritz, Dinette, The Juicery, Suicide Sue..
- gastronomy such as hotels, cafés, bars or restaurants

Duration:
Since 2016

https://www.halm.co

Food and agriculture

~

Commercial project

Chidos

Description:
Chidos is the Germany's first company to develop the method of cultivating mushrooms in the organic residue – Coffee Ground. Chidos also made the process experience open source data. Mushroom on coffee grounds is a new production focus of "Waste to Raw Material" where coffee grounds are collected from large consumers such as various cafes, restaurants, hospital and similar facilities across the city. The obtained residue are mixed with the mushroom mycelium and packed in bags and stored in humid condition for the cultivation. The post cultivated Coffee residues can be used as compost.

Possible implications:
- Inputs: Coffee grounds & bean shells, plastic bags, water, mushroom seeds
- Output: Fresh Mushrooms – oyster, lime pudding, pink sprig, Compost

Partners in Berlin (Germany):
- Growing Parters - Stadfarm, Topfarmers

Duration:
2010 - Present

https://www.chidos.org

DingsDums Dumplings

Description:
Berlin start up focusing on the food waste prevention topic. In cooperation with other Berlin projects working in the food rescue area, DingsDumsDumplings produce dumplings out of left overs

Possible implications:
- Input: diverse surplus left overs of meet, vegetables, soya products /
- Output: local dumplings production

Partners in Berlin (Germany):
- SirPlus. Award by "too good fuer die Tonne"

Duration:
Since 2017

DingsDumsDumplings

Food and agriculture

~

Commercial project

Isla Coffee

Description:
Isla coffee is a sustainable café located in Berlin, operating under the principle of circular economy and zero waste strategy. The café uses reusable materials such as glass and metal containers, thus avoiding packaging waste. The coffee cups are sourced from Kaffeeform, which are made from coffee waste. The steamed milk leftover is used by them to produce ricotta cheese. The snacks and brunch are made from organic, local and seasonal products. The terrace space in summers host space to grow vegetables and herbs for in-house use.

Possible implications:
- Inputs: coffee, milk, glass & metal containers,
- Output: Coffee waste, organic waste, cheese, organic baking products

Partners in Berlin (Germany):
- Kaffeeform
- Gastro Gründerpreis 2018 - Finalist

Duration:
2016 - Present

Isla Coffee

Too good too go

Description:
Start-up scaling up the solution for food rescue by App. In order to counter this senseless waste of resources, they network gastronomic businesses with customers.

Possible implications:
- Input: it application / platform to map the gastronomic services for people who can pick the dish up for the minimal price

Partners in Berlin (Germany):
- Diverse gastronomic partners in Berlin

Duration:
Since 2017

https://toogoodtogo.de

Prinzessinnengarten

Food and agriculture
~
Open Lab / Networking place

Description:
Nomadisch Grün (Nomadic Green) launched Prinzessinnengärten (Princess gardens) as a pilot project in the summer of 2009 at Moritzplatz in Berlin Kreuzberg. Prinzessinnengärten is a new urban place of learning. It is where locals can come together to experiment and discover more about organic food production, biodiversity and climate protection. The space will help them adapt to climate change and learn about healthy eating, sustainable living and a future-oriented urban lifestyle.

Possible implications:
- Output: organic food production, biodiversity and climate protection, learning processes about healthy eating,

Partners in Berlin (Germany):
- Neighborhood
- Community garden

Duration:
Since 2009

http://prinzessinnengarten.net

Components of circular agriculture and food value chain

Soil recovery	Urban gardening / farming	Permaculture	Food waste prevention	Packaging	Composting	Alternative use of bio-waste
Mostly only in the research phase		Approach is not widely spread	Only grass-root work		City industrial composting services	Hardly developed

The stakeholders hardly connected along the the value chain

CIRCULAR BERLIN

Main outcomes

Mostly presented non-profit projects for food rescue, but hardly research work done

Nutrition and energy recovery topic mostly remains in the research, but still not fully enabled in the commercial projects

No organized topic driver, very heterogenic

Some innovative projects, focusing on the circular business model are present

CIRCULAR BERLIN

Berlin commercial and non-commercial projects, and dedicated networks

Materials and products

Materials

Supply chain

CE Business model

Design, Planning

Realization, Production

End of life

CIRCULAR BERLIN

Materials and products

Organizations

Bioinspiration Gbr
Dycle
Kaffeeform
Pentatonic
The fair traders
Material Mafia
Studia Flaer
BSR
Alba
BRAL
Black forest Solutions
BAUFACHFRAU Berlin e.V.
Kunst-Stoffe – Central Department for Reusable Materials e.V
Reuse-Verein e.V.
Binee
Cradle to Cradle e.V.

Research centers

Bundesanstalt fuer material forschung und pruefung
Kunsthochschule Berlin Weißensee
Fraunhofer IZM
TU Berlin - Circular Economy Department

Networks / Open Labs

Fab Lab Berlin
Happy Lab

Finance

Next organic startup award
Horizon 2020
Bundes preis ecodesign
Umwelt Bundesamt
Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)
Senatsverwaltung für Stadtentwicklung und Umwelt von Berlin
Deutsche Bundesstiftung Umwelt (DBU)
Anstiftung Stiftungsgemeinschaft Anstiftung & Ertomis
IKEA Stiftung

Materials and Products

~

Non-commercial project

ProSUM

Description:

The project is aimed to gather and consolidate available data on critical raw materials (CRMs) with focus on waste electrical and electronic equipment (WEEE), end-of-life vehicles (ELV), batteries and mining wastes. Added to this the project has developed a new data structure to harmonize existing and future data, and built the UMP (Urban Mine Platform) to provide easy access to high quality charts, data and accompanying explanations in order to support Europe's position on raw material supply, with the ability to accommodate more wastes and resources in the future.

Possible implications:

- Input: secondary raw materials data from various sources
- Output: comprehensive knowledge base on various types of primary and secondary raw materials.

Partners in Berlin (Germany):

- TU-Berlin – Circular Economy Department

Duration:

2015-2018

http://www.prosumproject.eu/

CloseWEEE

Description:

CloseWEEE aims to develop integrated solutions for pre-processing of electronic equipment thus closing the loop of post-consumer high-grade plastics, whilst recovering critical raw materials including antimony and graphite. CloseWEEE focuses on developing and implementing robust and cost efficient recovery technologies, giving recycled materials a new life in added-value applications and providing efficient tools for the localization and separation of hazardous and valuable materials.

Possible implications:

- Input: economic and environmental evaluation of the processes as well as on dissemination and exploitation of these technologies.
- Output: increase in range and yields of recovered materials from WEEE streams

Partners in Berlin (Germany):

- Fraunhofer institute Berlin

Duration:

2015 - 2018

http://closeweee.eu/

Materials and Products
~
Non-commercial project

UPgrade

Description:
In the UPgrade project, researchers are working to develop new and improved processes and production chains for the enrichment of metals from WEEE and WEEE components, to minimize losses and to close material loops at all stages of already established recycling processes.

Possible implications:
- Reduce strategic dependence on raw material imports
- Prevent environmental pollution caused by primary production.
- Implication for Recycling technics for such metals as antimony, gallium, indium, cobalt, rare earth elements, tantalum and tin.

Partners in Berlin (Germany):
- Technische Universität Berlin
- Fraunhofer IZM
- Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research)

Duration:
August 2012 - July 2015

https://www.upgrade.tu-berlin.de/de_projekt.html

ORAMA

Description:
The main objectives of the project are to develop a clear strategy for extending and deepening the raw material data from all Member States in the EU; to make available different types of data (including social, environmental, economic, technical, exploration and extraction, primary and secondary raw materials) to end users; to provide a systematic collection methodology and recommendations for the improvement of datasets and EU-level harmonization; to assist and support data providers in creating portrayals harvestable through Web services (WFS) or other pertinent technical solution in the absence of existing 'harvestable' databases.

Possible implications:
- New processes
- New services
- New technologies
- Societal innovation

Partners in Berlin (Germany):
- TU-Berlin – Circular Economy Department

Duration:
March 2016 - February 2020

project link

Materials and Products

~

Non-commercial project

ARGOS

Description:

ARGOS is project of TU Berlin under circular economy and recycling. The project is for improving functional recycling rather non-functional recycling which involves material loss such as niobium, tungsten, gold, silver, etc in the economic cycle. The improvement is made along the value chain through real-time analysis of metal-rich processing products. ARGOS is a combination of sensors for the real-time analysis, based on which a system for the characterization of metal-rich reprocessing products will be developed.

Possible implications:

- Inputs: Sensor based Metal reprocessing system, Metals enriched waste
- Output: Efficient metal recycling

Partners in Berlin (Germany):

- IWARU at the FH Münster, IME at the RWTH Aachen
- LLA Instruments GmbH, Steinert Elektromagnetbau GmbH
- Siegfried Jacob Metalworks GmbH & Co. KG, TSR Recycling GmbH & Co. KG

Duration:

May 2016 – April 2019

ARGOS

OEMP

Description:

OEMP is a project of Kompetenz Zentrum Wasser Berlin developing materials and optimized process methods for removing microplastic from urban water cycle. The project identifies different entry pathways such as sewage treatment plant, mixed water overflows and precipitation runoff, etc, for micro plastic into the water cycle and at same time different process for retention too. A pilot tests were carried out in Berlin sewage treatment plant to validate the potential of developed filters materials and influence of operating conditions over the materials.

Possible implications:

- Inputs: Runoff water, rain water, etc carrying microplastics from urban environment, Soil based materials
- Output: Plastic waste, Treated water

Partners in Berlin (Germany):

- GKD, Berliner Wasserbetriebe, TU Berlin, Umwelt Bundesamt, BAM, Mecana Umwelttechnik

Duration:

April 2019 – March 2018

OEMP

Materials and Products

~

Non-commercial project

Material Mafia

Description:
Social enterprise that works with industrial waste, resources with the main objective to reuse and repurpose them. It works with residual materials from industry, trade fairs, exhibitions and the creative industry. After collection the main project partners are artists, designers, youth institutions, schools, social projects. Also provide upcycling workshops with the materials to inform about the origin of raw materials, production chains, reusability, recycling and social backgrounds in the production of goods.

Possible implications:
- Input / Output: wood, metal, glass, plastics, textile fabrics, paper, cardboard

Partners in Berlin (Germany):
- Xx

Duration:
Since xx

http://www.material-mafia.net/

PolyCE

Description:
PolyCE (or Post-Consumer High-tech Recycled Polymers for a Circular Economy), a European Commission funded project that aims to demonstrate the feasibility of a circular model for the plastics supply and value chain; develop a grading system for recycled plastics, which will ultimately serve to provide guidelines for designing new electronic products; involve green public procurement initiatives and consumer awareness raising campaigns across the EU (with a focus on Germany, Poland, Italy and France); establish a feedback loop from research activities that provides policy input regarding technical feasibilities and conflicts from a technical perspective

Possible implications:
- Input/Output: CE Business models, circular model for the plastics supply, guidelines for designing new electronic products, policy input regarding technical feasibilities, effective methods of reverse logistics and supply chain management, sustainable additives and flame retardants for polymer compounds suitable for applications in Electric & Electronic

Partners in Berlin (Germany):
- Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration IZM, TU Berlin - Research Center for Microperipheric Technologies

Duration:
2015-2019

https://www.polyce-project.eu/

Materials and Products
~
Non-commercial project

BAUFACHFRAU Berlin e.V.

Description:
Non-Profit project that promotes Women in work with wood building materials.
Within the Circular Economy area our focus lies on identifying new ways in creative design and product development with scrap wood. Scrap wood is seen as waste in strait economically working joineries.
Until Sept. 2019 we run a Pop-Up Workshop at the ZKU in Berlin where we perform different workshops under the theme of creative scrap wood design. We have a cooperation with different wood factories to collect scrap wood that we store and use in our workshops as well as give away to people in need for material.
In our projects we work with this "waste material" and develop open design, especially for the DIY-sector.

Possible implications:
- Input: wood scrap,
- Output: furniture, DIY Deisign

Partners in Berlin (Germany):
- Zentrum für Kunst und Urbanistik, Berlin (ZKU)

Duration:
Since 2009

http://www.baufachfrau-berlin.de/index.php?id=372&L=1

Kunst-Stoffe – Central Department for Reusable Materials e.V

Description:
Kunststoffe Berlin promotes material reuse and repurpose for projects with social purposes. Provides material collection and storage, Repair Cafes, educational workshops and, work with wood, and further projects. The materials are donated by hardware stores, workmen, organisations, expositions and private people. The target group of our facility are artists, educational institutions and DIYer. Those and everyone else can buy the material for a fraction of the original price.

Possible implications:
- Input: wood, cardboard and colours, but we also have tiles, decorations, fabrics and packaging material
- Output: materials resale, upcycled materials

Partners in Berlin (Germany):
- Reusecity project, BAUFACHFRAU Berlin e.V, Workstation Ideenwerkstatt e.V., Trial and Error, Bildung fuer Ressourcenschoenung und Ressourceneffizienz

Duration:
Since 2006

https://kunst-stoffe-berlin.de

Materials and Products
~
Non-commercial project

GreenLab

Description:
The environmental design initiative *greenlab - Laboratory for Sustainable Design Strategies* connects higher education, practice-led design research and industry to support, inspire and create innovative approaches to the development of sustainable and ethical products, services and systems. *greenlab* employs design methods and strategies to critically analyses and give a material form to concepts that balance ecology, society and economy.

Possible implications:
Inform students and the interested public of state-of-the-art developments in sustainable and eco concepts, strategies and design; Stimulate the development of the field through practice-led design research and thinking; Give an informative and critical analysis of these developments by placing them into wider environmental, economic, socio-cultural and technological contexts;

Partners in Berlin (Germany):
BAUFACHFRAU Berlin e.V., Haus der Kulturen der Welt, IDZ, Montessori Gemeinschaftsschule Buch, Textile Prototyping Lab, TU Berlin, topLab –Berlin, Universität der Künste Berlin, weißensee kunsthochschule berlin

Duration:
Founded at weißensee academy of art Berlin in 2010.

Green Lab

EcoDesign Circle

Description:
Project focuses on the development eco design practices to enhance capabilities of SME to make use of Eco Design practices and increase the capacity of designers in the environmental of design. The move towards a circular economy will help create jobs for tomorrow's markets.

Possible implications:
- Education about ecodesign, provide tools via "Learning Factory" and "Practice"
- Business oriented solutions in the form of tools: EcoDesign Audit & EcoDesign Sprint

Partners in Berlin (Germany):
- Umwelt Bundesamt
- International Design Center Berlin

As well cooperation among Sweden, Finland, Poland, Estonia

Duration:
2017-2019

https://www.ecodesigncircle.eu

Materials and Products
~
Non-commercial project

Biomimicry Germany e.V.

Description:
Biomimicry Germany is the leading Think Thank in sustainable bioinspired innovation in Germany, and the local branch of an extensive Biomimicry Global Network. It connects and supports industry leaders, startups, educational organizations, researchers and public institutions among others, to foster the emergence of sustainable bioinspired innovation projects and initiatives. It also educates both professionals and the public on Nature inspired Innovation, its value creation potential and the sustainable gains it generates.
Biomimicry is one of the major school of thoughts known to have developed and refined the concept of Circular Economy.

Possible implications:

- Input: Multidisciplinary Network of Innovation Stakeholders
- Output: Bio-inspired innovation projects and initiatives
  Public and expert cocreation events on Biomimicry
  Training

Partners in Berlin (Germany):

- Audi, Schindler, Museum für Naturkunde, Hasso Platner Institute, Korehnke Kommunikation, Dycle, Biooekonomierat, Doing It Together Science

Duration:
Since 2013

https://www.biomimicrygermany.com

Materials and Products ~ Commercial project

Dycle

Description:
DYCLE innovated a sustainable approach on how baby diapers are to be produced using natural fibers and close the loop of the product through collection & recycle. The diaper inlays produced are plastic free and compostable. The used diapers inlays are collected and converted through Terra Preta. Composting into hygienic, fertile black humus. The end product is used for growing fruit/nuts trees among local community, where the yields in return can be used for baby food.

Possible implications:
- Input: Natural fibres, Biochar, Cellulose, micoorganisms, fruit/nut seedlings, organic waste from local community, coffee ground, local bio-farmers, composting company,
- Output: Black humus – Terra Preta Composting, seedlings, Fresh fruits & Nuts

Partners in Berlin (Germany):
- Organic farm & agriculture sect. Demeter, Local communities

Awards:
- Next organic startup award 2016
- Social impact startup
- Deutschland Land der Ideen 2016

Duration:
2015 - Present

https://dycle.org/en

Binee

Description:
Binee focuses on take back of hazardous substances mainly WEEE and non-used/expired medicines. Thus, ensuring a safe disposal, reuse and recycle after the take back. They use specialized interactive bins for the take back called as “e-binee” and “medibinee”. The take back system has a network of collection points and provides redeemable vouchers which can be used online and shops.

Possible implications:
- Input: Unused and repaired electronics and electrical, Unused and expired medicines, Bin production materials.
- Output: Avoiding medicine disposal impact in waste water, Secondary raw materials from WEEE

Partners in Berlin (Germany):
- Conrad, EIT Raw materials, DM, Muller, Shift phone, Spinlab
- Ecosummit, ENERA, Free state of Saxony, Gelsenwasser

Duration:
2014 - Present

https://www.binee.com/

Materials and Products
~
Commercial project

Pentatonic

Description:
Design and production company that creates its material out of waste and further design furniture out it. They make all of their products out of one single material, ensuring that they can be recycled again also do not use toxins – glues, resins, paints

One of the essential part of the furniture is modularity, means all its components are standardized and interchangeable.
Pentatonic offers life-long buy back guarantee for all developed products. The trash sourcing aims to be locally (for European products at least by 90%), also use ID number to track products.

Possible implications:
- Input: plastic waste, precision engineering, and a few considered blasts of intense pressure and heat, polyester yarns, rPET
- Output: materials like PlyFix (wool like material) - water-resistant and breathable, and further used in furniture; rPET yarn

Partners in Berlin (Germany):
- Starbucks, Snarchitecture

Duration:
Since 2017

https://www.pentatonic.com/en_eu/

KaffeeForm

Description:
Kaffeeform is Berlin based design shop that created a product out of used coffee grounds the material which is robust and biodegradable. Kaffeeform stays true to its social and close-to-nature roots: the coffee grounds are collected in local coffee shops in Berlin and then dried, packed and shipped in through a sheltering workshop – a collaboration that is constantly growing closer over the time.

Possible implications:
- Input: Coffee waste with some formulary additions
- Output: Kaffeeform cups (espresso cups, take away cup)

Partners in Berlin (Germany):
Oslo Kaffebar or ISLA coffee

Duration:
2015 - Present

https://www.kaffeeform.com/en/

Materials and Products
~
Commercial project

MiFactori – Open Source Hardware as Design approach

Description:
Mifactori develops, builds and distributes sustainable circular Open Source Hardware. Circular Design needs to be reusable, repairable, hackable and recyclable everywhere easily. Open Hardware tries to create designs that can be understood and easily be replicated: Use readily available parts everyone can get, understand and work with. And document everything well to enable others! Mifactori creates circular designs and documents them. It uses readily available parts, combines them in a circular way. Modularity is a key factor for that. Many designs are based on the same geometrical grid - called the 3erlin Grid. Because circular and modular parts have the opportunity to create a circular network effect within a city.

Possible implications:
- Input: Design methodology, materials, grid elements
- Output: creates products, offer custom made solutions (e.g. for offices, exhibitions, fairs and events), do research and workshops

Partners in Berlin (Germany):
Young Arts Neukölln, OSCEdays Berlin, Kulturagenten Berlin BBK Berlin (Kulturförderungen), CRCLR

Duration:
Since 2015

http://mifactori.de/

Studia Flaer

Description:
Design studio for the modular furniture production

Possible implications:
- Output: modular décor items

Partners in Berlin (Germany):
- xx

Duration:
Since 2018

http://www.studioflaer.com

Materials and Products
~
Commercial project

Bioinspiration Gbr

Description:
Bioinspiration develops materials that follow the lead of nature compostable, upcyclable, harmless, innovative, resilient.
Natural raw materials, locally grown in living soils, processed and finished into polymers, resins, compounds, silicon, biomimetic materials, natural textiles, liquid wood, natural filaments, and more are maturing into mass availability
Currently the material company developed could be used in 3D printing, heat and cold resistant.

Possible implications:
- Input: compostable raw material - non-GMO corn starch
- Output: material Willow Flex eco filament for 3D printing, also biodegradable material

Partners in Berlin (Germany):
- Biomimicry Germany e.V. , phi360

Duration
Since 2015

https://bioinspiration.eu

Components of circular materials and products

Material science / design	Biodegradable materials	2ry materials (incl. supply chain)	CE Product design	CE Business model	EoL collection and sorting	EoL High value recycling
!	In a very early development stage			✕	City level organized system	✕

Product and material development in Berlin is present but remains on the very early stage of development

CIRCULAR BERLIN

Main outcomes

Only some innovative projects on the stage of research present

The area requires a lot of coordination and development

Some non-profit projects are operating with the topic secondary raw materials

Innovation is present on the product development stage.

CIRCULAR
BERLIN

Open spaces

Open spaces

Internationales Kultur Centrum ufaFabrik e.V

Description:
Right now Ufa Fabric services as a center for cultural and community activities, as well as environmental practices
Space offers activities for families, artists, guesthouse, community living, centers for music and dance practices. It provides local food production, incl. bakery.
The main focus is to promote collaborative and decentralized system, as well as to experiment with different building materials for isolation, local energy production, waster usage and effective building management system. Combining the topics of Culture and Sustainability.
UfaFabrik experiments with different approaches, as well as pedal-powered cinema.

Open Labs co-creator

- Environmental: Solaga
- Social: café ole, NUSZ (nachbarschaft zentrum), Netdays-Berlin e.V. Freie Schule in Berlin e.V.
- Cultural: terra Brasil,

Duration:
Since 1976

https://www.ufafabrik.de

Malz Fabrik

Description:
Malz Fabrik is an area for community development with the focus on social and environmental projects. When the area was recovered, the focus was on the strategy development on the sustainable use of space and development of the alternative concepts of space use.
The area residents are support local production like printing and food production. Also it offers a space for musician, events, flee markets, electric bike areas. As a space, provide a lot of insights on sustainable area use.

Open Labs co-creator:

- AfB social and green IT
- ECF Farmsystems
- Foodpol
- Mesami
- District Kunst und Kulturförderung GmbH, Mesami GmbH, Schöne Drucksachen

Duration:
Since 200

http://www.malzfabrik.de

Open spaces

CRCLR GmbH

Description:
The space will be re-purposed for the residential area with create use space for workshops, co-working, local food production and art.
Currently there are is used for different events, co-working renting for social entrepreneurship, urban and community gardening.
In the future extra 3 floors will be built to extend creative living and working space.

Open Labs co-creator

- Mimycri
- Original Unverpackt
- Plan A

Duration:
Since 2015

www.crlcr.org

Bötzow Fabrik as tech Garage

Description:
Space used by Ottobock to create a science tech garage as an open innovation space. Currently with collaboration with FabLab Berlin it attracts industrial and product designers. Material designers and architects. Hosting the project Textile Prototyping lab the space is also attractive for textile and fashion designers. Ottobock focuses on techniques for the rapid, innovative production of prototypes in the Open Innovation Space. Additionally, the company wants to advance the key topic of the digital future in this environment and continue to develop networking with universities and other research institutions

Open Labs co-creator:

- Fab Lab Berlin
- Ottobock
- Textile Prototyping Lab
- TU-Berlin (Eco-Maker project)

Duration:
Since 2015

http://www.boetzowberlin.de

Open spaces

Berlin TXL – The Urban Tech Republic

Description:
Once Tegel Airport is closed, new growth will be generated here, developing the site as a research and industry park for future technologies. In this way, the former airport is set to become a location both for urban technologies and for researching, developing and producing renewable energies and sustainable mobility. The DGNB promotes sustainable building and recognises buildings that are particularly environmentally friendly and energy efficient, that conserve resources, and at the same time meet the needs of the users. Urban quarters are evaluated on the basis of the infrastructure and more general considerations – for example the strategies relating to energy, water and waste management. The Schumacher Quarter will be an Urban Lab – the Experimental Space in Berlin for new urban technologies: climate-adapted, water sensitive, and responsible in the use of resources, energy, and waste. The Quarter is to receive DGNB certification as a model project as a "Climate-neutral urban quarter", and is also a reference project for "Climate-adapted and water-sensitive urban development".

Partner:
- Beuth University of Applied Sciences, TU Berlin, Fraunhofer Institutes, WISTA-MANAGEMENT GMBH

Duration:
Since 2015

Berlin TXL - Urban Technologies

Tempelhof Projekt GmbH

Description:
In the coming decades, Tempelhof Airport should become a new urban district for art, culture and creative industries: an area full of exciting ideas, with space to work and try out. The refurbishment and the structural and technical modernization of the building are progressing. Currently more focus is on digital and creative industry. The project realization starts in 2018 first with structural and technical renovation and Sustainability Fund (SIWANA). the development of the former officers' hotel in the H2rund building section into the innovation center of the creative industry and the expansion of market-oriented office space for modern working environments. Euro in prospect granted.
In addition to the projects Tower THF, History Gallery on the roof, Visitor Center at the main entrance, Redesign of the Ehrenhof and the Platz der Luftbrücke and the planned settlement of the Allied Museum, further projects are being accelerated in the planning and implementation.

Partners in Berlin (Germany):
- GSE gGmbH
- Exozet

Duration:
Since 2017

Tempelhof Project SIWANA project

Open spaces

BaumHaus Wedding

Description:
Das Baumhaus is a self-organised open socio-cultural project in Wedding. Since 2012, more than 300 people have collaboratively developed the project, organized events, meetings, initiated new groups, and in 2016 renovated a storefront space into a pretty unique project space. It is a non-profit association, a social business and above all, an open network. Projects are focusing on green and zero waste solutions, vertical gardens, and creative scene. Also offers further space for rental. Baumhaus is a place for projects that enhance a sustainable, democratic and solidarity society.

Partners

- KüfA, Repair Café, Lastenrad-Verleih, FoodKollektiv, Lesekreis, COB#1, Emergent Berlin & Wedding Festival, Wedding Zero Waste.
- Huge collaboration network

Duration:
Since 2012

http://www.baumhausberlin.de

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