

UNIVERSITÄT
DUISBURG
ESSEN

Open-Minded

Sustainability at the University of Duisburg-Essen (UDE)

The Development of a Process towards Sustainability

Prof.-Dr.-Ing. André Niemann

Head of sustainability process group at UDE

20th REFORM meeting Salzburg, September 3rd, 2015





UNIVERSITÄT
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ESSEN**

Open-Minded

University of Duisburg-Essen (UDE)

In the Heart of Europe

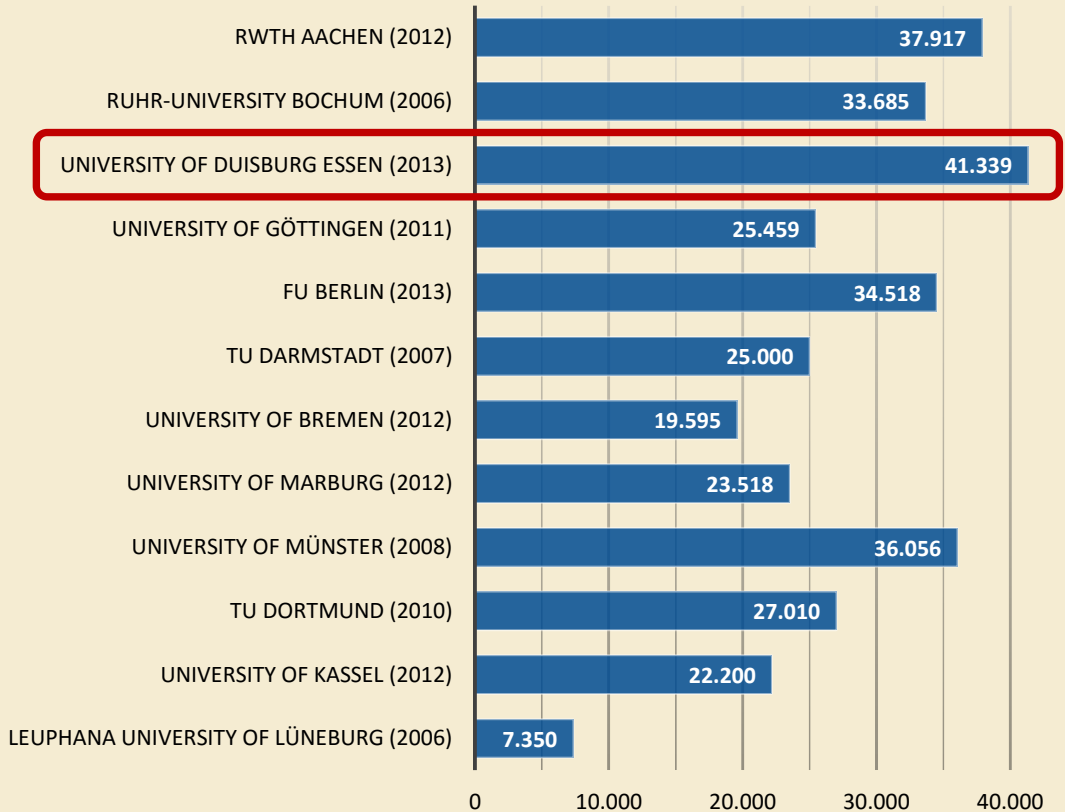


Source: <http://www.uni-due.de>



University of Duisburg-Essen

Number of Students



Source: Numbers provided by Universities

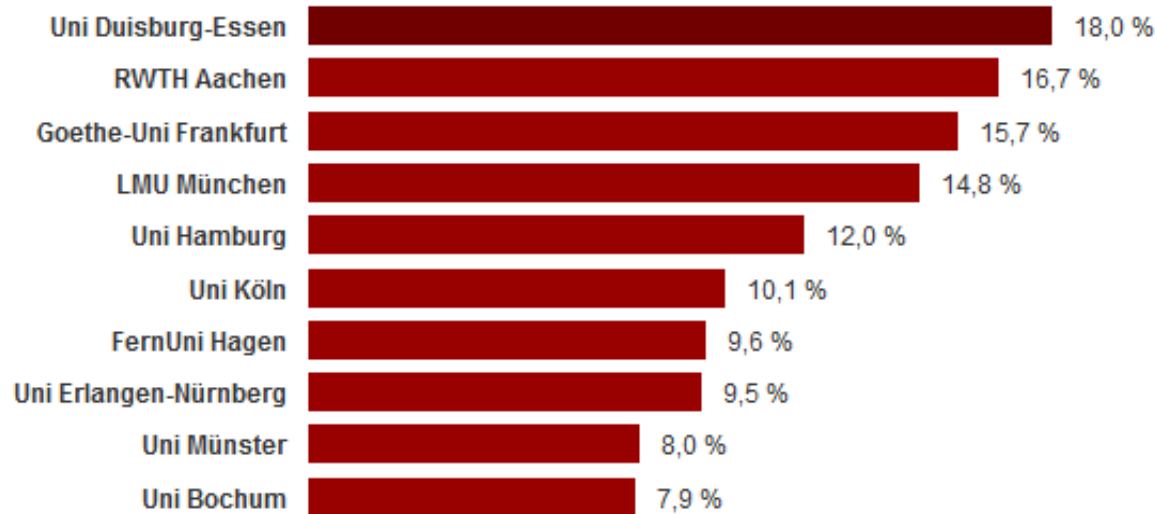
- Merge of two Universities in 2003
- Thus one of the youngest and largest Universities in Germany (4400 Employees and researchers)
- Wide range of studies in the humanities, economics, natural sciences and engineering





UDE – an international University

Percentage of international students



Stand: Wintersemester 2014/15, nur Wert der Uni Münster von 2013/14.

Source: Websites of Universities

ZEITUNG ONLINE





Sustainable Development

Declaration of Brundtland (1987)

In 1987, publicity of „Our Common Future“, also known as Brundtland Report, by the World Commission of Environment and Development.

- Sustainable development is defined in the report as:
- *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*
- *“Educational institutions and governments should provide the institutional support, resources and legitimacy for youth-led change processes towards sustainability”*

(Brundtland Report, p. 51)

(UNESCO Education for Sustainable Development Youth Statement, Japan 2014)





Education for sustainable Development

- Targeting transfer of knowledge for sustainable thinking and acting

Vision:

- Humans should make decisions for the future in relation to their actions and how they will affect future generations and their life in different countries



United Nations
Educational, Scientific and
Cultural Organization

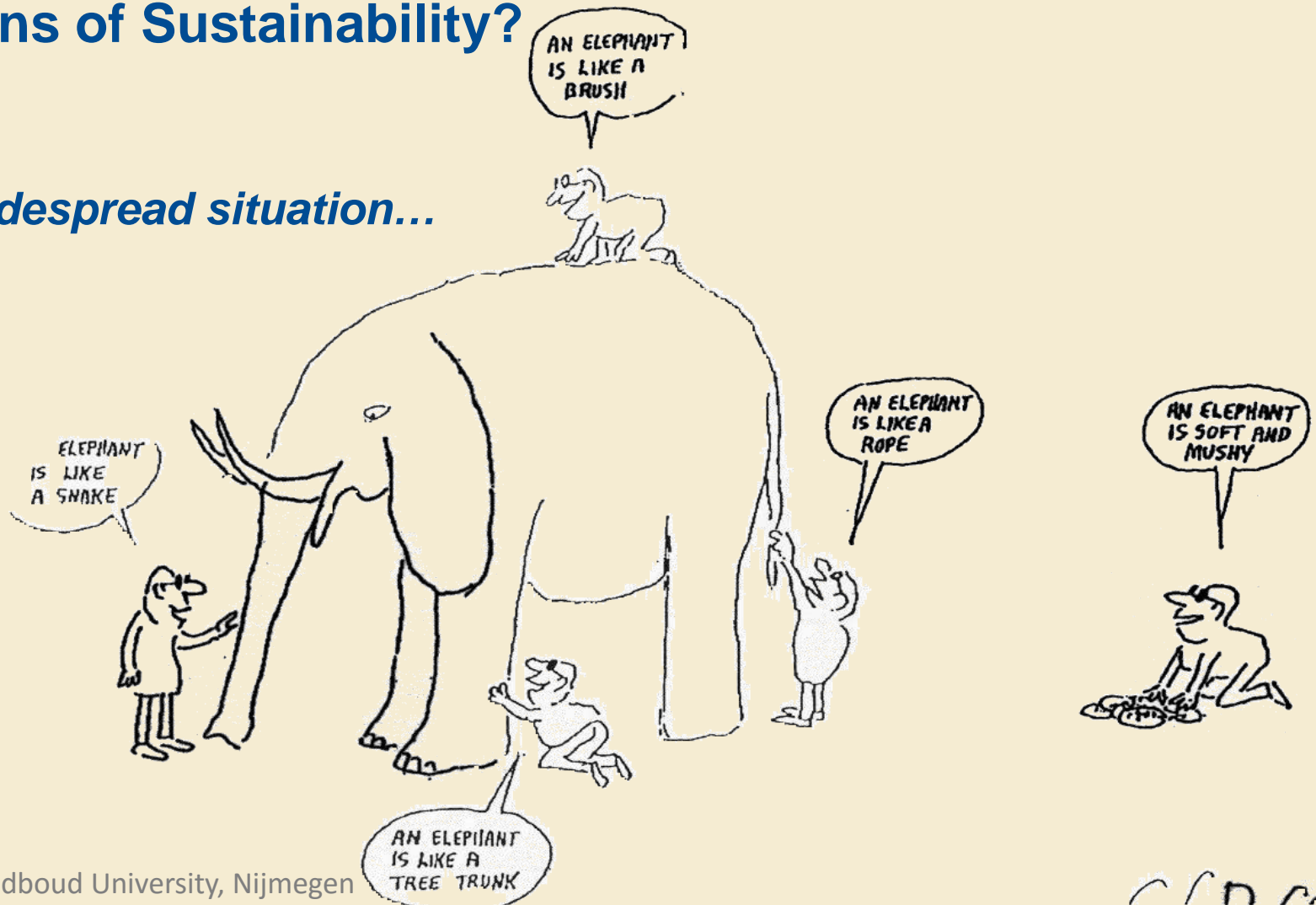
Declaration: Universities for sustainable Development

- Within education, research and administration, German Universities commit to a worldwide sustainable development.
- Declaration of the German Rectors' Conference and the German UNESCO-Commission



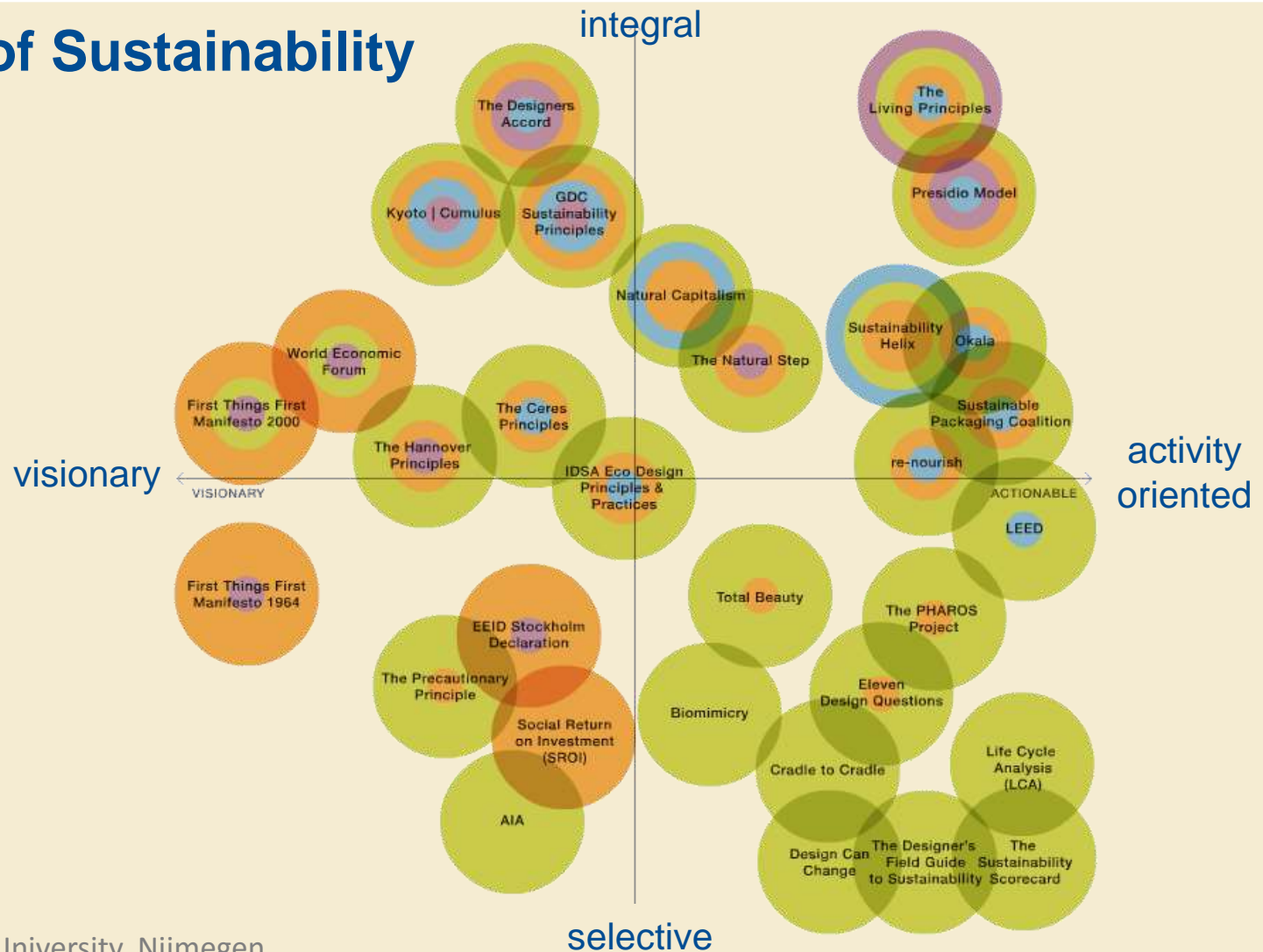
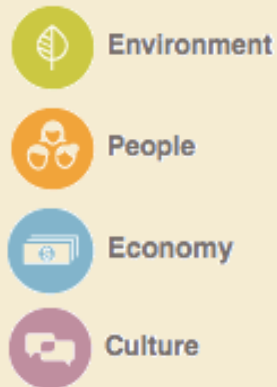
Definitions of Sustainability?

...the widespread situation...





Definitions of Sustainability

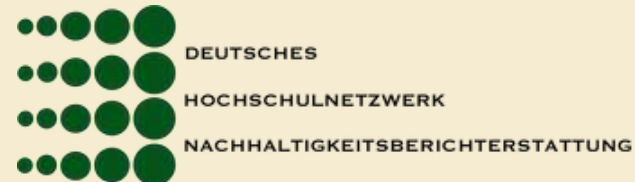




a look on existing networks and cooperations in the context of sustainability in Higher Education Units



➤ <http://www.international-sustainable-campus-network.org>



➤ <http://netzwerknbe.jimdo.com>



➤ <http://www.netzwerk-n.org>



➤ <http://www.nachhaltigkeitsrat.de>



➤ <http://www.unica-network.eu>



Sustainability of Higher Education Units

Application of the Global Reporting Initiative (GRI)

GRI-Vision

- Development of a global and sustainable economy, where organisations are able to manage responsibility and report transparency with its economical, ecological and social efficiency.

GRI@Universities (registered in the sustainability disclosure database)

- Worldwide: 53
- USA: 18
- Asia: 3
- Europe: 18
- Germany: 2


➤ **1,8 % of 108 Universities in Germany**

➤ **Rising tendency , increasing activities**





Sustainability at Universities

Christian-Albrechts-University Kiel		ETH Zürich (Executive department Sustainability)	University of Hamburg (Centre for sustainable University - CSU)
<ul style="list-style-type: none"> • Development concept - Climate Protection (funded by BMUB and NKI) • Goal: climate-neutral University until 2030 • Environmental prize for replacement of old hardware and devices • Environmental Management (EMAS certified) 		<ul style="list-style-type: none"> • <i>Sustainable Worlds</i> as strategic priority of the universities development • Committed outline for environmental and energy improvement by University administration office • 2. Sustainability report by GRI-Standard (2011-2012) • Summer + Winterschools for students with focus on sustainability • Member of IARU and ISCN 	<ul style="list-style-type: none"> • Process: <i>University for a Sustainable Future</i> • CSU is used as scientific network and innovation laboratory • Funding of scientific papers, sustainability analysis and student initiatives by CSU



Sustainability @ UDE

2002: Signing -
Copernicus Charta



2005: Foundation -
Initiative for Sustainability
(driven by students)



2004: Foundation -
SuDe Group



2010-2012: BENA -
Spotlight Sustainability



2008 / 2009: Eco-profit
(Environmental
Certificate)

Since 2014:
Sustainability
Process@UDE



2014: Diversity
audition

2010: Certificate -
family friendly
University





Steps and milestones of the sustainability process

sustainability reporting
(every 2 years)

establishing sustainability
guidelines



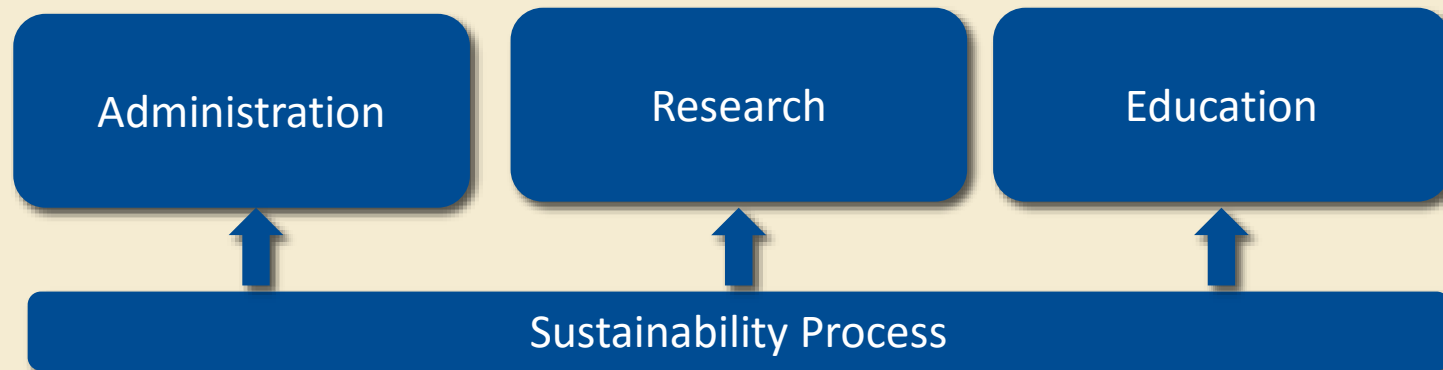
continuation and embedding of the process
in education, research and administration

permanent integration of university
administration, especially by usage
of data acquisition systems,
reporting obligations, etc.



The UDE sustainability process („napro“)

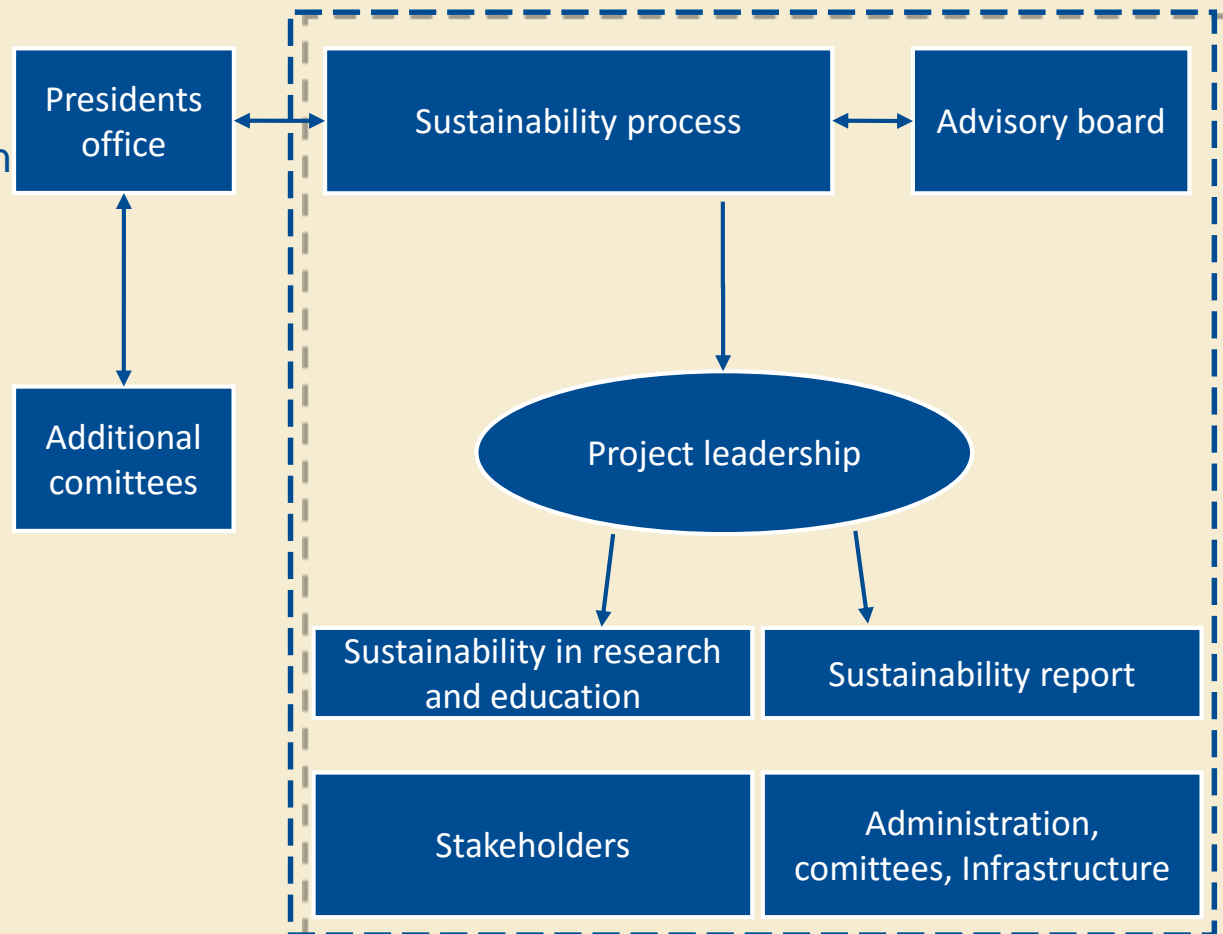
- „The University of Duisburg-Essen (UDE) focuses on its corporative task, to contribute to local and global sustainability ambitions. In that case, as the first one in Northrhine-Westphalia, the University will develop and initiate an innovative sustainability process.“
- to pool, display and promote sustainable development in the fields of:





UDE's ways towards sustainability

- strategical and coordinating approach
- decentralized process design
- active integration of all contributors and activities within all sustainability indicators
- definition of responsibilities matching of joint interests within participating units
- process development as a key activity
- a lot of activities are already existing

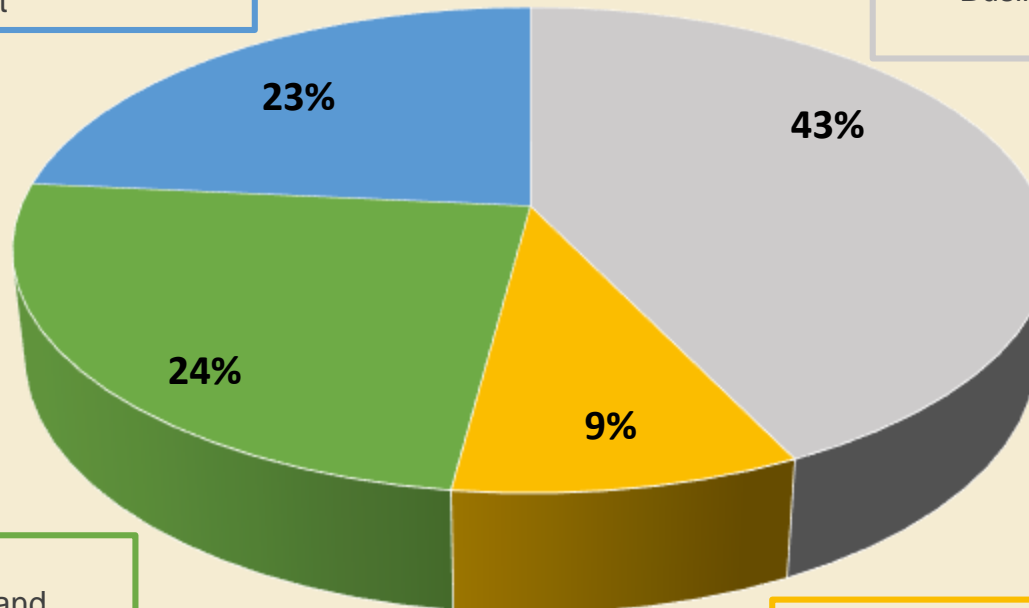




relevant sustainability Indicators at UDE

labor practices und decent employment,
human rights, society, product
stewardship commitment

Strategy und analysis, organisation
profile, included Stakeholders,
Business administration (CEO's),
Ethics und Integrity



■ General

■ Economical

■ Ecological

■ Social

Materials, energy, water,
emissions, waste water and
solid waste, transport,
Compliance

Economic efficiency, commercial
presence, purchase, indirect economic
effects

- 149 indicators included in GRI.
- After first survey, 98 indicators relevant for the University of Duisburg-Essen



The Sustainability Code (DNK)

Benchmark for sustainable development



- target group: small and medium-sized enterprises (SME)
- criteria of indicators by GRI, OECD, UN-Global Compact ...
- 20 criteria included:
 1. Strategy
 2. Process management
 3. Environment
 4. Society

➤ revised version for implementation at Universities → work in progress



Sustainability Indicators by GRI

G4-EN3 – Energy Consumption within organization



Freie Universität Berlin

DE | EN Direktzugang mit Google

ZENTRALE UNIVERSITÄTSVERWALTUNG – TECHNISCHE ABTEILUNG (ABT. III)

Wir über uns
Baudurchführung
Bauplanung
TGA und Betriebstechnik
Haus- u. Grundstücksverwaltung
Energie & Umwelt
Über uns
Energie & Klimaschutz
Energiemanagement
Energieeffizienz & Erneuerbare
Green IT
Klimaschutzvereinbarung
Prämersystem
Energiebilanz
Umwelt & Biodiversität
Abfall & Entsorgung
Downloads
Bauprojekte
Service
Klimaschutz

Technische Abteilung (Abt. III) » Energie & Umwelt » Energie & Klimaschutz » Energiebilanz

Energiebilanz und Umweltkennzahlen der Freien Universität Berlin

Energie: Verbrauch und Kosten 2013

- 126.000.000 kWh (-22% gegenüber 2000/01)
- 14,1 Millionen Euro

CO₂: energiebedingte THG-Emissionen 2013

- 41.700 t (-24% gegenüber 2000/01)

Abfall: Aufkommen und Kosten 2012

- 14.840 t (+10% gegenüber 2003)
- ca. 350.000 €

Wasser: Verbrauch und Kosten 2012

- 181.000 m³ (-36% gegenüber 2004)
- ca. 1,3 Mio. €

Endenergieeinsatz der Freien Universität

Primärenergieeinsatz der Freien Universität



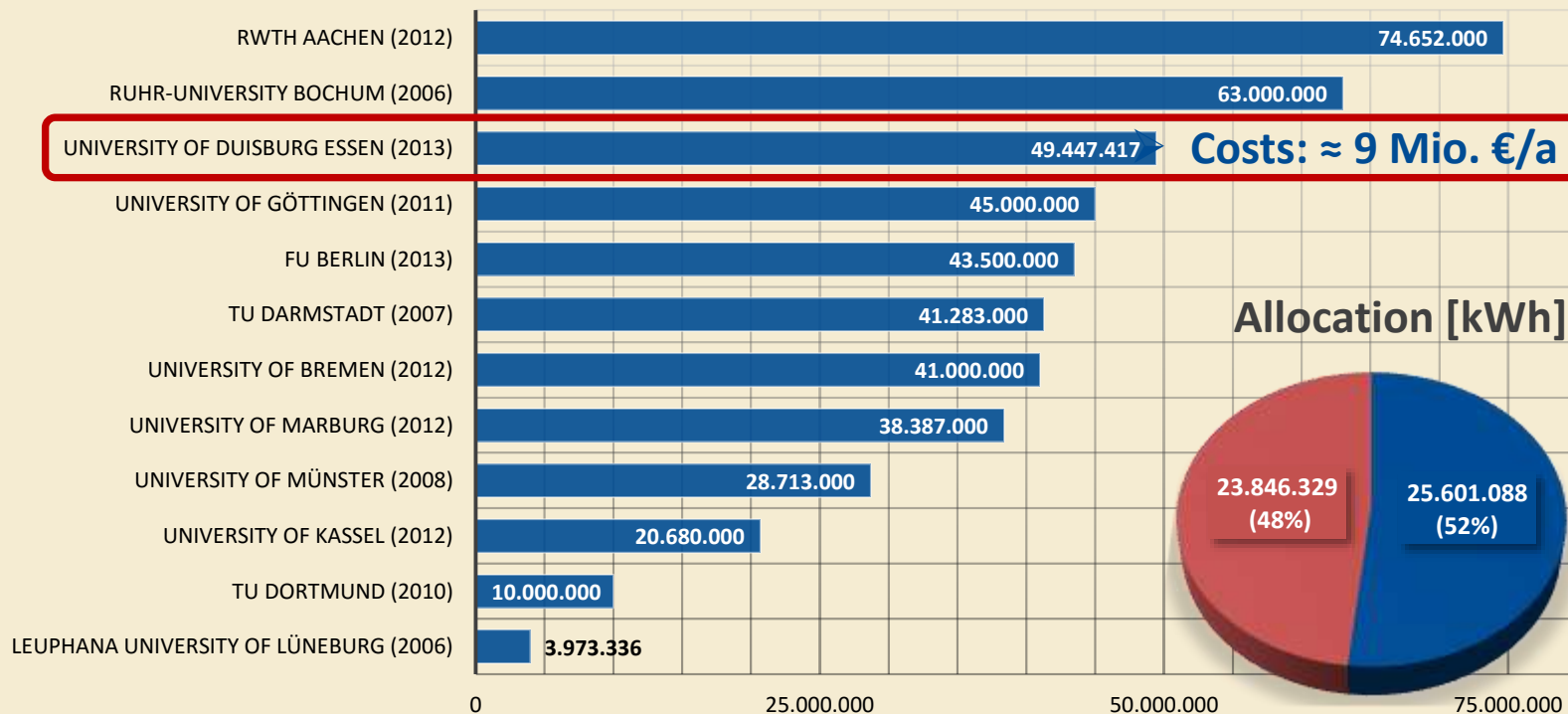


Sustainability indicators by GRI

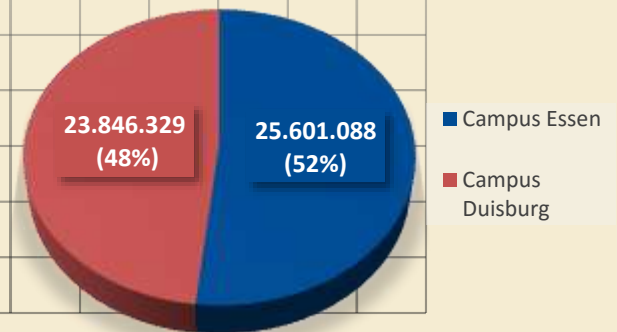
G4-EN3 – Energy consumption within organisation



Total power consumption [kWh/a]



Allocation [kWh]



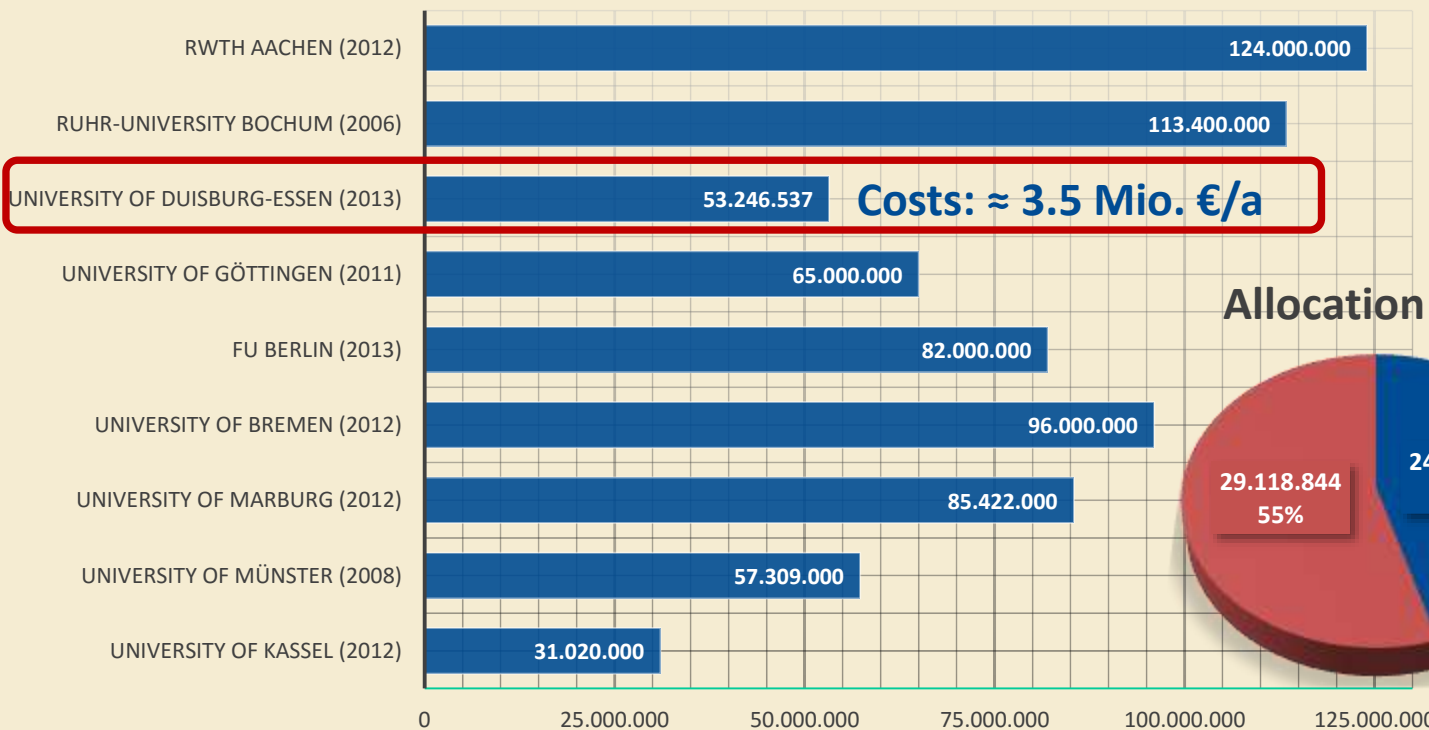


Sustainability indicators by GRI

G4-EN3 – Energy consumption within organisation

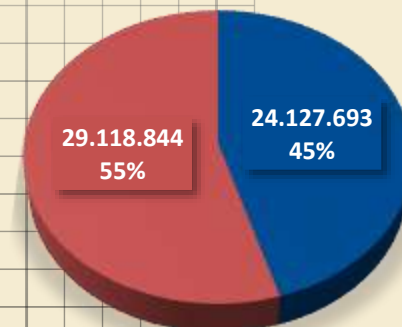


Total heat consumption [kWh/a]



Costs: ≈ 3.5 Mio. €/a

Allocation [kWh]

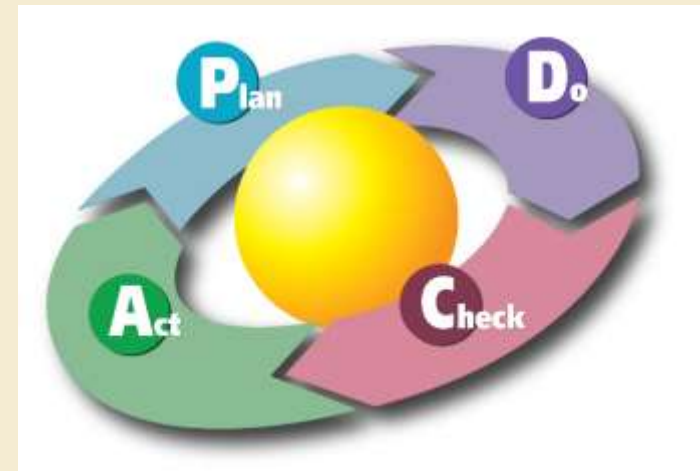


■ Campus Essen
■ Campus Duisburg



Energy management system at UDE

- Statistical data of consumption for analysis and documentation of energy distribution
- Strategic plan 2013-2015:
 - Implementation of an energy management system by ISO 50001



Source: wikipedia



Source: Energy management unit of UDE

Completed tasks:

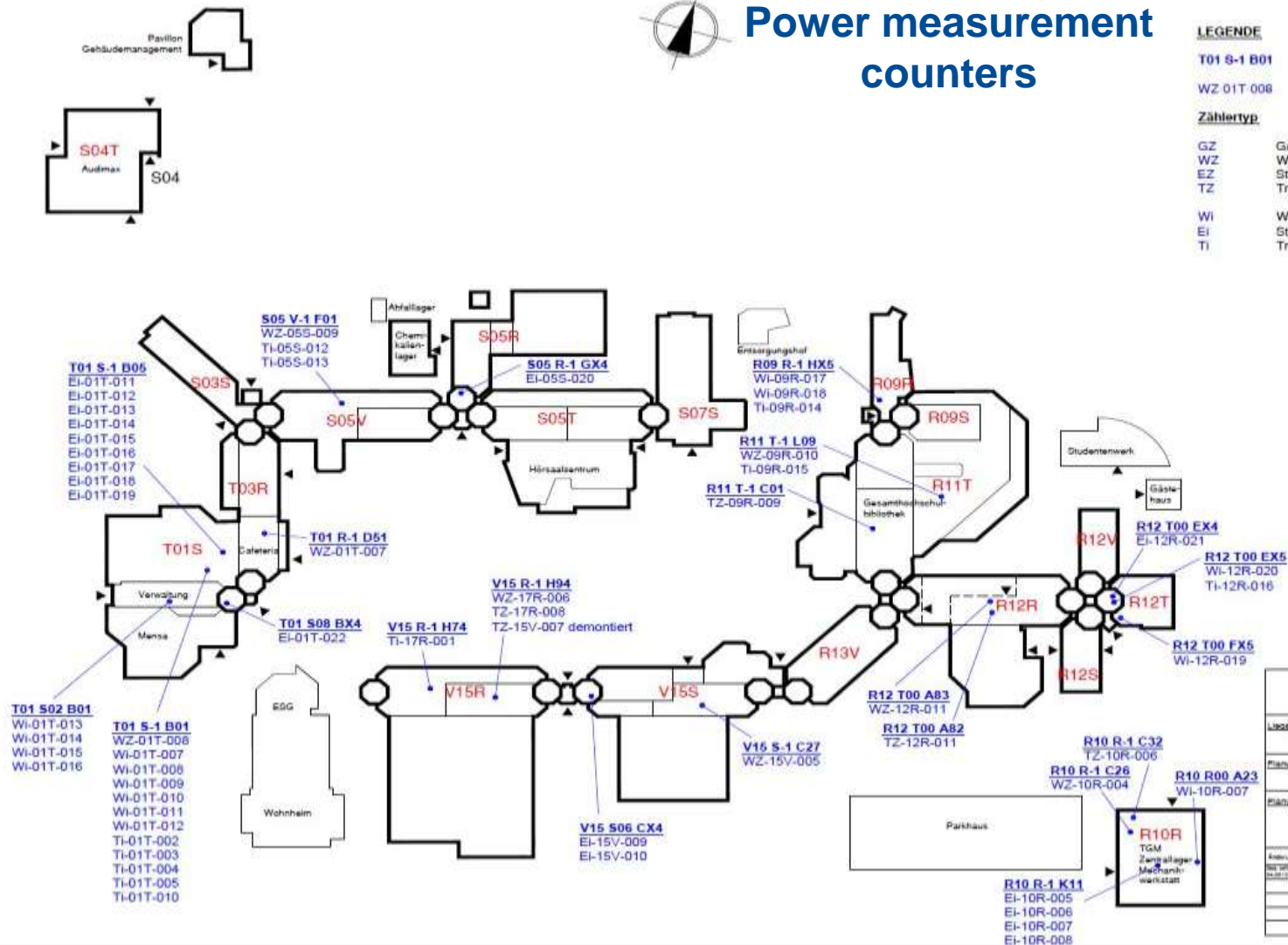
- Development of a documentation system with appropriate software
- Organisation of *Management*-layer
- Modernization of 200 power measurement counters for automatic data inquiry



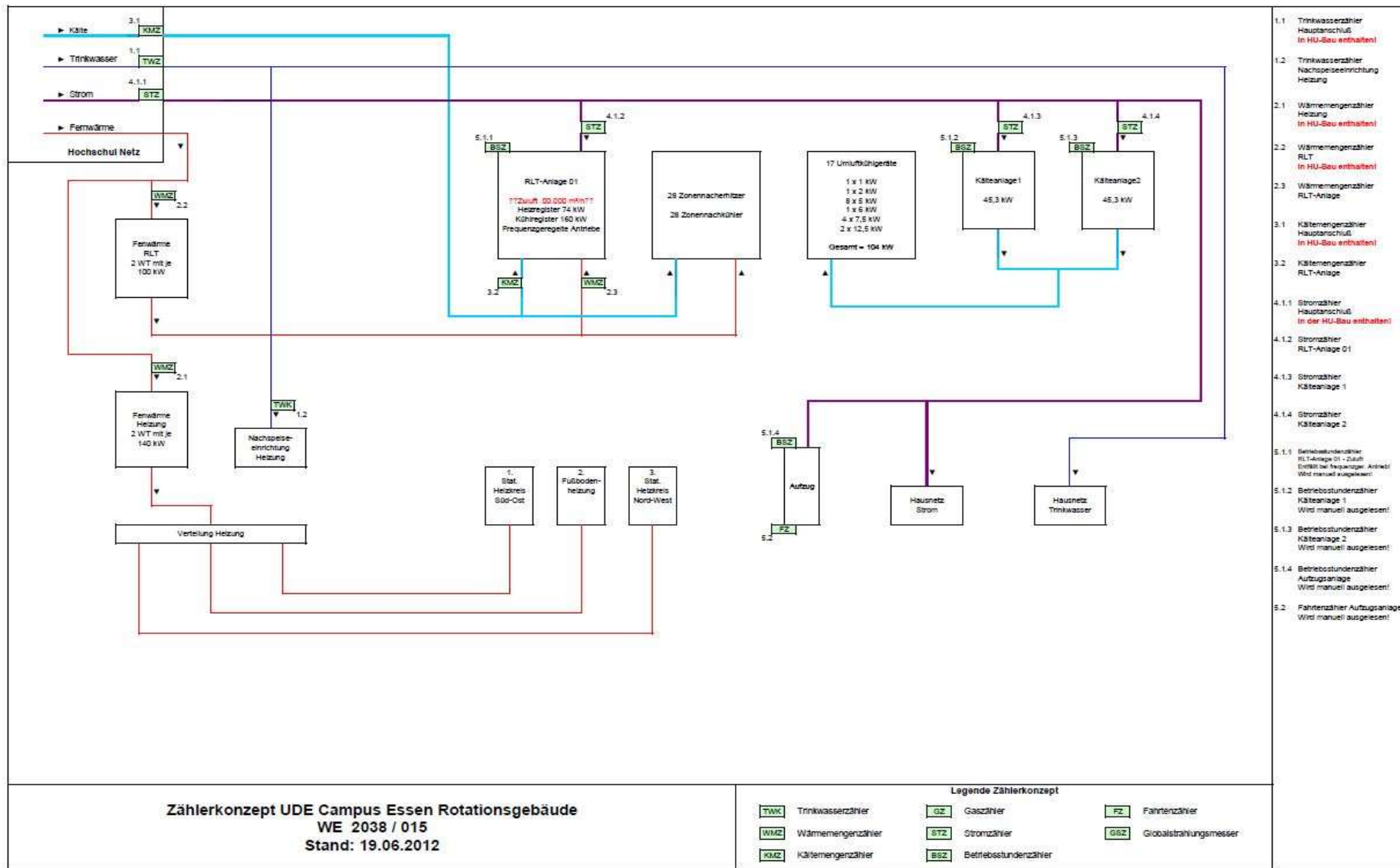
Power measurement counters

LEGENDE

T01 S-1 B01	Gebäude Etage Raumnummer
WZ 01T 008	Zählertyp Gebäude Lfd. Nummer
Zählertyp	
GZ	Gaszulieferung
WZ	Wärmeezulieferung
EZ	Stromzulieferung
TZ	Trinkwasserzulieferung
Wi	Wärme interne Verrechnung
Ei	Strom interne Verrechnung
Ti	Trinkwasser interne Verrechnung



<h1>Universität Duisburg-Essen</h1> <h2>Standort Essen</h2>				
Lageort		Hauptbaubische Universitätsstr. 124 Essen		
Planungsstand		Lageplan		
Planungsmaßstab		Universität Duisburg-Essen Dezernat 5 Gebäudemanagement Universitätsstr. 124 45141 Essen		
Änderung	Stand:	M:	Datum: 01.07.2010	Gezeichnet: (Name)
Gezeichnet von: (Name)		Darstellung: Lageplan Hauptbaubische Verbrauchs-Messpunkte		

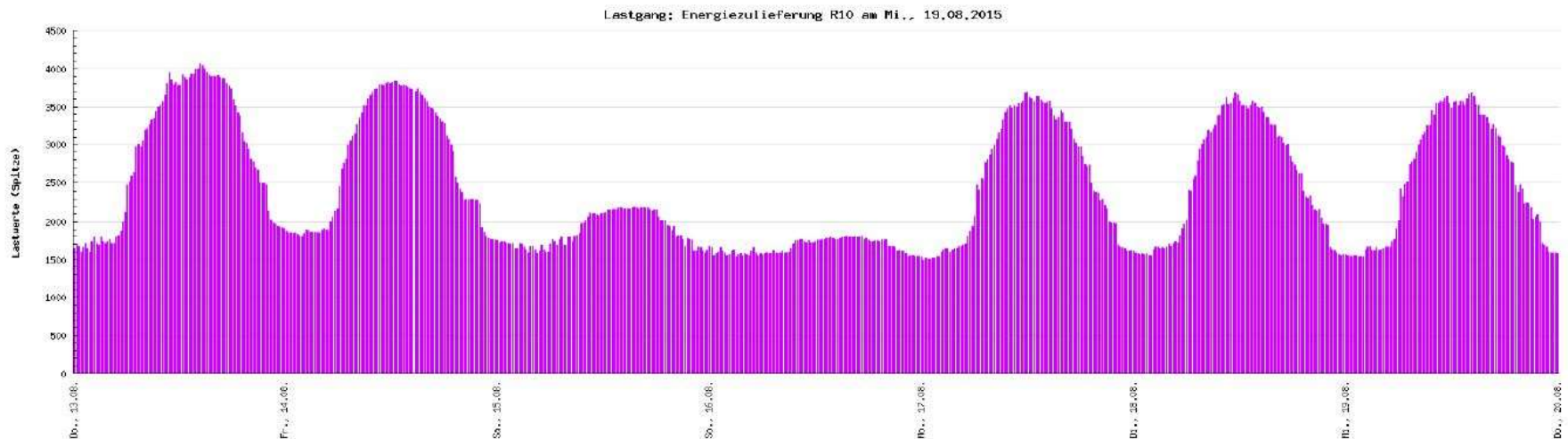




Energy Management System with ENerGo+

- trend monitoring by using weekly load profiles of energy consumption

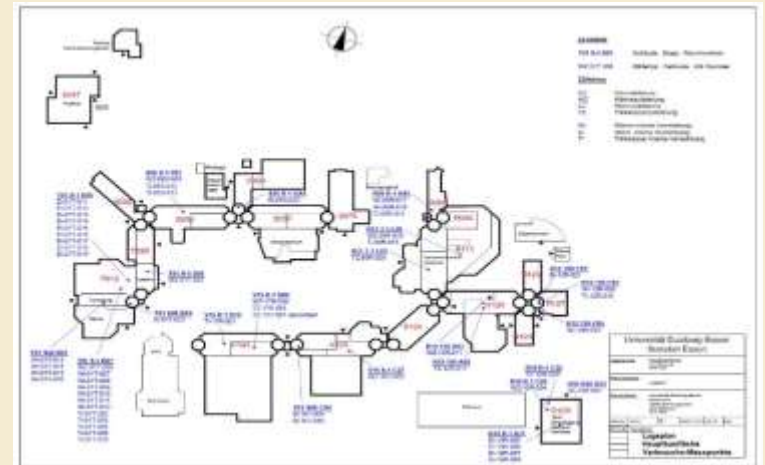
Messstelle:	AKS:	Bezeichnung:	Medium:	Einheit:	Farbe/Form/Y:
E_EZ-10R-004	Essen_R10_TGM_EZ001	Energiezulieferung R10	Strom	kW	Y





Energy Management System with ENerGo+

- decentralized input and trend monitoring of consumption
- all energy related data integrated in one tool
→ key tasks: management of lab facilities
- summary of lodger settlements (student services, AstA, gym,...)
- diverse report analysis options like trend analysis and annual reference





aims achieved within the sustainability process at UDE

- development of organizational structures within „napro“
- first survey of GRI indicators
- network development with internal and external competence centers and partners (regional, nation-wide, international)
- Sustainability campaign for public awareness (students, employees, researchers, public, ...)
- promotion of students, employees and researchers to think about a more sustainable way of their actions and to make decisions for the future



raising awareness: Sustainability Days in 2015

- four days sustainability campaign, including, lectures, information desks, film presentations and forums
- presentation of internal and external partners (e.g. smergy, consumer advice center NRW, etc.)
- e-car presentation and mobility forum
- ...and a lot of other activities





Thank you for your attention

