

Reporting Energie Agentur NRW		Back to Office Report (BTOR) Date: 12 Oktober 2019	
Name: 1. Gusti Hardiansyah		Phone: 082254948985	
Approved Mission Itinerary:		Travel Authorization # ----	
(From) Inclusive Travel Dates (To)		List of Annexes:	
(From) Inclusive Travel Dates (To)		Key Counterpart(s) in Each Location:	
8 Oct 2019	11 Oct 2019	Key Person in the Fieldtrip: 1. Rainer Van Lon 2. Akram El Bahay 3. Carl-Georg Buquoy' 4. RA Stefan Garche 5. Gerard Orlik 6. Lars Schnatbaum Laumann 7. Michael Muller 8. Dr. Petr Tluka 9. Carl-Georg Graf von Buquoy 10. Wesley Wojtas 11. Dr. Rainer Joosten 12. Stephanus Lintker 13. Dr. Pascal Beese-Vasbender	
Purpose/ Objective of Mission: <i>(specify the type of work which has/had to be accomplished – not acceptable to write "see attached")</i>			
<ul style="list-style-type: none"> ● On Oct, 8, 2019 we met Rainer Van Lon (Senior-Expert, EnergieAgentur.NRW, mobile phone +49 211 86642 289, email: van.lon@energieagentur.nrw) to prepare for a schedule. To know what is our specific interest our field and discuss certain energy topics and the possible participation in event that we would also be interested in field trips. ● The schedule as follows: 			
Tuesday, Oct, 8	Wednesday, Oct, 9	Thursday, Oct, 10	Friday, Oct, 11
9-10:30 : Introduction	10-13 : Energy Efficiency (Wuppertal)	9-10 : Wood Pellets	9-10 : International Meeting
11-12 : Flexibility	14-15 : wind energy in NRW	10-11 : Photovoltaic	10:30 :
14-15 : Hydrogen in NRW		13-15 : GIZ	12:15 : Field Trip Metabolon
	18:30 : International energy dialog NRW, "Goldenen Ring"	15:39-16:30 : Bio energy / Energy Forest	
<ul style="list-style-type: none"> ● Beside Mr. Rainer Van Lon, person in contact is Akram El Bahay (Organizer person of EnergieAgentur.NRW, mobile phone +49 211 866 42212, email: el-bahay@ 			

energieagentur.nrw). Help us to guide and meet some people in connection with our topic target.

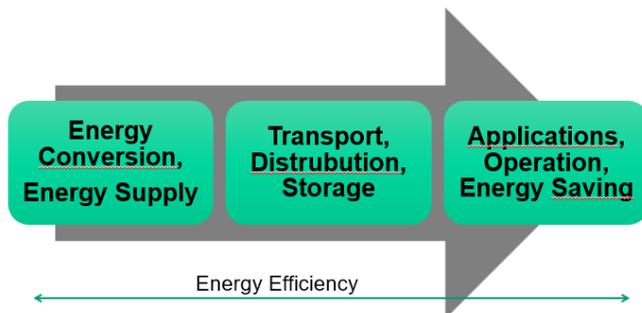


From left to right : Akram El Bahay, Rainer Van Lon, Gusti Hardiansyah. Introduction, discussion the schedule and visit

Brief Summary of Mission Findings: (not acceptable to write “see attached”)

- Targets of a Sustainable Energy Policy has three pillars are **Economy, safety and environment**. To achieve safety and environment we need intervention of innovation, R&D, market introduction.
- EnergyAgency.NRW, this institution has task Service provider for the energy and climate administration of the state of NRW On behalf of the NRW-Ministry for Economy, Innovation, Digitalisation & Energy. Operating platform with broad expertise in the energy sector: Energy research, Technical development & Innovation, Demonstration to market launch, Networks/Cluster and specialist forums, Initial Energy consultancy, Transfer of know-how, Public relations & Communication, International Relations.
- Task are divided into four service areas: Networks, Consultancy, Market initiatives, Public relations & knowledge management.

Topics are oriented along the Energy-Path-of-Life



- Has 16 topics: T1 Windenergy, T2 Biomass, T3 Geothermal Energy and Heat Pumps, T4 Photovoltaics, T5 CHP, Local and District Heating, Power Plants of the Future, T6 Hydropower, T7 Energy Grids, Storage Systems, Pumpstorage, Energy Systems, T8 Heat/Buildings, T9 Mobility (Drives and Fuels of the Future), T10 Fuel Cells, Hydrogen, T11 Energy Applications, Climate Protection in Industry and Commerce, T12 Energy Applications, Climate Protection in Communities and Regions, T13 Business, Financing and Marketing Models, T14 Overall Topics in Climate Protection & Energy, T15 Energy Research, T16 Energy Economy and Mining Technologies

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Cluster and Knowledge Panels

Linking of „Energy“-people along the whole value chain

grid / storage mobility
 heat/building small hydro bio-energy
 energy efficiency in companies and municipalities
 geo-energy energy research solar-energy
 local- and district heating power plants of the future
 carbon capture and usage hydrogen and fuel cell
 wind-energy CHP solutions

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Target Groups and Members of the Wind Power Network

More than 2,000 Network members along the entire value chain

- research and development
- training
- manufacturers of wind turbines
- suppliers
- project developers / operation
- assessors / other services
- associations and public institutions
- local authorities / citizens

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Major Research Facilities

- Center for Windpower Drives, Aachen
- „Solar Tower“, Solar thermal power plant, Jülich
- Research Center Jülich
- MEET, Battery research, Münster
- ZBT, Center for Fuel cell technology, Duisburg
- High Voltage DC Transmission Test Center, Dortmund

CEFNW
Cluster Energieeffizienz

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Foreign Trade Activities

- Organization of business and political trips abroad for all players in the NRW Energy-Industry
- Networking with national and international partners
- Roundtable
- Market analysis
- Receiving delegations from all over the world
- Supporting international projects: benchmarking processes and setup of institutions
- Workshops, events, trade fairs in Germany and abroad

- Meet Carl-Georg Buquoy at 11.00 am, explain about Potential with Photovoltaik, Photovoltaik storage and example of photovoltaic.
- Meet RA Stefan Garche at 14-15 pm, explain about Hydrogen for the sector coupling of energy and transport in North Rhine-Westphalia.

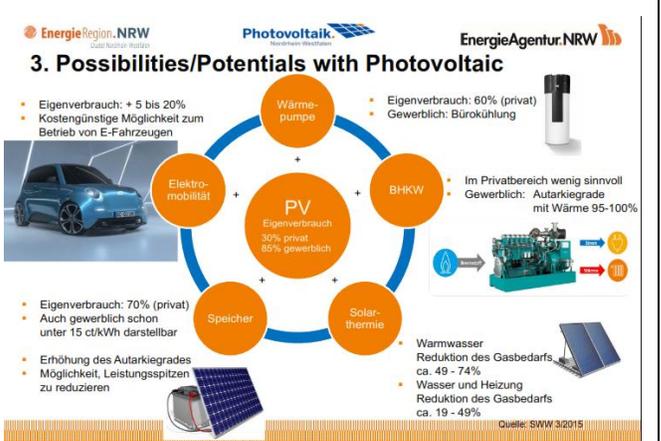
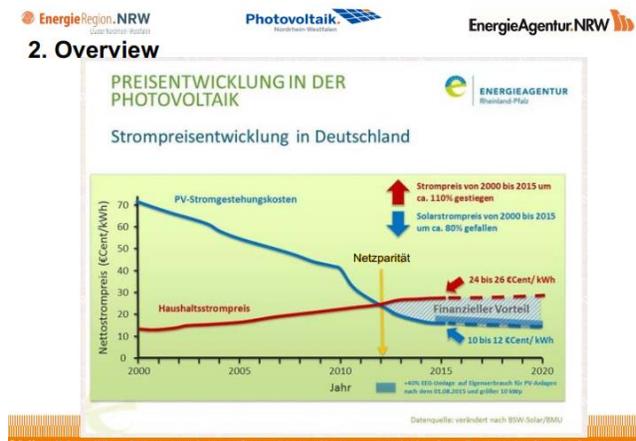
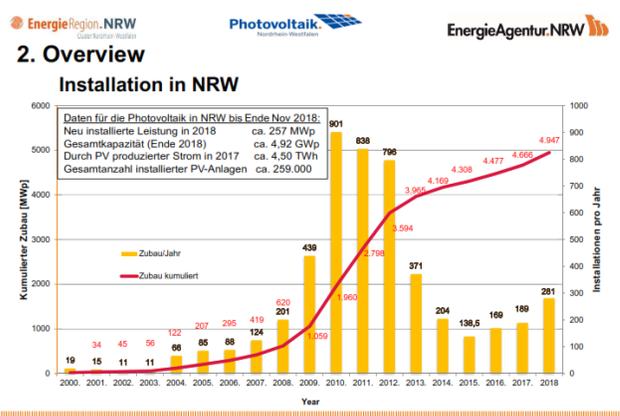
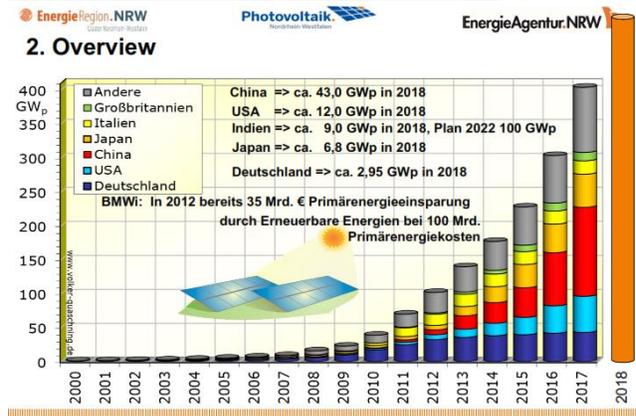


From left to right : Carl-Georg Buquoy, Akram El Bahay, Gusti Hardiansyah. Explain about photovoltaik

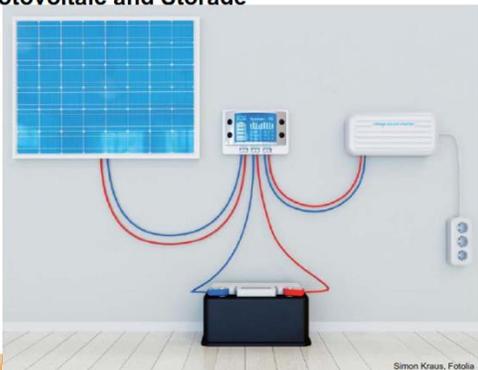


From left to right : RA Stefan Garche, Rainer Van Lon, Gusti Hardiansyah. Explain about hydrogen energy and transportation

Brief Summary of Mission Findings: (not acceptable to write "see attached")



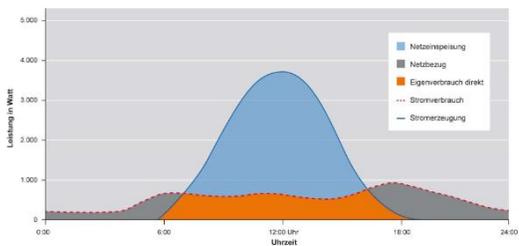
4. Photovoltaic and Storage



Simon Kraus, Fotolia

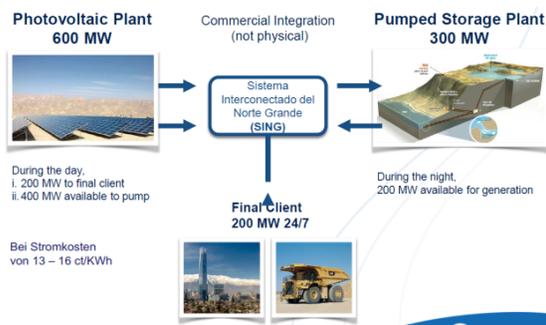
4. Photovoltaik and Storage

PV-Eigenverbrauch ohne Stromspeicher



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8. Praxisbeispiele



6. Praxisbeispiele

Market segments benefitting most from hybrid systems



Dieselaggregate und Photovoltaik

Dieselaggregate, elektrische Speicher und Photovoltaik

6. Praxisbeispiele

Comparison

	Fuel save concept	Energy storage concept
Energy consumption	450,936 kWh/a	450,936 kWh/a
Solar Installation size	100 kWp	180 kWp
Solar energy contribution	150,605 kWh	269,191 kWh/a
Solar energy share	33%	60%
Solar excess energy	11%	9%
Generator runtime	8,760 hrs/a	5,324 hrs/a
Battery size	n/a	100 kW / 200 kWh
Overall investment cost	240,000 €	700,000 €
Annual savings	91,991 €	162,337 €
Payback in years	2,6	4,3
LCOE (diesel only: 0.60 \$/kWh)	0.40 \$/kWh	0.24 \$/kWh

Quelle: OneStone

6. Praxisbeispiele



Agenda

- 1 NRW and Fuel Cell and Hydrogen, Electric Network NRW
- 2 Status Quo in GHG and other Emissions
- 3 Potential of Renewable Energy in Transport
- 4 Power-to-Gas and Transport Projects
- 5 Conclusion

EnergieAgentur.NRW

EnergyAgency.NRW

Service provider for energy transition and climate protection policy of North Rhine-Westphalia (NRW)



Platform for:

- Energy research
- Development, demonstration to market launch
- Energy consulting
- Know-how-transfer, communication
- International relations

Subjects:

- Renewable energies and storage
- Energy efficiency
- Mobility



NRW – The European Centre of the Energy Sector

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- 17.8 million inhabitants
- 34,000 km² in area
- GDP: 599,8 billion € (Germany No. 1, worldwide No.19)
- 150 million consumer within a radius of 500 km

Energy sector in NRW (2013)

- 28% of German electricity production (175.2 TWh)
- 24% of German electricity consumption (144.7 TWh)
- 43,760 MW_{el} installed power generation capacity
- No nuclear energy
- 9.1 % of electricity generation from renewable energies (15.9 TWh, doubled since 2005)
- 200,000 employees in energy sector (of whom 26,100 are in the area of renewable energies)

→ The "Energy Region No. 1" in Europe

Source: EnergieDaten.NRW 2014



Fuel Cell and Hydrogen, Electric Mobility Network NRW – Structure

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Structure:

- **Non-profit organization**, working on behalf of the NRW State Government, founded in 2000
- Regional **technology platform** to develop and **commercialise** fuel cell and hydrogen
- Implementation of NRW's **Fuel Cell and Hydrogen Strategy** ("NRW Hydrogen HyWay")
- 480 members worldwide, ~ 125 FC and H₂ projects with **140 million € NRW funding** and 220 million € expenditures initiated
- Since 2017: 120 partners of the "Model Region Electric Mobility"



Activities of the NRW Network

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Coordinating activities in the field of

- Hydrogen from renewables, power-to-gas
- Hydrogen filling stations
- Vehicle development and deployment
- Stationary applications
- R&D and special market applications

International exchange and cooperation, especially with Japan

Fukushima, Tokyo, Osaka, Yamanashi, Fukuoka and with companies Mitsui, Asahi Kasei, Toyota, Honda etc.



Project examples:

H₂ station Düsseldorf FC bus Cologne FC micro CHP FC forklifts Düsseldorf H₂ Herten



Source: Air Liquide, RWK, Solid Power, Danther, H2Herten



Policy Goals in Germany for Renewable Energies in the Energy System

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Energy Concept (2010)

reduce overall GHG emissions (vs. 1990):
40% by 2020 → 80%-95% by 2050

increase share of renewables in final energy consumption:
18% by 2020 → 60% by 2050

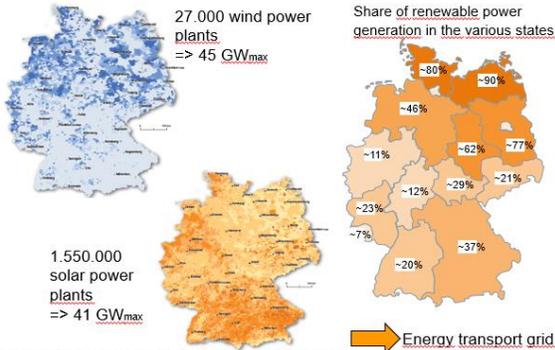
reduce primary energy consumption:
20% by 2020 → 50% by 2050

reduce final energy consumption of transport (vs. 2005):
10% by 2020 → 40% by 2050





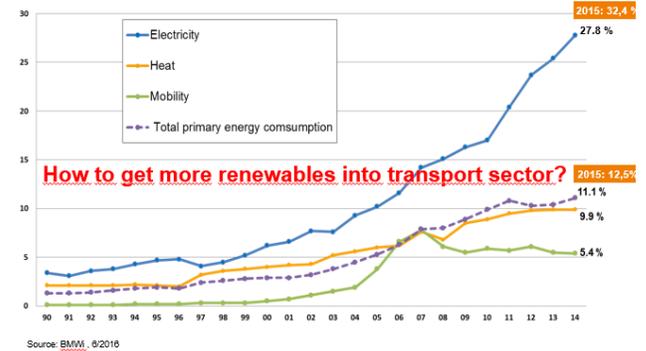
Wind and PV Power Generation in Germany 2016



* Source: AGEE-Stat_LAK, extrapolated

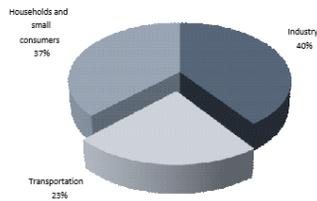


Development of Share of Renewables in Germany



Why care about Clean Mobility in NRW?

Endenergy Consumption in NRW



Source: EnergieDaten NRW 2014

Transport Sector

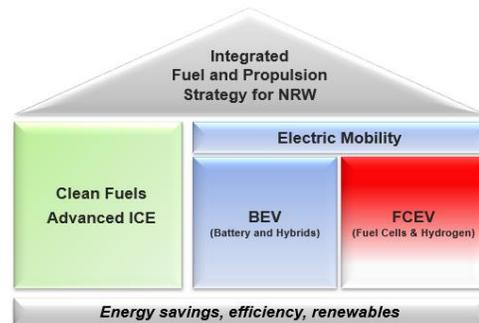
Vehicles registered ~ 10 million
 Passenger cars ~ 9 million
 Trucks ~ 700,000
 Public Transport buses ~ 10,000

Fuel Consumption: ~ 10 million tons/a

Energy consumption of transport 25%
 Transport's CO₂ emissions share ~ 17%



Fuel & Propulsion Strategy NRW



- On Oct, 9, 2019 at 10.00 am – 13.00 pm we met Gerard Orlik (multi project managemet, mobile phone 0151 2321 9633, email: orlik@energieagentur.nrw.de) to discuss about Energy efficiency in businesses focus for SMEs (Small Medium Enterprises)



Discuss with Gerard Orlik about Energy efficiency in businesses focus for Small Medium Enterprises

- Meet Lars Schnatbaum Laumann (mobile phone 0151 62454 787, email: schnatbaum@energieagentur.nrw) at 14-15 pm, explain about the Wind Energy Network North Rhine Westphalia



Discuss with Lars Schnatbaum Laumann about the Wind Energy Network North Rhine Westphalia

- Meet Michael Muller (mobile phone 0211 8664 2286, email: michael.mueller@energieagentur.nrw) at 18:30 pm, explain about Service Provider for Municipalities in North Rhine Westphalia

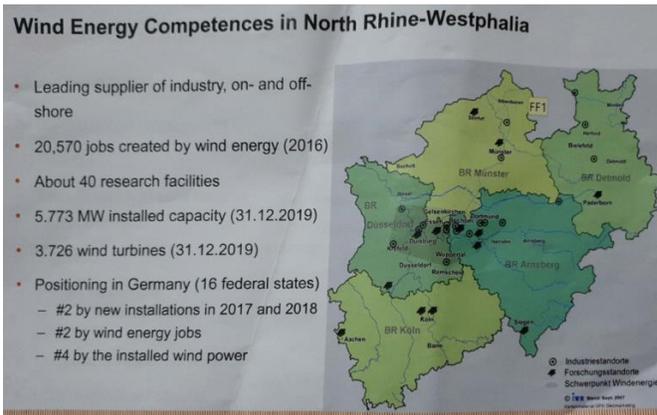


Discuss with Michael Muller about the Service Provider for Municipalities

Brief Summary of Mission Findings: (not acceptable to write “see attached”)

- Energy efficiency in businesses focus for SMEs (Small Medium Enterprises) established in 1990 by the Ministry of Economics of the State of NRW
- Instruction: promotion of energy efficiency and renewable energies especially in businesses and administrations
- Basic idea: energy efficiency has twofold advantage → the economic one: cost reduction, business development and job creation → the ecologic one: protection of natural resources and reduction of carbon dioxide emissions

- Service provider for business networks focusing on energy efficiency and climate protection
- Regional coordinator within nationwide “energy efficiency network initiative”
- Cooperation with economy representatives at regional level (chamber of industry and commerce, chamber of crafts, business associations, and economic federations)
- Idea: fostering implementation of energy efficiency through collective learning processes
- Task and goal the Wind Energy Network in North Rhine Westphalia are networking of politics, research and business; strengthening the wind sector and its competences; supporting the further development of wind energy technology; initiating research projects; supporting the expansion of wind energy in NRW; Providing a wide range of information and increasing knowledge transfer



- The “100 Climate Protection Estates in North Rhine-Westphalia“ are intended to achieve a consistent reduction of the heat-related CO₂ emissions in residential estates (new and refurbished housing). All technologies suitable for cutting back CO₂ can be deployed for this purpose. Planners and investors will thus have the freedom to select innovative building standards and supply variants from a wide range of options. Even though the main aim of the climate protection estates is to avoid CO₂ emissions, they should also have special urban development and social qualities beyond their innovative energy concept
- Features and requirements: High thermal insulation standard (passive house or three-litre standard); Minimum size: 20 owner-occupied homes/30 dwelling units in multi-store buildings/50 care home places; Urban development qualities and sustainable residential estate development limits CO₂ (for heating, hot water, auxiliary energy, without domestic power); 9 kg/m²a in new buildings; 12-15 kg/m²a in refurbished buildings

North Rhine-Westphalia – key facts and goals

- Population of 18 million
- 34.084 sqkm
- Provides 90 % of German’s hard coal
- Provides 50 % of German’s lignite coal
- 40 % of German electricity consumption
- 33 % of German electricity generation
- 30.000 MW installed power generation capacity
- 1.1 Mio employees in energy and mining
- „The Energy Region No1“ in Europe

Climate Protection Goals of the present State government

- Climate protection act 2013
- Reducing GHG emissions by at least 25% until 2020 and 80% until 2050 compared with 1990
- Zero emission state administration by 2030

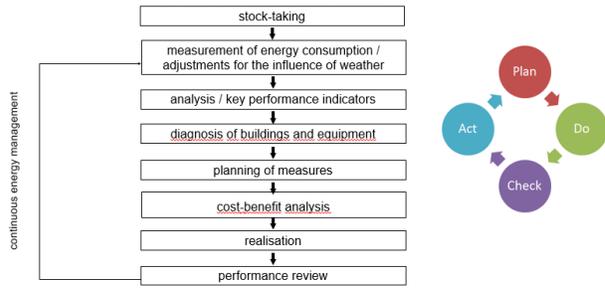


Initial consulting service for municipalities - topics

- HVACR (heating, ventilation, AC, refrigeration)
- heat & power co-generation and heat recovery
- Efficient use of power (compressed air technologies, lighting)
- Renewable energies (solar, biomass, geothermal energy...)
- Energy savings contracts, financing and funding instruments
- Energy efficient and solar buildings
- Energy purchasing
- Energy management for local authorities



Implementing Energy management Programm for municipalities



News buildings – energy standard

- Otto Hahn – high school in Dinslaken**
- Zero emission standard
 - Ventilation system with heat recovery (90%)
 - Pre-tempering of supply-air by geothermal probe
 - Remaining heat by district heating
- Lore Lorentz – vocational college in Düsseldorf**
- Zero emission standard
 - Heat consumption 15 kWh/m² a
 - Remaining heat by geothermal heat pump
 - Ventilation system



Business model for action



The Energy Agency supports business models and best practices.

- Contracting
- External company invests in energy efficient measures
- Contractor advises, plans, finances, builds and operates the energy facilities within a fixed period
- Citizens participation
- Citizens as investors, take over the management, control right
- Led by an external company
- Acting common instead of individually

Internet platform "KOMMEN"

- Best-practice-database of successful energy-projects
- Services to initiate new projects



Energy dialogue NRW

Consultancy for municipalities in terms of energy system transformation and local value observing any conflicts (e.g. nature conservation, ownerships, noise) and acceptance issues



Promotional Program: Carbon Footprint for Municipalities

- EA NRW supports the implementation and data collection
- Internet Tool ECORegion is fully provided by the State of NRW
- Trainings, support and exchange of experiences by EA NRW.
- Participating municipalities get additionally promotion



Promotional Program: Carbon Footprint for Municipalities

"If You Can't Measure It, You Can't Improve It"



- Monitoring Instrument for the climate protection goals
- 83% of municipalities and regions participate

Joint Implementation Model Projekt NRW – Local Emissions Trading Concept

- Reduction of CO₂ emissions in NRW from plants not covered by the EU ETS, in particular from municipalities
- Program-related JI project based on the regulation of the international emissions trading market
- Provision of emission reductions that can be used in the offset market.
- Additional support for energy efficiency projects in municipalities starts in 2008 and must end in 2012, as the framework conditions in Germany have changed
- There is still potential for the future



Who are the participants in JIM.NRW?

- A total of 33 participants
- More are interested, but the project ended in 2012 due to changes in the framework conditions
- 13 companies, 17 municipalities and 3 hospitals; 9 contract facilities
- 19 modernisation of plants with fuel change, 16 Conversion to biomass
- CO₂ reduction range per plant from 10 t/a to 2,100 t/a
- In total, there was a reduction of 60.000 tonnes GHG



Project example

Modernisation of the heat supply in a school by changing energy source from several light fuel oil boilers to one central biomass boiler by using wood chips

- Installed boiler capacity: 1.6 MW
- Energy consumption: 3,200,000 kWh (3,200,000 kWh)
- CO₂ reduction: 850 to p.a.
- Additional promotion: 850.000 €
- In relation to the investment costs: 20 %

100 Climate Protection Housing Estates in North Rhine-Westphalia

- **On Oct, 10, 2019** at 9-10 am, we met Dr. Petr Tluka (Netsweek Biomass, mobile phone 0151 1919181, email: tluka@energieagentur.nrw.de) to discuss about Wood Pellets are Becoming a Hot Commodity.
- Meet Carl-Georg Graf von Buquoy (Head of Network, mobile phone +49 171 895 0081, email: buquoy@energieadventur.nrw) at 10-11 am, explain about nuclear vs solar energy cost efficiency



Discuss with Dr. Petr Tluka about Wood Pellets are Becoming a Hot Commodity



Discuss with Carl-Georg Graf von Buquoy about nuclear vs solar energy cost efficiency

- Meet Wesley Wojtas (Project Manager Energy, mobile phone +49 152 9005 6080, email: wesley.wojtas@giz.de) at 13-15 pm to discuss about cooperation GIZ and West Kalimantan



Discuss with Wesley Wojtas about cooperation GIZ and West Kalimantan

- Meet Dr. Rainer Joosten (Silviculture Climate Change and Forest Timber Industries, mobile phone +49 0211 4566 462, email: rainer.joosten@mulnv.nrw.de) at 15:30-16:30 pm, explain about bio-energy/energy forest



Discuss with Dr. Rainer Joosten about bio-energy/energy forest

Brief Summary of Mission Findings: (not acceptable to write “see attached”)

- To phase out nuclear power by the end of 2022, Germany has increased its investment in renewable energies, solar, wind and biomass.
- The use of wood, specifically wood pellets, as an energy source has gained in importance and created new socioeconomic opportunities for areas with large forests.
- North Rhine-Westphalia has emerged as a leading hub for pellet sourcing and production. The State boasts the country’s largest forestry and wood cluster according to the State Enterprise for Forestry and Timber. More than 280,000 wood pellet stoves were in German households and businesses in 2012, using 1.7 million tons pellets per year.
- Is nuclear energy the most efficient?
Nuclear power is already one of the most efficient types of energy available today. An average capacity factor of 91 percent beats other energy forms by a substantial margin. Natural gas produces an average of 50 percent while coal produces energy at almost 59 percent
- How much does solar energy cost per kWh?
The cost of electricity is 10 cents per kWh on average (but can be as high as 24 cents or as low as 7 cents depending on the state). The average location in the U.S. has about 5 hours of solar resource. This means the average needs to generate 1,000 kW of power to offset their \$100/month electric bill
- How much energy is nuclear?
According to data from the World Nuclear Association, nuclear power generates 11 percent of the world's electricity. More than 30 countries use 430 commercial nuclear reactors that generate more than 370,000-MW of electricity.

- What's bad about nuclear energy?
Nuclear power is dirty, dangerous and expensive. Nuclear energy is both expensive and dangerous, and just because nuclear pollution is invisible doesn't mean it's clean. Renewable energy is better for the environment, the economy, and doesn't come with the risk of a nuclear meltdown
- GIZ is a service provider in the field of international cooperation for sustainable development. It is owned by the German Government. The registered offices of GIZ are in Bonn and Eschborn in Germany. In 2018, GIZ implemented development projects with a total volume of around 3 billion euros. GIZ has over 20,000 employees, almost 70 per cent are national personnel, that work in around 120 countries. GIZ provides services for the management of networks and dialogue platforms, tailored to individuals or organisations, on a regional or global scale.
- GIZ provides a number of specialist services in the area of climate change. This includes mitigation, adaptation, climate finance and climate policy. GIZ also operates in a number of climate-relevant sectors including forestry, agriculture, and other land-use, biodiversity, energy and energy efficiency, water, waste, and transport
- We discuss future opportunity collaboration for pursue international fund such as GCF (Green Climate Fund)
- Is forest bioenergy good for the environment?
As countries, industry, and communities seek ways to reduce greenhouse gas (GHG) emissions to address the climate change issue, there is increasing interest in the use of forest biomass for bioenergy to offset energy from fossil fuels.
- What is forest bioenergy?
Forest biomass includes all parts of the tree, not only the trunk but also the bark, the branches, the needles or leaves, and even the roots. Biomass can be converted into solid, liquid, or gaseous biofuels that can then be burned for energy or used as fuel substitutes for transportation or industrial processes. Trees are useful for energy because they convert sun energy into biomass through photosynthesis, a process that captures carbon dioxide from the atmosphere.
- Why is there interest in forest bioenergy?
As energy prices have fluctuated, and as concern about climate change has grown, companies and governments have looked increasingly to bioenergy as an economic and environmentally friendly alternative to fossil fuels as well as for energy security. Recent low forest product prices and financial difficulties faced by the forest sector have also led to calls for increased use of forest biomass for production of a range of bioproducts including bioenergy as additions or alternatives to traditional forest products. The transition to a bioeconomy has led to increased interest in higher value bioproducts that can improve the bottom line, such as biochemicals and biomaterials that can substitute for similar products made from fossil fuels and that are often coproduced with bioenergy.

- On Oct, 11, 2019 at 12:15 pm, we met Stephanus Lintker (Geophysicist, mobile phone +49 211 866 4212, email: lintker@energieagentur.nrw.de) to discuss about Innovative reuse from waste in Metabolon.
- Meet Dr. Pascal Beese-Vasbender, explain about Bergisch Waste Management Association.



Discuss with Stephanus Lintker about Innovative reuse from waste in Metabolon



From left to right : Dr. Pascal Beese-Vasbender, Gusti Hardiansyah, Stephanus Lintker. Explain about Bergisch Waste Management Association

Brief Summary of Mission Findings: (not acceptable to write “see attached”)

- Innovative reuse of the central landfill site Leppe. From a landfill to a site of innovation.
- Core Business: sustainable resource efficiency, biochemical conversion of matter, environmental technologies

BAV – Waste Recycling

Restmülltonne
Household waste bin
Arlık çöp varili
Pojemnik na preostale odpady
Контейнер для остальных отходов

Biotonne
Organic Waste Bin
Biyolojik maddeler varili
Pojemnik na organske otpadke
Контейнер для биоотходов

Gelber Sack / Tonne
Yellow Sack / Bin
Sarı torba / Varil
Zelty work / pojemnik
Желтый мешок / контейнер

Papiertonne
Paper Bin
Kağıt varili
Pojemnik na papir
Контейнер для бумаги

Glascontainer
Glass bin
Cam konteyneri
Kontener na szklo
Контейнер для стекла

Hazardous Materials

Bulk Waste

Electrical devices

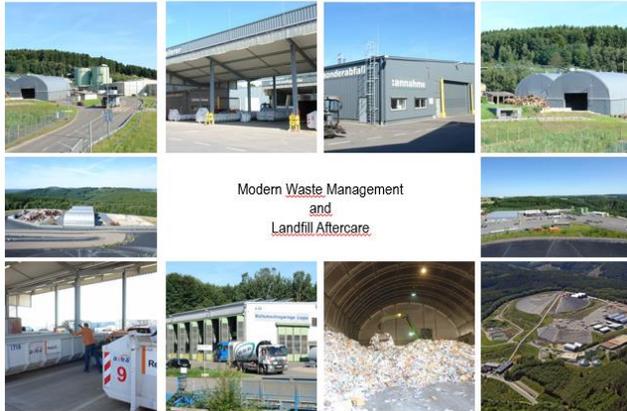
BAV – Waste Collection Stations

Collection and sorting of the recyclable fraction

Municipal Waste Collection Stations

- Lindlar
- Hückeswagen
- Waldbrol
- Burscheid-Heide
- Burscheid-Heiligeneiche
- Bergisch Gladbach
- Leichlingen

BAV – Waste Management Center on Leppe Landfill



Modern Waste Management and Landfill Aftercare

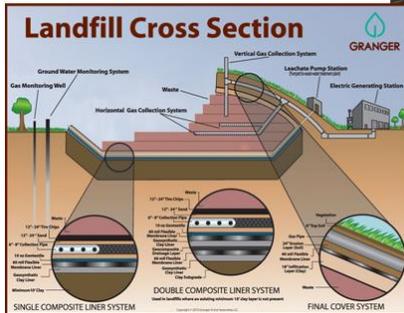
Landfill infrastructure



Landfill structure

Environmental protection measures

- composite liner system
- landfill gas collection system
- Landfill leachate collection system



Landfill operation

- monitoring of landfill emissions
- valorisation of landfill gas by CHP
- landfill leachate treatment
- waste management

Project structure of :metabolon

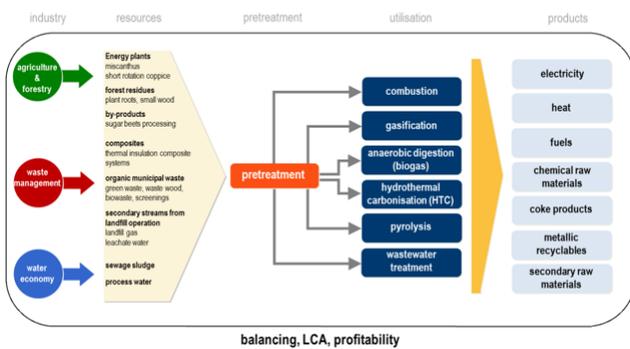


<p>Student lab</p> <p>Creation of sustainable awareness</p> <p>Kindergarten, elementary school, secondary school, further education</p> <p>Extracurricular site of learning</p>	<p>Research community</p> <p>Application-oriented research on resource management</p> <p>International education and research center with pilot plants</p> <p>Master's course for resource management</p>	<p>Bergisch Energy Competence Center</p> <p>Center of information for domestic energy efficiency</p> <p>BioEnergy management Climate protection management Regional energy management Resource-Efficiency-Network</p>
<p>meta theme: transfer of knowledge – lifetime learning</p> <p>sustainable commercial area, leisure / recreation and culture</p>		

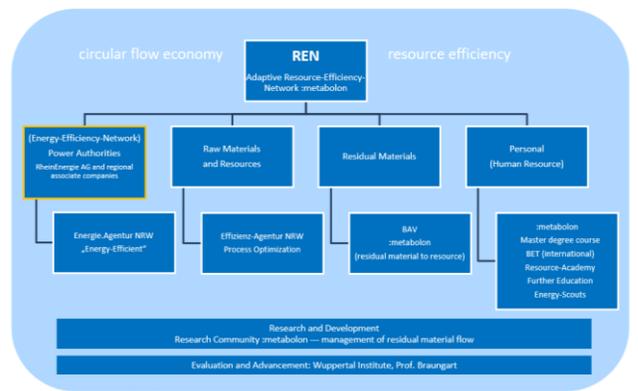
Application-oriented recycling chains

Technology Arts Sciences TH Köln

:metabolon – research concept



Partner of sustainable development



Actions/Recommendations to be taken after field trip report:

Make training course or workshops to implementing community action in reducing emissions and campaign to the other municipalities.

Introduction:

Indonesia is the world's fifth-largest emitter of greenhouse gases and the most significant contributor to forest-based emissions. Based on the analysis and calculation of the provincial Forest Reference Emission Levels 1990-2012 (FREL), in the past, West Kalimantan had a high deforestation rate of around 69,000 ha/year, and 11,000, ha/year were affected by forest degradation. Through deforestation, the province lost ± 1.5 million ha forest in 22 years (1990-2012). Based on the FREL, the province released 30.4 MtCO_{2e} per year of emission on average from deforestation and forest degradation, and additionally between 4.33 MtCO_{2e}/year and 31.87 MtCO_{2e}/year from peat decomposition¹. Taking these figures into the overall perspective of Kalimantan island it indicates that the province had the island's highest deforestation rates for the period 2013-2015². It should also be noted that West Kalimantan contains 6.43% of the tropical forest carbon stocks in Indonesia³. Due to this condition, in 2012 the government of West Kalimantan initiated a political process to address deforestation and forest degradation and pledged to reduce emissions by 60% until 2030. Indonesia's GHG emission reduction target in the NDC document is described in Table 1. In GHG emission reduction independently (29% in 2030), forestry sector is the most important concerning with 17.2% of BAU condition followed by energy sector which is committed to reduce GHG emission by 11% from BAU condition. The target of 17.2% of GHG emissions has a substantial consequence of reducing GHG emissions from 714 million tCO_{2e} (BAU in 2030) to 217 million tCO_{2e} by 2030. This means emissions from the forestry sector (including peat fires) should fall by as much as 70 % of BAU condition in the year of 2030⁴.

Table 1. Projection of GHG Emission and Emission Reduction Target of NDC Indonesia

No	Sector	Level of GHG Emission 2010* MTonCO _{2e}	Level of GHG emission 2030 (MTonCO _{2e})				Emission Reduction				Annual Average Growth of BAU (2010-2030)	Average Growth (2000-2012)
			BAU	CM1	CM2	(MtCO _{2e})		% Total BAU				
1	Energy*	453.2	1,669	1,355	1,271	314	398	11%	14%	6.7%	4.5%	
2	Waste	88	296	285	270	11	26	0.38%	1%	6.3%	4.0%	
3	IPPU	36	69.6	66.85	66.35	2.75	3.25	0.1%	0.11%	3.4%	0.1%	
4	Agriculture	110.5	119.66	110.39	115.86	9	4	0.32%	0.13%	0.4%	1.3%	
5	Forestry**	647	714	217	64	497	650	17.2%	23%	0.5%	2.7%	
Total		1,334	2,869	2,034	1,787	834	1,081	29%	38%	3.9%	3.2%	

Source: Ministry of Environment and Forestry, 2017

* Includes fugitive emission ** Includes peat fires

Notes: CM1= Intervention action (Mitigation scenario 1)

CM2= Intervention action (Mitigation scenario 2)

According to the data above, potentially West Kalimantan could reduce emissions from energy, waste and transportation 0,01% approximately (CM1= Intervention Action).

Therefore, after having Secondment Agreement between Under2 Coalition Future Fund and the Government of the Province of West Kalimantan (Grant Number: UC/FF/2019/010). we

¹ Forest Reference Emission Level (FREL) West Kalimantan. First Edition. UNU Kalbar Press ISBN 978-6027-4511

² Current achievements in reducing deforestation in Kalimantan. Stephanie Wegscheider¹, Judin Purwanto, Belinda A. Margono, Sigit Nugroho, Budiharto, Georg Buchholz, Ruandha A. Sugardiman Indonesian Geographic Journal

³ <http://gcfimpact.org/states?region=10661,states>

⁴ Strategy and Action Plan (SRAP) REDD + West Kalimantan. Revised Edition. UNU Kalbar Press ISBN 978-602 61304-7-1

purposes to provide awareness through a workshop or training scheme involving multi parties in this early phase that is described in Table 2 below.

Table 2. Training Seminar Climate Protection / Adaptation Manager for Municipalities

Outcome	Main Activity	Details Activity	Years	Multi Parties	Funding
implementing a Climate Protection / Adaptation Manager	Introduction to Climate Protection Policy and the practice	<ul style="list-style-type: none"> ▪ Objectives at sub national level (Pontianak and Singkawang Municipalities) ▪ Mobility concepts ▪ Practical experience of a climate protection manager ▪ Examples from the climate protection in municipalities practice guide 	2020	EnergieAgentur.NRW, Dinas LHK, Pemkot, Untan, Community	TCG
	Parallel Working Groups	<ul style="list-style-type: none"> ▪ Parallel working grup Climate protection management in administration and Establish of an independent energy consultancy: goals, strategies, partners and implementation 	2020	EnergieAgentur.NRW, Dinas LHK, Pemkot, Untan, Community	TCG
	Getting citizens involved in climate protection	<ul style="list-style-type: none"> ▪ Citizen energy – how citizens drive energy system transformation locally? ▪ Cycling campaign for the municipality 	2020	EnergieAgentur.NRW, Dinas LHK, Pemkot, Untan, Community	TCG
	Tools for municipal climate protection	<ul style="list-style-type: none"> ▪ Preparation of a municipal GHG balance sheet ▪ GHG and Energy Reporting Tool for municipalities and organisations 	2020	EnergieAgentur.NRW, Dinas LHK, Pemkot, Untan, Community	TCG
	Communicating and motivating climate protection successfully	<ul style="list-style-type: none"> ▪ Campaign Communication –do good and talk about it! ▪ Campaign strategies from attention to triggering action 	2020	EnergieAgentur.NRW, Dinas LHK, Pemkot, Untan, Community	TCG

Notes:

Consideration Why we are implementing a Climate Protection / Adaptation Manager?

- CO2 balancing, renewable energies, energy efficiency, urban development are all important issues of climate protection in municipalities
- The climate protection / adaptation manager represents an interface between the municipality, citizens and local companies to implement the goals of climate protection/adaptation in a practical way
- He or she also provides the necessary support for the decision-maker during the conception phase
- In a advanced training course, the EnergyAgency.NRW, the BEW and experts from the municipalities provide all the information needed to implement local climate protection/adaptation management
- In addition, there is a funding program of the Federal Ministry for the Environment which municipalities can join

A joint discussion with experienced experts on following questions:

- How does municipal climate protection and adaptation work?
- Which fields of action have proven themselves in practice?
- What financing options are available?
- Which partners do you need and how do you find them?
- How do you set up a well-functioning network?
- How do you motivate and convince fellow campaigners, supporters and citizens?

Acknowledgment to the funding:

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