Report on the

4TH INTERNATIONAL CONFERENCE ON BIOECONOMY

Anklam, Germany 2019/11/07

4th bioeconomy conference in Anklam

November 2019

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Project title	Bioeconomy in the South Baltic Area: Biomass- based Innovation and Green Growth For information on the project please check https://biobigg.ruc.dk/
Project acronym	BioBIGG
Work Package	WP6 – Building a cross-border sustainable bioeconomy network in the South Baltic Area
Deliverable	D6.1 – Establishment and promotion of the South Baltic Network (SBBN)
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1. Introduction

Since 2013, the town of Anklam in North-Eastern Germany has been the venue for a bioeconomy conference. Every other year 100 - 150 participants from research, industry and politics meet in the sugar factory in Anklam (Suiker Unie GmbH & Co KG) to network and discuss new developments in the bioeconomy. This year's conference focused on the sustainable cascade use of biomaterials – not only in the region, but also in other regions in the South Baltic Area. The 4th conference held in 2019 was conducted as part of the BioBIGG project to bring together actors from all parts of the South Baltic Area and promote a long-term South Baltic Bioeconomy Network. Guests from Sweden, Denmark and Poland presented their approaches to innovative use of biomass and how to extend existing value chains.

The 2019 conference was organized by the 'Förder- und Entwicklungsgesellschaft Vorpommern-Greifswald', the Chamber of Industry and Commerce Neubrandenburg, the University of Greifswald, WITENO GmbH and BioCon Valley® GmbH.
More than 150 participants attended the conference.

2. Morning Sessions

All participants were invited to take part in tours of two local companies, Anklam Extrakt and the Suiker Unie sugar factory (see program in appendix 5), which were offered in English and German. The sugar factory produces bioethanol and white sugar from sugar beets, whereby by-products are used for feed and energy.

To involve young people and make their views on the bioeconomy visible, two further parallel sessions were arranged as an accompanying program to the conference. Nearly 50 pupils from schools in the surrounding region and from schools in Poland, Estonia, Italy and Russia as well as students from the University of Applied Sciences in Neubrandenburg (countries of origin: Germany, Armenia, Indonesia, Iran and Syria) responded to the invitation to participate in the morning workshops "Young people meet bioeconomy" and created a very special and invigorating atmosphere.

For the younger pupils, an interactive bioeconomy quiz was organised. Together with their teachers they answered questions concerning "general bioeconomy", "renewable energies" and "sustainable nutrition" via their mobile phones.

The older pupils and students discussed three topics at three tables in the format of a world café:

- What can I myself contribute to the topic of sustainability?
- What can we replace?
- What do you want from politics for the future in the field of bioeconomics? Prohibition or voluntarism?

3. Presentation sessions

3.1. Pioneering BioEconomy: Connecting Technologies to Products

Dr Jürgen Eck, Brain AG

The Brain AG in Zwingenberg has more than 300 employees. The company's main focus is on research and development in the field of bioactive natural products, customized enzymes and high-performance microorganism. Dr Eck's presentation focused on the transformation of conventional industries to a knowledge-based bioeconomy. For this transformation a company can choose to develop alternative processes (same product from a different raw material, e.g. 1,2-propandiol from renewable feedstock instead of petrol) as well as new products. Dr Eck gave some examples for new techniques and products.

Currently, the dissolving of gold from ores is a chemical process. The Brain AG developed a technique to isolate gold, silver or copper from incinerator bottom ashes with the help of microorganisms. Bio-prospecting of specific microorganisms in metal-rich environments led to the identification of different forms of interaction between metals and microbes. Out of 53 000 microorganisms they characterized 2 000 strains with positive bioadhesive, bioleaching or biosorption activities. With these strains it is possible to isolate 1-3 tonnes of gold and 500 tonnes of copper per year from 5 million tonnes of ashes in Germany. To persuade clients and boost public awareness, a mobile truck (BioXtractor) with biomining test facilities was developed so that all steps from the ash to the recovery of gold can be demonstrated on-site on a small scale. A life cycle assessment and benchmarking, conducted by WWF and the Nova Institute, showed that this alternative is 2-3 times better than the conventional method with regard to issues such as global warming, toxicity and ozone layer depletion, to name but a few.

The Brain AG also looked into possibilities to recycle stages of a value chain that were previously regarded as end products. CO_2 is the "waste" from the degradation of organic compounds. Through photosynthesis, photoautotrophic organisms are able to generate CO_2-based products. Chemolithoautotrophic organisms are also able to fix CO_2. Besides *Clostridium*, which is known to fix CO_2 under anaerobic conditions, the Brain AG identified other anaerobic and micro-aerobic microorganisms that can metabolize the CO_2. Dr Eck presented one strain that can use CO_2 from chemical plants, bioethanol plants or flue gas power stations as well as glucose and methanol to produce acetate. It is the most efficient CO_2-fixation pathway currently in existence – even more efficient than photosynthesis. Acetate is the starting material for a variety of other organic compounds: Succinate (C_4), Isoprenes (C_5), Carotenoids (C_{40}) or proteins (C_{1000+}). These can in turn be used as raw material for a lot of innovative products.

3.2. Current Developments in Bioeconomic Policy in Germany and Internationally

Dr Beate El-Chichakli, Office of the Bioeconomy Council

Since 2010, the German Bioeconomy policy has been driven by an interministerial working group, the Bioeconomy Council and the Evaluation & Monitoring Initiative. The research strategy 2010-2016 was extended until 2019 and the decision for a new strategy is expected soon.

Dr El-Chichakli gave an overview about the bioeconomy policies in the different German regions and clusters.

Bioeconomic research in Germany is mainly application-oriented. Despite this, biobased innovations are underrepresented in the German market. Dr. El-Chichakli gave some reasons:

- unfair competition with unsustainable products
- lack of incentives for private sector investments
- unfavourable legal conditions
- insufficient synergies between bioeconomy centres & programmes on regional and federal level
- low public awareness & knowledge of bioeconomy concepts
- lack of standardization/definition of “biobased” product attributes.

A new bioeconomy high-tech strategy 2025 is planned. The aim is to use the entire spectrum of biobased methods on an industrial scale. To this end, knowledge-driven basic research and applied research will be strengthened. In addition, the development of future technologies should provide a reliable technological basis for the bioeconomy. Together with industry, science and civil society, an interdepartmental agenda "From Biology to Innovation" is to be developed within the framework of environmentally compatible limits. A second strand of the high-tech strategy is comprised of new research and innovation policy initiatives 2018-2020: the further development of the National Strategy Bioeconomy, the national research agenda *CO_2 Utilization*, a dialogue-platform *Industrial Bioeconomy* and new material strategies incl. bio-principles. The bioeconomy council is now waiting for the inter-ministerial decision in the cabinet.

Dr El-Chichakli addressed the need for consumers to critically reflect their behaviour in order for a sustainable bioeconomy in the 21st century. This does not mean a 1:1 substitution of fossil resources, but more sustainable lifestyles, circularity, efficiency and waste avoidance. A future “Sustainable Bioeconomy for All” requires an increase in multilateral and cross-sectoral collaboration & coordination in bioeconomy in the field of R&D, governance and capacity building.

3.3. Sugars from the Sea

Prof. Dr Thomas Schweder, University of Greifswald / Pharmaceutical Biotechnology Institute of Marine Biotechnology

Marine polysaccharides form the largest dynamic carbon pool on earth. They have a higher complexity (due to sulphate groups at different locations) and different physical and chemical properties that differ from those

of land-based plants. Polysaccharides are the chemically most diverse macromolecules in nature. Due to efficient photosynthesis and rapid growth rates, a lot of algae like *Ulva prolifera* can produce huge amounts of biomass in a short time. Agar, alginate or carrageenan can therefore be produced cheaply for a variety of applications.

Due to their complexity, the degradation of marine polysaccharides requires a group of enzymes. Prof. Schweder gave examples of marine bacteria that are able to metabolize them:

- *Formosa agariphila* degrades ulvan from *Ulva*, with an enzyme cascade involving 12 enzymes which have been decoded by Schweder's working group.
- *Lentimonas spp*. degrades complex fucoidans from the brown algae *Fucus vesiculosus*. More than 100 enzymes are involved in this cascade.

Isolation and analysis of these enzymes involved in the cascades gives the background knowledge to degrade polysaccharides through biotechnological processes. With the help of these enzymes rare marine sugar residues can be isolated and used in the pharmaceutical (e.g. antibacterial, anti-inflammatory and anti-coagulant activities), prebiotic and cosmetic sector.

3.4. **Industrial Breeding of Microalgae**

Jörg Ullmann, Roquette Klötze GmbH & Co.KG

Mr. Ullmann gave an overview of about 20 years' experience in industrial microalgae production. In 1999, the biggest algae farm in Europe was founded in Klötze in Saxony-Anhalt, a second farm was later founded in Neustadt-Glewe in Mecklenburg Western Pomerania. Besides *Chlorella* and *Spirulina*, the company is able to cultivate 15 different (autotrophic) strains of microalgae, diatoms and cyanobacteria for high value products. Its technology is based on 5 fermenters, photobioreactors and open ponds. Roquette produces supplements (e.g. Algomed with vitamin B12 from *Chlorella*), feed, food and cosmetics from the harvested biomass.

The company is also active in R&D: replacement of fish meal and fish oil in aquacultures, combining land-based organic food production in Africa, land and water requirements for the production of essential amino acids from various sources, plant-based Vitamin B12 from *Chlorella* to name a few of projects they are involved in.

The company's "Algae Discovery World" promotes knowledge transfer through fairs, cooking, microscopy and training of students and other interested people.

Ullmann emphasised that the EU needs an algae strategy. He pointed to the German ZIM – Cooperation Network "Microalgae – a sustainable source of high quality natural products" as a successful example of a publicly funded project to promote innovation and start-ups in the microalgae industry. Without such networks, few new products will be developed.

3.5. Possibilities of Waste Utilization from Potato, Brewery, and Poultry Industries in SBA, Poland – Prefeasibility Studies

Roksana Bochniak, Paweł Dąbrowski, Aleksandra Gołąbek, Gdansk University, Poland

Roksana Bochniak, Paweł Dąbrowski and Aleksandra Gołąbek gave three short presentations on utilization possibilities for by-products within the potato, brewery and poultry sector in Poland.

Potatoes are one of the most popular and important plants in Poland for food consumption. The South Baltic Area regions – Warmia and Mazury, Pomerania and West Pomerania have been specializing in potato production for years. During potato processing, various wastes are produced, which can be reused in many different ways (starch, peelings, potatoes unsuitable for further processing). One possibility to use the waste and by-products is the production of bioplastics. To modify properties of starch and increase its plasticity, modifiers such as glycerin, sorbitol or urea are added. The manufactured material can be formed like traditional plastics, i.e. in extruders. Calculations based on the amount of waste starch available in the Pomeranian region have shown that it would be possible to produce about 37 tonnes of bio-polymer per day. In Poland there are strict regulations that lead to a pressure towards industry to produce bioplastics as a substitute for fossil-based plastics and which thereby support such value chains. In the Voivodeship of Pomerania valuable residues from other crops, such as wheat, cereals or corn are also produced in significant quantities, which can also be used to produce biopolymers for bioplastic. It would be possible to organise several production lines within one factory or plant. Their production process, as opposed to obtaining chemical compounds from potatoes, is similar to that of existing factories, so existing production lines can be adjusted and there is no need to invest in a modern laboratory and build a separate infrastructure.

The **brewing** industry in Poland is one of the fastest-growing branches of the Polish economy. Beer is becoming the most popular beverage in the country, which results from the change in the preferences of consumers, who are increasingly choosing weaker alcoholic drinks. The brewing industry generates relatively large amounts of by-products and wastes; spent grain, spent hops and yeast being the most common. However, as most of these are agricultural products, they can be readily recycled and reused. The main by-product which represents around 85% of total by-products generated during beer production is Brewers' Spent Grain (BSG). Brewers' Spent Grain is generated in large amounts. Every 1 litre of beer produced in the brewery generates about 0,2 kg of BSG. Assuming annual beer production at the level of 40 million hectolitres, 800 000 tons of BSG are available for use every year in Poland.

At this moment, this huge amount of biomass is mainly utilised as feed for cattle. However, Brewer's Spent Grain quickly decays due to the high water content. So it should be utilised at the place of production. Thus, a possibility could be to use BSG as a substrate for nutrient beverages. Small breweries, which produce and sell their beer locally, in small quantities, could expand their offer with their own low-alcohol beverages, rich in nutrients. They already possess the facilities for the production of bottled beverages and experience with recipe creating so it would be easier for them to start with a new product. This low-alcohol beverage would be made out of fruits, the taste would be created by the brewers. The product would be a rich source of fibre and plant-

based proteins. Moreover, it would be dairy-free which is significant considering the market for lactose-free foods and drinks.

According to literature, feathers from **poultry** account for about 7% of the chicken weight, so we can assume that in the Polish SBA region annual production of chicken feathers is approximately 40 000 tonnes, which is about 110 tonnes per day. There is great potential to use this kind of waste as a raw material in other processes. There are lots of possibilities to use poultry feathers. One of them is the production of keratin hydrolysate.

Keratin belongs to the group of proteins and is a component of many cosmetics and drugs which improve the metabolism, prevent osteoporosis, or delay aging. It can also be used as a food component, which, for example, improves digestion. Its use in the packaging industry as biodegradable packaging material (for example foil) is also being considered.

At present, there is a lack of companies in Poland that deal with the production of keratin from poultry feathers, so the creation of such a production line or an entire company would be a novelty. A keratin production line could also be created in companies producing cosmetics and using this ingredient in their products. But for now, whilst the proposed concept can be considered as proven on the laboratory scale, and a lot of research and innovation regarding the production of keratin and its application in various industries is needed.

3.6. **Utilization of Residues for Production of Bio-Based Materials**

Dr William Newson, Swedish University of Agricultural Sciences; Sweden

Dr Newson reported on the use of fibres from the timber industry and agriculture. Important factors for economically viable use are the price, particle size, aspect ratio, surface chemistry, thermal stability, strength (cellulose content and type) and contamination. Different production chains need different composition of the fibres. Dr Newson presented possible production chains of wood plastic pellets from natural fibres and their different processing opportunities:

- With injection moulding and additives, a variety of chairs or slats from bioplastics can be produced.
- With extrusion and additives (e.g. colour, UV-protection) linear shapes of different size and colour can be produced and processed further.
- Long bast fibres (residue from some oilseed production such as flax or hemp) can be processed like textiles.
- Mouldable fibre mats (dried mixed polymer fibres and long natural fibres) can be incorporated into cars.
- Bonded particle composites are preferred for particle board production.
- For bulk uses, panel products with straw fill-in and hemp core bonded with lime as insulation material are imaginable.
- One possible product from the thermal treatment of fibres is biochar - a component for e.g. batteries or supercapacitors.

3.7. **Unlocking the Potentials of a Circular Bioeconomy in Regions**

Prof. Tyge Kjær, University of Roskilde, Denmark

Prof. Kjær gave an overview of EU member states with R&I priorities and pointed to the challenge in the transition to a bio-based economy and the increasing energy and resource demand. He pointed out, that there is not only considerable potential to increase biomass supply and production, but also a vast variety of research, opportunities and companies, capable of both solving the environmental problems of today and creating a more sustainable bioeconomy in the near future.

Prof. Kjær defined two main reasons for the current green transition; The depletion of fossil resources at an increasing rate, and the emission of carbon, causing climate change. From this perspective, the transition to a bioeconomy can be seen as a great green shortcut using the photosynthesis of plants to build biomass. The 10 million years of fossilising biomass to energy carriers can be replaced by using fresh biomass carbon directly in the economy. The total mass of over 13 billion tonnes of CO_2 released annually from fossil resources gives the dimensions of the transition needed to shift to a fully renewable carbon bioeconomy.

This transition requires the utilization of biomass from different sectors including agriculture, forestry and marine production by applying different methods of production and conversion with examples such as paludiculture, residue extraction, pyrolysis, fermentation etc.

Prof. Kjær showed examples of how a sustainable and cost-effective bioeconomy could be implemented successfully, such as valorizing husk residues from malting as well as spent grain and yeast residues from breweries for high-value products all the way down to biogas.

Finally, Prof. Kjær introduced a model for regional innovative bioeconomy with a sustainable natural resource- and ecosystem management, influenced by consumers and the market. The management additionally should be influenced by networks, clusters, and platform partnerships which in turn interact with policy makers, financiers, technology providers, knowledge / education /academia.

3.8. **The WIR! Alliance: „Plant³: Plants – Added Value – Change“**

Dr Stefan Seiberling, University of Greifswald

The Plant³ WIR-alliance (Wissen in der Region; knowledge in the region) should act as a crystallization nucleus in order to achieve a structural change towards a sustainable bioeconomy. In the logo of the federal state of Mecklenburg Western Pomerania, the colours blue, green and yellow stand for the sea, peatland and land. All three sectors have problems which have to be solved: the fishing industry is reducing production due to declining stocks as a result of over-fertilization, peatlands that were drained in the past for agricultural use are now major sources of CO_2 emissions, monoculture of rapeseed and winter wheat have led to higher susceptibility to pathogens and weather as well as to species extinction.

The potential from sustainable primary production of plant biomass lies in the synergetic combination of the production areas land, peatland, sea (Unique Selling Point!) with optimal use of space, compensation of negative effects of one type of production area (e.g. nutrient outputs) by others (interface function paludiculture) and the restoration of numerous ecosystem services. The sectors are at different stages of development:

- Land: Utilizations, applications and regional added value on a large, standardized scale are lacking (TRL 5-7)
- Peatland: Implementation of the National Strategy for Paludiculture (TRL 3-6)
- Sea: so far hardly any use of plant biomass; know-how available; transfer in the near future (TRL 1-4)

Dr Seiberling described two project consortia planned within the framework of Plant³: One is Paludi-product – added value from peatland. The aim is the establishment of paludiculture, the development of products from Paludi-biomass and the generation of innovative value chains. The second one is education and training for farmers, fishermen and industry. The concept also includes the introduction of a Master's degree course in Bioeconomics at the University of Greifswald.

3.9. **The WIR! Alliance: „Physics for Food – A Region Rethinks!“**

Prof. Dr Leif-Alexander Garbe, University of Neubrandenburg

Consumers expect their food to be residue-free, stem from ecologically sustainable and regional production and that it can be trusted and is affordable. Physical methods to combat pathogens are residue-free and therefore superior to conventional methods like chemical treatment. Three physical procedures were chosen because of their technology maturity levels:

- UV-light (TRL 7-9)
- atmospheric pressure plasma (TRL 3-5)
- pulsed electric fields

Three crop species were chosen for treatment: Lupin (proteins), barley (cereal) and rapeseed (oil).

Within the alliance, 5 projects are now being reviewed. The projects are derived from the innovation potentials and are intrinsically aligned to the value chain - from seeds (1) to plants (2) to feed and food (3), framed by the environment (4). The project Transfer, Procedures and Permissions (5) is of particular importance. This project thus acts as a kind of catalyst for business model development. In terms of content, the projects and their partners are characterised by a topic-oriented bundling of competencies. Partners come from agriculture, the agricultural machinery sector, the food industry, science, trade and society. In the area of society, politics, banks as venture capital donors or associations are included. Overall, regional and trans-regional value chains will be built up during the project period through strength-oriented cooperation between partners with complementary core competencies.

3.10. Student Statements from the BE2Youth-Workshop

Dr Gudrun Mernitz, WITENO GmbH / Wissenschafts- und Technologiepark NORD°OST°

To the question "What can I myself contribute to the topic of sustainability?" a 12th grade student summarised all considerations. It was agreed that bioeconomy bridges the generation gap and everyone has to think of children and grandchildren. With small steps like using public transport, going by bike instead of using the car (if possible), avoiding waste and buying only as much as one consumes, everyone can contribute to a sustainable bioeconomy.

A 10th grade student presented suggestions concerning the replacement of fossil resources with renewable materials for a more sustainable consumption. The group proposed drinking tap water instead of buying water in plastic bottles and highlighted the Swedish CO_2 tax model. The students noted that biobased alternatives are (currently) expensive and solutions must be found to implement sustainable alternatives.

The third group discussed the question "What do you want from politics for the future in the field of bioeconomics? Prohibition or voluntarism?". The answer was ambivalent: In some cases rigorous prohibition was viewed as necessary but if possible, behavioural changes should be on voluntary basis. All in all, the planet should be respected.

4. Conclusions and Outlook

4.1. Conclusions from the Conference

Besides the conference itself, an extensive accompanying programme with factory tours, a small fair and involvement of young people made the event attractive for a lot of people from schools, universities, industry and politics. Because of the BioBIGG project, the conference was more internationally oriented. The participants got an overview of actions and results within the BioBIGG project supported by examples from the partners in the south Baltic regions. On the other hand, BioBIGG project partners from Sweden, Demark and Poland were informed about activities in Germany and came into contact with representatives of local industry and local policy makers. This enabled the conference to contribute to the development of a transnational South Baltic Bioeconomy Network.

Taking all factors into account, not only the number of participants but also the contributions to discussions and the exchanges during the breaks made the conference more successful than ever.

For the first time, many interesting ideas were developed from young students. It was interesting to see that in schools bioeconomy is already an important topic that self-confident students are able to convey to the public.

4.2. Outlook

The BioBIGG project will continue preparing pre-feasibility studies for the most promising innovative value chains. This work will then continue with the preparation of roadmaps and innovation programs of selected

case studies. The next conference in Rostock will be on 10 March 2020 with focus on the overall results in the BioBIGG project and the creation of a sustainable network after the end of the project.

5. Appendices

5.1. Appendix A - Conference program

08.00 – 10.00	Company Tour Suiker Unie English
10.00 – 11.00	Company Tour Zuckerfabrik Anklam English
11.00 – 12.00	Company Tour Zuckerfabrik Anklam German
10:00 – 12:00	Workshop BE2Youth: Curious young people meet bioeconomy
11:00 – 12:00	Kahoot quiz to 3 topics of bioeconomy for younger pupils
12.00 – 13.00	Arrival and small snack
13.00 – 17.30	**Keynote** **„Pioneering BioEconomy: Connecting Technologies to Products“** *Dr Jürgen Eck, Brain AG* **Current Developments in Bioeconomic Policy in Germany and internationally** *Dr Beate El-Chichakli, Office of the Bioeconomy Council* **Sugars from the sea** *Prof. Dr Thomas Schweder, University of Greifswald / Pharmaceutical Biotechnology Institute of Marine Biotechnology* **Industrial breeding of microalgae** *Jörg Ullmann, Roquette Klötze GmbH & Co.KG* **Coffee Break** **Possibilities of waste utilization from potato, brewery, and poultry industries in SBA, Poland – prefeasibility studies** *Roksana Bochniak, Paweł Dąbrowski, Aleksandra Gołąbek, Gdansk University* **Utilization of residues for production of bio-based materials** *Dr William Newson, Swedish University of Agricultural Sciences* **Unlocking the potenial of a circulating bioeconomy in Regions** *Prof. Tyge Kjær, Roskilde University* **The WIR! Alliance: „Plant³: Plants – Added Value – Change“** *Dr Stefan Seiberling, University of Greifswald* **The WIR! Alliance: „Physics for Food – A Region Rethinks!“** *Prof. Dr Leif-Alexander Garbe, University of Neubrandenburg* **Student Statements from the BE2Youth-Workshop**

Dr Gudrun Mernitz, WITENO GmbH / Wissenschafts und Technologiepark NORD°OST°

Summary and Outlook

Dr Ulrich Vetter, Förder- und Entwicklungsgesellschaft Vorpommern-Greifswald mbH

18.00

Dinner and Get Together

5.2. Appendix B - List of participants

No	Family Name	First Name	Institution
1	Adler	Sebastian	NEAG Norddeutsche Energie AG
2	Arnold	Paul	Lindenschule Ducherow
3	Benischke	Frank	Neubrandenburger Wohnungsgesellschaft mbH
4	Bochniak	Roksana	Gdańsk University of Technology
5	Bratek-Jabłońska	Anna	Schule Police
6	Bröker	Mirko	Anklam Extrakt GmbH
7	Brümmer	Miriam	Wittich Medien KG
8	Brust	Henrike	Leibniz-Institut für Plasmaforschung und Technologie e.V.
9	Brust-Möbius	Juliane	Hansestadt Anklam; Klimaschutzmanagement
10	Buchlok	Shuja?	Universität Greifswald
11	Cîrstea	Dominique	Hochschule Neubrandenburg
12	Cramm	Rainer	BioCon Valley GmbH
13	Cuypers	Beate	Universität Greifswald, Zentrum für Forschungsförderung
14	Dąbrowski	Paweł	Gdańsk University of Technology
15	Damer	Fritz	WITENO GmbH
16	Dannenberg	Jan Lasse	Universität Greifswald
17	Denecke	Lennart	Lindenschule Ducherow
18	Dyreborg Martin	Andreas	University of Roskilde
19	Eck	Jürgen	BRAIN AG
20	El-Chichakli	Beate	Geschäftsstelle des Bioökonomierates
21	Emi	Podmelle	Humboldt-Gymnasium
22	Ender	Tommy	HTCycle AG
23	Ewert	Mathes	Jahngymnasium Greifswald
24	Feldt	Fabian	Universitäts- und Hansestadt Greifswald
25	Filter	Valentina	Jahngymnasium Greifswald
26	Fischer	Kristine	Agrar GmbH
27	Fischer	Fritz	Pommern Arche
28	Fraszczyk	Anna	Schule Police
29	Galander	Michael	Hansestadt Anklam
30	Garbe	Leif-Alexander	Hochschule Neubrandenburg
31	Gerold	Axel	AfD / Kreistag
32	Glück	Karin	Selbstständig
33	Golabek	Aleksandra	Gdańsk University of Technology

34	Gorajski	Błażej	Schule Police
35	Götz-Schlingmann	Frank	VORPOMMERSCHE DORFSTRASSE e. v.
36	Graage	Frank	Steinbeis Transfer GmbH
37	Graf	Sophia	Lindenschule Ducherow
38	Griebenow	Candy	Lindenschule Ducherow
39	Großjohann	Beatrice	Herbrand PharmaChemicals GmbH
40	Gunawan	Hardini	Hochschule Neubrandenburg
41	Gurgel	Andreas	Landesforschungsanstalt für Landwirtschaft und Fischerei MV
42	Guse	Katrin	Ager GmbH
43	Hagemann	Gunnar	IHK Neubrandenburg für das östliche Mecklenburg-Vorpommern
44	Hansen	Rasmus	Roskilde University
46	Heiden	Hans-Joachim	Ducherow
47	Heiden	Wilfriede	Ducherow
45	Heiden	Jens-Uwe	FEG VG mbH
48	Heiden	Lucas	Lindenschule Ducherow
49	Heiden	Tilo	Lindenschule Ducherow
50	Heidenreich	Bettina	SBR Consulting
51	Heimbokel	Mirko	Herbrand PharmaChemicals GmbH
52	Heinrichs	Phillipp Loris	Lindenschule Ducherow
53	Hoffmann	Pia	Lindenschule Ducherow
54	Hoffmann	Volker	Suiker Unie GmbH & Co. KG (Zuckerfabrik Anklam)
55	Höflich	Andreas	FBN Dummerstorf
56	Holldorf	Sophia-Milene	Lindenschule Ducherow
57	Holst	Henning	Henning Holst Coaching
58	Jürgen	Britta	Universität Greifswald
59	Kammann	Rolf	Wirtschaftsfördergesellschaft Vorpommern mbH
60	Kjaer	Tyge	Roskilde University
62	Köhn	Hauke	Fachagentur Nachwachsende Rohstoffe e.V.
61	Köhn	Nora	Universität Greifswald, Institut für Botanik und Landschaftsökologie
63	Kost	Paweł	Schule Police
64	Kriisa	Kristjan	Schule Tartu
65	Krohn	Markus	Universität Greifswald
66	Kubalczak	Maximilian	Uni Greifswald ZFF
67	Kundschaft	Max	Uni Greifswald ZFF
68	Kunzer	Aniko	Aniko-Kunzer Virtuelle Assistentin
69	Lammertz	Julia	Universität Greifswald
70	Leifert	Claudia	EPC gGmbH
71	Liebelt	Ute	Leibniz-Institut für Plasmaforschung und Technologie e.V.
72	Lipka	Alin	Humboldt-Gymnasium
73	Lippmann	Johannes	Hochschule Neubrandenburg
74	Löffler	Marita	DURTEC GmbH
75	Losehand	Christian	strohlos produktentwicklung GmbH
76	Mahdavi	Ali	Hochschule Neubrandenburg

77	Maslo	Laura	Universität Greifswald
78	Meloian	Gaiane	Hochschule Neubrandenburg
79	Mernitz	Gudrun	WITENO GmbH
80	Meurer	Peter	Hochschule Neubrandenburg
81	Meyn	Beate	Universitäts- und Hansestadt Greifswald
82	Mohni	Laura	Universität Greifswald
83	Moynihan	Maria	Universität Greifswald
84	Muschter	Stefan	folian gmbh
85	MV1		Filmteam Mitarbeiter
86	MV1		Filmteam Mitarbeiter
87	Newson	William	Swedish University of Agricultural Sciences
88	Obeido	Mohammed	Hochschule Neubrandenburg
89	Obeido	Mohamad	Hochschule Neubrandenburg
90	Oliver	Leonardo	Schule Bozen Italien / Gastschüler Anklam
91	Palmet	Madis	Schule Tartu
92	Pasik	Emilia	Schule Police
93	Pfoth	Ralf	IHK Neubrandenburg für das östliche Mecklenburg-Vorpommern
94	Phlichutka?	Markus	MB Lebenswissenschaften?
95	Podmelle	Emilia	Humboldt-Gymnasium
96	Pohle	Kerstin	Hochschule Neubrandenburg
97	Prade	Thomas	Swedish University of Agricultural Sciences
98	Pragst	Arian	Lindenschule Ducherow
99	Räth	Johann	Lindenschule Ducherow
100	Reichau	Thomas	Strohlos Produktentwicklung GmbH
101	Reuters	Ralf	Hochschule Neubrandenburg
103	Riedel	Max	Jahngymnasium Greifswald
102	Riedel	Katharina	Universität Greifswald
104	Rühs	Michael	Universität Greifswald
105	Sack	Michael	Landkreis Vorpommern-Greifswald
106	Saeger	Sven	Bauernverband Uecker-Randow e.V.
107	Sauer	Matthias	Suiker Unie GmbH & Co. KG (Zuckerfabrik Anklam)
108	Schade	Stefan	Dolmetscher
109	Schmegner	Daniela	Daniela Schmegner virtuelle Assistentin Feelgood Managerin
110	Schmidt	Timo	Lindenschule Ducherow
111	Schmidt	Marc	Hochschule Neubrandenburg
112	Schmidt	Tony	Hochschule Neubrandenburg
113	Schnell	Ivonne	IHK Neubrandenburg für das östliche Mecklenburg-Vorpommern
114	Schomburg	Joachim	DURTEC GmbH
115	Schulz	Jenny	PaludiMed GmbH
116	Schumann	Sophia	Universität Greifswald
117	Schweder	Thomas	Universität Greifswald
118	Schweitzer	Sorina	Privat
119	Seiberling	Stefan	Universität Greifswald
120	Siegh…..?	Boriss	Anklam

121	Skøt	Magnus Kristian	Roskilde University
122	Sladek	Konrad	Hochschule Neubrandenburg
123	Sodjinou	Mirjam	Dolmetscherin
124	Steiner	Birgit	Lindenschule Ducherow
125	Stöhr	Armin	WiMa Wirtschaftsberatungs- & Marketingbüro GmbH
126	Stolz	Erik	Hochschule Neubrandenburg
127	Strauß	Olaf	Hochschule Neubrandenburg
128	Stüdemann	Anne	Jahngymnasium Greifswald
129	Stuth	Lukas	Lindenschule Ducherow
130	Szemacha	Karen	Wirtschaftsfördergesellschaft Vorpommern mbH
131	Techniker 1		
132	Theel	Christian	Universität Greifswald
133	Träbert	Andreas	Braun Beteiligungs GmbH
134	Vanhöfen	Agnieszka	FEG VG mbH
135	Venz	Carsten	Continental Taraxagum Lab Anklam
136	Vetter	Ulrich	Förder- und Entwicklungsgesellschaft Vorpommern-Greifswald mbh
137	Voss	Vivien Christin	Lindenschule Ducherow
138	Wannicke	Nicola	Leibniz-Institut für Plasmaforschung und Technologie e.V.
139	Weichert	Dzasmina	Lindenschule Ducherow
140	Weigel	Michael	HTCycle AG
141	Wesenberg	Maj	Lindenschule Ducherow
142	Weuffen	Jarste	Marketinggesellschaft der Agrar- und Ernährungswirtschaft MV e.V.
143	Wiedemann	Kay	Landhof Schmuggerow
144	Wielert	Kai	Jahngymnasium Greifswald
145	Will	Lucas	Hochschule Neubrandenburg
146	Willnow	Henner	IHK zu Schwerin
147	Wójcik	Lena	Schule Police
148	Zinser	Ulrich	Baltic Consulting UG
149	Zocher	Katja	Leibniz-Institut für Plasmaforschung und Technologie e.V.