SWISS WIND ENERGY
R&D NETWORK

The Swiss Wind Energy R&D Network Annual Report 2022

Authored by the Management Board

23.01.2023

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SWISS WIND ENERGY
R&D NETWORK

1. Introduction

The Swiss Wind R&D Network was founded with the founding meeting on 06.02.2020. The Articles of Association can be found attached. We currently have a total of 201 members, about 70 of whom are abroad.

The current members of the Management Board are: Sarah Barber, OST (president); Ruth Schmitt, FHNW; Ursula Dubois, Sociolution GmbH; Andrew Clifton, enviConnect.

The current members of the Advisory Board are: Henrik Nordborg, OST; Imad Abdallah, ETHZ; Georg Traxler-Samek, FHNW; Anastasios Vassilopoulos, EPFL; Karen Mulleners, EPFL; Bernhard Brodbeck, Winji AG; Alexander Oudalov, Hitachi Power Grids; Stefano Grassi, Gilytics AG; Angela Mayer, BFH.

The activities of the Swiss Wind R&D Network are split into the following areas:

- Area 1: Organisation
- Area 2: Funding
- Area 3: Events
- Area 4: Diversity, Equity and Inclusion

The activities and achievements within each of these areas in 2022 are described in the next section. This is followed by a summary of the accounts in Section 3. The plan for 2023 can be found in a separate document (*Network_Plan_2023.pdf*).

2. Activities

The activities and achievements of the association within the above-mentioned areas are described in this section.

2.1 Organisation

This area involves general administration and coordination of the network. The following achievements were made in 2022:

- **June 2022:** "Market entry guidelines" launched
- **June 2022:** Challenges introduced on WeDoWind after the Networking Event 2022
- **December 2022:** Focus for 2023 defined
- **December 2022:** Plan for introducing membership fees completed
- **December 2022:** 201 members gained in total

Market entry guidelines

Together with Andy Clifton at enviConnect (a member of the Management Board), we developed some "market entry guidelines", which aim to help academics, job seekers and entrepreneurs in Switzerland get started in wind energy. They are available here: https://www.wedowind.ch/getting-started-in-wind-energy and were launched at the Networking Event Series on June 7th 2022 (see Section 2.3).

The guidelines help academics to get started in wind energy science and research by answering questions such as "What are the big themes in this area?", "How can I find collaborators?", "Where can I get data?", "Where can I try out my ideas?" and "Who funds R&D?".

They help job seekers get a job in wind energy as a recent graduate or academic by answering questions such as "How can I find out what jobs are available in the wind energy industry?", "Who are the major employers?", "What kinds of skills do I need?", "What training, courses, or study programmes are available for new entrants or people changing employers?" and "What will make me more attractive to potential employers?"

They help entrepreneurs convert an idea into a business in the wind energy industry by exploring topics such as "Failure mode: what are the major drivers/reasons behind a failure? What are the lessons learnt from others?", "Understanding major pain points and market needs --> identification/definition of a product", "Major entry market barriers", "Top 3 priorities to focus on", "Characteristics of local market: corporate strategy, digitization process/view", "Supply chain and distribution model", "Political drivers and framework", "Gate keepers in the TRL ladder/classification".

WeDoWind challenges after Networking Event 2022

The challenges that were discussed at the Networking Event on June 7th, 2022 (see Section 2.3) were posted within the WeDoWind space of the Swiss Wind Energy R&D Network. The WeDoWind project was described in the Annual Report 2021. Since then, the project has continued development, and we are running nine separate collaboration spaces including four data sharing challenges with the international wind energy community. One of the spaces is for the members of the Swiss Wind Energy R&D Network to use, and includes the Members' Directory as well as different posts and discussion forums. Members of the network can sign up for WeDoWind here:

https://share.hsforms.com/1oGyKEg1pQ2ykSxXTo44-5Q8mogq

An example of one of the posts created for the challenges taken from the Networking Event 2022 is shown in Figure **1** below. Using these posts, we tried to engage the members to continue work on the challenges beyond the event, but did not succeed. Due to this lack of interest, and the gaining interest in WeDoWind from the international community, we decided to focus WeDoWind on international collaboration. We are therefore currently in the process of re-branding the WeDoWind project and moving the website contents of https://www.wedowind.ch/wedowind-ecosystem to a separate website, which will be run by OST. However, Swiss-based challenges will still be possible within the space of the Swiss Wind Energy R&D Network.

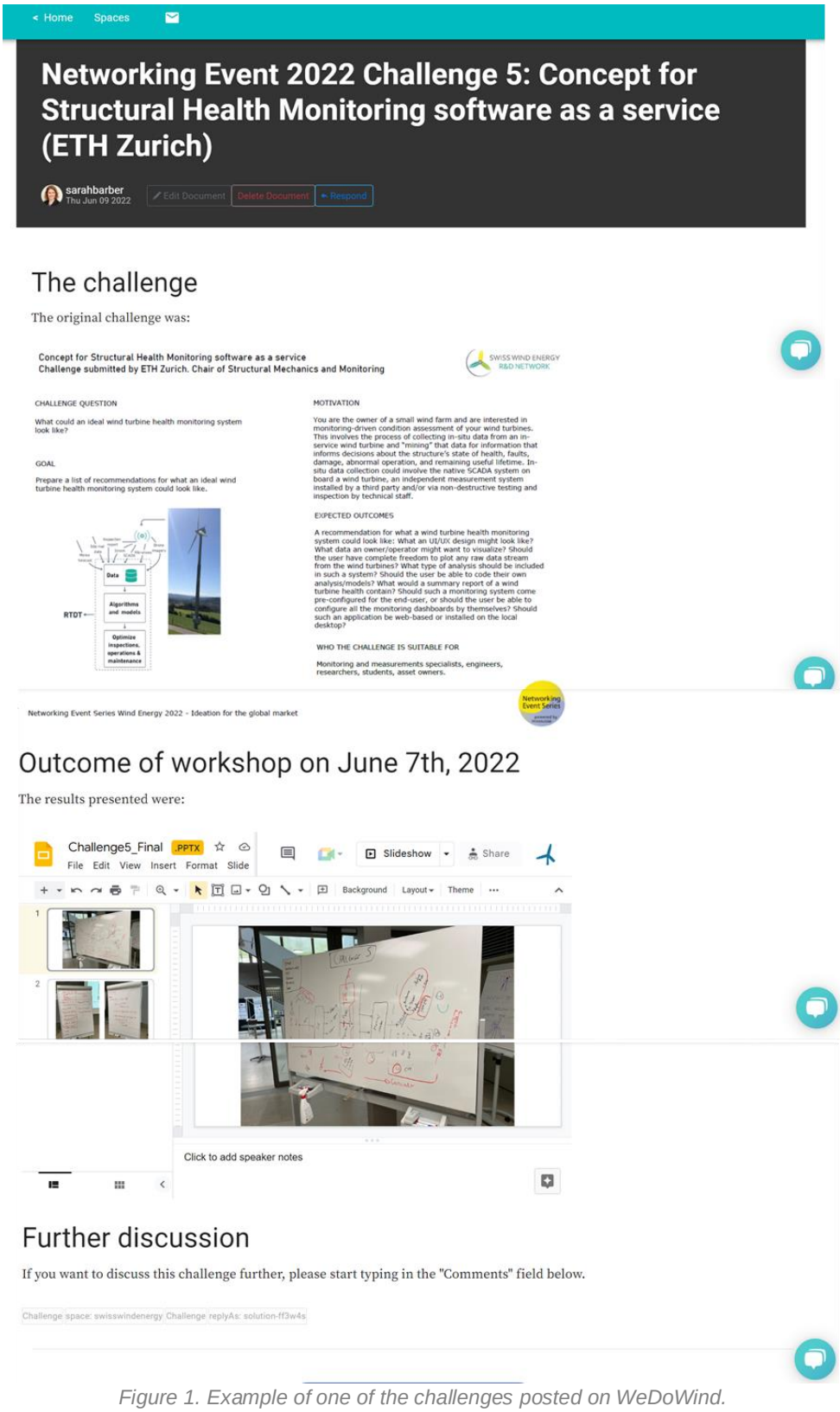

Figure 1. Example of one of the challenges posted on WeDoWind.

Focus for 2023

In Q3 and Q4 of 2022, the Management Board carried out a detailed analysis of the activities of the Swiss Wind Energy R&D Network. This was done in an iterative process with feedback from the Advisory Board. The conclusions are summarised below.

What was positive so far?

- We built up a functioning network with international visibility: we attracted 194 (Swiss and international) members.
- We built up a functioning Management Board (operations) and Advisory Board (strategy).
- We received funding from Innosuisse and held successful Networking Events with good attendance (2019: 80 attendees, 2022: 40 attendees) and very good feedback from the participants.
- We received funding for writing two concepts: WeDoWind and Swiss Wind Atlas (see Annual Report 2021 for more details).
- We submitted a good Innovation Booster concept, as first-placed «losers».

What would we like to improve?

- More success in obtaining external funding (NTN Innovation Booster rejected twice).
- Achieve stable, longer-term funding or other sources of money.
- Get the members more active.
- Differentiate better between the Swiss Wind Energy R&D Network, OST and WeDoWind.
- Make it easier to offer and receive services.

How we will improve:

- We will focus on running exciting, value-adding networking events relevant to Swiss and international partners (see Section 2.3).
- We will run a joint event with existing Innovation Boosters (e.g. Energy Living Lab) in 2023 (see *Network_Plan_2023.pdf*).
- We will develop a sponsoring concept based on the events (see *Network_Plan_2023.pdf*).
- We will introduce membership fees (see below). Once we have a stable income source, we will employ someone for administrative tasks.
- We will separate the WeDoWind project from the website of the Swiss Wind Energy R&D Network. This includes changing the URL of the website of the Swiss Wind Energy R&D Network to www.windenergynetwork.ch (email address: team@windenergynetwork.ch), removing our slogan (“We Do Wind”) to avoid confusion as well as re-branding

WeDoWind and using www.wedowind.ch just for WeDoWind. The launch is planned after the AGM 2023.

Plan for introducing membership fees

In order to decide the price and benefits related to membership fees, we carried out a members' survey at the end of 2022. In total, 19 members took part, distributed according to organization type as shown in Figure 2. Their willingness to pay for the membership is summarised in Figure **4** for the three main organisation types. The main benefits of interest were monthly updates, voting rights, access to the members' directory, free access to webinars, reduced price at events, and a logo on the "Swiss wind energy innovation landscape" graphic (planned).

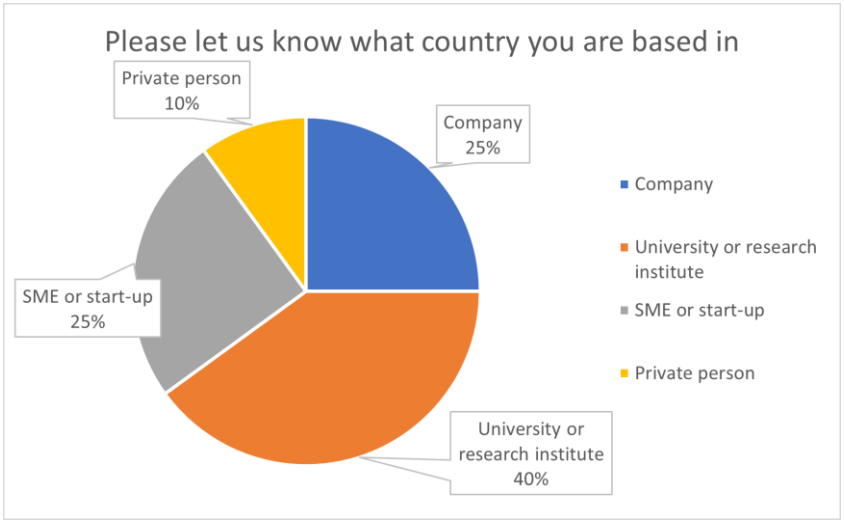

Figure 2. Distribution of organisation type for the members' survey.

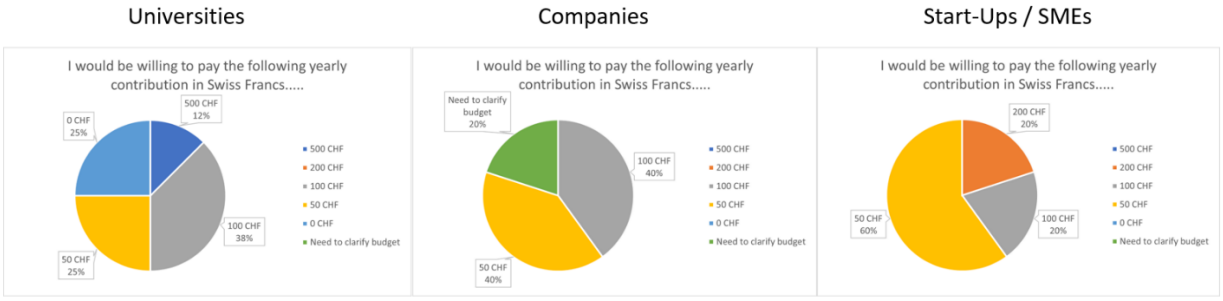

Figure 3. Willingness of different organisation types to pay membership fees.

Due to the low number of participants, the results could not be used directly to develop a model for membership fees and benefits. However, we used the information to guide the direction of our suggestion, which is presented in *Network_Plan_2023.pdf*.

2.2 Funding

This area involves acquiring the funding for the activities of the network. In 2022 we received no additional funding beyond the already acquired Innosuisse Networking Series Event running until 2024 (see Annual Report 2021).

For the “"Wind Goes Digital" - The opportunities and challenges of wind energy digitalisation” event planned for March 9th, 2023 (see Section 2.3), OST received funding of CHF 8’000 from the Swiss Federal Office of Energy for support with the organisation. However, this funding will be administrated directly by OST. This was decided because the Swiss Wind Energy R&D Network does not yet have any employees and otherwise would just have to transfer the money to OST directly. We want to solve this problem in the future by employing someone to support with the administration, once we have raised enough funds through membership fees for a stable basis.

2.3 Events

This area involves working group coordinates events. The following achievements were made in 2022:

- **March 2022:** Diversity, Equity and Inclusion (DEI) webinar series launched in collaboration with the European Academy of Wind Energy (EAWE)
- **June 2022:** Networking Series Event 2022 held in Rapperswil
- **November 2022:** Registration for “"Wind Goes Digital" - The opportunities and challenges of wind energy digitalisation” on March 9th, 2023 launched
- **December 2022:** Metadata Challenge webinar series launched in collaboration with IEA Wind Task 43
- **December 2022:** Registration for “Wind energy basics for offshore wind energy in Brazil” on March 20th-24th, 2023 launched

We plan to develop a strategy for future webinars and events in 2023, as described in *Network_Plan_2023.pdf*.

DEI webinar series

In collaboration with the Diversity Committee of the European Academy of Wind Energy (EAWE), lead by Sarah Barber (see Section 2.4), we launched a Diversity, Equity and Inclusion (DEI) webinar series in March 2022. More details are given here: https://www.wedowind.ch/diversity

So far we have carried out the following webinars:

- Wed. Dec. 14th, 2022, 15:00 CET: “How to move from diversity to inclusion in creating a sense of belonging from an LGBTI perspective?“, Martin Proksch, ambassador of the Swiss LGBTI label, Chief Human Resources Officer, Co-founder of Native Genius.

- Wed. Nov. 14th, 2022, 15:00 CET: “Smart business benefits of diversity in Climate Tech: sharing inspirational examples from the Women+ in Climate Tech network” with Helen Whiteley, Founder of Women+ in Climate Tech.
- Mon. Sep. 12th, 2022, 15:00 CEST: “Unconscious communication biases and why we need to increase the diversity of communication styles“ with Barbara Nilkens, Baukommunikation
- Tue. Jul. 5th, 2022, 15:00 CEST: “#BreakTheBias - what's it all about and how can it help the wind energy industry?” with Salvatore Daniele, Eastern Switzerland University of Applied Sciences.
- Mon. Mar. 28th, 2022, 14:00 CET: “Diversity, Equity and Inclusion - "nice to have" or necessity?” with Professor Paul Walton, Bioinorganic chemistry at University of York.

The number of registrations varied from 15 to 50 per event, and the number of actual attendees varied from 5 to 25 per event. Some very interesting discussions were had, which were continued in the “Diversity in wind energy science” space of WeDoWind (https://www.wedowind.ch/diversity-space). Several more are already planned (see *Network_Plan_2023.pdf* for more details).

Networking Series Event 2022

We had the pleasure of hosting the Networking Event Series Wind Energy 2022 - Ideation for the global market at Rapperswil on June 7th, 2022. Participants included more than 40 Swiss-based researchers, start-ups, SMEs and other organisations involved in wind energy. As well as some interesting presentations and posters, we solved five multidisciplinary challenges in small groups and then presented the results to the audience.

We started off with the official launch of our Getting Started in Wind Energy Guide, created in collaboration with enviConnect and the Eastern Switzerland University of Applied Sciences (OST). In the key-note speech by Katherine Dykes, Head of Section for Systems Engineering & Optimization at DTU Wind Energy in Denmark, we learned about the “Grand Challenges of Wind Energy Science”, based on the Science paper with the same name which she co-authored.

After a nice Q&A session, the poster presenters introduced their posters in short “two-minute presentations”. The topics this year included: How to communicate and collaborate on data; An experimental system to acquire aeroacoustic properties on wind turbine blades; The impact on Communications, Navigations and Surveillance Systems used for air traffic control; Vibration fault detection in wind turbines without feature engineering; Towards an autonomous flight control of small drones for airborne wind energy. During the coffee break, the participants had time to view and discuss the posters.

We had planned three presentations about technology transfer, but our first speaker, Andy Clifton from enviConnect had to cancel at the last minute, so we enjoyed two slightly longer presentations from Philip Morger (Switzerland Global Enterprise) and Jan-Ernst van Hattum (Enterprise Europe Network) instead. It was interesting to hear about several possibilities for researchers and companies in Switzerland to connect to partners in Europe. We carried out the

missing talk from Andy Clifton as a live webinar a few weeks later on July 11th. Before the lunch break, the five challenges to be solved in the afternoon were pitched.

After lunch, the participants chose which challenges they wanted to solve and went off into groups for 2.5 hours. Each challenge workshop was run by a challenge provider and a moderator from the event organisation team. We discussed the following challenges:

- CHALLENGE 1: AIRBORNE WIND ENERGY IN THE CONTEXT OF CONVENTIONAL WIND FARMS (SKYPULL SA): In this challenge, we discussed how to best integrate airborne wind energy (AWE) systems into conventional wind farms. It included a short online lecture by Roland Schmehl from TU Delft. The results included a list of recommendations to be considered in AWE farm planning.
- CHALLENGE 2: HOW TO BEAT ELECTROMAGNETIC COMPATIBILITY LIMITS? (MILITARY AVIATION AUTHORITY): In this challenge, we discussed how to assure Electromagnetic Compatibility (EMC) below regulation limits for wind turbines. The results included ideas for retrofit and noise cancelling solutions for wind turbines.
- CHALLENGE 3: EVALUATION OF THE POTENTIAL FOR SMALL WIND FARMS UP TO 5MW IN SWITZERLAND (SUISSE EOLE): In this challenge, we discussed how much more wind energy potential we would have in Switzerland if we could build small wind farms with 1-2 wind turbines with a total of up to 5 MW installed power. Rather than carrying out this estimation, the results consisted of a list of activities that could be implemented in order to ensure implementation of the strategy.
- CHALLENGE 4. TECHNICAL IMPLICATIONS AND CORRESPONDING BEST PRACTICES IN CURTAILMENT (NATECO AG): In this challenge, we discussed the technical implications and corresponding best practices in curtailment (shutting down turbines) to protect birds and bats. The results included a list of recommendations for curtailment best practices.
- CHALLENGE 5. CONCEPT FOR STRUCTURAL HEALTH MONITORING SOFTWARE AS A SERVICE (ETH ZURICH): In this challenge, we discussed what an ideal wind turbine health monitoring system could look like. The results consisted of a list of recommendations and priorities for designing such a system.

At the end, the results of each challenge were presented and we voted on the best presentation. Challenge 2 was voted the winner - congratulations to Reto Pauli and the team of solvers!

The feedback from the event was very positive. 100% of the participants answered “strongly agree” (77%) or “agree” (23%) to the statement “My overall impression of the event was very good” (see Figure **4**). The most positive feedback was given about the key-note talk and the ideation workshops. The most common suggestion for improvements was to attract more participants!

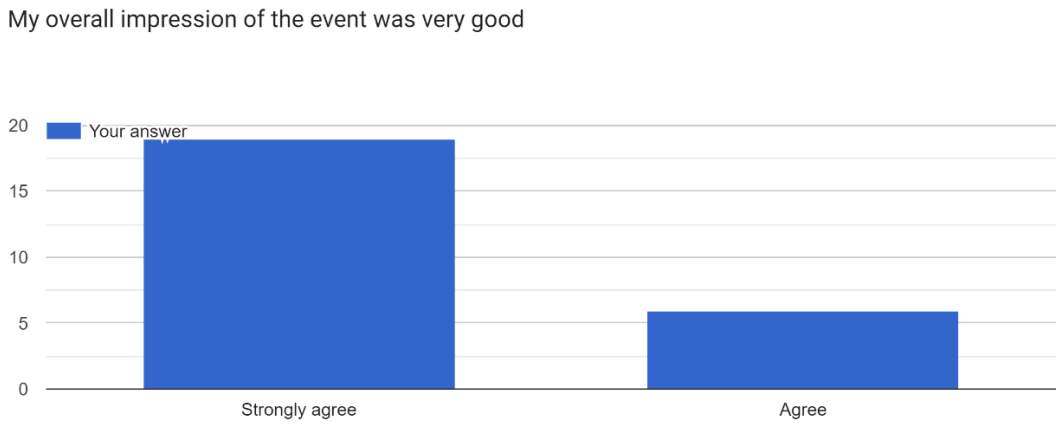

Figure 4. Summary of feedback from the Networking Event 2022 (the participants could answer "Strongly agree", "Agree", "Disagree" or "Strongly disagree".

"Wind Goes Digital" - The opportunities and challenges of wind energy digitalisation" event

In November 2022 we opened registration for this hybrid workshop, which will be held on March 9th, 2023 in Zurich, as a collaboration between the Swiss Wind Energy R&D Network, OST and ETH Zurich. Wind energy is one of the key technologies for achieving our ambitious net zero goals. For this, a significant expansion is needed, which poses several technical, political and social challenges. Digitalisation is one of the key drivers for reducing the costs and risks of wind energy and thus achieving these goals. This one-day hybrid workshop will take place at the campus of ETH Zurich, Switzerland. You should attend if you want to learn about the opportunities and challenges related to digitalisation in wind energy, as well as to meet some digitalisation leaders from all industries and to work on solutions together with other like-minded people. You don't need a background in wind energy or in digitalisation.

Find out more here: https://www.wedowind.ch/events/digitalisation-2023

Metadata Challenge webinar series

As part of the IEA Wind Task 43 Metadata Challenge, we launched a series of public webinars that aim to improve collaboration between Knowledge Engineering experts and domain experts. The first webinar "Ontology-based techniques for managing data streams" was held on Dec. 9th, 2022 with Jean-Paul Calbimonte. The recording is available on the website of the Swiss Wind energy R&D Network here: https://www.wedowind.ch/digitalisation.

Future webinars are planned once a month for the next year. See *Network_Plan_2023.pdf* for more details.

“Wind energy basics for offshore wind energy in Brazil” event

In December 2022, we opened the registration for the event “Wind energy basics for offshore wind energy in Brazil”, which takes place from March 20th-24th, 2023. The event is being planned by the participants of the “Wind energy in Brazil” WeDoWind space, which is lead by Sarah Barber (https://www.wedowind.ch/brazil-space). Eight different Brazilian lecturers will be carrying out lectures and workshops.

According to the 10-year expansion plan 2029, Brazil has ambitious plans to expand offshore wind energy. In the Brazilian Offshore Wind Energy Roadmap 2020, EPE estimates that a potential of 700 GW exists. However, there are a number of challenges related to implementing this amount of wind energy. One of the largest challenges relates to the technical training of staff. With this workshop, therefore, we offer a course that provides people in Brazil with the basic knowledge and skills required to be successful in the wind energy industry.

More information can be found here: https://www.wedowind.ch/events/brazil-2023

We plan to expand this idea and model for the Swiss Wind Energy R&D Network to offer a similar course in other countries. We will record the sessions and publish parts of them on YouTube in order to present them as a “success story”.

2.4 Diversity, Equity and Inclusion (DEI)

In this area, we work on improving diversity, equity and inclusion (DEI). At The Swiss Wind Energy R&D Network, we believe that every single one of us can contribute to increasing DEI. The following achievements related to this were made in 2022:

- **March 2022:** Diversity, Equity and Inclusion (DEI) webinar series launched in collaboration with the European Academy of Wind Energy (EAWE).

The goal of the EAWE Diversity Committee is to improve diversity in both EAWE and in wind energy science in general. We are committed to improving diversity, equity and inclusion (DEI) in wind energy science, by (a) providing tools to help people improve DEI in their organisations, (b) increasing the visibility of under-represented groups and (c) acting as positive role models by improving DEI within EAWE and our own organisations. More information can be found here: https://diversity.eawe.eu/

Parallel to the webinar series described in Section 2.3, we use the WeDoWind "Diversity in wind energy" to further discuss the webinar topics after the webinars. We have managed a small amount of engagement in this space, and look forward to increasing participation in the future.

We are currently looking for a new Management Board member who can take the time to build up our DEI activities even more, as described in *Network_Plan_2023.pdf*.

3. Accounts

The accounts summary for 2022 is shown in Table 1.

Table 1. Summary of accounts for 2022.

BILANZ

AKTIVEN

	31.12.2022
Kontokorrent	5'737.98
Umlaufvermögen	**5'737.98**
TOTAL AKTIVEN	**5'737.98**

PASSIVEN

	31.12.2022
Eigenkapital	5'882.21
Verlust	-144.23
Eigenkapital	**5'737.98**
TOTAL PASSIVEN	**5'737.98**

ERFOLGSRECHNUNG

ERTRAG

	2022
Ertrag aus Veranstaltungen	32'453.77
Spenden	26'485.00
TOTAL ERTRAG	**58'938.77**

AUFWAND

	2022
Leistungen Dritter	58'984.00
Personalaufwand	**58'984.00**
Informatikaufwand inkl. Leasing	69.00
Bankspesen	30.00
Sonstiger Betriebsaufwand	**99.00**
TOTAL AUFWAND	**59'083.00**
Verlust	**-144.23**

KOSTEN- UND PROFITSTELLEN

	2022
Projekte	
Innosuisse Event Series	2'912.77
Total Projekte	**2'912.77**

The planned budget for 2023 can be found in *Network_Plan_2023.pdf*.

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4. Summary and outlook

Thanks to financial support from Innossuise for the "Networking Event Series" we were able to carry out some exciting work as part of The Swiss Wind Energy R&D Network. We are particularly excited about the introduction of membership fees and increased focus on events for 2023. Further details about our plans for 2023 can be found in the document *Network_Plan_2023.pdf*.