

CO₂ SPAR RECHNER

Developed By Mustafa Lutaaya

ABOUT THE APP

The **Co2 Spar Rechner** is the backend for the **YoungCaritas Kleidertausch CO₂ Savings Calculator**, developed as a final semester project to improve the original system with:

- A complete admin dashboard
- User registration & approval
- Persistent data saving via PostgreSQL
- A flexible CO₂ item management system

WHY?

Previously, the YoungCaritas CO₂ calculator had issues like:

- Too simple with limited item options
- No user management
- No data persistence

The concept of “saving CO₂ through reuse” is socially impactful and fits YoungCaritas' mission and I volunteered to make it actually usable by during Kleidertausch events.

WHAT I DID

- Rebuilt the backend using **FastAPI + PostgreSQL**

Added:

- An Admin dashboard
- Secures user registration/approval
- CO₂ item database (editable)
- Swagger API and UI views
- Made it scalable and shareable between locations

DEVELOPMENT PROCESS

- **Planning:** Defined what features the original system lacked
- **Design:** Set up database models, authentication flow, admin views
- **Implementation:** Built API endpoints, templates, and email system
- **Testing:** Used pytest and Swagger to validate functionality
- **Deployment-Ready:** Dockerized the app for team or production use

RESULTS & IMPACT

- Fully working CO₂ tracking backend
- Live admin UI: easy to add/edit clothing items
- Local event teams can use and manage their own calculator
- Tangible impact: encourages reuse, quantifies environmental benefit
- Ready to be deployed across multiple YoungCaritas chapters
- Connects with the frontend I built to display the items from the database.

CONCLUSIONS & FUTURE WORK

- App works well and solves the key problems from the original system.

Future Improvements:

- Add statistics/dashboard for total saved CO₂
- Add multi-language support (e.g. English/German)
- Allow users to suggest items to admins
- Host on cloud (e.g., Render, Heroku)
- Real-world use: Can be handed over to YoungCaritas to use across events

THANK YOU

The background of the slide is a dark purple. On the right side, there are several thick, wavy, horizontal lines in a bright red color. These lines are layered over a pattern of thinner, diagonal lines in a lighter purple shade, creating a complex, textured effect. The overall design is modern and abstract.