



SUSTAINABILITY PROGRAM WITHIN THE KURATORIUM FOR DIALYSIS AND KIDNEY TRANSPLANTATION (KfH E.V.)



Sustainability efforts in 180 KfH centres since 2014

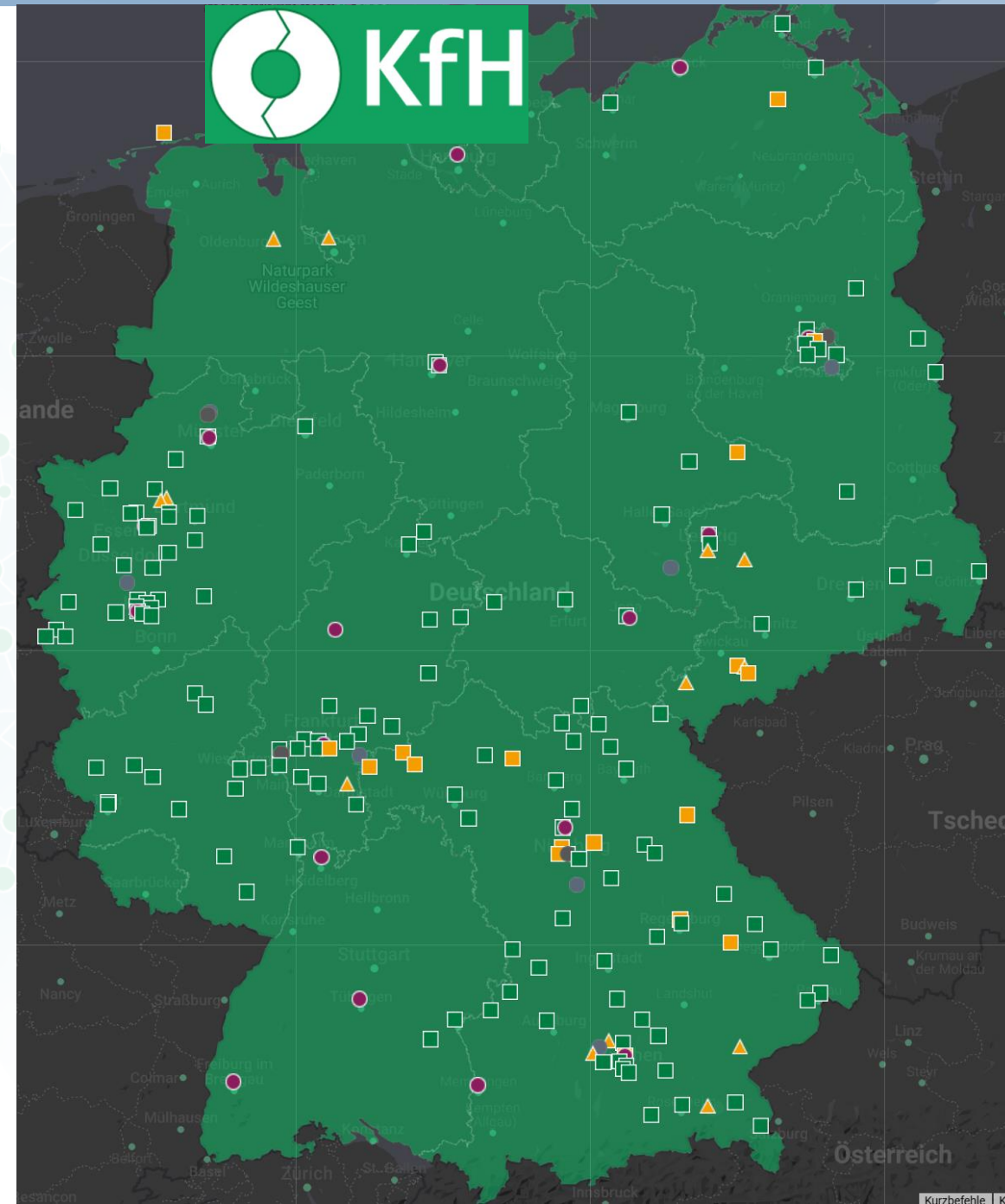
DISCLOSURES JOACHIM BEIGE

- Nothing related
- Unrelated Research grants from German Ministries of Health, Research and Education and EU ERAPermed Program
- Advisory fees from Astra Zeneca and Boehringer Ingelheim

Medical Director and 2x unit head of KfH
(non-profit) 180 units

17,000 dialysis and 70,000 CKD pats.

300 dialysis kids



Obstacles



Understand responsibility
and take along everybody

IF THE GLOBAL
HEALTH CARE
SECTORE WERE
A COUNTRY,
IT WOULD BE
THE 5TH LARGEST
EMITTER ON THE
PLANET. A NEW REPORT
HEALTH CARE'S
CLIMATE CHANGE

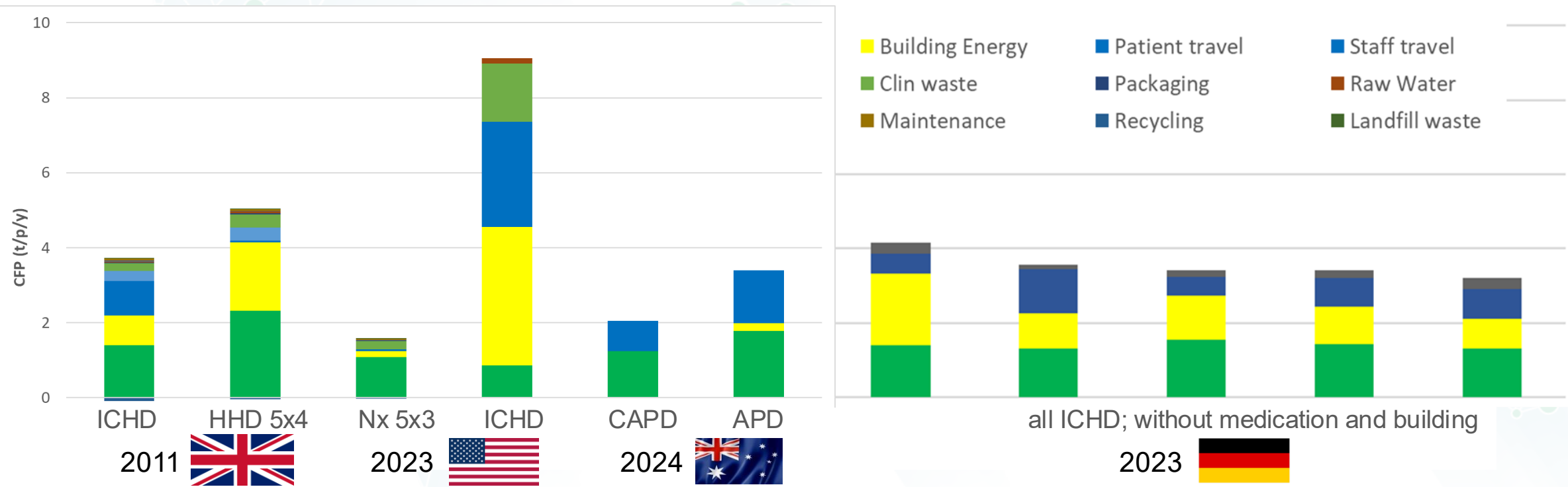


AREAS OF ACTION AND TO OVERCOME

- Must follow the 3 largest CO2 emission categories and  must be monitored by standards to be developed and agreed on

I Energy

II Transport, III Materials / Waste



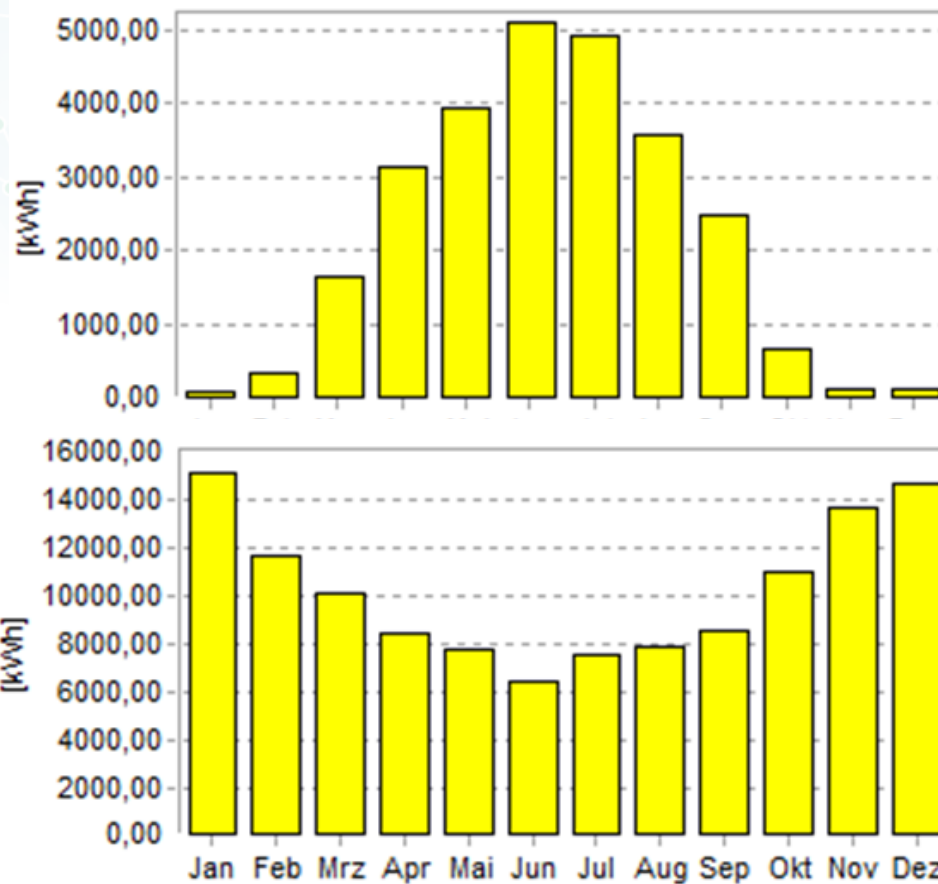
Sehgal AR, et al: J Am Soc Nephrol. 2022 Sep;33(9):1790-1795 [Editorial by Barraclough KA and McAlister S]
 McAllister S, ... Barraclough K: J Am Soc Nephrol.35(8):1095-1103, August 2024.
 Connor D, et al.:Hemodial Int. 2011 Jan;15(1):39-51.



I Green Energy Production (solar power)

- = 0,6 tons/patient/year CO₂equ reduction
[10.800 t overall if in all centres, 600 t prevalent]

Production



Consumption



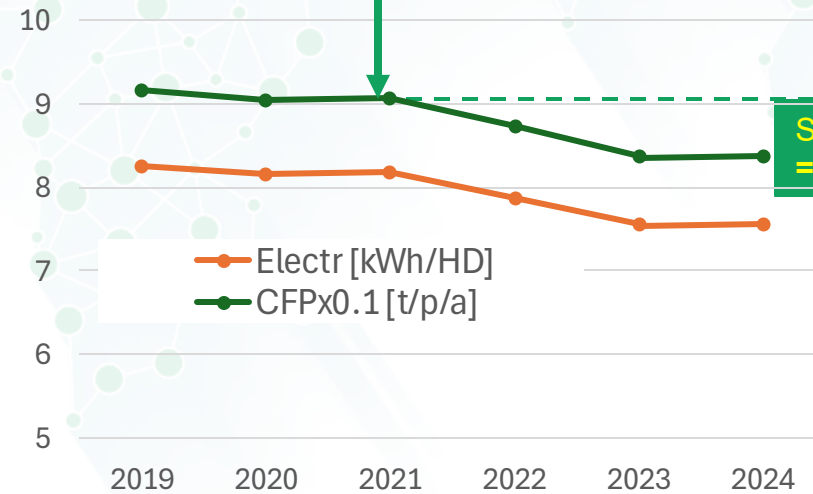
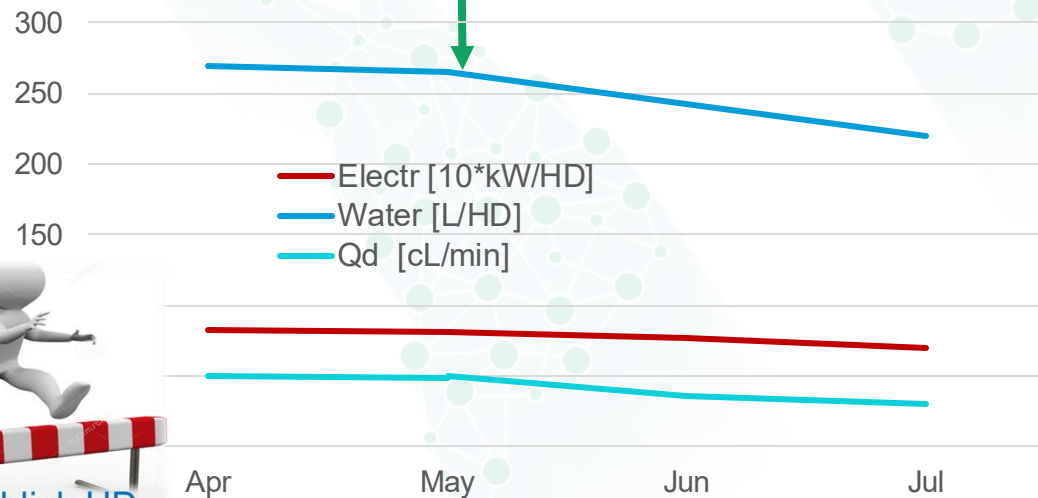
Roof
surface,
investment

I Energy Consumption reduction – Qd reduction

Single patient level

KfH overall level (estimate 30% of centers)

Recommendation of machine preset of Qd 350 mL/min, individualization per patient prescription (Qb, weight, residual function ...)



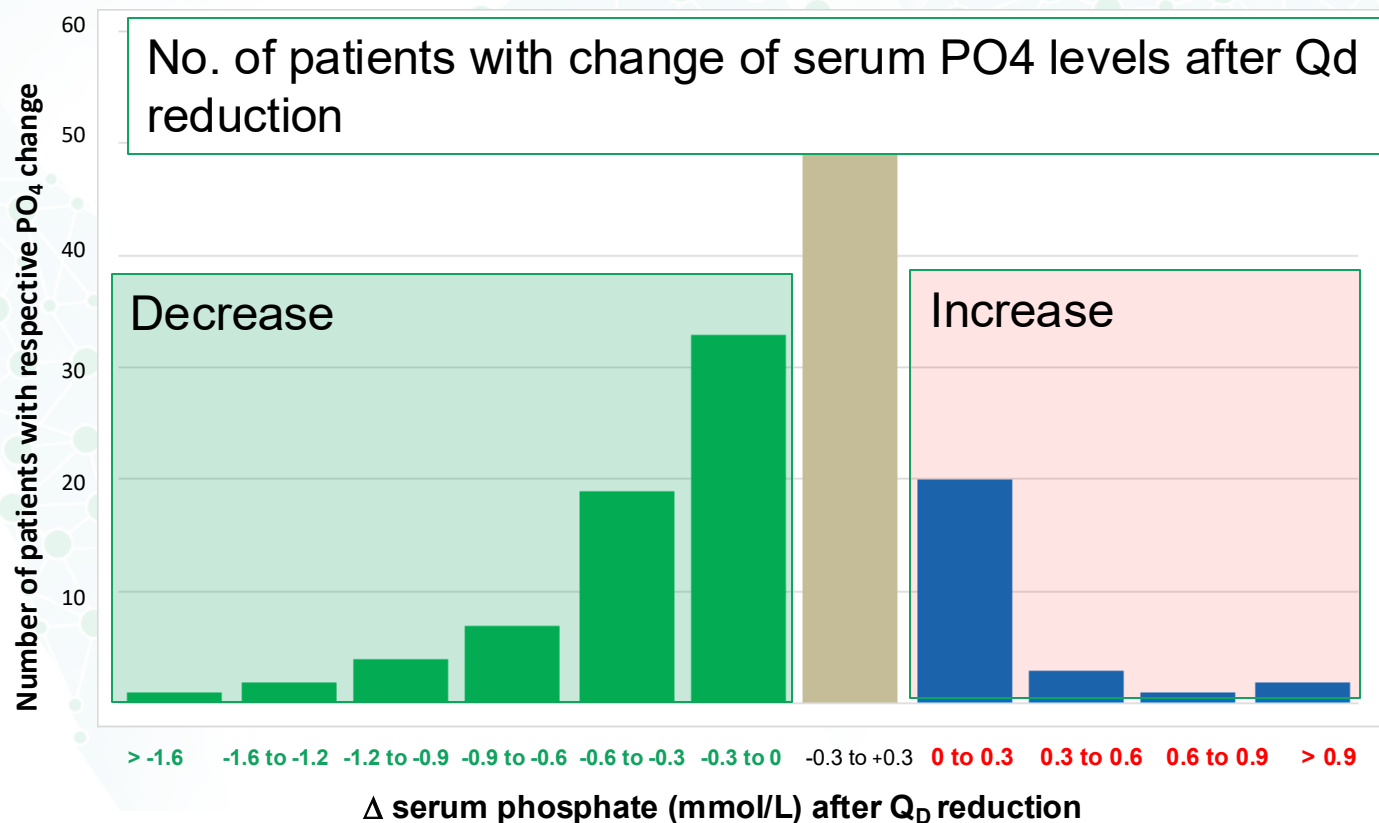
Savings 1.750 MWh
= (735 t CO₂equ), 0.23 Mio EUR



Patient information and education

I Energy Consumption reduction

- Dialysate flow reduction – **Overall effect** per dialysis (estimate 30% of centers)
 Recommendation of preset Qd 350 mL/min, individualization per patient prescription



Need for uremic toxins research/outcomes

III Transport: Patient transport (if not at home)



CFP reduction t/p/y

Electric car transport

0.2

Group transport

0.15

Non-fossile staff commute

0.07



Patient cooperation Payer (unifying) cooperation

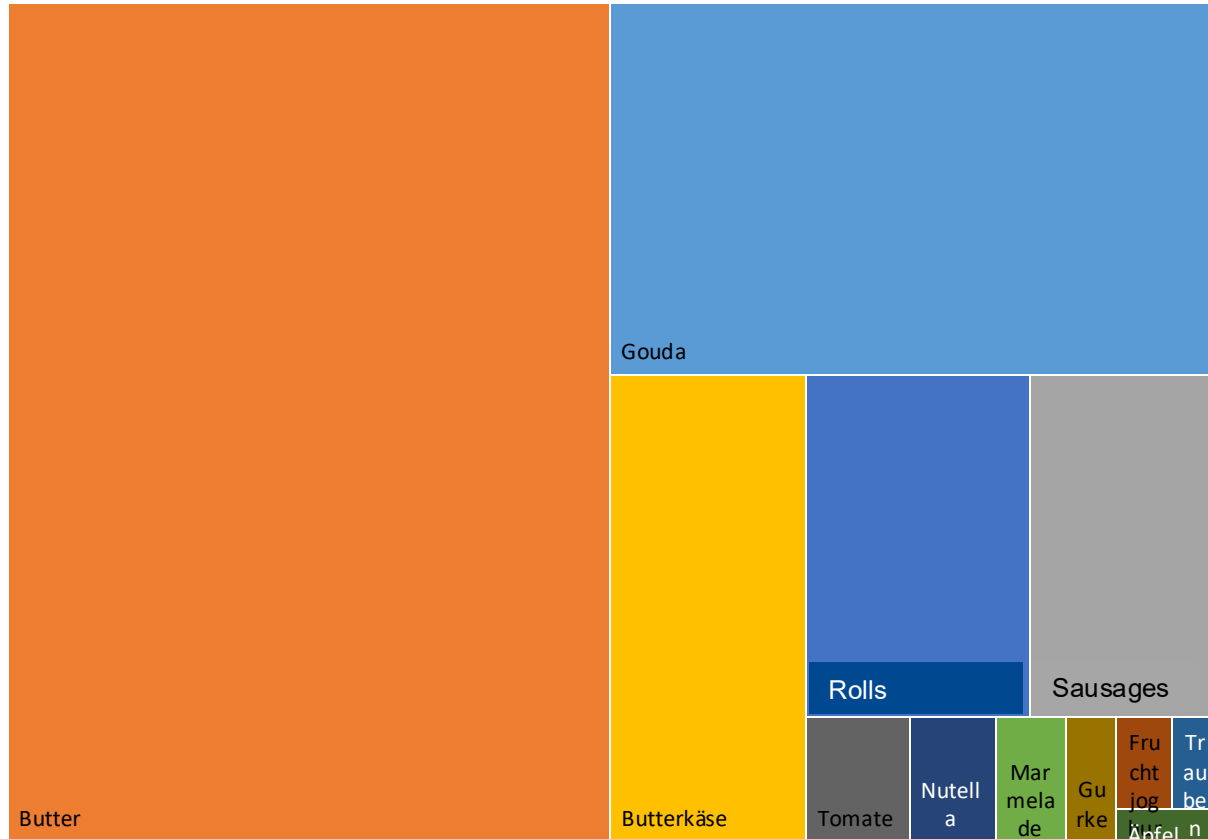
III Transport: 70% Reduction of freight weight by own concentrat mixing



Treatment
number break-
even and
manufacturer
responsibility

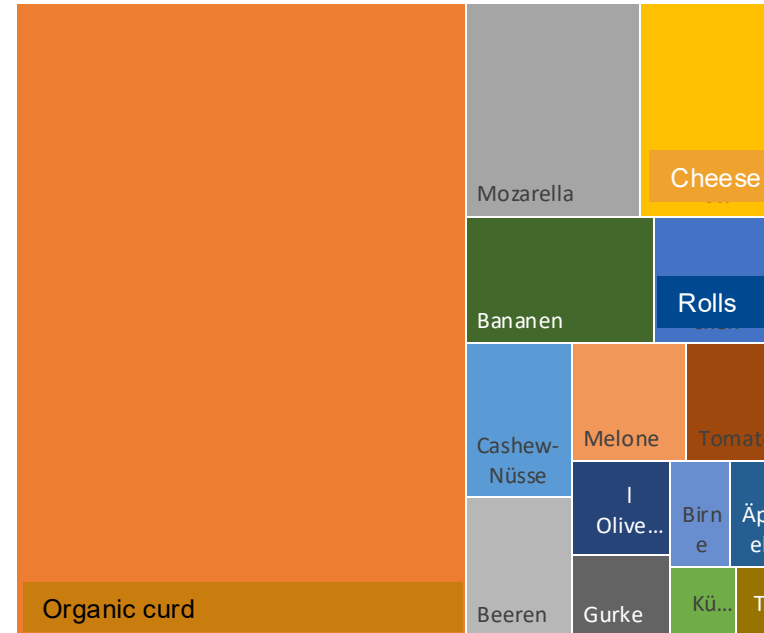
Dialysis CFP reduction using healthy food

Mixed conservative diet (CFP 148 kg/p/y)



Center total* 8.5 t/y

Vegetarian diet (84 kg/p/y)



Center total* 4.4 t/y

* Normalized from 118 pat.



My very first home hemo patient used dialysate recycling since 1970 !

And survived at least until 1995 ff. when we met first



Weekly Journal "Die Zeit",

24. 11. 1972 (by V.T.; translated)

Portable artificial Kidney

“Patients with severe kidney disease ... (make use of) **first portable artificial kidney** REDY. ... does not tie its patients to a hospital or a home dialysis machine. ... **In the past**, ... no possibility for vacation outside home, but **now** they can take the dialysis machine with them on vacation.”



**Back to
the
future**



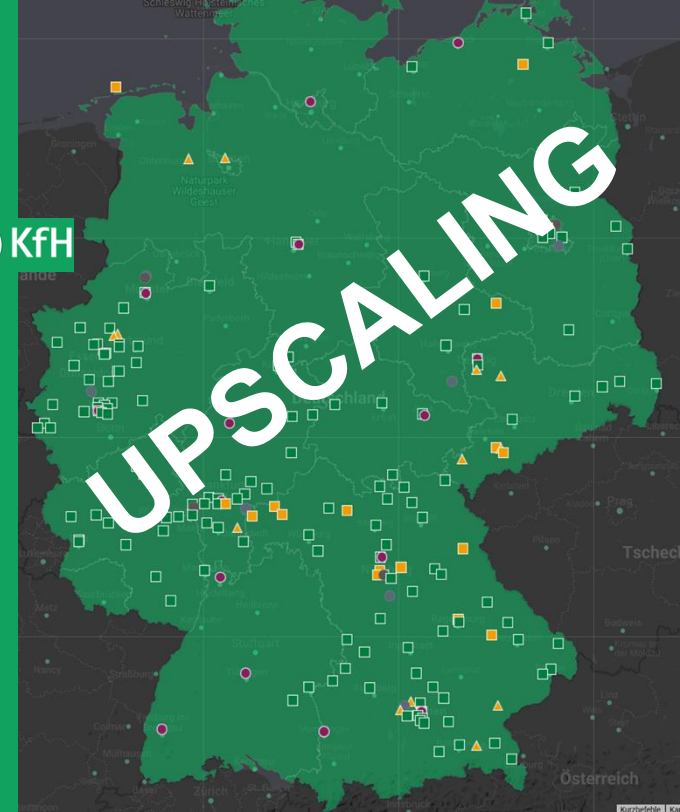
M J Blumenkrantz, M Roberts, ... M H Maxwell. Applications of the Redy sorbent system to hemodialysis and peritoneal dialysis *Artif Organs*. 1979 Aug;3(3):230-6.



What we have done

	CFP reduction t/p/y	% [est]	total t	KfH
Solar power	0.6	15	1200	
Dialysate reduction	0.4	10	735	
Group transport	0.1	2	150	
Planetary diet	0.1	2	15	
>90% recycling of packaging		?		

(but we lost mobile HD with dialysate recycling 😞)



What must be done *(immediately)*

Electric car transport	0.2	4		
<i>Clinical material recycling</i>	> 0.5	12		
Bicarb cartridge recycling				
Home dialysis	> 1.5	40		
<i>Dialysate recycling</i>	> 0.5	12		
Σ	2...3	30 ... 60 %		



Understand everybody's responsibility

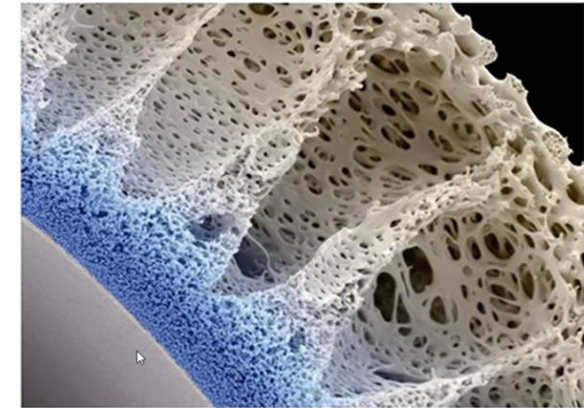
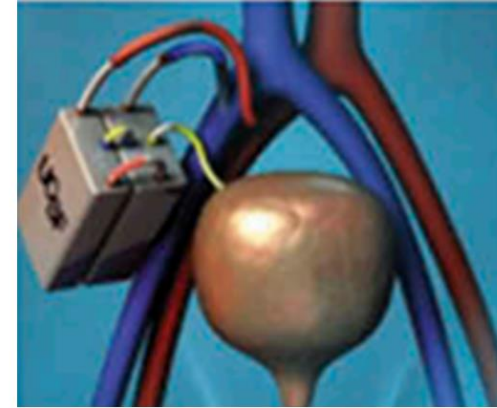
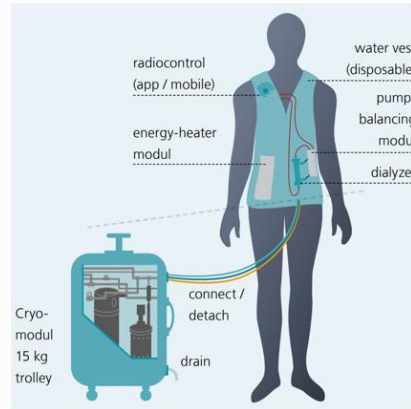
now. **We** can halve
emissions by 2030.

Closing sentence of the 2022 IPCC climate report

**The German Society's for
Nephrology green activists:**

- Susi Knöller (KfH Bremen)
- Cosima Boedecker-Lips (Uni Mainz)
- Nils Heyne (Uni Tübingen)
- Jan Galle (Klinikum Lüdenscheid)
- Joachim Beige, Andreas Canisius, Martin Hommerding, Andreas Brehm ... (KfH)
- Falk Sommer, Peter Barth (Greentec Dialysis)
- Martin Pachmann (FMC Nephrocare)
- Werner Kleophas (DaVita)
- Marion Haubitz (KfH Fulda)
- K. deGroot (KfH Offenbach)
- Sylvia Stracke (KfH Greifswald)
- Martin Weinreich (DN)

Disruption to „Net Zero“



Dialysate recycling

New Adsorber-Technologies

5 Liter Dialysat



Wearable art. Kidneys (WAK, PAK)



Eco-friendly, recyclable Materials

Materials

Materials with reduced CFP

Pyrolysis ready energy-recycle