Projects and activities

Franz Josef Radermacher

October 2026

The Research Institute for Applied Knowledge Processing (FAW/n) is a charitable foundation established in 2004 as the successor organisation to the former FAW (founded in 1987). It is headed by Prof. Dr Dr Dr h.c. Franz Josef Radermacher.

Its main areas of focus are futures studies and research into globalisation processes in the context of sustainable development (climate and energy issues, economy and development, ecology and sustainability), as well as how these are shaped by politics, business, public institutions and society.

Our hallmarks are a broad, interdisciplinary approach, the use of mathematical analytical tools, and the application and transformation of the insights gained into practical action from a global perspective.

We seek non-ideological and consensus-based answers to the major questions of our time, which are guided by economic rationality and point the way to economically viable paths into the future.

At the end of August 2020, at the suggestion of the Federal Ministry for Economic Cooperation and Development (BMZ), the FAW/n founded the non-profit association Global Energy Solutions (GES), also based in Ulm. The foundation took place at Ulm Town Hall. Since its inception, there has been close collaboration on substantive matters between the two organisations.



Launch event for Global Energy Solutions at Ulm Town Hall.
From left to right: Christof von Branconi (GES Board Member), Norbert Barthle (State Secretary, BMZ), Gunter Czisch (Lord Mayor of Ulm), Franz Josef Radermacher (FAW/n Board Member)

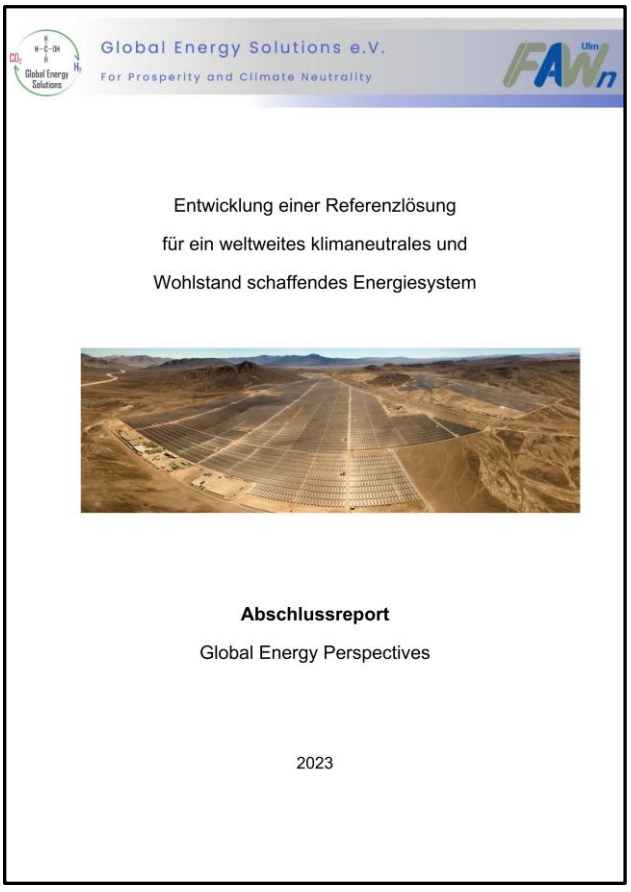
1. ‘Global Energy Perspectives’ project

Objective: To develop a reference solution for a global, climate-neutral energy system that generates prosperity

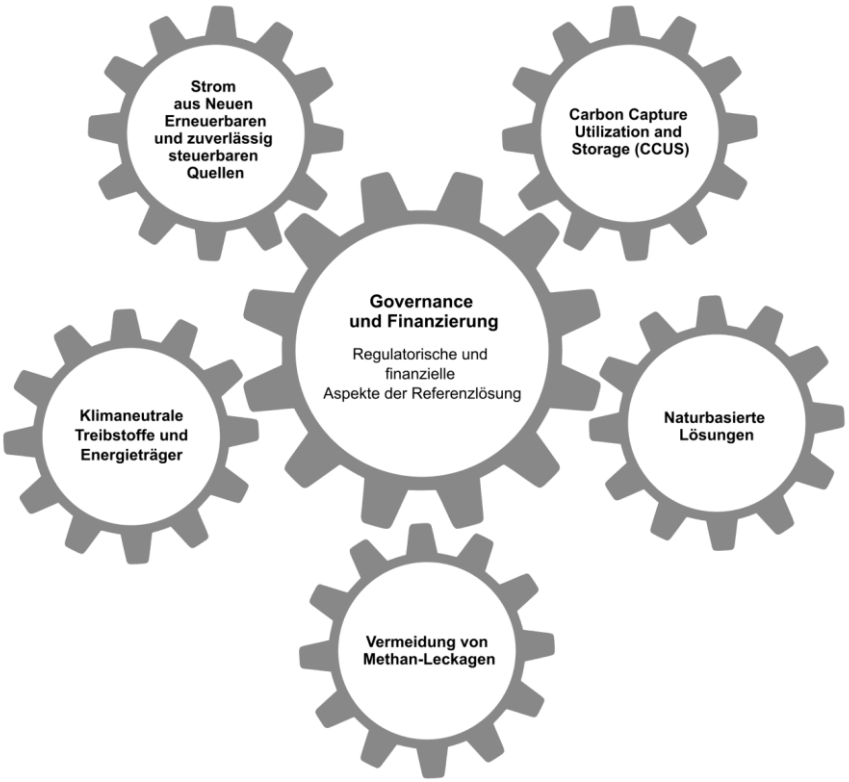
Commissioning body:
- Federal Ministry for Economic Cooperation and Development under Dr Gerd Müller (funding: 1 million euros)
- 15 partners from the business sector

Outcome: Final report + approximately 700 pages of accompanying technical material. The research was carried out with substantial support (both financial and in terms of personnel) from the BMZ and 15 partners from the private sector.

Further details: The project was carried out in collaboration with Global Energy Solutions e.V. (GES) and was successfully completed in 2023 after two years of work. Following many years of collaboration, this was the last project commissioned by the BMZ.



These are the six components of the reference solution:



To tackle the challenges in the energy and climate sectors, as well as the entire 2030 Agenda, the focus is on close North-South cooperation for mutual benefit. The aim is to achieve significant growth in developing and emerging economies whilst simultaneously attaining climate neutrality.

The world's countries have been divided into three groups, which reflect recent geopolitical developments and systematise the different starting points and responsibilities:

Erweiterte OECD 38 + 9 Staaten Wohlhabende Staaten	China-Club 10 Staaten Staaten mit hoher Abhängigkeit von fossilen Energien	Challenge Gruppe 128 Staaten Entwicklungsländer
2025 1,5 Mrd. Menschen 75 Bil. US-Dollar BIP	2025 1,5 Mrd. Menschen 30 Bil. US-Dollar BIP	2025 5 Mrd. Menschen 20 Bil. US-Dollar BIP
2050 1,5 Mrd. Menschen 110 Bil. US-Dollar BIP	2050 1,5 Mrd. Menschen 50 Bil. US-Dollar BIP	2050 7 Mrd. Menschen 80 Bil. US-Dollar BIP
Klimaneutralität 2050 - 2060	Klimaneutralität 2060	Klimaneutralität 2070

Die erweiterte OECD und der China-Club werden ihre Klimaziele aus eigener Kraft erreichen.

Die Länder der Challenge-Gruppe benötigen umfangreiche finanzielle Hilfe.

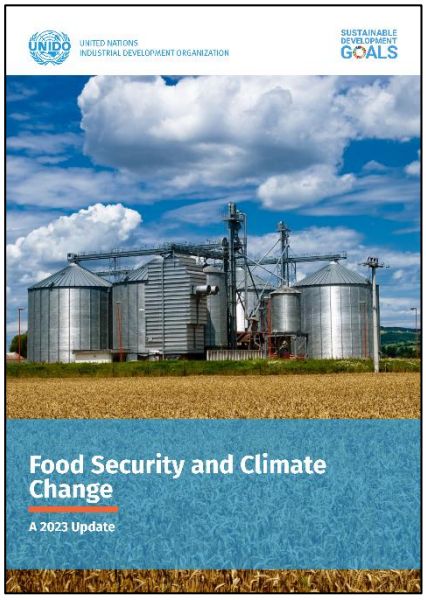
The funding required is intended to reduce CO_2 emissions in developing and emerging economies. It follows the logic of the 'Montreal Protocol' for the protection of the Earth's ozone layer. The figure involved is 1,200 billion US dollars per year. At the time the project was completed, projections for financial aid from rich countries still stood at 100 billion US dollars per year. At the World Climate Conference in Baku in autumn 2024, the world's nations agreed that, by 2035, approximately 1,400 billion US dollars in support must be made available annually from all sources, both governmental and non-governmental.

2. Activities with UNIDO

UNIDO (United Nations Industrial Development Organisation) is one of the UN organisations based in Vienna. UNIDO is committed to the industrialisation of developing and emerging economies. These countries have a legitimate right to growing prosperity. Their population is set to rise from 5 billion today to 7 billion by 2050. According to UN logic – see, for example, the Paris Climate Agreement – the countries concerned are permitted to continue increasing their CO_2emissions.

Dr Gerd Müller, the former German Federal Minister for Economic Cooperation and Development, has been **Director-General** of UNIDO since 10 December 2021. The FAW/n is – continuing the close cooperation established during its time with the BMZ – a key supporter of UNIDO's substantive work. UNIDO has no funds to finance these contributions. The following works, amongst others, have emerged from the collaboration with UNIDO:

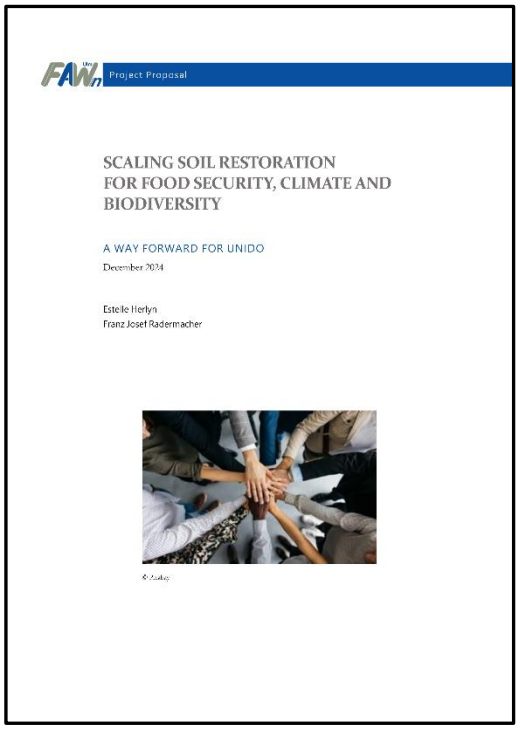
1) UNIDO publication "Food Security and Climate Change – A 2023 Update"



Authors: Estelle Herlyn and Franz Josef Radermacher, both from FAW/n.

Key message: Considerable synergies and potential can be realised by considering the issues of food security and climate action together. These relate to 1) the empowerment of the world's 500 smallholder farmers, with a particular focus on soil restoration, 2) the reduction of 'food loss' and 'food waste', and 3) changes in meat production and consumption.

2) Project proposal “Scaling Soil Restoration for Food Security, Climate and Biodiversity – A Way forward for UNIDO”



Authors: Estelle Herlyn and Franz Josef Radermacher, both from FAW/n

Content: Against the backdrop of continuing soil degradation worldwide and the associated negative consequences for food security, climate and biodiversity, a strategic project proposal has been developed with the aim of positioning UNIDO as a key player in a multi-stakeholder approach to addressing the aforementioned challenges.

What is urgently needed, but has not yet been established, is a convincing approach to translating CO_2 sequestration into international financial flows via a certification scheme based on an appropriate regulatory framework. For UNIDO, this field offers opportunities to assume a key role by establishing a substantive position and ensuring the quality of the relevant certificates.

3) Roll-out of global offset projects (Article 6.4 of the Paris Agreement / Baku Decision) / Proposal for UNIDO / **Switzerland as a model**
(Estelle Herlyn and Franz Josef Radermacher)

4) 2026: Preparation of four major studies for UNIDO:

- Developments over the last 10,000 years since the invention of agriculture and livestock farming
- A world without hunger
- Energy availability across the different continents
- Global eco-social market economy: the economic system for sustainable development

3. Participation in the UN Council of Engineers for the Energy Transition (CEET)

The Council was established in 2021 and reports directly to the UN Secretary-General (currently: António Guterres). Dr Gerd Müller (UNIDO) is one of the Council's two co-chairs. Activities for the CEET are not funded (apart from part of the travel expenses).

- **Prof. Franz Josef Radermacher** was the Council's sole German-speaking member from the outset. Following the expiry of his regular term of office, he continues to contribute as a senior member, liaising directly with Dr Müller.
- **Dr Tobias Orthen** (FAW/n) has been involved in key working groups of the Council from the outset, representing the Director of the Institute, including Working Group 3 on 'Heavy Industries'. There, he made a significant contribution to the paper 'Global Strategies for Low-Carbon Iron and Steel Production'. He has also contributed to the CEET's CCS paper, "Assessing Viability and Economic Implications of Integrating Carbon Capture and Storage (CCS) Technologies into the Energy Transition and Article 6 Carbon Markets". Both "Policy Briefs" are due to be published shortly.
- Furthermore, Tobias Orthen took part in a CEET panel at the climate conferences in Dubai and Baku in 2023 and 2024 respectively. The first panel focused on the 'decarbonisation of heavy industries'. At the second, the preliminary findings of the CCS paper were presented.
- Currently (2026), Dr Orthen is one of the two co-leads of the CEET's newly established 'synthetic fuels' working group.
- Furthermore, he is involved in a new working group (2026) on the "AU-EU Green Bridge", which links specific economic corridors on the African continent with the social, economic and environmental interests of the African Union (AU) and the European Union (EU). There is a close connection here to the "EU-Africa: Global Gateway Investment Package".

4. Projects with the Vector Foundation (Stuttgart)

The Vector Foundation in Stuttgart is a major sponsor of projects in the STEM field. Over the past 10 years, the Vector Foundation has funded several FAW/n projects. These include, in particular, the project:

Climate-neutral coal and gas-fired power stations – economically restructuring the energy system

(Completion: June 2024)


Global Energy Solutions
For Prosperity and Climate Neutrality

Klimaneutrale Kohle- und Gaskraftwerke

Das Energiesystem wirtschaftlich umbauen

Juni 2024

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Lise-Meitner-Straße 9
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The project addresses the topics of carbon capture (including in coal-fired power stations) and synthetic fuels for passenger cars. Both topics had been expressly excluded from consideration under the funding for Project 1 by the Ministry for Economic Cooperation and Development.

The Vector Foundation has enabled us to fill this gap in our research and to highlight the significant potential in these areas. Without this, climate neutrality cannot be achieved.

New project since mid-2024

- **STEM and Governance**

  with four key research areas

  1. Analysis of a targeted ramp-up of carbon capture to 10 billion tonnes of CO_2 per year by 2050,
  2. synthetic fuels, including for the financing of nature-based solutions (particularly soils),
  3. Unlocking the climate action plans (NDCs) of developing and emerging economies
  4. Development of a global cap-and-trade system based on the deconditioned climate action plans

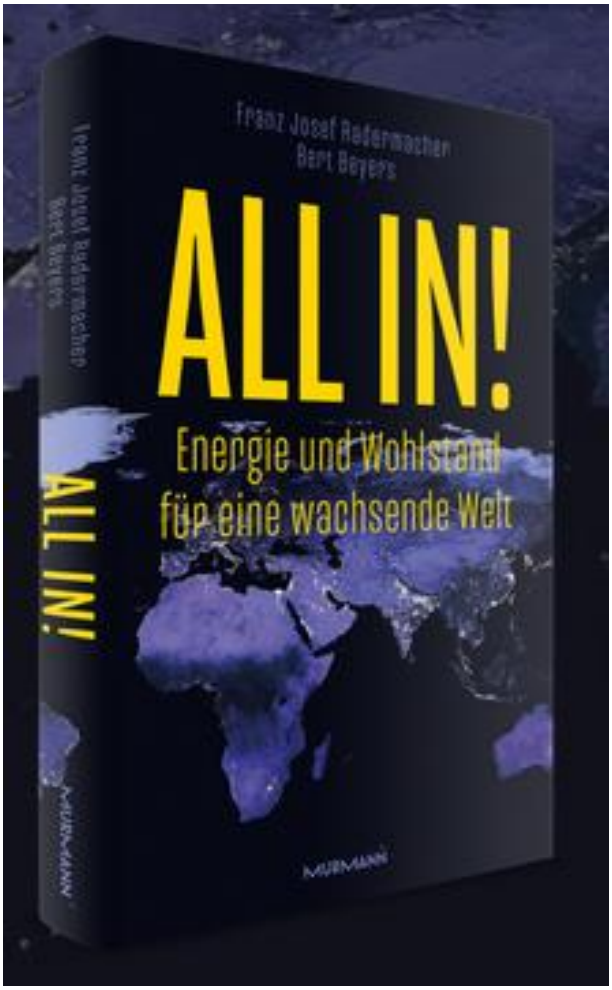
In the field of energy and climate, different approaches and corresponding narratives are currently 'clashing' with one another. The project makes an important contribution to underpinning an 'All In' approach (as opposed to 'All Electric'), which draws on all available technological options, advocates open markets and international cooperation, and aims to build global prosperity. The existing potential in the STEM sector can only be realised if appropriate governance promotes rather than hinders it. Against this backdrop, the aim across all four key focus areas is to harness technological potential as effectively as possible through appropriate governance and to put it to use for a bright future for the world.

The project is in its final phase and will be concluded at the end of November 2026 with a comprehensive report.

5. Book project ‘All In! Energy and Prosperity for a Growing World’

The book “ALL IN! Energy and Prosperity for a Growing World” aims to bring the findings of projects 1) “Global Energy Perspectives” (BMZ) and 4) “Climate-Neutral Coal and Gas-Fired Power Stations – Economically Transforming the Energy System” (Vector Foundation) to a wider audience.

It is also available in English under the title “ALL IN! Energy and Prosperity for a Growing World”.



It contains a wealth of testimonials from prominent figures and a foreword by Paul Shrivastava, Co-President of the Club of Rome.

The book project was funded by FAW/n and GES from their own resources.
The book was published to coincide with the 2024 Frankfurt Book Fair.

6. Position paper “8 Points for an Effective and Affordable Energy Transition / Plan B for German Energy Policy”

In collaboration with Global Energy Solutions, 4Pi-Solutions, denkfabrik 21 and the Senate of the Economy, the FAW/n has developed a position paper that sets out an 8-point plan for a way out of the economic recession and towards an effective and affordable energy transition.



8 PUNKTE FÜR EINE WIRKUNGSVOLLE UND BEZAHLBARE ENERGIEWENDE

Vorbemerkung

Die Basis des deutschen Wohlstands, die deutsche Wirtschaft, stagniert seit zwei Jahren. Andere Länder, wie beispielsweise die USA, sind deutlich erfolgreicher. Dabei belasten insbesondere die hohen Systemkosten der Energiewende Unternehmen, Bürger und den Staatshaushalt und damit die globale Wettbewerbsfähigkeit Deutschlands.

1. Germany needs competitive electricity prices once again, and electricity must be reliably available at all times in the long term
2. New photovoltaic and wind power plants must be able to compete without subsidies
3. Make fossil fuel power stations climate-friendly through $_{CO_2}$capture
4. Seize the opportunity presented by German natural gas
5. Use hydrogen only for cost-effective applications
6. CO_2-neutral fuels for energy-intensive industry and transport
7. Examine a return to nuclear energy
8. Market-based solutions instead of bans and excessive bureaucracy

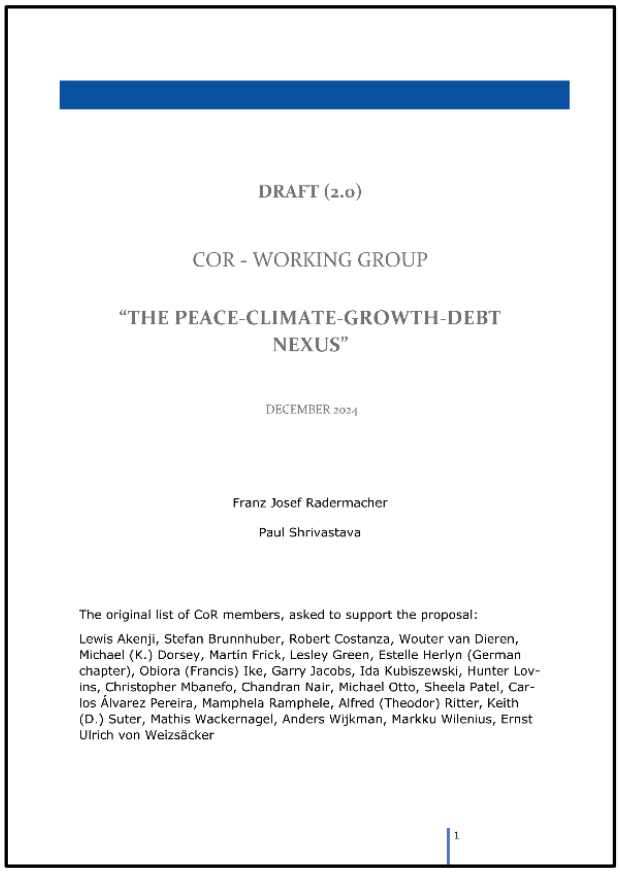
A joint study with GES / Frontier Economics on a **'Plan B' for the German energy transition** has now also been published as part of this broader analysis (https://www.frontier-economics.com/media/u1vbsfop/frontier-dihk-energiewende-plan-b-03092025-stc-update-stc.pdf). Plan B demonstrates that around half of Germany's energy and climate-related costs could be saved whilst achieving a much greater climate impact than under the status quo. That amounts to more than **100 billion euros** per year.



7. Club of Rome International – Peace-Climate-Growth-Debt Nexus

The project examines the interrelationships between poverty, growth, debt, the environment and climate, and analyses potential threats. If current negative trends persist, the outlook for the future is considered to be far from positive, even over the next 20 years. There is a high probability of violent conflicts within and between states.

Work is currently (2026) being taken forward with a view to the UN Climate Change Conference to be held in Turkey at the end of the year.



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COR - WORKING GROUP

"THE PEACE-CLIMATE-GROWTH-DEBT NEXUS"

DECEMBER 2024

Franz Josef Radermacher

Paul Shrivastava

The original list of CoR members, asked to support the proposal:

Lewis Akenji, Stefan Brunnhuber, Robert Costanza, Wouter van Dieren, Michael (K.) Dorsey, Martin Frick, Lesley Green, Estelle Herlyn (German chapter), Obiora (Francis) Ike, Garry Jacobs, Ida Kubiszewski, Hunter Lovins, Christopher Mbanefo, Chandran Nair, Michael Otto, Sheela Patel, Carlos Álvarez Pereira, Mamphela Ramphele, Alfred (Theodor) Ritter, Keith (D.) Suter, Mathis Wackernagel, Anders Wijkman, Markku Wilenius, Ernst Ulrich von Weizsäcker

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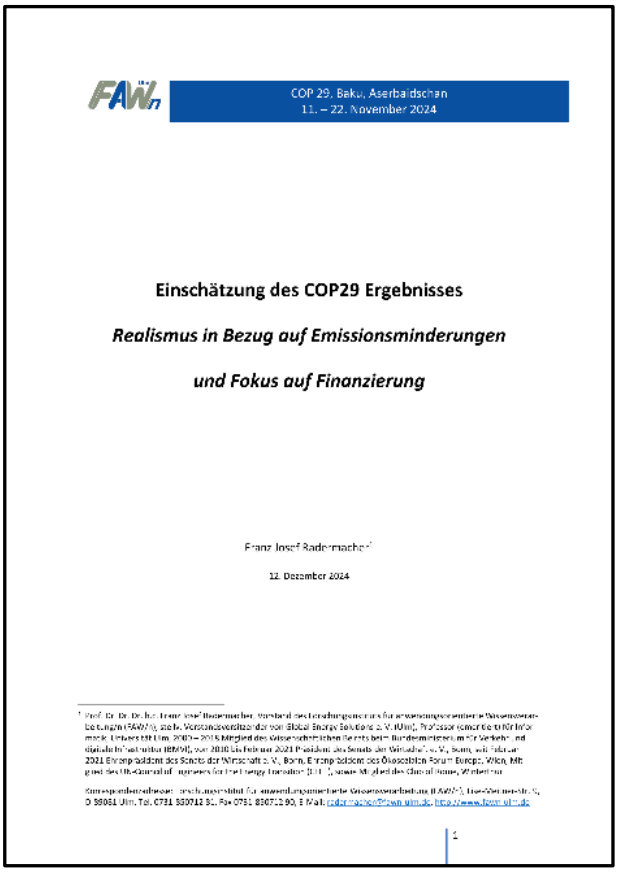
Participants in Club of Rome projects must finance their involvement from their own resources.

8. Assessment of the outcomes of the COP29 climate conference in Baku

The penultimate climate conference finally brought a sense of realism regarding expected emissions reductions and focused on the crucial issue of financing.

Key assessments:

1. Baku was a great success, even though the German media tended to give the conference a more negative coverage.
2. Central to this is the agreement on Article 6.4 of the Paris Agreement, which enables international cooperation and thus opens up new opportunities for the urgently needed international climate finance.
3. The agreed massive increase in international climate finance from government sources – from the current $100 billion per year to at least $300 billion by 2035 – is both significant and necessary.
4. If all conceivable sources of funding to support developing and emerging economies are taken into account, the conditions should be in place by 2035 to provide annual support amounting to 1,400 billion US dollars. At last, the financial scale of the challenge is being addressed – without which climate change cannot be brought under control.


FAW/n

COP 29, Baku, Aserbaidschan
11. – 22. November 2024

Einschätzung des COP29 Ergebnisses

Realismus in Bezug auf Emissionsminderungen

und Fokus auf Finanzierung

Franz Josef Radermacher[1]

12. Dezember 2024

Note: At COP30 in Belém (Brazil), it became clear that the rich countries are **not** currently pursuing the implementation of the Baku decisions.

The work was funded by FAW/n using funds from the Foundation.

9. Alliance for Development and Climate



Acknowledgement from the Foundation to Prof. E. Herlyn and Prof. F. J. Radermacher on 28 November 2022 at Ulm Town Hall for their contributions to the establishment of

Since autumn 2018, the FAW/n has been supporting the Federal Ministry for Economic Cooperation and Development (BMZ) – initially under Federal Minister Dr Gerd Müller – in establishing the Alliance for Development and Climate. The Alliance aims to link development cooperation and climate protection through the instrument of voluntary greenhouse gas offsetting, and to this end to mobilise partners to finance high-quality, certified development and climate protection projects in developing and emerging economies. The Alliance therefore advocates for offsetting projects, but is also frequently criticised for doing so. More than 1,300 partners from the business sector, public administration and civil society now support this objective – partners who are striving for climate neutrality and, to this end, are avoiding, reducing and offsetting their greenhouse gas emissions in their own individual ways. In doing so, they are also making an important contribution to the implementation of the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement. One prominent partner is Robert Bosch (a founding company of the FAW/n in Ulm), which has made extensive use of offsetting opportunities to achieve climate neutrality as early as 2020. In autumn 2020, with the involvement of the FAW/n, the Alliance was transformed into a foundation based at KfW in Frankfurt. The board members are Mr Peter Renner and Dr Olivia Henke. In recent years, the FAW/n has been supporting the 'Alliance for Development and Climate' foundation as an observer on its journey into the future. However, the Alliance has shifted its focus in recent years.

Allianz für Entwicklung und Klima

10. Senate of the Economy

In keeping with a long-standing tradition, the FAW/n works closely with the Senate of the Economy and its foundation within the philanthropic sector. Professor Radermacher is **Honorary President** of the Senate and remains a member of its Executive Committee, as well as serving on the foundation's Board of Trustees. A current focus of this work is a different energy and industrial policy for Germany. The Senate of the Economy is a non-partisan, business-oriented organisation based in Germany. It sees itself as a network of leading figures from business, academia and society who are committed to a sustainable, social and environmentally responsible market economy. The Senate acts as a bridge between business and politics and plays an active role in societal debates – for example, on issues such as energy policy, education, digitalisation and global responsibility.

Particular emphasis is placed on value-based action, responsibility towards future generations and alignment with the goals of the UN 2030 Agenda. In doing so, the Senate represents economic, environmental and social interests in the spirit of an eco-social market economy and is guided by principles such as integrity, partnership and sustainability. Its members include entrepreneurs, executives, experts and former politicians. The Senate is part of Senate Europe as well as Senate International, which connects similar organisations worldwide. Through its activities, the Senate sees itself as an advisory body to politics, public administration and society, providing impetus for a sustainable economic order.



Dieter Härthe, Ernst Ulrich von Weizsäcker, Walter Döring, Gerd Müller, Christoph Brüssel, Franz Josef Radermacher

11. Study by the Clean Energy Forum (CEF)



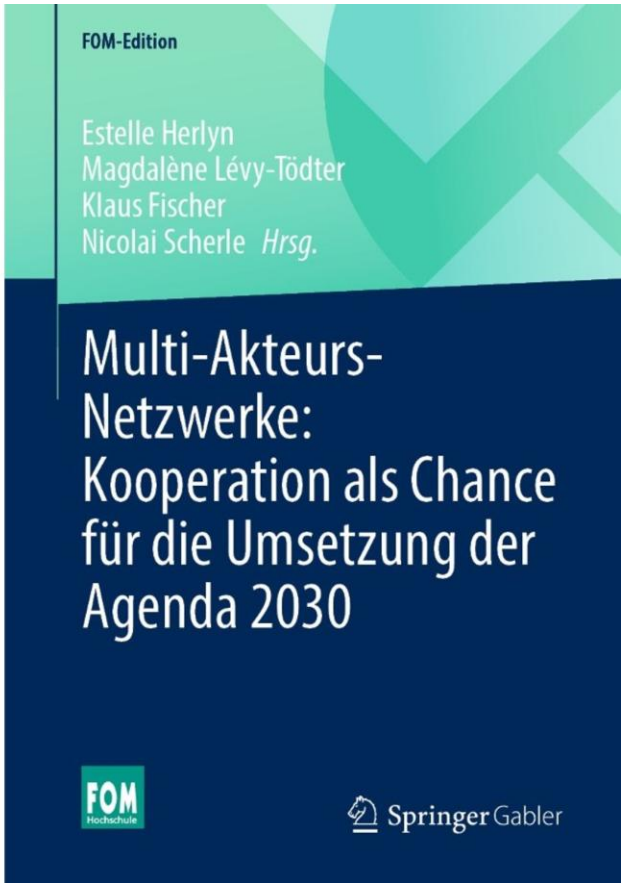
The Clean Energy Forum (CEF), headed by Dr Friedbert Pflüger and with Prof. Franz Josef Radermacher serving on its board of trustees, has published the report 'Carbon Management – Key Technology in the Fight against Climate Change'. The CEF is an independent think tank that advocates for a technology-neutral, market-oriented climate policy. In the publication, the authors Hans-Joachim Kümpel (former President of the Federal Institute for Geosciences and Natural Resources – BGR), Franz Josef Radermacher and Reinhard Hüttl emphasise the central role of carbon management technologies. They argue that CCS and related processes are indispensable for reducing hard-to-avoid emissions and achieving climate targets. The study calls for a reliable regulatory framework and investment in CO_2 infrastructure to enable the industrial implementation of these technologies.

The study emphasises the importance of international cooperation and market-based incentives to achieve a sustainable and economically viable transition. It advocates a climate policy that promotes innovation and strengthens global partnerships in order to effectively address the challenges of climate change. The CEF provides a platform for dialogue between the scientific community, industry and policymakers to promote innovative solutions for achieving climate targets. In doing so, the CEF emphasises the need to mobilise all available technologies, including renewable energy, carbon capture and storage (CCS), nuclear energy, and nature-based solutions. This is also the position of the FAW/n and is reflected in the book 'All In!'.

12. 2027 edition of the anthology ‘ : Late Opportunities for the 2030 Agenda: Necessary Paradigm Shifts, Actors and Fields of Action ’ edited by Prof. Estelle Herlyn

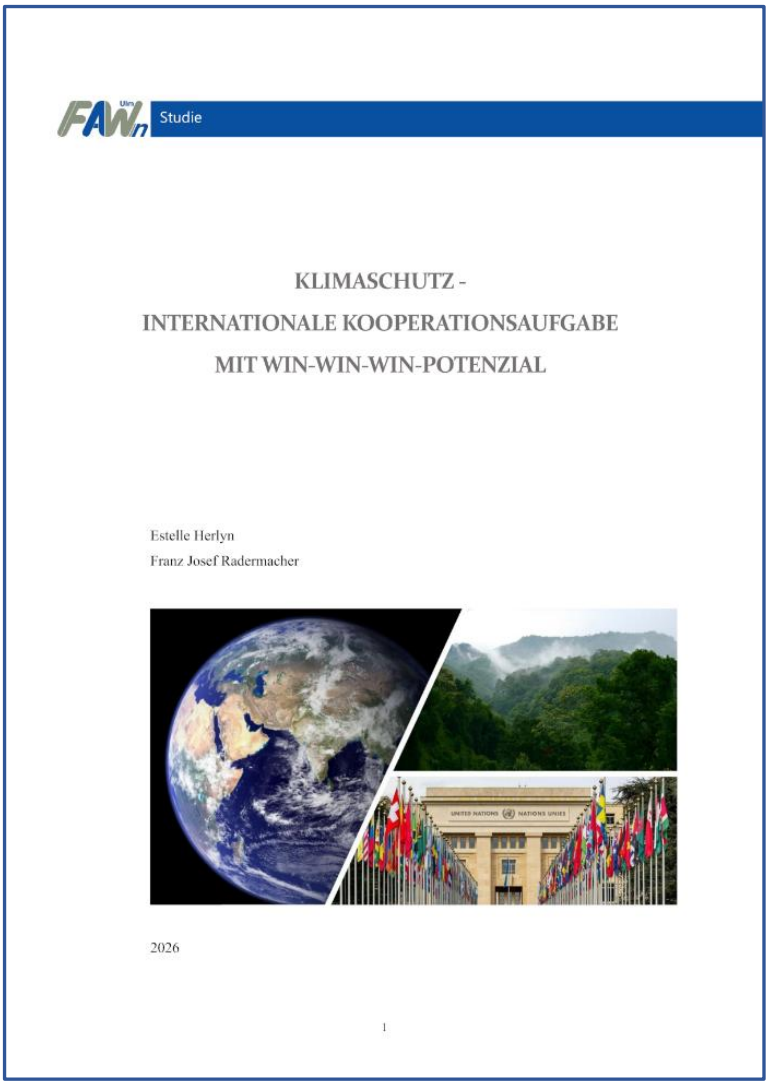
1) The two preceding volumes





2) In 2027, a further anthology entitled “Late Opportunities for the 2030 Agenda: Necessary Paradigm Shifts, Actors and Fields of Action” will be published

13. UNIDO contribution: “Climate Protection – An International Cooperative Endeavour with Win-Win Potential” (2026) by Prof. Estelle Herlyn and Prof. F. J. Radermacher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KLIMASCHUTZ -
INTERNATIONALE KOOPERATIONSAUFGABE
MIT WIN-WIN-WIN-POTENZIAL

Estelle Herlyn
Franz Josef Radermacher

2026

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14. **Book published in 2026. Article: “Marketing Management and Sustainability – Update 2025”, by Prof. F. J. Radermacher; and article: “Sustainable Marketing Management – Challenges, Objectives and Recommendations for the Decade of Action”, by Prof. Estelle Herlyn**

