**Paul Hugo Suding**

**Paul Hugo Suding** (\* 23.January 1949 in Vechta, Germany) is a German energy economist and international development specialist.

Paul Suding holds a Diploma in business administration and a Ph.D. in economics, with specialization in energy economics from the University of Cologne, Germany. He has published over 100 articles and books on energy, geography, environment and climate topics.

For his PhD thesis he received the prestigious Theodor Wessels Award in 1984.

Paul Suding has worked since 1973 as researcher and lecturer at the Institute of Energy Economics at the University of Cologne, and from 1981 to 1989 as Partner in the German consulting firm ENERWA.

He held numerous long term assignments to countries and development organizations as program director for Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, formerly GTZ. He was responsible for various German bilateral energy and environment programs in Burundi (1989-93), China (1999 – 2006) and Egypt (2008 – 2010) executing mainly cooperation programs of the German Ministry for Economic Cooperation and Development (BMZ). He was German Director of the Sustainable Energy and Development cooperation program with OLADE (Organización Latinoamericana de Energía) based in Quito, Ecuador and ECLAC (UN-Economic Commission for Latina America and the Caribbean), Santiago de Chile 1993 to 1999.

He was the first Head of the Secretariat of the Global Renewable Energy Policy Network REN21 in Paris, from 2006 to 2008.

Currently he is Director of a GIZ cooperation program on climate change and energy for Latin America and the Caribbean with the Inter-American Development Bank IDB and based in Washington DC.

**Life**

Paul Suding was born in Vechta, Germany, as 7th child to Auguste and Joseph Suding from the nearby village of Lüsche, where he spent his childhood and attended the catholic “Volksschule”. Ten years old, he was sent to the boarding school “Missionshaus Handrup”, later called “Gymnasium Leoninum”. At this classical grammar school curriculum, he took the baccalaureate in 1967.

In 1967 Paul Suding moved to Cologne for studies at University, but was drafted for 18 month military service, mostly in Oldenburg. He returned to Cologne and lived there from 1969 to 1989, before entering the expatriate life with his family.

He is married since 1981 to Elena Corgiolu. The couple lives currently (2014) in Washington D.C. USA, and has two children: cand. med. Lucrezia Langbein and the multiple Italian Mountain-bike Downhill Champion Lorenzo Suding .

Paul Suding speaks German, English, French, Spanish and Italian. During his youth, he was an avid football (‘soccer”) player (in his hometown team and in school varsity team) and athlete, sang in boys choir and played brass orchestra. Suding is not member of a church or political party.

# Extended Professional Bio

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## Academic achievements

Paul Suding studied Business Administration at the University of Cologne from 1967, interrupted by 18 month military service, and finished 1973 receiving the diploma in BA (Diplom-Kaufmann). On the basis of his excellent diploma thesis he was invited to join the research and teaching staff of the Institute of Energy Economics (Energiewirtschaftliches Institut - EWI) end of 1973. He went on to study economics and received his PhD (dr. rer. pol.) in Economics at the University of Cologne in 1982. For his PhD thesis he was awarded the prestigious Theodor-Wessels-Award in 1984.

He has published widely research results, dissertations, guidelines, policy reports and papers, increasingly also in other languages than his native German, including in academic referenced journals. (see below)

## Professional Life

Working in the Institute of Energy Economics library as a student since 1971 led to his lifelong dedication to energy matters. His professional life over almost 40 years had three distinct phases:

* Academics, research and teaching from 1973 until 1981: He was on the professional staff of the research Institute for Energy Economics associated to the University of Cologne (EWI).
* Consulting from 1981 to 1989: From 1981 he was charged with running the newly founded consulting company ENERWA in Cologne.
* Development cooperation expatriate from 1989 to retirement in 2014: In 1989 he started to work in development cooperation for the then GTZ - which was merged to GIZ in 2010. He was assigned long term positions in Bujumbura (Burundi), Quito (Ecuador), Beijing (China), Paris (France), Cairo (Egypt) and Washington DC.

Being a consultant and an advisor rather than an executive, Paul Suding tends to maintain a low profile in professional work, providing support to appearance and performance to high level personalities in policy, clients and partners.

Suding has been very productive in all phases and has shared work results with the public IP rights and internal rules of organizations permitting. He published over 100 professional papers on energy, environment, climate change and geography and kept publishing in refereed journals after leaving academia (see list of selected publications). He gave speeches and presented to numerous international and national conferences apart from the multitude of presentation to partners and clients and to colleague\s in his own organization. He supervised large numbers of theses, studies and consultancies.

In development cooperation, he concentrated on developing the various partners’ technical and management capacities apart from direct advisory, and being in charge of program management. Occasionally, he also was in charge of supervising GTZ/GIZ’s contribution to infrastructure investment projects.

A common feature of Suding’s professional work is the pioneering thrust, breaking new ground and the opening up to methods and concepts from various disciplines like engineering and empirical social research in addition to economics and business administration. He also has worked on various subjects and moved back and forth between various areas, instead of following only one theme. (see publication list)

He also nurtured contacts to researchers from different ideological positions. From his original academic base, the EWI, where neoclassical economic positions dominated, he kept contacts to social-democratic groups and to upcoming green research clubs, where markets are considered more like instruments than objectives in itself. Work in numerous countries in development cooperation has made him sensitive to the primacy of the respective country’s objectives and the importance of political economy.

### The professional formation years:

During the formation years, i.e. during studies and research at university Suding established his basic reference systems for the professional life. This includes the knowledge and ability to structure and analyze the energy sector, in different dimensions and terms: energy flows and quantities (energy statistics), organizations (the respective players: companies along the supply chain, consumers, regulators, government etc.) and institutions (the legal and regulatory framework). The work in the EWI provided a closer view of the relevant economic theory, since the EWI director was also the holder of the principle chair in political economics (Staatswissenschaften) at the University of Cologne also. As assistant to the chair, Suding did also teaching and mentoring of diploma students and PhD candidates in energy economics.

In his diploma thesis in 1973, Suding had analyzed the pricing of German **electricity** distribution companies under regulation, in particular the charges of additional connection cost. This work was not published honoring a commitment given to the electricity companies, when they provided data. The work, however, brought high marks in his exam and the invitation to join the research staff of Institute for Energy Economics.

Suding was between 1974 and 1981 a regular member of the project teams, when the Institute (EWI) was involved in **energy forecasting, projections and scenarios based on analysis**. This work was provided for the Federal German Government (Ministries for Economic Affairs, Research and Technology), German State Governments, international working groups (like the MIT led Workshop on Alternative Energy Strategies -WAES) and others. Related to this, Suding participated also in the development of quantitative methods of analysis and best practice of forecasting. (see publications)

Suding was in 1978 co-leader of the first research team in Germany to subdivide final energy demand by categories of use (process heat, heating, drives), which paved the way for bottom up energy analysis and projection in Germany. In addition Suding was the first analyst in Germany to assess the energy consumption of small-user groups. In this work, he used methods of empirical market research to identify and quantify agricultural commercial, and public sectors’ energy use. This work of detailing final energy consumption is being continued in annual studies by a group of German research institutes. This ground breaking demand analysis led to close collaboration with Lee Schipper from Lawrence Berkeley Lab.

Suding always remained interested in applying theory to research and consulting work as a scholar of leading German Economist Hans-Karl Schneider. He was a colleague of Dieter Schmitt, Walter Schulz, Heinz-Jürgen Schürmann, Walter Moenig, Wolf Pluge, Hans Wilhelm Schiffer and senior colleague or teacher to many EWI alumni. In his PhD dissertation “Ökonomische Ansätze zur Analyse des Energieverbrauchs der Haushalte für Raumwärmezwecke” which he finalized in 1981, he applied new microeconomics like household production and time allocations theory to residential energy consumption analysis. In part, he developed further a concept of Alex Scott from Heriott Watts University. This concept allowed among others an economic explanation of rebound effect. For this work, Suding received the Theodor-Wessels-Award in 1984 for extraordinary contributions to energy economics.

### Consulting highlights (mostly not published)

In another area within energy economics, Suding was already during the work in EWI involved in economic and financial analysis of projects and technologies including combined heat and power stations, early wind power units, coal fired and nuclear power and also solid waste management strategies. In addition to levelized unit cost comparisons he addressed the probabilistic capacity value of the varying wind power generation as early as in the 1984.

When running the consulting company ENERWA,which was an affiliate to the EVERSHEIM- STUIBLE Wirtschaftspruefungsgesellschaft mbH (chartered accountants) he combined the cash flow and net present value analysis and developed a financial analysis method for energy investment. This took into account include practical experience in collaboration with E-S partner Peter Marcus and involved a wider set of criteria to address risks in addition to average profitability. He wrote a guidance note on this methodology for the Federal German Natural Gas Association. (published by the then BGW).

Back to quantitative energy analysis work, Suding was responsible for an extraordinary study of the energy consumption of the Afghan refugees in Pakistan in 1886, his first short term consultancy for GTZ, based on field research. This study led to the creation of projects to increase energy efficiency of Afghan refugees and Pakistan households in collaboration with UNHCR.

For an international natural gas company supplying gas to Germany, he designed and ran with colleagues a quantitative model for the assessment of natural gas values and potential prices in German energy markets. For another international gas company he provide another gas market assessment.

### Work in Development and Energy

In 1989 Suding turned to work mainly in developing countries, as an expatriate staff for the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), which was merged into GIZ in 2010.

He held six long term assignments as program director, which involved a wide range of tasks including technical and political advisory as well as management and team leadership, strategic planning; portfolio programming and development, and organisational development.

During his 3 long terms bilateral assignments Suding supported numerous innovative programs, policies and instruments by and for the development partners:

* with the Government of Burundi from 1989 to 1993 he established among others a service to build sanitation and biogas installations for farms, schools, hospitals; he also designed a national energy policy and in particular a contingency policy for the country’s energy supply crisis during Rwandan civil war; he designed a rural energy supply plan for the central Gitega province; he organized training of the ministries’ staff in economic analysis of rural energy supply in developing country and in energy pricing. His main counterparts as Director General for Energy were Deogratias Mberubusha and Audace Ndayizeye.
* in China from 1999 to 2006 he was in charge of an increasingly broad bilateral cooperation program on energy, environment and climate change, partnering with the National Development and Reform Commission and other Ministries and State Agencies and Companies. He was directly responsible for cooperation including power supply reliability and efficiency, urban energy development planning, rural renewable energy development, wind power and power grid capacity development, renewable energy policy legislation, clean development mechanism (CDM China) and the start of a widely copied program of energy efficiency in existing buildings. He supervised a large team working with State Environmental Protection Agency, with provincial and city governments in environmental matters. He was involved in organization of the large Beijing International Renewable Energy Conference (BIREC) in the Great Hall of People. His counterparts in China include Xie Changjun, Wu Guihui; Shi Lishan, Ma Shenghong, Dai Huizhu, Li Junfeng, Wang Xonxing, Wu Yong, Lu Xuedu, Liu Deshun, Duan Maosheng and others.
* in Egypt from 2008 to2010 he established the Egyptian German Joint Committee on Renewable Energy and Energy Efficiency and Environment (JCREEE) , initiating among others Feed In Tariff system (calculation of required feed in tariff for renewable energy projects) and Third Party Access assessment for the Electricity Regulator, supporting regulations for the of large state property terrain for wind farms, capacity building for grid integration of RE systems and creating Energy Consumer organizations; initiating business energy efficiency activities, and supporting new low energy design.. He also was instrumental in starting the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) in Cairo. (Counterparts in Egypt include Khalil Yasso, Samir Hassan, Hafez el Salmawy, Abd el Rahman Salah el Din, Leila Georgy, Bothayna Amin, Ibrahim Yassin, Mona El Aghezi, Amal Bida and others)

Towards the end of each assignment he published energy polity articles on the respective countries (see literature).

Similarly, in 3 long term assignments to regional and international organizations or networks he implemented innovations based on new instruments or knowledge studies:

* With OLADE, the Energy Organization for Latin America and the Caribbean and ECLAC the Economic Commission for Latin America and the Caribbean from 1993 to 1999 he established and applied an analytical and policy formulation framework for energy and sustainable development in the Latina American and Caribbean for the Member Countries; Energy and sustainable development Policy formulation.. Counterparts were Hugo Altomonte Francisco Figueroa de la Vega, Roberto Gomelsky, Fernando Cuevas, Fernando Sanchez Albavera, Gabriel Sanchez-Sierra, Luis Augusto da Fonseca and many others. In parallel to the assignment to OLADE, he participated in bilateral Ecuadorian- German cooperation in particular financing of a bridge and a University in Ecuador’s Santo Domingo de los Tsachilas partnering with Monsignor Emilio Stehle.
* Between 2006 and 2008, Suding was the first Head of Secretariat of the newly created global Network REN21 in Paris in cooperation with executing partners UNEP and IEA. He helped establish the networks core activities like editing and managing the REN 21 Renewable Global Status Reports as the principle authoritative report on renewable energy, International Action Programme follow up, and other Global Issue Studies. The tasks included building the global network and co-organise the huge International RE Conference 2008 in Washington (WIREC), where governments renewed pledges from Bonn 2004 and Beijing 2005. Cooperation included leading Board members Mohamed El Ashry, Arturos Zervos, Li Junfeng, Jennifer Morgan, Manfred Konukiewitz, Rainer Hinrichs-Rahlwes, Carsten Sach, Norbert Gorissen, Martin Schoepe, Mark Radka and others as well as Paolo Frankl from IEA, Christine Lins, Eric Martinot, Chris Flavin and many others
* With the Inter-American Development Bank IDB in Washington DC from 2010 to --- now, Suding turned to climate change related risks for development projects developing and implementing climate change mitigation procedures: procedures and tools to assess and address GHG emissions of Bank projects including accounting tools, minimum performance requirements for high emission intensive sectors and risks of indirect emissions through deforestation enabled by infrastructure projects; incorporation of climate risks into safeguard screening and developing guidance on how to address and manage disaster and climate change risks in the Bank’s overall project cycle. He continues to support renewable energy and energy efficiency activities of GIZ and IDB in LAC working with Janine Ferretti, Emmanuel Boulet, Graham Watkins, Leila Chennoufi, Arnaldo Vieira, Walter Vergara and many others)

In the framework or in addition to the long term assignments, Suding executed numerous short terms tasks, which led him to stay and work in almost all countries of Latin America, several Caribbean and African Countries as well as South and South East Asia.

Within GTZ/GIZ Suding worked with a great many colleagues across the whole organization and innumerable consultants and experts. It is impossible to mention some without missing others.

### Political and epistemological positions

Farming, family business, early catholic education and team sports have strongly influenced Paul Suding’s ethics. On his path from a small village culture through a protected boarding school, agitated urban university and global culture environment in many stages in very different cultures, openness and curiosity have led to an ever widening horizon. At every stage he could incorporate new experience and see things from a different point and angle of view. This and in particular his marriage to a wife with distinct cultural background (Sardinian - Italian) has spurred a critical view and a permanent examination of his own background, habits and thoughts. He is a lifelong avid reader of newspapers, magazine articles, blogs and books, both non-fiction and fiction.

His thinking is framed by social-liberal humanism and tolerance since the enlightening days of German classical “gymnasium” high school. Growing up and maturing, Suding was witness and attendee of the agitations and rebellions of the 1960s and 1970s, involving cultural changes in society, politics, culture and in particular music,. He tried to steer clear of radical positions without being embraced by powerful vested interest. Sometimes he found himself classified to opposite camps at the same time. During the studies and research period of his life he may have been seen by some as a leftist or green agent – when participating in manifestations with friends - and by some as an agent for the energy industry – when presenting the work of the EWI or joint work with other economic research institutes like DIW and RWI.

In fact, he reached out from his work in EWI to the growing community of energy research and energy policy across the value and concept spectrum including the Fraunhofer ISI and Oeko-Intitute and others and personally to Klaus Michael Meyer-Abich, Eberhard Jochem, Peter Hennicke, Uwe Fritsche and others. In a fulminant article on the “Necessity” of nuclear energy in 1980 he showed that the work of Armory Lovins (“soft energy path”) and his German adept Florian Krause and others (“Energiewende”) had effectively demonstrated that the “necessity” argument of the nuclear proponents was untenable. He nonetheless criticized Krause et al. for too much wishful thinking in assessing the adaptability of socio-economic systems.

He still finds it difficult to adhere to a particular political side. In writings – he has taken up blogging and contributes to critical websites - he may be critical to political and economic positions and initiatives he is basically sympathizing with, and he may search and find correct statements in analytical work whose basis propositions he would not share.

His openness has led him to agree to work outside his comfort zone as an energy economist and/or using concepts from other disciplines. This has led more than once to pioneering work in Germany and in other countries, like the bottom up energy analysis (using technical and microeconomic and even market research concepts), hybrid technological-statistical scenario techniques in energy forecasting, combining technological, economic and political science concepts in energy policy advisory, taking into account the cultural background of the respective country and even the microcosms of rural energy. He even went out of his way to develop concepts for urban waste management, for managing indirect land use change impacts and also disaster risk and climate change adaptation of development projects.

Although he has undergone a sometimes painful period of epistemological doubts about the possibility of definite truth in social sciences during academic and PhD work, he still considers the search for understanding and truthfulness as guiding principle of life together with empathy for the human being.

# Main Interests and recurring themes

## (see also below list of publications)

* Application of Economics, Theory
* Quantitative analysis and projections and their methodologies: energy, environment, GHG emissions
* Sustainable Development, Energy, Environment and Climate: National, Regional, Global Development, Organizations and Policies
* Evaluation: Financial, Economic, Multi-objective, Methodologies
* Climate Safeguards in Development Projects

# Paul H. Suding, Selected Publications

(Monographs and Articles in refereed and non-refereed Journals , Contributions to Anthologies and Proceedings; Consulting products and internal reports not included)

## Economics, Theory , Lectures

(Diploma thesis: **Baukostenzuschüsse und Preise in der deutschen Elektrizitätswirtschaft** 1973, not published)

(Lecture notes at University of Cologne from 1974-1981 on **electricity** and **gas economics, energy analysis and forecasting**; not published)

1. **Ökonomische Ansätze zur Analyse des Energieverbrauchs der Haushalte für Raumwärmezwecke**, R. Oldenbourg-Verlag München 1984 (PhD-Dissertation)
2. Raumwärmeökonomie, in: **Zeitschrift für Energiewirtschaft 1/1984**
3. Quelques Notes Théoriques sur la Tarification de l'Electricité, en: **Commission National de l'Eau et de l'Energie, L'Eau et l'Energie pour le Développement Socio-economique du Burundi**, Actes de Conférences, Bujumbura 1991
4. **Electricity Economics in the Federal Republic of Germany and the People’s Republic of China**, Shanghai Coordination Office of the Friedrich Ebert Foundation , Shanghai 1988

## Quantitative Analysis and Projections and their respective Methodologies: Energy, Environment, Climate

1. **Künftiger Bedarf an elektrischer Energie in Abhängigkeit von wirtschafts- und gesellschaftspolitischen Entwicklungen, und dessen Deckung, insbesondere mithilfe der Kernenergie, F**orschungsbericht K 76-03, Eggenstein-Leopoldshafen, Juli 1976 (Co-author)
2. Möglichkeiten und Grenzen der Elastizitätsbetrachtung in der Energiewirtschaft, in: **Elektrizitätsverwertung 2/1975 (Co-author)**
3. Federal Republic, Part 7 in: **WAES, Energy Demand Studies: Major Consuming Countries**, The MIT Press 1976 (Co-author)
4. German Federal Republic, Part 12 in: **WAES, Energy Supply to the Year 2000,** The MIT Press 1977 (Coauthor)
5. German Federal Republic, Part 11 in **WAES, Energy Supply-Demand Integration,** The MIT Press 1977 (Co-author)
6. **Die künftige Entwicklung der Energienachfrage in der Bundesrepublik Deutschland und deren Deckung, Perspektiven bis zum Jahr 2000,** DIW, EWI, RWI Essen 1978 (Co-author)
7. **Der Energieverbrauch in der Bundesrepublik Deutschland und seine Deckung bis zum Jahr 1995**, DIW/EWI/RWI Glückauf Verlag Essen 1981 (Co-author)
8. Lehrstück für Forschung, in: **Wirtschaftswoche 23/1977**
9. Die Gemeinschaftsprognose der Institute, Charakter und Aussagewert, in: **Energiemodelle für die Bundesrepublik Deutschland**, Birkhäuser Verlag (Co-author) 1979
10. Die persönliche Befragung als Instrument primärstatistischer Erhebung, in: **Interview und Analyse Nr. 11/12-1981**
11. Der Energieverbrauch der Kleinverbraucher, in: **Zeitschrift für Energiewirtschaft 4/1981**
12. **Strukturen des Energieverbrauchs der Haushalte und Kleinverbraucher**, R. Oldenbourg-Verlag München 1982
13. **Entwicklung des Energieverbrauchs und seine Deckung bis zum Jahre 1995 im Lande Baden Württemberg**, München 1983 (Co-author)
14. Flüssiggas als Substitutionsenergieträger,in: **Flüssiggas 1/1983**
15. Residential Energy Consumption in West-Germany: Data, Conservation Record and Analysis, in: **Workshop on Residential Energy Use, Proceedings, Commission of the European Communities' Joint Research Center Ispra Establishment 1983**
16. **Strom im Haushaltswärmemarkt**, R.Oldenbourg Verlag, R. Oldenbourg-Verlag München 1986 (Co-author)
17. **Energie für Wärmezwecke im Kleinverbrauchermarkt**, R.Oldenbourg Verlag, München 1986 (Co-author)
18. **Endenergieverbrauch in der Bundesrepublik Deutschland, Disaggregierung nach Sektoren, Energieträgern und Verwendungszwecken**, Köln 1986 (Co-author)
19. Energy Use in the Commercial Sector of the Federal Republic of Germany, in: **Proceedings of the International Workshop on Electricity Use in the Service Sector,** EPRI Palo Alto California 1986
20. Langfristige Fernwärmeentwicklung bei wechselnden energiewirtschaftlichen Daten, in: **Energiewirtschaftliche Tagesfragen 11/1986**
21. Energy and Human Development in Latin America and the Caribbean: Statistical Evidence, in: **OLADE Energy Magazine, Year 19, Number 1,** (Co-author, also in Spanish)
22. **Road Impact Assessment Using Remote Sensing Methodology for Monitoring Land-Use Change in Latin America**: Results of Five Case Studies”. Inter-American Development Bank. July 2013. Washington, D.C. (co-author)

## Energy, Environmental, Climate and Sustainable Development Systems and Policies

### Global Energy

1. **REN21 Renewables Global Status Reports 2005, 2006, 2007**, Paris and Washington (executive producer) ;
2. The Multifaceted Institutional Landscape and Processes of International Renewable Energy Policy, in: **International Association of Energy Economists Newsletter Second Quarter 2007,** (Co-author)
3. **REN21Renewable Energy Potentials**, Opportunities for the Rapid Deployment of Renewable Energy in Large Economies, Its Impacts on Sustainable Development and Appropriate Policies to Achieve It, REN21 Paris 2008 (producer and editor), www.ren2.net
4. Boosting renewables with the right policies,in: **GTZ Energizing Development Eschborn Germany 2007**

### Germany

1. Zur "Notwendigkeit" der Kernenergie, in: **Zeitschrift für Energiewirtschaft 2/1980**
2. Fernwärmesubventionen - Problematisierung ihres gesamtwirtschaftlichen Nutzens, in**: Zeitschrift für Energiewirtschaft 4/1982**
3. Zehn Jahre Energiesparpolitik in der Bundesrepublik Deutschland, in**: Zeitschrift für Energiewirtschaft 3/1988**
4. Policies Affecting Energy Consumption in the Federal Republic of Germany, in**: Annual Review of Energy 1989**, Palo Alto
5. Hemmnisse der rationellen Energienutzung, in: **Energie und Klima, Studienprogramm "Internationale Konventionen zum Schutz der Erdatmosphäre",** Hrsg. von der Enquête-Kommission "Vorsorge zum Schutz der Erdatmosphäre des Deutschen Bundestags" 1991, Bonn Karlsruhe, Bd. 2: Energieeinsparung und rationelle Energieverwendung (Co-author)
6. Space Heating Energy Policy in Germany. published in **Building Energy Efficiency Nr. 37** , Beijing 2003 in Chinese
7. Aus der Ferne betrachtet, ein Essay zu institutionellen Aspekten der deutschen Energiepolitik, in: **Energiewirtschaft im Wandel,** (Festschrift für Dieter Schmitt)herausgegeben von, J. Grewe u.a. Agenda Münster 2004

### Other European

1. Zur politisch-ökonomischen Situation Islands, in: **Geographische Rundschau 12-75**
2. Steuerliche und finanzwirtschaftliche Bedingungen der Stromerzeugung in Frankreich, USA und der Bundesrepublik Deutschland, in: **D. Schmitt et.al.** **Stromerzeugungskosten im internationalen Vergleich**, R.Oldenbourg Verlag München 1988
3. **Gaswirtschaften ausgewählter Länder der Europäischen Gemeinschaft**, in: von Weizsäcker C.C. et.al. (Hrsg.) Erdgas im Europäischen Binnenmarkt, R.Oldenbourg Verlag München 1990 (Co-author)

### Burundi

1. Government Role and Energy Sector Policies in Burundi, in: **Proceedings of the International Seminar on Commercialization of Renewable Solar and Wind Energy Technologies**, Amman – Jordan, April 1992
2. Energiewirtschaft und -politik in einem afrikanischen Binnenland, in: **Zeitschrift für Energiewirtschaft 2/1992**
3. Government Role and Policies for the Promotion of Renewable Energy and Energy Conservation in LDC's, in: **Proceedings of the International IAEE Annual Conference**, Tours – France, May 1992
4. Stratégies et Actions Politiques pour la Promotion de l'Economie d'Energie, **Actes du Seminaire sur l'Economie d'Energie**, PNUD-BM (ESMAP) - GTZ, Burundi Novembre 1992
5. La place du biogaz dans le développement des énergies nouvelles et renouvables en Afrique, en: **Le Développement du Biogaz en Afrique**, Actes du Séminaire Bujumbura 1991, IEFP-EGL Quebec 1992
6. Ländliche Elektrifizierung in Burundi, in: **Fachtagung Ländliche Elektrifizierung der Abteilung 415 Energie und Ressourcenschutz** von 15.-17.09. 1993, Eschborn November 1993

### Latin America and Caribbean

1. Beyond Restructuring: Ideas for a Long-Term Energy Policy for Sustainable Development, in: **OLADE Energy Magazine, Year 19, Number 1,** (Co-author, also in Spanish)
2. New Forms of Financing for the Electric Power Subsector in Latin America and the Caribbean, in: **OLADE Energy Magazine, Year 19, Number 1,** (Co-author, also in Spanish)
3. The Contribution of Energy Integration to Sustainable Development: Elements for an Assessment, in: **OLADE Energy Magazine,** **Year 20, Number 1,** (also in Spanish)
4. Wirtschaftliche und Soziale Entwicklung, Energie und Umwelt in Lateinamerika und Karibik - ein Überblick, in**: Zeitschrift für Energiewirtschaft 4/1995**
5. Energy and Sustainable Development in Latin America and the Caribbean, **Conference Proceedings of the IAEE Annual International Conference**, Washington 1995
6. Energie und Nachhaltige Entwicklung in Latein-Amerika, in: **Energiewirtschaftliche Tagesfragen Heft 12/1996**
7. Energía y Sustentabilidad: ¿Vamos en la linea correcta?, in: **UNESCO Diálogo, 1996** (also in French and English)
8. Energy Integration and Sustainable Development in Latin America and the Caribbean: in: **Conference Proceedings of the IAEE Annual International Conference**, New Delhi 1997
9. Financing and Reforms of the Electric Power Subsector of Latin America and the Caribbean, in: **Energy Policy Vol.24 No 5**
10. **Energy and Sustainable Development in Latin America and the Caribbean: Approaches to Energy Policy**, OLADE/CEPAL/GTZ Project, Quito 1996 (Co-author, also in Spanish)
11. **Energy and Sustainable Development: Guidelines for the Formulation of Energy Policy,** OLADE July 2000 (Co-ordination and Co-author, also in spanish)
12. Sustainability as a Development Objective, **in: OLADE Energy Magazine Year 21, Number 1,** 1997 (also in Spanish)
13. Der soziale Kurzschluss, in: **Akzente aus der Arbeit der GTZ 1/98**
14. Energy Sector Modernization and Sustainable Development in Latin America and the Caribbean, in: **Conference Proceedings of the IAEE Annual International Conference**, Quebec 1998
15. Energy and Sustainable Development in Latin America and the Caribbean, in: Enerlac '98**, Proceedings of the OLADE/IDB Seminar: Sustainable Energy in Restructured Markets** in Santo Domingo 1998, Quito 1999 (also in Spanish)
16. Reforms and Privatization, in: **gate 1/1999**
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