

Dr.-Ing. Klaus Jorde:

List of Specific Projects 1987 - 2017

1. Förstermühle hydropower plant, environmental flow and fish migration (upstream and downstream), concept and design, since 2016.
2. Development of an E-Flow guideline and implementation of 4 pilot studies on e-flows for large hydropower plants (up to 1.2 GW) in Bhutan, Team leader for an Austrian/Swiss/German/Bhutanese consortium, National Environmental Commission, Royal Government of Bhutan, since 2015.
3. Hydrological analysis, general layout and annual energy generation for Aragvi 2 hydropower plant (2 MW), Georgia, since 2014
4. Hydrological analysis, general layout options, annual energy generation, pre-feasibility for Tskhvandiri-Okrili hydropower scheme, Georgia, since 2014
5. Hydrological analysis, general layout options, annual energy generation, pre-feasibility for Larakvakva hydropower scheme, Georgia, since 2014
6. Feasibility study and design, tendering, construction supervision, commissioning of Lakhami I and II medium - high head hydropower plants in Georgia, since 2014, ongoing.
7. Feasibility study and design, tendering, construction supervision, commissioning of Pichipedregoso (1 MW) and Pedregoso (2 MW) hydropower plants in Chile, since 2013, ongoing.
8. Murr flood retention basin, Oppenweiler, Germany. Development and evaluation of design options to allow the future operation of the Rüflensmühle HPP, since 2013, ongoing.
9. Design of 4.2 MW Bistrica hydropower plant, Montenegro. Design including evaluation of hydrological data, intake, sand trap, pipeline, power house and electromechanical equipment, 2013.
10. Evaluation of design and performance of the surge tank at Avče Pumped Storage Power Plant (120 MW), Slovenia, 2012.
11. Feasibility Study for the rehabilitation of 126 MW Kairakkum reservoir, dam and hydropower plant including effects of climate change, Team Leader of iC Group's International Expert Team, financed by EBRD, 2012 - 2013
12. Development of a strategy regarding environmental flows, hydropeaking regulation, fish migration, biodiversity protection, economic evaluation for river systems for the National Environmental Commission in Bhutan to be applied to hydropower plants between 100 MW and 1200 MW presently under construction or development, training and capacity building for NEC staff, 2012-2014.
13. Study of the regional hydropower potential for the Swiss Kanton of Schaffhausen, 2011-2012. GIS based hydropower assessment, identification of most feasible sites (mostly < 100 kW), site investigations, development of environmental criteria, pre-feasibility studies, financial feasibility, development of a regional hydropower utilization strategy.
14. Feasibility study for an increase of the impoundment level of Rheinkraftwerk Schaffhausen (25 MW), Switzerland, 2011. Feasibility study including technical,

ecological, regulatory and financial aspects, recommendation to the utility and local government.

15. Feasibility Studies for Northcroft Nigeria Ltd, Nigeria, Consultancy Services for Feasibility Studies, Engineering Designs and Preparation of Tender Documents for Small and Medium Hydropower Plants at Bakolori Dam and Goronyo Dam, 2011 (appr. 3 MW each). Site assessment including existing structures and electromechanical equipment, hydrological analysis, analysis of the hydropower generation potential, reservoir operation, financial analysis, tender documents. International Team Leader and Project Manager.
16. Consulting for GTZ on possibilities for private investment in hydropower developments on Himachal Pradesh, India, 2010.
17. Consultant for Kreditanstalt für Wiederaufbau, Germany, Renewable Energy Program for Khyber Pakhtunkhwa Province in Pakistan, 2010-2011. General assessment for planning a renewable energy development program with more than 400 individual sites, including solar lighting systems, solar pumping irrigations systems, appr. 100 small hydropower sites (5-500 kW). Identification of local implementing organisations, site inspections, assessment of possible community contributions, provision of technical support.
18. Small hydropower development in Switzerland (2008–2012), SHP Auerbach, Nothüsli, Wogmoos, Wängi, Chupferhammer, Dreien, Niederglatt (between 10 and 300 kW). Site inspection, hydrological analysis, technical design, environmental analysis, financial analysis, bankable feasibility studies.
19. Consultant for Renewable Energy Development within the Korean Export Processing Zone in Chittagong, Bangla Desh, 2010-2011. Assessment of the hydropower potential (run-of-river, storage, tidal) within the KEPZ to supply energy for industries under development.
20. Consultant for instream flow regulations for 2 small Hydropower plants, Aksu River in Turkey, jointly with Fichtner, 2010. Assessment of necessary environmental flows and consequences for energy generation.
21. Project Manager for Gemadro Coffee Plantation Pancake Fall HPP (1,3 MW), Ethiopia, GTZ, inspection and evaluation of 6 possible sites, identification of the best one, hydrological analysis, environmental analysis, preliminary design and equipment specification, load demand analysis, hybrid grid concept development, training and capacity building for local hydropower engineers, bankable feasibility study.
22. Consultant for design and construction of Nam Kha I and Nam Kha II Small Hydropower Plants and hybrid grid development, joint venture Entec AG – Sunlabob Ltd., Vientiane, Lao PDR.
23. Design Review of Siuri Khola hydropower plant (5 MW) in Nepal, 2009. Own project, Entec AG was one of the shareholders of the Nyadi Group.
24. Consultant for the Scientific Advisory Board of the Centre for Environmental Design of Renewable Energy (CEDREN), Norway, since 2010, ongoing. Evaluation of research projects related to environmental impact/mitigation of renewable energy projects, in particular hydropowerpeaking power plants with reservoirs and intermittent operation.
25. Project Manager for CREDP/GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) Project “Renewable Energy in the Caribbean“, 2008 – 2012, US\$ 380,000. Feasibility and tender design of 3 hydropower plants up to 1.5 MW. Site inspections, hydrological analysis, inspection of existing structures and electromechanical components, technical design for replacement/new components, financial analysis, tender documents.

26. Project Manager of KfW Project "Training Programme for Operation and Maintenance of Hydro Power Station and Electricity Transmission/Distribution Systems in Afghanistan", 2008 – 2010, Euro 998,000. Development and implementation of a 2-year training program for capacity building of Afghan staff at Sarobi and Mahipar hydropower plants and Breshna Kot substation.
27. Consulting for Private Investors to develop Hybrid Grids (wind, solar, pumped storage hydropower, diesel backup) on Con Dao Island, Vietnam, 2009-2011.
28. Project Manager for GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) Project „Renewable Energies in Central Asia – Regional Report and Market Analysis“, 2008, Euro 103,000. Assessment of the framework conditions in 8 Central Asian Countries for domestic and foreign investors in the renewable power market. Evaluation of general energy supply situation, technical potentials for renewable energies, present use of renewables, market situation and access to markets, regulatory and administrative conditions, availability of financing, key institutions and persons.
29. Programm Leader for the Swiss Hydropower Research Programm 2008-ongoing, funded by the Swiss Federal Office of Energy SFOE, CHF 600,000 (520,000 USD) annually. Development of the research program and main topics. Evaluation, revision and approval of research projects submitted to the Federal program. Participation in review panels and control of progress made in projects, final evaluation of the projects and results.
30. Consultant for the Korean Institute for Construction Technology and Korean Water Institute: Operation of Geonsan Dam on the Dal River, 2006 – 2011. Simulation of the impact of the dam operations on fish habitats downstream. Recommendations for dam operation and environmental flow releases.
31. Design and construction management of a Hydraulic Laboratory at the University of Idaho, Boise, including a 20 m tilting flume, sediment feeding and recirculation system, 2004-2007, \$ 2.5 Mio. funded by the US Congress.
32. Feasibility studies for two small hydropower plants (3-4 MW) and capacity building in Vietnam, 2005-2006, funded by the European Community, Euro 640,000. Site inspections, revision of the hydrological analysis and technical design done by local consultants.
33. Jorde, Egger, Benjankar: Operational Loss Assessment of the Lower Kootenai Floodplain, Part IV, BPA through Kootenai Tribe of Idaho, 2006-2007, \$ 87,902. Development of numerical simulation models to simulate floodplain vegetation development influenced by operation of Libby Dam, USA.
34. Jorde, Tauber: Feasibility studies for 36 sites for low head hydro power plants for electricity generation at existing drop structures in Southern Idaho (USA) irrigation schemes, 2006-2007, Boise Project Board of Control. Site inspections, hydrological analysis, technical design, turbine selection, financial feasibility.
35. Jorde, Benjankar: Operational Loss Assessment of the Lower Kootenai Floodplain (USA), BPA through Kootenai Tribe of Idaho, 2005-2006, \$ 79,169. Development of hydrodynamic numerical models for a large river and 200 km² of floodplain.
36. Jorde, Parra: Pan American Advanced Study Institute "Balancing Hydropower Development and Biodiversity: Is Sustainability in an Adaptive Management Framework Achievable?" National Science Foundation, 2004- 2005, \$99,370. Organisation of a 2 week International workshop in Concepción, Chile, and in Patagonia. Participant selection criteria development and selection, scientific program organisation, chair of the workshop.
37. Study of Reservoir Operations and Ecosystem Losses: Changes in Habitat Quality for Native Fish Species in the Río Biobío due to Ralco and Pangué Dam

- Operations, 2004-2006, joint research project between University of Idaho and University of Concepción, Chile.
38. Jorde, Burke, Benjankar: Operational Loss Assessment of the Lower Kootenai Floodplain, BPA through Kootenai Tribe, 2004-2005, \$ 47,138. Development of a numerical cottonwood recruitment model to study impacts of the dam operation on cottonwood recruitment.
 39. Jorde, Buffington, Burke: Operational Loss Assessment of the Lower Kootenai Floodplain, BPA through Kootenai Tribe, 2003-04, \$87,643. Development of a 1D numerical hydrodynamic model for a 200 km reach of the Lower Kootenai, model development, calibration, development of an Index of Hydraulic Alteration.
 40. Jorde, Luce (FKK 127): Energy Balance of Small Mountain Streams, US Forest Service, 2003-07, \$60,000. Influence of natural processes on the temperature regime of mountain streams and their impact on fish communities.
 41. Jorde, Goodwin, Scherrer: Process based temperature modeling of Red River restoration site in Central Idaho, BPA, 2002-03, \$7,000. Development of a temperature model for Red River (USA) to study different thermal restoration scenarios.
 42. Jorde, Goodwin, Buffington, Dibrani: River/Tributary Interaction on the Kootenai - Sediment Transport Modeling, BPA through Kootenai Tribe, 2002-03, \$9,259.
 43. Jorde, Buffington, Zelch: River/Tributary Interaction on the Kootenai - Tributary Watershed Assessment, BPA through Kootenai Tribe, 2002-03, \$24,432.
 44. Jorde, Buffington, Lewicky: Effects of Dynamic Landscape Processes on the Spatio-Temporal Distribution and Quality of Chinook Salmon Spawning Habitat in Mountain Watersheds, 2003-2006, \$ 140,000.
 45. Jorde, Buffington., Isaak: Spatial Structure and Dynamics of Salmonid Populations and their Habitats, 2004-2005, \$ 65,703.
 46. Jorde, Buffington, Rosenberger: Stream Ecosystem Response to Wildfire, 2003-2006, \$ 647,000.
 47. Long term habitat simulations for fish and floodplain vegetation in the river Rhine in Germany and the Netherlands, Project Manager and Engineer, 2000-02.
 48. Collaborative project "Oekostrom" with EAWAG (Swiss Federal Institute of Science and Technology): Synthesis of environmental flow regulations for a large alpine catchment (Val Blenio), Project Manager and Engineer, 2000-03.
 49. Instream flow regulation at the Ringethal Hydropower plant (500 kW), Germany, Project Manager, 2000.
 50. Standards for ecological construction und operation of hydropower plants (river and alpine storage plants), Consultant for the Swiss Federal Institute of Aquatic Science and Technology, 2000-02.
 51. Hydropower use at the Upper Eschach (6 small hydropower plants < 100 kW): Potentials, ecological deficits, flood protection deficits, alternative solutions, Project Manager and Engineer, 2000-02.
 52. Environmental Impact Assessment for the Werdohl Hydropower Plant (900 kW) including dynamic instream flow regulation and effects of the weir on upstream habitats, Project Manager and Engineer, 1999-2000.
 53. Technical and economic hydropower potential of the Stuttgart Region and assessment of ecological conflicts, Project Manager, 1999-2000.
 54. Instream flow regulation at the Spoel river in Southern Switzerland downstream of the Livigno reservoir, Project Engineer and Project Consultant for other institutions,

- 1999.
55. Research Project: Long term investigation of ecological consequences of the construction and operation of the Volk Hydropower Plant (300 kW) at the river Elz in the Black Forest (Funded by German Environmental Foundation), Project Manager and Engineer, 1999.
 56. Cooperative project "Oekostrom" with EAWAG: Habitat Modelling and instream flow regulations for a large alpine catchment (Pilot Project Val Blenio), Project Manager and Engineer, 1998-2002.
 57. Restoration of the Musikinsel Hydropower Plant (120 kW) including new turbines/generators, a flood protection concept, partial renewal of the weir und two fishways, Project Manager and Engineer, 1998-2002.
 58. Research Project: Further development of the simulation model CASIMIR for hydraulic and fish habitat simulation, Project Manager and Engineer, since 1998.
 59. Instream flow regulation and fish habitats in the River Inn at the Toeinging Hydropower station (80 MW), Project Manager, 1998-99.
 60. Dynamic Instream flow regulation at the Goersdorf Hydropower plant (600 kW), Project Manager and Engineer, 1997.
 61. Fischway construction for a planned 900 MW Hydropower station in Russian Karelia, Project Consultant for St. Peterburg Technical University (Russia), 1996.
 62. Research Project: Development of habitat related simulation models (CASIMIR) for instream flow regulations, Project Manager and Engineer, 1994-98.
 63. Physical model investigation for a new bottom outlet (cone valve) at the Schwarzenbach Dam (Germany, Black Forest), Project Engineer, 1995.
 64. Energy production losses due to environmental flows at several hydropower plants at the Glems river, Germany, Project Engineer, 1994.
 65. Potentials and costs of hydropower use in Germany, Project Engineer, 1994.
 66. Development of simulation models for morphologic, hydraulic and ecologic parameters in river systems, Project Manager and Engineer, since 1992.
 67. Influence of hydropower use and instream flow regulations on CO₂ emissions in Germany, Project Engineer, 1992.
 68. Development of a simulation model for hydropower plants, 1991.
 69. Hydropower potentials, present production, costs and ecological problems in Baden-Wuerttemberg, Project Engineer, 1991.
 70. Design of a small hydropower plant (50 kW), Project Engineer, 1991.
 71. Hydropower potentials and present use in the Neckarwerke supply area, Project Engineer, 1990.
 72. Hydropower potentials in 6 regions of Southern Germany, Project Engineer, 1988-89.

*Project Manager (Organisational, scientific and financial responsibility)

*Project Engineer (Project partly or completely realised by myself)