

DAMOCLES

UNDERSTANDING AND MODELING COMPOUND CLIMATE AND WEATHER EVENTS

European COST Action CA17109

CASE STUDY

Future renewable power generation in West Africa

Case study aim and description

Describe the conditions leading to extreme and compound events in electricity supply in future scenarios with high shares of renewable sources (solar, wind, hydro), focusing on West Africa as a case study; and identify potential mitigation measures, e.g. smart hydropower management, smartly distributed solar/wind generation, smart storage deployment.

- Medium-term power generation shortfalls (seasonal timescale)
- Long-term climate-related increases in extremes (decadal timescale)

Stakeholders

- Renewable energy investors
- Utility companies
- Water management agencies

Compound event types

Various types of extreme and compound events that could occur at different timescales will be identified and their drivers analysed, such as

- Short-term electricity balance problems (hourly timescale)

Method of collaboration

Stakeholders will actively participate in events and workshops organised under the umbrella of the project

Case study timeline

2020 – 2021

Contacts

Case study coordinator: Wim Thiery & Sebastian Sterl

Case study contributors: CIREG project consortium members (PIK, DTU, WASCAL)

References & resources

Sterl, S. et al (2018). A new approach for assessing synergies of solar and wind power: implications for West Africa. Environmental Research Letters 13 (094009). <https://doi.org/10.1088/1748-9326/aad8f6>

Sterl, S. et al. (2019). Flexible hydro-solar-wind mixes for reliable power supply in West Africa. Geophysical Research Abstracts 21, EGU2019-148-2, EGU General Assembly 2019. <https://meetingorganizer.copernicus.org/EGU2019/EGU2019-148-2.pdf>