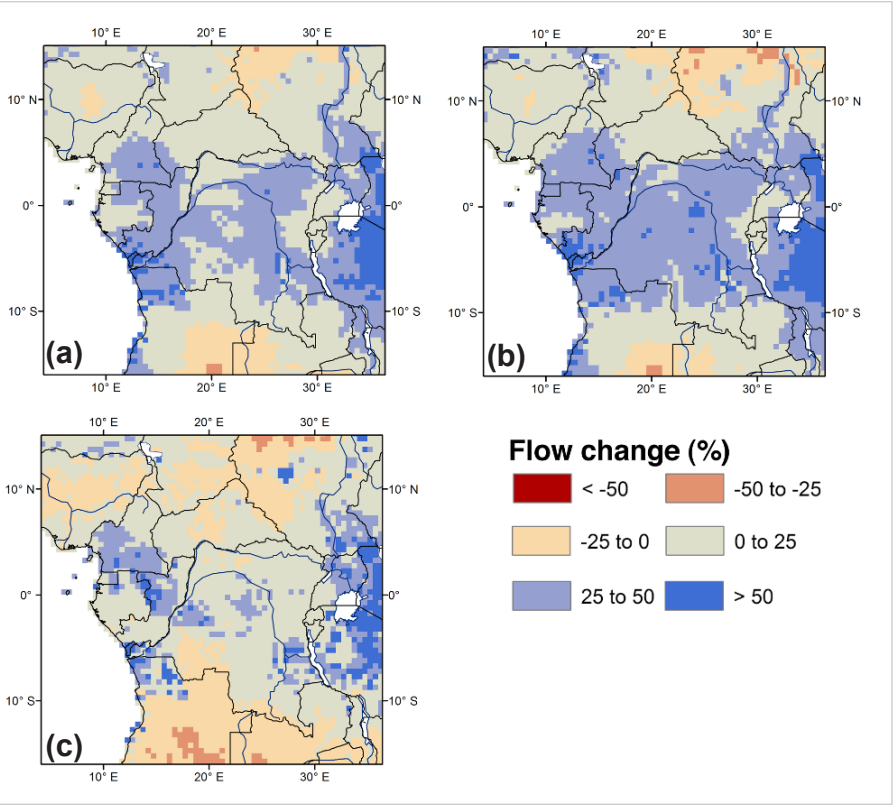
Fact-Sheet - Hydrology and Energy - Cameroon - Zone 1

Maps of projected changes

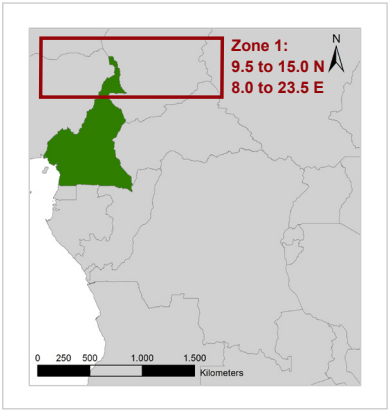
Maps show the projection of changes in mean flow (a), high flow (Q95) (b) and low flow (Q10) (c) for 2071-2100 relative to 1971-2000 for the "High" emission scenario. Flows are calculated using the VIC model in combination with three different climate models.



Definition of Zone 1

The map below indicates the position of Zone 1 (red rectangle), representing the semi-arid Sahel zone region regions in the north of central Africa. All values presented in this fact-sheet are changes spatially averaged over the whole zone.

As the northern part of Cameroon falls within Zone 1, projected changes for this zone are assumed to be representative for this part of the country.



Data and method

Climate change impacts on the hydrology of the Congo basin were assessed using the VIC macroscale hydrological model. For this analyses we used climate change projections from three different global climate models and for two different greenhouse gas emission scenarios: the "Low" scenario based upon the SRES B1 (IPCC-AR4) scenario; the "High" scenario based upon the SRES A2 (IPCC-AR4) scenario. Here we present the results in terms of changes in run-off and river flows. First the relative changes in average flow are presented. If the average flow is decreasing it indicates that in the future less water is available for different users. Then we present the change in high flows. For this we use the Q95 indicator (flow is only this high 5% of the time). If Q95 is increasing, it indicates that your flood risks are increasing. For low flow we used the Q10 indicator (flow is only this low 10% of the time). If Q10 is reducing it indicates that drought risks are increasing.

List of projected changes

The table shows the projection of changes in mean run-off (rounded values). Note that current land use is used in this study for all assessed time periods. Consequently all changes are caused by climate change alone.

Run-off in mm/year or mm/season		Today	Projected changes			
			Low emission scenario		High emission scenario	
		2000	till 2050	till 2100	till 2050	till 2100
Mean run-off	YEAR	**261**	**+63**	**+46**	**+71**	**+85**
	DJF	0	0	0	0	0
	MAM	7	+2	+1	-1	+2
	JJA	202	+46	+27	+44	+50
	SON	52	+15	+18	+27	+33

Key findings for Zone 1:

- The hydrological cycle will intensify resulting in more frequent droughts and floods.
- River discharge is very vulnerable to changes in rainfall in this zone. Small changes in rainfall can cause large changes in discharge.
- River discharge patterns will become more variable. High flows will probably increase while low flows will decrease.
- Due to more variable run-off patterns hydropower production will become less reliable.

Key adaptation options:

- Improving preparedness for extreme weather events and floods through for example (improved) early warning systems
- Improving water storage facilities to guarantee sufficient water supply during droughts
- Improving water use efficiencies in all sectors to avoid future water scarcity.
- Diversifying energy supply to prevent dependence on a single energy source

Further details can be found in the "**Impacts Report**" and the "**Adaptation Report**" in the report section of the final project document - also available online under www.giz.de and www.comifac.org

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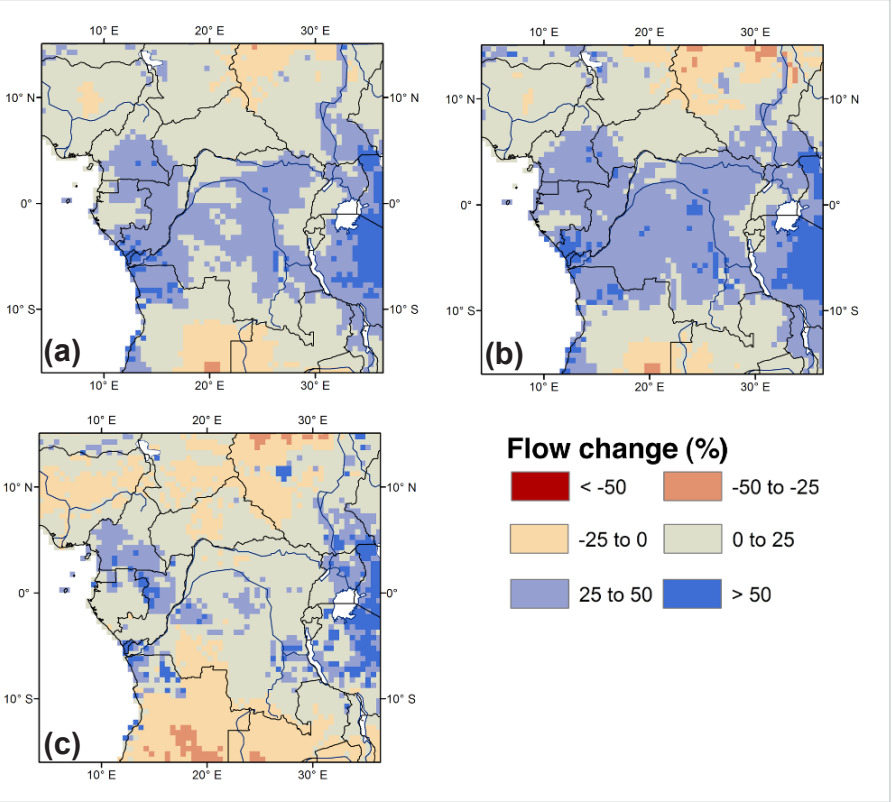
Fact-Sheet - Hydrology and Energy - Cameroon - Zone 2

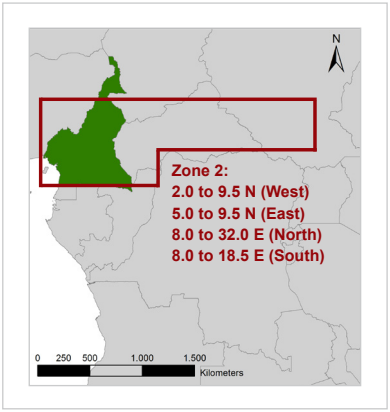
Maps of projected changes

Maps show the projection of changes in mean flow (a), high flow (Q95) (b) and low flow (Q10) (c) for 2071-2100 relative to 1971-2000 for the "High" emission scenario. Flows are calculated using the VIC model in combination with three different climate models.



Definition of Zone 2

The map below indicates the position of Zone 2 (red rectangle), representing the regions north of the equator with predominantly tropical wet and dry climates with a dedicated rainy season. All values presented in this fact-sheet are changes spatially averaged over the whole zone. As the major parts of Cameroon falls within Zone 2, projected changes for this zone are assumed to be representative for these parts of the country.



Data and method

Climate change impacts on the hydrology of the Congo basin were assessed using the VIC macroscale hydrological model. For this analyses we used climate change projections from three different global climate models and for two different greenhouse gas emission scenarios: the "Low" scenario based upon the SRES B1 (IPCC-AR4) scenario; the "High" scenario based upon the SRES A2 (IPCC-AR4) scenario. Here we present the results in terms of changes in run-off and river flows. First the relative changes in average flow are presented. If the average flow is decreasing it indicates that in the future less water is available for different users. Then we present the change in high flows. For this we use the Q95 indicator (flow is only this high 5% of the time). If Q95 is increasing, it indicates that your flood risks are increasing. For low flow we used the Q10 indicator (flow is only this low 10% of the time). If Q10 is reducing it indicates that drought risks are increasing.

List of projected changes

The table shows the projection of changes in mean run-off (rounded values). Note that current land use is used in this study for all assessed time periods. Consequently all changes are caused by climate change alone.

Run-off in mm/year or mm/season		Today	Projected changes			
			Low emission scenario		High emission scenario	
		2000	till 2050	till 2100	till 2050	till 2100
Mean run-off	YEAR	**795**	**+62**	**+117**	**+120**	**+281**
	DJF	8	0	-1	-1	+4
	MAM	103	-3	+9	-1	+23
	JJA	374	+24	+31	+52	+106
	SON	310	+41	+77	+70	+147

Key findings for Zone 2:

- The hydrological cycle will intensify resulting in more frequent droughts and floods.
- River discharge patterns will become more variable. High flows will increase while low flows will decrease.
- Average flows are more likely to increase than decrease. Flows will especially increase during the wet season.
- On average hydropower potential will be probably increase but due to more variable run-off patterns hydropower production could become less reliable.

Key adaptation options:

- Improving preparedness for extreme weather events and floods through for example (improved) early warning systems.
- Improving water storage facilities to guarantee sufficient water supply during droughts
- Development of additional (micro)hydropower facilities where possible.
- Diversifying energy supply to prevent dependence on a single energy source.
- Existing and future hydropower facilities should be developed and managed in such a way that they can cope with more variable flow patterns including more frequent and severe extremes.

Further details can be found in the "**Impacts Report**" and the "**Adaptation Report**" in the report section of the final project document - also available online under www.giz.de and www.comifac.org

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