

## Water Indicators

Indicator	Value	Description	Source
Overall Basin Risk (score)	2.61	Overall Basin Risk (score)	
Overall Basin Risk (rank)	108	Overall Basin Risk (rank)	
Physical risk (score)	2.03	Physical risk (score)	
Physical risk (rank)	163	Physical risk (rank)	
Regulatory risk (score)	3.95	Regulatory risk (score)	
Regulatory risk (rank)	8	Regulatory risk (rank)	
Reputation risk (score)	3.01	Reputation risk (score)	
Reputation risk (rank)	52	Reputation risk (rank)	
1. Quantity - Scarcity (score)	1.91	1. Quantity - Scarcity (score)	
1. Quantity - Scarcity (rank)	124	1. Quantity - Scarcity (rank)	
2. Quantity - Flooding (score)	2.16	2. Quantity - Flooding (score)	
2. Quantity - Flooding (rank)	154	2. Quantity - Flooding (rank)	
3. Quality (score)	2.18	3. Quality (score)	
3. Quality (rank)	141	3. Quality (rank)	
4. Ecosystem Service Status (score)	2.08	4. Ecosystem Service Status (score)	
4. Ecosystem Service Status (rank)	123	4. Ecosystem Service Status (rank)	
5. Enabling Environment (Policy & Laws) (score)	4.35	5. Enabling Environment (Policy & Laws) (score)	
5. Enabling Environment (Policy & Laws) (rank)	5	5. Enabling Environment (Policy & Laws) (rank)	
6. Institutions and Governance (score)	4.25	6. Institutions and Governance (score)	
6. Institutions and Governance (rank)	20	6. Institutions and Governance (rank)	
7. Management Instruments (score)	2.89	7. Management Instruments (score)	
7. Management Instruments (rank)	91	7. Management Instruments (rank)	
8 - Infrastructure & Finance (score)	4.35	8 - Infrastructure & Finance (score)	
8 - Infrastructure & Finance (rank)	37	8 - Infrastructure & Finance (rank)	
9. Cultural Diversity (score)	5.00	9. Cultural importance (score)	
9. Cultural Diversity (rank)	7	9. Cultural importance (rank)	
10. Biodiversity Importance (score)	4.18	10. Biodiversity importance (score)	

## Country Overview - Cameroon

Indicator	Value	Description	Source
10. Biodiversity Importance (rank)	41	10. Biodiversity importance (rank)	
11. Media Scrutiny (score)	2.10	11. Media Scrutiny (score)	
11. Media Scrutiny (rank)	164	11. Media Scrutiny (rank)	
12. Conflict (score)	2.83	12. Conflict (score)	
12. Conflict (rank)	64	12. Conflict (rank)	
1.0 - Aridity (score)	1.31	The aridity risk indicator is based on the Global Aridity Index (Global-Aridity) and Global Potential Evapo-Transpiration (Global-PET) Geospatial data sets by Trabucco and Zomer (2009). These data sets provide information about the potential availability of water in regions with low water demand, thus they are used in the Water Risk Filter 5.0 to better account for deserts and other arid areas in the risk assessment.	Trabucco, A., & Zomer, R. J. (2009). Global potential evapo-transpiration (Global-PET) and global aridity index (Global-Aridity) geodatabase. CGIAR consortium for spatial information.
1.0 - Aridity (rank)	92	The aridity risk indicator is based on the Global Aridity Index (Global-Aridity) and Global Potential Evapo-Transpiration (Global-PET) Geospatial data sets by Trabucco and Zomer (2009). These data sets provide information about the potential availability of water in regions with low water demand, thus they are used in the Water Risk Filter 5.0 to better account for deserts and other arid areas in the risk assessment.	Trabucco, A., & Zomer, R. J. (2009). Global potential evapo-transpiration (Global-PET) and global aridity index (Global-Aridity) geodatabase. CGIAR consortium for spatial information.
1.1 - Water Depletion (score)	1.06	The water depletion risk indicator is based on annual average monthly net water depletion from Brauman et al. (2016). Their analysis is based on model outputs from the newest version of the integrated water resources model WaterGAP3 which measures water depletion as the ratio of water consumption-to-availability.	Brauman, K. A., Richter, B. D., Postel, S., Malsy, M., & Flörke, M. (2016). Water depletion: An improved metric for incorporating seasonal and dry-year water scarcity into water risk assessments. <i>Elem Sci Anth</i> , 4.
1.1 - Water Depletion (rank)	143	The water depletion risk indicator is based on annual average monthly net water depletion from Brauman et al. (2016). Their analysis is based on model outputs from the newest version of the integrated water resources model WaterGAP3 which measures water depletion as the ratio of water consumption-to-availability.	Brauman, K. A., Richter, B. D., Postel, S., Malsy, M., & Flörke, M. (2016). Water depletion: An improved metric for incorporating seasonal and dry-year water scarcity into water risk assessments. <i>Elem Sci Anth</i> , 4.
1.2 - Baseline Water Stress (score)	1.03	World Resources Institute's Baseline Water Stress measures the ratio of total annual water withdrawals to total available annual renewable supply, accounting for upstream consumptive use. A higher percentage indicates more competition among users.	Hofste, R., Kuzma, S., Walker, S., ... & Sutanudjaja, E.H. (2019). <i>Aqueduct 3.0: Updated decision relevant global water risk indicators</i> . Technical note. Washington, DC: World Resources Institute.

## Country Overview - Cameroon

Indicator	Value	Description	Source
1.2 - Baseline Water Stress (rank)	154	World Resources Institute's Baseline Water Stress measures the ratio of total annual water withdrawals to total available annual renewable supply, accounting for upstream consumptive use. A higher percentage indicates more competition among users.	Hofste, R., Kuzma, S., Walker, S., ... & Sutanudjaja, E.H. (2019). Aqueduct 3.0: Updated decision relevant global water risk indicators. Technical note. Washington, DC: World Resources Institute.
1.3 - Blue Water Scarcity (score)	2.65	The blue water scarcity risk indicator is based on Mekonnen and Hoekstra (2016) global assessment of blue water scarcity on a monthly basis and at high spatial resolution (grid cells of 30 × 30 arc min resolution). Blue water scarcity is calculated as the ratio of the blue water footprint in a grid cell to the total blue water availability in the cell. The time period analyzed in this study ranges from 1996 to 2005.	Mekonnen, M. M., & Hoekstra, A. Y. (2016). Four billion people facing severe water scarcity. <i>Science advances</i> , 2(2), e1500323.
1.3 - Blue Water Scarcity (rank)	94	The blue water scarcity risk indicator is based on Mekonnen and Hoekstra (2016) global assessment of blue water scarcity on a monthly basis and at high spatial resolution (grid cells of 30 × 30 arc min resolution). Blue water scarcity is calculated as the ratio of the blue water footprint in a grid cell to the total blue water availability in the cell. The time period analyzed in this study ranges from 1996 to 2005.	Mekonnen, M. M., & Hoekstra, A. Y. (2016). Four billion people facing severe water scarcity. <i>Science advances</i> , 2(2), e1500323.
1.4 - Projected Change in Water Discharge (by ~2050) (score)	1.84	This risk indicator is based on multi-model simulation that applies both global climate and hydrological models from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP). To estimate the change at 2°C of global warming above 1980-2010 levels, simulated annual water discharge was averaged over a 31-year period with 2°C mean warming. Results are expressed in terms of relative change (%) in probability between present day (1980-2010) conditions and 2°C scenarios by 2050.	Schewe, J., Heinke, J., Gerten, D., Haddeland, I., Arnell, N. W., Clark, D. B., ... & Gosling, S. N. (2014). Multimodel assessment of water scarcity under climate change. <i>Proceedings of the National Academy of Sciences</i> , 111(9), 3245-3250.
1.4 - Projected Change in Water Discharge (by ~2050) (rank)	111	This risk indicator is based on multi-model simulation that applies both global climate and hydrological models from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP). To estimate the change at 2°C of global warming above 1980-2010 levels, simulated annual water discharge was averaged over a 31-year period with 2°C mean warming. Results are expressed in terms of relative change (%) in probability between present day (1980-2010) conditions and 2°C scenarios by 2050.	Schewe, J., Heinke, J., Gerten, D., Haddeland, I., Arnell, N. W., Clark, D. B., ... & Gosling, S. N. (2014). Multimodel assessment of water scarcity under climate change. <i>Proceedings of the National Academy of Sciences</i> , 111(9), 3245-3250.

## Country Overview - Cameroon

Indicator	Value	Description	Source
1.5 - Drought Frequency Probability (score)	2.92	This risk indicator is based on the Standardized Precipitation and Evaporation Index (SPEI). Vicente-Serrano et al. (2010) developed this multi-scalar drought index applying both precipitation and temperature data to detect, monitor and analyze different drought types and impacts in the context of global warming. The mathematical calculations used for SPEI are similar to the Standard Precipitation Index (SPI), but it has the advantage to include the role of evapotranspiration.	Vicente-Serrano, S. M., Beguería, S., & López-Moreno, J. I. (2010). A multiscale drought index sensitive to global warming: the standardized precipitation evapotranspiration index. <i>Journal of climate</i> , 23(7), 1696-1718.
1.5 - Drought Frequency Probability (rank)	77	This risk indicator is based on the Standardized Precipitation and Evaporation Index (SPEI). Vicente-Serrano et al. (2010) developed this multi-scalar drought index applying both precipitation and temperature data to detect, monitor and analyze different drought types and impacts in the context of global warming. The mathematical calculations used for SPEI are similar to the Standard Precipitation Index (SPI), but it has the advantage to include the role of evapotranspiration.	Vicente-Serrano, S. M., Beguería, S., & López-Moreno, J. I. (2010). A multiscale drought index sensitive to global warming: the standardized precipitation evapotranspiration index. <i>Journal of climate</i> , 23(7), 1696-1718.
1.6 - Projected Change in Drought Occurrence (by ~2050) (score)	3.15	This risk indicator is based on multi-model simulation that applies both global climate and drought models from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP) . A drought threshold for pre-industrial conditions was calculated based on time-series averages. Results are expressed in terms of relative change (%) in probability between pre-industrial and 2°C scenarios.	Frieler, K., Lange, S., Piontek, F., Reyer, C. P., Schewe, J., Warszawski, L., ... & Geiger, T. (2017). Assessing the impacts of 1.5 C global warming-simulation protocol of the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP2b). Geoscientific Model Development.
1.6 - Projected Change in Drought Occurrence (by ~2050) (rank)	47	This risk indicator is based on multi-model simulation that applies both global climate and drought models from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP) . A drought threshold for pre-industrial conditions was calculated based on time-series averages. Results are expressed in terms of relative change (%) in probability between pre-industrial and 2°C scenarios.	Frieler, K., Lange, S., Piontek, F., Reyer, C. P., Schewe, J., Warszawski, L., ... & Geiger, T. (2017). Assessing the impacts of 1.5 C global warming-simulation protocol of the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP2b). Geoscientific Model Development.
2.1 - Estimated Flood Occurrence (score)	2.14	This risk indicator is based on the recurrence of floods within the 34-year time frame period of 1985 to 2019. The occurrence of floods within a given location was estimated using data from Flood Observatory, University of Colorado. The Flood Observatory use data derived from a wide variety of news, governmental, instrumental, and remote sensing source.	Brakenridge, G. R. (2019). Global active archive of large flood events. Dartmouth Flood Observatory, University of Colorado.
2.1 - Estimated Flood Occurrence (rank)	154	This risk indicator is based on the recurrence of floods within the 34-year time frame period of 1985 to 2019. The occurrence of floods within a given location was estimated using data from Flood Observatory, University of Colorado. The Flood Observatory use data derived from a wide variety of news, governmental, instrumental, and remote sensing source.	Brakenridge, G. R. (2019). Global active archive of large flood events. Dartmouth Flood Observatory, University of Colorado.

## Country Overview - Cameroon

Indicator	Value	Description	Source
2.2 - Projected Change in Flood Occurrence (by ~2050) (score)	2.48	This risk indicator is based on multi-model simulation that applies both global climate and drought models from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP). The magnitude of the flood event was defined based on 100-year return period for pre-industrial conditions. Results are expressed in terms of change (%) in probability between pre-industrial and 2°C scenarios.	Frieler, K., Lange, S., Piontek, F., Reyer, C. P., Schewe, J., Warszawski, L., ... & Geiger, T. (2017). Assessing the impacts of 1.5 C global warming-simulation protocol of the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP2b). Geoscientific Model Development.
2.2 - Projected Change in Flood Occurrence (by ~2050) (rank)	82	This risk indicator is based on multi-model simulation that applies both global climate and drought models from the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP). The magnitude of the flood event was defined based on 100-year return period for pre-industrial conditions. Results are expressed in terms of change (%) in probability between pre-industrial and 2°C scenarios.	Frieler, K., Lange, S., Piontek, F., Reyer, C. P., Schewe, J., Warszawski, L., ... & Geiger, T. (2017). Assessing the impacts of 1.5 C global warming-simulation protocol of the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP2b). Geoscientific Model Development.
3.1 - Surface Water Contamination Index (score)	2.18	<p>The underlying data for this risk indicator is based on a broad suite of pollutants with well-documented direct or indirect negative effects on water security for both humans and freshwater biodiversity, compiled by Vörösmarty et al. (2010). The negative effects are specific to individual pollutants, ranging from impacts mediated by eutrophication such as algal blooms and oxygen depletion (e.g., caused by phosphorus and organic loading) to direct toxic effects (e.g., caused by pesticides, mercury).</p> <p>The overall Surface Water Contamination Index is calculated based on a range of key pollutants with different weightings according to the level of their negative effects on water security for both humans and freshwater biodiversity: soil salinization (8%), nitrogen (12%) and phosphorus (P, 13%) loading, mercury deposition (5%), pesticide loading (10%), sediment loading (17%), organic loading (as Biological Oxygen Demand, BOD; 15%), potential acidification (9%), and thermal alteration (11%).</p>	Vörösmarty, C. J., McIntyre, P. B., Gessner, M. O., Dudgeon, D., Prusevich, A., Green, P., ... & Davies, P. M. (2010). Global threats to human water security and river biodiversity. <i>Nature</i> , 467(7315), 555.

Indicator	Value	Description	Source
3.1 - Surface Water Contamination Index (rank)	141	<p>The underlying data for this risk indicator is based on a broad suite of pollutants with well-documented direct or indirect negative effects on water security for both humans and freshwater biodiversity, compiled by Vörösmarty et al. (2010). The negative effects are specific to individual pollutants, ranging from impacts mediated by eutrophication such as algal blooms and oxygen depletion (e.g., caused by phosphorus and organic loading) to direct toxic effects (e.g., caused by pesticides, mercury).</p> <p>The overall Surface Water Contamination Index is calculated based on a range of key pollutants with different weightings according to the level of their negative effects on water security for both humans and freshwater biodiversity: soil salinization (8%), nitrogen (12%) and phosphorus (P, 13%) loading, mercury deposition (5%), pesticide loading (10%), sediment loading (17%), organic loading (as Biological Oxygen Demand, BOD; 15%), potential acidification (9%), and thermal alteration (11%).</p>	Vörösmarty, C. J., McIntyre, P. B., Gessner, M. O., Dudgeon, D., Prusevich, A., Green, P., ... & Davies, P. M. (2010). Global threats to human water security and river biodiversity. <i>Nature</i> , 467(7315), 555.
4.1 - Fragmentation Status of Rivers (score)	2.02	<p>This risk indicator is based on the data set by Grill et al. (2019) mapping the world's free-flowing rivers. Grill et al. (2019) compiled a geometric network of the global river system and associated attributes, such as hydro-geometric properties, as well as pressure indicators to calculate an integrated connectivity status index (CSI). While only rivers with high levels of connectivity in their entire length are classified as free-flowing, rivers of CSI &lt; 95% are considered as fragmented at a certain degree.</p>	Grill, G., Lehner, B., Thieme, M., Geenen, B., Tickner, D., Antonelli, F., ... & Macedo, H. E. (2019). Mapping the world's free-flowing rivers. <i>Nature</i> , 569(7755), 215.
4.1 - Fragmentation Status of Rivers (rank)	115	<p>This risk indicator is based on the data set by Grill et al. (2019) mapping the world's free-flowing rivers. Grill et al. (2019) compiled a geometric network of the global river system and associated attributes, such as hydro-geometric properties, as well as pressure indicators to calculate an integrated connectivity status index (CSI). While only rivers with high levels of connectivity in their entire length are classified as free-flowing, rivers of CSI &lt; 95% are considered as fragmented at a certain degree.</p>	Grill, G., Lehner, B., Thieme, M., Geenen, B., Tickner, D., Antonelli, F., ... & Macedo, H. E. (2019). Mapping the world's free-flowing rivers. <i>Nature</i> , 569(7755), 215.
4.2 - Catchment Ecosystem Services Degradation Level (tree cover loss) (score)	2.20	<p>For this risk indicator, tree cover loss was applied as a proxy to represent catchment ecosystem services degradation since forests play an important role in terms of water regulation, supply and pollution control.</p> <p>The forest cover data is based on Hansen et al.'s global Landsat data at a 30-meter spatial resolution to characterize forest cover and change. The authors defined trees as vegetation taller than 5 meters in height, and forest cover loss as a stand-replacement disturbance, or a change from a forest to non-forest state, during the period 2000 – 2018.</p>	Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A. A., Tyukavina, A., ... & Kommareddy, A. (2013). High-resolution global maps of 21st-century forest cover change. <i>science</i> , 342(6160), 850-853.

## Country Overview - Cameroon

Indicator	Value	Description	Source
4.2 - Catchment Ecosystem Services Degradation Level (tree cover loss) (rank)	84	<p>For this risk indicator, tree cover loss was applied as a proxy to represent catchment ecosystem services degradation since forests play an important role in terms of water regulation, supply and pollution control.</p> <p>The forest cover data is based on Hansen et al.'s global Landsat data at a 30-meter spatial resolution to characterize forest cover and change. The authors defined trees as vegetation taller than 5 meters in height, and forest cover loss as a stand-replacement disturbance, or a change from a forest to non-forest state, during the period 2000 - 2018.</p>	Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A. A., Tyukavina, A., ... & Kommareddy, A. (2013). High-resolution global maps of 21st-century forest cover change. <i>science</i> , 342(6160), 850-853.
4.3 - Projected Impacts on Freshwater Biodiversity (score)	2.36	The study by Tedesco et al. (2013) to project changes [% increase or decrease] in extinction rate by ~2090 of freshwater fish due to water availability loss from climate change is used as a proxy to estimate the projected impacts on freshwater biodiversity.	Tedesco, P. A., Oberdorff, T., Cornu, J. F., Beauchard, O., Brosse, S., Dürr, H. H., ... & Hugueny, B. (2013). A scenario for impacts of water availability loss due to climate change on riverine fish extinction rates. <i>Journal of Applied Ecology</i> , 50(5), 1105-1115.
4.3 - Projected Impacts on Freshwater Biodiversity (rank)	99	The study by Tedesco et al. (2013) to project changes [% increase or decrease] in extinction rate by ~2090 of freshwater fish due to water availability loss from climate change is used as a proxy to estimate the projected impacts on freshwater biodiversity.	Tedesco, P. A., Oberdorff, T., Cornu, J. F., Beauchard, O., Brosse, S., Dürr, H. H., ... & Hugueny, B. (2013). A scenario for impacts of water availability loss due to climate change on riverine fish extinction rates. <i>Journal of Applied Ecology</i> , 50(5), 1105-1115.
5.1 - Freshwater Policy Status (SDG 6.5.1) (score)	5.00	This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "National Water Resources Policy" indicator, which corresponds to one of the three national level indicators under the Enabling Environment category.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
5.1 - Freshwater Policy Status (SDG 6.5.1) (rank)	2	This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "National Water Resources Policy" indicator, which corresponds to one of the three national level indicators under the Enabling Environment category.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
5.2 - Freshwater Law Status (SDG 6.5.1) (score)	4.00	<p>This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "National Water Resources Law(s)" indicator, which corresponds to one of the three national level indicators under the Enabling Environment category.</p> <p>For SDG 6.5.1, enabling environment depicts the conditions that help to support the implementation of IWRM, which includes legal and strategic planning tools for IWRM.</p>	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.

Indicator	Value	Description	Source
5.2 - Freshwater Law Status (SDG 6.5.1) (rank)	24	<p>This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation “National Water Resources Law(s)” indicator, which corresponds to one of the three national level indicators under the Enabling Environment category.</p> <p>For SDG 6.5.1, enabling environment depicts the conditions that help to support the implementation of IWRM, which includes legal and strategic planning tools for IWRM.</p>	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
5.3 - Implementation Status of Water Management Plans (SDG 6.5.1) (score)	4.00	<p>This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation “National IWRM plans” indicator, which corresponds to one of the three national level indicators under the Enabling Environment category.</p> <p>For SDG 6.5.1, enabling environment depicts the conditions that help to support the implementation of IWRM, which includes legal and strategic planning tools for IWRM.</p>	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
5.3 - Implementation Status of Water Management Plans (SDG 6.5.1) (rank)	32	<p>This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation “National IWRM plans” indicator, which corresponds to one of the three national level indicators under the Enabling Environment category.</p> <p>For SDG 6.5.1, enabling environment depicts the conditions that help to support the implementation of IWRM, which includes legal and strategic planning tools for IWRM.</p>	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
6.1 - Corruption Perceptions Index (score)	4.00	<p>This risk Indicator is based on the latest Transparency International's data: the Corruption Perceptions Index 2018. This index aggregates data from a number of different sources that provide perceptions of business people and country experts on the level of corruption in the public sector.</p>	Transparency International (2019). Corruption Perceptions Index 2018. Berlin: Transparency International.
6.1 - Corruption Perceptions Index (rank)	69	<p>This risk Indicator is based on the latest Transparency International's data: the Corruption Perceptions Index 2018. This index aggregates data from a number of different sources that provide perceptions of business people and country experts on the level of corruption in the public sector.</p>	Transparency International (2019). Corruption Perceptions Index 2018. Berlin: Transparency International.
6.2 - Freedom in the World Index (score)	5.00	<p>This risk indicator is based on Freedom House (2019), an annual global report on political rights and civil liberties, composed of numerical ratings and descriptive texts for each country and a select group of territories. The 2019 edition involved more than 100 analysts and more than 30 advisers with global, regional, and issue-based expertise to covers developments in 195 countries and 14 territories from January 1, 2018, through December 31, 2018.</p>	Freedom House (2019). Freedom in the world 2019. Washington, DC: Freedom House.



## Country Overview - Cameroon

Indicator	Value	Description	Source
6.2 - Freedom in the World Index (rank)	32	This risk indicator is based on Freedom House (2019), an annual global report on political rights and civil liberties, composed of numerical ratings and descriptive texts for each country and a select group of territories. The 2019 edition involved more than 100 analysts and more than 30 advisers with global, regional, and issue-based expertise to covers developments in 195 countries and 14 territories from January 1, 2018, through December 31, 2018.	Freedom House (2019). Freedom in the world 2019. Washington, DC: Freedom House.
6.3 - Business Participation in Water Management (SDG 6.5.1) (score)	4.00	This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "Business Participation in Water Resources Development, Management and Use" indicator, which corresponds to one of the six national level indicators under the Institutions and Participation category.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
6.3 - Business Participation in Water Management (SDG 6.5.1) (rank)	23	This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "Business Participation in Water Resources Development, Management and Use" indicator, which corresponds to one of the six national level indicators under the Institutions and Participation category.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
7.1 - Management Instruments for Water Management (SDG 6.5.1) (score)	3.00	This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "Sustainable and efficient water use management" indicator, which corresponds to one of the five national level indicators under the Management Instruments category.  For SDG 6.5.1, management instruments refer to the tools and activities that enable decision-makers and users to make rational and informed choices between alternative actions.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
7.1 - Management Instruments for Water Management (SDG 6.5.1) (rank)	76	This risk indicator is based on SDG 6.5.1. Degree of IWRM Implementation "Sustainable and efficient water use management" indicator, which corresponds to one of the five national level indicators under the Management Instruments category.  For SDG 6.5.1, management instruments refer to the tools and activities that enable decision-makers and users to make rational and informed choices between alternative actions.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.

## Country Overview - Cameroon

Indicator	Value	Description	Source
7.2 - Groundwater Monitoring Data Availability and Management (score)	3.00	This risk indicator is based on the data set by UN IGRAC (2019) to determine the level of availability of groundwater monitoring data at country level as groundwater management decisions rely strongly on data availability. The level of groundwater monitoring data availability for groundwater management is determined according to a combination of three criteria developed by WWF and IGRAC: 1) Status of country groundwater monitoring programme, 2) groundwater data availability for NGOs and 3) Public access to processed groundwater monitoring data.	UN IGRAC (2019). Global Groundwater Monitoring Network GGMM Portal. UN International Groundwater Resources Assessment Centre (IGRAC).
7.2 - Groundwater Monitoring Data Availability and Management (rank)	92	This risk indicator is based on the data set by UN IGRAC (2019) to determine the level of availability of groundwater monitoring data at country level as groundwater management decisions rely strongly on data availability. The level of groundwater monitoring data availability for groundwater management is determined according to a combination of three criteria developed by WWF and IGRAC: 1) Status of country groundwater monitoring programme, 2) groundwater data availability for NGOs and 3) Public access to processed groundwater monitoring data.	UN IGRAC (2019). Global Groundwater Monitoring Network GGMM Portal. UN International Groundwater Resources Assessment Centre (IGRAC).
7.3 - Density of Runoff Monitoring Stations (score)	2.27	The density of monitoring stations for water quantity was applied as proxy to develop this risk indicator. The Global Runoff Data Base was used to estimate the number of monitoring stations per 1000km <sup>2</sup> of the main river system (data base access date: May 2018).	BfG (2019). Global Runoff Data Base. German Federal Institute of Hydrology (BfG).
7.3 - Density of Runoff Monitoring Stations (rank)	156	The density of monitoring stations for water quantity was applied as proxy to develop this risk indicator. The Global Runoff Data Base was used to estimate the number of monitoring stations per 1000km <sup>2</sup> of the main river system (data base access date: May 2018).	BfG (2019). Global Runoff Data Base. German Federal Institute of Hydrology (BfG).
8.1 - Access to Safe Drinking Water (score)	4.00	This risk indicator is based on the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (UNICEF/WHO) 2019 data. It provides estimates on the use of water, sanitation and hygiene by country for the period 2000-2017.	WHO & UNICEF (2019). Estimates on the use of water, sanitation and hygiene by country (2000-2017). Joint Monitoring Programme for Water Supply, Sanitation and Hygiene.
8.1 - Access to Safe Drinking Water (rank)	33	This risk indicator is based on the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (UNICEF/WHO) 2019 data. It provides estimates on the use of water, sanitation and hygiene by country for the period 2000-2017.	WHO & UNICEF (2019). Estimates on the use of water, sanitation and hygiene by country (2000-2017). Joint Monitoring Programme for Water Supply, Sanitation and Hygiene.
8.2 - Access to Sanitation (score)	5.00	This risk indicator is based on the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (UNICEF/WHO) 2019 data. It provides estimates on the use of water, sanitation and hygiene by country for the period 2000-2017.	WHO & UNICEF (2019). Estimates on the use of water, sanitation and hygiene by country (2000-2017). Joint Monitoring Programme for Water Supply, Sanitation and Hygiene.

## Country Overview - Cameroon

Indicator	Value	Description	Source
8.2 - Access to Sanitation (rank)	31	This risk indicator is based on the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (UNICEF/WHO) 2019 data. It provides estimates on the use of water, sanitation and hygiene by country for the period 2000-2017.	WHO & UNICEF (2019). Estimates on the use of water, sanitation and hygiene by country (2000-2017). Joint Monitoring Programme for Water Supply, Sanitation and Hygiene.
8.3 - Financing for Water Resource Development and Management (SDG 6.5.1) (score)	3.00	This risk indicator is based on the average 'Financing' score of UN SDG 6.5.1. Degree of IWRM Implementation database. UN SDG 6.5.1 database contains a category on financing which assesses different aspects related to budgeting and financing made available and used for water resources development and management from various sources.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
8.3 - Financing for Water Resource Development and Management (SDG 6.5.1) (rank)	112	This risk indicator is based on the average 'Financing' score of UN SDG 6.5.1. Degree of IWRM Implementation database. UN SDG 6.5.1 database contains a category on financing which assesses different aspects related to budgeting and financing made available and used for water resources development and management from various sources.	UN Environment (2018). Progress on integrated water resources management. Global baseline for SDG 6 Indicator 6.5.1: degree of IWRM implementation.
9.1 - Cultural Diversity (score)	5.00	Water is a social and cultural good. The cultural diversity risk indicator was included in order to acknowledge that businesses face reputational risk due to the importance of freshwater for indigenous and traditional people in their daily life, religion and culture. This risk indicator is based on Oviedo and Larsen (2000) data set, which mapped the world's ethnolinguistic groups onto the WWF map of the world's ecoregions. This cross-mapping showed for the very first time the significant overlap that exists between the global geographic distribution of biodiversity and that of linguistic diversity.	Oviedo, G., Maffi, L., & Larsen, P. B. (2000). Indigenous and traditional peoples of the world and ecoregion conservation: An integrated approach to conserving the world's biological and cultural diversity. Gland: WWF (World Wide Fund for Nature) International.
9.1 - Cultural Diversity (rank)	7	Water is a social and cultural good. The cultural diversity risk indicator was included in order to acknowledge that businesses face reputational risk due to the importance of freshwater for indigenous and traditional people in their daily life, religion and culture. This risk indicator is based on Oviedo and Larsen (2000) data set, which mapped the world's ethnolinguistic groups onto the WWF map of the world's ecoregions. This cross-mapping showed for the very first time the significant overlap that exists between the global geographic distribution of biodiversity and that of linguistic diversity.	Oviedo, G., Maffi, L., & Larsen, P. B. (2000). Indigenous and traditional peoples of the world and ecoregion conservation: An integrated approach to conserving the world's biological and cultural diversity. Gland: WWF (World Wide Fund for Nature) International.
10.1 - Freshwater Endemism (score)	3.39	The underlying data set for this risk indicator comes from the Freshwater Ecoregions of the World (FEOW) 2015 data developed by WWF and TNC. Companies operating in basins with higher number of endemic fish species are exposed to higher reputational risks.	WWF & TNC (2015). Freshwater Ecoregions of the World.

## Country Overview - Cameroon

Indicator	Value	Description	Source
10.1 - Freshwater Endemism (rank)	114	The underlying data set for this risk indicator comes from the Freshwater Ecoregions of the World (FEOW) 2015 data developed by WWF and TNC. Companies operating in basins with higher number of endemic fish species are exposed to higher reputational risks.	WWF & TNC (2015). Freshwater Ecoregions of the World.
10.2 - Freshwater Biodiversity Richness (score)	4.96	The underlying data set for this risk indicator comes from the Freshwater Ecoregions of the World (FEOW) 2015 data developed by WWF and TNC. Count of fish species is used as a representation of freshwater biodiversity richness. Companies operating in basins with higher number of fish species are exposed to higher reputational risks.	WWF & TNC (2015). Freshwater Ecoregions of the World.
10.2 - Freshwater Biodiversity Richness (rank)	26	The underlying data set for this risk indicator comes from the Freshwater Ecoregions of the World (FEOW) 2015 data developed by WWF and TNC. Count of fish species is used as a representation of freshwater biodiversity richness. Companies operating in basins with higher number of fish species are exposed to higher reputational risks.	WWF & TNC (2015). Freshwater Ecoregions of the World.
11.1 - National Media Coverage (score)	3.00	This risk indicator is based on joint qualitative research by WWF and Tecnomia (Typsa Group). It indicates how aware local residents typically are of water-related issues due to national media coverage. The status of the river basin (e.g., scarcity and pollution) is taken into account, as well as the importance of water for livelihoods (e.g., food and shelter).	WWF & Tecnomia (TYPESA Group)
11.1 - National Media Coverage (rank)	124	This risk indicator is based on joint qualitative research by WWF and Tecnomia (Typsa Group). It indicates how aware local residents typically are of water-related issues due to national media coverage. The status of the river basin (e.g., scarcity and pollution) is taken into account, as well as the importance of water for livelihoods (e.g., food and shelter).	WWF & Tecnomia (TYPESA Group)
11.2 - Global Media Coverage (score)	1.00	This risk indicator is based on joint qualitative research by WWF and Tecnomia (Typsa Group). It indicates how aware people are of water-related issues due to global media coverage. Familiarity to and media coverage of the region and regional water-related disasters are taken into account.	WWF & Tecnomia (TYPESA Group)
11.2 - Global Media Coverage (rank)	170	This risk indicator is based on joint qualitative research by WWF and Tecnomia (Typsa Group). It indicates how aware people are of water-related issues due to global media coverage. Familiarity to and media coverage of the region and regional water-related disasters are taken into account.	WWF & Tecnomia (TYPESA Group)

## Country Overview - Cameroon

Indicator	Value	Description	Source
12.1 - Conflict News Events (RepRisk) (score)	4.00	This risk indicator is based on 2018 data collected by RepRisk on counts and registers of documented negative incidents, criticism and controversies that can affect a company's reputational risk. These negative news events are labelled per country and industry class.	RepRisk & WWF (2019). Due diligence database on ESG and business conduct risks. RepRisk.
12.1 - Conflict News Events (RepRisk) (rank)	38	This risk indicator is based on 2018 data collected by RepRisk on counts and registers of documented negative incidents, criticism and controversies that can affect a company's reputational risk. These negative news events are labelled per country and industry class.	RepRisk & WWF (2019). Due diligence database on ESG and business conduct risks. RepRisk.
12.2 - Hydro-political Risk (score)	1.65	This risk indicator is based on the assessment of hydro-political risk by Farinosi et al. (2018). More specifically, it is based on the results of spatial modelling by Farinosi et al. (2018) that determined the main parameters affecting water cross-border conflicts and calculated the likelihood of hydro-political issues.	Farinosi, F., Giupponi, C., Reynaud, A., Ceccherini, G., Carmona-Moreno, C., De Roo, A., ... & Bidoglio, G. (2018). An innovative approach to the assessment of hydro-political risk: A spatially explicit, data driven indicator of hydro-political issues. <i>Global environmental change</i> , 52, 286-313.
12.2 - Hydro-political Risk (rank)	160	This risk indicator is based on the assessment of hydro-political risk by Farinosi et al. (2018). More specifically, it is based on the results of spatial modelling by Farinosi et al. (2018) that determined the main parameters affecting water cross-border conflicts and calculated the likelihood of hydro-political issues.	Farinosi, F., Giupponi, C., Reynaud, A., Ceccherini, G., Carmona-Moreno, C., De Roo, A., ... & Bidoglio, G. (2018). An innovative approach to the assessment of hydro-political risk: A spatially explicit, data driven indicator of hydro-political issues. <i>Global environmental change</i> , 52, 286-313.
Population, total (#)	23439189	Population, total	The World Bank 2018, Data , homepage accessed 20/04/2018
GDP (current US\$)	32217497470	GDP (current US\$)	The World Bank 2018, Data , homepage accessed 20/04/2018
EPI 2018 score (0-100)	40.81	Environmental Performance Index	
WGI -Voice and Accountability (0-100)	14.76	Water Governance Indicator	Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, <i>The Worldwide Governance Indicators: Methodology and Analytical Issues</i> (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <a href="https://ssrn.com/abstract=1682132">https://ssrn.com/abstract=1682132</a>

## Country Overview - Cameroon

Indicator	Value	Description	Source
WGI -Political stability no violence (0-100)	21.67	Water Governance Indicator	Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <a href="https://ssrn.com/abstract=1682132">https://ssrn.com/abstract=1682132</a>
WGI - Government Effectiveness (0-100)	22.12	Water Governance Indicator	Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <a href="https://ssrn.com/abstract=1682132">https://ssrn.com/abstract=1682132</a>
WGI - Regulatory Quality (0-100)	23.08	Water Governance Indicator	Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <a href="https://ssrn.com/abstract=1682132">https://ssrn.com/abstract=1682132</a>
WGI - Rule of Law (0-100)	15.38	Water Governance Indicator	Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <a href="https://ssrn.com/abstract=1682132">https://ssrn.com/abstract=1682132</a>
WGI - Control of Corruption (0-100)	11.06	Water Governance Indicator	Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The Worldwide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <a href="https://ssrn.com/abstract=1682132">https://ssrn.com/abstract=1682132</a>

## Country Overview - Cameroon

Indicator	Value	Description	Source
WRI BWS all industries (0-5)	0.11	WRI Baseline Water Stress (BWS)	Gassert, F., P. Reig, T. Luo, and A. Maddocks. 2013. "Aqueduct country and river basin rankings: a weighted aggregation of spatially distinct hydrological indicators." Working paper. Washington, DC: World Resources Institute, December 2013. Available online at <a href="http://wri.org/publication/aqueduct-country-river-basin-rankings">http://wri.org/publication/aqueduct-country-river-basin-rankings</a> .
WRI BWS Ranking (1=very high)	160	WRI Baseline Water Stress (BWS)	Gassert, F., P. Reig, T. Luo, and A. Maddocks. 2013. "Aqueduct country and river basin rankings: a weighted aggregation of spatially distinct hydrological indicators." Working paper. Washington, DC: World Resources Institute, December 2013. Available online at <a href="http://wri.org/publication/aqueduct-country-river-basin-rankings">http://wri.org/publication/aqueduct-country-river-basin-rankings</a> .
Baseline Water Stress (BWS) - 2020 BAU (1=very high)	147	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2020 Optimistic (increasing rank describes lower risk)	147	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2020 Pessimistic (increasing rank describes lower risk)	147	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .

## Country Overview - Cameroon

Indicator	Value	Description	Source
Baseline Water Stress (BWS) - 2030 BAU (increasing rank describes lower risk)	150	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2030 Optimistic (increasing rank describes lower risk)	150	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2030 Pessimistic (increasing rank describes lower risk)	149	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2040 BAU (increasing rank describes lower risk)	155	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2040 Optimistic (increasing rank describes lower risk)	156	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .
Baseline Water Stress (BWS) - 2040 Pessimistic (increasing rank describes lower risk)	152	WRI country ranking	Luo, T., R. Young, and P. Reig. 2015. "Aqueduct projected water stress rankings." Technical note. Washington, DC: World Resources Institute, August 215. Available online at <a href="http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings">http://www.wri.org/publication/aqueduct-projected-water-stress-country-rankings</a> .



## Country Overview - Cameroon

Indicator	Value	Description	Source
Total water footprint of national consumption (m <sup>3</sup> /a/cap)	1245.01	WFN Water Footprint Data	Mekonnen, M.M. and Hoekstra, A.Y. (2011) National water footprint accounts: The green, blue and grey water footprint of production and consumption, Value of Water Research Report Series No. 50, UNESCO-IHE, Delft, the Netherlands. <a href="http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol1.pdf">http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol1.pdf</a>
Ratio external / total water footprint (%)	5.45	WFN Water Footprint Data	Mekonnen, M.M. and Hoekstra, A.Y. (2011) National water footprint accounts: The green, blue and grey water footprint of production and consumption, Value of Water Research Report Series No. 50, UNESCO-IHE, Delft, the Netherlands. <a href="http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol1.pdf">http://www.waterfootprint.org/Reports/Report50-NationalWaterFootprints-Vol1.pdf</a>
Area equipped for full control irrigation: total (1000 ha)	22.45	Aquastat - Irrigation	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
Area equipped for irrigation: total (1000 ha)	25.65	Aquastat - Irrigation	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
% of the area equipped for irrigation actually irrigated (%)	0.00	Aquastat - Irrigation	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
Electricity production from hydroelectric sources (% of total)	73.22	World Development Indicators	The World Bank 2018, Data , homepage accessed 20/04/2018
Total internal renewable water resources (IRWR) (10 <sup>9</sup> m <sup>3</sup> /year)	273.00	Aquastat - Water Ressources	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
Total internal renewable water resources (IRWR) (10 <sup>9</sup> m <sup>3</sup> /year)	10.15	Aquastat - Water Ressources	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
Water resources: total external renewable (10 <sup>9</sup> m <sup>3</sup> /year)	273.00	Aquastat - Water Ressources	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13

## Country Overview - Cameroon

Indicator	Value	Description	Source
Total renewable water resources (10 <sup>9</sup> m <sup>3</sup> /year)	283.10	Aquastat - Water Ressources	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
Dependency ratio (%)	3.59	Aquastat - Water Ressources	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
Total renewable water resources per capita (m <sup>3</sup> /inhab/year)	12127.00	Aquastat - Water Ressources	FAO. 2016. AQUASTAT website. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2018/04/13
World happiness [0-8]	4.98	WorldHappinessReport.org	World Happiness Report, homepage accessed 20/04/2018

## Country Aspects

### 1. PHYSICAL ASPECTS

#### 1.1. WATER RESOURCES

##### 1.1.1. WATER RESOURCES

The drainage basins of Cameroon are:

- the Logone and its tributaries, which drain the extreme north to Lake Chad, covering 11 per cent of the country;
- the Benue and its tributaries (the Faro, the Mandara, the Alantika Kebi and the Mayo), which drain the north to the Niger river and occupy 19 per cent of the country;
- the Ngoko and Kadei rivers, which drain south-east towards the Sangha, a tributary of the Congo, which cover 20 per cent of the country;
- the main rivers of the centre and west, which flow into the Atlantic: the Sanaga, the longest river in the country (920km) whose basin covers 140,000km<sup>2</sup> (30 per cent of the national territory), and the Nyong, Ntem, Mungo and Wouri, which cover 20 per cent.

Cameroon has significant groundwater resources, which are divided between the major aquifers and include:

- the base area of 430,000km<sup>2</sup> (90 per cent of the country), which contains about 79km<sup>3</sup>;
- the coastal basin of 7,500km<sup>2</sup>, which contains a volume of recoverable reserves of over 21km<sup>3</sup>;
- the basin of the Benue, which covers some 7,800km<sup>2</sup> and has 15km<sup>3</sup> of mineable reserves;
- the Chad basin, which covers 19,800km<sup>2</sup>;
- some small sub-basins, which cover a total of 9,900km<sup>2</sup>.

The internal renewable surface water resources are estimated at 268km<sup>3</sup>, and the internal renewable groundwater resources at 100km<sup>3</sup>. Taking into account a common part between surface water and groundwater of about 95km<sup>3</sup>, the internal renewable water resources total 273km<sup>3</sup>. Considering the rivers entering the country (such as the Benue, coming from Chad, with 4km<sup>3</sup>) or forming the border (such as the Logone, between Cameroon and Chad), the total renewable water resources are estimated at 285.5km<sup>3</sup>/year.

Wetlands are represented by Yaérés (floodplains formed from river runoff or overflow) in the extreme north and northeast and the mangrove area of the coast between the estuary and the Wouri border with Nigeria. The Yaérés of the Waza-Logone region in the extreme north have been the subject of a development project funded by the European Union and implemented by the World Conservation Union (IUCN).

The Cameroon contains a large number of lakes. The most important are:

- Lake Chad, shared with Nigeria, Niger and Chad;
- the volcanic lakes of Nyos (158ha), Barombi Mbo (415ha) and Oka (243ha);

•the tectonic lakes of Ossa, Dissoni and Ejagham.

The major dams and reservoirs have a total capacity of 15,326km<sup>3</sup>.

##### 1.1.2. WATER USE

The main water uses, in order of importance, are: agriculture (74 per cent), domestic uses (18 per cent) and industry (8 per cent). Total withdrawals in 2000 were 985 million m<sup>3</sup>.

#### 1.2. WATER QUALITY, ECOSYSTEMS AND HUMAN HEALTH

Water-borne diseases are prevalent in Cameroon; other current environmental problems are deforestation, overgrazing, desertification, poaching and overfishing.

The water used for irrigation in urban areas is heavily polluted. Rural water quality remains good, given the low use of pesticides and fertilizers in agriculture. The risk of pollution from industrial and human groundwater from the Douala region is significant.

### 2. GOVERNANCE ASPECTS

#### 2.1. WATER INSTITUTIONS

The water sector falls under three ministries:

- the Ministry of Mines, Water and Energy (MINMEE), which is responsible for overseeing exploration and rational exploitation of water resources, and for the design and implementation of sanitation policy. Formerly under the MINMEE and currently undergoing privatization, the National Water Company of Cameroon (SNEC) is responsible for supplying drinking water in urban areas, while the Water Directorate of the Ministry is responsible for water procurement in urban and rural areas;
- the Ministry of Agriculture is responsible for developing and implementing government programmes related to irrigation and drainage. Government policy is oriented towards the establishment of irrigation systems at prices within the reach of small farmers and the development of a strategy for agricultural and pastoral water. The Ministry of Livestock, Fisheries and Animal Industry assists in the implementation of this policy;
- the Water Research Centre (HRC) is under the Ministry of Scientific Research and responsible for technical supervision of the water cycle and water quality and the inventory and valuation of water resources.

Private structures, such as SEMRY and UNVDA, are also involved in the management of irrigation. The withdrawal of the state from the irrigation sector after the crisis of 1980-1990 resulted in decreased productivity throughout the sector. In order to boost irrigated production, the state now directs its policy towards improving the operation of existing schemes, promoting small irrigation and encouraging private sector investment in irrigation.

## 2.2. WATER MANAGEMENT

Water resource management in Cameroon is central to poverty alleviation and to sustainable development. Significant sections of the population suffer mainly due to poor water management rather than to actual water shortages. About 42 per cent of Cameroonians do not have access to adequate drinking water; this is a striking statistic for a country endowed with abundant freshwater resources.

Water governance has been improving in Cameroon but at a very slow rate. Water is considered to be state property, so the state is responsible for the protection and management of this resource and there are many institutions involved in such management. Thus, the IWRM concept is now widely accepted as the starting point for the development of water policies that can enhance sustainable water resources management in the country.

In major rice-growing areas, two bodies are responsible for day-to-day management:

- a branch with responsibility for maintenance of major infrastructures and for monitoring and coordinating production and marketing;
- collective organizations of irrigators who maintain networks and manage the distribution of water.

Water management and production is privatized in banana areas.

The traditional areas are managed by the irrigators, either individually or in small groups. These can take two forms:

- community groups where all agricultural activity is carried out by all operators and the purpose is the equal sharing of production;
- common initiative groups in which operators work individually but share a number of services or means of production.

## 2.3. WATER POLICY AND LEGAL FRAMEWORK

There is no specific legislation for irrigation and drainage. However, the country has a law concerning the water regime, namely Law No. 98/005 of 14 April, 1998. This law establishes the legal framework of the water regime and covers protection against water pollution, preservation of water resources, the provision of quality water for drinking and penalties due for non-compliance.

## 3. GEOPOLITICAL ASPECTS

The use of water from the Logone, which marks the border between Cameroon and Chad, is regulated by an agreement (known as the Moundou agreement) signed in August 1970 between the two countries. This agreement sets maximum quantities of water that can be taken by both countries in the dry season. These amounts are 5m<sup>3</sup>/s from January to April and 10m<sup>3</sup>/s in May and December.

Cameroon is also included in the river basins of the Congo (Zaire), Lake Chad and the Niger river. It is a member of the Board of the Lake Chad Basin (LCBC) and the Niger Basin Authority (NBA).

The Niger Basin Authority defines its purpose as the promotion of cooperation among member

countries to ensure integrated development of resources. The organisation originally defined its mission as the cooperative management of water resources, most notably, but not limited to, the Niger river.

The NBA nations seek to harmonize the development of energy, agriculture, forestry, transport, communications and industrial resources. The NBA has worked to create an Integrated Development Plan of the Basin, focussing especially on cross- boundary projects. The NBA itself has been ceded no sovereign power over resources or management, and therefore all regulation must be imposed by individual sovereign governments. While not the original focus of the NBA, environmental protection from the threats of desertification, deforestation and pollution of the rivers by agriculture and industry have become major themes of their work.