Supplementary Material

How do sectoral policies support Climate Compatible Development? An empirical analysis focusing on southern Africa

Table 1: SADC country national policies (in English) for the four sectors and their year of publication considered within this study.

	Water	Agriculture	Forestry	Energy
Botswana	2012	1991	2011	2009
Lesotho	2007	2010	2008	2015
Malawi	2005	2011	1996	2016 (draft version)
Mauritius	2014	2008	2007	2009
Namibia	2000	2015	2001	1998
South Africa	2013	2014	2015	2015
Swaziland	2009	2005	2002	2003
Tanzania	2002	2013	1998	2003
Zambia	1994	2004	2009	2007
Zimbabwe	2012	2012	2001	2008

Table 2: Assessment of SADC country sector (water, agriculture, forestry, energy) approaches in aligning with CCD.

Botswana

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	**Mitigation**	**Development**	**Adaptation**	**Mitigation**	**Development**		
Botswana								
Water								
Water demand management measures	Improve water use efficiency in light of changing and potentially decreasing rainfall and surface runoff conditions at the intra and inter annual timescale, particularly regarding rising water scarcity and droughts.	None	Increase productive water use and hence availability for agriculture, as well as drinking purposes, sanitation and other livelihood activities.	None	None	None	Effective implementation and management.	3
Improve access to drinking water and sanitation services	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Equitable water allocation between all users	Relative increased provision and access to water in light of temperature rise and potential changes in rainfall patterns and water runoff.	None	Increased access to water for sector purposes.	None	None	None	Effective implementation and management.	3
Increase water use efficiency	Improve water use efficiency in light of changing and potentially decreasing rainfall and surface runoff conditions at the intra and inter annual timescale, particularly regarding	None	Increase productive water use and hence availability for agriculture, as well as drinking purposes, sanitation and	None	None	None	Effective implementation and management.	3

	rising water scarcity and droughts.		other livelihood activities.					
Improve network for monitoring hydrology	Improved capacity to detect and understand variations in rainfall, runoff and river flow in the context of climate change hydro-meteorological impacts.	None	Improve capacity to measure and understand changes in hydrology, benefits to research and management approaches.	None	None	None	Successful establishment and management of hydrological gauges, monitoring techniques and data management.	3
Construction of large and small scale irrigated systems	Potential to increase crop production in light of changes in rainfall and water availability.	None	Increase food production, positive effect on livelihood activities.	Potential under-performance owing to uncertainty of rainfall patterns and water availability, particularly with large scale canal irrigation infrastructure.	None	Potential loss of habitat, human displacement.	Effective implementation and management.	1
Average of CCD assessment								3
Present of each component in policy %	100	0	100	16	0	16		
Agriculture								
Technology development to improve arable farming techniques	Increase ability of farmers to adapt to rising temperature and rainfall changes.	Potential to reduce soil tillage and carbon dioxide emissions.	Increase productivity of crops.	None	None	None	Effective implementation and management.	4
Soil mapping and land capability studies to ensure efficient use of land	Increase ability of farmers to adapt to rising temperature and rainfall changes through more efficiency use of land (soil, water).	None	Increase efficiency of agricultural inputs.	None	None	None	Effective implementation and management.	3
An intensive breeding programme of livestock	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1

Agricultural extension services	Increase in farmers' ability to adapt to changes in rainfall and water availability, as well as temperature rise for the cultivation of crops, through training and capacity building.	Potential to decrease level of tillage and hence carbon dioxide emission from soils	Increase in farmers' capacity to sustainably manage and potentially increase crop cultivation, with positive implications on livelihoods.	None	None	None	Effective implementation and management.	4
Average of CCD assessment								3
Present of each component in policy %	75	50	100	0	25	25		
Forestry								
Promote forestry based enterprise and industry	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	Income generation for those involved with wood based economy.	None	None	Traditional access reduced	Increase plantation coverage area to the detriment of the local community.	1
Promote participation of local communities in sustainable management of forests	Potential to increase adaptive capacity of rural and forest based livelihoods.	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	3
Strengthen wildland fire management in forest areas	None	None	Enhance safety of communities living in or near to forests.	None	None	None	Successful implementation and management.	3
Strengthen programmes for forest conservation	None	Increase carbon sequestration sink.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Successful implementation and management.	3
Develop human resource capacity in the forestry sector	None	Increase carbon sequestration sink	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Successful implementation and management.	3
Average of CCD assessment								2.6

Present of each component in policy %	20	80	100	0	0	20		
Energy								
Promotion of renewable energy sources (solar, wind, biomass, geothermal)	None	Clean energy sources, zero/minimal carbon dioxide emissions.	Increase clean zero carbon energy supply for livelihoods and economic growth.	None	None	None	Effective implementation and management.	3
Promote energy efficiency	None	Relatively less energy required if efficiency is increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Diversify energy supply and regional cooperation	None	None	Promotion of energy security through multiple sources.	None	Potential for increased fossil fuel carbon dioxide emissions.	None	Dependant on energy supply including a mixture of fossil fuels and renewables.	1
Promotion of fossil fuels including petroleum and coal to increase energy production	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1
Promotion of renewable such as bio-fuels and biomass	None	Clean energy source.	Potential to increase energy supply and diversification.	None	None	None	Effective implementation and management.	3
Increased and equitable access to affordable energy services for all sectors of the economy	None	None	Promote economic and livelihood benefits.	None	Potential for increase in carbon dioxide emission.	None	Effective implementation and management.	1
Average of CCD assessment	0	50	100	0	50	16		2
Present of each component in policy %								

Lesotho

Policy approach	Wins			Loses			Assumptions	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
Lesotho								
Water								
Expand and maintain hydrological monitoring networks for assessment of water resources	Improved capacity to detect and understand variations in rainfall, runoff and river flow in the context of climate change hydro-meteorological impacts.	None	Improve capacity to measure and understand changes in hydrology, benefits to research and management approaches.	None	None	None	Successful establishment and management of hydrological gauges, monitoring techniques and data management.	3
Accelerate the delivery of water and sanitation services to all Basotho in line with national development goals	Increase individual and community health and physical ability to deal with potential temperature rise and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Strengthen co-operation between riparian states for managing trans-boundary water	More effectively manage changes in river flow with climate change impacts on hydrology.	None	Promote cooperation between riparian zones.	None	None	None	Successful and transparent management of riparian water basins.	3
Promote efficient use of water resources including demand management	Improve water use efficiency in light of changing and potentially decreasing rainfall and surface runoff conditions at the intra and inter annual timescale, particularly regarding rising water scarcity and droughts.	None	Increase productive water use and hence availability for agriculture, as well as drinking purposes, sanitation and other livelihood activities.	None	None	None	Effective, efficient and appropriate implementation and management.	3

Groundwater development and management	Increase levels of groundwater through recharge, if rainfall becomes more variable.	None	Increase levels of, and access to, water for domestic, sanitation, agriculture and other domestic activities. Strengthen livelihood activities.	None	Potential for increased energy use and carbon dioxide emission from diesel pumps.	Potential to over-exact groundwater aquifers leading to decreased availability.	Diesel or petrol used to power pumps. Groundwater aquifers have the hydro-geological potential to be exploited for irrigation.	1
Expand water infrastructure including reservoir construction with hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Average of CCD assessment								2.5
Present of each component in policy %	100	16	100	16	33	16		
Agriculture								
Promote agro-forestry	None	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Effectively implemented and managed.	3
Increase livestock production and health	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Facilitate training of farmers to enhance crop production	Increase in farmers' ability to adapt to changes in rainfall and water available as well as temperature rise for the cultivation of crops, through training and capacity building.	None	Increase in farmers' capacity to sustainably manage and potentially increase crop cultivation, with positive	None	None	None	Effective implementation and management.	3

			implications on livelihoods.					
Improve research into crops and soils	Enhance understanding of agricultural systems, and ability to adapt to temperature rise and changes in rainfall and water.	None	Enhance understanding of agricultural systems to improve productivity and efficiency.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.5
Present of each component in policy %	75	25	100	0	25	25		
Forestry								
Combating land degradation through increased tree forest cover	None	Increased carbon sequestration.	Enhance rural based livelihoods.	None	None	None	Successful implementation and management.	3
Conservation and management of indigenous forests and conserving biological diversity	None	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Successful implementation and management.	3
Protecting forests from destructive agents	None	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Successful implementation and management.	3
Assessment and quantification of forest resources	Increased level of data on forestry, strengthens planning and management process in light of temperature rise and changing rainfall patterns.	Informed decision making for forest management with potential for greater carbon sequestration.	Increased level of data on forestry, strengthens planning and management processes for livelihood and associated activities.	None	None	None	Effective assessment programme managed.	3
Average of CCD assessment								3
Present of each component in policy %	25	100	100	0	0	0		
Energy								
Improve the availability and sustainable use of bioenergy resources	None	Clean energy source, low	Increase generation and potential access	None	None	None	Successful implementation	3

		carbon dioxide emissions.	to electricity to improve livelihoods.				and management.	
Consolidate and strength energy generation through fossil fuels particularly petroleum	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1
Develop and sustain a reliable and efficient transmission network	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	Potential to increase net electricity use leading to increase in fossil fuel sources and hence carbon dioxide emissions.	None	A proportion of electricity generation from fossil fuel sources.	2
Ensure more connections of electricity by end-users	None	None	Increase access to electricity to improve livelihoods.	None	None	None	A proportion of electricity generation from fossil fuel sources.	3
Average of CCD assessment								2.25
Present of each component in policy %	0	50	100	0	50	25		

Malawi

Policy approach	Wins			Losses			Assumption	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
Malawi								
Water								
Increase water storage, medium and large reservoirs with hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Rainwater harvesting	Increase water storage if rainfall patterns become more variable, on the seasonal and annual timeframes. Mitigate effects of extreme weather events such as short-intense periods of rainfall, through interception and decrease surface water runoff.	None	Increase water storage for drinking, sanitation, agriculture and other livelihood activities.	None	None	None	Rainwater harvesting structures can be built with suitable materials. Funds to purchase material is available when required.	3
Improve coverage and access of urban and rural domestic water supply	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Irrigation efficiency, improved drainage	More efficient use of water for irrigation, adaptation if rainfall/flow reduces with climate change.	None	Improve irrigation water use. Improve livelihoods and financial returns.	None	None	None	Effective implementation and management. Current irrigation	3

							systems performing below adequate levels of efficiency.	
Disaster management for floods and droughts, early warning systems	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	None	None	Government and/or relevant organisation has the capacity to appropriately manage floods and droughts.	3
Enhance hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Inter-basin transfer	Transfer of water between basins/sub-basins if changes in hydrology lead to increased water scarcity, droughts and/or floods.	None	Management of floods and water scarcity, increase access to water for sectoral uses.	None	Potential loss of habitat/forests and potential carbon sequestration sink with large-scale infrastructure construction.	Displacement of people.	Inter-basin infrastructure construction located on sites containing biodiversity and human settlement.	1
Average of CCD assessment								2.42
Present of each component in policy %	100	29	100	29	43	43		
Agriculture								
Livestock production	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Risk management including early warning systems	Enhance farmers' ability to agriculturally adapt to temperature rise, water	None	Increase farmers' ability to manage seasonal and long	None	None	None	Systems implemented and managed	3

	scarcity, droughts and floods with climate change impacts. Enhance food security.		term changes in rainfall and temperature.				appropriately by relevant organisations.	
Use and access to fertilisers and pesticides	Promote crop cultivation through enhanced soil nutrient content, increasing crop resilience to temperature rise, and variability in rainfall patterns and soil water content.	None	Promote crop cultivation through enhanced soil nutrient content and reduction in pests. Positive rural livelihood implications, and for food security.	None	None	Significant potential for over-use leading to reduction in soil health and crops, in addition to aquatic pollution. Cost of fertilisers and pesticides to farmers.	Variability in soil conditions requiring careful context specific application to avoid degradation problems.	1
Food (crop) and seed storage systems	Secure agricultural production and food access in drought with climate change.	None	Secure rural and urban livelihoods through improved access to seeds and food.	None	None	None	Secure, efficient storage systems are provided and maintained.	3
Drought resistant seeds and crops	Increase crop resilience to drought conditions with rising temperatures, reduced rainfall with climate change.	Increase carbon sequestration sinks through greater and more consistent crop coverage.	Improve livelihood security and access to food. Income generation benefits.	None	None	None	Part of crop diversification strategy not fully leading to mono-cropping with associated risks.	4
Market access and liberalisation of trade policies	None	None	Improved access to markets for income generation and purchasing of required agricultural inputs for farming.	None	None	None	Fair and equitable access to markets with efficient transport systems.	2
Encourage agroforestry to improve land fertility	Increase ecosystem resilience to climate change impacts.	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None		4
Average of CCD assessment								2.57
Present of each component in policy %	71	28	100	0	14	28		

Forestry								
Forest conservation and management by local communities	Potential to increase adaptive capacity of rural and forest based livelihoods.	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	3
Technologies for development and management of trees and forests, optimal harvesting and utilization of forest products	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	More efficient processes.	None	None	Traditional access reduced.	Effective implementation and management.	1
Accelerate and intensifying efforts to manage forest plantations for the production of timber and industrial wood products	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	Income generation for those involved with wood based economy.			Traditional access reduced.	Increase plantation coverage area to the detriment of local the community.	1
Support networks of rural marketing services and the transportation of forest products	None	Potential to maintain carbon sinks.	Strengthen rural forest based livelihoods through income generation.	None	None	Charcoal production and use.	Fair and equitable access.	1
Average of CCD assessment								1.5
Present of each component in policy %	25	100	100	0	0	75		
Energy								
Strengthen electricity supply industry for more efficient supply	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management	3
Promote a coal supply industry with private sector participation	None	None	Increase energy production for livelihoods and economic growth, job creation	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation. and management	2

Increase electricity generation and reliable transmission to households and industry	None	None	Increase access to electricity to improve livelihoods.	None	Potential for net increase in energy consumption with a proportion fossil fuels and increased carbon dioxide emissions.	None	Proportion of energy supply from fossil fuels.	1
Promote efficient use of energy by all users	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Increase reliance of petroleum supply through private sector participation	None	None	Increase energy production for livelihoods and economic growth.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1
Average of CCD assessment								2.4
Present of each component in policy %	0	40	100	0	60	40		

Mauritius

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	**Mitigation**	**Development**	**Adaptation**	**Mitigation**	**Development**		
Mauritius								
Water								
Improve access to safe drinking water supply	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Optimize the use of hydro-electricity generation	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Promote rainwater harvesting	Increase water storage if rainfall patterns become more variable, on the seasonal and annual timeframes. Mitigate effects of extreme weather events such as short-intense periods of rainfall, through interception and decrease surface water runoff.	None	Increase water storage for drinking, sanitation, agriculture and other livelihood activities.	None	None	None	Rainwater harvesting structures can be built with suitable materials. Funds to purchase material is available when required.	3
Improve water quality	Positive impact on human health and aquatic environments, particularly if rainfall and run-off decreases with climate change.	None	Positive impact on human health and aquatic environment.	None	None	None	Successful implementation and management of water quality	3

							improvement activities.	
Strengthen disaster management approaches to deal with floods and droughts	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	None	None	Government and/or relevant organisation has the capacity to appropriately management flood and droughts.	3
Conduct research into the impacts of climate change on water resources	Enhance understanding of and ability to adapt to potential impacts of climate change on rainfall patterns and water resources.	None	Enhance ability of infrastructure and strengthen livelihoods in the face of climate change impacts.	None	None	None	Informative research allow greater understanding of potential impacts of climate change on water resources.	3
Improve hydrological monitoring and data dissemination	Improved capacity to detect and understand variations in rainfall, runoff and river flow in the context of climate change hydro-meteorological impacts.	None	Improve capacity to measure and understand changes in hydrology, benefits to research and management approaches.	None	None	None	Successful establishment and management of hydrological gauges, monitoring techniques and data management.	3
Average of CCD assessment								2.8
Present of each component in policy %	100	14	100	14	14	14		
Agriculture								
Increase the application of pesticides and fertilisers	Promote crop cultivation through enhanced soil nutrient content, increasing crop resilience to temperature rise, and variability in rainfall patterns and soil water content.	None	Promote crop cultivation through enhanced soil nutrient content and reduction in pests. Positive rural livelihood implications, and for food security.	None	None	Significant potential for over-use leading to reduction in soil health and crops, in addition to aquatic pollution. Cost of fertilisers	Variability in soil conditions requiring careful context specific application to avoid degradation problems.	1

						and pesticides to farmers.		
Promotion of small-scale irrigation schemes	Potential to increase crop production in light of changes in rainfall and water availability.	None	Increase food production, positive effect on livelihood activities.	None	None	None	Successful implantation and management.	3
Promote livestock health and breeding programme	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Increase farmer access to markets	None	None	Improved access to markets for income generation and purchasing of required agricultural inputs for farming.	None	None	None	Fair and equitable access to markets with efficient transport systems.	2
Promote agricultural markets for trade and investment	None	None	Improved access to markets for income generation and purchasing of required agricultural inputs for farming.	None	None	None	Fair and equitable access to markets with efficient transport systems.	2
Early warning system for climate change impacts on agriculture should as droughts and floods	Enhance farmers' ability to agriculturally adapt to temperature rise, water scarcity, droughts and floods with climate change impacts. Enhance food security.	None	Increase farmers' ability to manage seasonal and long term changes in rainfall and temperature.	None	None	None	Successful implementation and management.	3
Average of CCD assessment								1.83
Present of each component in policy %	50	0	100	13	20	40		
Forestry								
Conserve and protect nature areas, including protected areas network and community participation	Potential to increase adaptive capacity of rural and forest based livelihoods.	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced	None	None	None	Successful implementation and management.	3

			conservation resource base.					
Document and update biodiversity through regular surveys; ensure that databases on biodiversity are readily accessible to users	None	Contribute to better management practises of biodiversity, and potential for conservation and hence carbon sequestration.	Contribute to better management practises of biodiversity and potential for conservation.	None	None	None	Successful implementation and management.	3
Support networks of rural marketing services and the transportation of forest products	None	Potential to maintain carbon sinks.	Strengthen rural forest based livelihoods through income generation.	None	None	Charcoal production and use.	Fair and equitable access.	2
Promote the conservation of agricultural land and improvement in quality of food crops, with specific programmes targeting women	Potential to increase adaptive capacity of rural and forest based livelihoods, particularly that of women.	Contribute to better management practises of biodiversity and agriculture, and potential for conservation and hence carbon sequestration.	Improve gender dynamics, rural agricultural livelihoods and income generation.	None	None	None	Successful implementation and management.	4
Average of CCD assessment								3
Present of each component in policy %	50	100	100	0	0	25		
Energy								
Increase renewable energy sources to 35% by 2025	None	Clean energy sources, zero/minimal carbon dioxide emissions.	Increase clean zero carbon energy supply for livelihoods and economic growth.	None	None	None	Successful implementation and management.	3
Increase use of fossil fuels such as oil, coal and LPG	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	2
Rehabilitation and development of new micro hydropower schemes	None	Clean energy source.	Increase electricity generation and portfolio of sources.	None	None	None	Successful implementation and management.	3

Secure energy supply and reliability at the household level	Increase individual and community ability to adapt to temperature rise.	None	Increase access to electricity to improve livelihoods.	None	Potential for net increase in energy consumption with a proportion fossil fuels and increased carbon dioxide emissions.	None	Proportion of energy supply from fossil fuels.	1
Promotion of energy efficiency at all levels	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.6
Present of each component in policy %	20	60	100	0	40	20		

Namibia

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
Namibia								
Water								
Demand management particularly in irrigation	More efficient use of water for irrigation, adaptation if rainfall/flow reduces with climate change.	None	Improve irrigation water use. Improve livelihoods and financial returns.	None	None	None	Effective implementation and management. Current irrigation systems performing below adequate levels of efficiency.	3
Construction of water storage including reservoirs with hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Promote and ensure safe drinking water and sanitation facilities in urban and rural areas	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Strengthen disaster management approaches to deal with floods and droughts	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events,	None	None	None	Government and/or relevant organisation has the capacity to appropriately	3

			such as floods and droughts.				manage flood and droughts.	
Average of CCD assessment								2.75
Present of each component in policy %	100	25	100	25	25	25		
Agriculture								
Strengthen livestock breeding and health	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Promote agricultural extension services	Increase in farmers' ability to adapt to changes in rainfall and water available as well as temperature rise for the cultivation of crops, through training and capacity building.	Potential to decrease level of tillage and hence carbon dioxide emission from soils.	Increase in farmers' capacity to sustainably manage and potentially increase crop cultivation, with positive implications on livelihoods.	None	None	None	Successful implementation and management.	4
Drought resistant seeds and crops	Increase crop resilience to drought conditions with rising temperatures, reduce rainfall with climate change.	Increase carbon sequestration sinks.	Improve livelihood security and access to food. Income generation benefits.	None	None	None	Part of crop diversification strategy not fully leading to mono-cropping with associated risks.	4
Improve farmer access to markets	None	None	Improved access to markets for income generation and purchasing of required agricultural inputs for farming.	None	None	None	Fair and equitable access to markets with efficient transport systems.	2
Promote agroforestry	Increase ecosystem resilience to climate change impacts.	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Sustainably managed.	4
Average of CCD assessment								2.8

Present of each component in policy %	60	60	100	0	20	20		2.8
Forestry								
Promote reforestation projects	None	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Managed sustainably.	3
Attract investment in small and medium industry based on wood and non-wood forest raw materials	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	Income generation for those involved with wood based economy.	None	None	Traditional access reduced.	Increase forest-industry coverage area to the detriment of the local community.	1
Implement innovative land-use strategies including multiple use conservation areas	None	Contribute to better management practises of biodiversity and agriculture, and potential for conservation and hence carbon sequestration.	Promote more environmentally sustainable land-use planning practices.	None	None	None	Managed sustainably.	3
Promote gender equality in forestry related livelihoods	None	Contribute to better management practises of biodiversity and agriculture, and potential for conservation and hence carbon sequestration.	Improve gender dynamics, rural agricultural livelihoods and income generation.	None	None	None	Effectively managed on gender equity grounds.	3
Average of CCD assessment								2.5
Present of each component in policy %	0	100	100	0	0	25		
Energy								
Secure fossil fuel production (oil and gas) to need present and future demands	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1

Households and communities improved access to affordable energy supplies	Increase individual and community ability to adapt to temperature rise.	None	Increase access to electricity to improve livelihoods.	None	Potential for net increase in energy consumption with a proportion fossil fuels and increased carbon dioxide emissions.	None	Proportion of energy supply from fossil fuels.	2
Promotion of renewables particularly biomass	None	Clean energy source, minimal carbon dioxide emissions.	Diversification of energy supply portfolio, sustainability in the long term.	None	None	None	Effectively implemented and managed.	3
Increase efficiency of electricity use in all sectors	None	Relatively less energy required if efficiency is increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.5
Present of each component in policy %	25	50	100	0	50	25		

South Africa

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
South Africa								
Water								
Improve and secure reliable and safe drinking water all of the population	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Groundwater management and recharge	Increase levels of groundwater through recharge, if rainfall becomes more variable.	None	Increase levels of and access to water for domestic, sanitation, agriculture and other domestic activities. Strengthen livelihood activities.	None	Potential for increased energy use and carbon dioxide emissions from diesel pumps.	Potential to over-exact groundwater aquifers, leading to decreased availability.	Diesel or petrol used to power pumps. Groundwater aquifers have the hydro-geological potential to be exploited for irrigation.	1
Effective water management in times of floods, drought and other extreme weather events	Increase level of preparedness and management approaches to deal with extreme weather events, such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events, such as floods and droughts.	None	None	None	Government and/or relevant organisation has the capacity to appropriately management flood and droughts.	3
Research into climate change impacts on water resources and development of appropriate adaptation strategies	Enhance understanding of and ability to adapt to potential impacts of climate change on rainfall patterns and water resources.	None	Enhance ability of infrastructure and strengthen livelihoods in the face of climate change impacts.	None	None	None	Informative research allow greater understanding of potential impacts of	3

							climate change on water resources.	
Construction of reservoirs with hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Average of CCD assessment								2.7
Present of each component in policy %	100	20	100	20	40	40		
Agriculture								
Develop and promote climate smart agriculture	Increase resilience of crops in light of rising temperatures and changing rainfall patterns.	Increase carbon sequestration sinks.	Increase crop productivity with positive livelihood consequences through food and income generation.	None	None	None	Effectively developed, implemented and managed.	4
Strengthen early warning systems for droughts and floods	Enhance farmers' ability to agriculturally adapt to temperature rise, water scarcity, droughts and floods with climate change impacts. Enhance food security.	None	Increase farmers' ability to manage seasonal and long term changes in rainfall and temperature.	None	None	None	Effectively implemented and managed.	3
Increase coverage and efficiency of irrigation systems, particularly in rain-fed areas of the country	None	None	Increase food production, positive effect on livelihood activities.	None	None	None	No displacement of people with new construction. Effectively implemented and managed.	2
Promote and strengthen agroforestry	Increase ecosystem resilience to climate change impacts.	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Sustainably managed.	4
Average of CCD assessment								3.25
Present of each component in policy %	75	50	100	0	0	0		

Forestry								
Facilitate the entry of small farmers and entrepreneurs by introducing incentives	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	More efficient processes.	None	None	Traditional access reduced.	Effective implementation and management.	2
Forest conservation and management by local communities	Potential to increase adaptive capacity of rural and forest based livelihoods.	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	4
Support research and innovation through technology transfer to maintain competitiveness of the industry	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	More efficient processes.	None	None	Traditional access reduced.	Effective implementation and management.	2
Ensure gender equality with regards to women's role in forest-based livelihoods	None	Contribute to better management practises of biodiversity and agriculture, and potential for conservation and hence carbon sequestration.	Improve gender dynamics, rural agricultural livelihoods and income generation.	None	None	None	Gender equity within forest-based livelihoods.	3
Average of CCD assessment								2.75
Present of each component in policy %	25	100	100	0	0	50		
Energy								
Ensure that energy supply is secure through the use of fossil fuels	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	2
Facilitate an efficient infrastructure network	None	More efficient use of energy and potentially less	Increase access to electricity to	None	None	None	Effectively implemented and managed.	3

		gross consumption.	improve livelihoods.					
Implement approaches that adapt to and mitigate the effects of climate change, such as renewable energy	None	Clean energy sources, zero/minimal carbon dioxide emissions.	Increase clean zero carbon energy supply for livelihoods and economic growth.	None	None	None	Effectively implemented and managed.	3
Average of CCD assessment								2.6
Present of each component in policy %	0	66	100	0	33	33		

Swaziland

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
Swaziland								
Water								
Provision of sufficient water to meet domestic and sanitation needs	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Facilitate hydro-power generation at both large and small scale	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Efficient water use systems to increase water savings	Improve water use efficiency in light of changing and potentially decreasing rainfall and surface runoff conditions at the intra and inter annual timescale, particularly regarding rising water scarcity and droughts.	None	Increase productive water use and hence availability for agriculture, as well as drinking purposes, sanitation and other livelihood activities.	None	None	None	Effective implementation and management.	3
Construct water storage including reservoirs with hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2

					reservoir area flooded.			
Strengthen disaster management approaches to deal with floods and droughts	Increase level of preparedness and management approaches to deal with extreme weather events, such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events, such as floods and droughts.	None	None	None	Government and/or relevant organisation has the capacity to appropriately management flood and droughts.	3
Average of CCD assessment								2.6
Present of each component in policy %	100	40	100	40	40	40		
Agriculture								
Agricultural extension services	Increase in farmers' ability to adapt to changes in rainfall and water available, as well as temperature rise for the cultivation of crops, through training and capacity building.	Potential to decrease level of tillage and hence carbon dioxide emission from soils.	Increase in farmers' capacity to sustainably manage and potentially increase crop cultivation, with positive implications on livelihoods.	None	None	None	Effective implementation and management.	4
Promotion of drought tolerant crop varieties	Increase crop resilience to drought conditions with rising temperatures, reduce rainfall with climate change.	None	Improve livelihood security and access to food. Income generation benefits.	None	None	None	Part of crop diversification strategy not fully leading to mono-cropping with associated risks.	3
Diversification and strengthening of the rainfed crop production	Increase ability of farmers to adapt to temperature rise and rainfall changes.	None	Strengthen crop production in rainfed areas.	None	None	None	Effective implementation and management	3
Promotion of livestock breeding and health programme	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Average of CCD assessment								2.75
Present of each component in policy %	75	25	100	0	25	25		
Forestry								

Promote sustainable use of land and achieve a balance between forestry and other uses of the land and water resources	None	Increase level of carbon sequestration through sustainable forestry management.	Promote forestry based livelihoods.	None	None	None	Effective implementation and management.	3
Improve forest productivity, ensure supply of multiple forest products and services	None	Increase and/or retain level of carbon sequestration through sustainable forestry management.	Income generation for those involved with forest based economy.	None	None	Traditional access reduced	Increase forest cover for timber and other sales. Increased forest area to detriment of local agricultural production.	2
Conservation of biodiversity and forests, encourage its sustainable use and ensure that benefits accrued are shared equitably	None	Increase level of carbon sequestration through sustainable forestry management.	Promote forestry based livelihoods and income generation.	None	None	None	Effective implementation and management.	3
Forest conservation and management by local communities	Potential to increase adaptive capacity of rural and forest based livelihoods.	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	4
Average of CCD assessment								3
Present of each component in policy %	25	100	100	0	0	25		
Energy								
Efficient utilisation of energy across all sectors	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Development of fossil fuel energy sources, particularly coal	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	2

Increase access to electricity supply to rural areas	None	None	Increase access to electricity to improve livelihoods.	None	Potential for net increase in energy consumption with a proportion fossil fuels and increased carbon dioxide emissions.	None	Proportion of energy supply from fossil fuels.	1
Promotion of renewable energy including solar and wind	None	Clean energy sources, zero/minimal carbon dioxide emissions.	Increase clean zero carbon energy supply for livelihoods and economic growth.	None	None	None	Effective implementation and management.	3
Development of hydropower	None	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Average of CCD assessment								2.4
Present of each component in policy %	0	60	100	20	60	40		

Tanzania

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	**Mitigation**	**Development**	**Adaptation**	**Mitigation**	**Development**		
Tanzania								
Water								
Water conservation, recycling/re-use	Improve water use efficiency in light of changing and potentially decreasing rainfall and surface runoff conditions at the intra and inter annual timescale, particularly regarding rising water scarcity and droughts.	None	Increase productive water use and hence availability for agriculture, as well as drinking purposes, sanitation and other livelihood activities.	None	None	None	Effective implementation and management.	3
Disaster management for floods and droughts, early warning systems	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	None	None	Government and/or relevant organisation has the capacity to appropriately management flood and droughts.	3
Enhance hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Improve coverage and access of urban and rural domestic water supply	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3

	induced stress on livelihood activities.							
Equitable allocation between water sectors	Potentially increase in water availability for sectoral uses as adaptation to rising temperatures and changing rainfall patterns and hydrology.		Potentially increase in water availability for sectoral uses.	None	None	None	Effective implementation and management.	3
Groundwater management and development	Increase levels of groundwater through recharge, if rainfall becomes more variable.	None	Increase levels of and access to water for domestic, sanitation, agriculture and other domestic activities. Strengthen livelihood activities.	None	Potential for increased energy use and carbon dioxide emission from diesel pumps.	Potential to over-exact groundwater aquifers leading to decreased availability.	Diesel or petrol used to power pumps. Groundwater aquifers have the hydro-geological potential to be exploited for irrigation.	1
Hydrological monitoring, assessment and data management	Improved capacity to detect and understand variations in rainfall, runoff and river flow in the context of climate change hydro-meteorological impacts.	None	Improve capacity to measure and understand changes in hydrology, benefits to research and management approaches.	None	None	None	Successful establishment and management of hydrological gauges, monitoring techniques and data management.	3
Inter-basin transfer	Transfer of water between basins/sub-basins if changes in hydrology lead to increased water scarcity, droughts and/or floods.	None	Management of floods and water scarcity, increase access to water for sectoral uses.	None	Potential loss of habitat/forests and potential carbon sequestration sink with large-scale infrastructure construction.	Displacement of people	Inter-basin infrastructure construction located on sites containing biodiversity and human settlement.	1
Average of CCD assessment								2.37
Present of each component in policy %	100	12.5	100	25	37.5	37.5		
Agriculture								

Soil and crop research	Increase knowledge and potential for improved adaptation responses.	Potential to decrease level of tillage and hence carbon dioxide emission from soils.	Increase knowledge base.	None	None	None	Effectively implemented.	4
Food (crop) and seed storage systems	Secure agricultural production and food access in drought with climate change.	None	Secure rural and urban livelihoods through improved access to seeds and food.	None	None	None	Secure, efficient storage systems are provided and maintained.	3
Risk management including early warning systems	Enhance farmers' ability to agriculturally adapt to temperature rise, water scarcity, droughts and floods with climate change impacts. Enhance food security.	None	Increase farmers' ability to manage seasonal and long term changes in rainfall and temperature.	None	None	None	Effectively implemented and managed.	3
Livestock production	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Seeds – drought resistant	Increase crop resilience to drought conditions with rising temperatures, reduce rainfall with climate change.	Increase carbon sequestration sinks.	Improve livelihood security and access to food. Income generation benefits.	None	None	None	Part of crop diversification strategy not fully leading to mono-cropping with associated risks.	4
Agricultural extension services	Increase in farmers' ability to adapt to changes in rainfall and water available as well as temperature rise for the cultivation of crops, through training and capacity building.	Potential to decrease level of tillage and hence carbon dioxide emission from soils.	Increase in farmers' capacity to sustainably manage and potentially increase crop cultivation, with positive implications on livelihoods.	None	None	None	Effectively implemented and managed.	4
Promote agroforestry	Increase ecosystem resilience to climate change impacts.	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and	None	None	None	Sustainably managed.	4

			enhanced conservation resource base.					
Average of CCD assessment								3.28
Present of each component in policy %	86	57	100	0	16	16		
Forestry								
Sustainable supply of forest products and services by maintaining sufficient forest area	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	Income generation for those involved with forest based economy.	None	None	Traditional access reduced	Increase forest products coverage area to detriment of local community.	2
Forest conservation and management by local communities	Potential to increase adaptive capacity of rural and forest based livelihoods.	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	4
Promote sustainable eco-tourism within forest and natural conservation areas	None	Maintain level of carbon sequestration.	Promote forest ecotourism and income generation activities.	None	Potential for damage/loss of habitat with increased numbers of tourists in conservation areas.	None	Significant numbers of tourists leading to potential damage of forest habitat.	1
Average of CCD assessment								2.33
Present of each component in policy %	25	100	100	0	33	33		
Energy								
Promote fuel switch from petroleum to other alternative environmentally friendly fuels	None	Reduce level of carbon dioxide emissions.	Diversify portfolio of energy sources, long term sustainability in supply.	None	None	None	Effectively implemented and managed.	3
Promote application of alternative energy sources other than fuelwood and charcoal	None	Reduce carbon dioxide emissions.	Promote rural forest based livelihoods.	None	None	None	Effectively implemented and managed.	3
Exploration of petroleum promoted and natural gas exploration and exploitation	None	None	Increase energy production for livelihoods and economic growth.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1

Promote exploitation of coal resources for electricity generation	None	None	Increase energy production for livelihoods and economic growth.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution	Effective implementation and management.	1
Expand rural areas with access to electricity	Increase individual and community ability to adapt to temperature rise.	None	Increase access to electricity to improve livelihoods.	None	Potential for net increase in energy consumption with a proportion fossil fuels and increased carbon dioxide emissions.	None	Proportion of energy supply from fossil fuels.	2
Promote energy efficient within all sectors and users	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.16
Present of each component in policy %	16	50	100	0	50	33		

Zambia

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
Zambia								
Water								
Disaster management for floods and droughts, early warning systems	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	Increase level of preparedness and management approaches to deal with extreme weather events such as floods and droughts.	None	None	None	Government and/or relevant organisation has the capacity to appropriately management flood and droughts.	3
Increase water storage (medium/large reservoirs) with hydropower	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Inter-basin transfer	Transfer of water between basins/sub-basins if changes in hydrology lead to increased water scarcity, droughts and/or floods.	None	Management of floods and water scarcity, increase access to water for sectoral uses.	None	Potential loss of habitat/forests and potential carbon sequestration sink with large-scale infrastructure construction.	Displacement of people.	Inter-basin infrastructure construction located on sites containing biodiversity and human settlement.	1
Groundwater management and development	Increase levels of groundwater through recharge, if rainfall becomes more variable.	None	Increase levels of and access to water for domestic,	None	Potential for increased energy use and carbon dioxide	Potential to over-exact groundwater aquifers	Diesel or petrol used to power pumps. Groundwater	1

			sanitation, agriculture and other domestic activities. Strengthen livelihood activities.		emission from diesel pumps.	leading to decreased availability.	aquifers have the hydro-geological potential to be exploited for irrigation.	
Irrigation efficiency, improved drainage	More efficient use of water for irrigation, adaptation if rainfall/flow reduces with climate change.	None	Improve irrigation water use. Improve livelihoods and financial returns	None	None	None	Effective implementation and management. Current irrigation systems performing below adequate levels of efficiency.	3
Hydrological monitoring, assessment and data management	Improved capacity to detect and understand variations in rainfall, runoff and river flow in the context of climate change hydro-meteorological impacts.	None	Improve capacity to measure and understand changes in hydrology, benefits to research and management approaches.	None	None	None	Successful establishment and management of hydrological gauges, monitoring techniques and data management.	3
Water quality and pollution reduction	Positive impact on human health and aquatic environment, particularly if rainfall and run-off decreases with climate change.	None	Positive impact on human health and aquatic environment.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.28
Present of each component in policy %	100	14	100	28.5	43	43		
Agriculture								
Irrigation development	Potential to increase crop production and strengthen rural livelihoods.		Increase food production, positive effect on livelihood activities.	Potential under-performance owing to uncertainty of rainfall patterns and water availability,	None	Potential loss of habitat, human displacement depending on the scale of development.	Construction of new infrastructure within areas of human settlement.	2

				particularly with large scale canal irrigation infrastructure.				
Risk management including early warning systems	Enhance farmers' ability to agriculturally adapt to temperature rise, water scarcity, droughts and floods with climate change impacts. Enhance food security.	None	Increase farmers' ability to manage seasonal and long term changes in rainfall and temperature.	None	None	None	Effective implementation and management.	3
Livestock production	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Soil and crop research	Increase knowledge and potential for improved adaptation responses.	Potential to decrease level of tillage and hence carbon dioxide emission from soils.	Increase knowledge base.	None	None	None	Effective implementation and management.	4
Risk management including early warning systems	Enhance farmers' ability to agriculturally adapt to temperature rise, water scarcity, droughts and floods with climate change impacts. Enhance food security.	None	Increase farmers' ability to manage seasonal and long term changes in rainfall and temperature.	None	None	None	Effective implementation and management.	3
Seeds – drought resistant	Increase crop resilience to drought conditions with rising temperatures, reduce rainfall with climate change.	Increase carbon sequestration sinks.	Improve livelihood security and access to food. Income generation benefits.	None	None	None	Part of crop diversification strategy not fully leading to mono-cropping with associated risks.	
Agricultural extension services	Increase in farmer's ability to adapt to changes in rainfall and water available as well as temperature rise for the cultivation of crops,	Potential to decrease level of tillage and hence carbon dioxide emission from soils.	Increase in farmers' capacity to sustainably manage and potentially increase crop	None	None	None	Effective implementation and management.	4

	through training and capacity building.		cultivation, with positive implications on livelihoods.					
Mechanisation	None	None	Increase farmers work efficiency, labour saving devices, freeing of time to pursue other livelihood activities.	None	Potential for increased carbon dioxide emission through petrol/diesel machines. Enhanced soil carbon losses through tillage.	None	Fair and equitable access.	1
Average of CCD assessment								2.75
Present of each component in policy %	75	50	100	12.5	25	25		
Forestry								
Protection of forests by empowering local communities and promoting the development and use of wood, non-wood forest products and services	None	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	3
Technologies for development and management of trees and forests, optimal harvesting and utilization of forest products	None	Contribute to sustainable forest management and help maintain carbon sequestration sinks.	More efficient processes.	None	None	Traditional access reduced.	Effective implementation and management.	2
Improve role of forests in the provision of ecosystem services and abatement of climate change	None	Maintain and/or increase forest cover and hence carbon sequestration.	Support forest based livelihoods and income generation.	None	None	None	Effective implementation and management.	3
Regulate the exploitation and ensure efficient use of forest resources and products	None	Maintain and/or increase forest cover and hence carbon sequestration.	Promote forestry-based livelihoods.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.75
Present of each component in policy %	0	100	100	0	0	25		

Energy								
Increase access to affordable energy in rural areas	Increase individual and community ability to adapt to temperature rise.	None	Increase access to electricity to improve livelihoods.	None	None	None	Effective implementation and management.	3
Increase contribution of coal as an energy resource	None	None	Increase energy production for livelihoods and economic growth.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1
Ensure an reliable and affordable supply of petroleum products	None	None	Increase energy production for livelihoods and economic growth.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1
Promotion of renewable energy sources such solar, biomass, wind and geothermal	None	Clean energy sources, zero/minimal carbon dioxide emissions.	Increase clean zero carbon energy supply for livelihoods and economic growth.	None	None	None	Effectively implemented and managed.	3
Promote hydropower electricity generation	None	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
Promote efficient use of energy at the industrial and household level	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effectively implemented and managed.	3
Average of CCD assessment								2.16
Present of each component in policy %	16	50	100	16	50	50		

Zimbabwe

Policy approach	Wins			Losses			Assumptions	Overall subjective assessment
	Adaptation	Mitigation	Development	Adaptation	Mitigation	Development		
Zimbabwe								
Water								
To improve coverage and access to safe drinking water and adequate sanitation facilities in urban and rural areas	Increase individual and community health and physical ability to deal with potential temperature rise, and changing rainfall-induced stress on livelihood activities.	None	Improve health and well-being of individuals and communities.	None	None	None	Effective implementation and management.	3
Urgent rehabilitation of existing hydropower generation infrastructure and establishment of new power stations	Flood management and increased water storage if levels of rainfall and hence runoff decrease with climate change.	Reduce CO_2 emissions from hydropower, clean energy source.	Increase storage for irrigation, drinking purposes, industrial growth. Strengthen livelihood activities.	None	Loss of habitat/forests and potential carbon sequestration sink when reservoir area flooded.	Displacement of people.	Reservoir construction located on site containing biodiversity and human settlement.	2
National hydrological management system established to make data usable for water management research, public information and risk assessments	Improved capacity to detect and understand variations in rainfall, runoff and river flow in the context of climate change hydro-meteorological impacts.	None	Improve capacity to measure and understand changes in hydrology, benefits to research and management approaches.	None	None	None	Successful establishment and management of hydrological gauges, monitoring techniques and data management.	3
Improving water quality and protecting water sources	Positive impact on human health and aquatic environment, particularly if rainfall and run-off decreases with climate change	None	Positive impact on human health and aquatic environment.	None	None	None	Effective implementation and management.	3

Groundwater management and development	Increase levels of groundwater through recharge, if rainfall becomes more variable.	None	Increase levels of and access to water for domestic, sanitation, agriculture and other domestic activities. Strengthen livelihood activities.	None	Potential for increased energy use and carbon dioxide emission from diesel pumps.	Potential to over-exact groundwater aquifers leading to decreased availability.	Diesel or petrol used to power pumps. Groundwater aquifers have the hydro-geological potential to be exploited for irrigation.	1
Average of CCD assessment								2.3
Present of each component in policy %	100	20	100	25	50	50		
Agriculture								
Increase crop diversification	Increase adaptive capacity through diversification, with temperature rise and rainfall pattern changes.	Potential to increase biodiversity resource base and increase carbon sinks.	Strengthen rural livelihoods.	None	None	None	Successfully implemented and managed.	4
Improve breeding and health of livestock	None	None	Strengthen livelihood activities through source of food/milk, labour for agricultural purposes.	None	Increase in methane emissions from cattle.	None	Increase in relative number of livestock.	1
Increase coverage of irrigation systems	Increased crop production strengthen rural livelihoods of farmers through income generation, if temperature rises and rainfall patterns change.	None	Potential for increase in production of crops with positive livelihood implications.	Potential negative implications on irrigated productivity with temperature rise and changing rainfall patterns.	None	Potential loss of natural habitat and/or displacement of people for construction.	Irrigation systems constructed in areas of human settlement.	2
Improve trade in agricultural products and access to markets for farmers	None	None	Improved access to markets for income generation and purchasing of required agricultural inputs for farming.	None	None	None	Fair and equitable access to markets with efficient transport systems.	2

Improve effectiveness and resourcing of agricultural extension services	Increase in farmers' ability to adapt to changes in rainfall and water available as well as temperature rise for the cultivation of crops, through training and capacity building.	Potential to reduce level of soil tillage and hence carbon dioxide emissions.	Increase in farmers' capacity to sustainably manage and potentially increase crop cultivation, with positive implications on livelihoods.	None	None	None	Effectively implemented and managed.	4
Promote agro-forestry	None	Increase carbon sequestration sinks.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Effectively implemented and managed.	3
Average of CCD assessment								2.66
Present of each component in policy %	50	50	100	33	33	50		
Forestry								
Promote the planting of timber plantations for construction	None	Contribute to sustainable forest management and help maintain carbon sequestration sink.	Income generation for those involved with wood based economy.	None	None	Traditional access reduced.	Increase plantation coverage area to detriment of local community.	2
Conserve forests and biodiversity through conservation projects	None	Increase carbon sequestration sink.	Promotion of forest livelihood activities and enhanced conservation resource base.	None	None	None	Effectively implemented and managed.	3
Promote community participation of forest livelihood activities	None	Maintain and potentially increase forest cover for carbon sequestration.	Contribution to rural-based livelihoods, increase access to non-timber food products.	None	None	None	Efficient community based natural resource management, equitable access.	3
Average of CCD assessment								2.75
Present of each component in policy %	0	100	100	0	0	0		
Energy								

Consolidate and expand coal powered electricity generation to enhance economic growth	None	None	Increase energy production for livelihoods and economic growth, job creation.	None	Significantly increase carbon dioxide emissions.	Increase in level of air pollution.	Effective implementation and management.	1
Improve electricity access throughout rural areas	Increase individual and community ability to adapt to temperature rise.	None	Increase access to electricity to improve livelihoods.	None	Potential for net increase in energy consumption with a proportion fossil fuels and increased carbon dioxide emissions.	None	Proportion of energy supply from fossil fuels.	2
Develop the use of renewable energy resources	None	Clean energy sources, zero/minimal carbon dioxide emissions.	Increase clean zero carbon energy supply for livelihoods and economic growth.	None	None	None	Effectively implemented and managed.	3
Promote more efficiency use of energy at the household and industrial level	None	Relatively less energy required if efficiency increased, leading to relatively less carbon dioxide emissions.	Energy savings either used for further powering of sector, or redirected towards another sector. Economic savings.	None	None	None	Effective implementation and management.	3
Average of CCD assessment								2.25
Present of each component in policy %	25	50	100	0	50	25		

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