

Supplementary Materials:

Tesfaye Dessu Geleta ^{1,*}, Diriba Korecha Dadi ², Weyessa Garedew ³ and Adefires Worku ⁴

List of Supplementary(S) Tables and Figures



Figure S1. Partial overview of Jimma city plates (a) Historical Abba Jifar palace built in 1930's (b) city business core with congested buildings and vehicles, low vegetation and more heat warming (c) greenery areas based on field observation conducted during the period of 2019 to 2021.

Table S1. Adaptive capacity of study urban center municipalities based on a field survey of households conducted during the period from 2019 to 2021.

Variables	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
What is your opinion about adaptive capacity of Municipality in reducing during climate change extreme events occurred?	1) Excellent	1	2	0	0	3	1
	2) Very Good	1	3	4	4	12	3
	3) Good	12	14	8	10	44	11
	4) Fair	35	6	2	12	55	14
	5) Poor	103	42	15	34	194	51
	6) Very Poor	40	18	12	6	76	20

Table S2. Socio demographic characteristics of Key informants in urban centers conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
Sex	1) Male	13	12	12	12	49	89
	2) Female	2	1	2	1	6	11
	Total	15	13	14	13	55	100
Age	1) 15-24years	1	0	2	1	4	7
	2) 25-34	3	7	6	9	25	45
	3) 35-44	3	1	1	3	8	15
	4) 45-54	6	5	4	0	15	27
	5) 55-64	2	0	1	0	3	6
	6) 65 and above	0	0	0	0	0	0
Educational status	1) Diploma	2	0	2	0	4	7
	2) 1 st degree	6	12	10	12	40	73
	3) 2 nd degree	7	1	2	1	11	20
Position	1) Expert	4	2	4	9	19	34
	2) Process owner head	6	6	8	3	23	42
	3) Office Head	5	5	2	1	13	24
Experience	1) 1 - 10 years	3	2	9	10	24	44
	2) 11 - 20	4	5	2	4	15	25
	3) 21 to 30	5	3	2	0	10	18
	4) 31 and above	3	3	1	0	7	13
What are the major production and livelihood activities within your local area of your town?	1. Trade/Merchant	9	10	11	1	31	58
	2. Agriculture	2	2	1	11	16	29
	3. Other works	3	1	2	1	7	13

Table S3. Climate change variability and trends in urban centers by key informant interview conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
Is there climate variability or change particularly in	1. Yes	15	12	13	11	51	93
	2. No	0	0	1	0	1	2

rain fall and temperature in your town in the past three decades?	3. I do not know	0	1	0	2	3	5
Are there changes in temperature and precipitation in your urban area?	1. Yes	15	11	10	13	49	89
	2. No	0	0	4	0	4	7
	3. I do not know	0	2	0	0	2	4
How do the urban residents perceive climate change?	1. Increasing	15	11	10	10	46	84
	2. Decreasing	0	0	4	2	6	11
	3. I do not know	0	2	0	1	3	5
What are the main causes of climate change in your town?	1. Natural	0	1	0	0	1	2
	2. Human	8	7	2	7	24	44
	3. Both	7	5	12	6	30	54
Does role of urbanization has in triggering climate change?	1. Yes	15	11	11	13	50	91
	2. No	0	2	3	0	5	9
	3. I do not know	0	0	0	0	0	0
What about the size your town and land use land cover change with respect to the past 20-30 years?	1. Changed	15	12	14	12	53	96
	2. Not changed	0	0	0	0	0	0
	3. I do not imagine	0	1	0	1	2	4
Does your town have structural plan or master plan to guide development based on the planned land use at town level?	1. Yes	14	12	14	6	46	84
	2. No	1	1	0	4	6	11
	3. I do not know	0	0	0	3	3	5
If so, does regulation of urban plan respected by urban actors?	1. Yes	14	4	4	5	27	49
	2. No	1	9	10	8	28	51
	3. I do not know	0	0	0	0	0	0

Table S4. Climate Change impacts by key informants' interview of urban centers conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					Total	%
		Jimma	Bedelle	Bonga	Sokorru			
What is the impact of climate change on urban people's livelihood?	1. On farming with shortage of products	10	3	0	4		17	20
	2. Impair their health	9	3	6	5		23	28
	3. Infrastructure damage	10	5	5	3		23	28
	4. Loss of assets and life	7	0	3	1		11	13
	5. all impacts happen	7	2	0	0		9	11
Would you mention any climate change related	1. Drought	5	7	1	10		23	29
	2. Flooding	12	9	10	3		34	43

problems happened in the last 30 years?	3. Landslides	5	0	12	4	21	26
	4.others specify-health problem (respiratory diseases in Jimma)	2	0	0	0	2	
							2

Table S5. Climate information and emergency service provision as means of adaptation based on a key informant interview conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
Is there any early warning information to reduce vulnerability the past 20-30years?	1. Yes	1	2	2	2	7	13
	2. No	14	8	12	7	41	74
	3. I do not know	0	3	0	4	7	13
Your opinion about support delivered to the affected groups or Households satisfactory or not?	1. Satisfactory	3	4	1	3	11	20
	2. Not satisfactory	12	9	13	10	44	80
What are the immediate actions or measures taken during disaster and risk management to climate change in terms of support provided to affected peoples?	1. Excellent	0	0	0	0	0	0
	2. Very good	0	2	0	3	5	9
	3. Good	2	0	3	2	7	13
	4. Medium	10	5	7	2	24	43
	5. Low	3	3	3	5	14	24
	6. Very low	1	3	1	1	6	11
What are the roles of Municipality / city administration and any other disaster prevention institutions during addressing affected bodies?	1. Proactive planning	14	3	0	2	19	19
	2. Coordination of urban actors	12	4	1	6	23	22
	3. Provision of materials and needed emergency support	13	1	6	5	25	24
	4. Provision of information	11	2	0	2	15	15
	5.All	10	3	7	0	20	20

Table S6. Climate adaptation assessment by key informant interview conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
Is there responsible organization responsible to address environmental problems and climate change at town level? Would you mention the name of the organization?	Yes, there is responsible body	11	7	6	10	34	62
	No, responsible body	4	6	9	3	21	38
	1. Well-implemented	2	0	0	0	2	4

What does the policy environment application of national Adaptation plan in your Town?	2. Medium	9	4	12	6	31	56
	3. Not well applied	4	9	2	7	22	40
If so, have you developed Municipal Adaptation plan at your city level to reverse climate change impacts?	1. Yes	0	2	3	2	7	13
	2. No	15	10	11	11	47	85
	3. I do not know	0	1	0	0	1	2
Any actions of planned adaptation taken ahead of the risks happened or you take actions later after for example like flooding or land slide catastrophes, drought happened to reduce vulnerability?	1. Ahead of the risks happened	1	3	0	0	4	7
	2. Take actions or measures later (reactive)	14	6	13	9	42	76
	3. No action	0	4	1	4	9	17

Table S7. Constraints of climate adaptation by key informants in urban centers based on a field survey conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
What are the constraints faced by urban residents to adapt to climate change?	1. Lack of cooperation and coordination	10	6	2	3	21	18
	2. Lack of commitment	9	4	6	5	24	21
	3. Lack of awareness and information	12	7	11	4	34	30
	4. Lack of adaptive capacity due economic reasons	11	4	3	1	19	16
	5. Lack of participation	9	3	4	1	17	15

Table S8. Capacity of municipality to implement climate adaptation action and level of integration and cooperation of urban actors in urban centers by key informants' interview conducted during the period from 2019 to 2021.

Background information	Descriptions	Selected urban centers/ towns					
		Jimma	Bedelle	Bonga	Sokorru	Total	%
Do Municipality have capacity to implement adaptation action and reduce vulnerability due to climate change impacts?	1. Yes	3	5	3	3	14	26
	2. No	12	7	11	8	37	67
	3. I do not know	1	1	0	2	4	7
What about the level of integration and coordination of urban actors (Government, CBOs, NGOs, resident and others) to reverse climate change issues in participatory and planned manner?	1. Excellent	0	0	0	0	0	0
	2. Very good	0	1	0	1	2	4
	3. Good	1	1	0	0	2	4
	4. Medium	8	5	6	5	24	44
	5. Low	5	3	7	6	21	38
	6. Very low	1	3	1	1	6	11