Supplementary Material

A1. Table 3: Model runs replacing drought indicator with seasonal rainfall

VARIABLES	(1) Trad base	(2) Trad control	(3) Mod base	(4) Mod control
Precipitation Seasonal Mean	0.000927	0.00134***	-0.000743***	-1.37e-05***
(100mm)	(0.000753)	(0.000276)	(0.000143)	(2.95e-06)
Precipitation Seasonal Mean	-0.000134***	-4.73e-05***	3.08e-05***	3.92e-07***
Quadratic	(2.42e-05)	(8.14e-06)	(4.60e-06)	(9.44e-08)
Household owns farmland		0.0113***		-4.73e-05***
		(0.000523)		(5.81e-06)
Household owns livestock		0.0111***		-5.97e-05***
		(0.000509)		(6.79e-06)
4th quintile of wealth index		-0.00514***		2.40e-05***
		(0.000332)		(3.35e-06)
3rd quintile of wealth index		-0.0250***		0.000134***
		(0.000895)		(1.23e-05)
2nd quintile of wealth index		-0.0864***		0.00155***
		(0.00260)		(0.000122)
Top quintile of wealth index		-0.340***		0.0234***
		(0.00905)		(0.00166)
HHH ed: incomplete primary		0.000650		4.13e-06
		(0.000464)		(4.54e-06)

HHH ed: complete primary		-0.000647		1.45e-05**
		(0.000523)		(6.04e-06)
HHH ed: incomplete secondary		-0.00385***		5.58e-05***
		(0.000608)		(8.67e-06)
HHH ed: complete secondary		-0.00596***		0.000112***
		(0.000760)		(1.57e-05)
HHH edu: higher level		-0.00785***		0.000279***
		(0.000962)		(3.56e-05)
# household members		0.00181***		-1.19e-05***
		(8.32e-05)		(1.30e-06)
Household head age		0.000216***		-9.28e-07***
		(1.30e-05)		(1.38e-07)
Country electricity access (% pop)		0.00102*		9.11e-06
		(0.000536)		(7.86e-06)
Year temperature mean (Celsius)		-0.00119		1.57e-05*
		(0.00103)		(9.49e-06)
Year temperature mean sq (C°^2)		5.79e-06		-2.43e-07
		(1.62e-05)		(1.52e-07)
Soil moisture at depth of 0-100cm (kg/m^2)		-5.95e-07		1.20e-07**
		(6.24e-06)		(4.95e-08)
Observations	304,010	263,349	304,010	263,349

Clustered Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Country and time fixed effects are included.

A2. Robustness check: Model runs replacing drought indicator with natural log

VARIABLES	(1) Trad base	(2) Trad control	(3) Mod base	(4) Mod control
Log of precipitation seasonal mean	-0.0243***	0.000719	-0.00286***	-4.65e-05***
	(0.00313)	(0.00110)	(0.000389)	(6.63e-06)
Household owns farmland		0.0117***		-4.60e-05***
		(0.000532)		(5.71e-06)
Household owns livestock		0.0115***		-5.82e-05***
		(0.000523)		(6.66e-06)
4th quintile of wealth index		-0.00512***		2.40e-05***
		(0.000332)		(3.37e-06)
3rd quintile of wealth index		-0.0251***		0.000131***
		(0.000902)		(1.19e-05)
2nd quintile of wealth index		-0.0871***		0.00158***
		(0.00260)		(0.000124)
Top quintile of wealth index		-0.341***		0.0233***
		(0.00911)		(0.00166)
HHH ed: incomplete primary		0.000540		3.09e-06
		(0.000468)		(4.49e-06)
HHH ed: complete primary		-0.000854		1.33e-05**
		(0.000530)		(5.88e-06)
HHH ed: incomplete secondary		-0.00408***		5.23e-05***
		(0.000617)		(8.25e-06)
HHH ed: complete secondary		-0.00615***		0.000112***

		(0.000771)		(1.56e-05)
HHH ed: higher level		-0.00773***		0.000279***
		(0.000958)		(3.53e-05)
# household members		0.00182***		-1.17e-05***
		(8.39e-05)		(1.29e-06)
Household head age		0.000215***		-9.29e-07***
		(1.30e-05)		(1.38e-07)
Country electricity access (% pop)		0.000843		1.04e-05
		(0.000539)		(7.80e-06)
Year temperature mean (Celsius)		-0.000530		2.78e-05***
		(0.00103)		(9.93e-06)
Year temperature mean sq (C°^2)		-6.17e-06		-4.63e-07***
		(1.64e-05)		(1.61e-07)
Soil moisture at depth of 0-100cm (kg/m^2)		-1.08e-05*		1.44e-07***
		(6.22e-06)		(4.89e-08)
Observations	304,010	263,349	304,010	263,349

Clustered Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Country and time fixed effects are included.

A3. Country Planting and harvest months (1 to 12) for cereals (FAO)

Country	**Planting month main season**	**Harvest month main season**	**Planting month second season**	**Harvest month second season**	**Rainy months**

Burkina Faso	6	10			5
Burundi	2	5			4
Ethiopia	4	10			7
Ghana	3	10			8
Kenya	3	6	10	12	7
Lesotho	10	3			6
Liberia	1	12			12
Madagascar	11	4			6
Mali	7	9			3
Malawi	11	4			6
Mozambique	11	4			6
Nambia	12	3			8
Nigeria	4	10			7
Rwanda	9	5			3
Senegal	6	10			5
Sierra Leone	4	11			8
Zimbabwe	11	3			5

A4: Details on the model

If the household makes a choice j, we then assume that U_{ij} is the maximum among the three fuel types, i.e. j is chosen if $U(fuel\ j) > U(fuel\ k)$ where j ≠ k. The observed fuel choice is defined as a vector $Y_i = Y_{ij}$ of three dummy variables taking value 1 if the household's choice is the j^{th} alternative, and value 0 otherwise (consider j takes the following values: 0 - traditional, 1 -

transitional, 2 - modern). If we consider the choice probabilities at the mean of every variable in *X*, we have:

$$Prob(Y_{ij} = j) = \frac{\exp(\beta_j' \bar{x}_\iota)}{\sum_{m=1}^{j} \exp(\beta_m' \bar{x}_\iota)}, \quad j = \{0,1,2\}$$

Where m = base outcome choice of fuel. We take transitional fuel use as the base outcome as it allows the interpretation from a mid-point on the likelihood of using traditional or modern fuel sources in lieu of transitional ones. The marginal effects are taken at the mean of all explanatory variables for each precipitation variable model. Given this approach, four columns are presented with the first two representing the marginal effects from the mean on choosing traditional fuels over transitional and the last two representing the choice of modern sources. In each pair of outcomes, the first column excludes controls (but keeping country and time fixed effects), while the adjacent columns respectively show the results includes such controls.

A5: Cluster buffer methodology

For the purposes of this study, a 10-kilometre diameter circular buffer was created around each point to calculate satellite indicator statistics. This was done to be sure the original cluster centre would be included and given the relative homogeneity over such a small area. Depending on the indicator, either the sum or mean of the year the survey took place is taken for each pixel within the country (1 pixel = 1km^2). The mean and standard deviation (as well as maximum and minimum values in some cases) were then taken over the cluster buffer area. All derived data set cell sizes are at ~1000 m.