

Appendix 3. Relative parameter settings for each alternate scenario, compared to the base models for (a) Xilingol, Inner Mongolia and (b) Sukhbaatar, Mongolia. Adapted from Allington et al. 2017.

a) Xilingol

	Precip ^a	Grassland Protection Policy ^b	Cropland Policy ^b	Urbanized Fraction ^c
Baserun	-2	1	1	0.75
Scenario 1	+	=	=	=
Scenario 2	=	-	=	=
Scenario 3	=	=	-	=
Scenario 4	=	-	-	-

a. Coefficient to alter the slope of precipitation over time

b. Model switch to turn on (1) and off (0) protection policies

c. Maximum percentage of the population that is allowed to become urban by the model

b) Sukhbaatar

	Labor Efficiency ^a	Grazing Intensity ^b	Market Access ^c	Urbanized Fraction ^d	Urbanization Rate Coefficient	Out-Migration Rate ^e
Baserun:	0.02	1	1	0.8	1	Slow decline
Scenario 1	-	=	=	0.65-0.9	+	+
Scenario 2	+	-	+	0.65-0.9	-	=
Scenario 3	-	+	-	0.65-0.9	=	+

a. Rate of adoption of new technologies and innovations to increase efficiencies in herding (resulting in larger herd)

b. Coefficient. Proxy for mobility. Higher coefficient= greater grazing intensity due to limited mobility in grazing

c. Coefficient. Proxy for access to markets for sale of livestock, which can serve as a livelihood adaptation strategy

d. Maximum proportion of the population that will become urbanized, over the long-term

e. All migration out of Sukhbaatar (people/year), largely comprised of migration to Ulanbaatar.