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Pathway narratives

	A) CURRENT TRENDS	B) NATIONAL COMMITMENTS	C) GLOBAL SUSTAINABILITY	JUSTIFICATION
General description	**We do not act differently than in the past decade / today**	**National actions/policies are aligned with national commitments**	**National actions/policies are aligned with global sustainability targets**	
Country Narrative - the main elements that have guided the selection of the assumptions under each pathway	This pathway is designed primarily to account for the newly implemented Inflation Reduction Act's (IRA) benefits for climate investments in the AFOLU sectors. Since these benefits are allocated for each activity type, we use FASOM results of a $20/tCO2 carbon price as an imperfect proxy for IRA benefits.	This pathway was designed to follow the US Long Term Strategy (LTS) for climate change mitigation, which is the US's official updated/latest submission to the Paris Climate Agreement. We also adopt the USDA and Human Health Service's recommended "Healthy US style diet".	We increase the ambition of the National Commitments pathway by not allowing for additional expansion of agricultural lands, reducing post-harvest losses, and phasing out corn ethanol (replacing with second generation biofuels)	IRA US Long term strategy

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Pathway Assumptions					
		A) CURRENT TRENDS	**B) NATIONAL COMMITMENTS**	**C) GLOBAL SUSTAINABILITY**	**JUSTIFICATION**
1. Macroeconomics	**1.1)** GDP per capita	23% increase between 2020 and 2050	23% increase between 2020 and 2050	23% increase between 2020 and 2050	-
	1.2) Population	About 400 million people by 2050 (SSP2)	About 400 million people by 2050 (SSP2)	About 400 million people by 2050 (SSP2)	-
	1.3) Inflation	Increase by 50% between 2020 and 2050	Increase by 50% between 2020 and 2050	Increase by 50% between 2020 and 2050	-
	1.4) Inequalities	-	-	-	-
2. Land	**2.1)** Constraints on agricultural expansion / deforestation	No constraint on the expansion of the agricultural land beyond protected areas	No constraint on the expansion of the agricultural land beyond protected areas	No expansion of agricultural land	-
	2.2) Afforestation, and forest plantations targets	30 million ha	30 million ha	40 million ha	US Long term strategy
	2.3) Urban and settlements area	Increases 12% per year, so 95% increase between 2020 and 2050	Increases 12% per year, so 95% increase between 2020 and 2050	Increases 12% per year, so 95% increase between 2020 and 2050	-
	2.4) Protected areas	No change	30% of total area by 2030	30% of total area by 2030	Executive Order Sec. 216. Conserving Our Nation's Lands and Waters. (a) The Secretary of the Interior, in consultation with the Secretary of Agriculture, the Secretary of Commerce, the

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					Chair of the Council on Environmental Quality, and the heads of other relevant agencies, shall submit a report to the Task Force within 90 days of the date of this order recommending steps that the United States should take, working with State, local, Tribal, and territorial governments, agricultural and forest landowners, fishermen, and other key stakeholders, to achieve the goal of conserving at least 30 percent of our lands and waters by 2030."
3. Productivity and management	**3.1)** Crop productivity for the key crops	11% increase by 2050 for corn 40% increase for soy 60% increase by 2050 for wheat	11% increase by 2050 for corn 40% increase for soy 60% increase by 2050 for wheat	11% increase by 2050 for corn 40% increase for soy 60% increase by 2050 for wheat	Consistent with FASOM runs
	3.2) Cropland under agroecological practices	Mixed - 20% organic farming by 2050 - 30% no/minimal tillage by 2050 - 30% embedded natural by 2050	Mixed - 20% organic farming by 2050 - 30% no/minimal tillage by 2050 - 30% embedded natural by 2050	Mixed - 20% organic farming by 2050 - 30% no/minimal tillage by 2050 - 30% embedded natural by 2050	IRA includes incentives for various climate-smart ag practices IRA
	3.3) Livestock productivity for the key livestock products	Between 2020 and 2050, the productivity per head increases: - 10% for beef - 40% for chicken - 37% for eggs	Between 2020 and 2050, the productivity per head increases: - 10% for beef - 40% for chicken - 37% for eggs	Between 2020 and 2050, the productivity per head increases: - 10% for beef - 40% for chicken - 37% for eggs	

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		- 54% for milk - 2% for pork	- 54% for milk - 2% for pork	- 54% for milk - 2% for pork	
	3.4) Pasture stocking rate	0.42 TLUha in 2020 to 0.45 TLU/ha in 2050	0.42 TLUha in 2020 to 0.45 TLU/ha in 2050	0.42 TLUha in 2020 to 0.45 TLU/ha in 2050	
	3.5) Forest management				
4. Trade	**4.1)** Share of consumption which is imported for key imported products (%)	The share of total consumption which is imported stays constant at the following between 2020 and 2050: - beef: 2% - vegetables_other: 26% - fruit_other: 52%	The share of total consumption which is imported stays constant at the following between 2020 and 2050: - beef: 2% - vegetables_other: 26% - fruit_other: 52%	The share of total consumption which is imported stays constant at the following between 2020 and 2050: - beef: 2% - vegetables_other: 26% - fruit_other: 52%	
	4.2) Evolution of exports for key exported products (1000 tons)	Exports adhere to FASOM $20/tCO2 scenarios for the following crops - 10% reduction in corn - no change for soy, wheat, beef, eggs, and milk - 10% increase in pork - 30% increase in chicken	Exports adhere to FASOM $20/tCO2 scenarios for the following crops - 10% reduction in corn - no change for soy, wheat, beef, eggs, and milk - 10% increase in pork - 30% increase in chicken	Exports generally increase by 50% between 2020 and 2050 for corn, soy, wheat, pork, and chicken. Exports for beef increase by 100% by 2050	
5. Food	**5.1)** Average dietary composition	By 2050, the average daily calorie consumption per capita is 2640 kcal and composed as: 22% cereals, 14% dairy, 7% red meat, 8% other meat, 13% oil and fat, 7% sugar, 11% fruits and vegetables, 3% pulses, 4% roots and tubers	By 2050, the average daily calorie consumption per capita is 2535 kcal and composed as: 26% cereals, 14% dairy, 4% red meat, 5% other meat, 15% oil and fat, 7% sugar, 11% fruits and vegetables, 3% pulses, 5% roots and tubers	By 2050, the average daily calorie consumption per capita is 2535 kcal and composed as: 26% cereals, 14% dairy, 4% red meat, 5% other meat, 15% oil and fat, 7% sugar, 11% fruits and vegetables, 3% pulses, 5% roots and tubers	Dietary Guidelines for Americans

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	5.2) Share of food consumption which is wasted at household level	No reduction compared to 2020 level	Reduces by 50% compared to 2020 level	Reduces by 50% compared to 2020 level	US Environmental Protection Agency. US 2030 Food Loss and Waste Reduction Goal
6. Biofuels	**6.1)** Targets on biofuel and/or other bioenergy use	Targets adhere to FASOM $20/tCO2 scenarios: 30% of total corn production, 60% of total rapeseed oil production, 20% of total soyoil production by 2050	Targets adhere to FASOM $20/tCO2 scenarios: 30% of total corn production, 60% of total rapeseed oil production, 20% of total soyoil production by 2051	Biofuel demand accounts for 0% of total corn production, 56% of total rapeseed oil production, 20% of total soyoil production, and 100% of total switchgrass and miscanthus production by 2050	Global sustainability scenario follows the central pathway of this net zero US study
	6.2) Targets on other non-food use	-	-	-	-
7. Water	**7.1)** Irrigated crop area	No growth between 2020 and 2050	No growth between 2020 and 2050	No growth between 2020 and 2050	-