

Table 1: Effects of Hydro-Meteorological Natural Disasters**Total Number of People Affected, 1975-2001 [millions]**

Region	Droughts	Famines	Floods	Windstorms
Africa	221.9	49.9	28.93	9.1
Asia	1095.83	7.5	2120.18	415.95
Latin America	47.89	1	40.41	21.96
Oceania	8.65	0	0.498	5.55
Europe	6	3.21	7.73	7.57
North America	0.03	0	0.83	2.64

Number of People Affected per Occurrence [millions]

Region	Droughts	Famines	Floods	Windstorms
Africa	0.87	1.16	0.093	0.087
Asia	9.36	0.47	2.88	0.57
Latin America	0.72	1	0.11	0.1
Oceania	0.39	0	0.0071	0.034
Europe	0.27	1.605	0.032	0.034
North America	0.0025	0	0.0085	0.0086

Table 2: Environmental Migration Episodes

Origin, period reported	Destination	Environmental push factors	Other push factors	# moving	Conflict in destination
1. Bangladesh, rural areas, costal areas, islands, 1970s-1990s	Bangladesh, Chittagong Hill Tracts	droughts, water scarcity, floods storms, erosion desertification	overpopulation, underdevelopment, poverty, government migration incentives	By 1990: 400,000, By 1992: 600,000	Ethnic tension, migrants-residents strife, armed insurgency
2. Ethiopia, (a) central/northern (b) Awash river basin-Afar, 1984-1985	Ethiopia, (a) southwest, west; (b) Wollo region	drought, famine, forest fires, locust invasion	underdevelopment, poverty, over population, gov. promotes cotton/ sugar over grazing	600,000	Nomad-farmer conflict over land in Wollo region.
3. Rwanda, rural south, central, 1994	Rwanda, north, Zaire	arable land and water scarcity, land degradation, deforestation	overpopulation, food scarcity, civil war, underdevelopment, government focusing aid in north	1.7 million refugees in late 1994	Ethnic tension, eventually full scale civil war, genocide
4. Mexico, Southern Guatemala, 1960s-1990s	Mexico, eastern, Chiapas	land degradation. deforestation, land pressure	Persecution, civil war in Guat. Mexican gov. incentives to resettlement, unequal land distribution, overpopulation	280,000	peasants fight over land with loggers and ranchers, Zapatista rebel movement
5. Bangladesh, 1950s-current, Kulna, 1970s-current	India, West Bengal, Assam, Tripura	droughts, water /land/food scarcity, land erosion, storms, salt intrusion	India's diversion of Ganges River water India-Bang. inability to share river water, overpopulation	12-17 million since 1950s	Hindu-Muslim civil strife, violence.
6. El Salvador, 1950s-1980s	Honduras up to the late 1960s, then US	deforestation, land degradation, arable land/ water scarcity	wealth disparity, skewed land-tenure system, poverty, overpopulation repressive regime	300,000 to Honduras, 500,000 to US by 1980s	Migrant-native resource contest, border dispute flaring into 1969 Soccer War
7. Ethiopia/ Eritrea, 1960s-1980s	Sudan, Southern	droughts, famines.	underdevelopment, poverty, Eritrean secession war	By 1985: 1.1 million	Native-migrant clash over scarce water and land.
8. Mauritania, 1980s-1990s	Senegal, Senegal River Valley	drought, soil erosion, desertification, deforestation, water scarcity.	Moors-African enmity, Mauritania-Senegal war, Senegal river dam raises land values and stakes, population growth	68,700 reported in 1995.	border clashes, ethno-religious violence against Moors in Senegal and Africans in Mauritania, riots

Origin, period reported	Destination	Environmental push factors	Other push factors	# moving	Conflict in destination
9. Somalia, late 1970s	Somalia-Ethiopia border region, Ogaden	arable/grazing land degradation, water scarcity	underdevelopment, population growth, poverty, Ethiopia Somalia war 1977-78	400,000	Native migrant water conflict long standing hostility.
10. Haiti, northern, 1970s-1990s	rural hillsides, l'Artibonite region, cities Dominican Republic, US	deforestation, land scarcity/ degradation, erosion	poverty, inequality, high population density, repressive regime, elite rule	1.3 million	Civil unrest, urban violence
11. Philippines, lowlands, 1970s-1990s	Philippines, (central), uplands	Arable land/ water scarcity, deforestation, floods, slides, drought, land degradation	Overpopulation poverty, land/wealth disparity, vague property rights, unemployment, underdevelopment.	4.3 million	Landowner-peasant tension, civil strife, anti government guerilla movement
12. South Africa, black areas 1970s-present	South Africa, urban centers	Land degradation, deforestation, subsistence crisis, water scarcity	repressive regime, poverty, poor infrastructure, unemployment in black areas, overpopulation	750,000 per year	Land squatters, social discord, domestic violence
13. Sahel, rural areas, late 1960s-1980s	Sahel, urban regions, neighboring coastal states	droughts, famines, land scarcity	poverty, inflation, underdevelopment overgrazing	1.4 million in 1970s, 10 million by late 1980s	Unrest in drought-hit states facing newcomers
14. Brazil, northeastern, 1960s-present	Brazil, central and southern Amazon region.	droughts, land degradation, water scarcity, deforestation	overpopulation, poverty, land disparity, gov. subsidies to settlers vague property rights	8 million	Clashes between land owners and squatters
15. Sudan, north, south, west, 1970s-1980s	Sudan, Khartoum, Central, Kordofan, east	droughts, famine, desertification, deforestation, erosion	civil war, poverty, underdevelopment, gov. policies against small farm and pastoralism, population growth	3.5-4 million by early 1990.	gov.- migrant squatters clash, ethnic tensions, clashes between nomads and land owners
16. US, Great Plains, 1931-1939	US, other regions	droughts, sand storms, land degradation	Great Depression, over-plowing, over-grazing, poverty	2.5 million	migrants-residents discord, resource contest
17. Ethiopia, late 1970s	Ethiopia-Somalia border region, Ogaden	grazing land, and arable land degradation, deforestation	overpopulation, poverty, Ogaden war land disparity, underdevelopment	450,000	Et.-So. water and border dispute, resource competition

Origin, period reported	Destination	Environmental push factors	Migration push factors	# moving	Conflict in destination
18. Nigeria, Jos Plateau, since 1900	Urban areas, intra-regional.	soil/water/air pollution, silted rivers, land scarcity/ degradation	tin-mining, poverty, unemployment, high population density and growth	n/a	conflict between nomadic herdsman and farmers over resources
19. Pakistan	urban areas, especially Karachi and Islamabad, some foreign countries	water scarcity, deforestation, pollution, floods, land degradation	population growth, unequal access to resources, poverty, unemployment, unclear land tenure	n/a	ethnic conflict, struggle over resources
20. Bangladesh, rural areas, 1970s-1990s	Bangladesh, urban centers	droughts, storms, floods, water scarcity	overpopulation, poverty, economic opportunities	n/a	No conflict
21. China, primarily Gansu and Ningxia, 1980s-	China, urban centers	floods, land degradation, desertification, water scarcity	mountainous terrain, poverty, malnutrition, gov. incentives	1983-1990: 320,000; 1990s: 20-30 million	No conflict
22. Ecuador, highlands, southern, 1970s-1990s	Ecuador, northern Amazon	droughts, deforestation, land degradation, water scarcity	Underdevelopment, construction of oil pipelines through Amazon region	n/a	No conflict
23. North Korea, 1995-2000	China, urban centers	floods, tidal waves, droughts, land degradation, deforestation	failure of collective farming policy, lack of infrastructure, poverty	300,000-400,000	No conflict
24. Somalia, late 1980s-mid 1990s	Somalia-Ogaden, Kenya, Ethiopia, Djibouti	drought, erosion, deforestation	civil war in Somalia, population growth, overgrazing.	1 million in 1991, 2.8 million since 1988.	No conflict
25. Guatemala, rural areas, 1950-1980s	Guatemala, north Peten region, urban centers, eastern lowlands, Pacific Coast, US	Land degradation, deforestation, floods, river sedimentation, water scarcity	Overpopulation, land inequality, poverty, underdevelopment, gov. promoting export crops, insurgency	100,000	No conflict
26. Dominican Republic, Las Ayumas, 1940s-1980s	Dominican Republic, Santiago's urban center	deforestation, land degradation	rise in coffee prices stimulates deforestation to grow coffee, poverty	Several tens of thousands	No conflict

Origin, period reported	Destination	Environmental push factors	Other push factors	# moving	Conflict in destination
27. Canada, Great Plains, 1931-1939	Canada, other regions, urban areas	droughts, sand storms, land degradation	Great Depression, over-plowing, overgrazing.	300,000	No conflict
28. Mexico, rural areas, Oaxaca	Mexico, urban centers, US	drought, land degradation, water scarcity, deforestation	underdevelopment, poverty, inequality, population growth	600,000-900,000 annually	No conflict
29. Kenya, Western, Northern, 1960s-1990s	Kenya, Rift Valley, some remain in West, urban centers	drought, land degradation, land scarcity, famine	overpopulation, poverty, ethnic strife, inequality, unemployment.	150,000-200,000	No conflict
30. Uzbekistan, Kazakstan, Aral Sea, 1970s-2000	within region or adjacent regions	pollution, salinization, dust storms, water scarcity, drying of Sea, desertification	unemployment, underdevelopment, ethnic pull factor, excessive water withdrawal.	65,000-100,000 annually	No conflict
31. Caspian Sea region, Kalmykia, 1990s	Russia, neighboring regions	sea level rise, floods, land scarcity	ethnic pull factor, unemployment, underdevelopment	2,200-8,100 annually	No conflict
32. Russia, Kola Peninsula	Russia, various	air pollution	poor healthcare, social problems	5% of population	No conflict
33. Burkina Faso, Mossi Plateau, 1960s-	Burkina Faso, south, east	drought	underdevelopment, population pressures	n/a	No conflict
34. India, west Rajasthan, East India, 1978-1983	India, Haryana, Madhya Pradesh, Madras	drought	underdevelopment, poverty	n/a	No conflict
35. Zimbabwe, Southern lowlands, 1980s-	Zimbabwe, highlands	drought	unclear property rights, overgrazing lands, poverty, seasonal movement	n/a	No conflict
36. Thailand, northeast, 1980s-	Thailand, other rural areas, urban centers	deforestation, land scarcity/ degradation	poverty, underdevelopment	n/a	No conflict
37. Russia, Arctic region, 1990s	Russia, urban centers, other CIS countries	extreme weather	socioeconomic decline	70,000	No conflict
38. Tanzania, Southern and northeast regions, 1950s-	Usangu Plains	land scarcity/ degradation	overpopulation, poverty, gov. promotes commercial agriculture	84,000	No conflict

Table 3: Potential Effects of a 1-Meter Rise in Sea Level Assuming No Adaptation

Case	Country	Land Loss: [km ²]	Land Loss: [Percent]	Population Exposed: [millions]	Population Exposed: [Percent]
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Asia

1	Bangladesh	29,846	20.7	14.8	13.5
2	India	5,763	0.4	7.1	0.8
3	Indonesia (60 cm)	34,000	1.9	2	1.1
4	Japan	9,086	2.4	4.1	3.3
5	Malaysia	7,000	2.1	>0.05	>0.3
6	Vietnam	40,000	12.1	17.1	23.1
7	China	125,000	1.3	72	6.5

Africa

8	Egypt	2,100	0.3	8	16
9	Nigeria	18,803	2	3.2	3.6
10	Senegal	6,000	3.1	0.11-0.18	1.4-2.3
11	The Gambia	92	0.92	0.042	3.2

Latin America

12	Belize	2,616	0.29	0.07	35
13	Guyana	2,400	1.1	0.6	1.1
14	Uruguay	96	0.1	0.013	<1
15	Venezuela	5,700	0.6	0.056	<1
16	Argentina	3,492	0.1	n/a	n/a

Europe

17	Netherlands	2,165	5.9	10	67
18	Germany	13,900	3.9	3.2	4
19	Poland	1,700	0.5	0.24	1

Small Island States, Pacific

20	Tuvalu	26	100	0.01	100
21	Maldives	255	85	0.3	100