**Food production shocks across land and sea**

Supplementary information

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**Figure S1 - Statistical shock detection method. a.** Local polynomial regression (LOESS) model fitted to food production time-series **b.** Regression of model residuals against lag-1 residuals **c.** Production shock in 1991 identified as outlier from regression in b using Cook’s Distance measures

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**Figure S2 – Proportion of shocks recovered or not during study period in crops, livestock, fisheries and aquaculture sectors across geographic region.**



**Figure S3 – Shock frequency through time across all sectors for a range of parameter combinations.** Light grey confidence interval represents range of plausible shock frequencies dependent on span, baseline and average type used in shock detection. Dashed black line is mean of the confidence interval frequencies. Solid red line represents parameter combination that minimizes the sum of squared residuals with the confidence interval mean (parameters selected for this analysis).

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**Figure S4– Comparisons of number of shocks detected in crop, livestock, fisheries and aquaculture time series with incremental changes to Cook’s distance values.** Lines represent either the combination of model parameters used in this study (‘Selected Model’, LOESS span = 0.6, production baseline = 7 years and average type used = median), or repeated with changes to model span, production baseline or average type.

**Table S1 – Proportion of imposed shocks detected in simulated time series for different time series standard deviations and shock size combinations.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Standard deviation | | | | | | | | | |
|  |  | **0.1** | **0.2** | **0.3** | **0.4** | **0.5** | **0.6** | **0.7** | **0.8** | **0.9** | **1** |
| Magnitude | **0** | 0.003 | 0.001 | 0.001 | 0.001 | 0.003 | 0.001 | 0.002 | 0.001 | 0.001 | 0.003 |
| **0.5** | 0.82 | 0.159 | 0.043 | 0.023 | 0.018 | 0.012 | 0.006 | 0.006 | 0.006 | 0.006 |
| **1** | 1 | 0.805 | 0.345 | 0.161 | 0.061 | 0.036 | 0.018 | 0.017 | 0.008 | 0.01 |
| **1.5** | 1 | 0.995 | 0.786 | 0.459 | 0.246 | 0.122 | 0.089 | 0.052 | 0.035 | 0.026 |
| **2** | 1 | 1 | 0.982 | 0.81 | 0.526 | 0.352 | 0.22 | 0.133 | 0.082 | 0.065 |
| **2.5** | 1 | 1 | 0.997 | 0.97 | 0.781 | 0.603 | 0.408 | 0.273 | 0.177 | 0.131 |
| **3** | 1 | 1 | 1 | 0.994 | 0.954 | 0.813 | 0.651 | 0.469 | 0.301 | 0.22 |
| **3.5** | 1 | 1 | 1 | 1 | 0.99 | 0.934 | 0.813 | 0.666 | 0.506 | 0.41 |
| **4** | 1 | 1 | 1 | 1 | 1 | 0.973 | 0.911 | 0.802 | 0.652 | 0.565 |
| **4.5** | 1 | 1 | 1 | 1 | 1 | 0.995 | 0.974 | 0.906 | 0.824 | 0.668 |
| **5** | 1 | 1 | 1 | 1 | 1 | 1 | 0.99 | 0.957 | 0.902 | 0.821 |
| **5.5** | 1 | 1 | 1 | 1 | 1 | 1 | 0.997 | 0.984 | 0.952 | 0.878 |
| **6** | 1 | 1 | 1 | 1 | 1 | 1 | 0.999 | 0.995 | 0.976 | 0.942 |

**Drivers of shocks**

**Table S2 – Identified causes for production shocks across all sectors.** Asterisks indicate possible drivers for shocks of an unknown cause.

| **Sector** | **Country** | | **Year** | | **Shock size**  **(tonnes)** | | **Recovery time (years)** | | **Driver** | | **Reference** | **Category** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Crops | Afghanistan | | 2001 | | 1146371 | | 1 | | Severe droughts (1999-2001) | | 1 | Climate/weather events |
| Crops | Albania | | 1992 | | 700580 | | 16 | | Transition to market-based economy in early 90s | | 2 | Geopolitical/ economic events |
| Crops | Antigua and Barbuda | | 1995 | | 471 | | 1 | | Reduction in crop output associated more with damage from Hurricane Luis | | 3 | Climate/ weather events |
| Crops | Australia | | 2007 | | 12018352 | | 1 | | Annual rainfall in 2006 40-60% below normal over most of the country in part caused by the 2006/07 El Niño event | | 4,5 | Climate/weather events |
| Crops | Bahrain | | 1981 | | 30551 | | 32 | | Urban expansion and salinization of ground water led to significant losses in agricultural areas | | 6 | Mismanagement |
| Crops | Bermuda | | 1971 | | 1017 | | 14 | | Oil price fluctuations in the US economy from 1969- 1972 \* | | 7 | Geopolitical/ economic events |
| Crops | Bhutan | | 2000 | | 135694 | | 4 | | Heavy seasonal monsoon rainfall and flash floods across the country | | 8 | Climate/weather events |
| Crops | Burundi | | 2012 | | 87394 | | 1 | | Dramatic decrease in banana production between 2007 and 2012 due to the effects of *Xanthomonas* wilt | | 9 | Other |
| Crops | Cameroon | | 1987 | | 367152 | | 1 | | Severe economic crisis due to decline in world prices of oil, coffee and cocoa resulted in shrinking agricultural investment | | 10,11 | Geopolitical/economic events |
| Crops | Cayman Islands | | 2004 | | 240 | | 9 | | Hurricane Ivan | | 12 | Climate/weather events |
| Crops | Chile | | 2007 | | 986109 | | 1 | | Rising world food prices combined with severe winter frosts in Chile reduced yields for vegetables, pulses and some fruits | | 13 | Climate/weather & geopolitical/economic events |
| Crops | Comoros | | 1985 | | 8250 | | 1 | | Effects of Cyclone Kamisy on Banana Crop\* | |  | Climate/weather events |
| Crops | Cuba | | 2006 | | 1469850 | | 7 | | Restructuring in sugar industry led to systemic declines in agricultural productivity | | 14 | Geopolitical/economic events |
| Crops | DPRK | | 1995 | | 6800710 | | 18 | | Torrential rainfall causing severe flooding and mudslides affecting up to 16% of agricultural areas | | 15 | Climate/weather events & Mismanagement |
| Crops | DPRK | | 1996 | | 8298824 | | 17 | | As above with recurrent flooding into 1996. | | 15 | Mismanagement |
| Crops | Democratic Republic of the Congo | | 1995 | | 3396734 | | 18 | | Civil unrest during the 1990s preventing agricultural investment and displacing the rural work force. | | 16,17 | Geopolitical/ economic events |
| Crops | Dominica | | 1979 | | 11248 | | 2 | | Hurricane David effects on banana crop | | 18 | Climate/weather events |
| Crops | Dominican Republic | | 2008 | | 129906 | | 1 | | Destruction of plantain crop by Tropical Storm Noel late 2007 | | 19 | Climate/weather events |
| Crops | Ecuador | | 1998 | | 412931 | | 1 | | Heavy rains causing widespread flooding and crop failures | | 20 | Climate/weather events |
| Crops | French Polynesia | | 2006 | | 204 | | 1 | | Unknown | |  | Unknown |
| Crops | Gambia | | 2011 | | 94155 | | 1 | | Severe drought reducing crop production by over 50% in some crops e.g. Millet | | 21 | Climate/weather events |
| Crops | Guadeloupe | | 1980 | | 96781 | | 2 | | Hurricane David in 1979 followed by Hurricane Allen in 1980 destorying the banana crop | | 22 | Climate/weather events |
| Crops | Guam | | 2002 | | 1102 | | 2 | | Typhoon Pongsona causing widespread devastation in Guam \* | |  | Climate/weather events |
| Crops | India | | 2002 | | 14092939 | | 1 | | Severe drought across major growing regions | | 23 | Climate/weather events |
| Crops | Iran (Islamic Republic of) | | 2008 | | 6510785 | | 1 | | Drought reducing wheat production by 34% | | 24 | Climate/weather events |
| Crops | Iraq | | 2009 | | 2134230 | | 1 | | Drought 2009 -10 in major wheat growing areas | | 25 | Climate/weather events |
| Crops | Kiribati | | 1989 | | 2800 | | 1 | | Drought and effect largely on coconut plantations | | 26 | Climate/weather events |
| Crops | Liberia | | 1995 | | 136526 | | 1 | | Liberian Civil War | | 27 | Geopolitical/economic events |
| Crops | Libya | | 1971 | | 10307 | | 1 | | Dip in productivity after 1969 coup d'etat\* | |  | Geopolitical/economic events |
| Crops | Libya | | 1977 | | 60112 | | 1 | | Libya-Egypt War\* | |  | Geopolitical/economic events |
| Crops | Madagascar | | 2013 | | 484817 | | 2 | | Drought causes large crop and depletion of seed stores | | 28 | Climate/weather events |
| Crops | Malawi | | 2005 | | 1600136 | | 1 | | Drought reduced staple harvest to only 37% of requirements | | 29 | Climate/weather events |
| Crops | Maldives | | 1990 | | 16743 | | 23 | | Unknown | |  | Unknown |
| Crops | Mali | | 2013 | | 484899 | | 2 | | Northern Mali Conflict displacing over 300 000 people and disrupting crop production | | 30 | Geopolitical/economic events |
| Crops | Namibia | | 1998 | | 16707 | | 1 | | Severe drought affecting 25000 people\* | | 31 | Climate/weather events |
| Crops | Nauru | | 2007 | | 272 | | 6 | | Significant decline of coconuts due to hispid beetles infestations | | 32 | Other |
| Crops | Nauru | | 2008 | | 234 | | 5 | | Significant decline of coconuts due to hispid beetles infestations | | 32 | Other |
| Crops | Nigeria | | 2009 | | 21555081 | | 1 | | Initernal conflict throughout Nigeria reducing agricultural output | | 30 | Geopolitical/economic events |
| Crops | Niue | | 1990 | | 1217 | | 6 | | Banana, breadfruit, papaya and taro crops devastated by Cyclone Ofa | | 33 | Climate/weather events |
| Crops | Norway | | 1976 | | 288148 | | 1 | | Precipitation deficit evident in late winter of 1975 and drought into 1976. | | 34 | Climate/weather events |
| Crops | Pakistan | | 2002 | | 199835 | | 1 | | Drought from 1999 through 2002 caused 70% reduction in wheat among other crops | | 35 | Climate/weather events |
| Crops | Paraguay | | 2009 | | 485042 | | 1 | | Drought | | 36 | Climate/weather events |
| Crops | Peru | | 1990 | | 846197 | | 1 | | Lack of investment and structural changes in agriculture in the early 1990s through recession | | 37 | Geopolitical/economic events |
| Crops | Republic of Korea | | 1980 | | 2202191 | | 1 | | Unknown | |  | Unknown |
| Crops | Saint Kitts and Nevis | | 1990 | | 598 | | 1 | | Hurrican Hugo caused major damage to crops, particularly sugar towards end of 1989 | | 38 | Climate/weather events |
| Crops | Saudi Arabia | | 1995 | | 371562 | | 9 | | Economic pressure forced a reduction in subsidies for wheat and barley growing | | 39 | Mismanagement |
| Crops | Somalia | | 1991 | | 673387 | | 22 | | Civil war displaced over a million people and decimated agricultural production (the main livelihood for rural Somalians) | | 40 | Geopolitical/economic events |
| Crops | Syrian Arab Republic | | 1989 | | 2443833 | | 1 | | Drought affecting wheat crop | | 41 | Climate/weather events |
| Crops | Timor-Leste | | 2011 | | 96394 | | 2 | | Disrupted planting for 2011 due to severe La Nina flooding in 2010 | | 42 | Climate/weather events |
| Crops | Togo | | 2013 | | 117639 | | 2 | | Drought | | 43 | Climate/weather events |
| Crops | Tokelau | | 1994 | | 101 | | 10 | | Unknown | |  | Unknown |
| Crops | Tokelau | | 2006 | | 8 | | 2 | | Unknown | |  | Unknown |
| Crops | United Kingdom | | 1976 | | 7054926 | | 1 | | Major drought - lowest rainfall in the UK in over 200 years resulting 20-30% drops in potato, oilseed and wheat | | 44 | Climate/weather events |
| Crops | United Republic of Tanzania | | 2003 | | 624231 | | 1 | | Drought in northern and central Tanzania affecting 2 million people. 85% of sorghum, maize and groundnuts affected | | 45 | Climate/weather events |
| Crops | Vanuatu | | 1995 | | 3273 | | 1 | | Unknown | |  | Unknown |
| Crops | Venezuela (Bolivarian Republic of) | | 2009 | | 306179 | | 2 | | Drought in 2009 due to El Nino event, 70-80% of Venzeuelan rice and maize affected | | 46,47 | Climate/weather events |
| Crops | Wallis and Futuna Islands | | 2006 | | 2009 | | 7 | | Unknown | |  | Unknown |
| Livestock | Argentina | | 2003 | | 1576886 | | 1 | | Foot and Mouth Disease outbreak in 2000 leading to further declines until 2003 | | 48 | Other |
| Livestock | Bahamas | | 2000 | | 3997 | | 13 | | Hurricane Floyd with huge impact on agriculture\* | | 49 | Climate/weather events |
| Livestock | Bangladesh | | 1980 | | 191496 | | 4 | | Drought over 7 major growing regions in 1980 | | 50 | Climate/weather events |
| Livestock | Barbados | | 1992 | | 3175 | | 3 | | Downturn in productivity following economic recession. Agricultural output declined between 1991 and 1994 due to poorly performing export sectors - largely due to the 1990 oil price shock | | 51 | Geopolitical/economic events |
| Livestock | Belize | | 1989 | | 6115 | | 1 | | Unknown | |  | Unknown |
| Livestock | Bhutan | | 2009 | | 4471 | | 4 | | Agricultural damage from flash floods from cyclone Aila influenced 12 of 20 districts in Bhutan | | 52,53 | Climate/weather events |
| Livestock | Bulgaria | | 1991 | | 742790 | | 22 | | Dissolution of Council for Mutual Economic Assistance (COMECON) resulted in trade disruption for Bulgarian livestock. Production output dropped nearly 15% from 1988 to 1991. By 1993 cattle inventories were down 40% and poultry 53% from 1988 levels | | 54 | Geopolitical/economic events |
| Livestock | Burkina Faso | | 2013 | | 73220 | | 1 | | Floods displaced 6712 people in Burkino Faso and inundated agricultural lands | | 43 | Climate/weather events |
| Livestock | Cabo Verde | | 2011 | | 17237 | | 2 | | Unknown | |  | Unknown |
| Livestock | Chad | | 1984 | | 50096 | | 2 | | Severe drought aggravated by civil war in Chad. Huge livestock losses throughout Sahelian Africa | | 55 | Climate/weather events |
| Livestock | China, Macao SAR | | 2008 | | 3239 | | NA | | H5N1 avian influenza outbreak across the region; poultry production decimated | | 56,57 | Other |
| Livestock | Côte d'Ivoire | | 1998 | | 53540 | | 6 | | Unknown | |  | Unknown |
| Livestock | Cuba | | 1991 | | 385299 | | 22 | | Loss of subsidized petroleum, fertilizer subsides and export markets from USSR dissolution Gross agrcultural output declined by 40% | | 58 | Geopolitical/economic events |
| Livestock | DPRK | | 1992 | | 107760 | | 9 | | Cessation of subsidised coal and oil from USSR following demise and subsequent withdrawal of aid from China. Further declines in 1994 after China withdrew. | | 15 | Geopolitical/economic events |
| Livestock | DPRK | | 1997 | | 164730 | | 2 | | Food production continued to dip until 1997 following floods 1995-96. | | 15,59 | Geopolitical/economic events |
| Livestock | Dominica | | 2005 | | 1251 | | 2 | | Productivity decline during 2000s across the agricultor sector due to rural-urban migration in younger demographic | | 60 | Geopolitical/economic events |
| Livestock | Falkland Islands (Malvinas) | | 1996 | | 808 | | 17 | | Ovine hytadosis prevalence from early 1990s, high slaughter in 1994-95 revealed slump in 1996 | | 61 | Other |
| Livestock | Former Czechoslovakia | | 1991 | | 1197866 | | 22 | | Velvet Revolution and transition to market-based economy | | 62 | Geopolitical/economic events |
| Livestock | Germany | | 1991 | | 5150508 | | 19 | | Decentralisation of agricultural production following the demise of COMECON and reunification with West Germany | | 63 | Geopolitical/economic events |
| Livestock | Greenland | | 1972 | | 332 | | 7 | | Collapse of reindeers herds either a result of mass starvation over winter or possibly issues with data reporting/ management | | 64 | Mismanagement |
| Livestock | Guam | | 1989 | | 774 | | 24 | | Abandonment of agricultural livelihoods in the late 1980s - number of farmers across Guam crashed in 1987 after Cyclone Lynn | | 65 | Geopolitical/economic events |
| Livestock | Hungary | | 1991 | | 719965 | | 22 | | Dissolution of COMECON reduced inputs and markets for export and competition from western european countries led to a massive decline in agricultural productivity | | 66 | Geopolitical/economic events |
| Livestock | Indonesia | | 1998 | | 395732 | | 3 | | Drought driven by El Nino combined with Asian economic crisis | | 67 | Climate/weather events |
| Livestock | Iraq | | 1991 | | 549893 | | 22 | | Sanctions on Iraq during first Gulf War led to complete cut-off of imported feed grains. Domestic feed grain supply also decreased as it was redirected to human food. | | 68 | Geopolitical/economic events |
| Livestock | Iraq | | 2003 | | 300858 | | 10 | | Invasion of Iraq during second gulf war | | 68 | Geopolitical/economic events |
| Livestock | Kuwait | | 1991 | | 125192 | | 5 | | First Gulf War and Invasion of Kuwait by Iraq | | 69 | Geopolitical/economic events |
| Livestock | Lebanon | | 2011 | | 8703 | | 1 | | Severe drought from 2007 through 2010 across fertile crescent | | 70 | Climate/weather events |
| Livestock | Malawi | | 2002 | | 18307 | | 2 | | Malawi food crisis induced by floods in 2001 and complacency of projected food production. IMF encouraged sale (and so depletion of grain stores). Rush to sell livestock for staples leading to flooded market and a crash in livestock prices. Collapse of many rural livelihoods even migration to neighbouring Zambia. | | 71 | Climate/weather events |
| Livestock | Malaysia | | 1999 | | 231740 | | 3 | | Nipah Virus in Swine Industry | | 72 | Other |
| Livestock | Maldives | | 2005 | | 400 | | 8 | | 2004 Tsunami | | 73 | Other |
| Livestock | Mali | | 2013 | | 46482 | | 2 | | Northern Mali Conflict displacing over 300 000 people and disrupting agriculture | | 30 | Geopolitical/economic events |
| Livestock | Mauritania | | 1974 | | 82840 | | 4 | | Drought from 1968 -1972 causes large losses to pastoralists as herd numbers dwindle to 1.5 million head | | 74 | Climate/weather events |
| Livestock | Mauritius | | 1978 | | 4688 | | 8 | | Severe economic crisis hindering agriculture and trade of agricultural goods | | 75 | Geopolitical/economic events |
| Livestock | Mexico | | 1989 | | 1887191 | | 2 | | Successive droughts and economic crises from 1986-1989 | | 76 | Climate/weather & geopolitical/economic events |
| Livestock | Mongolia | | 2001 | | 81647 | | 7 | | 20 Million head of livestock perished in two mass mortality events (dzuds) in between 2000-2002 and 2009-2010. Dzuds driven by a combination of summer droughts, heavy snowfall, high winds, and extremely low winter temperatures | | 77 | Climate/weather events |
| Livestock | Mongolia | | 2010 | | 74802 | | 1 | | 20 Million head of livestock perished in two mass mortality events (dzuds) in between 2000-2002 and 2009-2010. Dzuds driven by a combination of summer droughts, heavy snowfall, high winds, and extremely low winter temperatures | | 77 | Climate/weather events |
| Livestock | Montserrat | | 2006 | | 659 | | 7 | | Economic downturn induced by infrastructure damage from the eruption of Soufriere volcano in 2005 | | 78 | Other |
| Livestock | Nauru | | 1976 | | 4 | | 2 | | Unknown | |  | Unknown |
| Livestock | Nicaragua | | 1980 | | 322697 | | 19 | | Nicaraguan civil war causing loss of production facilities or dangerous conditions inhibiting producers livelihoods. Large production losses across the country totalling USD $ 4.3 million in 1981 | | 79 | Geopolitical/economic events |
| Livestock | Niger | | 1984 | | 65563 | | 6 | | Drought reduced feed crops and fodder yielding insufficient grazing or feed for cattle in the second half of 1984 | | 80 | Climate/weather events |
| Livestock | Nigeria | | 2011 | | 89523 | | 1 | | Significant floods in southern Nigeria washed away many livestock | | 81 | Climate/weather events |
| Livestock | Norway | | 2000 | | 145906 | | 13 | | Subsidy system reform incentivising fewer small farms and more large scale farms causing a restructure within Norwegian agriculture | | 82 | Policy change |
| Livestock | Republic of Korea | | 2005 | | 41664 | | 1 | | Outbreak of food and mouth disease | | 83 | Other |
| Livestock | Saint Kitts and Nevis | | 2006 | | 449 | | 7 | | Combination of agricultural theft, insufficient grazing lands left many livestock rearers unwilling to sell livestock in 2005 onwards | | 84 | Geopolitical/economic events |
| Livestock | Sao Tome | | 1974 | | 295 | | 2 | | Transitional government enroute to Independence? | |  | Geopolitical/economic events |
| Livestock | Seychelles | | 2002 | | 1583 | | 11 | | Unknown | |  | Unknown |
| Livestock | Sierra Leone | | 2002 | | 21086 | | 3 | | Civil war destroyed livestock, agricultural infrastructure and depressed the economy | | 85 | Geopolitical/economic events |
| Livestock | Somalia | | 1992 | | 744596 | | 3 | | Famine caused by conflict exacerbating a water crisis. Livestock targeted by militia during civil war to use hunger as a weapon | | 86 | Geopolitical/economic events |
| Livestock | Sri Lanka | | 1986 | | 102685 | | 4 | | Unknown | |  | Unknown |
| Livestock | Sri Lanka | | 1998 | | 131686 | | 11 | | Severe drought\* | | International Federation of Red Cross And Red Crescent Societies (2002) Sri Lanka: Drought 2002 Appeal No.18/2002. In ReliefWeb. Retrived from: https://reliefweb.int/report/sri-lanka/sri-lanka-drought-2002-appeal-no182002 | Climate/weather events |
| Livestock | Timor-Leste | | 1997 | | 1163 | | 1 | | Combined influence of severe El-Nino drought and Asian financial crisis led to soaring fed prices from imports | | 87 |  |
| Livestock | Venezuela (Bolivarian Republic of) | | 2004 | | 138954 | | 1 | | Protests and conflict over prosposed land reform and shutdown of the oil industry major economic disturbances for agriculture | | 88 | Geopolitical/economic events |
| Fisheries | Afghanistan | | 2001 | | 450 | | 12 | | Severe droughts (1999-2001) impacting inland fisheries | | 1,89 | Climate/weather events |
| Fisheries | Albania | | 1991 | | 9165.578 | | 22 | | Fall of communism in Eastern Europe | | 90 | Geopolitical/economic events |
| Fisheries | Angola | | 1975 | | 315545.3 | | 38 | | Independence from Portugal, withdrawal of Portugese fleet from domestic operations | | 91 | Geopolitical/economic events |
| Fisheries | Anguilla | | 2010 | | 40.7581 | | 1 | | Overfishing of nearshore waters | | 92 | Mismanagement |
| Fisheries | Antigua and Barbuda | | 1981 | | 1511.095 | | 1 | | Overfishing in lobster fishery, reporting change also likely as FAO data only accepted in mid 1980s | | 93 | Mismanagement |
| Fisheries | Barbados | | 1989 | | 1325.079 | | 3 | | 1989 identified as a year of particularly low natural productivity followed and preceeded by years of high productivity | | 94 | Other |
| Fisheries | Belgium | | 1969 | | 3102.253 | | 2 | | Drop off in capacity after governement subsidies issued between 1961 -1969 | | 95 | Policy change |
| Fisheries | Belize | | 2003 | | 10022.06 | | 4 | | Overfishing | | 96 | Mismanagement |
| Fisheries | Botswana | | 1978 | | 200 | | 2 | | Severe drought from 1978-1979 – Botswanan inland fisheries sensitive to environmental fluctuations | | 97–99 | Climate/weather events |
| Fisheries | Bulgaria | | 1978 | | 16351.84 | | 2 | | Overfishing and eutrophication in the black sea during the 1970s resulting in dramatic decline of small pelagics | | 100,101 | Mismanagement |
| Fisheries | Burundi | | 1997 | | 698 | | 16 | | Closure to landing sites on Lake Tangyanika in 1996 due to civil unrest | | 102 | Geopolitical/economic events |
| Fisheries | Central African Republic | | 2013 | | 2000 | | 1 | | Political turmoil reducing fish supply by 40% due threat violence along countries rivers and the loss of fishing equipment | | 103 | Geopolitical/economic events |
| Fisheries | China, Macao SAR | | 1987 | | 4897.452 | | NA | | Declining resource in polluted nearshore waters and inefficient fleet | | 104 |  |
| Fisheries | Cook Islands | | 2013 | | 368.5621 | | 1 | | Unknown | |  | Unknown |
| Fisheries | Dominica | | 1983 | | 214.9291 | | 10 | | Overfishing of nearshore species by mid 1980s | | 105 | Mismanagement |
| Fisheries | Fiji, Republic of | | 1994 | | 3442.686 | | 1 | | Overfishing of sea cucumber stocks | | 106 | Mismanagement |
| Fisheries | Former USSR | | 1992 | | 4947742 | | 21 | | Breakup of Soviet Union leading to reduced capacity and overfished stocks | | 107 | Geopolitical/economic events |
| Fisheries | Germany | | 1973 | | 98731.97 | | 40 | | Collapse of mackerel stocks in North Sea in early 1970s due to overfishing | | 108 | Mismanagement |
| Fisheries | Greece | | 1998 | | 78556.77 | | 4 | | Overfishing leading to general decline in total landings from the mid-1990s | | 109 | Mismanagement |
| Fisheries | Greece | | 2001 | | 75954.02 | | 1 | | Overfishing leading to general decline in total landings from the mid-1990s | | 109 | Mismanagement |
| Fisheries | Grenada | | 1982 | | 469.5915 | | 1 | | Political instability in Grenada disrupted tourism-based fisheries and damage from Hurricane Allen a likely contirbutor | | 110 | Climate/weather & geopolitical/economic events |
| Fisheries | Guinea | | 2008 | | 7556.994 | | 1 | | Unknown | |  | Unknown |
| Fisheries | Haiti | | 1976 | | 1469.032 | | 1 | | Unknown | |  | Unknown |
| Fisheries | Hungary | | 1991 | | 10492 | | 22 | | Transition to market economy with significant impact on seafood production | | 111 | Geopolitical/economic events |
| Fisheries | Italy | | 2005 | | 195668.5 | | 8 | | Overfishing since WWII in the Adriatic region | | 112 | Mismanagement |
| Fisheries | Jamaica | | 2001 | | 5129.559 | | 12 | | Closure in conch fishery in 2000, reopened in 2001 at lower quota than pre 2000 | | 113,114 | Policy change |
| Fisheries | Kenya | | 2001 | | 22446.6 | | 10 | | Intense overfishing on kenyan coral reefs and in Lake Victoria. | | 115,116 | Mismanagement |
| Fisheries | Kiribati | | 2000 | | 14797.08 | | 4 | | Overfishing of mullet | | 117 | Mismanagement |
| Fisheries | DPRK | | 1983 | | 184107.9 | | 4 | | High catch fluctaution in EEZ before closure of distant fleet due to oil crisis suggest overfishing | | 118 | Mismanagement |
| Fisheries | Kuwait | | 1991 | | 7080.867 | | 1 | | Majority of Kuwait's fishing fleet removed during Iraq Invasion | | 119 | Geopolitical/economic events |
| Fisheries | Lesotho | | 2001 | | 6 | | 1 | | Unknown driver to carp production decline | |  | Unknown |
| Fisheries | Liberia | | 1995 | | 4335.824 | | 4 | | Liberian civial war | | 120 | Geopolitical/economic events |
| Fisheries | Malaysia | | 2006 | | 1635.816 | | 1 | | Tsunami damage to vessels and gear on the western Peninsula coast | | 121 | Other |
| Fisheries | Maldives | | 2007 | | 15707.75 | | 6 | | Overfishing of tuna stocks, increased Somali piracy in productive regions and recent increases in fuel prices | | 122 | Mismanagement & geopolitical/economic events |
| Fisheries | Mayotte | | 2004 | | 803.2232 | | 9 | | Shift away from pirogue fishing in the lagoon due to decreasing catches | | 123 | Mismanagement & policy change |
| Fisheries | Montserrat | | 1988 | | 56.39493 | | 3 | | Damage from Hurricane Hugo | | 124 | Climate/weather events |
| Fisheries | Montserrat | | 1992 | | 103.7283 | | 21 | | Damage from Hurricane Hugo | | 124 | Climate/weather events |
| Fisheries | Netherlands Antilles | | 2011 | | 18723.66 | | 2 | | Unknown | |  | Unknown |
| Fisheries | New Caledonia | | 1983 | | 2209.096 | | 1 | | Large fluctuation in sea cucumber fishery, natural productivity pulse | | 125 | Other |
| Fisheries | New Zealand | | 1996 | | 5509.09 | | 1 | | Reduced TAC on many fish stocks | | 126 | Policy change |
| Fisheries | Niue | | 2009 | | 9.39722 | | 4 | | Stock decline reducing subsistence landings and a closure of fish processing plant in 2008 | | 127 | Geopolitical/economic events |
| Fisheries | Palau | | 1984 | | 8151.412 | | 23 | | Closure of the bait fish fishery in 1982 | | 128 | Policy change |
| Fisheries | Philippines | | 2011 | | 174619.7 | | 2 | | Overexploitation edpleting marine resources | | 129 | Mismanagement |
| Fisheries | Romania | | 1990 | | 133690 | | 23 | | Dissolution of USSR and overfishing during soviet era | | 130 | Geopolitical/economic events |
| Fisheries | Saint Lucia | | 1979 | | 1904.803 | | 5 | | Decimation of landings (particularly urchins) by Hurricane David in 1979 followed by destruction of fishing boats by Hurricane Allen in 1980 | | 131,132 | Climate/weather events |
| Fisheries | Saint Vincent/Grenadines | | 2003 | | 12010.91 | | 10 | | Unknown | |  | Unknown |
| Fisheries | Samoa | | 1984 | | 6229.257 | | 1 | | Overfishing of groundfish causing decline by mid 1980s coupled with a drop in tuna catch | | 133 | Mismanagement |
| Fisheries | Seychelles | | 2007 | | 15808.66 | | 2 | | Steep drop in tuna catches following abnormally high years suggest previous overexploitation | | 134 | Mismanagement |
| Fisheries | Solomon Islands | | 2005 | | 39404.7 | | 1 | | Dramatic decreases in sea cucumber fishery thought due to domestic tensions and resource depletion | | 135 | Mismanagement |
| Fisheries | South Africa | | 1970 | | 151399.7 | | 3 | | Sardine crash following overfishing | | 136 | Mismanagement |
| Fisheries | Sri Lanka | | 2005 | | 80016.1 | | 1 | | Tsunami caused extensive fishing gear and infrastructure damage | | 137 | Other |
| Fisheries | St Helena | | 2012 | | 198.3568 | | 1 | | Unknown | |  | Unknown |
| Fisheries | St. Pierre and Miquelon | | 1993 | | 25072.44 | | 20 | | Cod Moratorium in Atlantic | | 107 | Mismanagement & policy change |
| Fisheries | Suriname | | 2009 | | 4956.326 | | 1 | | Overfishing across multiple taxa combined with very high discard rates | | 138 | Mismanagement |
| Fisheries | Switzerland | | 1982 | | 1383 | | 31 | | Overfishing, pollution, water extraction from inland waters a number of possible causes | | 139 | Mismanagement |
| Fisheries | Syrian Arab Republic | | 2008 | | 1825.426 | | 5 | | Shock to inland fisheries during severe drought in Syria combined with overfishing by artisanal operations at sea | | 140 | Climate/weather events & mismanagement |
| Fisheries | Tanzania, United Rep. of | | 2008 | | 23206.06 | | 1 | | Overfishing evident in years leading up to 2008 | | 141 | Mismanagement |
| Fisheries | Turkey | | 1989 | | 122755.2 | | 4 | | Collapse of fishery in Black Sea due to overcapacity and pollution | | 142 | Mismanagement |
| Fisheries | Turks and Caicos Is. | | 1987 | | 1466.889 | | 1 | | Unknown | |  | Unknown |
| Fisheries | United States of America | | 2010 | | 978894.5 | | 1 | | Quota enforcement to prevent collapse | | 143 | Policy change |
| Fisheries | US Virgin Islands | | 2007 | | 342.983 | | 6 | | Unknown | |  | Unknown |
| Fisheries | Venezuela, Boliv Rep of | | 2005 | | 106956 | | 8 | | Collapse of sardine fishery due to shift in plankton community combined with over exploitation in upwelling zone | | 144,145 | Climate/weather events & mismanagement |
| Fisheries | Viet Nam | | 1974 | | 158669.1 | | 9 | | Displaced of Vietnamese fishing fleet during the end of Vietnamese war efforts | | 146 | Geopolitical/economic events |
| Aquaculture | Albania | | 1991 | | 1306 | | 15 | | Demise of financial support from the USSR | | FAO (2006 -2018) National Aquaculture Sector Overview. Albania. National Aquaculture Sector Overview Fact Sheets. Text by Cobani, M. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 6 March 2015. [Cited 8 February 2018]. | Geopolitical/economic events |
| Aquaculture | Austria | | 1990 | | 874 | | 23 | | Unknown | |  | Unknown |
| Aquaculture | Bahrain | | 2001 | | 0.5 | | 1 | | Unknown | |  | Unknown |
| Aquaculture | Burundi | | 2010 | | 32.7 | | 1 | | Unknown | |  | Unknown |
| Aquaculture | Congo | | 1994 | | 70 | | 5 | | Down turn in aquaculture production from prolonged internal conflict from 1993-2000 | | FAO (2005) National Aquaculture Sector Overview. Congo. National Aquaculture Sector Overview Fact Sheets. Text by Ebounaka, H. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2 May 2005. [Cited 9 February 2018]. | Geopolitical/economic events |
| Aquaculture | Congo | | 2000 | | 74 | | 13 | | Down turn in aquaculture production from prolonged internal conflict from 1993-2000 | | FAO (2005) National Aquaculture Sector Overview. Congo. National Aquaculture Sector Overview Fact Sheets. Text by Ebounaka, H. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2 May 2005. [Cited 9 February 2018]. | Geopolitical/economic events |
| Aquaculture | Congo, Dem. Rep. of the | | 1996 | | 100 | | 1 | | Declining productivity after cessation of US, Belgian and French cooperation projects in 1990 | | FAO (2006) National Aquaculture Sector Overview. Democratic Republic of Congo. National Aquaculture Sector Overview Fact Sheets. Text by Kombozi, G.L.B. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2 March 2006. [Cited 9 February 2018]. | Geopolitical/economic events |
| Aquaculture | Dominica | | 2010 | | 8 | | 3 | | Severe drought in 2009/2010 posing challenges for both crops and production in inland water ways combined with economic downturn in wake of the GFC | | FAO (2016) Drought characteristics and  management in the Caribbean. FAO Water Reports, 42. Caribbean Institute for Meteorology and Hydrology, St. James, Barbados and Land and Water Division, FAO, Rome. | Climate/weather events |
| Aquaculture | Ecuador | | 2000 | | 47569 | | 4 | | White spot syndrome in Shrimp Industry causing huge drop in production | | FAO (2005) National Aquaculture Sector Overview. Ecuador. National Aquaculture Sector Overview Fact Sheets. Text by Schwarz, L. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 9 February 2018]. | Other |
| Aquaculture | El Salvador | | 2013 | | 539 | | 1 | | Huge drop in freshwater fish production (largely Nile Tilapia) during severe drought across region 2013-2014\* | | World Bank (2014) Record drought in Central America: four countries, 40 days without rain, two million facing hunger. | Climate/weather events |
| Aquaculture | Faroe Islands | | 2006 | | 23970 | | 2 | | Infectious salmon anaemia outbreaks 2000-2005 | | Christiansen, D.H., Østergaard, P.S., Snow, M., Dale, O.B. and Falk, K., 2011. A low-pathogenic variant of infectious salmon anemia virus (ISAV-HPR0) is highly prevalent and causes a non-clinical transient infection in farmed Atlantic salmon (Salmo salar L.) in the Faroe Islands. Journal of General Virology, 92(4), pp.909-918. | Other |
| Aquaculture | French Guiana | | 1992 | | 63 | | 21 | | Reduction in larval population from mangroves used for stocking in brown shrimp culture | | Artigas, L.F., Vendeville, P., Leopold, M., Guiral, D. and Ternon, J.F., 2003. Marine biodiversity in French Guiana: estuarine, coastal, and shelf ecosystems under the influence of Amazonian waters la biodiversidad marina en Guyana Francesa: los ecosistemas de estuarios, las costas y plataformas bajo la influencia de las aguas amazonicas. Gayana, 67(2), pp.302-326. | Mismanagement |
| Aquaculture | Guadeloupe | | 2005 | | 9.639 | | 8 | | Unknown | |  | Unknown |
| Aquaculture | Guam | | 2003 | | 60.5 | | 10 | | Unknown | |  | Unknown |
| Aquaculture | Guyana | | 2008 | | 316 | | 5 | | Unknown | |  | Unknown |
| Aquaculture | Guyana | | 2009 | | 97.04 | | 4 | | Unknown | |  | Unknown |
| Aquaculture | Hungary | | 1984 | | 5477 | | 29 | | Transition from centralized to market-driven economy | | FAO (2003) National Aquaculture Sector Overview. Hungary. National Aquaculture Sector Overview Fact Sheets. Text by Varadi, L. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 January 2003. [Cited 9 February 2018]. | Geopolitical/economic events |
| Aquaculture | | 2013 | | 1 | | Iraqi Insurgency | | Geopolitical/economic events | |
| Aquaculture | Jamaica | | 2003 | | 581 | | 1 | | Severe flooding in 2002 with inland systems prone to damage from fish farm flooding and infrastructure damage | | Selvaraju, R., Trapido, P.J., Santos, N., Del Mar Polo Lacasa, M. and Hayman, A.A., 2013. Climate change and agriculture in Jamaica: Agricultural sector support analysis. FAO. | Climate/weather events |
| Aquaculture | Jordan | | 2004 | | 28 | | 1 | | Unknown | |  | Unknown |
| Aquaculture | Kiribati | | 2007 | | 4825 | | 5 | | Poor on-farm management and warm waters cited as unfavourable conditions for seaweed but high freight costs and poor currency exchanges rates contributing factors | | Ponia, B., 2010. A review of aquaculture in the Pacific Islands 1998-2007: tracking a decade of progress through official and provisional statistics. Secretariat of the Pacific Community, Noumea, New Caledonia  . | Mismanagement & geopolitical/economic events |
| Aquaculture | DPRK | | 1994 | | 262961 | | 19 | | Withdrawal of Chinese subsidised imports in 1994 | | Noland, M., 2004. Famine and reform in North Korea. Asian Economic Papers, 3(2), pp.1-40. | Geopolitical/economic events |
| Aquaculture | Madagascar | | 2009 | | 580.5 | | 1 | | Expensive shrimp products unable to compete in export markets against cheaper alternatives from Asia leading to farm closures. Potentially exacerbated by political crisis\* | | UNEP. Integrated Assessment of Trade-related Policies and  Biological Diversity in the Agricultural Sector in Madagascar  Transition strategies for the shrimp farming industry. Accessed at: https://unep.ch/etb/initiatives/Executive%20Summaries%20and%20briefs/Madagascar%20Ten%20Pager.pdf | Geopolitical/economic events |
| Aquaculture | Mali | | 2012 | | 21 | | 1 | | Violent conflict disrupting fishing and aquaculture operations | | Kimenyi, M., Adibe, J., Djiré, M. and Jirgi, A.J., 2014. The impact of conflict and political instability on agricultural investments in Mali and Nigeria. | Geopolitical/economic events |
| Aquaculture | Malta | | 2005 | | 817 | | 1 | | Capture-based culture of Bluefin Tuna - overfishing of Bluefin reported by International Commission for the Conservation of Atlantic Tunas leading to implementation of strict quotas | | FAO (2003) National Aquaculture Sector Overview. Malta. National Aquaculture Sector Overview Fact Sheets. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 January 2015. [Cited 9 February 2018]. | Mismanagement & policy change |
| Aquaculture | Martinique | | 1995 | | 10 | | 8 | | Hurricane Iris | | Martin J. I. (2007) Fisheries in Martinique. Policy Department Structural and Cohesion Policies. Directorate-General for Internal Policies of the Union. European Parliment. | Climate/weather events |
| Aquaculture | Mexico | | 2010 | | 6794 | | 1 | | Economic impact of deep-water horizon oil spill reduces shrimp production | | FAO (2010) GLOBEFISH - Análisis e información comercial en pesquerias. Shrimp - November 2010. Food and Agricultural Organization of the United Nations, Rome. Accessed at: http://www.fao.org/in-action/globefish/marketreports/resource-detail/es/c/338092/ | Geopolitical/economic events |
| Aquaculture | Morocco | | 2000 | | 183 | | 5 | | Declining competitiveness in foreign markets as fish prices decrease but Morocco is still dependent on expensive European feed producrs | | FAO (2005) National Aquaculture Sector Overview. Morocco. National Aquaculture Sector Overview Fact Sheets. Text by Abdellatif, O.; El- Ahdal, M. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Geopolitical/economic events |
| Aquaculture | Morocco | | 2006 | | 728 | | 7 | | Declining competitiveness in foreign markets as fish prices decrease but Morocco is still dependent on expensive European feed producrs | | FAO (2005) National Aquaculture Sector Overview. Morocco. National Aquaculture Sector Overview Fact Sheets. Text by Abdellatif, O.; El- Ahdal, M. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Geopolitical/economic events |
| Aquaculture | Pakistan | | 2000 | | 2179 | | 1 | | Severe drought and pollution slowing production in early 2000s | | FAO (2005) National Aquaculture Sector Overview. Pakistan. National Aquaculture Sector Overview Fact Sheets. Text by Hayat, M. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018] | Climate/weather events |
| Aquaculture | | 2013 | | 2 | | Typhoon Yolanda/ Haiyan\* | | Climate/weather events | |
| Aquaculture | Panama | | 1999 | | 2778.5 | | 4 | | White spot disease in shrimp farming | | FO (2005) National Aquaculture Sector Overview. Panamá. National Aquaculture Sector Overview Fact Sheets. Text by Pretto Malca, R. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Other |
| Aquaculture | Panama | | 2000 | | 3326.5 | | 3 | | White spot disease in shrimp farming | | FO (2005) National Aquaculture Sector Overview. Panamá. National Aquaculture Sector Overview Fact Sheets. Text by Pretto Malca, R. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Other |
| Aquaculture | Philippines | | 2013 | | 34312.1 | | 2 | | Super Typhoon Yolanda/ Haiyan | | Andriesse, E. and Lee, Z., 2017. Viable insertion in agribusiness value chains? Seaweed farming after Typhoon Yolanda (Haiyan) in Iloilo Province, the Philippines. Singapore Journal of Tropical Geography, 38(1), pp.25-40. | Climate/weather events |
| Aquaculture | Poland | | 1993 | | 7342 | | 2 | | Transition to market economy from centralized system | | FAO (2005) National Aquaculture Sector Overview. Poland. National Aquaculture Sector Overview Fact Sheets. Text by Zakes, Z. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 10 October 2005. [Cited 10 February 2018]. | Geopolitical/economic events |
| Aquaculture | RÃ©union | | 1996 | | 28 | | 1 | | Rapid development of non-native species for overseas markets in offshore French territories | | FAO (2005) National Aquaculture Sector Overview. France. National Aquaculture Sector Overview Fact Sheets. Text by Lacroix, D. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 25 July 2005. [Cited 10 February 2018]. | Policy change |
| Aquaculture | Saint Lucia | | 2000 | | 10 | | 1 | | Change in reporting likely (FAO country profile only displays production from 2000) | | FAO (2007) Fishery and Aquaculture Country Profiles. Saint Lucia (2007). Country Profile Fact Sheets. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 December 2007. [Cited 10 February 2018]. http://www.fao.org/fishery/ | Policy change |
| Aquaculture | Saudi Arabia | | 2013 | | 6810 | | 1 | | White spot disease in shrimp farming | | FAO (2015) National Aquaculture Sector Overview. Kingdom of Saudi Arabia. National Aquaculture Sector Overview Fact Sheets. Text by Odaiby, M. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 6 November 2015. [Cited 10 February 2018]. | Other |
| Aquaculture | Singapore | | 2007 | | 524 | | 6 | | Unknown | |  | Unknown |
| Aquaculture | South Africa | | 2001 | | 1318 | | 1 | | Unknown | |  | Unknown |
| Aquaculture | Spain | | 1993 | | 121296 | | 4 | | Harmful algal blooms | | FAO (1997) Review of the State of World Aquaculture. FAO Inland Water Resources and Aquaculture Service, Fishery Resources Division Review of the state of world aquaculture.   FAO Fisheries Circular. No. 886, Rev.1. Rome, FAO. | Other |
| Aquaculture | Trinidad and Tobago | | 2003 | | 6 | | 1 | | Economic turndown during political uncertainty\* | | Commonwealth Secretariat (2018) Trinidad and Tobago: Economy. Accessed at: http://thecommonwealth.org/our-member-countries/trinidad-and-tobago/economy | Geopolitical/economic events |
| Aquaculture | Uruguay | | 2001 | | 8.5 | | 2 | | Low brood stock in selected waterwats | | National Aquaculture Sector Overview. Uruguay. National Aquaculture Sector Overview Fact Sheets. Text by Foti Clavelli, R. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Mismanagement |
| Aquaculture | Venezuela, Boliv Rep of | | 2009 | | 3918.6 | | 1 | | Taura syndrome in farmed shrimp beginning at the start of 2005 | | National Aquaculture Sector Overview. Visión General del Sector Acuícola Nacional - Venezuela (República Bolivariana de). National Aquaculture Sector Overview Fact Sheets. Text by Parra, L. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Other |
| Aquaculture | Venezuela, Boliv Rep of | | 2010 | | 537.27 | | 1 | | Taura syndrome in farmed shrimp beginning at the start of 2006 | | National Aquaculture Sector Overview. Visión General del Sector Acuícola Nacional - Venezuela (República Bolivariana de). National Aquaculture Sector Overview Fact Sheets. Text by Parra, L. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 1 February 2005. [Cited 10 February 2018]. | Other |

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