

Regional brief: North America

The *Outlook's* regional briefs highlight broad trends for the regions defined by the FAO in the implementation of its global workplan. Recognising the diversity across the regions, the intention is not to compare results across regions. Instead, these briefs illustrate some of the latest regional developments, highlighting responses to global challenges and emerging trends within them and relating these to the main messages of the *Outlook* publication. The assessments generally compare the end point of the *Outlook's* projection (2030) to the base period of 2018-20. These briefs acknowledge that the impact of the COVID-19 pandemic, which is still playing out globally, and the response to it differs across the regions. The briefs do not contain a specific quantitative assessment of the pandemic's impact, but they reflect the latest available macro-economic projections and the extent to which the actions imposed to curb the spread of COVID-19 influenced this environment. Consequently, the trends and issues presented in this chapter are those which are expected to underpin the *Outlook* as economies re-emerge from the unexpected shock of the novel corona virus, assuming that its effects on food production, consumption and trade will gradually moderate.

Background

North America comprises two highly developed countries, the United States and Canada, implying that it is more homogeneous than others covered in this chapter. Both economies are mature and diverse, with agriculture's (including forestry and fisheries) share to total GDP less than 1%. The region is a notably important contributor to global agriculture. Its 366 million people comprise just 5% of the global population, yet it produces 10% of global agricultural and fish output. It has the most agricultural land per person and provides the highest value of agricultural and fish production per capita. Over the 2018-20 base period, the region had the second largest trade surplus for agricultural commodities. Nevertheless, in proportionate terms, the role of North America in global agriculture is slowly diminishing over time, as the output from other regions are growing more quickly. By 2030, North America is expected to constitute 9% of the global value of agriculture and fish production. While it is still expected to have the second largest trade surplus by 2030, this surplus will be less than half of the base period value by 2030.

Agriculture in North America is characterised by high input intensity in general, but particularly for capital, as agricultural production occurs to a significant degree on large commercial units. Consequently, the region exhibits very high partial factor productivities for land and livestock, as measured by crop yields, milk yields and livestock/meat off-take ratios. The long term decline in agricultural land use has slowed in recent years, but land utilised for crop production continues to trend downwards and contracted by 2.4% over the past decade. Yields have improved to the extent that the value of crop production increased by 17% over the same period. This trend is expected to continue. Animal production is very important in the region, contributing 35% of its net value of agricultural production. This compares to the global average share of livestock of 28%. However, livestock inventory is proportionately lower given its high productivity. For example, bovine meat production per animal in inventory is three times the global average level. The region is a small producer of fish compared to other regions, with a current 4% share in agricultural value within the region and a dwindling share of global fish production, which is set to reach 3% by 2030.

Food consumption per capita in the region is the highest of all. This is enabled by the highest per capita income (USD 54 280) and the highest urbanisation rate (83%), which affects both the level and composition of food intake. The COVID-19 pandemic and the measures imposed to curb its spread reduced per capita GDP in the region by 4.5% in 2020. Despite the largest year-on-year increase in 2020 in the prevalence of food insecurity since 2014, the mature consumer base, combined with income support measures implies that the shock from the pandemic had a greater influence on the composition and distribution of food sales than absolute quantities consumed. Retail sales increased, while food away from home declined, forcing changes in the food supply chain.

Following a recovery in per capita GDP of almost 3% per annum in 2021 and 2022, real per capita income is projected to grow at an average of 1.4% p.a. over the coming decade. With income levels already high and population growth at 0.6% p.a., possible changes in dietary preferences could be important in influencing food demand over the outlook period. Further to its influence on spending power, the pandemic may also have lasting impacts on such preferences, having provided a renewed focus on the benefits of healthy eating.

While estimates include considerable food waste, calorie and protein availabilities in the region already averaged almost 3 760 kcal/capita per day and 113 g/capita per day over the base period, some 29% and 22% higher than the global average. Food consumption is proportionately high in animal products, with caloric and protein shares of 27% and 64% respectively, compared to global averages of 18% and 35%. North Americans consume substantial amounts of vegetable oil and sweeteners, with caloric shares of 19% and 15% compared to the global averages of 10% and 8% respectively. The North American diet has led to problems of obesity and incidence of food related non-communicable diseases such as diabetes. However, despite this level of aggregate consumption, food insecurity was estimated to be experienced by 10-13% of the region's population prior to accounting for pandemic related impacts (USDA, 2020^[11]) (Tarasuk and Mitchell, 2020^[21]).

North America (specifically the United States) is the largest bio-fuel producing region, with a production share of global output approaching 50%. It comprises primarily ethanol derived from maize feedstocks, and to a much lesser extent, biodiesel derived from soybean oil. Production has been mainly policy driven, with mandates largely filled at blending rates near the blend wall for transportation fuels. Trade within the region is important, with Canada relying strongly on ethanol imports from the United States in order to fulfil its own blending mandate.

Production

Agricultural and fish production in North America is projected to continue expanding, albeit at a slower rate of 9% over the coming decade, relative to the past expansion of 15%. The general cause of slowing growth is stable and in some instances declining real prices for the main crop and livestock commodities and strength in the US dollar relative to competing countries. Growth is expected to be stronger in crop sectors, which grow 10% by 2030 relative to the base period, whereas the value of livestock production only expands by 8%.

Growth in crop output comes despite a continuation of the historic decline in crop land use, which contracts by a further 3% by 2030. Land use in cereal production is projected to remain almost unchanged, thereby increasing its share in total cropland to 41% by 2030. Oilseed area is expected rise by 3% over the next ten years, supported by high prices in the beginning of the outlook period, and feed demand from livestock production growth. This implies that the share of oilseeds in total crop area will rise to 28% by 2030. From a much smaller base, the land used for pulse production will also expand by 11% over the next ten years, while declines are evident in roots and tubers. Total area harvested in the region is expected to remain fairly stagnant, rising by only 1.4% over the next ten years due to intensification. This entails an increase in the United States of 1.1%, together with a 2.4% increase in Canada. In the United States, total crop

output volume is set to rise by 8% relative to the base period, whereas in Canada this growth will be faster at 13%, building on a strong season in 2020, where field crop production in Canada reached record levels. In both countries, production gains will emanate mostly from yield gains in the range of 9% for cereals and 10% for oilseeds.

The impact of the pandemic related recession resulted in downward pressure on meat prices in 2020, due both to consumer spending power and the influence of the disease and measures to contain its spread on processing facility capacity. After a short term recovery, real prices trend downwards over time. Nevertheless, feed prices remain competitive and total meat production in North America is expected to rise to 56 Mt by 2030, a 9% increase relative to the base period. Of the 4.5 Mt gain, 4 Mt, or 88%, is attributed to the United States. Poultry meat production is expected to grow faster than any other meat type at 1.1% p.a. and accounts for more than 60% of additional meat produced by 2030. Bovine meat and pig meat production are expected to increase by modest annual average rates of 0.6% and 0.3% respectively. Consequently, poultry will increase its share in total meat output to 47% by 2030.

An increase in milk production of 13.5% will be achieved by growth in dairy cow milk yields of 11%, as dairy herds expand by only 2% over the same period. Led by consumer preferences, an increasing share of milk will be allocated to processed dairy products and a decreasing share to fluid milk products.

Fish production in North America, which is dominated by captured fisheries (89%), is expected to rise by 8% by 2030 relative to the base period, with aquaculture increasing its share of total production to 12.5% by 2030. The latter sector continues to develop from a low base, encouraged by favourable relative prices emanating from firm demand for fish.

The increase total GHG emissions from agriculture is expected to slow relative to the past decade. Emissions will be 1.3% higher in 2030 than in the base period. Emissions from livestock activities are the major contributor, growing by 3.2% in light of minor ruminant inventory expansion. Emissions from the crop sector, however, are projected to decline by 2.7%.

Consumption

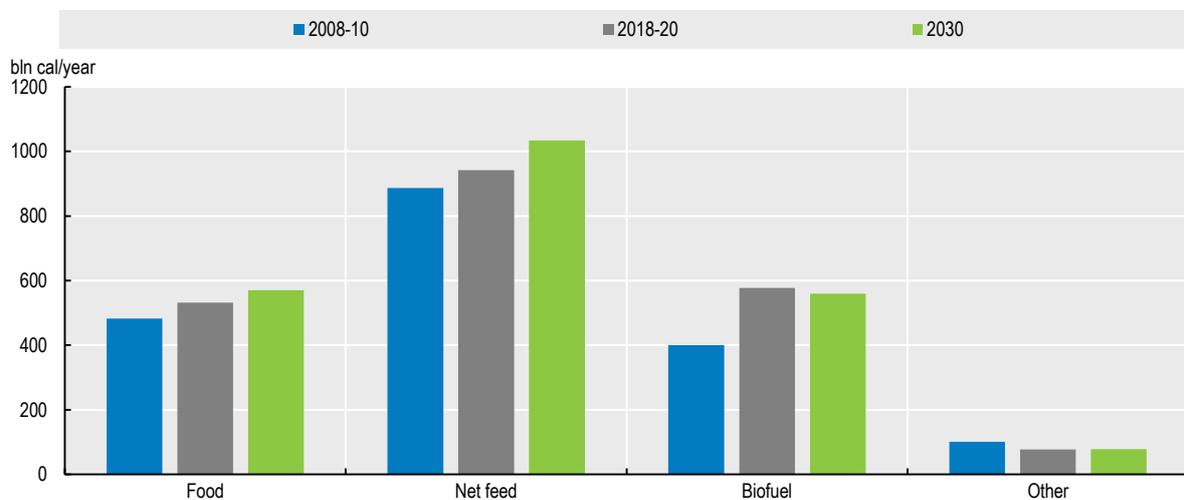
Movements in food consumption on a per capita basis will largely be determined by adjustments in preferences, which are projected to be minor. Though the effects of the pandemic may induce a greater focus on healthy eating, this would have a greater influence on fresh produce, which is not directly covered in this *Outlook*. As measured by caloric availability, food consumption in North America is set to remain at high levels increasing by a further 48 kcal/capita/day by 2030. This implies that average caloric availability in the region will exceed 3800 kcal/capita/day. Regionally, the greatest increase is expected to come from vegetable oils (+25kcal) followed by dairy products (+19 kcal), meat products (+17 kcal) and pulses (+11 kcal). Such gains are partly offset by a decline in calories from sweeteners (-43 kcal) and cereals (-7kcal). The increase in caloric availability will be greater in Canada than in the United States, but the absolute levels of caloric availability will still be higher in the United States than in Canada by 2030.

Protein intake in the region will increase only marginally from 113 g/day in the base period, to 117g/day by 2030. The split between animal and vegetal sources is expected to remain constant, with 64% of total protein availability obtained from animal sources. Consumption of both meat and dairy products are expected to rise further, with a comparatively larger (2.2 kg/capita) increase in meat products. The bulk of consumption growth in this sector is attributed to poultry, where consumption is set to increase by 2.4 kg per capita per year, compared to a minor increase of 0.7kg per capita for pork and a decline of 0.5 kg per capita for bovine meat. Protein availability from dairy products is also expected to rise, as growth in cheese, butter and WMP consumption more than offsets the continued decline in fresh dairy products. Fish consumption is projected to increase 4% by 2030 relative to the base period. Despite the trend decline in cereal consumption, growth in pulse intake will result in modest gains in protein availability from vegetal sources.

Feed use in the region is a significant offtake of agricultural output, consuming more energy/calories than final food use. Following livestock production, total feed use is projected to rise by 10% to 290 Mt by 2030, with shares from sources of maize (including distiller dried grains) rising slowly over time to 67%, while protein meal remains stable at 17%.

Biofuel production is another important market uptake for feed grains in the region. Ethanol production is projected to decline to just under 60 billion litres by 2030, down by 3% from the base period, on the back of reduced gasoline usage in the United States and Canada over the coming decade. Decarbonisation programs will sustain ethanol use to some extent, limiting the decline in production. Biodiesel production is also expected to decline by 2% over the coming decade. The outlook for biofuel is heavily contingent on developments in the energy sector, and biofuel policies in the region.

Figure 1. Calories used in food, feed and other use in North America



Note: Estimates are based on historical time series from the FAOSTAT Food Balance Sheets database which are extended with the *Outlook* database. Products not covered by the *Outlook* are extended by trends.

Source: FAO (2021). FAOSTAT Food Balances Database, <http://www.fao.org/faostat/en/#data/FBS>; OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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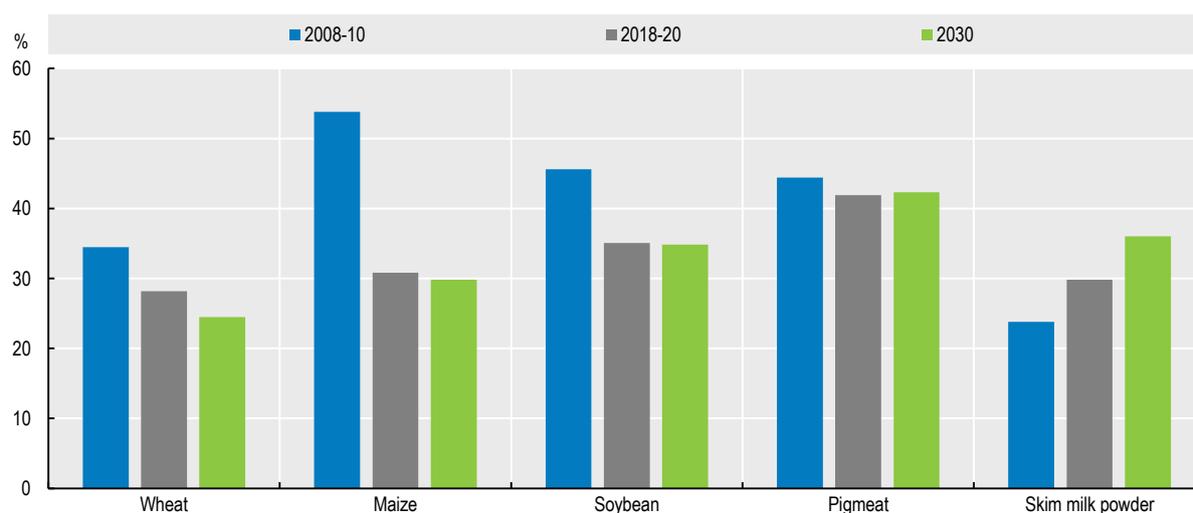
Trade

North America's agricultural trade surplus remains second only to Latin America and the Caribbean, but has declined by more than 25% over the past decade. This trend is expected to prevail over the outlook period, as the net value of imports into the region grows faster than that of exports from the region. Growth in both exports and imports will decelerate. The slower growth reflects weakening domestic and foreign demand, and the subsequent slowdown in production growth. Trade relations, particularly between the United States and China, will substantially affect the region, as bilateral trade has been significant. These relations have improved and in 2021, China is expected to once again become the top market for exports from the United States. While this points to resumed and potentially expanded trade opportunities, it is also a factor of China's expansion in poultry production, rapid rebuilding of its pig herd and resulting increased demand for feed products. The United States-Mexico-Canada (USMCA) Agreement, which was implemented on 1 July 2020 to replace the North American Free Trade Agreement (NAFTA), will improve intra-regional trade, especially for certain dairy products.

The net value of exports, measured at international commodity prices in 2014-16, is, projected to rise 14% by 2030 relative to the 2018-20 base period. This compares to an increase in the last decade of 21%. Reasons for slower growth relate largely to soybean exports, where growth slows substantially relative to the past decade, despite improvements in trade relations with China. Ethanol exports are also projected to decline in the coming decade, along with pig meat, where the rebuilding of China's herd as it recovers from the devastating African Swine Fever outbreak will reduce its demand for imports. The region has lost considerable trade share in recent times for cereals and oilseeds. In the case of cereals, this trend is expected to continue, but at a slower rate, due to growing competition from Latin America and the Black Sea region. North America's share in global oilseed exports is set to stabilise at 35% by 2030. While North America's share in global pig meat trade is expected to stabilise, it will continue to rise for Skim Milk Powder.

Despite its trade surplus, the region is also the third largest importer of agricultural produce in the world. The net value of imports, measured in constant 2014-16 value, is expected to rise 25% by 2030. The region used to be a large net importer of bovine meat, and while it still has a large share of world imports (18%), the region became a net exporter in the last decade. This trend is expected to persist. The region remains a relatively large importer of fish, with a 15% share of global markets and imports are set to grow by 6% by 2030. The region is also a major importer of fresh fruit and vegetables.

Figure 2. Trends in export market shares of selected commodities of North America



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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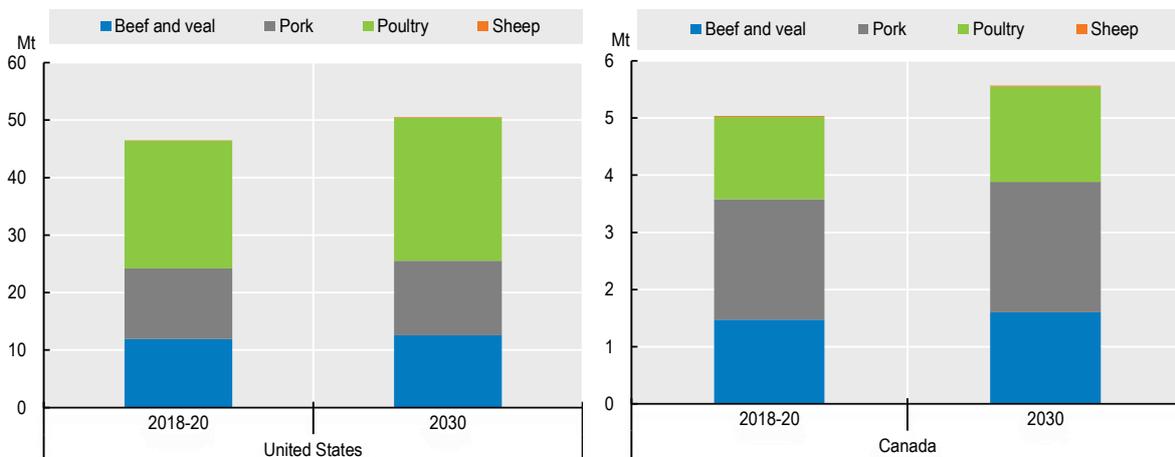
Figure 3. Change in area harvested and land use in North America



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Figure 4. Livestock production in North America



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Figure 5. Demand for key commodities, food availability and agricultural trade balances in North America



Notes: Estimates are based on historical time series from the FAOSTAT Food Balance Sheets and trade indices databases and include products not covered by the *Outlook*. a) Population growth is calculated by assuming per capita demand constant at the level of the year preceding the decade. b) Fats: butter and oils; Animal: egg, fish, meat and dairy except for butter; Staples: cereals, oilseeds, pulses and roots. c) Include processed products, fisheries (not covered in the FAOSTAT trade index) based on outlook data.

Source: FAO (2021), FAOSTAT Value of Agricultural Production Database, <http://www.fao.org/faostat/en/#data/QV>; OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Table 1. Regional indicators: North America

	Average			%	Growth ²	
	2008-10	2018-20 (base)	2030	Base to 2030	2011-20	2021-30
Macro assumptions						
Population ('000)	340 012	366 464	390 476	6.55	0.70	0.57
Per capita GDP ¹ (kUSD)	48.44	54.28	61.87	13.98	1.28	1.38
Production (bln USD)						
Net value of agricultural and fisheries ³	343.6	395.3	431.1	9.06	1.73	0.77
Net value of crop production ³	204.4	239.3	262.9	9.85	2.14	0.76
Net value of livestock production ³	122.6	138.6	149.4	7.82	1.36	0.79
Net value of fish production ³	16.5	17.4	18.8	8.13	-0.68	0.61
Quantity produced (kt)						
<i>Cereals</i>	455 153	489 594	529 621	8.18	1.53	0.58
<i>Pulses</i>	7 422	10 582	12 798	20.94	4.68	1.69
<i>Roots and tubers</i>	4 955	5 566	5 816	4.50	0.94	0.28
<i>Oilseeds⁴</i>	16 451	24 206	27 703	14.44	3.73	1.12
<i>Meat</i>	45 756	51 543	56 085	8.81	1.73	0.73
<i>Dairy⁵</i>	11 415	13 516	15 364	13.67	1.73	1.09
<i>Fish</i>	5 898	6 213	6 713	8.05	-0.69	0.60
<i>Sugar</i>	6 592	7 440	8 134	9.33	0.50	0.39
<i>Vegetable oil</i>	12 897	18 241	19 668	7.82	3.61	0.91
Biofuel production (mln L)						
<i>Biodiesel</i>	2092.57	8833.02	8677.32	-1.76	9.75	-0.31
<i>Ethanol</i>	44 085	61 336	59 620	-2.80	1.48	-0.32
Land use (kha)						
Total agricultural land use	467 803	463 418	460 804	-0.56	0.05	-0.05
Total land use for crop production ⁶	176 523	172 303	166 462	-3.39	0.11	-0.31
Total pasture land use ⁷	291 280	291 115	294 342	1.11	0.01	0.10
GHG Emissions (Mt CO₂-eq)						
Total	397	414	419	1.33	0.49	0.07
Crop	131	140	136	-2.74	0.08	-0.21
Animal	245	246	254	3.16	0.54	0.21
Demand and food security						
Daily per capita caloric availability ⁸ (kcal)	3 680	3 756	3 804	1.28	0.42	0.04
Daily per capita protein availability ⁸ (g)	111.9	113.0	116.8	3.3	0.6	0.2
Per capita food availability (kg)						
<i>Staples⁹</i>	136.0	133.6	133.6	-0.02	0.09	-0.03
<i>Meat</i>	94.0	97.9	100.1	2.25	1.24	0.24
<i>Dairy⁵</i>	31.2	33.4	34.9	4.33	0.90	0.33
<i>Fish</i>	19	21	21	4.31	1.11	0.33
<i>Sugar</i>	31	30	31	1.22	0.09	0.02
<i>Vegetable oil</i>	34	40	40	0.91	1.57	0.06
Trade (bln USD)						
Net trade ³	31	23.09	10	-57.39
Net value of exports ³	146.3	177	202	14.10	2.78	1.26
Net value of imports ³	114.9	154.1	192	24.81	2.80	1.92
Self-sufficiency ratio¹⁰						
<i>Cereals</i>	127.5	129.6	129	-0.8	0.60	-0.06
<i>Meat</i>	114.8	116.4	115	-0.8	0.09	-0.03
<i>Sugar</i>	60.0	64.9	65	0.7	0.18	-0.31
<i>Vegetable oil</i>	102.8	99.6	101.3	1.7	0.09	0.42

Notes: 1. Per capita GDP in constant 2010 US dollars. 2. Least square growth rates (see glossary). 3. Net value of agricultural and fisheries data follows FAOSTAT methodology, based on the set of commodities represented in the Aglink-Cosimo model valued at average international reference prices for 2014-16. Projections for not included crops have been made on the basis of longer term trends 4. Oilseeds represents soybeans and other oilseeds. 5. Dairy includes butter, cheese, milk powders and fresh dairy products, expressed in milk solid equivalent units. 6. Crop Land use area accounts for multiple harvests of arable crops. 7. Pasture land use represents land available for grazing by ruminant animals. 8. Daily per capita calories represent availability, not intake. 9. Staples represents cereals, oilseeds, pulses, roots and tubers. 10. Self-sufficiency ratio calculated as Production / (Production + Imports - Exports) * 100.

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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