



INTERNATIONAL COFFEE ORGANIZATION
ORGANIZACIÓN INTERNACIONAL DEL CAFÉ
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Outlook for coffee market 2010-2019

Background

In the context of its programme of activities, the Organization has an ongoing programme of technical cooperation with the Food and Agricultural Organization (FAO) of the United Nations, in particular for the elaboration of an econometric model for the world coffee sector. As a result of this collaborative exercise the FAO has prepared the present revised projections on coffee for use as a benchmark tool by policy makers. The main objective of this exercise is to provide a starting point for agricultural planning by showing the inter-relations between important factors that impact the evolution of the world coffee sector.

Action

The Council is requested to take note of this document.

OUTLOOK FOR COFFEE MARKET 2010-2019

1. Background

In collaboration with the International Coffee Organization (ICO), the Food and Agriculture Organization (FAO) produced an outlook for the coffee market. This document presents the main results of the Outlook, which covers the period 2010 to 2019, and provides an assessment of market prospects for production, consumption, trade, stocks and prices, both at the world and individual country level. The projections are based on dynamic time series models, essentially employing Vector Autoregression (VAR) models. Projections are based on the assumption of normal weather patterns and a continuation of the past trends in yields and planted areas. Exogenous variables include population prospects, expected inflation rates, changes in exchange rate and income growth. Adjustments were made to reflect current policies and future market prospects. The projection model captured cycles and trends in the world coffee market to a satisfactory level.

2. Model

The model used is the following:

2.1 World prices

$$WP_t = \alpha + \beta_1 WP_{t-1} + \beta_2 WP_{t-2} + \beta_3 C_{t-1,j=1} + \dots + \beta_j C_{t-1,j=j} + \varepsilon_t$$

Where the world price in year 't' (WP_t) is a function of:

$WP_{t-1} + WP_{t-2}$	the world price in previous years;
$C_{t-1,j=1} + \dots + C_{t-1,j=j}$	the level of consumption in the previous year, lagged over time.

2.2 Production

$$Q_{t,c}^X = \alpha + \beta_1 WP_{t-1} + \beta_2 WP_{t-2} + \beta_3 Q_{t-1,c}^X + \beta_4 Q_{t-2,c}^X + \varepsilon_t$$

Where production of country 'c' in year 't' ($Q_{t,c}^X$) is a function of:

$WP_{t-1} + WP_{t-2}$	the world price in previous years;
$Q_{t-1,c}^X + Q_{t-2,c}^X$	the level of production in previous years.

2.3 Consumption

$$C_{t,c} = \alpha + \beta_1 WP_{t-1} + \beta_2 C_{t-1,c} + \beta_3 C_{t-2,c} + \beta_4 GDP_{t-1,c} + \beta_5 \Delta POP_{t-1,c} + \beta_6 CPI_{t-1,c} + \beta_7 XR_{t-1,c} + \epsilon_t$$

Where consumption of country 'c' in year 't' ($C_{t,c}$) is a function of:

WP_{t-1}	the world price in the previous year;
$C_{t-1,c}, C_{t-2,c}$	the level of consumption in previous years;
$GDP_{t-1,c}$	the level of GDP in the previous year;
$\Delta POP_{t-1,c}$	the change in population in the previous year;
$CPI_{t-1,c}$	the Consumer Price Index in the previous year;
$XR_{t-1,c}$	the exchange rate in the previous year.

2.4 Stocks

$$\Delta S^X_{t,c} = \alpha + \beta_1 WP_{t-1} + \beta_2 \Delta S^X_{t-1,c} + \beta_3 Q^X_{t-1,c} + \beta_4 C^X_{t-1,c} + \epsilon_t$$

$$\Delta S^M_{t,c} = \alpha + \beta_1 WP_{t-1} + \beta_2 \Delta S^M_{t-1,c} + \beta_4 C^M_{t-1,c} + \epsilon_t$$

Where the stock variation of exporters (ΔS^X) is a function of:

WP_{t-1}	the world price in the previous year;
$\Delta S^X_{t-1,c}$	the exporter's stock variation in the previous year;
$Q^X_{t-1,c}$	the exporter's level of production in the previous year;
$C^X_{t-1,c}$	the exporter's level of consumption in the previous year.

And where the stock variation of importers (ΔS^M) is a function of:

WP_{t-1}	the world price in the previous year;
$\Delta S^M_{t-1,c}$	the importer's stock variation in the previous year;
$C^M_{t-1,c}$	the importer's level of consumption in the previous year.

2.5 Trade forecasts

Levels of expected exports and imports are also computed, using the following identities:

$$X^X_{t,c} = Q^X_{t,c} - C^X_{t,c} - \Delta S^X_{t,c}$$

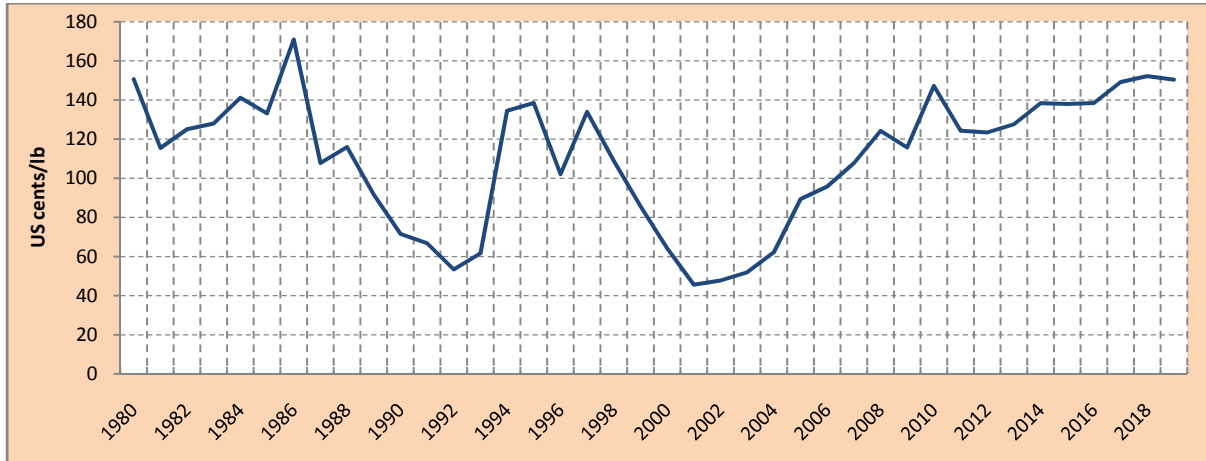
$$M^M_{t,c} = C^M_{t,c} + \Delta S^X_{t,c}M$$

Such that exports (X^X), for exporters, are defined as production minus consumption (C^X) and the change in stocks (ΔS^X), and imports (M^M), for importers, are consumption (C^M) plus the change in stocks (ΔS^X).

3. Results

3.1 World prices

Graph 1: ICO composite indicator price



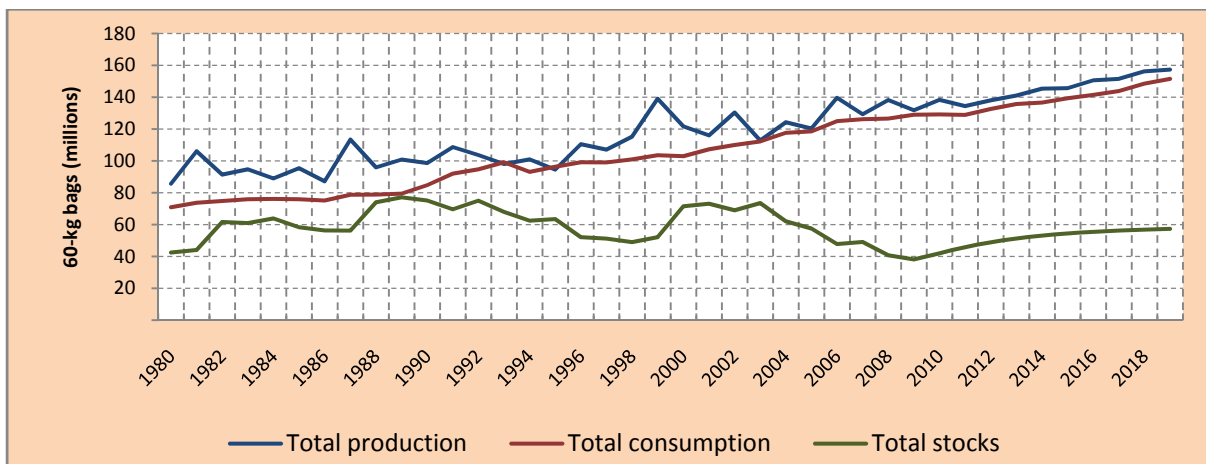
According to the VAR model, the world price for coffee will increase between 2010 and 2019, from 147 US cents/lb to 150 US cents/lb, reaching a low of 123 US cents/lb in 2012.

Table 1: ICO composite indicator price 2010-2019 (yearly average)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
ICO composite price (US cents/lb)	147.24	124.26	123.37	127.59	138.35	137.97	138.46	149.18	152.22	150.42

3.2 Production, consumption and stocks

Graph 2: Total production, consumption and stocks



Total coffee production, consumption and stocks are all expected to rise in the outlook period. Production will consistently remain above consumption, reaching 157.3 million bags and 151.5 million bags respectively in 2019. Stocks will also increase, from 42 million bags in 2010 to 57.4 million bags in 2019.

Table 2: Production, consumption and stocks 2010-2019

60-kg bags (millions)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Production	138.26	134.37	137.98	141.06	145.29	145.64	150.55	151.41	156.21	157.28
Consumption	129.14	128.83	132.61	135.70	136.59	139.37	141.43	143.84	148.45	151.49
Total Stocks	41.99	45.89	48.87	51.28	53.09	54.46	55.48	56.26	56.87	57.35

3.3 Trade forecasts

Graph 3: Total exports and imports



Total exports from producing countries will increase, from 103.9 million bags in 2010 to 114.5 million bags in 2019. Imports, however, will stay roughly the same, with a slight increase from 86.3 million bags to 87.3 million.

Table 3: Total exports and imports 2010-2019

60-kg bags (millions)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Exports	103.87	97.27	104.51	100.95	107.98	105.15	109.87	109.78	113.15	114.47
Imports	86.31	84.75	85.23	85.76	84.69	85.22	85.62	86.92	85.55	87.31

Table 4: Production outlook 2010-2019

60-kg bags (thousands)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	45 742	43 225	48 483	47 456	51 356	51 558	54 099	54 621	56 883	57 769
Cameroon	923	977	730	852	626	631	632	589	687	702
Colombia	11 331	10 833	9 903	10 236	10 483	10 164	9 993	9 928	9 782	9 659
Costa Rica	1 957	1 415	1 894	1 863	1 594	1 967	1 663	1 714	1 837	1 819
Côte d'Ivoire	2 634	2 217	2 039	2 141	1 757	1 846	1 837	1 681	1 659	1 546
Ecuador	866	844	821	799	778	759	741	724	708	693
El Salvador	1 588	1 416	1 359	1 423	1 284	1 109	1 149	1 259	1 085	966
Ethiopia	3 859	3 876	4 022	4 290	4 604	4 855	5 064	5 213	5 381	5 588
Guatemala	3 186	3 114	3 125	3 060	3 050	3 151	3 235	3 363	3 388	3 433
Honduras	4 050	4 237	4 425	4 615	4 808	5 007	5 212	5 424	5 644	5 874
India	3 765	4 226	4 370	4 641	4 927	5 393	5 494	5 813	5 991	6 232
Indonesia	9 626	9 635	10 066	10 602	11 049	11 423	11 796	12 208	12 672	13 184
Kenya	840	922	972	1 021	1 061	1 096	1 125	1 150	1 172	1 190
Mexico	3 617	5 029	2 971	4 836	4 062	3 263	5 009	3 558	4 396	3 629
Nicaragua	1 666	1 581	1 587	1 620	1 589	1 598	1 600	1 599	1 609	1 616
Other Africa	3 142	2 949	3 379	3 534	3 704	3 699	3 795	3 932	4 187	4 438
Other Asia	48	30	21	47	48	36	41	48	39	34
Other Latin America	11 819	11 512	11 496	11 983	12 712	13 281	13 647	13 953	14 293	14 692
Papua New Guinea	985	995	1 000	1 001	1 002	1 002	1 002	1 002	1 002	1 002
Peru	4 335	4 152	4 542	4 496	4 821	4 883	5 173	5 297	5 562	5 726
Philippines	380	352	341	318	294	268	242	215	187	158
Tanzania	879	946	994	1 043	1 096	1 152	1 209	1 267	1 326	1 385
Thailand	965	832	1 052	1 479	1 575	1 231	1 112	1 568	1 999	1 799
Uganda	3 167	3 165	3 403	3 523	3 562	3 477	3 476	3 611	3 532	3 389
Vietnam	16 888	15 887	14 986	14 175	13 446	12 789	12 199	11 667	11 189	10 758
TOTAL	138 257	134 368	137 982	141 055	145 289	145 640	150 546	151 405	156 209	157 281

Table 5: Consumption outlook 2010-2019

60-kg bags (thousands)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Australia	1 165	1 156	1 208	1 238	1 279	1 316	1 357	1 398	1 439	1 483
Brazil	19 133	19 704	20 412	21 155	21 853	22 490	23 157	23 834	24 511	25 193
Cameroon	70	72	72	73	74	74	75	75	76	76
Canada	3 188	3 256	3 328	3 398	3 467	3 537	3 608	3 681	3 755	3 829
Colombia	1 444	1 445	1 411	1 417	1 428	1 450	1 462	1 463	1 463	1 475
Costa Rica	145	174	222	176	250	210	170	202	140	152
Côte d'Ivoire	326	365	370	364	375	370	378	387	394	406
Ecuador	160	168	175	182	189	194	200	205	209	214
El Salvador	232	229	231	249	255	261	277	283	285	291
Ethiopia	1 754	1 702	1 666	1 643	1 627	1 616	1 609	1 604	1 601	1 599
European Union (23 countries)	24 660	22 328	24 126	24 312	22 888	23 760	23 957	23 063	23 930	24 461
Fiji	3	3	4	4	4	3	3	3	3	3
Former USSR	2 159	2 385	2 515	2 661	2 827	3 003	3 190	3 387	3 596	3 816
France	5 800	5 768	6 191	6 322	6 346	6 511	6 589	6 711	6 869	6 997
Germany	9 483	9 772	9 769	9 954	10 027	10 160	10 281	10 418	10 553	10 672
Guatemala	321	316	315	314	314	314	314	314	314	314
Honduras	454	453	456	464	475	489	506	525	546	568
India	1 614	1 605	1 592	1 673	1 702	1 736	1 828	1 892	1 963	2 058
Indonesia	3 916	4 199	4 288	4 392	4 579	4 823	5 090	5 362	5 635	5 916
Israel	413	420	425	429	434	438	442	447	452	457
Japan	7 274	7 940	7 857	8 036	8 121	8 256	8 383	8 511	8 628	8 735
Kenya	50	50	50	50	50	50	50	50	50	50
Mexico	2 576	1 999	1 913	2 846	3 243	2 976	2 387	3 039	4 145	3 899
New Zealand	252	254	258	263	268	273	279	285	291	297
Nicaragua	182	190	193	196	199	200	201	201	202	203
Other	7 001	6 786	6 638	6 501	6 386	6 287	6 202	6 130	6 067	6 014
Other Africa	869	928	1 090	1 263	1 356	1 393	1 472	1 634	1 827	1 985
Other Asia	15	23	27	29	30	30	31	31	31	31
Other European Union	1 683	1 680	1 858	1 782	1 732	1 735	1 811	1 813	1 776	1 790
Other Latin America	4 087	4 522	4 679	4 684	4 731	4 859	5 036	5 232	5 425	5 615
Papua New Guinea	2	2	2	3	3	3	3	3	3	3
Peru	265	270	282	289	301	310	322	333	346	358
Philippines	1 078	1 104	1 137	1 169	1 202	1 236	1 272	1 309	1 348	1 389
Russian Federation	3 117	3 250	3 411	3 588	3 778	3 994	4 217	4 447	4 693	4 958
South Africa	544	510	549	565	600	633	671	709	750	794
Tanzania	46	47	49	51	53	55	57	59	61	63
Thailand	489	468	499	511	527	519	526	546	571	574
Uganda	151	169	178	190	211	225	237	257	274	285
USA	21 720	22 046	22 252	22 478	22 722	22 969	23 223	23 480	23 745	24 010
Vietnam	1 295	1 076	909	782	685	612	555	513	480	455
TOTAL	129 138	128 833	132 611	135 697	136 589	139 371	141 428	143 837	148 448	151 490

Table 6: Stocks outlook 2010-2019

60-kg bags (thousands)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	17 377	19 391	20 880	21 983	22 798	23 402	23 848	24 179	24 423	24 604
Cameroon	206	316	378	451	496	538	564	586	598	606
Colombia	646	1 193	1 674	2 098	2 471	2 800	3 090	3 345	3 569	3 767
Costa Rica	142	195	237	270	297	318	335	348	359	367
Côte d'Ivoire	1 143	1 258	1 335	1 386	1 420	1 442	1 457	1 467	1 474	1 478
Ecuador	86	143	186	217	240	257	269	278	285	290
El Salvador	122	276	407	497	549	573	579	577	572	567
Ethiopia	2 134	2 257	2 309	2 330	2 338	2 340	2 341	2 340	2 340	2 339
European Union (23 countries)	6 948	6 423	6 119	5 919	5 777	5 671	5 591	5 528	5 480	5 442
France	294	358	393	412	422	428	431	432	433	433
Germany	3 136	3 029	2 760	2 636	2 523	2 450	2 395	2 357	2 329	2 309
Guatemala	110	172	209	230	243	250	254	257	258	259
Honduras	110	146	169	183	193	198	202	204	206	207
India	790	769	835	845	878	892	911	924	936	945
Indonesia	780	853	899	929	948	960	968	973	976	979
Japan	729	875	979	1 052	1 103	1 139	1 165	1 183	1 195	1 204
Kenya	125	206	270	322	364	398	425	446	464	478
Mexico	516	630	700	744	771	787	797	804	807	810
Nicaragua	40	60	72	79	83	86	87	88	88	88
Other Africa	703	874	1 001	1 099	1 174	1 234	1 280	1 317	1 346	1 368
Other Asia	5	6	6	6	7	7	7	7	7	7
Other European Union	171	230	266	288	302	310	315	318	319	321
Other Latin America	605	936	1 193	1 368	1 479	1 547	1 587	1 610	1 623	1 630
Papua New Guinea	85	85	85	85	85	85	85	85	85	85
Peru	101	151	175	188	194	196	198	199	199	199
Philippines	141	255	349	424	486	536	577	611	638	660
Tanzania	53	69	82	94	105	114	123	131	137	143
Thailand	62	88	99	104	106	107	107	107	108	108
Uganda	165	340	510	663	798	914	1 015	1 101	1 174	1 238
USA	3 955	3 811	3 853	3 958	4 051	4 105	4 122	4 117	4 105	4 095
Vietnam	512	489	442	415	390	371	356	344	334	326
TOTAL	41 991	45 886	48 874	51 278	53 090	54 457	55 480	56 260	56 866	57 351

Table 7: Exports outlook 2010-2019

60-kg bags (thousands)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	32 933	26 636	34 581	29 878	35 465	33 631	36 923	36 259	39 069	39 103
Cameroon	904	773	708	769	573	539	499	418	462	461
Colombia	10 411	8 774	8 582	9 037	8 423	7 960	8 295	8 189	7 705	7 501
Costa Rica	1 914	1 248	2 178	1 736	1 650	2 192	1 619	2 017	2 065	2 069
Côte d'Ivoire	3 363	3 363	3 363	3 363	3 363	3 363	3 363	3 363	3 363	3 363
Ecuador	1 162	1 228	1 290	1 351	1 412	1 474	1 536	1 599	1 663	1 728
El Salvador	1 647	1 398	1 179	1 253	1 282	1 129	997	1 162	1 143	1 001
Ethiopia	1 131	1 140	996	1 012	1 090	1 170	1 242	1 238	1 262	1 270
Guatemala	2 920	2 835	2 866	2 777	2 718	2 816	2 852	2 998	2 990	3 023
Honduras	2 737	2 552	2 494	2 529	2 627	2 765	2 926	3 101	3 281	3 464
India	2 559	2 994	4 024	3 532	3 985	4 682	4 660	4 925	5 325	5 396
Indonesia	4 850	5 075	5 483	5 834	5 969	6 008	6 057	6 147	6 285	6 452
Kenya	753	866	822	990	1 036	1 018	1 093	1 124	1 187	1 157
Mexico	1 026	4 176	1 179	1 273	2 431	1 506	2 754	1 540	1 380	2 537
Nicaragua	1 137	1 409	1 368	1 428	1 494	1 479	1 491	1 483	1 469	1 465
Other Africa	1 701	1 810	2 490	2 677	2 714	2 679	2 892	3 240	3 627	3 895
Other Asia	22	27	29	48	50	37	57	55	48	60
Other Latin America	8 070	7 521	7 398	7 914	8 543	8 919	9 113	9 265	9 454	9 698
Papua New Guinea	965	790	875	779	762	689	689	619	596	559
Peru	3 467	3 705	4 113	4 267	4 541	4 655	4 883	5 033	5 265	5 452
Philippines	484	390	401	374	373	365	363	360	360	359
Tanzania	997	969	975	991	1 011	1 035	1 062	1 093	1 127	1 165
Thailand	511	369	548	953	1 123	800	618	1 011	1 488	1 365
Uganda	2 882	2 781	2 922	3 256	3 055	2 530	2 703	2 827	2 248	2 012
Vietnam	15 324	14 443	13 649	12 934	12 290	11 710	11 187	10 717	10 293	9 912
TOTAL	103 870	97 272	104 511	100 953	107 980	105 151	109 874	109 783	113 154	114 467

Table 8: Imports outlook 2010-2019

60-kg bags (thousands)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Australia	1 165	1 156	1 208	1 238	1 279	1 316	1 357	1 398	1 439	1 483
Canada	3 188	3 256	3 328	3 398	3 467	3 537	3 608	3 681	3 755	3 829
European Union (23 countries)	24 830	23 458	22 861	23 842	23 379	22 739	23 350	23 357	22 993	23 495
Fiji	3	3	4	4	4	3	3	3	3	3
Former USSR	2 159	2 385	2 515	2 661	2 827	3 003	3 190	3 387	3 596	3 816
France	5 730	5 682	5 980	6 183	6 142	6 278	6 375	6 458	6 607	6 725
Germany	9 307	9 733	9 706	9 824	9 906	10 005	10 108	10 216	10 327	10 422
Israel	413	420	425	429	434	438	442	447	452	457
Japan	7 419	7 520	7 626	7 681	7 753	7 828	7 913	7 995	8 069	8 130
New Zealand	252	254	258	263	268	273	279	285	291	297
Other	6 406	5 089	5 177	4 013	2 815	3 157	2 055	2 514	626	950
Other European Union	1 607	1 602	1 765	1 643	1 617	1 618	1 680	1 669	1 621	1 642
Russian Federation	3 117	3 250	3 411	3 588	3 778	3 994	4 217	4 447	4 693	4 958
South Africa	544	510	549	565	600	633	671	709	750	794
USA	20 170	20 433	20 419	20 423	20 420	20 394	20 377	20 351	20 334	20 304
TOTAL	86 311	84 751	85 230	85 756	84 687	85 215	85 624	86 919	85 555	87 307