

ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

<i>Action to be taken</i>		<i>Voting procedure</i>
For information	FINANCE COMMITTEE 358 th Meeting 14 December 2016	—
For information	COUNCIL 183 rd Session 15 December 2016	—

Final Budget
of the Organization
for the sixty-third financial year
2017

The Final 2017 Budget is expressed in 2017 prices, i.e. it implements the 0 % indexation of the regular contributions of the Member States and the Associate Member States and the cost-variation indices applying to expenses proposed in document CERN/FC/6061-CERN/3278, which the Finance Committee is invited to recommend and the Council is invited to approve under a separate item of their respective December 2016 agendas, as well as the scale of contributions (document CERN/FC/6008-CERN/3243) approved by the Council in June 2016.

The Finance Committee and the Council are invited to take note of this document.

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I. Executive Summary

1. Observations of the Director-General

Following the Council's approval in June 2016 of the proposed Medium-Term Plan (MTP) for the period 2017-2021, including an outlook until 2026, and of the 2017 Draft Budget^[1], the Management presents the Final 2017 Budget in 2017 prices in this document.

The Final 2017 Budget is based on the same objectives and targets as the approved Draft Budget for the scientific and non-scientific programmes. It takes account of Ukraine's accession to Associate Member State status in October 2016.

The Final 2017 Budget also takes account of the 2016 Probable Revenues and Expenses, including the carry-forward, in line with CERN's Financial Rules.

Details of the main changes in the budget allocations due to re-profiling and re-assessed scheduling from 2016 to 2017 are presented in Figure 1. These changes lead to an overall reduction of the cumulative budget deficit by the end of 2016 with respect to the Draft Budget.

The Final 2017 Budget is expressed in 2017 prices following application of the cost-variation indices^[2] submitted to the Council and its Committees for approval under separate agenda items in December 2016. The Member States' contributions are indexed by 0%, in line with the Council's decision of June 2012^[3].

In line with of the 2013 decision to introduce "rolling reporting and evaluation of the budgetary consequences, in particular the cumulative budget deficit, during the MTP discussions in the coming years"^[4], the impact on the overall budget deficit for the years 2016 and 2017 is shown in Figure 3.

With respect to the 2017 Draft Budget, the estimated cumulative budget deficit at the end of 2017 has fallen from -248 MCHF to -187 MCHF. The reasons for this 61 MCHF variation are explained below.

2. Variations with respect to the Revised 2016 Budget and the 2017 Draft Budget

The Final 2017 Budget incorporates the same contributions from Member States and small variations for the expenses without changes in the scientific

objectives as set out in the approved Draft Budget. Variations are shown in Figure 1 and can essentially be broken down as follows:

Changes in revenues:

- For 2016: Ukraine's accession to Associate Member State status in October 2016;
- Changes in and re-profiling of EU-supported projects;
- Small delays in projects such as HIE-ISOLDE, AWAKE and FAIR, resulting in re-profiling of external revenues;
- Update of personnel paid from team accounts and personnel on detachment;
- Three-year extension of the SCOAP3 Open Access initiative;
- Small changes in the other revenues heading including OpenLab.

Changes in expenses:

- Indexation of expenses^[2], i.e. -0.01% for the personnel budget (0% indexation of basic salary and stipend as well as of subsistence allowances and family benefits and -1.80% indexation of home leave) and -4.93% for the materials budget, subject to the Council's approval;
- Changes in and re-profiling of EU-supported projects;
- Savings in operation and expenses covered by additional revenue allocated to general infrastructure and security, IT projects and outreach, as well as to additional commitments in 2017 for personnel;
- Material to personnel transfers, mainly for fellows (GET programme) and technical trainees;
- Personnel paid from team accounts and personnel on detachment;
- Re-profiling and carry-forward for multi-annual projects:
 - Limited available personnel due to the focus on the LHC operation and priority given to LHC upgrades, which results in some delays for most of the other projects;
 - Re-profiling of some consolidation activities, taking into account contract adjudications and available personnel;

^[1] CERN/SPC/1064-CERN/FC/6011-CERN/3246

^[2] CERN/FC/6061-CERN/3278

^[3] CERN/FC/5644-CERN/3023

^[4] CERN/FC/5760/RA, page 25

- Re-profiling of some building projects, such as Building 311 (magnetic measurement lab), Building 107 (surface treatment lab), and Globe renovation, taking into account contract adjudications and contractual deliverables;
- Further delays in the completion of work and new schedule for non-LHC projects such as HIE-ISOLDE, AWAKE, MEDICIS and FAIR, with external revenues realigned accordingly (see above).

The expenses figures in this document do not include possible transfers from materials to personnel for some additional limited-duration positions, as set out in document “*Review of the Limited-Duration Staff Complement: Reallocation of Resources CERN/SPC/1079/RA CERN/FC/6065/RA CERN/3281/RA*”.

Figure 1 (1/2): Variations with respect to the Revised 2016 Budget and 2017 Draft Budget (CERN/SPC/1064-CERN/FC/6011-CERN/3246, p. 22 and 23)

(in MCHF, rounded off)	Variations between 2016 Probable Revenues and Expenses and Revised 2016 Budget (2016 prices)	Variations between Final 2017 Budget (2017 prices) and 2017 Draft Budget (2016 prices)
Variations on REVENUES	-7.1	12.8
New Associate Member States Contributions	0.3	
EU contributions	-5.5	3.1
Additional contributions (HIE-ISOLDE, AWAKE)	-2.0	1.8
Personnel paid on team accounts	-0.4	2.3
Personnel on detachment	0.1	0.2
Other revenues	0.5	5.4
<i>Sales and miscellaneous</i>	0.9	-0.2
<i>SCOAP3 revenues</i>		4.9
<i>OpenLab revenues</i>	-0.4	0.7
Variations on EXPENSES	-51.7	-3.4
Indexation to 2017 prices		-27.7
<i>Personnel</i>		0.0
<i>Energy</i>		1.8
<i>Materials</i>		-29.4
Operation	-7.4	4.1
<i>2015 KT incentives allocated to different activities</i>	1.1	
<i>2015&2016 revenues allocated to future commitments</i>	-1.7	1.8
<i>Operational savings (allocated to new and existing projects)</i>	-5.4	
<i>Operations variation</i>	-1.4	1.6
<i>Additional allocation to personnel commitments</i>	0.0	0.7
Projects (carry-forward and re-profiling)	-36.0	7.0
Reallocation of materials budget to fellows and technical trainees	-2.8	1.1
<i>Materials</i>	-8.8	-12.8
<i>Fellows & technical trainees</i>	6.0	13.9
Reprofiling of fellowship budget linked to COFUND	-2.6	0.5
Reallocation of budget to new and existing projects (from operational savings)	3.0	1.1
<i>Additional allocation to general infrastructure and security</i>	2.3	0.1
<i>Additional allocation to IT infrastructure and security</i>	0.4	0.6
<i>Additional allocation to KT and outreach</i>	0.3	0.4
Expenses corresponding to EU contributions	-5.5	3.1
Personnel paid on team accounts	-0.4	2.3
Personnel on detachment	0.1	0.2
Expenses corresponding to SCOAP3 revenues		4.9
Variations on BALANCE	44.6	16.2
IMPACT ON CUMULATIVE BALANCE	44.6	60.8

Details for projects in the
second table →

Figure 1 (2/2): Variations with respect to the Revised 2016 Budget and 2017 Draft Budget (CERN/SPC/1064-CERN/FC/6011-CERN/3246, p. 22 and 23)

	Variations between 2016 Probable Revenues and Expenses and Revised 2016 Budget (2016 prices)	Variations between Final 2017 Budget (2017 prices) and 2017 Draft Budget (2016 prices)
Details for Projects (carry-forward and re-profiling)	-36.0	7.0
LHC consolidation, injectors, and spares	-4.2	-3.8
LHC experiments and detectors consolidation	-0.1	0.1
LHC computing	0.1	0.0
Non-LHC physics & scientific support (NA62, ISOLDE, electronics investm.)	-2.0	2.0
Low- and med. accelerators, PS, SPS, Technical services, incl. consolidation	-10.2	0.5
Experimental aera consolidation	-0.9	1.8
Infrastructure and services	-13.7	8.9
<i>- of which infrastructure consolidation and buildings</i>	-7.9	8.2
LHC upgrades	3.5	4.3
<i>LINAC4</i>	0.1	-0.1
<i>LHC injectors upgrade</i>	-0.2	7.9
<i>HL-LHC construction</i>	3.1	-3.1
<i>LHC detectors upgrade (phase 1) and consolidation</i>	0.3	-0.4
<i>HL-LHC detectors, including R&D (phase 2)</i>	0.2	0.1
Energy frontier	-0.2	-3.0
<i>Linear collider studies (CLIC, ILC, detector R&D)</i>	-0.2	0.0
<i>Future circular collider study</i>	0.0	-3.0
Diversity activities	-8.3	-3.8
<i>ELENA</i>	1.1	-2.0
<i>CERN neutrino platform</i>	-0.1	0.0
<i>HIE-ISOLDE</i>	-1.6	1.3
<i>Proton-driven plasma wakefield acceleration</i>	-0.8	1.0
<i>Medical applications (MEDICIS)</i>	-0.6	0.2
<i>Superconducting magnet R&D (SCM)</i>	-2.2	-1.7
<i>Superconducting RF studies</i>	-2.2	-0.2
<i>Other R&D (FAIR, ITER, ESS, EU, detectors, etc.)</i>	-1.8	-2.3

Explanations concerning Figure 1:

Figure 1 shows the variations for 2016 and 2017 with respect to the Revised 2016 Budget and the 2017 Draft Budget approved in June 2016. Details of the

carry-forward and re-profiling for projects are shown on the second table. The totals for the 2016 Probable Revenues and Expenses as well as the Final 2017 Budget in 2017 prices are given in Figures 2 and 3.

II. Overview of Revenues and Expenses

1. Overview of Revenues

Figure 2: Overview of Revenues

(in MCHF, rounded off)	2016 Probable Revenues (2016 prices)	Final 2017 Budget (2017 prices)	Variation of Final 2017 Budget with respect to 2016 Probable Revenues
REVENUES	1,226.0	1,230.1	0.34 %
Member States' contributions	1,119.0	1,119.9	0.08 %
Associate Member States' contributions	8.4	10.2	20.81 %
Contributions anticipated from new Associate Member States		10.0	
EU contributions	14.4	16.0	10.63 %
Additional contributions	14.9	4.8	-67.74 %
<i>for LINAC4, HIE-ISOLDE, ELENA, AWAKE, CLIC, IdeaSquare, FAIR, CESSAMag</i>	14.9	4.8	-67.74 %
Personnel paid on team accounts	12.5	13.7	9.03 %
Personnel on detachment	1.1	1.0	-2.38 %
Internal taxation	30.0	30.1	0.20 %
Knowledge Transfer	2.2	1.1	-48.88 %
Other revenues	23.4	23.4	-0.17 %
<i>Sales and miscellaneous</i>	6.7	6.2	-8.32 %
<i>SCOAP3 revenues</i>	4.3	4.9	15.15 %
<i>OpenLab revenues</i>	2.3	2.2	-5.59 %
<i>Financial revenues</i>	2.0	2.0	
<i>In-kind¹</i>	2.0	2.0	
<i>Housing fund</i>	6.0	6.0	

¹ Theoretical interest on the FIPOI loan.

Explanations concerning Figure 2:

The Member States' contributions for 2017 amount to 1,119.9 MCHF.

This includes contributions from Romania, which became a Member State on 17 July 2016. Romania paid 75% of its theoretical Member State contribution (2 MCHF) for the first quarter of 2016 and 100% of its actual Member State contribution (8.2 MCHF) for the remaining part of the year, in accordance with the Council Resolution CERN/3189/RA and the 2017 Budget Scale of Contributions CERN/3243.

In accordance with the Council's decision on Greece's contribution (CERN/3258/RA), Greece will pay 85% of its contribution for 2017 plus an amount of 2,261,739 CHF by December 2017 as part of the 15-year plan for the repayment of its arrears. The remaining 15% of the 2017 contribution (2,018,107.5 CHF) will be added to the arrears and the Council will revisit the situation in 2019.

The contributions from **Cyprus** and **Serbia** as Associate Member States in the pre-stage to Membership and from **Pakistan**, **Turkey** and **Ukraine** as Associate Member States are included.

Switzerland expressed an interest in reallocating the amount due to it by CERN for the ppBar loan (2.276 MCHF) to the neutrino platform. The arrangements for this reallocation (which will also be disclosed in the Financial Statements) are currently under discussion.

The additional contributions to various projects, such as HIE-ISOLDE, ELENA, AWAKE and FAIR, will decrease in 2017 as these projects approach completion.

EU contributions are higher in 2017 due to new proposals submitted and accepted in the framework of Horizon 2020.

The heading "Other revenues" corresponds to a conservative assumption based on the budget out-turn in the years 2012 to 2015.

Several items (e.g. "Personnel paid on team accounts", "Personnel on detachment", "Housing Fund", etc.) have corresponding expenses under various headings under the "Infrastructure and services" programme, as shown in Figure 7.

2. Overview of Expenses

Figure 3: Overview of Expenses

Explanations are provided in Chapter III
“Expenses for the 2017 Financial Year”

¹ Including theoretical interest of the FIPOI loan (compensated by a corresponding heading in the revenues).

(in MCHF, rounded off)	2016 Probable Expenses (2016 prices)	Final 2017 Budget (2017 prices)	Variation of Final 2017 Budget with respect to 2016 Probable Expenses
EXPENSES	1,151.3	1,202.5	4.45 %
Running of scientific programmes and support	927.8	969.0	4.44 %
Scientific programmes	463.1	490.4	5.89 %
<i>LHC (machine, detectors, computing, including spares and consolidation)</i>	252.4	267.7	6.05 %
<i>Non-LHC physics and scientific support</i>	78.1	82.0	5.06 %
<i>Other accelerators and areas (including consolidation)</i>	132.6	140.6	6.06 %
Infrastructure and services	287.7	300.3	4.35 %
<i>General infrastructure and services (incl. admin, international relations, safety)</i>	254.0	254.7	0.29 %
<i>Infrastructure consolidation, buildings and renovation</i>	33.8	45.6	34.84 %
Centralised expenses	176.9	178.4	0.81 %
<i>Centralised personnel expenses</i>	36.3	36.3	
<i>Internal taxation</i>	30.0	30.1	0.20 %
<i>Internal mobility, personnel on detachment, paid from team accounts</i>	13.7	15.0	9.96 %
<i>Budget amortisation of staff benefit accruals</i>	17.3	17.3	
<i>Energy and water, insurance and postal charges, miscellaneous</i>	66.6	67.4	1.25 %
<i>Interest, bank and financial expenses, in-kind ¹</i>	13.0	12.2	-6.35 %
Projects and studies	223.5	233.6	4.49 %
LHC upgrades	116.2	148.8	27.99 %
<i>LINAC4</i>	5.7	1.0	-83.11 %
<i>LHC injectors upgrade</i>	36.2	52.4	44.83 %
<i>HL-LHC construction</i>	50.9	71.8	40.93 %
<i>LHC detectors upgrade (Phase 1) and consolidation</i>	16.0	16.1	0.75 %
<i>HL-LHC detectors, including R&D (Phase 2)</i>	7.5	7.6	1.00 %
Energy frontier	34.5	34.8	0.88 %
<i>Linear collider studies (CLIC, ILC, detector R&D)</i>	24.6	22.0	-10.43 %
<i>Future Circular Collider study</i>	9.9	12.8	28.88 %
<i>High-energy frontier</i>			
Scientific diversity activities	72.8	50.0	-31.31 %
<i>ELENA</i>	12.9	2.5	-80.89 %
<i>HIE-ISOLDE</i>	7.7	4.2	-45.33 %
<i>CERN neutrino platform</i>	17.2	17.9	4.16 %
<i>R&D (incl. EU support) for accelerators, medical applications</i>	35.0	25.4	-27.43 %
BALANCE			
Annual balance	74.7	27.6	
Capital repayment allocated to the budget (Fortis, FIPOI 1, 2 and 3)	-25.1	-25.9	
Recapitalisation Pension Fund	-60.0	-60.0	
Annual balance allocated to budget deficit	-10.4	-58.3	
-Cumulative balance ²	-128.5	-186.9	

² The cumulative balance of -118.1 MCHF is the accumulated budget deficit as stated in the Financial Statements for 2015 (CERN/FC/6001, page 19). It does not include 2015 open commitments and reprofiled projects of 88.2 MCHF carried forward to 2016 and later years (of which 55.5 MCHF were announced in the Final 2016 Budget).

3. Scale of Contributions of the Member States for 2017

Figure 4 (1/2): Scale of Contributions of the Member States for the Financial Year 2017

	Country	Currency	Net National Income at factor costs (in millions national currency)			Exchange rates national currencies in Swiss francs			Net National Income at factor costs Average 2012 to 2014 (in MCHF)	2017 Theoretical Contribution in %	2017 Due Contribution in %	
			2012	2013	2014	2012	2013	2014				
Member States	Austria	EUR	220 450	224 321	225 263	1.2053	1.2308	1.2146	271 803	2.16538%	2.16538%	
	Belgium	EUR	282 545	283 427	289 618	1.2053	1.2308	1.2146	347 055	2.76490%	2.76490%	
	Bulgaria	BGN	58 703	58 821	59 946	0.6163	0.6293	0.6210	36 807	0.29323%	0.29323%	
	Czech Republic	CZK	2 498 106	2 498 894	2 599 330	0.0480	0.0474	0.0441	117 635	0.93717%	0.93717%	
	Denmark	DKK	1 327 961	1 359 916	1 398 446	0.1619	0.1650	0.1629	222 424	1.77200%	1.77200%	
	Finland	EUR	137 175	138 361	141 278	1.2053	1.2308	1.2146	169 076	1.34699%	1.34699%	
	France	EUR	1 456 583	1 475 282	1 499 259	1.2053	1.2308	1.2146	1 797 465	14.31995%	14.31995%	
	Germany	EUR	2 051 678	2 096 608	2 176 188	1.2053	1.2308	1.2146	2 565 530	20.43893%	20.43893%	
	Greece	EUR	130 875	122 013	118 948	1.2053	1.2308	1.2146	150 797	1.20136%	1.20136%	
	Hungary	HUF	17 201 108	18 698 981	19 724 814	0.0042	0.0041	0.0039	75 626	0.60250%	0.60250%	
	Israel	ILS	700 152	748 818	777 059	0.2433	0.2567	0.2560	187 164	1.49109%	1.49109%	
	Italy	EUR	1 094 727	1 094 232	1 098 558	1.2053	1.2308	1.2146	1 333 521	10.62383%	10.62383%	
	Netherlands	EUR	491 016	491 407	494 129	1.2053	1.2308	1.2146	598 938	4.77159%	4.77159%	
	Norway	NOK	2 252 630	2 330 554	2 473 716	0.1612	0.1579	0.1454	363 603	2.89674%	2.89674%	
	Poland	PLN	1 190 321	1 212 337	1 253 531	0.2882	0.2933	0.2902	354 105	2.82107%	2.82107%	
	Portugal	EUR	111 444	115 802	117 385	1.2053	1.2308	1.2146	139 809	1.11382%	1.11382%	
	Romania	RON	428 600	457 429	478 622	0.2703	0.2785	0.2733	124 691	0.99338%	0.99338%	
	Slovakia	EUR	49 632	50 230	49 785	1.2053	1.2308	1.2146	60 705	0.48362%	0.48362%	
Spain	EUR	750 969	738 923	743 183	1.2053	1.2308	1.2146	905 760	7.21596%	7.21596%		
Sweden	SEK	2 430 972	2 467 887	2 558 445	0.1385	0.1423	0.1336	343 195	2.73414%	2.73414%		
Switzerland	CHF	491 309	496 287	487 159	1.0000	1.0000	1.0000	491 585	3.91633%	3.91633%		
United Kingdom	GBP	1 242 191	1 275 542	1 320 905	1.4859	1.4496	1.5065	1 894 881	15.09604%	15.09604%		
	TOTAL							12 552 175	100.0000%	100.0000%		
Associate Member States	in Pre-Stage	Cyprus ¹	EUR	14 015	12 963	12 470	1.2053	1.2308	1.2146	15 998	0.12745%	0.01275%
		Serbia ²	RSD	2 580 259	2 781 649	2 802 191	0.0107	0.0109	0.0104	28 930	0.23048%	0.17286%
		Pakistan ³	PKR	14 431 297	16 058 835	17 972 630	0.0111	0.0101	0.0097	165 653	1.31971%	0.13197%
		Turkey ⁴	TRY	1 019 941	1 124 663	1 252 777	0.5207	0.4881	0.4181	534 608	4.25908%	0.42591%
		Ukraine ⁵	UAH	1 050 390	1 092 636	1 137 744	0.1174	0.1164	0.0774	112 840	0.89897%	0.08990%

¹ Cyprus became an Associate Member State in the pre-stage to Membership on 1st April 2016 and will pay the statutory minimum contribution of 1 MCHF in 2017, as provided for in Council Resolution CERN/3034/RA.

² Serbia became an Associate Member State in the pre-stage to Membership on 15 March 2012 and will become a Member State by the end of 2017 at the latest. It is assumed that Serbia will pay 75% of its theoretical Member State contribution in 2017 and 100% of its contribution, as of 2018, as provided for in Council Resolution CERN/2999/RA.

³ Pakistan became an Associate Member State on 31 July 2015 and will pay 10% of its theoretical contribution in 2017, as provided for in Council Resolution CERN/3142/RA.

⁴ Turkey became an Associate Member State on 6 May 2015 and will pay 10% of its theoretical contribution in 2017, as provided for in Council Resolution CERN/3106/RA.

⁵ Ukraine became an Associate Member State on 5 October 2016 and will pay 10% of its theoretical contribution in 2017, as provided for in Council Resolution CERN/3082/RA.

The scale of contributions for 2017 (document CERN/FC/6008-CERN/3243) was approved by the Council in June 2016, and the cost-variation index

proposals are submitted to the Council for approval in document CERN/FC/6061-CERN/3278 in December 2016.

Figure 4 (2/2): Scale of Contributions of the Member States for the Financial Year 2017

		Country	2017 Annual contribution (in CHF, 2016 prices)	2017 Annual contribution (in CHF, 2017 prices)	2017 Contribution in %
Member States		Austria	24,250,100	24,250,100	2.16538%
		Belgium	30,964,100	30,964,100	2.76490%
		Bulgaria	3,283,900	3,283,900	0.29323%
		Czech Republic	10,495,350	10,495,350	0.93717%
		Denmark	19,844,650	19,844,650	1.77200%
		Finland	15,084,950	15,084,950	1.34699%
		France	160,369,150	160,369,150	14.31995%
		Germany	228,895,300	228,895,300	20.43893%
		Greece	13,454,050	13,454,050	1.20136%
		Hungary	6,747,400	6,747,400	0.60250%
		Israel	16,698,700	16,698,700	1.49109%
		Italy	118,976,300	118,976,300	10.62383%
		Netherlands	53,437,050	53,437,050	4.77159%
		Norway	32,440,600	32,440,600	2.89674%
		Poland	31,593,150	31,593,150	2.82107%
		Portugal	12,473,650	12,473,650	1.11382%
		Romania	11,124,850	11,124,850	0.99338%
		Slovakia	5,416,050	5,416,050	0.48362%
		Spain	80,811,550	80,811,550	7.21596%
		Sweden	30,619,650	30,619,650	2.73414%
	Switzerland	43,859,000	43,859,000	3.91633%	
	United Kingdom	169,060,550	169,060,550	15.09604%	
	TOTAL		1,119,900,050	1,119,900,050	100.0000%
Associate Member States	in Pre-Stage	Cyprus	1,000,000	1,000,000	
		Serbia	1,935,850	1,935,850	
		Pakistan	1,477,950	1,477,950	
		Turkey	4,769,750	4,769,750	
		Ukraine	1,006,750	1,006,750	
	TOTAL		10,190,300	10,190,300	
Grand TOTAL			1,130,090,350	1,130,090,350	

The Member States' contributions for 2017 in 2017 prices amount to 1,119.9 MCHF, including the contribution of Romania, which became a Member State in July 2016.

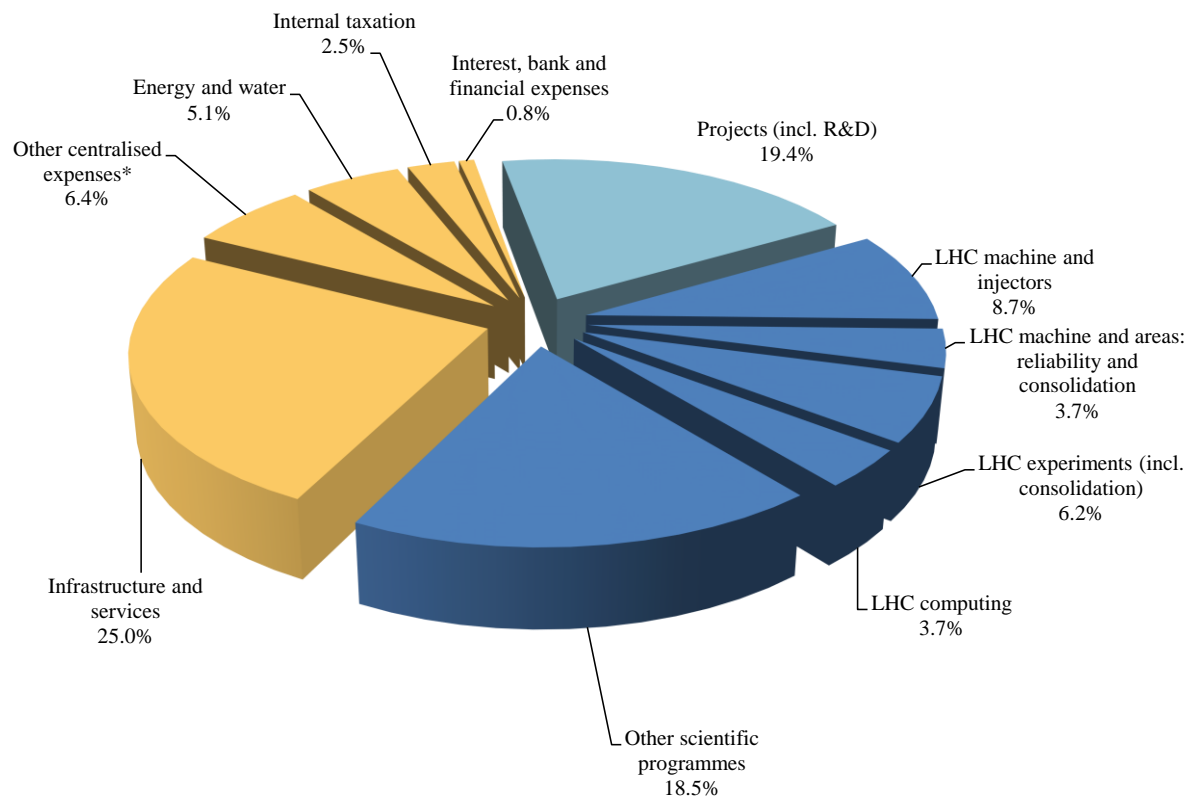
In accordance with the Council's decision on Greece's contribution (CERN/3258/RA), Greece will pay 85% of its contribution for 2017 plus an amount of 2,261,739 CHF by December 2017 as part of the 15-year plan for

the repayment of its arrears. The remaining 15% of the 2017 contribution (2,018,107.5 CHF) will be added to the arrears and the Council will revisit the situation in 2019.

III. Expenses for the 2017 Financial Year

Expenses by Scientific and Non-Scientific Programmes

Figure 5: Final 2016 Budget (Personnel, Materials and Interest & financial costs)



* Including centralised personnel expenses, internal mobility and personnel on detachment (3.2%), Personnel paid from team accounts (1.1%), Budget amortisation of staff benefit accruals (1.4%), Insurance, postal charges, miscellaneous (0.5%), In-kind (theoretical interest on the FIPOI loan) (0.2%)

Scientific Programme

Figure 6: Scientific programme

2016 Probable Expenses (2016 prices) (a)				Fact sheet	Activity	Final 2017 Budget (2017 prices) (b)				Variation of Final 2017 Budget with respect to 2016 Probable Expenses
FTE	kCHF					FTE	kCHF			
Personnel	Personnel	Materials	Total			Personnel	Personnel	Materials	Total	
863.7	156,060	96,375	252,435		LHC programme	843.7	156,280	111,430	267,710	6.1 %
336.8	57,435	43,190	100,625	1	LHC machine	327.5	56,460	47,805	104,265	3.6 %
336.8	57,435	38,280	95,715		LHC machine and experimental areas	327.5	56,460	43,270	99,730	4.2 %
		4,910	4,910		Spares			4,535	4,535	-7.6 %
85.3	13,460	19,125	32,585	1	LHC machine and areas: reliability and consolidation	87.6	14,135	30,075	44,210	35.7 %
330.1	62,885	11,960	74,845		LHC experiments	316.2	62,425	12,290	74,715	-0.2 %
81.3	15,605	3,485	19,090	2	ATLAS detector	77.6	15,375	3,125	18,500	-3.1 %
104.6	20,445	3,675	24,120	3	CMS detector	99.6	19,660	3,750	23,410	-2.9 %
50.7	9,655	1,790	11,445	4	ALICE detector	44.0	8,290	1,655	9,945	-13.1 %
50.1	10,280	1,430	11,710	5	LHCb detector	47.8	10,050	1,310	11,360	-3.0 %
43.4	6,900	1,580	8,480	6	Common items, other experiments (incl. Totem, LHCf, MoEDAL)	47.3	9,050	2,450	11,500	35.6 %
111.6	22,280	22,100	44,380	8	LHC computing	112.3	23,260	21,260	44,520	0.3 %
701.2	128,040	82,630	210,670		Other programmes	755.6	139,035	83,615	222,650	5.7 %
24.4	4,545	2,045	6,590	9	Non-LHC physics (experimental programme)	24.1	4,450	1,820	6,270	-4.9 %
60.0	9,605	1,800	11,405	10	Theory	62.0	9,895	1,475	11,370	-0.3 %
17.8	3,240	4,525	7,765	11	Knowledge transfer	14.7	2,635	2,920	5,555	-28.5 %
37.7	6,975	3,120	10,095	13	Low- and medium-energy accelerators	43.8	8,385	2,830	11,215	11.1 %
197.7	33,655	20,870	54,525	13	PS and SPS complexes	206.1	36,050	19,775	55,825	2.4 %
183.3	35,755	27,525	63,280	13	Accelerator maintenance and consolidation	198.5	39,225	25,540	64,765	2.3 %
171.9	33,000	19,330	52,330	12	Scientific support (associates, computing, R&D detectors, tech. support)	197.7	36,935	21,910	58,845	12.4 %
8.3	1,265	3,415	4,680	13	Consolidation of experimental areas	8.7	1,460	7,345	8,805	88.1 %
1,564.9	284,100	179,005	463,105		Grand Total	1,599.3	295,315	195,045	490,360	5.9 %
	23.17%	14.60%	37.77%		% of total revenues		24.01%	15.86%	39.86%	

Explanations concerning Figure 6:

The expenses for the **operation and maintenance of the LHC programme** are stable during running periods. Concerning the consolidation headings, in line with the extended year-end technical stop, some higher expenses are anticipated in 2017 for the consolidation of the electrical network and for the consolidation activities (including spares) towards HL-LHC, which started in 2016.

The materials expenses for **LHC computing** consist mainly of CERN's share of the required CPU and storage costs. These expenses are essentially linked to the amount of data expected to be recorded.

The **non-LHC physics** heading includes the funding for non-LHC experiments (AD, ISOLDE, COMPASS, CAST, NA62, etc.).

The **theory** allocation maintains a stable staff complement and constant materials funding to allow the Department to continue to host a constant annual number of visitors, fellows and scientific associates.

The **knowledge transfer** heading covers the personnel of the KT group as well as some expenses for patents. Higher expenses in 2016 are explained by some additional KT activities funded by revenues and the carry-forward from 2015.

Under **scientific support**, the personnel assigned to general services for physics will be stabilised at a higher level from 2017 onwards in view of the LHC luminosity goals.

The **low- and medium-energy accelerators** heading covers the AD, n_TOF and ISOLDE facilities and the allocations earmarked for their operation. The budget increase from 2017 onwards is for the operation of HIE-ISOLDE and ELENA.

The costs for the operation of the **PS and SPS complexes** and for the technical groups linked to them are stable during running periods.

Under the **accelerator maintenance and consolidation** heading, the technical services for the accelerators, i.e. accelerator controls, fluids, temporary work, remain constant, as do the allocations to items that are common to all accelerators at CERN. The upgrade of the SM18 magnet test facility will continue in 2017. The consolidation materials budget is shared equally between the PS and the SPS machines. The main accelerator consolidation items in 2016 and 2017 are: PS and SPS access system, PS electrical distribution, PS and SPS cabling or removal of cables, PS and SPS power converters, PS beam instrumentation, SPS high-voltage substations.

Under the **experimental areas consolidation** heading some 6 MCHF are dedicated to urgent items in the North Area and the AD in 2017. In addition, priority has been given to the renovation of the East Area, which started in 2016 and will be completed during LS2.

Infrastructure and Services

Figure 7: Infrastructure and Services

2016 Probable Expenses (2016 prices) (a)				Fact sheet	Activity	Final 2017 Budget (2017 prices) (b)				Variation of Final 2017 Budget with respect to 2016 Probable Expenses
FTE	kCHF					FTE	kCHF			
Personnel	Personnel	Materials	Total			Personnel	Personnel	Materials	Total	
1,001.3	254,375	210,300	464,675		Infrastructure, services and centralised expenses	994.3	257,100	221,510	478,610	3.0 %
58.3	9,340	795	10,135	14	Manufacturing facilities (workshops, etc.)	55.3	9,275	3,390	12,665	25.0 %
203.1	35,300	41,895	77,195	15	General facilities & logistics (site maintenance, transport)	205.6	35,900	40,035	75,935	-1.6 %
194.6	34,265	23,560	57,825	16	Informatics	186.4	34,245	21,930	56,175	-2.9 %
168.0	26,205	13,310	39,515	17	Safety, health and environment	167.3	26,510	14,345	40,855	3.4 %
199.3	37,315	13,510	50,825	18	Administration	202.8	38,510	13,925	52,435	3.2 %
65.3	11,565	6,890	18,455	19	International relations	63.6	11,355	5,265	16,620	-9.9 %
20.3	3,015	30,780	33,795	20	Infrastructure consolidation, buildings and renovation	16.7	2,515	43,055	45,570	34.8 %
92.3	97,370	79,560	176,930	21	Centralised expenses	96.7	98,790	79,565	178,355	0.8 %
	36,335		36,335		Centralised personnel expenses		36,335		36,335	
	30,045		30,045		Internal taxation		30,105		30,105	0.2 %
3.8	1,140		1,140		Internal mobility and personnel on detachment	3.6	1,365		1,365	19.7 %
88.6	12,520		12,520		Personnel paid from team accounts	93.1	13,655		13,655	9.1 %
	17,330		17,330		Budget amortisation of staff benefit accruals		17,330		17,330	
		60,485	60,485		Energy and water			61,170	61,170	1.1 %
		6,090	6,090		Insurance, postal charges, miscellaneous			6,235	6,235	2.4 %
		10,940	10,940		Interest, bank and financial expenses			10,115	10,115	-7.5 %
		2,045	2,045		In-kind			2,045	2,045	
	20.75%	17.15%	37.90%		% of total revenues		20.90%	18.01%	38.91%	

Explanations concerning Figure 7:

The baseload of the ongoing **infrastructure and services heading** results in an overall constant budget allocation, with some fluctuations mainly due to infrastructure and manufacturing projects and energy, which is linked to the accelerator schedule.

The materials component of the **safety, health and environment** heading includes the central safety services, radiation protection and the operational costs of safety inspections, as well as earmarked amounts for several radioactive waste management projects, radiation-monitoring systems (RAMSES) and the operational cost of the collaboration with the Geneva University Hospitals (HUG) to respond to medical emergencies. The SPS fire safety project, aiming at making the SPS fully compliant with fire safety standards during LS2, will start in 2017.

The **international relations** heading includes several projects, such as Ideasquare and the renovation of the Microcosm, as well as some external revenues.

The variation of the **infrastructure consolidation, buildings and renovation** heading is linked to several ongoing projects, including Building 107 (surface treatment lab), Building 774 (Prévessin main building, last invoices in 2016), renovation of the Globe, Building 311 (magnetic measurements lab) and the polymer lab. In addition, the construction of Building 90 next to the Main Building and of a storage building in Prévessin will start in 2017.

Most headings of the **centralised expenses** are expected to remain constant.

The Council is invited to endorse a change in the CHIS rules (document CERN/FC/6066 CERN/3282), in order to share the financing of the scheme more equitably among its members. While the CHIS contributions payable by the Organization for its retired staff will increase slightly (by some 400 kCHF per year, or 0.6% of CERN's total contribution to the Scheme), there will be no increase in the number of members or in benefits and therefore no increase in expenses/reimbursements.

Projects and studies

Figure 8: Projects and studies

2016 Probable Expenses (2016 prices) (a)				Fact sheet	Activity	Final 2017 Budget (2017 prices) (b)				Variation of Final 2017 Budget with respect to 2016 Probable Expenses
FTE	kCHF					FTE	kCHF			
Personnel	Personnel	Materials	Total			Personnel	Personnel	Materials	Total	
617.0	104,760	118,760	223,520		Projects	563.1	100,235	133,325	233,560	4.5 %
368.9	63,480	52,755	116,235		LHC upgrades	358.5	65,780	82,990	148,770	28.0 %
18.3	3,315	2,370	5,685	22	LINAC4	4.9	780	180	960	-83.1 %
121.8	19,160	17,030	36,190	23	LHC injectors upgrade	109.9	20,295	32,120	52,415	44.8 %
159.2	26,725	24,190	50,915	24	HL-LHC construction	175.1	30,200	41,555	71,755	40.9 %
45.2	10,270	5,680	15,950	25	LHC detectors upgrade (phase 1) and consolidation	44.5	10,620	5,450	16,070	0.8 %
24.4	4,010	3,485	7,495	25	HL-LHC detectors, including R&D (phase 2)	24.1	3,885	3,685	7,570	1.0 %
116.2	19,445	15,025	34,470		Energy frontier	107.4	18,765	16,010	34,775	0.9 %
70.2	12,225	12,325	24,550	26,27	Linear collider studies (CLIC, ILC, detector R&D)	56.3	10,565	11,425	21,990	-10.4 %
46.0	7,220	2,700	9,920	28	Future Circular Collider study	51.0	8,200	4,585	12,785	28.9 %
131.9	21,835	50,980	72,815		Scientific diversity activities	97.2	15,690	34,325	50,015	-31.3 %
23.4	3,920	8,950	12,870	29	ELENA	9.7	1,765	695	2,460	-80.9 %
23.8	4,345	3,365	7,710	30	HIE-ISOLDE	10.4	1,905	2,310	4,215	-45.3 %
14.5	2,255	14,945	17,200	31	CERN neutrino platform	14.9	2,325	15,590	17,915	4.2 %
16.7	2,505	8,160	10,665	32	Proton-driven plasma wakefield acceleration	16.9	2,460	3,915	6,375	-40.2 %
10.0	1,440	2,665	4,105	33	Superconducting RF studies	9.4	1,410	2,640	4,050	-1.3 %
1.4	335	2,635	2,970	34	Superconducting magnet R&D (SCM)	1.9	250	2,125	2,375	-20.0 %
12.7	1,935	2,390	4,325	35	R&D for medical applications	15.2	2,345	2,085	4,430	2.4 %
29.4	5,100	7,870	12,970	36	Other R&D (FAIR, ITER, ESS, EU, etc.)	18.8	3,230	4,965	8,195	-36.8 %
	8.55%	9.69%	18.23%		% of total revenues		8.15%	10.84%	18.99%	

Explanations concerning Figure 8:

While the **LINAC4** project is approaching completion (with connection to the PS Booster scheduled for LS2), the activities for the **LHC injector upgrade** project and for **HL-LHC construction** will be ramped up in 2017 to allow installation of some components during LS2.

The expenses for continued **R&D** for the **LHC detectors upgrade** and for procurement of components are stable.

The **Linear collider studies** heading starts to decrease as from 2017 (with a major reduction anticipated from 2019 onwards).

Part of the materials allocation for the **Future Circular Collider study** in 2017 will be converted into personnel (as was done in 2016 for fellows). The budget covers R&D to study a proton-proton collider, with an electron-positron collider as a possible first step and an electron-proton collider as an option.

The construction and commissioning of the **ELENA** deceleration ring will be completed in 2017-2018. The connection of the electrostatic transfer lines to the experiments is now planned during LS2.

The construction work for phase 2 of **HIE-ISOLDE** (10 MeV/A), including the third experimental beam line, will terminate in 2017-2018.

The construction of a large **neutrino** test area (EHN1 extension) and the neutrino platform activities will continue in 2017.

The peak expenses for the **proton-driven plasma wakefield acceleration** project (AWAKE), including in-kind contributions, were in 2016. Commissioning with beams started.

The roughly constant materials allocation for **superconducting RF studies** will probably be converted partially into personnel. For the **superconducting magnet** studies, the budget is dedicated to R&D on materials alternatives to Nb₃Sn.

The materials component of the **R&D for medical applications** heading includes the MEDICIS project.

The **other R&D** heading consists of projected expenses for EU projects (with corresponding revenues), testing of the FAIR magnets (funded externally), as well as the start-up of technical studies for a possible future beam-dump facility in preparation for the European Strategy update. The reduction is due to the ending of some of these externally funded activities.

Multi-annual projects and fixed assets

Figure 9 (1/3): Expenses – Details of projects included in the activity headings

It details the amounts of non-recurrent expenses for 2016 and 2017 split by program and project.

(in kCHF, rounded off)

2016 Probable Expenses (2016 prices)			Programme	Project	Final 2017 Budget (2017 prices)		
Personnel	Materials	Total			Personnel	Materials	Total
18,446	42,472	60,918		LHC programme	18,566	52,459	71,025
	3,934	3,934		LHC machine and experimental areas		3,682	3,682
	2,917	2,917		LHC spares		2,703	2,703
	996	996		LHC magnet repair		915	915
	21	21		Electrical circuit change for ALFA		64	64
13,397	19,121	32,518		LHC machine and areas reliability and consolidation	14,106	30,083	44,189
1,034	990	2,024		Collimation system: enhancements	965	873	1,838
465	531	996		Electrical network 2025	516	5,979	6,495
430	48	478		Consolidation of experimental areas	594	846	1,440
8,191	11,538	19,729	LHC programme	LHC consolidation	8,797	11,189	19,986
3,277	4,737	8,014	Included in Figure 6	Radiation to electronics (R2E)	3,234	5,563	8,797
	501	501		POPS repairs, spare and consolidation		1,543	1,543
	511	511		Spares and consolidation in the framework of HL-LHC		4,084	4,084
	265	265		CERN Control Centre consolidation		6	6
	113	113		LHC detectors		21	21
1,770	18,182	19,952		LHC Computing Grid	1,892	17,591	19,483
3,279	1,082	4,361		EU projects	2,568	1,082	3,650
	40	40		TT projects			
18,634	25,475	44,109		Other programmes	20,578	27,742	48,320
351	244	595		AEGIS	356	-1	355
1,114	93	1,207		NA62	1,206	222	1,428
	150	150		PCB workshop machine		723	723
51	14	65		ISOLDE robots	70		70
52	112	164		Magnet infrastructure upgrade	109		109
2,019	3,813	5,832		SM18 infrastructure upgrade	1,449	587	2,036
133	2,420	2,553		TE Infrastructure consolidation	174	679	853
				Cryogenic infrastructure upgrade	1,885		1,885
	-70	-70		EP safety and consolidation		834	834
52	143	195		LHC injectors		15	15
106	167	273	Other programmes	"White Rabbit" timing development	109	287	396
510	1,594	2,104	Included in Figure 6	AD consolidation	703	2,982	3,685
37	277	314		East Area consolidation	37	2,655	2,692
724	1,549	2,273		North Area consolidation	728	1,708	2,436
68	775	843		PS 66/18 kV loop consolidation	18	1	19
719	1,410	2,129		SPS 18 kV loop + substations consolidation	734	3,817	4,551
8,149	7,643	15,792		Accelerator consolidation	8,846	9,093	17,939
275	532	807		PS and SPS spares	254	1,179	1,433
	147	147		Computer security reinforcement		532	532
4,051	1,210	5,261		EU projects	3,717	1,450	5,167
223	3,252	3,475		TT projects	183	979	1,162

Figure 9 (2/3): Expenses – Details of projects included in the activity headings

(in kCHF, rounded off)

2016 Probable Expenses (2016 prices)			Programme	Project	Final 2017 Budget (2017 prices)		
Personnel	Materials	Total			Personnel	Materials	Total
9,478	52,648	62,126		Infrastructure, services and centralised expenses	7,939	63,854	71,793
	1,417	1,417		Manufacturing facilities		1,172	1,172
	1,417	1,417		Investment in new mechanical technologies		1,172	1,172
14	142	156		General facilities & logistics (site maintenance, transport)	14	2,001	2,015
14	12	26		Globe car park and "Esplanade des Particules"	14	1,513	1,527
	130	130		Building 38 (hostel renovation)		488	488
2,369	10,186	12,555		Informatics	1,402	8,041	9,443
	1,721	1,721		Computing network consolidation		2,122	2,122
	1,017	1,017		2nd network hub		412	412
	6,757	6,757		SCOAP3		5,240	5,240
2,191	494	2,685		Openlab	1,198	261	1,459
178	197	375		AIS re-engineering	204	6	210
112	304	416		Administration	9	295	304
	58	58		HR projects		-2	-2
112	158	270		FAP projects	9	297	306
	88	88		Risk management			
2,576	6,367	8,943		Safety, health and environment	2,777	8,111	10,888
51	34	85		Radio infrastructure upgrade for firefighters	102	134	236
	28	28		Consolidation of calibration hall			
1,124	791	1,915		Ramses II light	1,110	1,099	2,209
	675	675		Emergency		782	782
1,378	4,779	6,157		Radioactive waste management	1,341	5,248	6,589
				SPS fire safety	200	744	944
23	60	83		HLD instrumentation upgrade	24	104	128
95	1,091	1,186	Infrastructure, services and centralised expenses Included in Figure 7	International relations		762	762
	191	191		New Microcosm exhibition			
	555	555		IdeaSquare building		325	325
	171	171		Visitpoint		-12	-12
	105	105		Alumni		93	93
				Outreach 2017		112	112
95	69	164		Other outreach projects		244	244
3,019	32,236	35,255		Infrastructure consolidation, buildings and renovation	2,518	43,037	45,555
	5	5		AD control rooms			
303	4,357	4,660		Building 107 (surface treatment)	158	16,763	16,921
550	2,558	3,108		Building 311 (magnetic measurements)	380	6,918	7,298
	1,117	1,117		Building 774 (Prévessin main building)		-16	-16
51	100	151		Building 90 (new main building)	102	1,208	1,310
	500	500		Building 156 (extension)		292	292
				CMS site consolidation		451	451
	2,241	2,241		Renovation Globe of Science and Innovation		231	231
75	32	107		LHCb building		3	3
	1,000	1,000		Workshop and assembly hall at LHC point 8		105	105
40	2,774	2,814		Polymer laboratory consolidation	17	40	57
	500	500		Replacement of water-cooled cables		-2	-2
2,000	16,942	18,942		Surface and technical infrastructure consolidation (roofs, facades, heating, etc.) ¹	1,861	13,023	14,884
	10	10		Cooling tower Point 18		19	19
	100	100		Flexible storage building Prévessin		4,002	4,002
1,233	865	2,098		EU projects	1,099	435	1,534
60	40	100		TT projects	120		120

¹ Including some building renovation.

Figure 9 (3/3): Expenses – Details of projects included in the activity headings

(in kCHF, rounded off)

2016 Probable Expenses (2016 prices)			Programme	Project	Final 2017 Budget (2017 prices)		
Personnel	Materials	Total			Personnel	Materials	Total
99,440	113,946	213,386		Projects	94,820	128,765	223,585
8,077	11,600	19,677		CLIC	6,695	10,679	17,374
2,866	443	3,309		Linear collider detector R&D	2,926	376	3,302
4,346	3,312	7,658		HIE-ISOLDE	1,905	2,257	4,162
3,852	8,950	12,802		ELENA	1,712	694	2,406
2,425	8,058	10,483		Proton-driven plasma wakefield acceleration (AWAKE)	2,351	3,913	6,264
	16	16		High-radiation material test facility			
145	1,364	1,509		MEDICIS	144	1,021	1,165
2,257	14,938	17,195		CERN neutrino platform	2,329	15,548	17,877
3,316	2,659	5,975		LINAC4	777	277	1,054
19,106	17,034	36,140	Projects	LHC injectors upgrade	20,291	32,124	52,415
26,079	24,016	50,095	Included in Figure 8	LHC luminosity upgrade project (HL-LHC)	29,544	39,906	69,450
10,271	5,509	15,780		LHC detectors upgrade	10,619	4,305	14,924
7,081	2,701	9,782		Future circular collider study	8,055	4,583	12,638
39	2,376	2,415		Superconducting magnets R&D	214	1,923	2,137
				SM18 extension for superconducting RF		118	118
1,612	5,437	7,049		Upgrade of building 180 for test facility (FAIR)	503	3,690	4,193
				Beam dump facility		430	430
4,011	3,566	7,577		R&D for HL-LHC detectors	3,884	4,682	8,566
3,957	1,766	5,723		EU projects	2,871	2,192	5,063
	201	201		TT projects		47	47
145,998	234,541	380,539		Grand Total	141,903	272,820	414,723

IV. Summary of Expenses by Nature

Materials expenses by nature (including interest and financial costs)

Figure 10: Materials expenses by nature

(in kCHF, rounded off)

Nature	2016 Probable Expenses (2016 prices)	Final 2017 Budget (2017 prices)	Variation of Final 2017 Budget with respect to 2016 Probable Expenses
	(a)	(b)	(b)-(a)/(a)
Materials expenses	495,180	537,820	8.6%
Goods, consumables and supplies	219,990	257,560	17.1%
Electricity, heating gas and water	60,485	61,170	1.1%
Industrial services	119,300	123,585	3.6%
<i>Service contracts</i>	82,155	86,130	4.8%
<i>Repair and maintenance</i>	32,745	33,005	0.8%
<i>Temporary labour</i>	4,400	4,450	1.1%
Associated Members of the Personnel	39,490	39,590	0.3%
Other overheads	55,915	55,915	
<i>Consultancy</i>	7,460	7,460	
<i>Contributions to Collaborations</i>	6,825	6,825	
<i>Miscellaneous¹</i>	41,630	41,630	
Interest and financial costs	12,885	12,060	-6.4%
Fortis bank	9,875	9,050	-8.4%
In-kind (FIPOI interest 0%) ²	2,045	2,045	
Other financial expenses	965	965	
TOTAL MATERIALS	508,065	549,880	8.2%

¹ Including insurance and postal charges, handling and transport, bank charges, depreciation of current assets.

² Theoretical interest at market rate for FIPOI 1, 2 and 3 loans at 0%. This heading is compensated by the corresponding revenue line "Other revenues / In-kind".

The electricity consumption allocation for 2017 reflects a normal year of operation with the 2016 extended year-end technical stop continuing at the beginning of the year. It is very similar to the consumption in 2016. The Final 2017 Budget includes 3% indexation, which takes into account the combined effect of the electricity price increase and the EUR-CHF exchange rate.

The heading for industrial services is higher than the previous estimate, due to the change in the applicable exchange rate and the inclusion of new contracts,

including those for civil-engineering consultancy, non-destructive analyses, CHIS management, operation of the CERN housing service and travel management services. The figures for industrial services are based on the estimates given in the document "Service contracts at CERN" (CERN/FC/6038/RA), presented to the Finance Committee in September 2016.

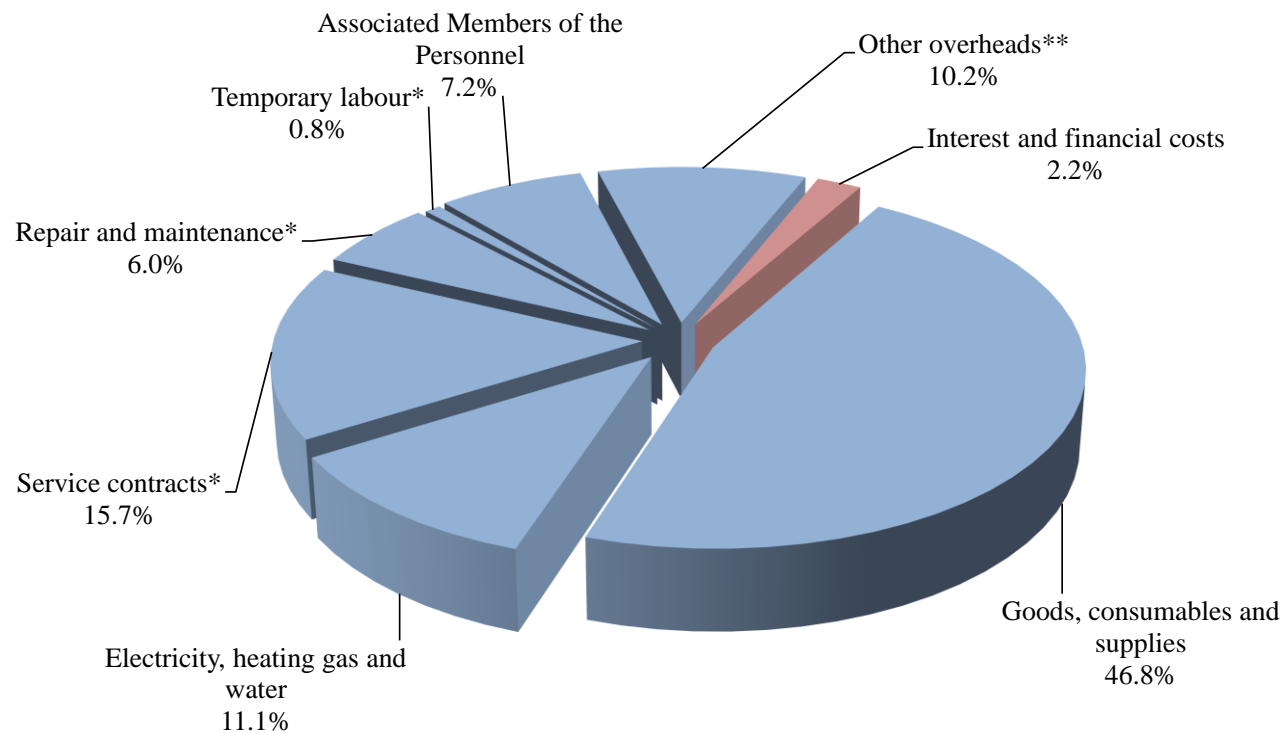
The heading for associated members of the personnel remains stable.

Figure 11: Materials expenses by nature (chart)

Materials expenses: 97.8%
Interest and financial costs: 2.2%

* Total for industrial services: 15.7% + 6% + 0.8% = 22.5%.

** Including insurance and postal charges, consultancy, CERN contributions to collaborations, handling and transport, bank charges, depreciation of current assets.



Personnel expenses by nature

Figure 12: Personnel expenses by nature

(in kCHF, rounded off)

Nature	2016 Probable Expenses (2016 prices)	Final 2017 Budget (2017 prices)	Variation of Final 2017 Budget with respect to 2016 Probable Expenses
	(a)	(b)	(b)-(a)/(a)
Staff members¹	485,970	500,335	3.0%
Basic salaries (incl saved leave)	310,765	319,950	3.0%
Basic salaries	315,955	325,295	3.0%
Contribution to saved leave schemes	-5,190	-5,345	3.0%
Allowances	64,605	66,515	3.0%
Non-resident allowances / international indemnities	19,380	19,955	3.0%
Family and child allowances	24,615	25,345	3.0%
Special allowances	2,845	2,930	3.0%
Overtime	2,745	2,820	2.7%
Various allowances	15,020	15,465	3.0%
Social contributions	110,600	113,870	3.0%
Pension Fund	85,565	88,095	3.0%
Health insurance	25,035	25,775	3.0%
Fellows²	73,155	68,245	-6.7%
Apprentices	400	300	-25.0%
Centralised personnel budget³	66,380	66,440	0.1%
Centralised personnel expenses	36,335	36,335	
Installation, recruitment and termination of contracts	6,500	6,100	-6.2%
<i>Installation and removal costs</i>	1,500	1,300	-13.3%
<i>Termination allowances</i>	5,000	4,800	-4.0%
Additional periods of membership of the Pension Fund for shift work		135	
Contribution to health insurance for pensioners incl. Long-term care	29,835	30,100	0.9%
<i>Contribution to health insurance for pensioners</i>	27,030	27,200	0.6%
<i>Contribution to long-term care for pensioners</i>	2,805	2,900	3.4%
Internal taxation	30,045	30,105	0.2%
TOTAL PERSONNEL	625,905	635,320	1.5%
Budget Amortisation of staff benefit accruals	17,330	17,330	
TOTAL PERSONNEL incl bud. amort. of staff benefit accruals	643,235	652,650	

¹ Including staff paid from team accounts (10.8 MCHF).

² Including fellows paid from team accounts (2.9 MCHF).

³ Including centralised expenses for staff and fellows paid from team accounts (0.03 MCHF).

Overall complement: The 2017 personnel budget covers 2,549.9 staff FTEs (2,462.6 FTEs funded by CERN's core budget, 10.0 FTEs funded by EU projects, 3.4 FTEs funded by OpenLab, 7.8 FTEs paid by external parties and 66.0 FTEs paid from team accounts) and 606.7 fellow FTEs (509.0 FTEs

funded by CERN's core budget, 61.2 FTEs funded by EU projects, 5.8 FTEs funded by OpenLab, 1.1 FTE funded by TT, 2.5 FTE paid by external parties and 27.2 FTEs paid from team accounts).

Explanations concerning Figure 12:

The total CERN personnel budget for 2017 amounts to 635.3 MCHF. This includes 13.7 MCHF for staff and fellows paid from team accounts.

The 2017 budget for staff members totals 500.3 MCHF. This amount has increased by 3.0% compared to the 2016 Probable Expenses, partly due to late arrivals in 2016, as well as to the net result of advancement and retirements.

The increase in allowances and social contributions is directly linked to the number of staff members. The actual percentage of the Organization’s contribution to the CERN Health Insurance Scheme is stable with respect to 2016, after yearly increases since 2011.

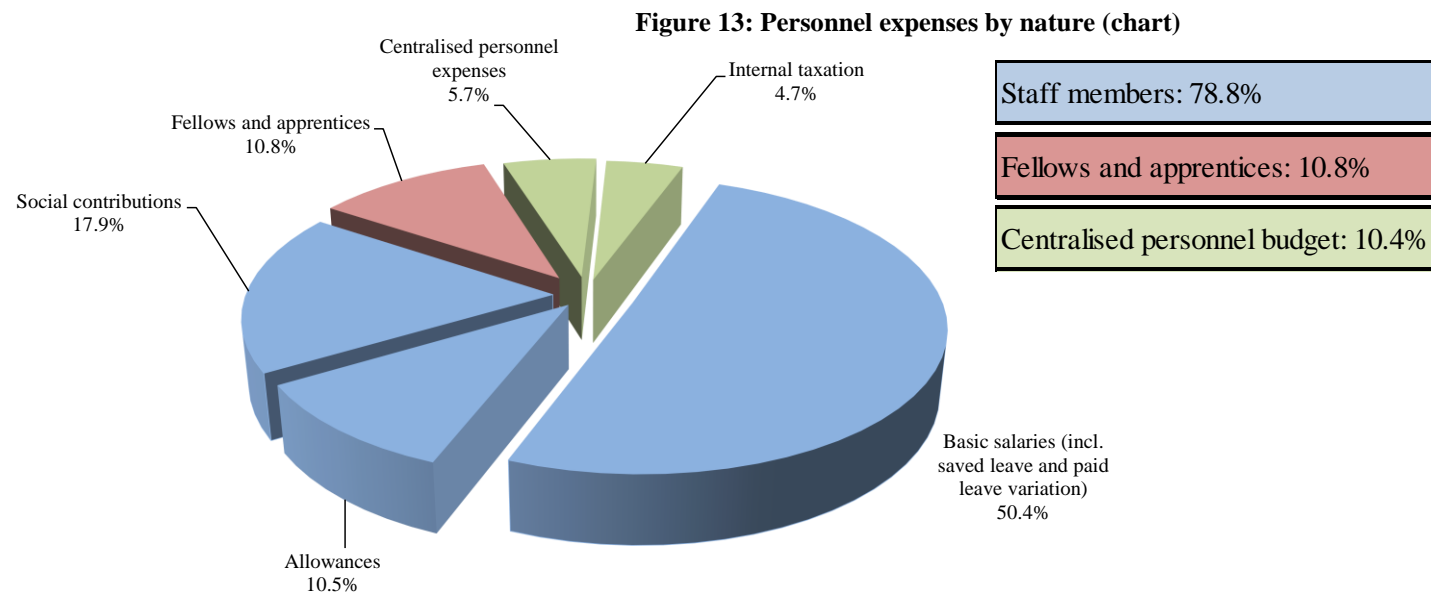
Additional fellowship funding will be made available during 2017, through materials-to-personnel transfers for the GET fellows programme and the Technical Trainees programme, which will be executed once the arrivals are confirmed.

As of August 2016, apprentices are now classed as associate members of the personnel (materials expenses). However, the apprentices who currently hold

a contract will remain employed members of the personnel for the duration of their internships and the personnel component of this heading will gradually decrease until 2019.

The centralised personnel expenses total 36.3 MCHF. The heading “Installation, recruitment and termination of contracts”, which relates to beneficiaries taking up appointment and leaving the Organization, is expected to decrease, mainly as a result of the recently introduced possibility to extend staff members’ contracts beyond 5 years. The contribution to the Pension Fund for additional periods of membership is based on an estimated number of staff members exercising this right. The contribution to pensioners’ health insurance and long-term care amounts to 30.1 MCHF, which represents an increase linked to more beneficiaries. The Organization’s contribution to the CERN Health Insurance Scheme for staff members has now been stabilised.

Internal taxation is expected to amount to 30.1 MCHF and is also shown as revenues for the Organization. The exact amount will depend on the staff positions in the salary grid.



Energy and water

Figure 14: Expenses – Energy and water

(in MCHF, rounded off)

Nature	2016 Probable Expenses (2016 prices)	Final 2017 Budget (2017 prices)	Variation of Final 2017 Budget with respect to 2016 Probable Expenses
	(a)	(b)	(b)-(a)/(a)
Energy and water (baseload)	13.50	14.41	6.8%
Electricity	5.95	6.41	7.8%
Heating oil and gas	4.00	4.40	10.0%
Water and waste water	3.55	3.60	1.4%
Energy for basic programmes	46.99	46.76	-0.5%
Experimental areas ¹	12.34	11.30	-8.4%
Data handling	1.50	1.66	10.3%
Accelerators:	13.18	13.36	1.3%
<i>AD</i>	<i>0.51</i>	<i>0.47</i>	<i>-8.2%</i>
<i>PS</i>	<i>2.81</i>	<i>2.72</i>	<i>-3.4%</i>
<i>SPS</i>	<i>9.86</i>	<i>10.18</i>	<i>3.2%</i>
LHC	19.96	20.44	2.4%
TOTAL ENERGY	60.49	61.17	1.1%

¹ This includes particle physics (PS and SPS fixed targets, ISOLDE, LHC experiments and LHC test beam to the East, West and North Areas).

The electricity consumption in 2017 reflects a year of operation with an extended year-end technical stop continuing at the beginning of the year. It is very similar to the consumption in 2016. The Final 2017 Budget includes 3%

indexation, which takes into account the combined effect of the electricity price increase and the impact of the EUR-CHF exchange rate.

V. Financial Position of the Organization

Statement of Cash Flow

Figure 15: Estimated cash-flow statement for the Financial Years 2016 and 2017

(in MCHF, rounded off, estimated as at 21/11/2016)

	2016 (2016 prices)	2017 (2017 prices)
(A) START OF THE YEAR		
Liquid assets brought forward	176	* 122
Outstanding short-term loans	0	* 0
(1) CASH INFLOW	1,304	1,301
Contributions	1,138	1,140
Teams and collaborations	118	118
EU, KT, other revenues	47	43
(2) CASH OUTFLOW	1,358	1,352
Payments	1,139	1,138
Teams and collaborations	122	118
Interest, bank and financial expenses	11	10
Capital repayment Fortis and FIPOI	25	26
Recapitalisation of the Pension Fund	60	60
(3) VARIATION OF CASH POSITION	-54	-51
(B) END OF THE YEAR		
Estimated liquid assets	122	71
Estimated outstanding short-term loans	0	0

* Estimated amount.

The cash-flow statement is an estimate assuming that Member States' contributions are paid by the scheduled instalment dates.

Under these assumptions, no short-term loans will be required in 2016 or 2017.

Short-term bank loans and overdrafts

No short-term bank loans and overdrafts are expected, provided that Member States' contributions are settled on the scheduled instalment dates or by the end of the year at the latest.

Loan from FORTIS bank

The outstanding amount owed to Fortis Bank amounts to 273.2 MCHF at the end of 2016 and will decrease to 248.4 MCHF by the end of 2017. The loan will be fully reimbursed by the end of June 2026.

Loans from FIPOI

The FIPOI loans are interest-free. Capital repayments for the three existing FIPOI loans amount to 1.1 MCHF per year; the financial benefit is accounted for as in-kind.