



**DRAFT FOUR-YEAR ROLLING OPERATIONAL PLAN FOR THE
RADIOCOMMUNICATION SECTOR FOR 2018-2021**

1 Introduction

The four-year rolling Operational Plan for the ITU Radiocommunication Sector (ITU-R) has been prepared in full alignment with the ITU Strategic Plan for 2018-2021, within the limits of the Financial Plan for 2018-2021 and the corresponding biennial budgets. The structure follows the ITU-R results framework, outlining the ITU-R objectives, the corresponding outcomes and the indicators to measure their progress, as well as the outputs (products and services) produced by the activities of the Sector.

The planning, implementation and monitoring and evaluation process for the Radiocommunication Bureau (BR) will be complemented by the following internal mechanisms:

- i) the Work Plans of the Departments and Divisions of the BR, and
- ii) the Service Level Agreements (SLAs) for the planning, monitoring and evaluation of the support services.

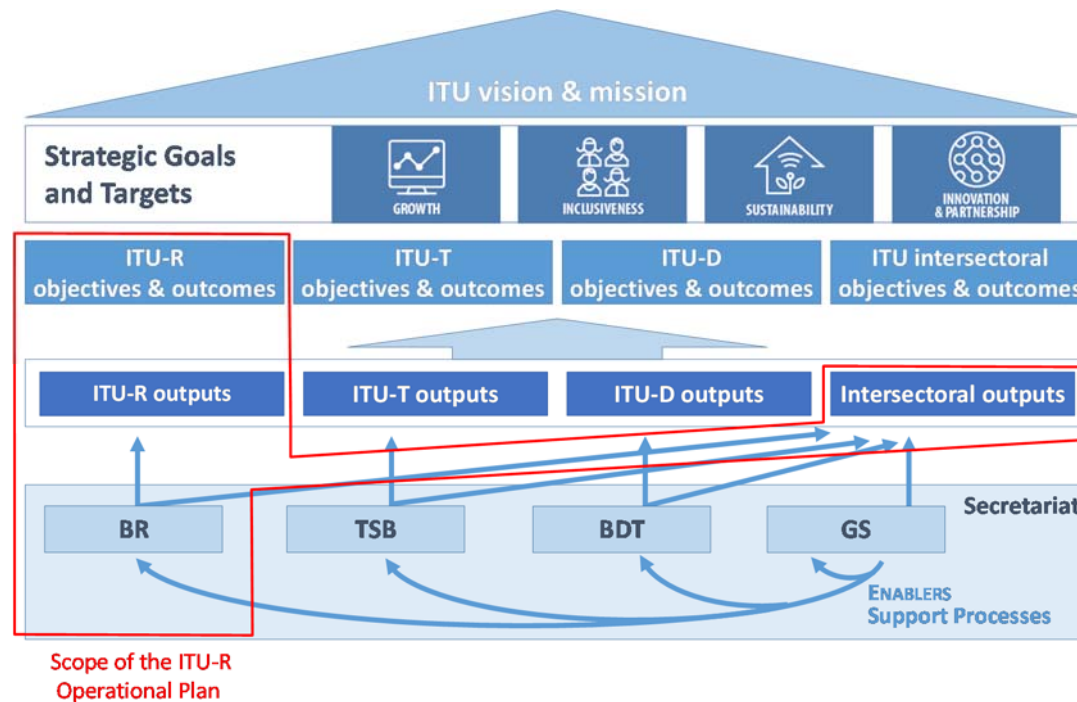


Figure 1: ITU-R OP and the ITU strategic framework for 2016-2019

2 Outline and key priorities for the ITU-R Sector

The period 2018-2021 will be marked by the implementation of the decisions of RA-15 and WRC-15, the preparation of RA-19 and WRC-19 and the development of key standards and best practices in radiocommunications. The key issues are listed below, against the four operational activities of the ITU-R Sector and the supporting activities of the Radiocommunication Bureau:

2.1 To establish and update international regulations on the use of the radio-frequency spectrum and satellite orbits

- The implementation of the decisions of WRC-15,
- The adoption by the RRB of the associated Rules of Procedure.

2.2 To implement and apply international regulations on the use of the radio-frequency spectrum and satellite orbits

- The development and delivery to the membership of the software tools relating to the application of the Radio Regulations and associated Rules of Procedure,
- The proper and timely application of the provisions of the Radio Regulations and applicable Regional Agreements for terrestrial and space services, with the update of the Master International Frequency Register (MIFR) and assignment and/or allotment Plans and Lists,
- The monitoring of harmful interference cases and more generally of situations of conflicts in sharing spectrum/orbit resources and the resolution of these cases,
- The associated publications (BR IFIC, Maritime service publications, list of international monitoring stations).

2.3 To establish and update worldwide Recommendations, Reports and Handbooks for the most efficient use of the radio-frequency spectrum and satellite orbits

- The preparation of RA-19 and WRC-19 in ITU-R Study Groups and in close collaboration with the regional groups, including the development of draft technical, regulatory, and procedural texts in support of the CPM19-2,
- The development of key Recommendations, Reports and Handbooks, in particular on the radio interface of IMT-2020, in close cooperation with ITU-T, regional organizations and other standard-making bodies.

2.4 To inform and assist the ITU-R membership in radiocommunication matters

- The publication and promotion of the ITU-R products (such as Radio Regulations, Recommendations, Reports, and Handbooks).
- In close cooperation with the other Sectors, the ITU regional offices, the relevant regional organizations, and the membership,
 - The dissemination and sharing of information, including Worldwide and Regional Radiocommunication seminars, conferences, workshops and other events.
 - The assistance to the membership in facing the challenges raised by the development of their radiocommunication services, in particular in relation to the transition to digital television broadcasting and the use of the digital dividend.

2.5 Supporting activities of the Radiocommunication Bureau

- The continuing development, improvement, and maintenance of the BR software tools, with a view to maintaining a high level of efficiency, reliability, user-friendliness, and satisfaction of the membership.
- The logistical and administrative support to ITU-R Study groups and the participation in the related activities of the regional groups.
- The rendering of assistance to the membership, in close collaboration with the other Bureaux, the ITU regional offices, and the regional organizations.

3 ITU-R results framework for 2018-2021

3.1 Linkage with the ITU Strategic Goals¹

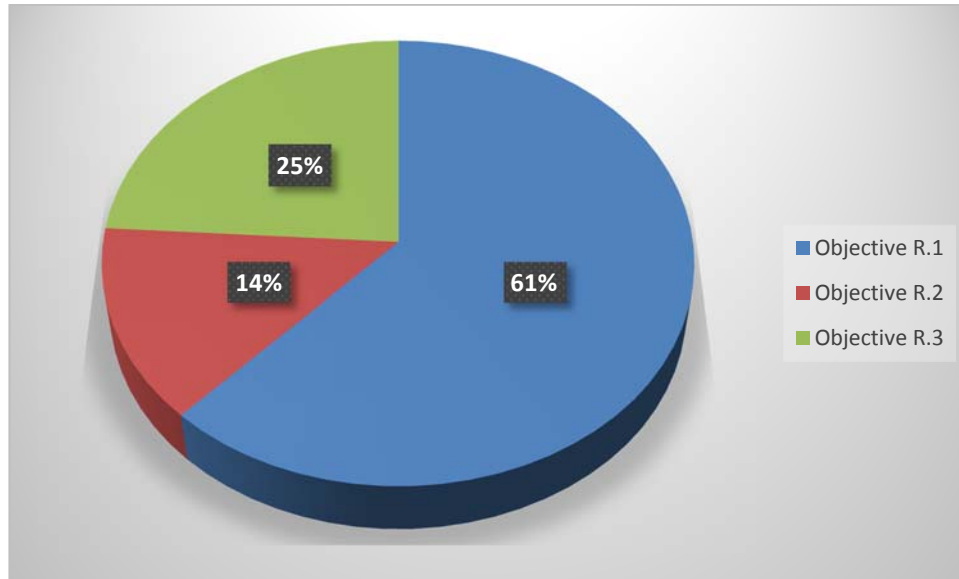
ITU-R objectives	Goal 1: Growth	Goal 2: Inclusiveness	Goal 3: Sustainability	Goal 4: Innovation & partnership
R.1 Meet, in a rational, equitable, efficient, economical and timely way, the ITU membership's requirements for radio-frequency spectrum and satellite orbit resources, while avoiding harmful interference	☑	✓	✓	✓
R.2 Provide for worldwide connectivity and interoperability, improved performance, quality, affordability and timeliness of service and overall system economy in radiocommunications, including through the development of international standards	☑	✓	✓	✓
R.3 Foster the acquisition and sharing of knowledge and know-how on radiocommunications		☑		

¹ Boxes and ticks demonstrate primary and secondary links to goals.

3.2 ITU-R objectives, outcomes and outputs

Objectives	R.1 Meet, in a rational, equitable, efficient, economical and timely way, the ITU membership's requirements for radio-frequency spectrum and satellite-orbit resources, while avoiding harmful interference	R.2 Provide for worldwide connectivity and interoperability, improved performance, quality, affordability and timeliness of service and overall system economy in radiocommunications, including through the development of international standards	R.3 Foster the acquisition and sharing of knowledge and know-how on radiocommunications
Outcomes	<p>R.1-1: Increased number of countries having satellite networks and earth stations recorded in the Master International Frequency Register (MIFR)</p> <p>R.1-2: Increased number of countries having terrestrial frequency assignments recorded in the MIFR</p> <p>R.1-3: Increased percentage of assignments recorded in the MIFR with favourable finding</p> <p>R.1-4: Increased percentage of countries which have completed the transition to digital terrestrial television broadcasting</p> <p>R.1-5: Increased percentage of spectrum assigned to satellite networks which is free from harmful interference</p> <p>R.1-6: Increased percentage of assignments to terrestrial services recorded in the MIFR which are free from harmful interference</p>	<p>R.2-1: Increased mobile-broadband access, including in frequency bands identified for international mobile telecommunications (IMT)</p> <p>R.2-2: Reduced mobile-broadband price basket, as a percentage of gross national income (GNI) per capita</p> <p>R.2-3: Increased number of fixed links and increased amount of traffic handled by the fixed service (Tbit/s)</p> <p>R.2-4: Number of households with digital terrestrial television reception</p> <p>R.2-5: Number of satellite transponders (equivalent 36 MHz) in operation and corresponding capacity (Tbit/s); Number of VSAT terminals; Number of households with satellite television reception</p> <p>R.2-6: Increased number of devices with radionavigation-satellite reception</p> <p>R.2-7: Number of Earth exploration satellites in operation, corresponding quantity and resolution of transmitted images and data volume downloaded (Tbytes)</p>	<p>R.3-1: Increased knowledge and know-how on the Radio Regulations, Rules of Procedures, regional agreements, recommendations and best practices on spectrum use</p> <p>R.3-2: Increased participation in ITU-R activities (including through remote participation), in particular by developing countries</p>
Outputs	<ul style="list-style-type: none"> – Final acts of world radiocommunication conferences, updated Radio Regulations – Final acts of regional radiocommunication conferences, regional agreements – Rules of Procedure adopted by Radio Regulations Board (RRB) – Results of the processing of space notices and other related activities – Results of the processing of terrestrial notices and other related activities – RRB decisions other than the adoption of Rules of Procedure – Improvement of ITU-R software 	<ul style="list-style-type: none"> – Decisions of Radiocommunication Assembly, ITU-R resolutions – ITU-R recommendations, reports (including the CPM report) and handbooks – Advice from the Radiocommunication Advisory Group 	<ul style="list-style-type: none"> – ITU-R publications – Assistance to members, in particular developing countries and LDCs – Liaison/support to development activities – Seminars, workshops and other events
<p>The following outputs of the activities of the ITU governing bodies contribute to the implementation of all the objectives of the Union:</p> <ul style="list-style-type: none"> – Decisions, resolutions, recommendations and other results of the Plenipotentiary Conference – Decisions and resolutions of the Council, as well as results of the Council Working Groups 			

3.3 Allocation of resources to ITU-R objectives and outputs for 2018-2021



- R.1** Meet, in a rational, equitable, efficient, economical and timely way, the ITU membership's requirements for radio-frequency spectrum and satellite-orbit resources, while avoiding harmful interference **61%**
- R.2** Provide for worldwide connectivity and interoperability, improved performance, quality, affordability and timeliness of service and overall system economy in radiocommunications, including through the development of international standards **14%**
- R.3** Foster the acquisition and sharing of knowledge and know-how on radiocommunications **25%**

Planned allocation of resources per Output

	% of total	% of objective
R.1-1 Final acts of world radiocommunication conferences, updated Radio Regulations	5.4%	8.8%
R.1-2 Final acts of regional radiocommunication conferences, regional agreements	0.5%	0.8%
R.1-3 Rules of Procedure adopted by Radio Regulations Board (RRB)	2.0%	3.3%
R.1-4 Results of the processing of space notices and other related activities	24.4%	39.9%
R.1-5 Results of the processing of terrestrial notices and other related activities	12.1%	19.8%
R.1-6 RRB decisions other than the adoption of Rules of Procedure	2.0%	3.3%
R.1-7 Improvement of ITU-R software	12.4%	20.2%
R.2-1 Decisions of Radiocommunication Assembly, ITU-R resolutions	2.4%	17.4%
R.2-2 ITU-R recommendations, reports (including the CPM report) and handbooks	9.1%	65.6%
R.2-3 Advice from the Radiocommunication Advisory Group	1.8%	13.3%
R.3-1 ITU-R publications	12.4%	49.4%
R.3-2 Assistance to members, in particular developing countries and LDCs	3.9%	15.7%
R.3-3 Liaison/support to development activities	2.3%	9.1%
R.3-4 Seminars, workshops and other events	5.5%	22.0%
PP : Decisions, resolutions, recommendations and other results of the Plenipotentiary Conference *	1.5%	1.5%
Council/CWGs : Decisions and resolutions of the Council, as well as results of the Council working groups *	2.2%	2.2%

* Cost of these Outputs is allocated to all the Objectives of the Union.

4 Risk analysis

Moving from strategy to implementation, the following top-level operational risks presented in the Table below have been identified, analysed and evaluated. The Bureaux and each Department will manage all the risks associated with the achievement of the corresponding outcomes.

RISK FOCUS	DESCRIPTION OF RISK	PROBABILITY	IMPACT LEVEL	MITIGATION ACTIONS ²
OPERATIONAL RISK	a) Total or partial loss of integrity of data in the MIFR or in any of the Plans, resulting in inadequate protection of the rights of administrations to use spectrum/orbit resources	Low	Very High	<ul style="list-style-type: none"> - Daily backup of data - Development of high data security program - Ability to restore data/operation within a limited time period
	b) Total or partial loss of operations in the processing of notices, resulting in delays in the recognition of rights of administrations to use spectrum/orbit resources and risks for the corresponding investments.			
	c) Occurrence of harmful interference (e.g. due to lack of observance of the regulatory provisions), resulting in disruptions in the radiocommunication services provided by the membership.	Low	High	<ul style="list-style-type: none"> - Promote capacity building on international regulations, through worldwide and regional seminars, and any other appropriate events - Provide BR assistance in applying the international regulations - Promote regional or sub-regional coordination to resolve interference problems, with BR support - Report, inform and assist in resolving cases of harmful interference in accordance with the instructions to the Director of the Bureau in Resolution 186 (Busan, 2014)
ORGANIZATIONAL RISK	Inadequate facilities for meetings in ITU (e.g. due to lack of meeting rooms and overcrowded meetings schedule), resulting in membership dissatisfaction and delays in work programmes.	Medium	High	<ul style="list-style-type: none"> - Hold more meetings externally - Increase the use of virtual meeting rooms for small meetings

² Risk owners will be appointed by the Director of the Bureau.

5 ITU-R objectives, outcomes and outputs for 2018-2021

ITU-R Sector objectives will be met by achieving the related outcomes, through the implementation of the outputs. ITU-R objectives, in the context of the remit of the Sector, contribute to the overarching goals of the Union. The Radiocommunication Bureau is also contributing to the implementation of the intersectoral objectives, outcomes and outputs (presented in the General Secretariat's Operational Plan).

5.1 R.1 Meet, in a rational, equitable, efficient, economical, and timely way, the ITU membership's requirements for radio-frequency spectrum and satellite-orbit resources, while avoiding harmful interference.

Outcome	Outcome Indicator	2013	2014	2015	2016	2020 target	Source
R.1-1: Increased number of countries having satellite networks and earth stations recorded in the Master International Frequency Register (MIFR)	Number of countries having satellite networks recorded in the MIFR	49	51	52	56	70	BR/MIFR
	Number of countries having earth stations recorded in the MIFR	82	82	76	77	120	
R.1-2: Increased number of countries having terrestrial frequency assignments recorded in the MIFR	Number of countries having terrestrial frequency assignments recorded in the MIFR	188	188	190	190	193	BR/MIFR
	Number of countries which registered terrestrial assignments in the MIFR within the last 4-year period	74	78	84	79	90	
R.1-3: Increased percentage of assignments recorded in the MIFR with favourable finding	Subject to Coordination (Terrestrial)	99.86%	99.86%	99.87%	99.88%	99.99%	BR/MIFR
	Subject to a Plan (Terrestrial)	92.66%	92.81%	74.46%	74.32%	75%	
	Others	98.29%	98.34%	98.37%	98.46%	98%	
R.1-4: Increased percentage of countries which have completed the transition to digital terrestrial television broadcasting	Percentage of countries which have completed the transition to digital terrestrial television	3.6%	17%	27%	42%	70%	BR & BDT

Outcome	Outcome Indicator	2013	2014	2015	2016	2020 target	Source
R.1-5: Increased percentage of spectrum assigned to satellite networks which is free from harmful interference	% of spectrum assigned to satellite networks which is free from harmful interference	99.97%	99.97%	99.96%	99.96%	99.99%	BR/MIFR
R.1-6: Increased percentage of assignments to terrestrial services recorded in the MIFR which are free from harmful interference	Percentage of assignments to terrestrial services recorded in the Master Register which are free from harmful interference (based on the number of cases reported to the ITU within the last four years)	99.99%	99.99%	99.99%	99.90%	99.99%	BR/MIFR

Output	Financial resources ³ (in k CHF)			
	2018	2019	2020	2021
R.1-1: Final acts of world radiocommunication conferences, updated Radio Regulations	1,762	9,367	1,009	1,021
R.1-2: Final acts of regional radiocommunication conferences, regional agreements	242	333	308	309
R.1-3: Rules of Procedure adopted by the Radio Regulations Board (RRB)	1,268	1,213	1,238	1,226
R.1-4: Results of the processing of space notices and other related activities	14,641	14,577	15,259	15,388
R.1-5: Results of the processing of terrestrial notices and other related activities	7,475	7,339	7,371	7,383
R.1-6: RRB decisions other than the adoption of Rules of Procedure	1,186	951	1,422	1,435
R.1-7: Improvement of ITU-R software	7,725	7,562	7,453	7,505
Cost allocation to Plenipotentiary Conference and Council activities (PP, Council/CWGs)	2,028	1,229	1,050	1,204
Total for Objective R.1	36,327	42,571	35,110	35,471

³ Estimates, especially for 2018-2019. Allocation of resources for the subsequent years is subject to change upon Senior Management decisions.

5.2 R.2 Provide for worldwide connectivity and interoperability, improved performance, quality, affordability, and timeliness of service and overall system economy in radiocommunications, including through the development of international standards

Outcome	Outcome Indicator ⁴	2012	2013	2014	2015	2016	2020 target	Source
R.2-1: Increased mobile-broadband access, including in frequency bands identified for international mobile telecommunications (IMT)	Number of subscriptions/subscribers (bn)	6.23/ 4.30	6.67/ 4.60	7.01/ 4.83	7.22 /4.98	7.38/ 5.09*	9.20	The State of Broadband 2016: A Report by the Broadband Commission for Digital Development
	% of mobile broadband subscriptions	25%	29%	38%	45%	50%*	83.7%	
R.2-2: Reduced mobile-broadband price basket, as a percentage of gross national income (GNI) per capita	Mobile broadband price basket as percentage of GNI per capita (prepaid, handset 500 MB) World		8.72	5.50	3.88		4.00	ITU, Measuring the Information Society (MIS) Report, Ed. 2016
	<i>Developed Countries</i>		1.02	0.75	0.57			
	<i>Developing Countries</i>		11.6	7.2	5.1			
	<i>Least Developed Countries</i>		30.3	17.0	11.4			
	Number of countries with a price basket below 5%	81	101	117	135		193	
R.2-3: Increased number of fixed links and increased amount of traffic handled by the fixed service (Tbit/s)	Number of fixed links			n/a	n/a	n/a	n/a	To be obtained via BDT/ICT Survey
	Total capacity (in Tbps)			n/a	n/a	n/a	n/a	To be obtained via BDT/ICT Survey
R.2-4: Number of households with digital terrestrial television reception	Number of households with DTT (millions)	130.1	164.7	203.3	252.0		453	Digital TV World Databook report, June 2015; Digital TV Research Ltd Databook report
	<i>Number of households with ATT (millions)</i>	419.5	364.6	319.8	261.9			

⁴ "n/a" specifies that indicator values are not yet available.

* Estimates.

Outcome	Outcome Indicator ⁴	2012	2013	2014	2015	2016	2020 target	Source
	<i>Total number of households DTT + ATT (millions)</i>	549.6	529.3	514.1	513.9			
	% of households with DTT	6.8%	8.5%	10.3%	12.7%		22.7%	
	% of households with ATT	21.8%	18.7%	16.3%	13.2%			
	% of households with Terrestrial TV	28.6%	27.2%	26.6%	25.8%			
R.2-5: Number of satellite transponders (equivalent 36 MHz) in operation and corresponding capacity (Tbit/s); Number of VSAT terminals; Number of households with satellite television reception	Number of satellite transponders (equivalent 36 MHz) in operation		15878	15997	17953	19772	n/a	Euroconsult (http://www.euroconsult-ec.com)
	Corresponding capacity (in Tbit/s)		0.999	1.095	1.269	1.491	n/a	Euroconsult (http://www.euroconsult-ec.com)
	Number of VSATs (millions)		3.480	3.786	3.891	3.838	n/a	Global VSAT Forum (https://gvf.org)
	Number of DTH (millions)	319.3	337.3	359.2	396.3		439	Digital TV World Databook report, June 2015; Digital TV Research Ltd
R.2-6: Increased number of devices with radionavigation-satellite reception	Number of operational GNSS constellations/satellites	2/48	2/48	2/48	4/75	5/90	6/144	BR/MIFR
	Number of devices with GNSS embedded Rx (billions)		2.9	3.6	4.5*	5.4*	8	European GNSS Agency: GNSS Report 2015 (https://www.gsa.europa.eu)
R.2-7: Number of Earth exploration satellites in operation, corresponding quantity and resolution of transmitted images and data volume downloaded (Tbytes)	Number of ERS satellites			180	215	219	440	BR/MIFR
	Quantity of transmitted images (million)	55	60	62	68	71	n/a	Various COPUOS stakeholders
	Size of downloaded images (Terabytes)	18,000	22,000	27,000	35,000	37,000	n/a	Various COPUOS stakeholders

Output	Financial resources ⁵ (in k CHF)			
	2018	2019	2020	2021
R.2-1 Decisions of the Radiocommunication Assembly, ITU-R resolutions	1,012	2,142	1,370	1,387
R.2-2 ITU-R recommendations, reports (including the CPM report) and handbooks	5,022	6,060	5,517	5,660
R.2-3 Advice from the Radiocommunication Advisory Group	1,242	1,270	995	1,006
Cost allocation to Plenipotentiary Conference and Council activities (PP, Council/CWGs)	433	283	243	283
Total for Objective R.2	7,709	9,755	8,125	8,336

5.3 R.3 Foster the acquisition and sharing of knowledge and know-how on radiocommunications

Outcome	Outcome Indicator	2014	2015	2016	2020 target	Source
R.3-1: Increased knowledge and know-how on the Radio Regulations, Rules of Procedures, regional agreements, recommendations and best practices on spectrum use	Number of ITU-R free online publication downloads (millions) ⁶	0.9	0.9	1.0	4.0	ITU Events Registration Database
	Number of capacity-building events organized/supported by BR (presence & virtual)	30	25	38	36	
	Number of participants on capacity building events organized/supported by ITU/BR (intra WRC period)	1,261	1,518	737	2,000	
R.3-2: Increased participation in ITU-R activities (including through remote participation), in particular by developing countries	Number of technical assistances/events with BR participation	78	93	100	100	ITU Events Registration Database
	Number of countries receiving BR technical assistance/events	57	78	61	80	ITU Events Registration Database
	Number of participants/events in ITU-R conferences, assemblies and Study Group-related meetings (presence & virtual)	6,385/52	8972/38	6042/48		ITU Events Registration Database
	Number of countries participating in ITU-R seminars and workshops, SG and WP meetings and events (presence & virtual)	103	161	130	193	ITU Events Registration Database

⁵ Estimates, especially for 2018-2019. Allocation of resources for the subsequent years is subject to change upon Senior Management decisions.

* Estimates.

⁶ This number is appropriate for comparison purposes only, as the download of a single document/publication might count as several downloads.

Output	Financial resources ⁷ (in k CHF)			
	2018	2019	2020	2021
R.3-1 ITU-R publications	7,737	5,985	8,328	8,283
R.3-2 Assistance to members, in particular developing countries and LDCs	2,565	2,392	2,336	2,353
R.3-3 Liaison/support to development activities	1,484	1,554	1,281	1,290
R.3-4 Seminars, workshops and other events	3,552	3,420	3,282	3,290
Cost allocation to Plenipotentiary Conference and Council activities (PP, Council/CWGs)	911	398	470	535
Total for Objective R.3	16,249	13,749	15,697	15,751

6 Implementation of the Operational Plan

The outputs defined in this Operational Plan will be coordinated by the responsible Departments of the Radiocommunication Bureau, implementing the activities of the internal work plans of the Bureau and each department; the regional offices will participate in the implementation of this operational plan. The administrative support services are delivered partly by the Radiocommunication Bureau and principally by the General Secretariat, subject to predefined and agreed annual Service Level Agreements (for the provision of internal services) between the two parties. The Support Services delivered by the General Secretariat are described in the General Secretariat Operational Plan. The delivery of the outputs and support services is planned, monitored and evaluated by ITU management based on the objectives of the ITU as outlined in the strategic plan. The annual report on the implementation of the strategic plan will emphasize on the progress made towards achieving these objectives and the overall goals. With regard to risk management, in addition to the risks analysis included in this Operational Plan for periodical review by senior management, each Bureau/Department will continue systematic identification, assessment and management of risks associated with the delivery of the respective outputs and support services, based on a multi-level risk management approach.

⁷ Estimates, especially for 2018-2019. Allocation of resources for the subsequent years is subject to change upon Senior Management decisions.

Annex 1: Allocation of resources to intersectoral objectives and ITU Strategic Goals

CHF 000

ITU Strategic Objectives for 2018		Total Cost	Cost of BR/Direct Cost	Cost Reallocated from GS	Cost allocated by TSB/BDT
R1	ITU-R Objective 1	36,329	19,354	16,953	22
R2	ITU-R Objective 2	7,709	4,709	2,995	5
R3	ITU-R Objective 3	16,249	9,949	6,290	10
Total Cost		60,287	34,012	26,238	37

Goal 1 Growth	Goal 2 Inclusiveness	Goal 3 Sustainability	Goal 4 Innovation & partnership
50%	30%	10%	10%
50%	30%	10%	10%
0%	100%	0%	0%

Goal 1 Growth	Goal 2 Inclusiveness	Goal 3 Sustainability	Goal 4 Innovation & partnership
18,165	10,899	3,633	3,633
3,855	2,313	771	771
0	16,249	0	0
22,020	29,461	4,404	4,404
36.5%	48.9%	7.3%	7.3%

ITU Strategic Objectives for 2019		Total Cost	Cost of BR/Direct Cost	Cost Reallocated from GS	Cost allocated by TSB/BDT
R1	ITU-R Objective 1	42,570	25,521	17,024	26
R2	ITU-R Objective 2	9,755	6,712	3,038	6
R3	ITU-R Objective 3	13,749	7,779	5,962	8
Total Cost		66,074	40,012	26,024	40

Goal 1 Growth	Goal 2 Inclusiveness	Goal 3 Sustainability	Goal 4 Innovation & partnership
50%	30%	10%	10%
50%	30%	10%	10%
0%	100%	0%	0%

Goal 1 Growth	Goal 2 Inclusiveness	Goal 3 Sustainability	Goal 4 Innovation & partnership
21,285	12,771	4,257	4,257
4,877	2,926	975	975
0	13,749	0	
26,162	29,446	5,232	5,232
39.6%	44.6%	7.9%	7.9%