**COMISSÃO LATINO-AMERICANA
DE AVIAÇÃO CIVIL**

CLAC

**LATIN AMERICAN CIVIL
AVIATION COMISIÓN**

COMISIÓN LATINOAMERICANA DE AVIACIÓN CIVIL

**SECRETARÍA
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LIMA 100, PERÚ**

CLAC/GEPEJTA/15-NI/01
27/01/05

**DÉCIMA QUINTA REUNIÓN DEL GRUPO DE EXPERTOS EN ASUNTOS POLÍTICOS,
ECONÓMICOS Y JURÍDICOS DEL TRANSPORTE AÉREO (GEPEJTA/15)**

(Asunción, Paraguay, 16 al 18 de marzo de 2005)

**Cuestión 13 del
Orden del Día**:   **Otros asuntos:**

- Informe sobre las misiones de evaluación de búsqueda y salvamento (SAR) en los Estados africanos
  Tarea No. 1 del Programa de Trabajo de la CLAC

(Nota informativa presentada por la Secretaría)

1.   Considerando la importancia del fortalecimiento de los servicios de búsqueda y salvamento (SAR), la Secretaría ha creído conveniente **adjuntar**, para conocimiento de los Expertos, el informe OACI/CAFAC sobre las misiones de evaluación SAR.

Medidas propuestas al Grupo de Expertos

2.   Se invita al Grupo de Expertos a tomar nota de la información presentada en el **adjunto**.

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Ref.: AN 15/19   29 de septiembre de 2004

Asunto: Informe sobre las misiones de evaluación
de búsqueda y salvamento (SAR) en los
Estados africanos — 2003

Tramitación: Tomar nota

Señor/ Señora:

1.   Tengo el honor de dirigirme a usted en relación con el Memorundo de acuerdo (MOU) relativo a un programa para el fortalecimiento de los servicios de búsqueda y salvamento (SAR) en los Estados africanos firmado en enero de 2002, entre el Gobierno de Francia, la Comisión Africana de Aviación Civil (CAFAC) y la Organización de Aviación Civil Internacional (OACI). Como resultado de ello, la OACI y la CAFAC llevaron a cabo misiones de evaluación SAR en 18 Estados africanos en 2003, con el apoyo financiero del Gobierno de Francia.

2.   Si bien todos los informes sobre las misiones de evaluación SAR son confidenciales, según lo convenido en el MOU, la Secretaría de la OACI realizó un análisis detallado de las conclusiones, basándose en los resultados recopilados y las tendencias identificadas en cada uno de los Estados evaluados. En este informe, se respeta plenamente la confidencialidad de los informes de evaluación individuales, pero se brinda una percepción de las necesidades de la región y se sugieren estrategias de perfeccionamiento.

3.   Del análisis de los 18 Estados evaluados se desprende que los servicios SAR en los Estados africanos pueden mejorarse de manera significativa sin excesivos gastos ni aumento de los recursos. Esta estrategia supone la adopción de legislación habilitante y de aplicación, el mejoramiento de la organización de las entidades de cooperación, el establecimiento de un mecanismo de financiamiento, una coordinación más estrecha entre los servicios aeronáuticos y marítimos, y acuerdos regionales más sólidos para compartir el uso de los recursos.

4.   Estos conceptos, que son el fundamento de la política actual de la OACI y de la Organización Marítima Internacional (OMI) sobre los servicios SAR y que fueron formulados en el marco de la reciente enmienda completa del Anexo 12 — *Búsqueda y salvamento*, han recibido amplia aceptación por parte de los Estados participantes.

S04-4247

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5.　　　　Se adjunta a la presente el informe OACI/CAFAC sobre las misiones de evaluación SAR. Espero que lo encuentre instructivo y que le sea útil en el contexto de las circunstancias imperantes en su Estado.

6.　　　　Se ruega tomar nota asimismo de que varios otros Estados africanos se han ofrecido para que se realicen evaluaciones de sus sistemas SAR en 2004. Además, si los Estados donantes mantienen su apoyo financiero, se llevarán a cabo misiones de asistencia en aquellos Estados que, habiendo sido objeto de evaluación, han solicitado la asistencia de la OACI para subsanar las deficiencias.

7.　　　　En estrecha cooperación con el Gobierno de Francia, la OMI, la CAFAC y otros participantes africanos, la OACI continuará ayudando a los Estados africanos por lo que respecta a sus permanentes esfuerzos para proporcionar servicios SAR que cumplen plenamente con las normas internacionales.

8.　　　　La Secretaría de la OACI desea aprovechar la oportunidad para agradecer al Gobierno de Francia el apoyo financiero brindado al proyecto y recordar a todas las partes interesadas que siempre son bien recibidas las contribuciones voluntarias a los proyectos relacionados con la seguridad operacional.

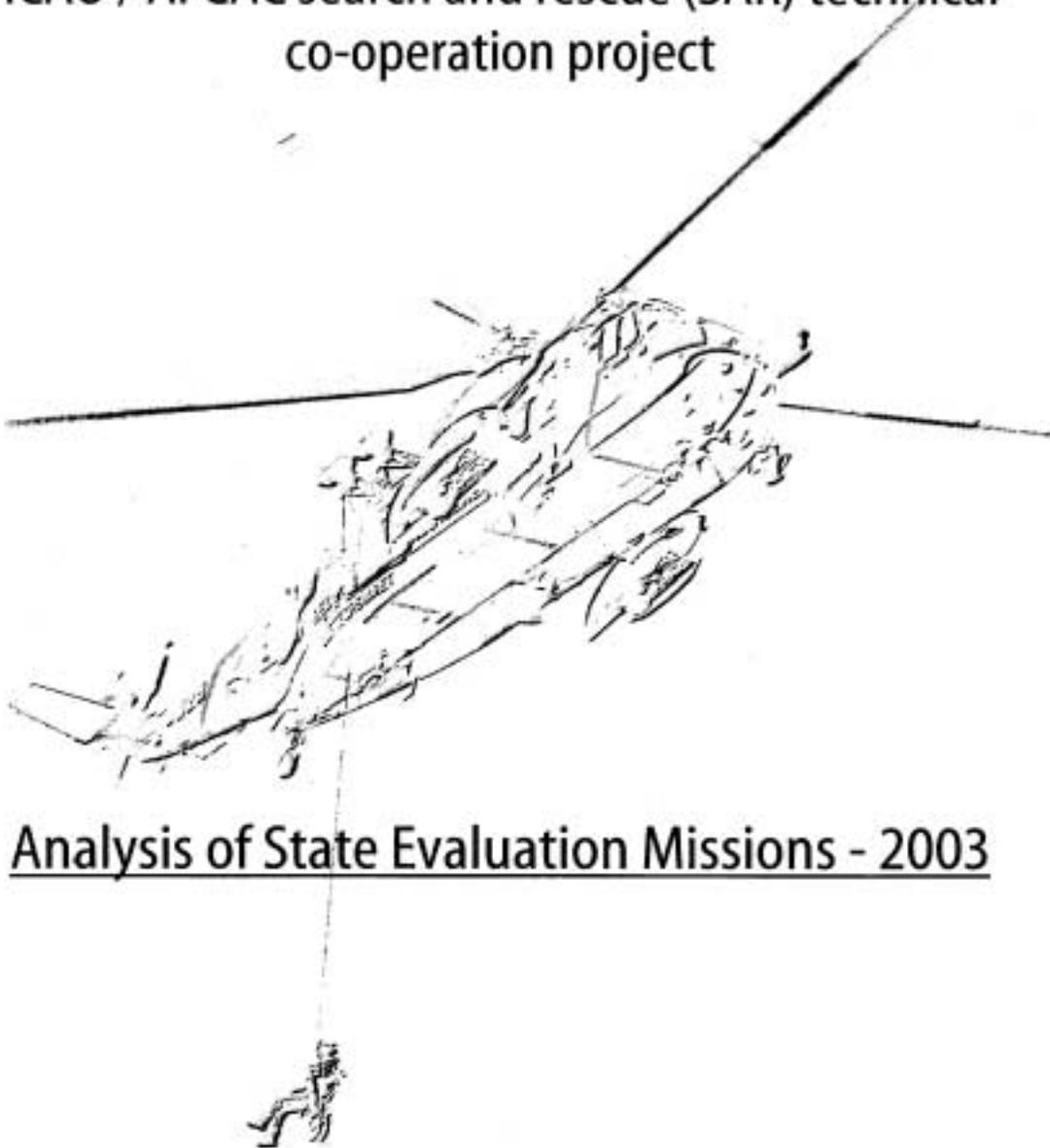Le ruego acepte el testimonio de mi mayor consideración y aprecio.

Taïeb Chérif
Secretario General

Anéxanse:
Informes sobre las misiones de evaluación

ICAO / AFCAC search and rescue (SAR) technical co-operation project

Analysis of State Evaluation Missions - 2003

September 2004

ICAO / AFCAC Search and Rescue (SAR) Project

Evaluation missions

Findings Analysis

1. INTRODUCTION

From March to November 2003, eighteen African States received a Search And Rescue (SAR) evaluation mission in the framework of a technical cooperation project managed by the African Civil Aviation Commission (AFCAC) and the International Civil Aviation Organization (ICAO) and funded by France.

Those States are :

- Benin
- Botswana
- Burkina Faso
- Cameroon
- Chad
- Gambia
- Ghana
- Kenya
- Lesotho
- Mali
- Mauritania
- Niger
- Nigeria
- Senegal
- South Africa
- Sudan
- United Republic of Tanzania
- Zimbabwe

The following map shows the above States (shown in blue or dark grey on black and white prints), as well as all States that had requested an evaluation as of 1st March 2004, but have not yet been evaluated (shown in red or light grey on black and white prints).

Note: Tunisia was evaluated in March 2004 but findings from the Tunisia mission are not included in the present analysis. Tunisia is therefore shown in red.
The Seychelles administration has requested an evaluation mission but because the State is geographically remote from the African mainland, it was not possible to include it on the map. Other island States, including Cape Verde, Sao Tome and Principe, do not appear on the map for the same reason.
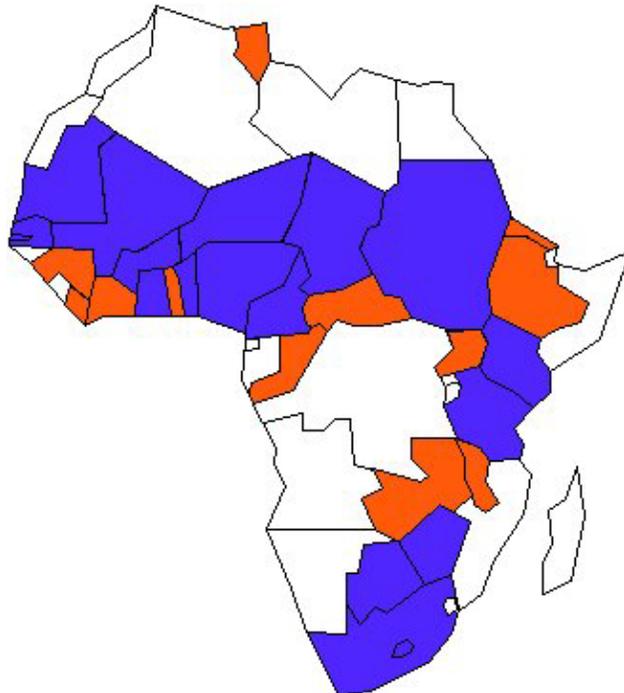
The present document aims at presenting an overview of the most important findings and conclusions drawn from the eighteen SAR evaluation missions conducted in 2003.

The main purpose of this document is to provide the ICAO / AFCAC SAR project steering committee with insight into the level of implementation of ICAO SAR Standards and Recommended Practices (SARPs) in the evaluated African States.

The document also aims at providing feedback to the ICAO – International Maritime Organisation (IMO) SAR Joint Working Group and other AFCAC and ICAO partners in recognition of their support of and contribution to the ICAO / AFCAC SAR project activities.

2. BACKGROUND INFORMATION

2.1. General presentation of the project and definitions

The present document covers the findings of evaluation missions conducted in the framework of the search and rescue (SAR) technical cooperation programme implemented by the African Civil Aviation Commission (AFCAC) and the International Civil Aviation Organisation (ICAO) and funded by France, pursuant to the Memorandum of Understanding signed on 31st January 2002 between AFCAC, France and ICAO.

The terminology used in the present report conforms to the definitions found in Annex 12 – *Search and Rescue* to the Convention on International Civil Aviation (Chicago Convention) and in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual (ICAO Doc 9731).

2.2. Rules and policy of the evaluations

2.2.1. Objective

The objective of the evaluation missions was to determine, in some detail, the level of implementation of ICAO Standards and Recommended Practices (SARPs) by evaluated States in the field of SAR and to make recommendations for consideration by State administrations in consequential strengthening activity.

2.2.2. Participating States

The evaluation missions were conducted in those African States that had requested SAR technical assistance within the framework of the project.

2.2.3. Principles

The project evaluation teams sought to respect the following principles :

- Sovereignty
- Voluntarism
- Confidentiality
- Timeliness
- Uniformity
- Fairness
- Quality

2.2.3.1. Sovereignty

AFCAC, ICAO and participating States recognize that every State has complete and exclusive sovereignty over the airspace above its territory, pursuant to Article 1 of the Convention on International Civil Aviation.

2.2.3.2.   Voluntarism

The ICAO / AFCAC SAR programme, in each of its components, was initiated on a voluntary basis. It is, therefore, on a voluntary basis that each State whose SAR services are to be evaluated in the framework of the present programme is participating.

2.2.3.3.   Confidentiality

Pursuant to article 3 of the Memorandum of Understanding on the improvement of search and rescue services in the African States, AFCAC and ICAO commit themselves to respect the confidentiality of the SAR evaluation reports. However, it is proposed that reports on evaluated States be forwarded to appropriate technical and institutional partners of AFCAC and ICAO. Each State may or may not agree to the findings of the evaluation being communicated to such other parties and, if in agreement in principle, may choose which partner(s) may receive the report.

To respect this agreement, States are not identified in this report, being referred to, for example, as 'State n° X'.

2.2.3.4.   Timeliness

Evaluation reports are produced and communicated to the evaluated State on a timely basis in accordance with an agreed pre-determined schedule.

2.2.3.5.   Homogeneity

AFCAC and ICAO will seek to ensure the homogeneity of the evaluation process by managing all coordination and follow up activity as requested and by use of specially produced evaluation protocols throughout this phase of the project.

2.2.3.6.   Fairness

The goal of the first phase of the project is to evaluate the integrity of cooperating States' SAR systems and to identify possible deficiencies which, being defined, may be amenable to corrective action in subsequent phases of the ICAO / AFCAC SAR project. Evaluation teams, however, in no way seek to penalize States whose SAR services are evaluated. To the contrary, the evaluation team seeks to render assistance in the process of improving any areas of weakness and will also assist in implementing solutions already developed by States. Thus, the project team will seek to facilitate the States assisting each other to the improvement of SAR services both within individual States and within African sub-regions.

2.2.3.7.   Quality

The evaluations are conducted by internationally qualified, highly experienced SAR experts supervised by AFCAC and ICAO.

2.2.4.   Working languages

The evaluation missions are conducted in English or French.

2.2.5.   Quality control

AFCAC and ICAO have set up a quality control system for safeguarding the standard of the SAR evaluation findings that is based on an analysis of States' and evaluation experts' feedback.

2.3. A few words about the evaluations

The evaluations usually last five working days. When there are no maritime SAR services in the State, the duration of the evaluation may be reduced.

Within an agreed period of time after the evaluation mission (usually about eight to ten weeks), AFCAC or ICAO sends an interim evaluation report to the States for comment. Once AFCAC or ICAO has received the evaluated States' comments on the interim report, a final report is produced.

It has been found that the findings of most final reports to States remained essentially unchanged from those of the interim reports (see detailed description of ratings in paragraph 3.2), although a few ratings have been changed in the light of States' comments. These few changes have not had a significant impact on the overall trends elaborated in this report.

About half of the reports used as a basis of this analysis were interim reports.

3. ANALYSIS OF EVALUATION RESULTS

3.1. Introductory remarks

The purpose of the analysis is to identify trends from consolidated results of the SAR evaluation missions to 18 African States.

Although it is hypothesised that there may be a direct link between the level of preparedness for an aviation or maritime accident and the number of survivors rescued in actual SAR events, such a link cannot be expected to be immediately apparent.

Concluding that most survivors would be rescued in the event of an accident in a State or region where most ICAO SAR SARPs are implemented would be simplistic and inaccurate, as would an assumption that most accident survivors would likely die while awaiting assistance in a region where SARPs are not correctly implemented. Furthermore, the worldwide incidence of commercial aircraft accidents involving survivors, thus involving SAR services, is statistically low. This is as a result of the greater reliability of aircraft, higher levels of aircraft equipment redundancy and improved safety procedures throughout the industry. It is therefore inappropriate to mathematically correlate the level of implementation of ICAO / IMO SAR SARPs within a region / State with the number of survivors rescued or equipment salvaged in such a way as to indicate the effectiveness of SAR services.

However, it is accepted as a general principle that the probability of an effective response to an emergency where SARPs are implemented is higher than in regions where they are not.

The use of figures in this analysis to describe the level of implementation of SARPs should be considered only as indicative of trends.

3.2. Tables and figures

3.2.1. Nature of data

The evaluation protocols place sixty-five aspects of SAR service at question, for example : "Has a SAR point of contact (SPOC) been designated ?" or "Has the State designated an authority to be in charge of SAR services coordination ?" A comprehensive list is presented in appendix 1.

These aspects of service are grouped into seven chapters: see paragraph on 'Analysis by chapter'.

The following key indicators are used to evaluate the level of implementation of SARPs:
A – Not implemented
B – Initial implementation
C – Meets Annex 12 requirements (or other relevant ICAO / IMO provisions) in some areas
D – Meets Annex 12 requirements (or other relevant ICAO / IMO provisions) in most areas
E – Fully meets Annex 12 requirements (or other relevant ICAO / IMO provisions).

There are some aspects of service for which evaluation by these indicators is inappropriate e.g. 'Has the State ratified the Chicago Convention ?'; for such aspects a simple 'Yes / No' response has been made.

The evaluation manual has been amended throughout the evaluation process on the basis of SAR experts' feedback. Therefore, some minor adjustments to reports have sometimes been necessary to ensure standardization of consolidated results.

In no case was the evaluation team able to evaluate all sixty-five aspects of service itemised on the evaluation table. Some State circumstances rendered consequential questions irrelevant, e.g. 'Does the SAR National Committee hold regular meetings?' when there is no SAR Committee established in the evaluated State, and 'Has a coordination mechanism been established between the aviation and maritime SAR services?' in States with no coastline. To cover such cases, two self explanatory key indicators were added : 'Not applicable' and 'Not evaluated'.

Some captions may appear in French in the English version of the present report, and in English in the French version. This is to ease data processing and updating and is due to links between the charts and the data being dynamic, and the data existing in only one language. The most common French word that English readers will confront in this report is 'moyenne', meaning 'mean'. A few occurrences of 'Etat' will also be found in some charts, meaning 'State'.

To respect the confidentiality of evaluation reports, reference to particular States in this report is made in the form of 'State n° X'.

3.2.2. Data processing

The data have been grouped by chapters paralleling the seven topic chapters used in the evaluation reports :
1. National legislation and regulatory framework
2. International SAR agreements and Conventions
3. Operational procedures
4. Funding
5. Equipment
6. Human Resources
7. Exercises / quality control

An arithmetic mean has been calculated to rate each chapter topic. In order to calculate the mean between an 'A' and a 'C', letters were transformed into figures (1 to 5 corresponding to A to E).

The validity of this process is open to debate since a State with many 'C' ratings may have an organization which would be capable of an acceptable response to an aviation or maritime accident whereas a State with several 'A' and 'E' ratings may not be in a position to provide a satisfactory SAR service because of some major shortcomings. Still, both States would appear in this report as having the same arithmetic mean.

Moreover, all evaluated service aspects are treated as of equal priority, thus an arithmetic finding may be misleading. For instance, question n could be "Is the State equipped with an RCC ?" and question $n+1$ "Is the SAR part of the State Aeronautical Information Publication (AIP) up-to-date ?". While two States with ratings of 'A' and 'E' and 'E' and 'A' respectively would have the same arithmetical mean, having an operational RCC is, clearly, more critical to effective SAR service provision than an up-to-date AIP.

It should also be noted that the 'not evaluated' and 'not applicable' key indicators are processed similarly by the software although 'not evaluated' does not necessarily imply the existence of a shortcoming and 'not applicable' may sometimes cover important shortcomings. For instance, if there is no SAR Coordinating Committee (SCC) in the State, the answer to 'Does it [the SCC]

include representatives of civilian and military authorities?' would be 'Not applicable', which does not of itself reflect the existence of a serious incremental shortcoming.

Furthermore, the formulae used do not take account of the number of occurrences of 'not evaluated' and 'not applicable' ratings. In the case of two States, the first having two 'A' and two 'C' ratings for four topics, and the second State having one 'A', one 'C' and two 'not applicable' ratings would have the same arithmetic mean. The effectiveness of the two States' SAR systems could, however, be quite disparate.

All the above weaknesses in the presentation of system data emphasize the need for conclusions, including the arithmetic means and the charts, to be considered as indicative only. Still, a State with a majority of 'D' and 'E' ratings in a given section could be considered to have a generally better system than a State with a majority of 'A' and 'B' ratings. When significant trends appear in charts or tables, they may be understood to indicate greater or lesser compliance with ICAO SAR SARPs.

Thus, in incorporating all these realities, this analysis highlights significant trends. Its aim, then, is not to provide a comprehensive description of the SAR services in Africa, but to identify some widespread shortcomings and lay the basis for remedial action in assisting States to identify appropriate solutions, at both the national and regional levels.

Identifying weaknesses that apparently affect many States could also help ICAO and donor States in providing global responses to such weaknesses. For example, SAR funding is clearly a field in which most States experience shortcomings. This finding has already led to the development of contacts between ICAO and a donor State that have resulted in the organisation of a SAR Conference focusing on SAR funding issues. Similarly, Human Resources have been identified as a global field of weakness and a pan-Africa SAR training programme has been launched to assist States in this field.

3.3. Analysis by region

The notes referring to Tunisia, the Seychelles and other island States following the map at paragraph 1 - Introduction, apply to the maps presented in this chapter.

Note: Two States that appear in the map presented at paragraph 1, namely Sudan and Tunisia, belong to neither the Western And Central African (WACAF) nor the Eastern and Southern African (ESAF) ICAO regions. Those States' evaluation results are not included in any of the analyses of this section of the report (3.3).

3.3.1. Western And Central African (WACAF) region

Eleven of the eighteen States evaluated in 2003 are included in the WACAF region. Six other States have volunteered to be included in the programme but could not be evaluated in 2003.

Altogether, seventeen of the twenty four WACAF States have volunteered to be evaluated, which represents about a 71% response rate. Eleven States out of the twenty four were actually evaluated, which represents approximately 46 %.
WACAF States' strong involvement in the ICAO / AFCAC SAR project is largely due to the opportunity for ASECNA and Dakar ICAO senior officers to personally sensitise WACAF State

civil aviation decision makers to the importance of the project and the opportunities for SAR systems' improvements through the project.

The following schematic map shows WACAF evaluated States (in blue / dark grey), and States that have volunteered to receive an evaluation mission but have not yet been evaluated yet (in red / light grey):

It is to be noted that, as described more fully in paragraph 3.2.2 - Data processing, '1' indicates a complete lack of SARPs implementation, whereas '5' corresponds to a full implementation of SARPs.
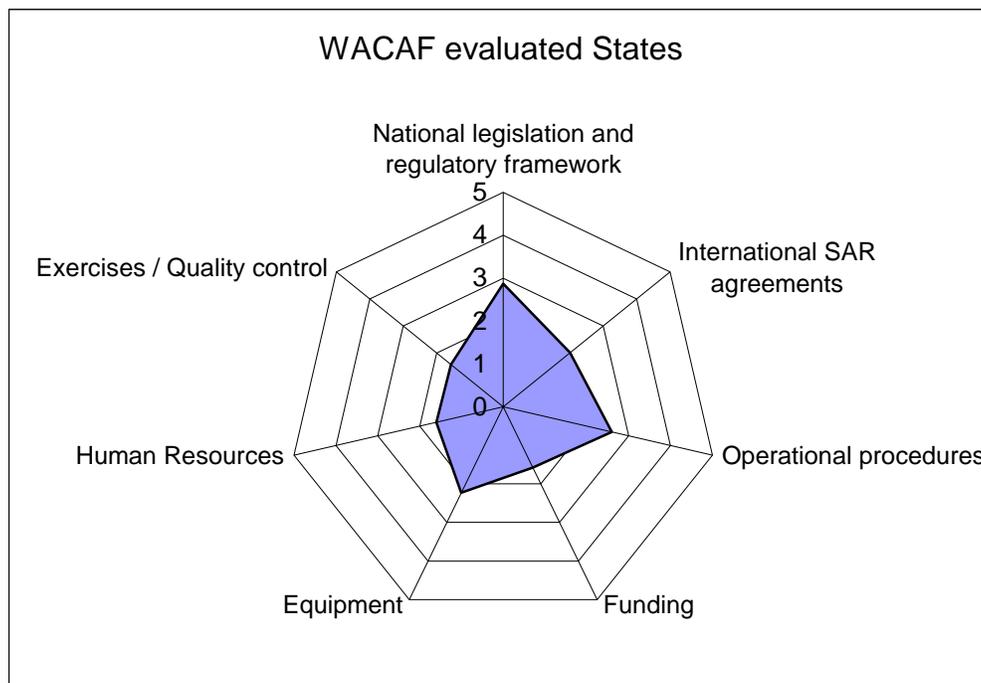
Fig 1.   SAR SARPs implementation – WACAF evaluated States

The trends in WACAF States show a regionally low level of implementation of SAR SARPs. Most aspects of service are only at the initial implementation stage. Although efforts are being made in the areas of legislation, regulatory framework and operational procedures, severe shortcomings are apparent in almost every other field.
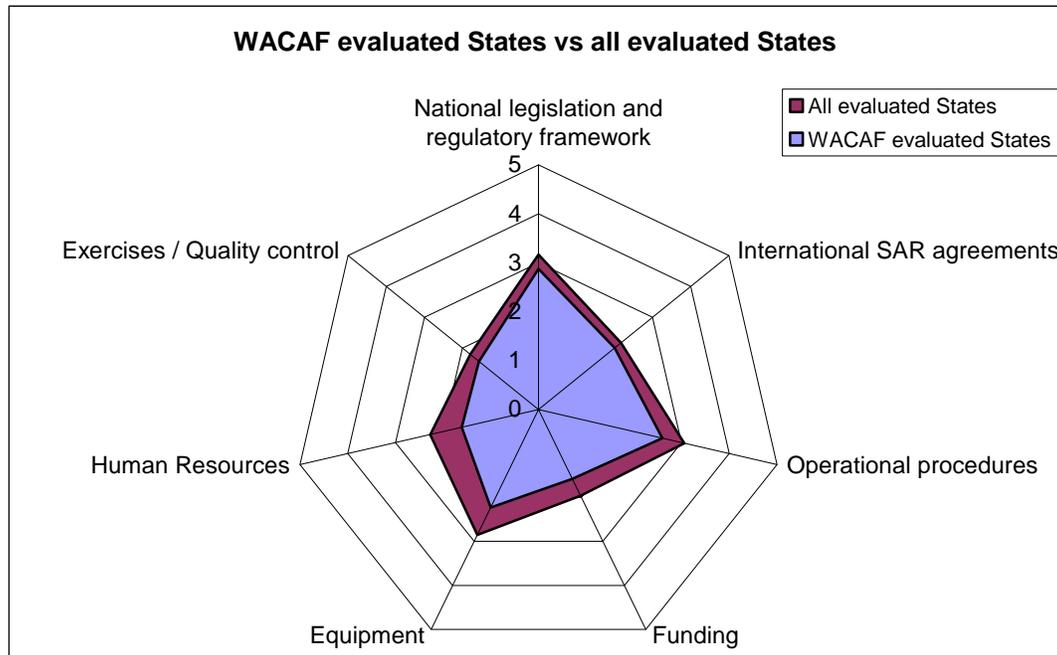
Fig 2.   SAR SARPs implementation – WACAF evaluated States vs all evaluated States

The above chart indicates a regionally reduced level of implementation of SAR SARPs in the WACAF region, as opposed to the rest of Africa.

It is to be noted that all evaluated WACAF States are in a stable and peaceful political circumstance. However, the average Gross National Income (GNI) per capita in the WACAF region (522 US$) is lower than the average in all African States (926 US$), thus WACAF States are among the poorest States in Africa (source : World Bank – World development report 2003 – data available for 49 African States, including 22 WACAF States). The WACAF States actually evaluated are even poorer with an average GNI of 315 US$. (Average GNI of all evaluated States : 664 US $)

A significantly higher number of States in the WACAF region have volunteered to be evaluated than throughout the AFI region at large; (71 % against 58 %) and, consequently, a significantly higher number of States have been evaluated in the WACAF region than across Africa generally (46 % against 36 %).

Two special WACAF regional situations may also have impacted on the above results :
- Agreements with the French Army,
- Role of ASECNA.

The French Army has signed agreements with several Western and Central African States. One of these is especially relevant as it provides for use of a French Navy SAR aircraft (currently an Atlantique II aircraft) based in Dakar Senegal as a SAR unit.

ASECNA has an operational responsibility for SAR alerting as an air navigation service provider. It also offers to its member States a forum on many civil aviation issues that include SAR.

These two elements of cooperative service may explain why WACAF States' compliance with SARPs concerning international SAR agreements is almost the same as that of other African States whereas WACAF States' compliance in other matters is significantly less than other States'.
As a conclusion, overall level of implementation of SAR SARPs in WACAF States, as reflected in the chart, is concerning.

3.3.2.   Eastern and Southern African (ESAF) region

Six of eighteen States evaluated in 2003 belong to the ESAF region. Six other States have volunteered to be involved in the project but could not be evaluated in 2003. The following schematic map shows ESAF evaluated States (in blue / dark grey), and States that have volunteered to receive an evaluation mission, but have not yet been evaluated (in red / light grey):

Altogether, twelve out of twenty three ESAF States have volunteered to be evaluated, which represents about 52%. Six States out of twenty three were evaluated, which represents a rate of approximately 26 %.
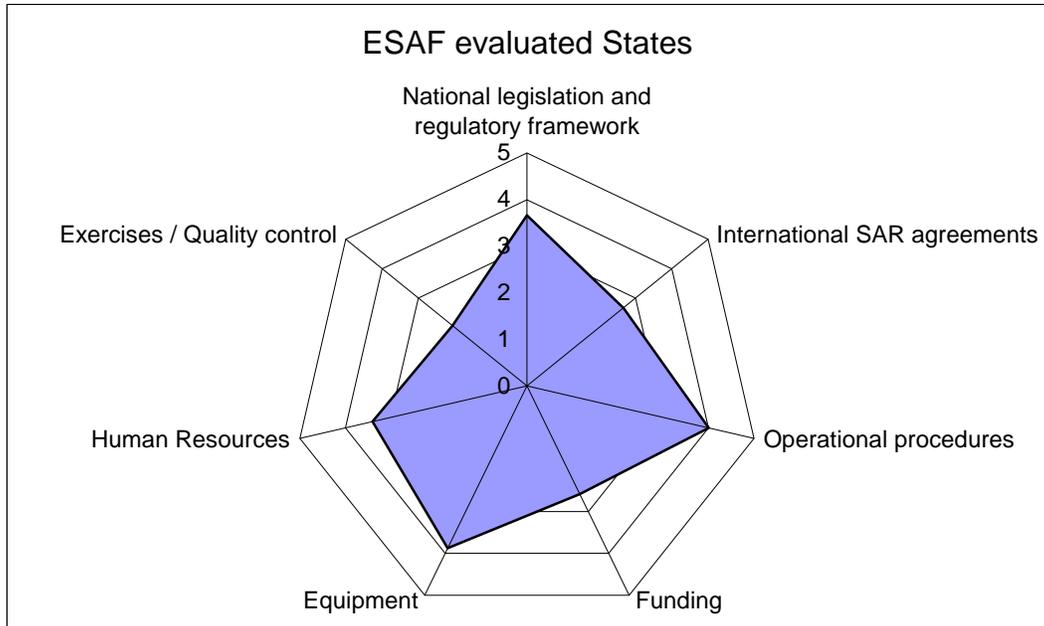
Fig 3.   SAR SARPs implementation – ESAF evaluated States

The level of SARPs implementation by those ESAF States evaluated to date in the fields of 'National legislation and regulatory framework', 'Operational procedures', 'Equipment' and 'Human resources' are fairly satisfactory.

On the other hand, fields of 'Funding', 'International SAR agreements' and 'Exercises / Quality control' are not generally satisfactorily implemented.

The average Gross National Income (GNI) per capita in the ESAF region (1,234 US$) is higher than that of all African States (926 US$), which means that globally, ESAF States economies are stronger than those of other African States (source : World Bank – World development report 2003 – data available for 49 African States, including 22 ESAF States). This is particularly true for the ESAF States that have been evaluated, the average GNI of which is 1362 US$ (Average GNI of all evaluated States : 664 US $).
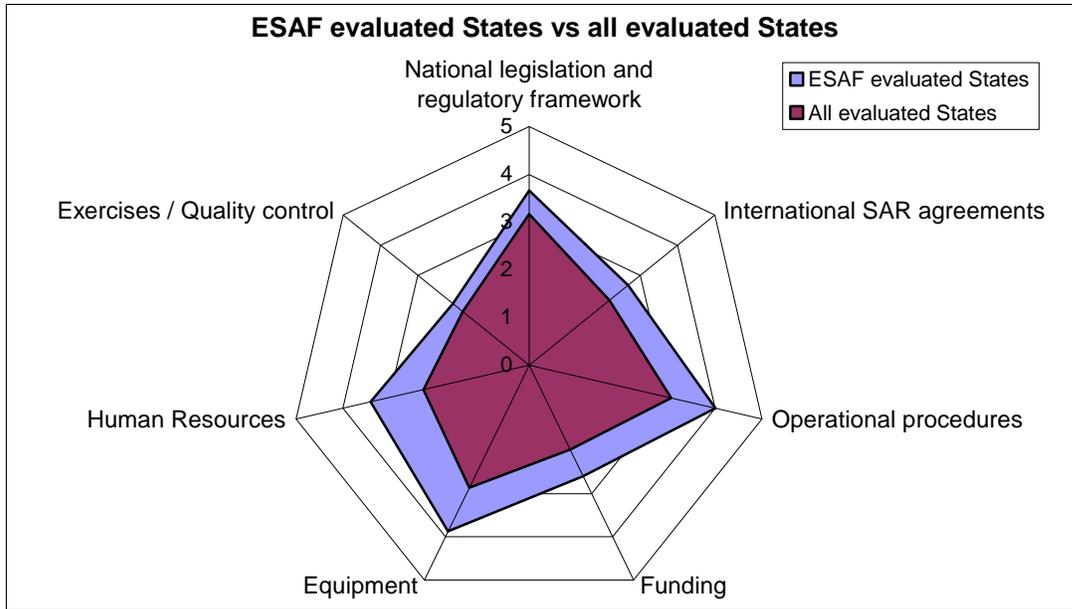
Fig 4.   SAR SARPs implementation – ESAF evaluated States vs all evaluated States

The general trends indicate a better level of implementation of SAR SARPs in ESAF evaluated States than elsewhere in Africa.

3.3.3.   Trends by region

In more closely analysing the relatively high level of implementation of SAR SARPs in ESAF evaluated States, it is apparent that the most significant differences are found in the fields of 'Operational procedures', 'Equipment' and 'Human Resources' fields, as shown in the following figures :
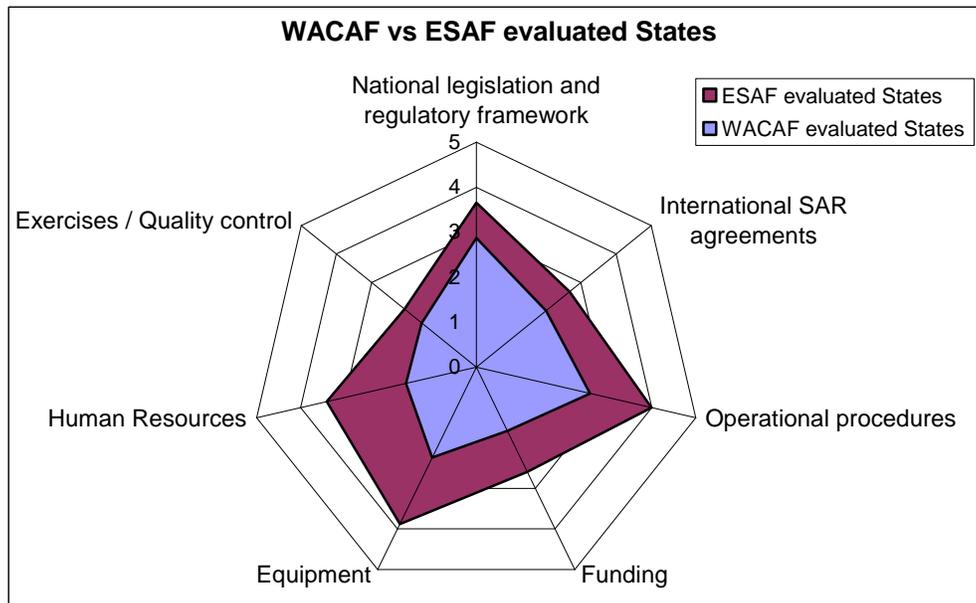
Fig 5.   SAR SARPs implementation – WACAF vs ESAF evaluated States
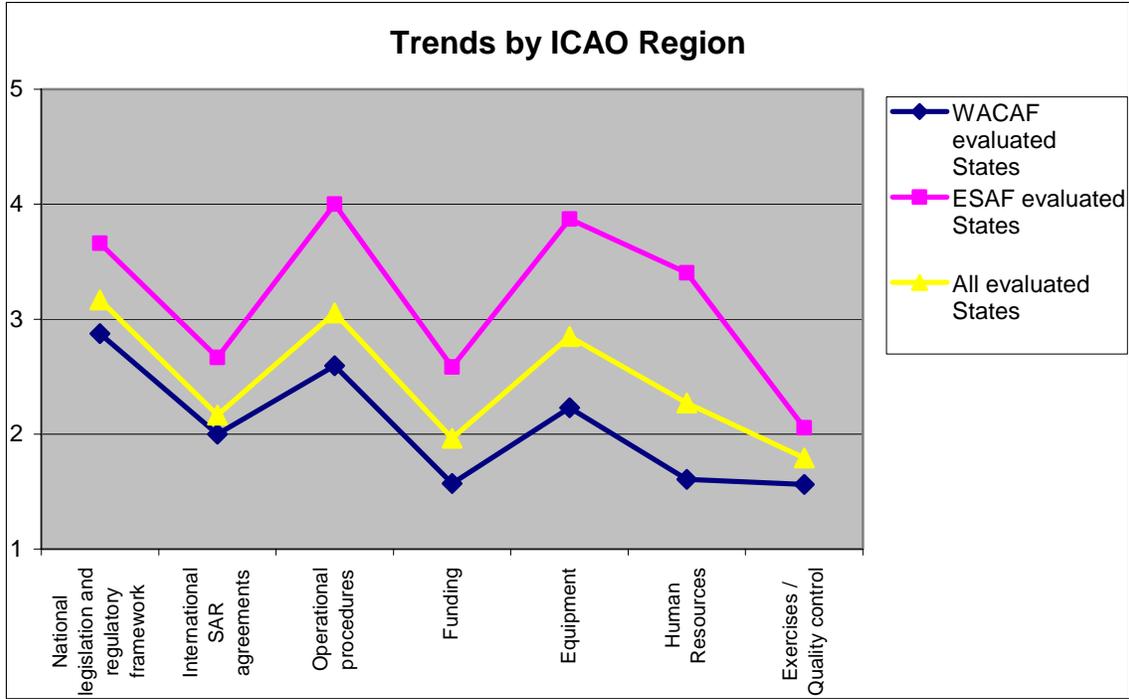
Fig 6.   SAR SARPs implementation – trends by ICAO Region

3.4. Analysis by chapter

The following figure shows the arithmetic mean of all States' ratings in each chapter topic:
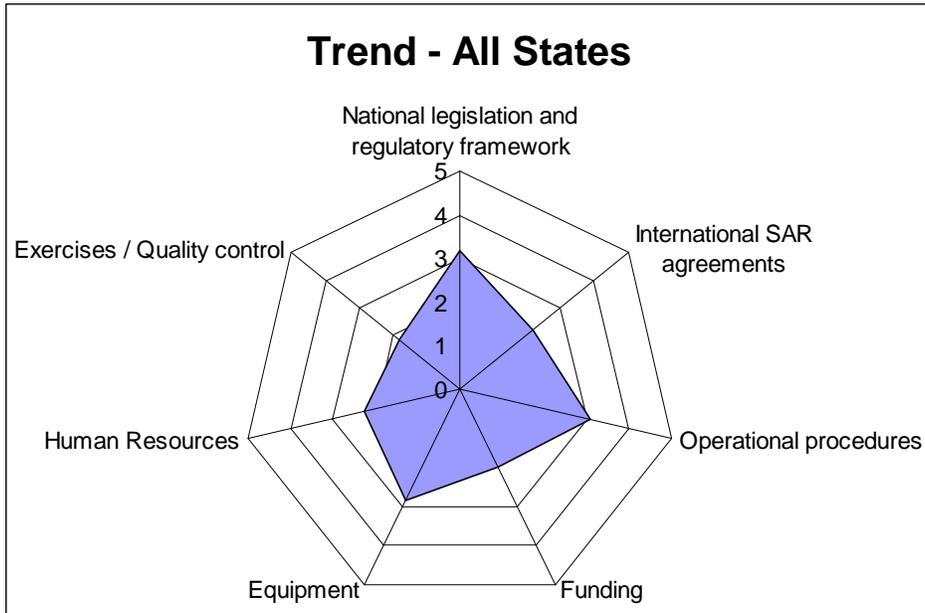
Fig 7.   SAR SARPs implementation – All evaluated States

It is to be noted that '1' indicates a complete lack of SARPs implementation, whereas '5' corresponds to a full implementation of SARPs. The trends relative to each field are analysed and commented upon in the following paragraphs. The list of questions relating to each chapter topic is presented in Appendix 1.

3.4.1. National legislation and regulatory framework

Whereas the historical approach to SAR system development has rested on the establishment of independent national SAR systems and knitting these together to develop a patchwork of services around the globe, economic pressures, and the fact that SAR actions frequently occur over more than one search and rescue area (SRR), demand cost-effective provision of services wherever aircraft fly. The International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual recommends that consideration be given to contemporary SAR systems being constructed on a regional basis and in cooperation with many inter-acting agencies rather than on the basis of national borders which, from an operational perspective, are entirely arbitrary. Thus civil and military authorities, aeronautical and maritime agencies, communication providers, meteorological services, air traffic service (ATS) providers and aircraft operators (to name a few) are recommended to combine in multi-lateral agreement to exercise SAR responsibility over a geographic area determined in consideration of need and risk.

Fundamental to this strategy of development is that human and physical resources can be used incrementally and cooperatively, that is, the personnel and equipment necessarily apportioned to other public support services, (for example, air traffic services, meteorology, police, military, air operators and rescue and fire fighting), can, after training, be assigned to SAR duties when emergencies arise. For this to be effectively managed, it is vital that instruments of bilateral and multilateral agreement be pre-emptively ratified. This, in turn, requires the establishment and effective functioning of SAR coordinating committees (SCCs).

It is a basic institution-building tenet that effective SAR requires astute organization and maximum utilization of existing assets more than it does the expensive acquisition of supplementary resources, whether human or material. Thus the end result of contemporary development practice is that more is established with less. This strategy has obvious application in those areas least financially favoured.

Chapter 2 of Annex 12 – *Organization*, lists ICAO requirements with respect to the organization of SAR services. The IAMSAR Manual Volume I provides detailed guidance material with respect to the construction of a SAR system.
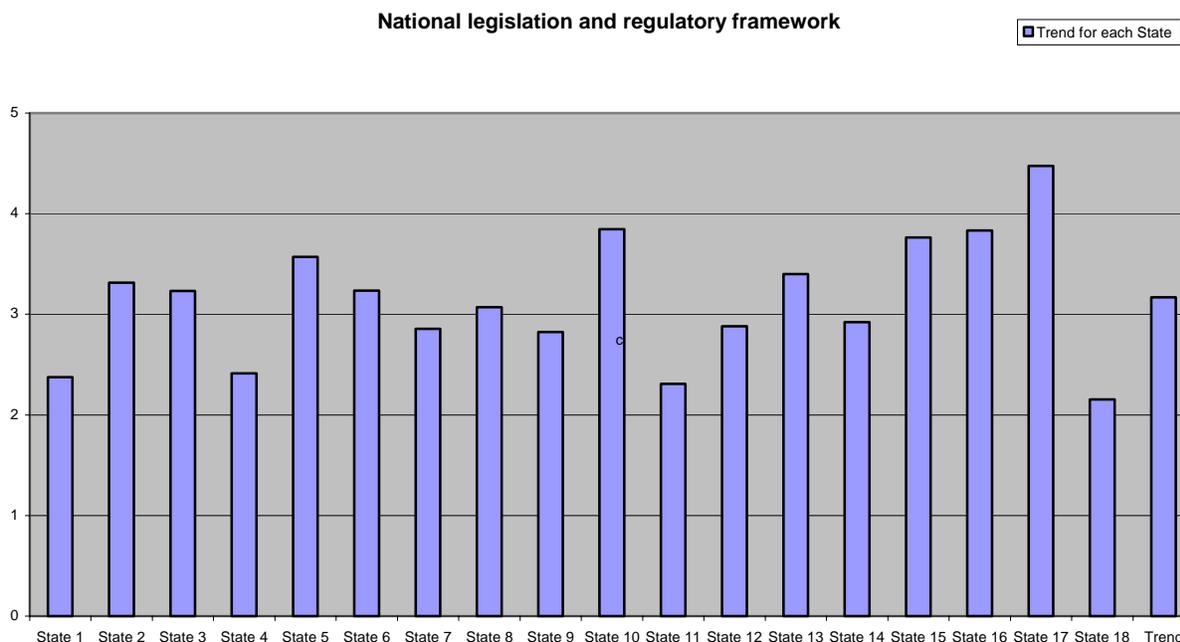
National legislation and regulatory framework

Fig 8.   SAR SARPs implementation – National legislation and regulatory framework

The general level of implementation of SARPs relating to 'National Legislation and Regulatory Framework' is around '3', which is indicative of 'meeting Annex 12 requirements (or other relevant ICAO / IMO provisions) in some areas'.

These results are worrying in the sense that the 'legislation and regulatory framework' is a key element in the acceptability of the 'final product', that is, the quality of aviation and maritime SAR services as provided by the State. Trends show that while a few States are satisfactorily organised, most States have established a SAR regulatory framework that is only partly effective.

In many evaluated States, the lack of authoritative documentation gives scope for confusion of roles among SAR stakeholders. This situation impacts negatively on the capability of the SAR coordinator to use all potential SAR assets in an effective and timely manner. This is particularly true with respect to civilian / military operational cooperation. Whereas armed forces often operate well equipped, well staffed units for their primary tasks, and these are often eminently suited to SAR tasks, their usefulness is dependent upon workable civil-military organisational arrangements. Experience shows that in most evaluated States, the lack of pre-emptively signed agreements limits the actual operational support provided by the armed forces to civil SAR operations. This is a major and unnecessary shortcoming.

The lack of a properly empowered coordinating body further limits, in several States, the capability of the SAR Mission Coordinator (SMC) to requisition SAR assets that could have otherwise provided a satisfactory SAR service. Rectification of this shortcoming lies in the authoritative documentation of assigned powers and appropriate delegation of those powers and may be best achieved in the framework of civil aviation regulations.

3.4.2.   International SAR agreements

International SAR agreements
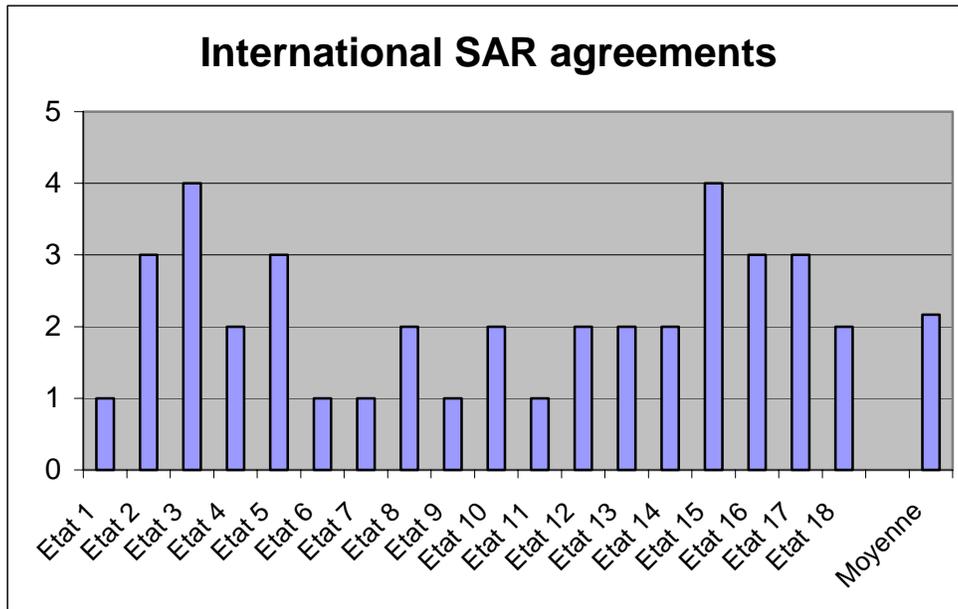
Fig 9.   SAR SARPs implementation – International SAR agreements

The IAMSAR Manual and Annex 12 urge neighbouring States to enter into SAR agreements. Matters to be addressed should include:
- general information about SAR organizations;
- provision for RCC level clearances for SAR units to enter territorial areas;
- establishment of common procedures;
- pooling of facilities, when appropriate;
- cooperation on international SAR projects of common interest;
- liaison visits;
- joint training exercises.

More comprehensive agreements might also provide:
- identification of SAR areas;
- information about RCCs and SAR communications;
- agreement to exchange SAR information;
- procedures for requesting and providing assistance;
- directories of SAR facilities;
- lists of special SAR services available;
- coordinated SAR research, development, testing and technical assistance.

IAMSAR Volume 1, Appendix I provides a template of an Inter-state SAR agreement. The IAMSAR Manual, in noting that it is the objective of international SAR law to address concerns both for saving lives and sovereignty (paragraph 5.4.19), recommends that neighbouring States should seek practical ways of balancing these concerns in situations where entry of foreign SAR facilities into territorial waters or sovereign territory may be necessary or appropriate. These "practical ways" should include detailed, tested procedures for requesting and granting entry of foreign aircraft that are both operationally effective and diplomatically sensitive and which make provision for any essential limitations necessary in local circumstances.

The recent rewrite of ICAO Annex 12, *Search and Rescue*, in several places in Chapter 2, *Organization*, uses the words, "individually or in cooperation with other States" after the words "Contracting State" to provide for a regional approach to SAR system establishment. This is based on a consensus that contemporary communications capacity, SAR facility performance and the international nature of many civil aviation operations, suggest the merit of rationalizing SAR facilities within a region of contiguous States. This is more important when the density of air traffic, hence the occurrence of SAR actions, could require the application of resources from throughout the region that could be coordinated through a single operational centre. The added advantage of collocating a rescue coordination centre with an ATC, AIS and MET facility is compelling; it offers considerable economies of scale in accommodation, equipment, especially communication networks, and staffing and ensures ease of operational coordination.

'International SAR agreements' are considered to be a weak point in almost all States. Of significance is the lack of any State rating above '4'. Of more concern still is the number of States showing no progress at all in implementing these SARPs. Five States gave no evidence of achievement in this regard. In seven States, only early steps had been taken.

Such findings are consistent with findings made on previous occasions when the lack of international SAR agreements was highlighted as a major shortcoming. Comment has been passed and recommendations made in this regard at the AFI/7 RAN meeting, AfI planning and implementation regional group (APIRG) and APIRG ATS/AIS/SAR sub-group meetings and Director General of Civil Aviation (DGCA) meetings in the WACAF and ESAF regions. This shortcoming is all the more penalizing to the system at large as it prevents some States with very limited SAR resources from benefiting from neighbouring States' potentially sufficient resources. It is a matter of importance that is amenable to improvement by a programme of education and awareness. Such a programme would benefit from strong political and diplomatic support. It should be vigorously pursued.

3.4.3. *Operational procedures*
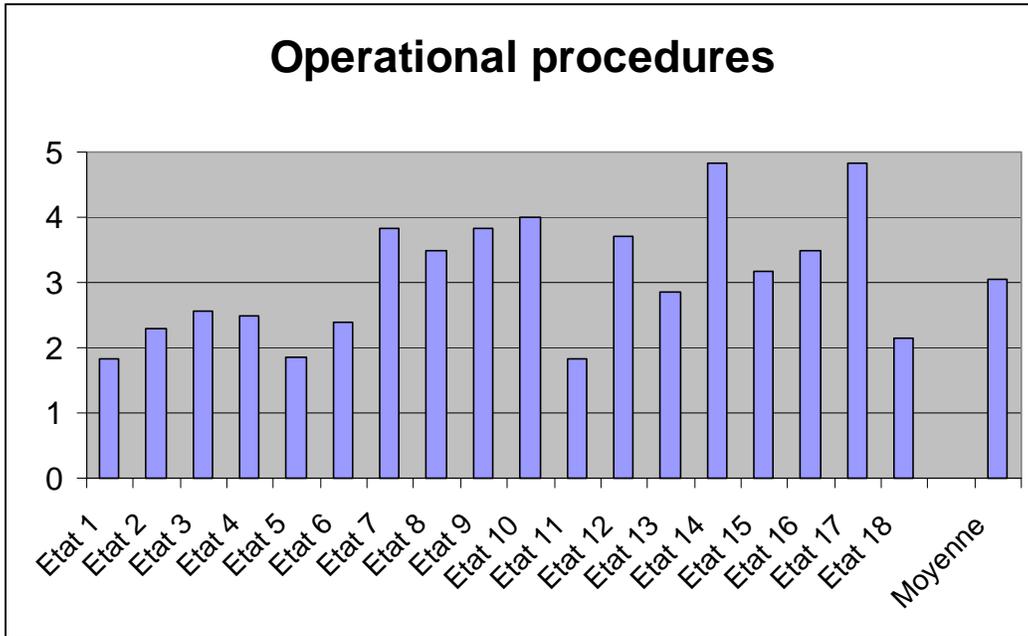
Fig 10. SAR SARPs implementation – Operational procedures

Operational procedures are an essential element of SAR systems. SAR policy and procedures, as detailed in National SAR Plans and RCC /RSC operations plans, must interface with Aerodrome Emergency Procedures (AEP), ATC in-flight emergency procedures and ATC SAR alerting procedures. Procedural documents should provide operational staff with explicit instructions and guidance on how to give effect to the principles and directives set up in legal documents. Such documentation, however, can hardly be produced if the legal framework is inappropriate.

With a global arithmetic mean rating of about '3', this field is an issue of concern, although two States have developed quite comprehensive material.

Of particular concern is the situation of eight States that have developed almost no SAR operational documentation. This requirement is fundamental and capable of compliance without incurring undue cost.

3.4.4. *Funding*

Funding SAR services is a multi-faceted and important aspect of their provision. The IAMSAR Manual addresses a number of these aspects.

While much of a SAR system's needs can be satisfied from facilities already established for other, like-type purposes, some specific needs such as training and specialized equipment require special provision. In any case, the concept of shared, cooperative employment of assets across a region can be developed into practically manageable SAR plans to the financial benefit of all participating States and agencies. If not legally binding, these arrangements need, at least, to be formally and institutionally established.

It is important that the spirit of SAR, that is, the preparedness to rapidly respond to craft and persons in grave and imminent danger regardless or nationality, circumstance and location, be practically maintained. This principle could be compromised if considerations of financial liability were to require negotiation after the declaration of an emergency and before a response is made. This points to the need for pre-prepared inter-agency and inter-State arrangements of both an operational and economic nature.

SAR can require the provision of specialist and expensive services capable of being rendered only by highly expert commercial entities. These services could include crashed aircraft recovery, sea-craft towing and salvage and the use of sophisticated search platforms and tools. For these needs, pre-emptive arrangements are made by some States as part of planning activities which oblige providers to occasionally meet certain responsibilities and the SAR authorities to meet certain costs. In the case of civil aircraft requisitioned for SAR purposes, these costs are customarily reviewed from time to time as a regular administrative function. These costs may be based upon fuel consumption, actual cost of aircraft operation and pilot time only; on the other hand, some margin may be added for business profit. These are matters appropriate to administrative negotiation, but not for discussion at the time of a SAR action. It is, from an operational perspective, vital that financial negotiation not prejudice the responsiveness of SAR services. Rapidity of response must be inspired by a willingness to save life, not be compromised by confusion of argument about who pays.

Just as there are SAR cases in which specialist civil agencies may be the only recourse practically available to mission coordinators, State military forces may sometimes be the only agencies capable of effective SAR response. Indeed, it is not uncommon that the responsibility for SAR services, including civil aviation SAR, is largely or entirely vested in military authorities. This may or may not include the coordination of missions. It is evident that the degree of proficiency of flight crews, the capabilities of military sea craft and aircraft, the integral regulation of military services and the extent of coverage frequently make defence forces the pre-eminent SAR unit provider. In supply-dropping operations, an inherently dangerous activity, the equipment, safeguards, training and proficiency typical of military services may strongly (or uniquely) recommend their involvement.

Commonly, military services agree to make input to civil SAR actions free of charge. This, not unusually, may be subject to a not-to-interfere policy, that is, operational military obligations may be agreed to take precedence over any call for civil SAR input. Many military budgets make provision for such generalized activities as "pilot proficiency" or "navigation exercise" which may be used as umbrellas for civil SAR involvement and serve the purpose of cost attribution. Still, organizational arrangements and circumstances vary from State to State. It is important, therefore, that negotiations for use of military resources in civil SAR be finalized in the planning

stages by a well informed, specially commissioned committee as part of a regional SAR plan and that arrangements are formally agreed upon by all parties. Delegation of powers for requisition of resources during SAR events needs, then, to be vested in suitably trained operational personnel able to make timely decisions of operational and financial integrity. This authority is best vested in properly trained SAR mission coordinators within the RCC.

Notwithstanding the various strategies available for economic management of SAR services in Africa, it is clear that sound management will not by itself alleviate the severe shortage of funds made available for that purpose. While the prospect of an international SAR fund, if soundly administered, gives hope of relief, the effectiveness of SAR response will, to a significant extent, remain tied to the amount of funds available through State budgets. Accepting this reality, regionalized, cooperative service provision can be appreciated. While shortage of funds may render impossible the allocation of sufficient suitable, local search units to life-saving tasks, if there is, at least, an infrastructure of trained personnel, appropriate accommodation, shared communication facilities and multi-lateral memoranda of agreement in place, search units volunteered from afar can be effectively and efficiently allocated by regional coordinators. For example, it is not uncommon that transiting, foreign search craft - and, indeed, foreign craft operating out of distant bases - are made available to less developed States at times of high emergency. Such a base of human and material resources can be more easily established and coordinated on a regional basis.
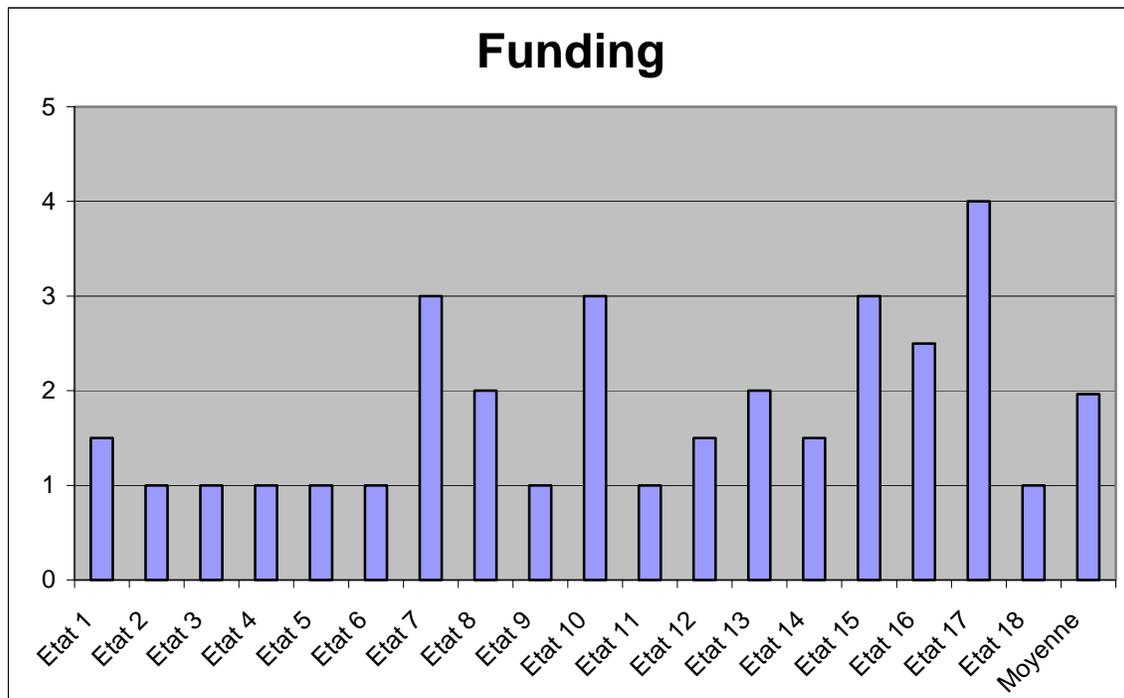
Fig 11. SAR SARPs implementation – Funding

The evaluation missions found that funding is a subject of major concern, as reflected in the above chart. Most evaluated States have made no specific provisions for SAR funding. The average rating for this aspect of services is about '2' ('initial implementation'). There is an urgent and critical need for remedial action in this field. Redress is to be found just as much in the establishment of appropriate arrangements of allocation and administration as in the availability

of funds. It is, however, true that the issue is complex, especially in the economically constrained environment of Africa.

Considering the need for exploration of funding and its complexity, it has been decided that a conference will be organized during the second half of 2004 to address the SAR funding issue. Topics to be addressed will include the elaboration of national and regional funding mechanisms for SAR activities. The spirit of this conference will be in keeping with the guidance material included in the IAMSAR Manual which seeks to assist States in providing more for less.

3.4.5. *Equipment*

This section covers, *inter alia*, the availability of SAR units and their equipment (homers, droppable supplies, communication facilities), the establishment of a Cospas-Sarsat register, regulations regarding carriage of ELTs, RCC / RSC equipment including communication equipment and technical documentation.
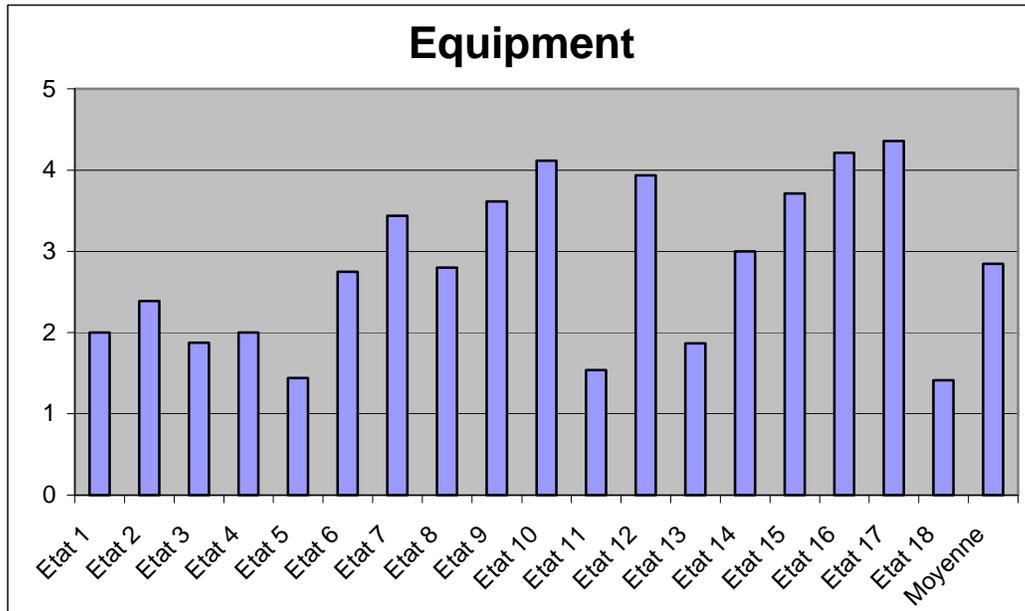
Fig 12. SAR SARPs implementation – Equipment

While some specific topics in this category raised some concerns, including, particularly, the generally poor level of regulation regarding the carriage of 406 MHz ELTs and the non-establishment of a 406 MHz ELT register, the average level of implementation of relevant SARPs, while not fully compliant is, in most States, responsive in degree and in a few others somewhat more so.

In States where the level of implementation is very low, it is commonly due to a lack of awareness of SAR concepts, benefits and needs at managerial level and / or to a severe lack of funding, as shown in the previous chart. In the least compliant States, there is neither an RCC nor RSC at all.

3.4.6. *Human Resources*

Search planning is a complex task. It is vital, therefore, that officers once trained are employed in the appropriate area of operations and given opportunity for the retention of their skills.

The IAMSAR Manual provides guidance on SAR human resources (Volume I Chapter 2, 3 and 6, Volume II Chapter 1).
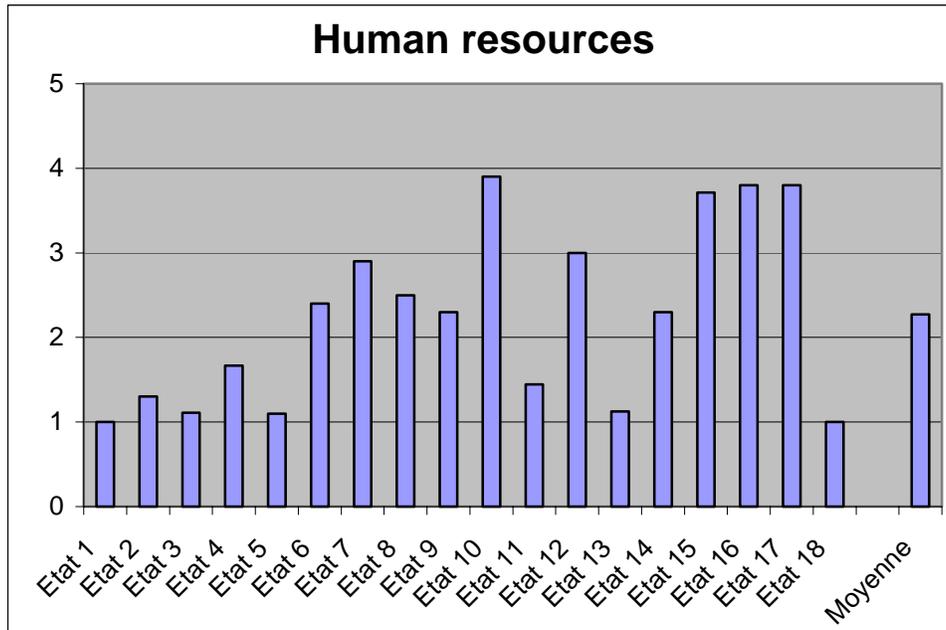
Fig 13.   SAR SARPs implementation – Human resources

As shown by the very low average rating (about '2'), human resources remain a major weakness in many States' SAR systems. Eight States have not implemented any SAR human resources management, whereas seven States only rate between '2' and '3'. Even the most advanced States have not implemented human resources-related SARPs in their entirety. (No State rated above '4').

This finding highlights the need for assistance in the human resources field. Initial remedial action has been taken in the framework of the ICAO / AFCAC SAR project, with two SAR training sessions being organized in 2002/2003, and four other SAR training courses scheduled in 2004.

However, there remains a crucial need for more regular training to be organized for SAR pilots, SAR mission coordinators and national SAR coordinators, and sensitisation at the two extremes of the workforce spectrum: in the general aviation community, its pilots and passengers being the most common beneficiaries of SAR services, and at a senior administrative level, where decisions regarding funding and organisation are made.

Whereas the ICAO / AFCAC SAR project cannot secure long term funding to support SAR training in Africa, it has been decided that the project will focus on the improvement of training centres, in order to facilitate the emergence of African centres of excellence in SAR training. Those centres could offer affordable, high level SAR training courses that would offer practical alternatives to the expensive SAR training options outside Africa.

3.4.7. *Exercises / quality control*

With an average rating of less than '2', 'exercises and quality control' is the aspect of service in which the level of implementation is shown to be the lowest. Significant in this regard is the fact that 13 States' average implementation level is rated lower than '2'.
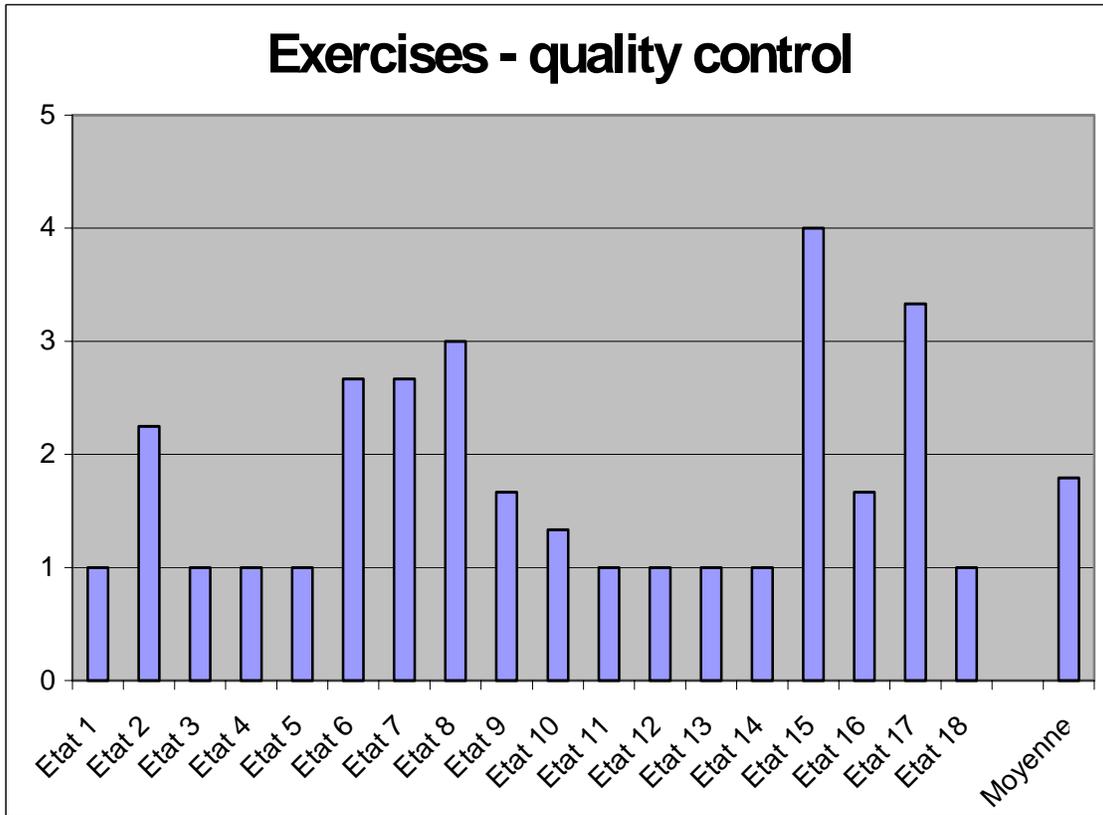
Fig 14. SAR SARPs implementation – Exercises / Quality control

Setting up a quality control system is considered to be an unnecessary "luxury" in many States that cannot implement the most basic SAR SARPs. However, quality control remains an appropriate goal for the more advanced African SAR service providers, is recommended by the IAMSAR manual and will, if earnestly pursued, give rise to distinct life-saving improvements in system effectiveness.

3.5. Correlations between items
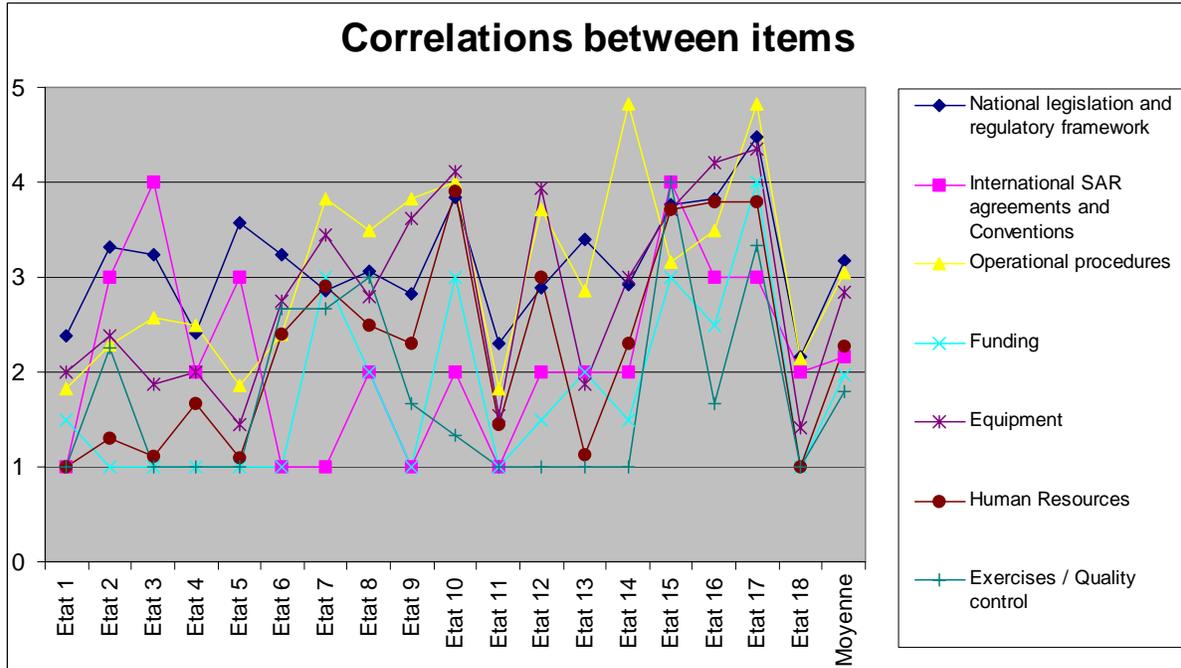
Fig 15. **SAR SARPs implementation – Correlations between items**

The amount of information presented in the above summary chart makes it difficult to analyse and to draw conclusions of correlation between different fields. A reduced number of fields have been isolated in the following charts to clarify correlations.

3.5.1. Correlations between 'legislation and regulatory framework' and 'operational procedures'
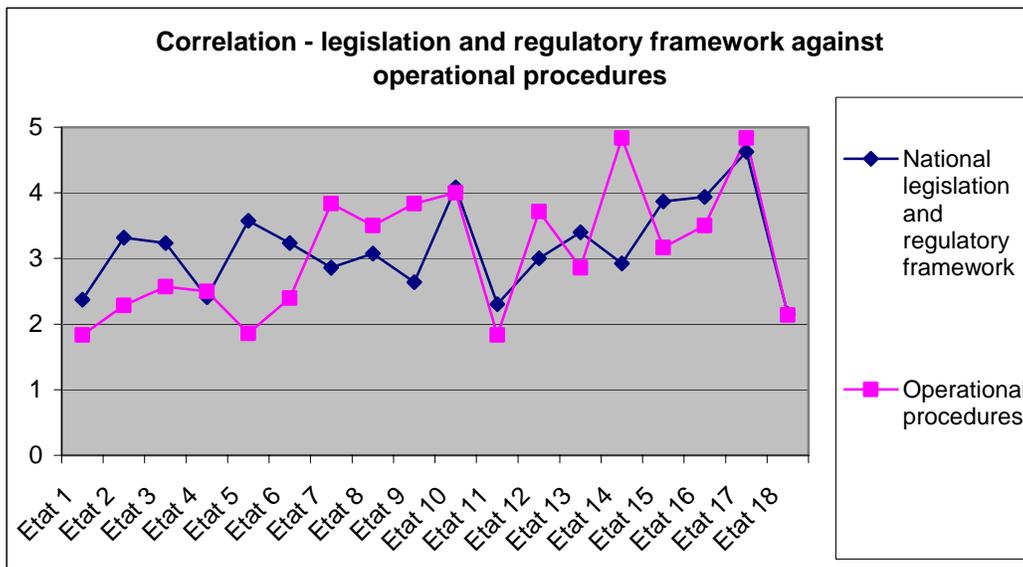
Fig 16. **SAR SARPs implementation – correlation between 'legislation and regulatory framework' and 'operational procedures'**

Correlation rate : 0.47

Apart from States 5 and 14, "national legislation" and "regulatory framework" are fairly closely correlated with "operational procedures" in most States. Where there is a strong legal framework, stakeholders have an explicit indication of their responsibilities, thus making it easier for them to develop their comprehensive and appropriate operational procedures.

The overall correlation rate is, however, generally low, mainly on account of the ratings of States 5 and 14. However, States 4, 8, 10, 11, 16, 17 and 18 show a strong correlation. The correlation rate for these States is 0.95.
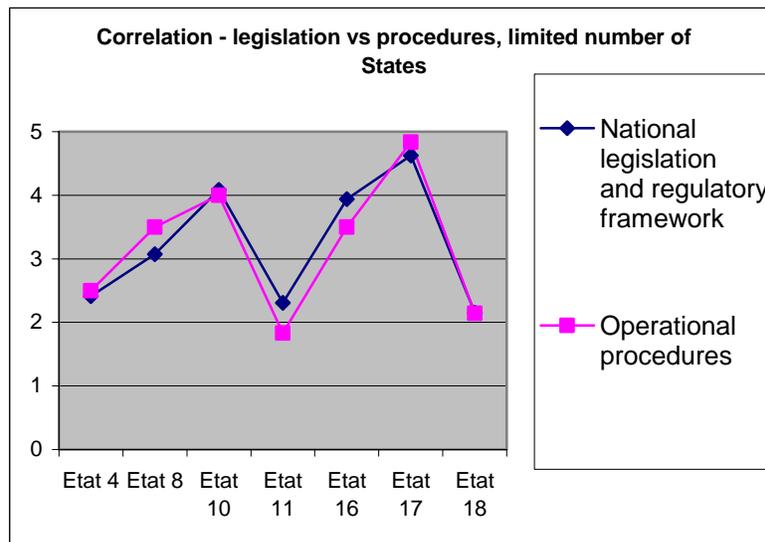
Fig 17. SAR SARPs implementation – correlation between 'legislation and regulatory framework' and 'operational procedures' for a limited number of States

3.5.2.   *Correlations between 'funding' and 'equipment'*

As might be expected, the correlation between funding and equipment is quite strong. The few States that have implemented a sophisticated funding mechanism show satisfactory compliance with equipment-related SARPs.
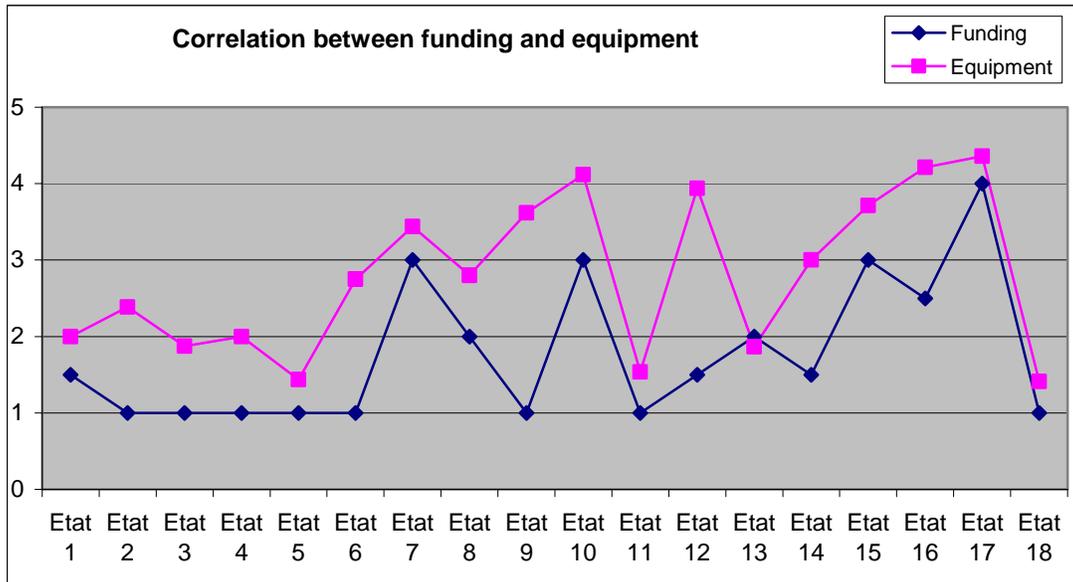
Fig 18.   SAR SARPs implementation – correlation between 'funding' and 'equipment'

Correlation rate : 0.72

Of special interest are the States 9 and 12 where, despite the lack of formal funding mechanism, satisfactory equipment is available. This could mean that, in those States, good will and stakeholders' awareness of the need for efficient SAR services somewhat compensates for the lack of a formal SAR funding mechanism. This latter hypothesis, however, does not reflect the general trend. Neither does it negate the need for those States to formalize their funding mechanism. Indeed, while good inter-personal relationships can facilitate the establishment of an effective SAR system, this state of affairs can be rapidly and seriously degraded should one of the influential stakeholders be removed from the system by, for example, transfer or retirement. Furthermore, equipment is only one of the elements requiring the solid support of a SAR funding mechanism. Some States that have not yet implemented an efficient SAR funding mechanism could face difficulties, (and have), in funding SAR operations or training SAR staff, despite a satisfactory level of equipment.

3.5.3. *Correlations between 'funding' and 'human resources'*

The correlation between funding and human resources is high. This implies a limit to 'good will' when no financial resources are allocated to SAR.
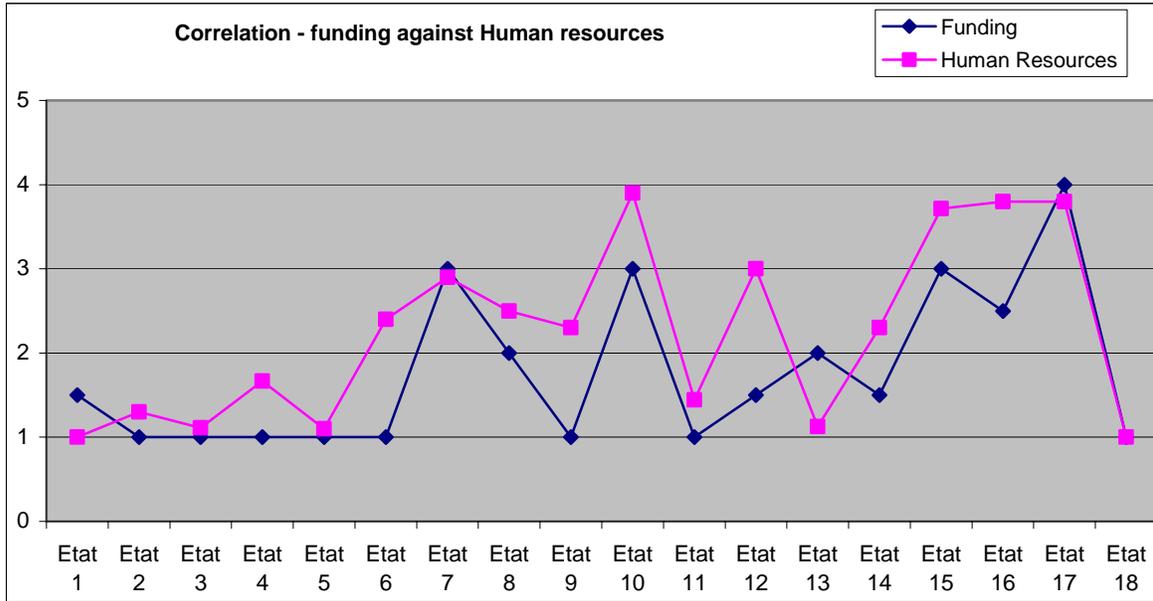
Fig 19. SAR SARPs implementation – correlation between 'funding' and 'Human resources'

Correlation rate : 0.78

The low level of implementation of funding-related SARPs in States 9 and 12 appears to have a stronger negative impact on human resources than on equipment, although State 12 achieved a rating of '3' with respect to the level of implementation of human resources-related SARPs.

3.5.4. Correlations between 'legislation and regulatory framework' and 'funding'

Whereas funding can be considered an influential factor in the availability of human resources and equipment, it is more likely, as indicated by the following chart, that the reciprocal effect is equally significant, that is that where legislation and the regulatory framework are satisfactory, similarly satisfactory provision can be expected to have been made for an adequate funding mechanism.

This would explain the strong correlation between legislation and funding in States ranging from 8 to 18 in the chart. This is not, however, considered to be a contradiction of the apparent lack of direct correlation in States ranging from 1 to 7 in the chart. In those cases, there is no SAR funding mechanism or it is poor, yet initial steps have been taken to develop a SAR legal framework. The likely significance of this is that the initial steps taken in setting up a legal framework have not developed sufficiently to give rise to an appropriate funding mechanism.
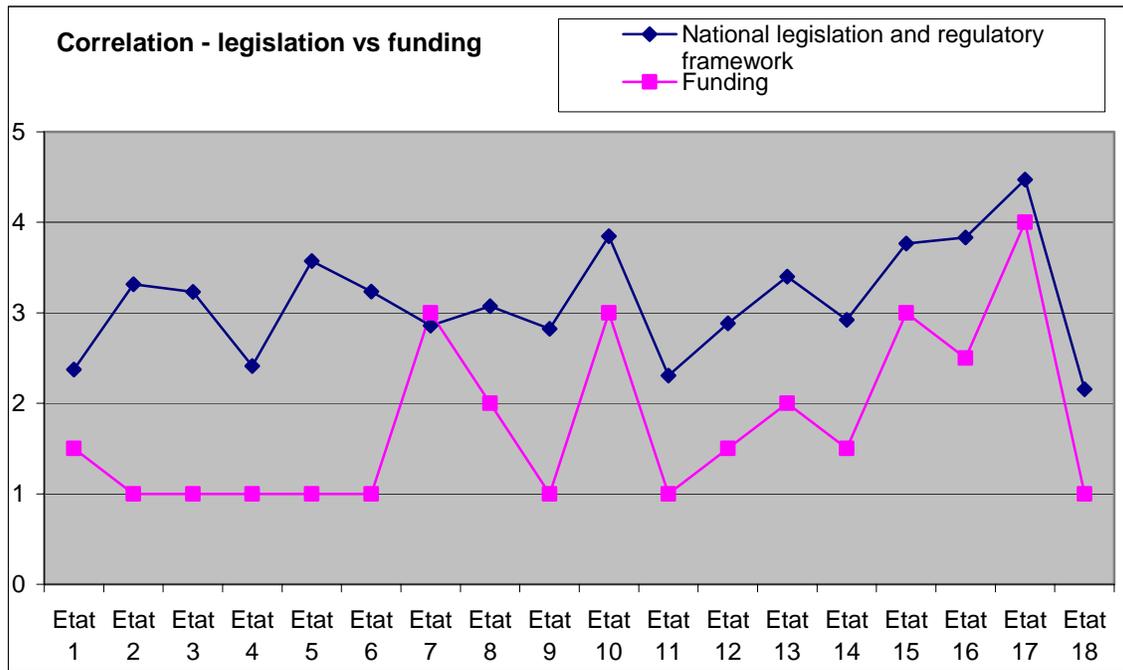
Fig 20. SAR SARPs implementation – correlation between 'legislation and regulatory framework' and 'funding'

Correlation rate : 0.71

3.5.5. Correlations between 'international agreements' and 'funding'

It is interesting to note that, while "funding" appears to be closely correlated with "equipment" and "human resources", there is a low level of correlation between "international SAR agreements" and "funding mechanism". This suggests the possibility of achieving efficient inter-State cooperation despite lack of significant funding.

A few States give evidence of a correlation between 'international agreements' and 'funding' (for example, States 6, 8, 9, 10, 11, 13, 14, 15, 17) but this trend is not necessarily attributable to a "cause and effect" relationship between the two. It may well be a reflection of other significant factors, such as the level of SAR awareness in the State.

On the other hand, while they have not established a satisfactory SAR funding mechanism, States 2, 3, 4 and 5 have signed a few agreements with neighbouring States. This would tend to suggest that establishing a strong network of cooperation with neighbouring States can be achieved without strong funding mechanisms in place, although the lack of such funding mechanisms may have other negative impacts (on equipment and human resources, for example).
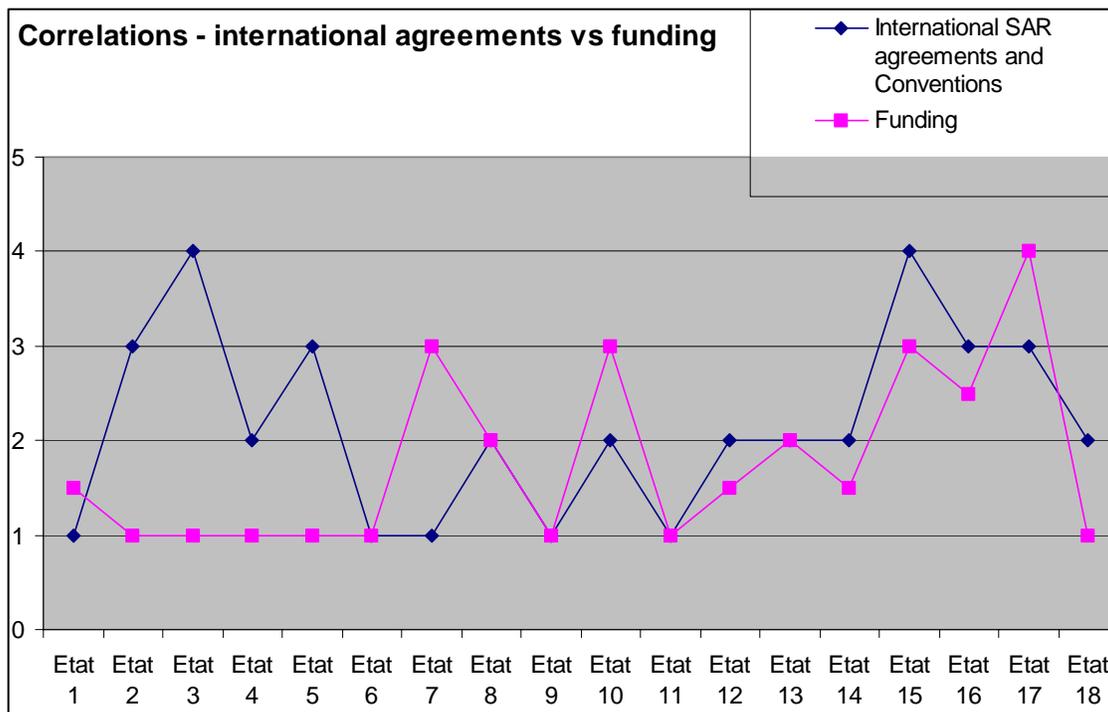
Fig 21. SAR SARPs implementation – correlation between 'international SAR agreements' and 'funding'

Correlation rate : 0.23

3.5.6. Conclusion on correlation analysis

Analysing correlations between fields is an imprecise task, and explanations given to expound on apparent correlations should be considered to be tentative. Indeed, some mathematical correlations arise out of external influences, whether positive or negative, that are not addressed by this analysis.

In consideration of these limitations, and to clarify genuine correlations to the extent possible, the next paragraphs focus on a few selected States.

3.6. Case studies

In this chapter, four States' results are presented and briefly commented upon. One is an encouraging example of a State where the SAR system is sophisticated, well organised, and comprehensively effective. Another, on the other hand, is a State with a very poor level of SAR SARPs implementation. The other two are 'average' States, quite representative of the majority.

3.6.1. State n° 17
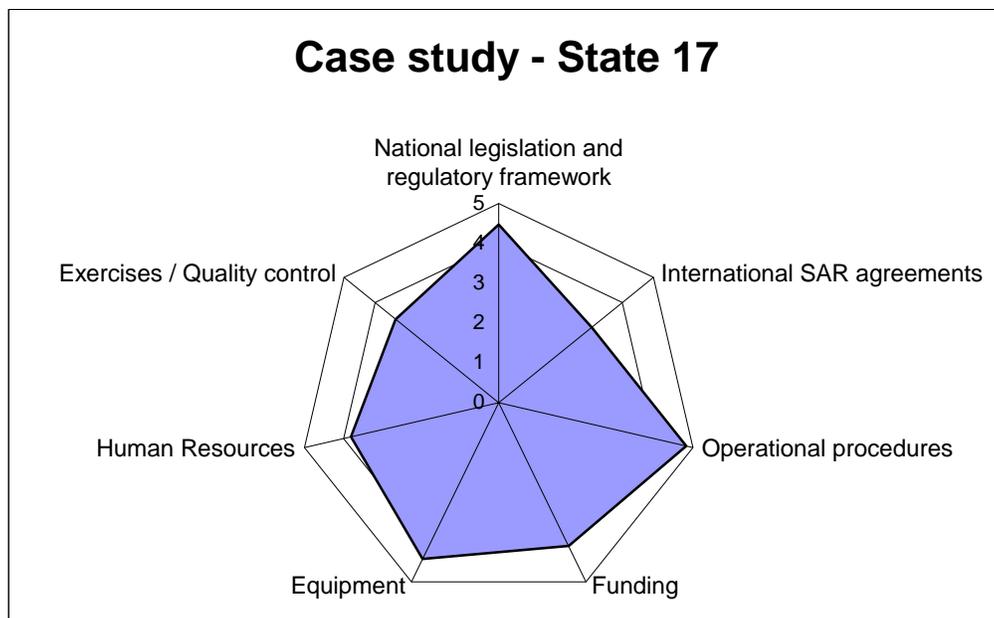
Fig 22. SAR SARPs implementation – case study, State n°17

SAR SARPs implementation levels in State n° 17 are all satisfactory.

This State is well equipped and its SAR staff is well trained even though a few recommendations were made to improve some aspects of training. This State has enacted sophisticated SAR legislation and established a robust regulatory framework and highly effective operational organization. It has set up a funding mechanism which, although in need of minor improvements, was found to be fully functional. The two main fields of weakness in State n° 17 SAR system are "International SAR Agreements", although this item, by nature, involves several States, and the lack of agreement may be due to either party, and "Exercises / Quality control".
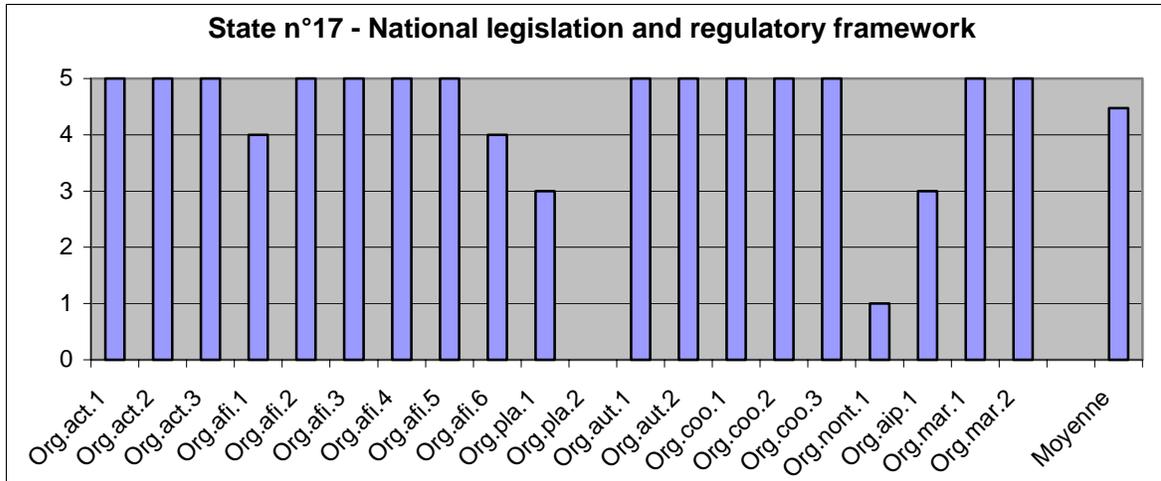
Fig 23. SAR SARPs implementation – case study, State n°17 – National legislation and regulatory framework

State n°17's regulatory framework is satisfactory. It defines the roles of each stakeholder with appropriate precision and grants appropriate authority to provide for the efficient acquittal of operatives' responsibilities. The main shortcomings identified in this State relate to the National SAR Plan and the content of the SAR section of the AIP.

The organisation of SAR services in State n°17 is practical and effective thus the SAR system performs at a level commensurate with its highest rating amongst the group of 18 States that were evaluated in 2003.

3.6.2. State n° 18
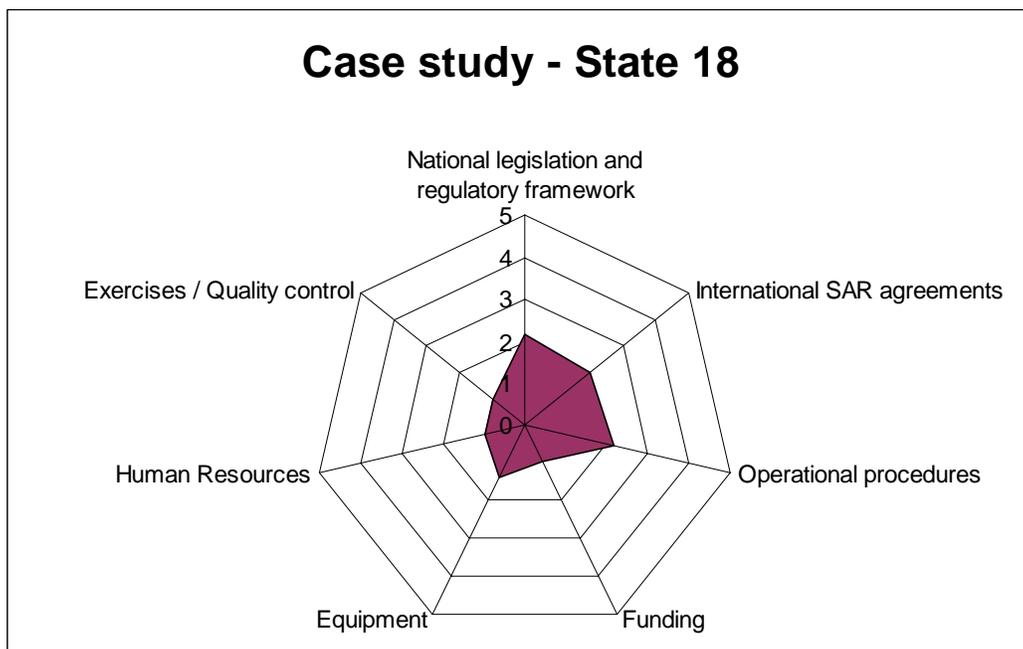
Fig 24. SAR SARPs implementation – case study, State n°18

The SAR services provided by State n°18 are not satisfactory. There is no infrastructure and almost no SAR equipment in the State; no funds are allocated to SAR, the regulatory framework is incomplete and out-of-date, and no staff, (apart from the air traffic controllers' initial training which comprises a course on alerting procedures), has received SAR training.

No international SAR agreements have been signed by the State.

There is serious concern about the capacity of the State to render meaningful assistance to aircraft in distress.

The State serves as an example of those States urgently in need of both internal improvement and external assistance in reinforcing their cooperative place in sub-regional SAR systems attuned to local needs. More attuned integration in a sub-regional SAR service arrangement would give prospect of problems being solved that have beset the service at the national level for many years.

3.6.3. State n°10
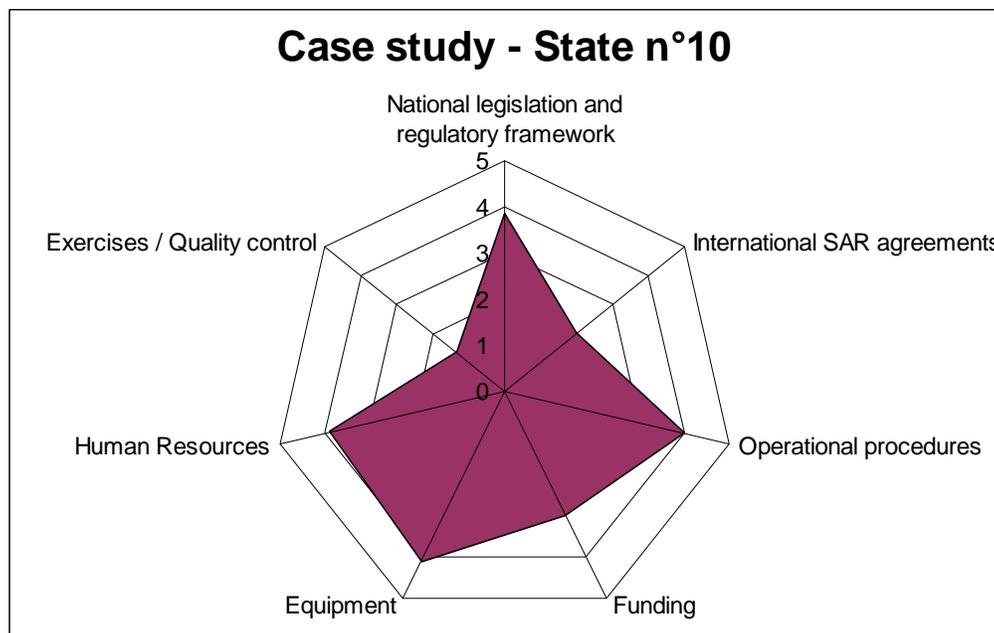
Fig 25. SAR SARPs implementation – case study, State n°10

State n°10 illustrates the typical situation of several African States where SAR services could become compliant with a range of ICAO and IMO SARPs with only a limited increase of financial resources and political support.

The lack of regular SAR exercises and a quality control system is a common shortcoming, affecting almost all evaluated States. Indeed, the lack of quality control mechanism can be somewhat attributed to a lack of awareness of quality control principles at large.

The lack of SAR exercises is usually attributable to a lack of both expertise and funding. It is expected that the assistance phase of the ICAO / AFCAC SAR technical cooperation project will include an important SAREX component and that this input will be valuable to many States. In this regard, due effort will be made to ensure in-depth critique of exercises and the formulation of meaningful recommendations in their wake.

The lack of international agreements - (no agreement at all in the case of State n° 10) - is a shortcoming previously recognized by APIRG in respect of almost all African States.

Funding is a major challenge in most African States, resources being very scarce in the African context and SAR often being granted a low priority.

Despite this difficult environment, State n°10 serves as an example of a well organized SAR service, supported by acceptable equipment and manned by well trained staff. Thus it is considered that with, as they are, the essential elements of system being in place, for the sake of increased financial and political support, the SAR services of State n°10 would be close to fully compliant with ICAO and IMO SARPs.

3.6.4. State n°6
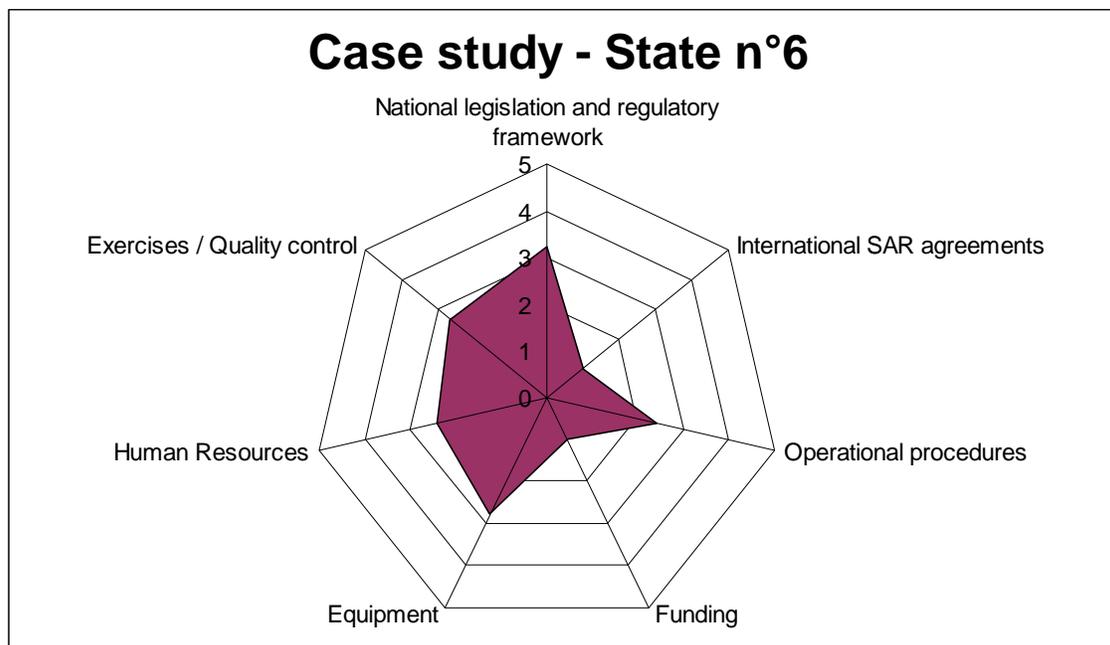
Fig 26. SAR SARPs implementation – case study, State n°6

State n° 6 was found to be the formulaically representative State inasmuch as the sum of the squares of differences between the State's arithmetic mean for each field and the whole group's arithmetic mean for the same field was lowest for this State.

"Funding" and "international SAR agreements" are the fields of most serious shortcomings in State n°6 while the other fields are also cause for concern. In most other fields, ICAO / IMO SAR SARPs are partly implemented, allowing for a rating of around '3'. This signifies that basic elements are, for the most part, in place, but there is room for significant improvements in almost all fields.

3.7. General comment

A study of the level of SAR SARPs implementation across the 18 evaluated States indicates a somewhat heterogeneous circumstance although there are certain needs common to almost all States. These are (in decreasing order of occurrence):

- SAREXs and quality control;
- Documented SAR agreements;
- Funding;
- Human resources.

This heterogeneity calls for carefully considered, selective assistance to each evaluated State, as requested and as necessary. Many needs can be alleviated by taking a regional approach to both efforts of assistance and the operation of services itself. There is good potential for intra-African cooperation in the SAR field by which both individual States and the region's capacity as a whole can be significantly enhanced.

4. CONCLUSION

In the framework of the ICAO / AFCAC SAR project, 18 African States SAR services were evaluated in about 6 months.

This was made possible by the financial support of the French authorities, the voluntary involvement of more than 30 African States and the support of AFCAC and ICAO partners, including Air France, Air Senegal International, Ghana Airways and ASECNA. The high level of participation by ASECNA States (11 participating States out of 15 African ASECNA Member States) is of particular significance in terms of project support.

Kenya Airways, Ethiopian Airlines and South African Airways have agreed in principle to support the project into the future. Opportunities for application of this support are expected to arise in the near future as other States request evaluation or assistance missions.

The project management team is highly appreciative of this support.

Both the International Maritime Organization (IMO) and the International Lifeboat Federation (ILF) have expressed and given strong support. This is of special significance as it gives prospect of a more closely harmonized policy across the aeronautical and maritime domains, neatly integrated and tightly interfaced procedures and, organizationally, rationalised training activities, operational work forces and coordination centres. This is an aspect of system improvement that portends greater cost efficiency on a broad front and is the subject of ongoing consideration by the ICAO/IMO Joint Working Group on SAR and a specially established splinter group of key personnel.

Search and Rescue systems have not benefited from the support and attention they deserve over past decades. Notwithstanding outstanding improvements in aircraft technology, greater reliability and increasingly replicated systems, as air traffic over African States grows, the number of aircraft accidents in Africa is likely to increase in degree. A similarly significant increase in demands for SAR aircraft support of maritime SAR events is inevitable. In all, the attention now being paid to improvement and, in some cases, the rehabilitation of the African aeronautical SAR system is deemed to be both essential and timely.

Without SAR service providers' own cooperation, however, and that of their governments, assistance efforts will prove of limited value. Hence the purpose of this document which aims at calling high level African decision makers' attention to the imperative need for stronger support, both financially and politically, to their SAR systems.

This analysis demonstrates how it is possible to significantly improve the effectiveness of SAR services throughout Africa at a reasonable cost, indeed, in many ways and to a meaningful degree, at a cost, only, of more robust organizational structures, harmonized procedures and closer cooperation. This can be achieved by improving national legislative, regulatory and procedural systems, integrating them into cohesive regional arrangements of practical proportions, rationalizing maritime and aviation SAR services, and in putting all suitable, available assets to use for the common good.

These principles have been widely recognized globally and comprise the substance of the recent rewrite of Annex 12 to the International Convention on Civil Aviation.

Article 25 to the Convention establishes ICAO Contracting States' obligation to develop high level, efficient and sustainable SAR services in the areas of their designated responsibility. This, too, is their humanitarian and moral duty. It is on the States' political will to do so that the ultimate success of this project now most depends.

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5. APPENDIX 1 - EXTRACT FROM THE EVALUATION MANUAL : LIST OF QUESTIONS IN EACH FIELD

Code	Reference	Aspect to be evaluated	Implementation	Comment
ORGANISATION				
Legislative Acts governing national SAR activities				
Org.act.1	Annex 12 Chap 2 Doc 7474 Part V para 2.1, 2.3 and 2.4 Doc 9731 Vol I Chap 1 and 5	Are there legislative acts governing SAR activities ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Org.act.2	Annex 12 Chap 2 Doc 7474 Part V para 2.1, 2.3 and 2.4 Doc 9731 Vol I Chap 1 and 5	If there are legislative acts governing SAR activities, are they up-to-date ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Org.act.3	Annex 12 Chap 2 Doc 7474 Part V para 2.1, 2.3 and 2.4 Doc 9731 Vol I Chap 1 and 5	Do the above acts organise SAR services in such a way that tasks and responsibilities are precisely and efficiently distributed ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
AFI Plan – Administrative SAR Units				
Org.afi.1	Annex 12 Chap 2 para 2.2 Doc 9731 Vol I Chap 2 para 2.3.15	Are SRR and FIR boundaries coincident ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Org.afi.2	Annex 12 Chap 2 para 2.3 Doc 9731 vol I Chap 2 Para 2.3	Is the State equipped with a RCC ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
Org.afi.3	Annex 12 Chap 2 para 2.3 Doc 9731 vol I Chap 2 Para 2.4	Is the State equipped with one or several RSC ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Org.afi.4	Annex 12 Chap 3 para 3.2 Doc 7474 part V para 3.2	Has a SAR point of contact (SPOC) been designated ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Org.afi.5	Annex 12 Chap 2 para 2.4	Are there radio/coastal stations ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Org.afi.6	Annex 12 Chap 2 para 2.4	If the answer is positive, are radio/coastal stations known and listed ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
National SAR Plan				
Org.pla.1	Doc 9731 Vol I Chap 5 para 5.2	Is there a national SAR plan ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Org.pla.2	Doc 9731 Vol I Chap 5 para 5.2	If the answer is positive, is it up-to-date ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
Organizational Authorities in charge of SAR Services				
Org.aut.1	Doc 9731 Vol I Chap 1er para 1.5 Doc 9731 Vol II Chap 1er para 1.2	Has the State designated an Authority to be in charge of SAR services coordination ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Org.aut.2	Annex 12 Chap 2 Doc 7474 Part V para 2.1 Doc 9731 Vol I Chap 1er para 1.5 Doc 9731 Vol II Chap 1er para 1.2	Does the above Authority have the legal means to discharge its responsibilities ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
SAR Committee / Civilian – military coordination				
Org.coo.1	Doc 9731 Vol I Chap 5 para 5.2 and 5.3 Doc 9731 Vol I Chap 6 para 6.3	Has a national SAR Committee been established ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Org.coo.2	Doc 9731 Vol I Chap 5 para 5.2 and 5.3 Doc 9731 Vol I Chap 6 para 6.3	Does the SAR national Committee hold regular meetings ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Org.coo.3	Doc 9731 Vol I Chap 5 para 5.2 and 5.3 Doc 9731 Vol I Chap 6 para 6.3	Does it include representatives of civilian and military Authorities ?	❑ Yes ❑ No ❑ Not applicable ❑ Not evaluated	
Notification of difference(s) to ICAO Annex 12				
Org.not.1	Doc 7300 (Convention de Chicago) Article 38	Has the State notified any difference to ICAO Annex 12 ?	❑Yes ❑ No ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
SAR data published in AIP				
Org.aip.1	Annex 12 Chap 3 para 3.3 Doc 7474 Part V para 2.6 Doc 9731 Vol I Chap 4 para 4.5	Does the State AIP include SAR data ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Aviation / maritime SAR coordination				
Org.mar.1		Are there maritime SAR services in the State ?	❏ Yes ❏ No ❏ Not applicable ❏ Not evaluated	
Org.mar.2	Annex 12 Chap 3 para 3.2 Doc 7474 Part V para 4.2	Has a coordination mechanism been established between the aviation and maritime SAR services ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
INTERNATIONAL SAR AGREEMENTS AND CONVENTIONS				
International SAR related Conventions				
Acc.conv.1	Not applicable	Has the State ratified the Convention on International Civil Aviation ?	❏ Yes ❏ No ❏ Not applicable ❏ Not evaluated	
Acc.conv.2	Not applicable	Has the State ratified the Safety of Life at Sea (SOLAS) Convention ?	❏ Yes ❏ No ❏ Not applicable ❏ Not evaluated	
Acc.conv.3	Not applicable	Has the State ratified the International Convention on Maritime Search and Rescue ?	❏ Yes ❏ No ❏ Not applicable ❏ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
International SAR agreements				
Acc.acc.1	Annex 12 Chap 3 para 3.1 Resolution A33-14 Appendix O Doc 7474 Part V para 4.1 Doc 9731 Vol I Chap 1er para 1.6 and 1.7 Doc 9731 Vol I Chap 5 para 5.1 Doc 9731 Vol I Chap 6 para 6.3.6	Has the State signed SAR agreements with neighbouring States ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
OPERATIONAL PROCEDURES				
Aerodrome Emergency plan				
Ops.airp.1	Annex 14 para 9.1 Doc 9731 Vol II Chap 7 para 7.7	Are international aerodromes equipped with appropriate emergency plans ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Ops.airp.2	Annex 14 para 9.1 Doc 9731 Vol II Chap 7 para 7.7	Are domestic aerodromes equipped with appropriate emergency plans ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Ops.airp.3	Doc 9731 Vol II Chap 7 para 7.7	Is there appropriate coordination between SAR and aerodrome services ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
National Emergency plan				
Ops.org.1	Not applicable	Has the State enforced regional or national emergency plans ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
National SAR Manual				
Ops.man.1	Doc 9731 Chap 5 para 5.2.11 to 5.2.18	Has the Authority responsible for SAR services developed a national SAR manual ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
RCC operations plans				
Ops.cond.1	Annex 12 Chap 4 para 4.2 Doc 9731 Vol I Chap 5 para 5.2 Doc 9731 Vol II Chap 1er para 1.5	Has a RCC operations plans been developed and updated ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Procedures / Alerting phase				
Ops.aller.1	Annex 12 Chap 5 para 5.2 Doc 9731 Vol II Chap 3 para 3.3 Doc 9731 Vol II Appendix E	Have special procedures dedicated to alerting phases been implemented ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
FUNDING				
Fin.mec.1	Doc 9731 Vol I Chap 5 para 5.4	Has the State implemented a SAR activities funding mechanism ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Fin.mec.2	Doc 9731 Vol I Chap 5 para 5.4	Does this mechanism ensure adequate funding of SAR services complying with international standards ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
		EQUIPMENTS		
Compliance with the Air Navigation Plan				
Equ.afi.1	Doc 7474 Part V para 2 to 5	Are available equipments in line with the available equipment list of AFI Air navigation plan ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Navigation means of the SAR units				
Equ.nav.1		Are SAR Units equipped with on-board radio direction-finding stations ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Survival equipments				
Equ.surv.1	Annex 12 Chap 2 para 2.6 Doc 9731 Vol I chap 2 para 2.5 Doc 9731 Vol II chap 6 para 6.4 and 6.5 Doc 9731 Vol II appendix G	Are SAR Units equipped with functional survival equipments ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
RCC / RSC equipments				
Equ.rcc.1	Doc 9731 Vol I Chap 2 para 2.3 Doc 9731 Vol I Chap 5 para 5.2 Doc 9731 Vol II Chap 1er para 1.7	Are RCC / RSC equipped with SAR technical documentation (IAMSAR Manual and other technical documentation)	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Equ.rcc.2	Doc 9731 Vol I Chap 2 para 2.7 Doc 9731 Vol II Chap 1 para 1.11	Are RCC / RSC equipped with computers and SAR dedicated software ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
Communications				
Equ.com.1	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with air traffic services ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Equ.com.2	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with RSC ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Equ.com.3	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with position fixing and radio direction-finding stations ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Equ.com.4	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with radio/coastal stations ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Equ.com.5	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with Cospas-Sarsat mission control centres ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Equ.com.6	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with Rescue teams operations centres ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
Equ.com.7	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with adjacent RCCs ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Equ.com.8	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with adequate communication means with MET or MET Watch office ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Equ.com.9	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with MF communication means with SAR Units when employed on SAR operations ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Equ.com.10	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with HF communication means with SAR Units when employed on SAR operations ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
Equ.com.11	Annex 12 Chap 2 para 2.4 Doc 9731 Vol I Chap 4 Doc 9731 Vol II Chap 2	Is the RCC equipped with VHF communication means with SAR Units when employed on SAR operations ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	
COSPAS / SARSAT				
Equ.cosp.1	Doc 7474 Part V para 3.2 Doc 9731 Vol II Chap 2 para 2.15	Is the State managing and updating a database of Cospas-sarsat users registered on its territory ?	❏ A ❏ B ❏ C ❏ D ❏ E ❏ Not applicable ❏ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
Equ.cosp.2	Annex 6, Parts I, II and III; Annex 10, Vol III, Part II, Chapter 5; Annex 10, Vol V, Chapter 2, para 2.1	Has the State adopted a regulation making the carriage of 406 MHz beacons compulsory ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Removal of wreckage				
Equ.epav.1	Annex 12 Chap 4 para 4.5	Is the State equipped with removal of wreckage facilities ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
HUMAN RESOURCES				
SAR personnel				
Rh.per.1	Doc 9731 Vol I Chap 5 para 2.3.11 and 5.4.9 to 5.4.16	Is SAR personnel sufficient and properly trained in the State ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Training				
Current training plan(s)				
Rh.for.1	Doc 9731 Vol II Chap 1er para 1.8	Is a training plan currently applied to coordinating SAR mission staff ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Rh.for.2	Doc 9731 Vol II Chap 5	Is a training plan currently applied to pilots involved in SAR missions ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
Rh.for.3	Doc 9731 Vol II Chap 1er para 1.8	Is a training plan currently applied to staff involved in rescue missions ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Scheduled training plans				
Rh.for.4	Doc 9731 Vol I Chap 6 Doc 9731 Vol II Chap 1er para 1.8	Has a training plan been scheduled for coordinating SAR mission staff ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Rh.for.5	Doc 9731 Vol I Chap 6 Doc 9731 Vol II Chap 1er para 1.8	Has a training plan been scheduled for pilots involved in SAR missions ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Rh.for.6	Doc 9731 Vol I Chap 6 Doc 9731 Vol II Chap 1er para 1.8	Has a training plan been scheduled for staff involved in rescue missions ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Qualification / certification procedure				
Rh.for.7	Doc 9731 Vol I Chap 6 Doc 9731 Vol II Chap 1er para 1.8	Has a standard Qualification / certification procedure for SAR staff been implemented ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Training venue(s)				
Rh.for.8	Doc 9731 Vol I Chap 6 Doc 9731 Vol II Chap 1er para 1.8	Have training venues been certified ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

Code	Reference	Aspect to be evaluated	Implementation	Comment
English language proficiency				
Rh.ang.1	Doc 9731 Vol II Chap 1er para 1.8	Are RCC and RSC staff proficient in the use of the English language ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
QUALITY CONTROL / EXERCISES				
Quality control procedure				
Qua.proc.1	Annex 12 Chap 5 para 5.11 Doc 9731 Vol I Chap 5 Doc 9731 Vol I Chap 6 Doc 9731 Vol II Chap 8 para 8.6	Has the State established a quality control mechanism for its SAR services ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Exercises				
Qua.ex.1	Annex 12 Chap 4 para 4.4 Doc 7474 Part V para 3.3 Doc 9731 Vol I Chap 3 para 3.3 Doc 9731 Vol II Chap 1er para 1.8	Does the State organize SAR exercises on a regular basis ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
Qua.ex.2	Doc 7474 Part V para 3.3 Doc 9731 Vol I Chap 3 para 3.3 Doc 9731 Vol II Chap 1er para 1.8	If the answer is yes, are the SAR exercises conducted in conformity with ICAO recommendations ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	
SAR actions				
Qua.pha.1	Annex 12 Chap 5 para 5.11 Doc 9731 Vol II Chap 1er para 1.7 Doc 9731 Vol I Chap 5 and 6	Are reports established and critical analysis conducted about passed SAR actions ?	❑ A ❑ B ❑ C ❑ D ❑ E ❑ Not applicable ❑ Not evaluated	

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6. APPENDIX 2 - LIST OF FIGURES