



# United Nations Environment Programme



UNEP/BUR/39/4  
July 5, 1991

Original: ENGLISH

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## MEDITERRANEAN ACTION PLAN

Meeting of the Bureau of the Contracting Parties  
to the Convention for the Protection of the  
Mediterranean Sea against Pollution and  
its related protocols

Paphos, Cyprus, 16-17 July 1991

### **Report of the financial experts on the impact of inflation rates and exchange rate fluctuations on MAP budget**

This report was prepared by Mr. M. Tobin (UNCTAD) and Mr. E. Scicluna (Malta) in their personal capacities and does not necessarily reflect the views of either UNCTAD or the Government of Malta.

The experts would like to express their appreciation for the immense time and effort (exceeding the norms of duty) put in by the Secretariat.

## BACKGROUND

During the last Joint Meeting of the Scientific and Technical Committee and the Socio-Economic Committee of the Mediterranean Action Plan (MAP) (Athens, 6-10 May 1991), the Secretariat of MAP presented a proposed budget for the 1992-1993 biennium (UNEP(OCA)/MED WG.25/4), which was 23.42 percent larger than the budget for the 1990-1991 biennium. It was explained that the proposed budget had taken into consideration the effects of inflation and exchange rate fluctuations on the MAP budget, as well as an increase in the current level of activities and further expansion in some components of the Action Plan. The Meeting thoroughly reviewed the budget proposal, made various amendments and approved it, subject to the study requested on the actual impact of inflation rates and exchange rate fluctuations on the MAP budget. The budget as agreed provided for an increase of 19.78 percent over the budget for the 1990-1991 biennium (UNEP(OCA)/MED WG.25/5).

After lengthy discussion of the proposed budget, the meeting decided that for the purpose of constructing a sound budget that took into account inflation rates and exchange rate changes, it was essential that the rates used in the calculations should be carefully checked using the experience of financial experts and a UN Agency familiar with similar problems.

The objective of such work would be to design a general formula for reflecting accurately the effects of inflation and exchange rate fluctuations on the MAP budget, which could be used in the future, and also to apply this formula to the proposed 1992-1993 budget. Results of this work are to be submitted to the forthcoming meeting of the Bureau of the Contracting Parties (Cyprus, 16-17 July 1991) for its consideration. The budget, revised accordingly, will be submitted to the Seventh Ordinary Meeting of the Contracting Parties (Cairo, 8-11 October 1991).

## INTRODUCTION

The purpose of this study is to explore the implications of inflation and exchange rate changes on the MAP biennial budget.

In principle, one can attempt to forecast future inflation and exchange rate changes. Indeed, the large speculative flows of finance around the world attest to its application. Large econometric models have been built by money market institutions in order to profit from interest rate differentials (related to relative inflation) and expectations of exchange rate changes. These activities are extremely expensive and there are losers as well as winners in this "game". Protection against exchange rate variability can be bought through forward purchases or sales of currency, but this form of cover is expensive, limited to major currencies and only available for large transactions.

For an intergovernmental body not charged with global macro-economic management to take a view on future inflation and exchange rate policy in individual member countries would be fraught with difficulties and would be extremely expensive for a secretariat to prepare background input.

At a practical level what is feasible is to retrospectively examine the effects of inflation and exchange rate changes that have taken place over a current budget cycle. Thus it is possible to try to answer the question - what would be the budget requirements for the 1992-1993 biennium if one wished to maintain the real level of resources that had been agreed (in 1989) for the 1990-1991 budget ?

Such a budget could be described as zero real growth. It would establish the level of resources required at the beginning of 1992 to carry-out in 1992-1993 the identical basket of activities which had been agreed for the biennium 1990-1991. It would be a comparison between two points in time - late 1989 and late 1991. Such an exercise would not address the difficulties in execution of the 1990-1991 budget due to inflation and exchange rate variability experienced in the course of the biennium - it would merely restore the 1992-1993 budget to the level of activities envisaged for the 1990-1991 biennium. Moreover, the exercise would not address the increase (or decrease) in costs that would arise if member states wished to increase (or decrease) the overall level of activities or the relative priorities among activities. The exercise would, however, allow member states to address questions of real growth in activities by removing the veil that inflation and exchange rates cast over a budget dealt with in nominal terms.

This being said, a number of practical difficulties have to be addressed in such an exercise. Inflation in local currency terms may turn out to have been neutralized in terms of a dollar-based budget if the local currency was devalued in a synchronized fashion with domestic inflation. However, in practice this is rarely the case - usually exchange rate changes lag behind (and in an irregular fashion) domestic inflation. In cases where inflation is high, even trying to work with monthly data provides an unsatisfactory result. A further problem in dealing with a budget based on the US dollar is the instability between the US dollar and other major currencies. In the period under review the US dollar weakened in 1990 vis-à-vis 1989 and in 1991 it has been sharply appreciating vis-à-vis its 1990 low. Inflation also has a varying impact across the many components of a budget. The exercise must, to the extent possible, compare like with like between the two time periods. The effect of quality changes in goods can hardly be dealt with - advances in computer technology can lead to quantum increases in a computer's capacity with even a fall in unit price. Moreover, and this must be stressed, there has to be in such an exercise a balance struck between the level of detail into which one descends and the research costs of obtaining an additional level of precision.

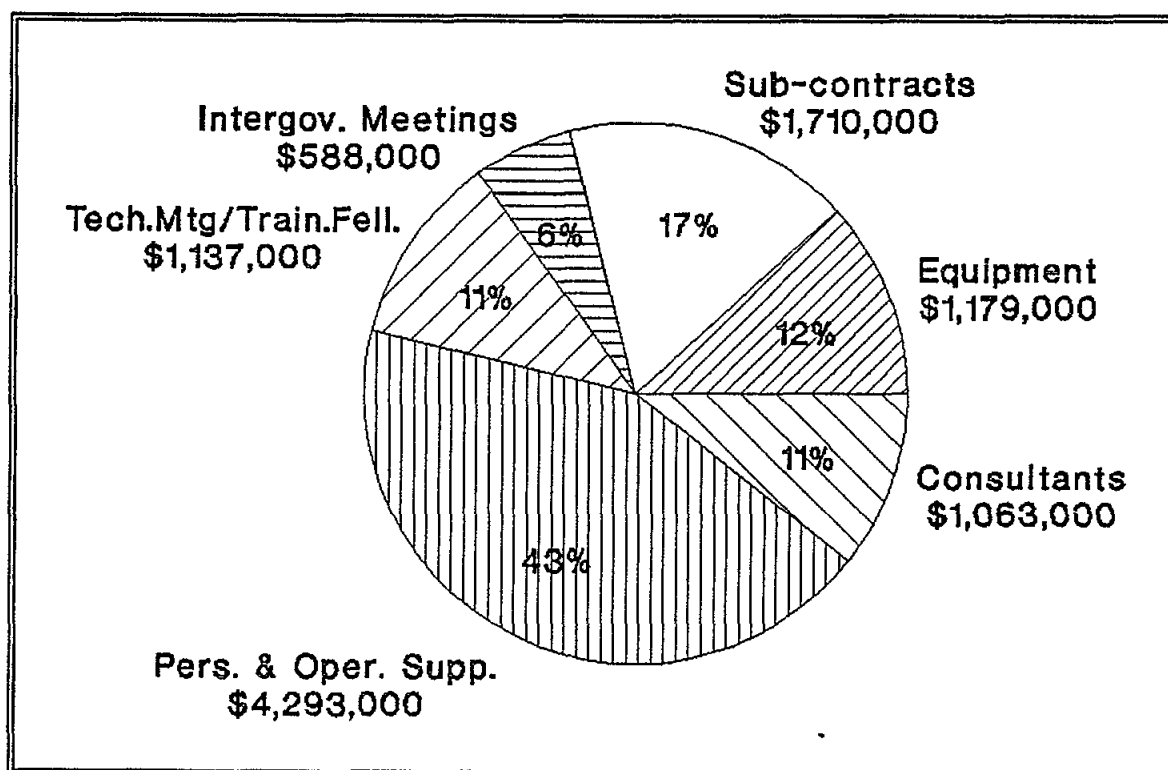
## METHODOLOGY

The approach taken in this study is to break down the 1990-1991 budget into its major component parts, exclude non-comparable items, and, on the basis of a careful examination of inflation (and exchange rate changes) in these specific components estimate the current cost of the identical basket of activities. Such an exercise naturally does not address changes in activities and priorities for 1992-1993 that member states may wish to see implemented.

As may be seen in chart I below, the 1990-1991 budget may be broken down into 6 major components: Intergovernmental meetings; Technical meetings/Training and Fellowships; Personnel and Operational Support; Consultants; Purchase of equipment (provision of equipment for Med Institutes) and Sub-contracts.

The increases in US dollar costs (adjusted for exchange rate effects) between mid-1989 and mid-1991 for each component has been estimated. In principle, all figures are factual (eg the exact cost of repeating in 1991 a meeting that had taken place in 1989, rental of identical equipment, etc).

CHART I  
MAP Budget Components (1990 - 1991)



For travel (including per diem), estimates were made of the increase in costs of five representative meetings (see Table III). These meetings involved participants travelling from a variety of Mediterranean locations to a number of locations in the region. As such they are quite representative of the costs of travelling generally in the region. These estimates have also been applied in adjusting the travel costs of each MAP centre since the travel pattern is comparable.

Unless otherwise stated in the text the exchange rates applied are the average rates for each currency to the US dollar in 1989 and the "current" (June 1991) rates for 1991.

The steps taken to establish an inflation factor for each component are set out below.

## ANALYSIS

### Intergovernmental Meetings

The Joint meeting of the Scientific and Technical Committee and the Socio-Economic Committee has been taken as a representative case of this form of meeting. This Committee met in Athens on 26-30 June 1989. The cost of this meeting may be broken down into the travel and per diem costs of participants and the travel, per diem and fees paid to conference support staff. These costs are set out in column one of Table I. Travel and per diem for participants amounted to \$ 10,846 and \$ 6,960 respectively. Cost of interpreters (six) amounted to \$ 8,385. Revisers (four) cost \$ 8,960 (\$ 3,560 fee; \$ 3,660 travel and \$ 1,740 per diem). Thus participants cost a total of \$ 17,806 and support staff \$ 17,345 giving a grand total of \$ 35,151. The Committee met again in May 1991. This session had certain differences - the 1991 meeting met in two separate locations in Athens which introduced not only the rental of a conference room but also required an additional team of interpreters. This non-comparable element was removed so as to eliminate a false upward bias in the estimation.

Adjusting for these differences the costs in 1991 would have amounted to \$ 45,332, an absolute increase of 29.0 percent. This figure is exact, having been calculated using current per diem rates, official Airline prices for tickets and the current fee scale for Interpreters and Revisers. Columns 2 and 3 of Table I show respectively the detailed breakdown of these costs in current dollars and the absolute percentage increase. In support of these figures Table II shows the official United Nations per diem rates for June 1989 and June 1991 for a large number of Mediterranean locations. As can be seen from the Table, the absolute increase in rates over that twenty-four month period ranged from minus 13.0 percent (Albania) to as much as 136.0 percent (Lebanon). The unweighted average increase for these locations amounts to 32.5 percent. The absolute increase for Greece amounts to 17.2 percent.

TABLE I  
Cost of Intergovernmental Meetings - Illustrative Case

	June 1989 <sup>a/</sup> (US dollars)	May 1991 <sup>b/</sup> (US dollars)	Absolute Increase %
Participants:			
Travel	10,846	12,752	17.6
Per diem	6,960	9,040	29.9 <sup>c/</sup>
Sub-total	17,806	21,792	22.4
Conf. Support Staff:			
Interpreters (6) Fee	8,385	11,430	36.3
Revisers (4) Fee	3,560	4,468	25.5
Travel	3,660	5,382	47.0
Per Diem	1,740	2,260	29.9
Sub-total	17,345	23,540	35.7
Grand Total	35,151	45,332	29.0

a/ Joint Meeting of the Scientific and Technical Committee and the Socio-Economic Committee, Athens, 26 - 30 June 1989.

b/ Joint Meeting of the Scientific and Technical Committee and the Socio-Economic Committee, Athens, 6 - 10 May 1991.

c/ Per diem rates for Athens, \$87.0 in June 1989 and \$113 in May 1991.

N.B. For this and other tables in the study figures may not add to totals due to rounding.

TABLE II

Official United Nations Daily Subsistence Rates for  
Mediterranean Locations  
(June 1989 and June 1991)

Country/City	June 1989 (US dollars)	June 1991 (US dollars)	Absolute Increase %
Albania	92	80	-13.0
Algeria*	87	107	23.7
Cyprus	75	91	21.3
Egypt	64	74	15.6
France*	107	168	57.0
Greece*	79	92	17.2
Israel*	95	151	59.5
Italy*	185	197	6.5
Lebanon*	54	128	136.0
Libya*	99	136	37.4
Malta	107	123	15.0
Monaco	118	194	64.4
Morocco	90	119	32.2
Spain*	153	205	33.7
Syria*	102	106	4.4
Tunisia*	56	78	39.6
Turkey*	110	122	11.0
Yugoslavia*	109	136	23.9
Unweighted Average			32.5

\* For countries where per diem rates for more than one location were available, the unweighted average of these was taken to represent the country.

## Technical Meetings/Training and Fellowships

These meetings do not involve language and Conference services. The components of the total cost of such meetings are travel and per diem. As such their location heavily influences the calculations. In order to arrive at a reasonable estimate of the inflation factor for this category a small but representative sample of meetings held in 1989 was taken. For an Athens meeting, again the Joint Meeting of the Scientific and Technical Committee and the Socio-Economic Committee was taken, but this time excluding the conference servicing component. In addition, meetings in Monaco, Split, Alexandria and Tunis were selected. The cost of such meetings was calculated as at June 1991 using the official United Nations per diem rates (see Table II) and current airfares which were provided by an outside Travel Agency. The absolute increase in cost of each meeting was calculated. These calculations are summarized in Table III below. The unweighted average increase in the cost of holding these five meetings amounts to 33.17 percent.

TABLE III  
Cost of Technical Meetings/Training and Fellowships  
Illustrative Cases

Meeting		1989 (US dollars)	1991 (US dollars)	Absolute Increase %
Athens <sup>a/</sup> Total		17,806	21,792	22.39
of which:	Travel	10,846	12,752	17.57
	DSA	6,960	9,040	29.89
Monaco <sup>b/</sup> Total		17,285	27,429	58.69
of which:	Travel	3,377	4,857	43.83
	DSA	13,908	22,572	62.30
Split <sup>c/</sup> Total		16,410	20,104	22.51
of which:	Travel	10,220	13,190	29.06
	DSA	6,190	6,914	11.70
Alexandria <sup>d/</sup> Total		13,215	15,619	18.19
of which:	Travel	7,825	9,921	26.78
	DSA	5,390	5,698	5.71
Tunis <sup>e/</sup> Total		6,202	8,935	44.07
of which:	Travel	2,362	3,715	57.30
	DSA	3,840	5,220	35.94
Unweighted Average				33.17

- a/ Joint Meeting of the Scientific and Technical Committee and the Socio-Economic Committee, 26 - 30 June 1989.
- b/ Training on Petroleum Hydrocarbons, 11 - 29 September 1989.
- c/ Workshop on the Planning and Management of Tourism in the Mediterranean Coastal Zones, 30 May to 1 June 1989.
- d/ WHO/UNEP 2nd Training Course and Intercalibration Exercise on Microbiological Methodology, 16 - 21 October 1989.
- e/ WHO/UNEP Consultation Meeting on Programmes and Measures for the Protection of the Mediterranean Against Pollution from LBS Sources, 5 - 9 November 1989.

## Personnel and Operational Support

Estimates of costs for personnel and operational support have been made on a Centre-by-Centre basis since the experience of each Centre has been quite different due to different financing arrangements and very different experiences of inflation and exchange rate movements.

### Co-ordinating Unit (Athens, Greece)

This Centre employs 8 Professionals (6 UNEP Professionals, one WHO Professional and one FAO Professional) seven of which are charged to MTF, and 15 General Service staff (13 UNEP, one WHO General Service and one FAO General Service) twelve of which are charged to MTF budget. This Centre accounts for 51.45 percent of the total for Personnel and Operational Support. In 1989 the budget agreed for Personnel and Operational Support for this Centre for the biennium 1990-1991 amounted to \$ 2,209,000. The host Government makes a US \$ 800,000 contribution in local currency towards the biennial cost of the Centre.

Professional salaries (in dollars) in 1990 increased by 6 percent reflecting a United Nations-wide general salary increase for Professionals and post adjustment changes and normal step increases. General Service staff received a salary increase of 23.3 percent (in Dollar terms) resulting from an official survey assessing best prevailing rates of pay as well as normal step increases. It is estimated that Professional salaries will increase during 1991 by a further 6 percent (due to automatic step increases and some regrading and promotions). As a result of a recently conducted United Nations salary survey, General Service salaries were increased (backdated to January 1991) by 21 percent in local currency terms. The depreciation of the Drachma vis-à-vis the US dollar so far this year effectively wipes out any growth in dollar terms. In addition a United Nations comprehensive General Service Post Classification exercise is underway in the Athens Centre. While the exercise has not been completed it is likely that the regrading which will emerge will increase the budget costs retroactively for this item by 10-13 percent in dollar terms (for the purposes of this exercise the lower estimate of 10.0 percent has been taken).

Rent paid by the Athens Centre has increased from \$ 69,386 in 1989 to \$ 76,261 in 1990 and reached \$76,674 in 1991 (an average increase of 10.50 percent).

Travel costs of staff at the Co-ordinating Unit<sup>1/</sup> (\$ 176,000 in the 1990-1991 budget) are assumed to have increased at the same rate as travel (including daily subsistence) for Technical meetings/Training and Fellowships (see Table III). This amounts to an overall increase of 33.17 percent.

Reporting costs (\$ 54,000 in the 1990-1991 budget) are largely the cost of the high speed photocopying machine, the annual rental fee for which increased by 28 percent (50.45 percent in local currency - from 1,320,000 drachmas in 1989 to 1,986,000 in 1991). The cost of equipment and maintenance (\$ 245,000 in the 1990-1991 budget) increased by an estimated 10 percent during the period.

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<sup>1/</sup> including UN Agencies staff travel



Changes in other operational costs - postage and telecommunications (\$ 230,000 in the 1990-1991 budget) are set out in the table below.

Athens, Greece	1989 (US dollars)	1991 (US dollars)	Absolute Increase 1989 to 1991 %
Postage rates /20 gr.			
Local	0.19	0.26	36.84
Europe	0.37	0.42	13.68
USA/Asia/Africa	0.43	0.53	21.80
Total	0.99	1.21	25.86
Telephone Rates (per unit)	0.024	0.026	9.31
Weighted Average <sup>a/</sup>			15.93

a/ Postage 40 percent, Telecommunications 60 percent of total.

Source: See Appendix

Table IV below takes the above elements in the Athens Centre's budget and adjusts the 1989 prices to their 1991 levels. The overall increase in costs is estimated to be 18.70 percent, which represents an increase in the budget from \$ 2,209,000 in 1990-1991 to \$ 2,622,001 in 1992-1993.

TABLE IV  
Estimated Increase in Costs: Co-ordinating Unit (Athens, Greece)

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Professional Staff	936,000	12.36	1,051,690
General service	410,000	35.63	556,083
Rent	158,000	10.50	174,590
Travel	176,000	33.17	234,379
Reporting costs	54,000	28.00	69,120
Equipment and maintenance	245,000	10.00	269,500
Post and Telecommunications	230,000	15.93	266,639
Total	2,209,000	18.70	2,622,001

a/ Adjusted to 1991 prices.

Blue Plan (BP/RAC, Sophia Antipolis, France)

This Centre employs 5 Professionals (out of which 3 are charged to the MTF) and 4 General Service staff (out of which one is charged to the MTF). This Centre accounts for 9.32 percent of the total for Personnel and Operational Support. The counterpart contribution of the Government of France represents a significant share of total operations costs. Moreover, the counterpart contribution covers certain salary costs normally appearing under the MTF (thus exceeding the officially reported counterpart contribution). In one case a salary increase amounted to 29.45 percent while the increase borne by the MTF amounted to 8.88 percent. It must also be noted that during 1990, certain job descriptions and sources of funding were changed. Overall the increase charged to the MTF in 1990 over 1989 amounted to 13.66 percent. No provision for growth in salary costs (in dollar terms) has been made for 1991. Thus the overall increase for this item would remain at 13.66 percent for the period.

Travel costs of the Sophia Antipolis Centre (\$ 30,000 in the 1990-1991 budget) are assumed to have increased at the same rate as travel (including daily subsistence) for Technical meetings/Training and Fellowships (see Table III). This amounts to an overall increase of 33.17 percent. Rent for this Centre does not enter into the MAP budget since it is met entirely by counterpart contributions from the French Government.

Reporting costs (\$ 10,000 for the 1990-1991 budget) are estimated to have increased by 17.56 percent. Other equipment and maintenance cost are not covered by the MTF budget and are met entirely by the counterpart contribution. Changes in other operational costs - postage and telecommunications (\$ 20,000 in the 1990 - 1991 budget) are set out in the table below.

Sophia Antipolis, France	1989 (US dollars)	1991 (US dollars)	Absolute Increase 1989 to 1991 %
Postage rates /20 gr. International	0.34	0.40	15.95
Telephone Rates (per unit)	0.10	0.11	10.91
Average <sup>a/</sup>			13.43

a/ Postage 50 percent, Telecommunications 50 percent of total.

Source: See Appendix

Table V below takes the above elements in the Centre's budget and adjusts the 1989 prices to their 1991 levels. The increase in costs between 1989 and 1991 are estimated at \$ 60,837, an increase of 15.21 percent.

TABLE V  
Estimated Increase in Costs: Blue Plan (BP/RAC, Sophia Antipolis, France)

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Staff	340,000 <sup>b/</sup>	13.66 <sup>b/</sup>	386,444 <sup>b/</sup>
Rent	-- <sup>c/</sup>	-- <sup>c/</sup>	-- <sup>c/</sup>
Travel	30,000	33.17	39,951
Reporting costs	10,000	17.56	11,756
Equipment and maintenance	-- <sup>c/</sup>	-- <sup>c/</sup>	-- <sup>c/</sup>
Post and Telecommunications	20,000	13.43	22,686
Total	400,000	15.21	460,837

a/ Adjusted to 1991 prices.

b/ As reported in the 1990 - 1991 budget, i.e. excluding host government contributions.

c/ Met entirely out of counterpart funds.

#### Priority Actions Programme (PAP/RAC, Split, Yugoslavia)

This Centre employs 2 Professionals and 6 General Service staff and accounts for 10.6 percent of the total for personnel and operational support. In 1989, the budget agreed for Personnel and Operational Support for this Centre for the biennium 1990-1991 amounted to US \$ 432,000.

The experience of this Centre represents a classic case of the interaction between inflation and exchange rates. Inflation in Yugoslavia amounted to 444 percent in 1990. But, as part of the Government's anti-inflationary policy, the exchange rate was pegged to the Deutsche mark. As a result the real value of salaries established in dollars but paid in Dinars was seriously eroded. The effect was so great that an emergency increase (in dollars) had to be agreed by the Bureau (UNEP/BUR/37/6). Salaries in dollar terms were increased by, on average, 26.72 percent. This, however, fell far short of restoring the real purchasing power of the salary scale agreed in 1989. In late 1990 a change in Government policy led to a substantial devaluation of the Dinar. Inflation has been substantially curtailed in 1991 compared to 1990 but still amounted to over 40 percent in the first half of this year. The Dinar has also been successively devalued (by 70 percent since the beginning of the year). It is not possible to untangle the extent to which the emergency measures adopted in early 1990 anticipated the unfolding pattern of inflation and exchange rates for the remainder of the year. Moreover the abrupt change in exchange rate policy in late 1990 but with much reduced but continuing inflation in 1991 provides a further discontinuity.

A salary survey into best prevailing local rates is being carried out by the UNDP Office in Belgrade. This will provide the best basis for establishing the budget for the Split Centre. Unfortunately the results of the survey will not be available by the time the Bureau meets (but it will be available soon thereafter).

It has been decided for the purposes of this study to suspend judgement and simply insert the dollar estimates agreed in 1990. The budget for this Centre can then be dealt with on a more sound basis prior to the meeting of the Contracting Parties. There may be therefore a minor degree of understatement in the overall estimates presented in this study.

Rent is met entirely by the host country counterpart contribution and therefore is not charged to the MTF budget. Travel costs of staff of the Split Centre (64,000 in the 1990-1991 budget) are assumed to have increased at the same rate as travel (including DSA) for Technical meetings/Training and Fellowships (see Table III). This amounts to an overall increase of 33.17 percent.

Reporting costs (US \$ 34,000 for the 1990-1991 budget) have been reported to have increased by 122 percent. Comparable figures for equipment and maintenance costs were not available. The increase may amount to as much as for reporting costs. However, for this exercise no estimates were made and the figures approved in 1989 for the biennium 1990-1991 have been retained. Changes in other operational costs (postage and telecommunications) (\$ 74,000 in the 1990-1991 budget) are illustrated in the table below:

Split, Yugoslavia	1989 (US dollars)	1991 (US dollars)	Absolute Increase 1989 to 1991 %
Postage rates /100 gr. Air Mail	2.46	3.29	33.71
Telephone Rates (per unit)	0.02	0.04	62.81
Average <sup>a/</sup>			48.26

a/ Postage 50 percent, Telecommunications 50 percent of total.

Source: See Appendix

As may be seen in Table VI below the overall increase in costs for the Split Centre (but bearing in mind the arbitrary assumptions regarding salaries) are estimated to amount to \$ 160,420, an increase of 37.13 percent.

TABLE VI

Estimated Increase in Costs: Priority Actions Programme (PAP/RAC, Split, Yugoslavia)

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Staff	232,000	26.72	294,000 <sup>b/</sup>
Rent	-- <sup>c/</sup>	-- <sup>c/</sup>	-- <sup>c/</sup>
Travel	64,000	33.17	85,229
Reporting costs	34,000	122.00	75,480
Equipment and maintenance	28,000	-- <sup>d/</sup>	28,000
Post and Telecommunications	74,000	48.26	109,712
Total	432,000	37.13	592,420

a/ Adjusted to 1991 prices.

b/ As adjusted in the emergency increase approved by the Bureau in 1990 but not adjusted for any further inflation /exchange rate movements. A salary survey is currently underway.

c/ Met entirely out of counterpart funds.

d/ No estimate made.

## REMPEC (Malta)

This Centre employs 4 Professionals, out of which 3 are charged to the MTF and 5 General Service staff and accounts for 16.24 percent of the total for Personnel and Operational Support. In 1989 the budget agreed for Personnel and Operational Support for this Centre for the 1990-1991 biennium amounted to \$ 697,000.

Professional salaries (in dollars) rose in 1990 by 9.50 percent and are expected to grow by a further 2.90 percent in 1991. For General Service staff a job classification exercise as well as a local salary survey were carried out in 1990. These two exercises led to an increase in General Service salaries of 35.54 percent (in dollar terms). The Maltese pound in 1990 strengthened against the US dollar as the US dollar weakened internationally. This year the Maltese pound has weakened against the dollar as the dollar has strengthened internationally. Currently the Maltese pound has lost two-thirds of the gains it had made in 1990 vis-à-vis the low point in 1989. No provision for growth in General Service salary costs in dollar terms has been made for 1991. Rent is entirely met by the host country and therefore does not enter into the calculations. Travel costs of the staff of the Malta Centre (\$ 32,000 in the 1990-1991 budget) are assumed to have increased at the same rate as travel (including daily subsistence) for Technical meetings/Training and Fellowships (see Table III). This amounts to an overall increase for this item of 33.17 percent.

Reporting costs (\$ 14,000 in the 1990-1991 budget) have remained stable in local currency terms. The recent appreciation of the US dollar may lead to some savings in this area. For the purpose of this exercise, a zero growth of this budget line in nominal dollar terms has been assumed. For equipment and maintenance (US \$ 21,000 for 1990-1991 budget), costs were largely stable in local currency terms. They increased in dollar terms in 1990, reflecting the then low value of the US dollar. In 1991, the strengthening dollar has partially redressed the previous year's losses. Overall an absolute increase in dollar terms of 8.75 percent is estimated for this budget line. Changes in other operational costs - postage and telecommunications (\$ 83,000 in the 1990-1991) are set out in the table below:

Malta	1989 (US dollars)	1991 (US dollars)	Absolute Increase 1989 to 1991 %
Postage rates /20 gr.			
Local	0.11	0.12	2.35
Europe	0.29	0.29	2.35
Other	0.40	0.41	2.35
Total	0.80	0.82	2.35
Telephone Rates (per unit)	0.52	0.53	2.35
Weighted Average <sup>a/</sup>			2.35

a/ Postage 40 percent, Telecommunications 60 percent of total.

Source: See Appendix

Table VII below takes the above elements in the Malta Centre's budget and adjusts the 1989 prices to their 1991 levels. The overall inflation factor of 18.28 percent has been estimated which represents an increase in the budget from \$ 697,000 in 1990-1991 to \$ 824,425 in 1992-1993.

TABLE VII  
Estimated Increase in Costs: REMPEC (Malta)

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Professional Staff	356,000	12.68	401,141
General service	191,000	35.54	258,881
Rent	--b/	--b/	--b/
Travel	32,000	33.17	42,614
Reporting costs	14,000	0.00	14,000
Equipment and maintenance	21,000	8.75	22,838
Post and Telecommunications	83,000	2.35	84,951
Total	697,000	18.28	824,425

a/ Adjusted to 1991 prices

b/ Met entirely out of counterpart funds.

### IAEA/ILMR (Monaco)

One Professional and one General Service post is charged to the MTF by this Centre. This Centre accounts for 5.70 percent of the total Personnel and Operational Support.

Professional salaries increased by 6.98 percent in 1990 and are estimated to increase by a similar amount in 1991. For the General Service staff member there was an upgrading of post and an increase in the salary scales in 1990 leading in an overall increase of 38.75 percent. A further increase in 1991 in the order of 7 percent is anticipated.

All other staff and other operational costs with the exception of travel are met by the International Atomic Energy Agency and do not enter in the MTF budget. Travel costs of staff of the Monaco Centre (\$ 48,000 for the 1990-1991 budget) are assumed to have increased at the same rate as travel (including daily subsistence) for Technical meetings/Training and Fellowships (see Table III). This amounts to an overall increase of 33.17 percent.

Table VIII below takes the above elements in the Monaco Centre's budget and adjusts the 1989 prices to their 1991 levels. The overall inflation factor is estimated to be 26.72 percent, amounting to an increase in the budget from \$ 245,000 in 1990-1991 to \$ 310,473 in 1992-1993.

TABLE VIII  
Estimated Increase in Costs: IAEA/ILMR (Monaco)

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Professional Staff	135,000	14.45	154,504
General service	62,000	48.46	92,047
Rent	--b/	--b/	--b/
Travel	48,000	33.17	63,922
Reporting costs	--b/	--b/	--b/
Equipment and maintenance	--b/	--b/	--b/
Post and Telecommunications	--b/	--b/	--b/
Total	245,000	26.72	310,473

a/ Adjusted to 1991 prices.

b/ Met entirely out of counterpart funds.

### Specially Protected Areas (SPA/RAC, Tunis)

The Headquarters agreement with the Tunisian Government was signed in May 1991. Thus the Centre was not operational for a large part of the current biennium and no sound basis exists for estimating inflation factors. The budget proposed for 1992-1993 reflects a revision of the General Service staff requirements compared to what had been envisaged in the Centre's proposals contained in the 1990-1991 budget. For the purpose of this exercise the 34.84 percent increase in the budget has been taken as given. One should note that the percentage increase in the dollar per diem rate for Tunisia between 1989 and 1991 was 39.6 (see Table II).

## Summary of Costs of the Six Centres

The costs and inflation factors for all six Centres for Personnel and Operational Support are shown in Table IX below. These costs are estimated to have increased from \$ 4,293,000 as planned in the 1990-1991 budget to \$ 5,228,155 based at current prices - an overall growth of 21.78 percent.

TABLE IX  
The Impact of Inflation on the  
Centres of the Mediterranean Action Plan

Centres	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Athens (MEDU)	2,209,000	18.70	2,622,001
Sophia Antipolis (BP)	400,000	15.21	460,837
Split (PAP/RAC)	432,000	37.13	592,420
Malta (REMPEC/IMO)	697,000	18.28	824,425
Tunis (SPA/RAC)	310,000	34.84	418,000
Monaco (IAEA/ILMR)	245,000	26.72	310,473
Total	4,293,000	21.78	5,228,155

a/ Adjusted to 1991 prices.

## Consultants

Provision for Consultants in the 1990-1991 budget amounted to \$ 1,063,000. Costs of this category have 3 elements: fees, travel and per diem. From an examination of all consultancy contracts established by the Co-ordinating Unit of the Mediterranean Action Plan in 1989 - 1990 (98 individual contracts) fees represent 85 percent of the total costs of this category. Increases in fees cannot be directly estimated since there are so many non-comparable factors involved. However, consultancy fees have a relationship to the United Nations Professional Staff salaries. The average percentage increase in Professional Staff salaries for Athens, Malta and Monaco was 13.16 between 1989 and 1991. For the purposes of this exercise, a conservative inflation factor of 5 percent per annum has been assumed. Regarding travel and per diem, the already estimated 33.17 absolute increase has been used. As can be seen from Table X below this brings the overall increase during the two year period to 13.69 percent in absolute terms.

TABLE X  
Increase in Consultancy Costs

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Fees	903,550	10.25	996,164
Travel	159,450	33.17	212,340
Total	1,063,000	13.69	1,208,503

a/ Adjusted to 1991 prices.



## Provision of Equipment

A further important component of the programme's activities is provision of equipment to participating Mediterranean institutions. Such equipment purchases cover a wide variety of items and price changes may embody improvements in quality which cannot easily be separated out. Centres were requested to provide information on equipment they purchased. Items included are those for which 1989 invoices were available and for which the original suppliers provided current (1991) price quotations. As may be seen in Table XI below, price changes range from minus 4.54 percent to plus 74.79 percent (an unweighted annual average increase of 11.68 percent for the 50 items examined). For convenience this average annual increase was rounded down to 10.0 percent per annum for the calculation of the overall impact of inflation on the budget.

TABLE XI  
Estimated Increase in Costs: Laboratory Equipment

Item	Price 1989 (US dollars)	Price 1991 (US dollars)	Absolute Increase %
Service Board Kit for GC3400	5,456.69	6,897.75	26.41
Resistor, Probe simulator	1.57	1.73	10.05
Push Switch, Power On-Off	29.92	38.13	27.43
Cell with Ni63 foil	1,360.63	1,871.75	37.56
Bracket with shock mounts	80.31	140.38	74.79
Drive Belt (9176)	47.24	62.39	32.06
On-Off Valve	103.94	133.45	28.39
Power Amplifier PCB Assy.	1,198.43	1,646.45	37.38
Injector Heater and Probe	414.17	487.00	17.58
Heater, 85W	39.37	50.26	27.66
Platinum probe	256.69	336.22	30.98
Heater Cartridge, FID	59.84	76.26	27.43
Swage,T, Brass	17.32	27.73	60.08
ECD Electronics	1,099.21	1,391.68	26.61
Switch, column oven	31.50	34.66	10.05
Nut, Flame tip mounting	23.62	32.93	39.40
Power Control Board	429.92	554.59	29.00
Readout Module, Digital, 1 Det.	2,612.60	3,311.96	26.77
Photocolorimetre A3160102	2,195.28	2,428.08	10.60
Stereomicroscope (Olimpus VE-31)	385.83	447.66	16.03
Membranes Filtrante A2663020	68.82	83.71	21.64
Boites de Petri A 14116043 (per 144 pcs.)	116.38	113.00	-2.90
Tubes (Verre) 20x200mm	7.06	6.90	-2.13
Chromatographe en phase gazeuse Modele 8700	14,455.28	21,582.86	49.31

Item	Price 1989 (US dollars)	Price 1991 (US dollars)	Absolute Increase %
Injecteur/split/splitless	2,375.91	3,533.33	48.72
Injecteur "On column"	2,220.47	3,320.00	49.52
Detecteur a ionisation de flamme (FID)	7,527.40	11,219.05	49.04
Regulateur de pression 0-30 (Canal de gauche)	883.78	1,318.10	49.14
Regulateur de pression 0-30 (Canal de droite)	1,168.03	1,318.10	12.85
Computer Colonies	879.65	839.69	-4.54
Autoclave	1,498.41	1,797.75	19.98
Pompe Unispence	1,861.69	2,096.53	12.61
PH Metre	202.86	198.09	-2.35
Broyeur a Mortier	2,210.97	2,426.86	9.76
Mortier Acier inox	835.45	972.79	16.44
Pilon Acier inox	255.01	296.53	16.28
Pompe bi etagee	1,378.54	1,676.43	21.61
Coffret Nitrites	34.18	37.26	9.01
Kit Nitrites	42.77	46.62	9.01
Coffret Phoshates	27.98	30.50	9.01
Coffret Sulfates	22.73	27.21	19.68
Coffret Ammonium	30.84	35.01	13.51
24 Tubes Reactif	46.26	54.42	17.63
pH and Ion Meter	1,305.08	1,702.92	30.48
Pt-100 Sensor	115.48	155.56	34.70
Calomel Reference Electrode	75.14	101.17	34.64
Thiocyanide Ion electrode	783.05	1,085.38	38.61
Copper Ion Senc. electrode	805.65	1,085.38	34.72
Cadmium Ion Sens. electrode	783.05	1,052.63	34.43
Series water sampler	1,744.63	2,017.54	15.64
Unweighted Average			25.25

## Sub-Contracts

This component amounts to \$ 1,710,000 in the 1990-1991 budget and comprises a variety of forms of support to Mediterranean institutions. Broadly speaking it has three component parts -financial support for Staff (approximately 40 percent of the component total), travel (approximately 10 percent of the component total) and provision of equipment (approximately 50 percent of the component total). For staff support, involving as it does locally recruited staff, a modest 5 percent per annum growth rate has been assumed. Travel (including per diem) is estimated to have increased by 33.17 percent for the period. Equipment is of the same nature as the provision of equipment estimated above which has been assumed to have grown at an average annual rate of 10.0 percent. The effects of these inflation factors are summarized in Table XII below.

TABLE XII  
Estimated Increase in Costs : Sub-Contracts

Components	1990 - 1991 budget (US dollars)	Increase in costs 1989 - 1991 %	Adjusted <sup>a/</sup> 1990 - 1991 budget (US dollars)
Staff	684,000	10.25	754,110
Travel	171,000	33.17	227,721
Equipment	855,000	21.00	1,034,550
Total	1,710,000	17.92	2,016,381

a/ Adjusted to 1991 prices.

## CONCLUSIONS

The Summary Table below brings together the inflation factors estimated for the several components of the budget. The weights of each category in the overall budget have been applied to the different inflation factors to derive the inflation factor for the overall budget. As may be seen from the table to provide at current (1991) prices the identical basket of activities agreed in the 1990-1991 budget, the budget would have to be increased by 21.9 percent to reflect current prices. This amounts to an overall increase in the budget from \$ 9,970,000 to \$ 12,152,293.

### SUMMARY TABLE

The Impact of Inflation on the  
1990 - 1991 MAP Budget

Components	1990-1991 Budget <sup>a/</sup> (US dollars)	Inflation June 1989 to June 1991 %	1990 - 1991 Budget Adjusted to mid 1991 prices (US dollars)
Meetings	588,000	29.0	758,520
Training/fellowships	1,137,000	33.2	1,514,143
Personnel and Operational Support	4,293,000	21.8	5,228,155
Consultants	1,063,000	13.7	1,208,503
Provision of Equipment	1,179,000	21.0	1,426,590
Sub-contracts	1,710,000	17.9	2,016,381
Total	9,970,000	21.9	12,152,293

a/ Prepared and approved in the period May - October 1989.

N.B. Figures may not add to totals due to rounding.

## RECOMMENDATIONS FOR FUTURE BUDGET EXERCISES

An exercise which aims to study the impact of inflation on the MAP budget, like the present one, is costly in terms of staff time, both at the Co-ordinating Unit and at the other Regional Activity Centres. Some information is accessible without great cost: per diem rates, travel costs, some personnel costs (official United Nations salaries) and some operational support costs (Rent and some equipment and maintenance). Other information is less readily available or requires heavy analysis to ensure comparability: equipment costs, some personnel costs and some elements of operational support costs.

In the case of those items or components whose costs are expected to change in common for all Centres, in order to avoid duplication, the Co-ordinating Unit should provide standard component-specific inflation rates.

One area where such an index may be calculated is with respect to the cost of scientific equipment - Equipment Component plus approximately half of the subcontract component - which together amount to 20.5 percent of the overall 1990-1991 MAP budget.

Subject to advice from scientific staff of MAP it is proposed that a small but representative list of commonly purchased items (perhaps 15-20 items) be established. Price changes of items in this list could be tracked by the Co-ordinating Unit and would provide an inflation index for this significant portion of the MAP budget.

Similarly, the Co-ordinating Unit should centrally deal with costing of meetings, travel, per diem, consultancy fees and such like.

The Co-ordinating Unit would need to be fully supported by the Regional Activity Centres for the provision of detailed salary and other operational cost information which are, by their very nature, Centre-specific.

Finally it is suggested that the MAP budget presentation could be improved by the addition of a certain number of summary tables which would provide a synoptic view of the overall costs of the Co-ordinating Unit and all the other Regional Activity Centres.

## APPENDIX

Athens, Greece	1989 (Greek Drachma)	1991 (Greek Drachma)	Absolute Increase 1989 - 1991 %
Postage rates /20 gr.			
Local	30.00	50.00	66.67%
Europe	60.00	80.00	33.33%
USA/Asia/Africa	70.00	100.00	42.86%
Total	160.00	230.00	47.62%
Telephone Rates (per unit)	3.900	5.000	28.21%

Sophia Antipolis	1989 (French Franc)	1991 (French Franc)	Absolute Increase 1989 - 1991 %
Postage rates /20 gr.			
International	2.20	2.30	4.55%
Telephone Rates (per unit)	0.62	0.62	0.00%

Split, Yugoslavia	1989 (Yugoslav Dinar)	1991 (Yugoslav Dinar)	Absolute Increase 1989 - 1991 %
Postage rates /100 gr.			
Air Mail	12.10	73.00	503.31%
Telephone Rates (per unit)	0.05	0.84	1476.72%

Malta	1989 (Maltese Lira)	1991 (Maltese Lira)	Absolute Increase 1989 - 1991 %
Postage rates /20 gr.			
Local	0.04	0.04	0.00%
Europe	0.10	0.10	0.00%
Other	0.14	0.14	0.00%
Total	0.28	0.28	0.00%
Telephone Rates (per unit)	0.18	0.18	0.00%