

UNITED NATIONS  
GENERAL  
ASSEMBLY

UN LIBRARY



Distr.  
GENERAL

A/36/356  
5 October 1981

ORIGINAL: ENGLISH

Thirty-sixth session  
Agenda items 51 (d) and 69

REVIEW OF THE IMPLEMENTATION OF THE RECOMMENDATIONS AND DECISIONS  
ADOPTED BY THE GENERAL ASSEMBLY AT ITS TENTH SPECIAL SESSION

DEVELOPMENT AND INTERNATIONAL ECONOMIC CO-OPERATION

Study on the relationship between disarmament and development

Report of the Secretary-General

1. By paragraph 94 of resolution S-10/2 of 30 June 1978, the General Assembly requested the Secretary-General, with the assistance of a group of qualified governmental experts, to carry out a study on the relationship between disarmament and development.
2. Pursuant to that resolution, the Secretary-General appointed a Group of Governmental Experts on the Relationship between Disarmament and Development, which met from 4 to 13 September 1978; 15 to 26 January 1979; 2 to 11 May 1979; 17 to 21 September 1979; 11 to 18 February 1980; 2 to 12 June 1980; 15 to 26 September 1980; 19 to 30 January 1981; 21 April to 1 May 1981 and 17 to 28 August 1981.
3. In conformity with paragraph 94 of the Final Document of the Tenth Special Session of the General Assembly contained in resolution S-10/2, the Secretary-General submitted to the Assembly at its thirty-fourth session in interim report on the subject (A/34/534).
4. By a letter dated 3 September 1981, the Chairman of the Group of Governmental Experts transmitted to the Secretary-General the report which is hereby submitted to the General Assembly.

ANNEX

Study on the relationship between disarmament and development

CONTENTS

	<u>Paragraphs</u>	<u>Page</u>
FOREWORD BY THE SECRETARY-GENERAL . . . . .		2
LETTER OF TRANSMITTAL . . . . .		3
<u>Chapter</u>		
I. INTRODUCTION . . . . .	1 - 27	6
II. THE FRAMEWORK AND SCOPE OF THE RELATIONSHIP BETWEEN DISARMAMENT AND DEVELOPMENT . . . . .	28 - 101	14
III. PRESENT-DAY UTILIZATION OF RESOURCES FOR MILITARY PURPOSES . . . . .	102 - 172	42
IV. ECONOMIC AND SOCIAL EFFECTS OF A CONTINUING ARMS RACE AND OF THE IMPLEMENTATION OF DISARMAMENT MEASURES . . . . .	173 - 241	73
V. CONVERSION AND REDEPLOYMENT OF RESOURCES RELEASED FROM MILITARY PURPOSES THROUGH DISARMAMENT MEASURES TO ECONOMIC AND SOCIAL DEVELOPMENT PURPOSES . . . . .	242 - 328	108
VI. POSSIBLE INSTITUTIONAL MEASURES FOR THE INTERNATIONAL REALLOCATION OF RESOURCES FROM ARMAMENTS TO DEVELOPMENT . . . . .	329 - 390	141
VII. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS . . . . .	391 - 426	161

APPENDICES

I. Commissioned research reports received by the Group of Governmental Experts . . . . .		177
II. List of possible products for converted military industrial capacity . . . . .		183
III. Reservations expressed by some Experts on the study . . . . .		187



Foreword by the Secretary-General

1. By paragraph 94 of the Final Document of the Tenth Special Session of the General Assembly, contained in resolution S-10/2 of 30 June 1978, the Secretary-General was requested to carry out, with the assistance of a group of governmental experts, a study on the relationship between disarmament and development.
2. The mandate of the group, contained in document A/S-10/9, sets out the following main areas of investigation: (a) present-day utilization of resources for military purposes; (b) economic and social consequences of a continuing arms race and of the implementation of disarmament measures; and (c) conversion and deployment of resources released from military purposes through disarmament measures to economic and social development purposes. In resolution 33/71 I of 14 December 1978, the General Assembly also requested the Secretary-General to submit to the Group of Governmental Experts on the Relationship between Disarmament and Development, for its consideration, the proposal to establish an international disarmament fund for development, which had been previously submitted by the French Government to the General Assembly at its tenth special session (A/S-10/AC.1/28).
3. In pursuance of the request by the General Assembly, a group of seven governmental experts was appointed to carry out the study. The Group held 10 sessions between September 1978 and August 1981.
4. The study greatly benefited from the preparation of 40 research reports commissioned by the Group. Of these reports, 21 were funded from voluntary contributions to the Disarmament Project Fund established for this purpose by the Governments of 10 States; in addition, 9 countries undertook to finance nationally a total of 19 projects, either completely or in part.
5. The Secretary-General has on many occasions pointed out that the continuing escalation of the arms race constitutes a serious drain on resources that are desperately needed for socio-economic development. He has repeatedly stressed that the hope for a peaceful, just and stable world order depends largely on narrowing the gap between the developed and developing countries. The present study is an important attempt by the international community to thoroughly investigate the proposition that a balanced and generally acceptable pattern of global economic and social development is inextricably related to disarmament. The clear and widely shared understanding of this relationship may provide a basis for the formulation of practical measures by Governments that would both promote disarmament and further development.
6. The Secretary-General wishes to thank the experts for their report which is submitted herewith to the General Assembly for its consideration. It should be noted that the observations and recommendations contained in the report are those of the experts. In this connexion, the Secretary-General wishes to point out that in the complex field of disarmament matters, in many instances he is not in a position to pass judgement on all aspects of the work accomplished by the experts.

/...

LETTER OF TRANSMITTAL

3 September 1981

Sir,

I have the honour to submit herewith the report of the Group of Governmental Experts on the Relationship between Disarmament and Development, which was appointed by you in pursuance of paragraphs 94 and 95 of the Final Document of the Tenth Special Session of the General Assembly contained in resolution S-10/2 of 30 June 1978.

The governmental experts appointed in accordance with the General Assembly resolution were the following:

Mr. Ljubivoje ACÍMOVIĆ

Director, Institute of International Politics and Economics,  
Belgrade, Yugoslavia

Mr. Mansur AHMAD

Permanent Representative of Pakistan to the United Nations  
Office at Geneva

Mr. Tamás BACSKAI

General Manager, National Bank of Hungary

Mr. Horst BECKER

Director of the Disarmament Section, Ministry of Foreign Affairs,  
Federal Republic of Germany

Mr. Luis CABANA

Member of the Advisory Commission for Foreign Affairs,  
Venezuela

Mr. Antoni CZARKOWSKI

Deputy Director, Department of International Organizations  
Ministry of Foreign Affairs, Poland

Mr. Hendrik de HAAN

Professor of Economics, University of Groningen, the Netherlands

Mr. Sergio de Queiroz DUARTE

Deputy Representative of Brazil to the Committee on Disarmament

Mr. Omran EL SHAFEI

Under-Secretary of State, Ministry of Foreign Affairs,  
Egypt

1...

Mr. José Antonio ENCINAS DEL PANDO

Director, Economic and Social Research Centre,  
University of Lima, Peru

Mr. Klaus ENGELHARDT

Professor of Economics, Institute for International Politics and  
Economics, German Democratic Republic

Mr. Daniel GALLIK

Senior Economist, Arms Control and Disarmament Agency,  
Washington, D.C., United States of America

Mr. Placido GARCIA REYNOSO

Permanent Representative of Mexico to the United Nations  
Office at Geneva

Mr. Robert HASELDEN

Economic Adviser, Ministry of Defence,  
United Kingdom of Great Britain and Northern Ireland

Mr. Anthony HILL

Permanent Representative of Jamaica to the United Nations  
Office at Geneva

Mr. Masayoshi KAKITSUBO

Adviser to the Ministry of Foreign Affairs,  
Tokyo, Japan

Mr. Sten F. LUNDBO

Chief of Research Division, Ministry of Foreign Affairs,  
Norway

Mr. A. C. H. MOHAMED

Ministry of Foreign Affairs, Sri Lanka

Mr. Jacques PRADELLE DE LA TOUR DE JEAN

Ministry of External Relations, France

Mr. Anire SAGAY

Deputy Secretary, Ministry of Defence, Nigeria

Mr. Nodari SIMONIA

Head, Institute of Oriental Studies, USSR Academy of Sciences

Mr. K. SUBRAHMANYAM

Director, Institute for Defence Studies and Analyses, India

Mr. Ibrahima SY

First Counsellor, Permanent Mission of Senegal to the  
United Nations Office at Geneva

Mrs. Inga THORSSON

Under-Secretary of State, Ministry of Foreign Affairs, Sweden

Mr. Leandro I. VERCELES

Director-General for United Nations Affairs and International  
Organizations, Ministry of Foreign Affairs, Philippines

Mr. Constantin VLAD

Director, Institute of Political Sciences and Study of the  
National Question, Stefan Gheorghiu Academy, Romania

Mr. Bernard WOOD

Director, North-South Institute, Canada

The report was prepared between September 1978 and August 1981, during which period the Group held 10 sessions: from 4 to 13 September 1978, 15 to 26 January 1979 and 2 to 11 May 1979 at Geneva; from 17 to 21 September 1979 in New York; from 11 to 18 February 1980 at Geneva; from 2 to 12 June 1980 in New York; and from 15 to 26 September 1980, 19 to 30 January 1981, 21 April to 1 May 1981 and 17 to 28 August 1981 at Geneva.

The members of the Group of Governmental Experts wish to express their gratitude for the assistance which they received from members of the Secretariat of the United Nations and the specialized agencies and other organizations of the United Nations system. They wish in particular to convey their thanks to Mr. Jan Martenson, Assistant Secretary-General, to Mr. Abdelkader Bensmail, who served as Secretary of the Group and to Mr. Ronald Hunisken, Mr. Hugh Mosley and Mrs. Swadesh Rana who served as consultants to the Group.

I have been requested by the Group of Governmental Experts as its Chairman, to submit to you on its behalf its report. Certain members submitted reservations to chapters II, IV and VI, in whole or in part. These reservations are reproduced in appendix III to this report. The rest of the report, including chapter VII, entitled "Summary, conclusions and recommendations", was adopted unanimously.

(Signed) Inga THORSSON  
Chairman of the  
Group of Governmental Experts  
on the Relationship between  
Disarmament and Development

His Excellency Mr. Kurt WALDHEIM  
Secretary-General of the United Nations  
New York

## CHAPTER I

### INTRODUCTION

1. The origin of the present study can be traced to resolution 32/88 A 12 December 1977 whereby the General Assembly decided that a study on the relationship between disarmament and development should be initiated and that the terms of reference of the study should be determined by the Assembly itself at its special session devoted to disarmament in 1978. 1/ To this end, the Secretary-General was requested to appoint an ad hoc group of Governmental Experts for the purpose of elaborating a possible framework and terms of reference for the study. The ad hoc group submitted its report to the Secretary-General on 21 March 1978 and it was subsequently submitted to the General Assembly as document A/S-10/9.
2. By paragraph 94 of the Final Document of the Tenth Special Session of the General Assembly, contained in resolution S-10/2 of 30 June 1978, the Assembly decided that the Secretary-General should appoint a group of qualified Governmental Experts to execute the study and that document A/S-10/9 should serve as the group's mandate. In pursuance of that decision, the Secretary-General appointed a group of 24 governmental experts which held its first meeting in September 1978. 2/
3. According to the general guidelines in the mandate, the Group's study should be made in the context of the current situation in the field of disarmament, the importance of disarmament for détente, international peace and security, economic and social development and the promotion of international co-operation and their reciprocal relationships. The study should further be made in the context of how disarmament could contribute to the establishment of a new international economic order. The general guidelines also stated that a real and effective process of disarmament was imperative and that the study should serve as a basis for decisions on concrete actions, following disarmament measures, to release real resources now being used for military purposes for economic and social development in the world, particularly for the benefit of the developing countries. To that end, it was urged that the study should be forward-looking and policy-oriented and place special emphasis on both the desirability of and, most particularly, the substantive feasibility of such a reallocation of resources at the local, regional, national and international levels. The construction of a comprehensive and reliable data base for the study was considered highly desirable.

---

1/ Resolution 32/88 A itself stemmed from a working paper prepared by Denmark, Finland, Norway and Sweden proposing a United Nations study on disarmament and development. See Official Records of the General Assembly, Tenth Special Session, Supplement No. 1 (A/S-10/1), vol.V, document A/AC.187/80.

2/ Experts were appointed from the following countries: Brazil, Egypt, France, German Democratic Republic, Germany, Federal Republic of, Hungary, India, Japan, Mexico, Netherlands, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Romania, Senegal, Sweden, Union of Soviet Socialist Republics, United Kingdom of Great Britain and Northern Ireland, United States of America, Venezuela and Yugoslavia.

4. The terms of reference identify the following main areas of investigation:

(a) Present-day utilization of resources for military purposes;

(b) Economic and social consequences of a continuing arms race and of implementation of disarmament measures;

(c) Conversion and redeployment of resources released from military purposes through disarmament measures to economic and social development purposes.

5. This represents a shift in emphasis from earlier attempts which focused more on military expenditure than on real resources, and which have not paid sufficient attention to the potential benefits for the economies of the major weapons States and other developed countries as well as for the developing countries.

6. The results of the first meeting were set out in an organizational report submitted by the Secretary-General to the General Assembly at its thirty-third session (A/33/317, annex). The Assembly responded to the requests and recommendations contained in the report by adopting resolution 33/71 M of 14 December 1978, which appealed to all Governments to consider making voluntary contributions to the Disarmament Project Fund, which would enable the Group to commission specialized research on its terms of reference or to finance national research projects on topics approved by the Group. Resolution 33/71 M also appealed to Governments to make available data and information relevant to a meaningful completion of the study. <sup>3/</sup> In a separate resolution (33/71 I), the Assembly also requested the Secretary-General to transmit to the Group, for its consideration, the proposal to establish an international disarmament fund for development, which had previously been submitted to the General Assembly at its tenth special session (A/S-10/AC.1/28).

7. At its second session, in January 1979, the membership of the Group was expanded to 27 by the addition of experts from Canada, Jamaica and Sri Lanka. At that session, the Group agreed that the proposal to establish an international disarmament fund for development, as referred to in resolution 33/71 I, was within its terms of reference and undertook consideration of this proposal against the background of earlier proposals with a similar intent.

8. On 21 September 1979, the Group submitted an interim report on the results of its work in 1979 (A/34/534, annex) to the Secretary-General, who transmitted it to the General Assembly. In that report, the Group reiterated its conviction that, particularly in the final stages of its work, strong support from suitably qualified research consultants in the Centre for Disarmament would be indispensable for the successful execution of its mandate. Specifically, the Group recommended that three such consultants be appointed, a request that was endorsed by the Assembly in resolution 34/83 K.

---

<sup>3/</sup> Four countries, Denmark, Norway, Sweden and the United Kingdom of Great Britain and Northern Ireland, have responded to this request.

Commissioning the research projects

9. The Group's terms of reference recognized that, in view of the broad and complex field to be studied and in the interests of securing the broadest possible participation in the project, it would be desirable to draw on expert assistance from all over the world. To achieve this, the Group drew up a list of researchers and institutes around the world considered to be knowledgeable in the various fields of study relevant to the Group's terms of reference. All those on the list were invited to submit research proposals for evaluation by the Group. This procedure was adopted at the first session in September 1978 and again at the second session in January 1979 in recognition of the Group's expanded membership and the addition to its terms of reference.

10. In total, the Group reviewed some 75 research proposals. In the selection process, the Group endeavoured to meet a number of criteria. The primary considerations were that the commissioned proposals should collectively cover the areas of research in the Group's mandate as completely as possible; that the proposals be original and well-constructed and that the researchers responsible be manifestly competent for the task. In addition, the Group endeavoured to ensure that the research would focus on as many countries and geographic regions as possible and that those responsible for the research would come from countries at different stages of development and be representative of different economic and social systems. Furthermore, preference was given to proposals that placed emphasis on the real human and material resources absorbed by armaments and potentially available for development needs. Finally, the Group considered that the problem of the conversion of resources from armaments to economic and social development, particularly for the benefit of developing countries, was of particular importance, and that also influenced the selection of proposals.

11. The voluntary contributions to the Disarmament Project Fund eventually totalled a generous \$594,180. <sup>4/</sup> In addition, nine countries undertook to finance projects nationally, either completely or in part. <sup>5/</sup> The outcome of the whole process was that the Group was able to commission a total of 45 projects, 24 financed from the Fund and 21 that were nationally financed. For a variety of reasons, 5 of these projects were abandoned so the net total of studies received was 40. <sup>6/</sup> All the studies were submitted to the Centre for Disarmament over the period from January to November 1980.

---

<sup>4/</sup> The contributing countries were Cyprus, Ethiopia, France, India, the Netherlands, Norway, the Philippines, Sweden, the United States of America and Venezuela. A contribution was also received from the International Federation of Commercial, Clerical, Professional and Technical Employees. Amounts contributed are shown in document A/34/534, annex.

<sup>5/</sup> Canada, Finland, Germany, Federal Republic of, German Democratic Republic, Norway, Poland, Romania, the Union of Soviet Socialist Republics and the United States of America.

<sup>6/</sup> The titles of these studies and the researchers responsible are listed in appendix I.

12. The Group became aware at an early stage that its own final report could not do full justice to the wealth and diversity of the studies submitted. The authors were therefore granted permission to publish their studies separately and many have already done so. The Group regards the opportunity to generate this broad and in-depth body of research and to bring the results into the public domain as one of its principal accomplishments.

13. Apart from the commissioned material, the Group also benefited from ongoing research in many institutions around the world, including the United Nations Industrial Development Organization (UNIDO), the United Nations Institute for Training and Research (UNITAR), the United Nations Conference on Trade and Development (UNCTAD), the International Labour Organisation (ILO) and the Stockholm International Peace Research Institute (SIPRI). Similarly, the results of several international conferences and symposia on subject-matter directly or closely related to the Group's terms of reference provided valuable inputs, particularly the Conference on Disarmament and Development held in Sandefjord, Norway, on 6-7 May 1980. 7/ Finally, the Group solicited the views of non-governmental organizations - including trade unions and other professional organizations - both as inputs to its work and with a view to facilitating the wide dissemination of the findings of the final report. The Group also attempted to solicit the views of employers' organizations.

Review of the treatment in the United Nations of the relationship between  
disarmament and development

14. There has been no lack of attempts in the United Nations over the past 30 years to associate or link disarmament with development. 8/ Since 1950, the General Assembly has adopted a number of resolutions appealing for an over-all reduction of military spending and employing the funds for economic and social purposes, particularly for the benefit of the developing countries. Proposals for agreed reductions of military budgets have also been recurring over the post-war period and on several occasions these proposals have provided specifically for the diversion of part of the savings to the promotion of economic and social development in the developing countries.

15. These appeals and proposals to establish a link between disarmament and development, in so far as they were based at all on the recognition of a genuine relationship between these two phenomena, would appear to have been based primarily on the moral judgement that it is wrong to squander resources on armaments while the basic needs of so many people remain unmet. Another judgement that seems to have been implicit in these earlier proposals was that, for whatever reasons, a state of over-armament existed so that some reallocation of resources could be accomplished without raising concerns about security. Indeed, many of the earlier proposals were apparently made in the belief they were worth making precisely

---

7/ The Sandefjord Report on Disarmament and Development (Oslo 1980).

8/ These earlier proposals will be described in chap. VI.



because the quantum of resources devoted to armaments was so large that one could envisage diversions to development on a meaningful scale without really addressing the complex and sensitive issues that effective disarmament would raise. This can be seen, for example, in the United Nations report entitled The Economic and Social Consequences of Disarmament published in 1962. The experts who prepared this report pointed out that "... A much larger volume of resources could be allocated to investment for productive development in developing countries even if only a fraction of the resources currently devoted to military purposes were used in this way". 9/

16. More recently, however, there have been several changes from these views. For one, there has been a perceptible movement toward the view that there exists a deeper incompatibility between the arms race and the economic and social needs and aspirations of the peoples of the world. This view accompanied the greater attention being accorded in various world forums to the unsatisfactory progress of development in the developing countries. In 1972, an expert report entitled Economic and Social Consequences of the Arms Race and of Military Expenditure pointed out that "a more substantial curtailment of the arms race would permit for the first time the kind of massive transfer of resources which could make a fundamental change in the prospects for economic and social development". 10/ At the same time, however, another report that appeared in the same year, entitled Disarmament and Development, broadly endorsed this view but introduced a note of caution on the question of linkage. While this report emphasized the enormous potential in effective disarmament, the authors stressed that "fundamentally disarmament and development stand separately from one another" and that "national and international efforts to promote development should neither be postponed nor allowed to lag merely because progress in disarmament is slow". 11/

17. Another change has been the systematic attention paid to proposals for agreements on the reduction of military budgets and the increased efforts made to address the many problems they raise when treated as potentially effective disarmament measures. These efforts were given a notable impetus by the 1974 expert report entitled Reduction of Military Budgets of States Permanent Members of the Security Council by 10 per cent and Utilization of Part of the Funds Thus Saved to Provide Assistance to Developing Countries. 12/

---

9/ E/3593/Rev.1 (United Nations publication, Sales No. E.62.IX.1), p. 51 (emphasis added).

10/ A/8469/Rev. 1 (United Nations publication, Sales No. E.72.IX.16), p. 34.

11/ ST/ECA/174 (United Nations publication, Sales No. E.73.IX.1), p. 22.

12/ A/9770/Rev.1 (United Nations publication, Sales No. E.75.I.10). A series of expert reports extending these efforts was prepared in 1976, 1977, and 1980, although with less wide participation.

18. In 1977, the expert group that updated the report on the economic and social consequences of the arms race went considerably further toward suggesting the existence of a broad and intimate relationship between disarmament and development, specifically stating "development at an acceptable rate would be hard if not impossible to reconcile with a continuation of the arms race" and "disarmament should be so designed that the close connexion between disarmament and development gets full recognition". 13/ The General Assembly at its thirty-fifth session decided that a new updated version of this report should be made and be transmitted to the Assembly at its thirty-seventh session (resolution 35/141).

19. This position was explicitly endorsed by the General Assembly in the final document adopted at its special session devoted to disarmament in 1978. The relevant paragraph reads as follows:

"There is also a close relationship between disarmament and development. Progress in the former would help greatly to the realization of the latter. Therefore resources released as a result of the implementation of disarmament measures should be devoted to the economic and social development of all nations and contribute to the bridging of the economic gap between developed and developing countries." 14/

20. A similar trend can be identified in the General Assembly resolutions on the United Nations development decades. The resolutions launching the first and second development decades focused primarily on the resources that disarmament would make available for economic and social development although in each case there was also an awareness of a wider relationship between international development and the general international situation, particularly as regards progress toward disarmament. 15/ The International Development Strategy for the Third United Nations Development Decade, on the other hand, used wording almost identical to that cited in paragraph 19 above from the special session devoted to disarmament. What is clearly implicit in this wording is that recognition of the relationship between disarmament and development should be reflected in the use of the resources released through the implementation of disarmament measures for economic and social development particularly in the developing countries (see resolution 35/56 of 5 December 1980, para. 39).

---

13/ Economic and Social Consequences of the Arms Race and of Military Expenditure (A/32/88 (United Nations publication, Sales No. E.78.IX.1)), pp. 73-74.

14/ Final Document of the Tenth Special Session of the General Assembly (resolution S-10/2 of 30 June 1978), para. 35.

15/ See the second preambular paragraph and para. 4 (i) of resolution 1710 (XVI) of 19 December 1961 and para. 5 of the International Development Strategy for the Second United Nations Development Decade contained in resolution 2626 (XXV) of 24 October 1970. Resolution 2685 (XXV) of December 1970 also called for a close link between the first Disarmament Decade and the Second United Nations Development Decade.

Objectives of the present study

21. This study is the first attempt by the United Nations to investigate systematically and in depth, the range of relationships between the prospects for balanced and sustainable global economic and social development on the one hand and disarmament on the other through the reallocation of real resources. The relationship is a complex and multidimensional one, and the Group's analysis aims to improve understanding of it as a basis for the formulation of practical measures. The need for this is clear from persisting trends in resources allocated to world armaments and the existence of extremely serious economic and social problems.

22. It appears, therefore, that disarmament and development are widely viewed as separate problems, particularly at the national level. At the most fundamental level this undoubtedly stems from the perception by nation-States that the maintenance of adequate military power is an unassailable priority given contemporary political realities. However, there also appears to be a lack of conviction in political circles that recognizing and acting upon the relationship between the two is really necessary or desirable on economic and social grounds. Furthermore, there are doubts among many States about the feasibility of giving practical expression to this relationship. This report will re-examine the basis for these latter perceptions and attitudes in the light of current trends in the arms race and the current prospects for global economic and social development. 16/

23. It should be noted that it is not within the Group's terms of reference to interfere with the process of disarmament negotiations, nor to make any recommendations to Governments as to the direction or the content of such negotiations. In a deeper sense, however, this work should help to enhance the climate and political will for disarmament efforts by clarifying their economic and social costs and benefits. In addition, the Group will examine whether and why there are reasons for an urgent, even imperative need for contingency arrangements at the national and international levels if resources released through disarmament measures are to be redeployed with a minimum of dislocation and waste, and in ways which help solve the problems of development.

24. The Group has been conscious of the fact that action based upon the recognition of a strong relationship between disarmament and development will require that the peoples of all nations, industrialized and developing, perceive significant benefits from this step. At the same time, however, and as defined in its terms of reference, the Group has paid particular attention to the urgent economic and social needs of the developing countries and to how the resources released by disarmament measures could be used to meet these needs. Fortunately, as will be seen below, these two objectives are by no means incompatible.

---

16/ There is one major dimension to these issues that this report will not consider in detail. This is the interrelationship between disarmament and international security. If policies are to be implemented that reflect recognition of the relationship between disarmament and development a major prerequisite will be acceptable alternative arrangements to exclusive reliance on national military forces for the preservation of security. These questions are being reviewed in depth in a parallel study by another group of experts on the interrelationship between disarmament and international security.

The study

25. As a general framework for the study the Group has endeavoured in chapter II to provide a conceptual basis for an examination of the relationship between disarmament and development. Chapter III sketches the current dimensions of the arms race in terms of real human and material resources. Chapter IV analyses the economic and social consequences of the post-war arms race and employs the results to assess future prospects in the event of both a continuing arms race and the beginning of a process of genuine disarmament. Chapter V is concerned with the feasibility of converting and redeploying resources to economic and social development as disarmament measures are implemented. Chapter VI considers the desirability and feasibility of institutional arrangements - including funding modalities - at the regional and international levels that could give recognition to the relationship between disarmament and development and facilitate the process of reallocating real resources. Finally, chapter VII presents summaries of the substantive chapters together with the Group's conclusions and recommendations.

26. The report is based upon available data. Both the research reports submitted to the Group and other available official and unofficial material demonstrate that data for most countries, including some which have very high military expenditures, are insufficient in regard to military expenditure, resources used by the military sector and arms transfers. For this reason, the present report refers disproportionately to data and examples from a few western countries, and resorts to various forms of estimates. Therefore much of the data cited in the Study are subject to an unknown margin of error which, in our opinion, may be significant. This inevitably and regrettably reduces the balance and precision of certain parts of this study.

27. The Group's mandate stresses the importance of informing as wide an audience as possible on the issues of the relationship between disarmament and development and recommends that a short and popular version of the main report be prepared for general distribution. Arrangements have been made, in co-operation with the Government of Canada, for the preparation by an outside author of a short text based on the present report and aimed at a mass audience. This short text will be an autonomous publication except that the Chairman of the Group will contribute the foreword and that it will contain the conclusions and the recommendations of the present study.

## CHAPTER II

### THE FRAMEWORK AND SCOPE OF THE RELATIONSHIP BETWEEN DISARMAMENT AND DEVELOPMENT

28. The world's past seemed to be catching up with it in the 1970s, as ominous global stresses and strains came to the surface in one field after another. This examination of the relationship between disarmament and development has been conducted against a background of growing international political tension and economic turmoil; it is part of an urgent search for solutions to increasingly pressing old problems as well as dangerous new problems. To describe the global prospect at the present time as uncertain is to be almost charitable. The current watchwords are complexity and interdependence and in all spheres the new or, more accurately, newly perceived complexities have exposed serious deficiencies and dangers in prevailing attitudes, modes of behaviour and tools of management. The diffusion of political and economic influence and, to a lesser extent, of military power is no longer a prospect but a fact of life. The economic fortunes of all States are now tied inextricably and irreversibly together dictating, it would seem, co-operation and the co-ordination of strategies for mutual benefit. Of particular relevance here is that underdevelopment, its causes and policies for its elimination, now rank among the foremost political issues in the international community. Furthermore, the world community has become sensitive to the fact that human activity is placing intolerable strains on our planet's environment and that long-held presumptions on the inexhaustibility of the world's resources should be seriously questioned.

29. These facts have been dramatized by the more than 20 United Nations global conferences and General Assembly special sessions, which took place during the last decade, addressing such issues as desertification, disarmament, employment, energy, environment, food, health, human settlements, industrialization, population science and technology, trade and water. These conferences and special sessions, which amounted to something like an assessment of the state of the world, also drew up general guidelines for political action. The time has now come to implement these guidelines.

30. For all these reasons the early 1980s may turn out to be a watershed. If we are to tackle the existing problems and to avoid or minimize those that we can re-see, the future will have to be more radically different from the past than at any other time in the post-war period. Broadly speaking, the present report is an investigation into the contribution that disarmament could make toward facilitating the changes and adjustments needed to put the global economy on a path of sustainable growth and development. Conversely, it is intended to provide a basis for judging how far we can reasonably hope to proceed toward sustainable growth and development if the arms race is not brought under control and reversed.

31. Mankind is at present facing the greatest challenge of the century. The level and speed of the arms race are bound to increase the danger of war. The outbreak of a nuclear war would jeopardize the very existence of all mankind. During this decade peoples will be confronted with new technological, economic and social challenges that will be made far more complex if the arms race continues unabated.

In the context of halting and reversing this race, it is also imperative to find solutions to the problems impeding the technological, economic and social development of the developing countries. Additional human, material and financial resources are needed to solve the problems in such fields as raw materials, energy, food production and environmental protection. The challenges of the 1980s urgently call for real and effective disarmament measures in the interests of mankind.

32. The phenomena described by the terms disarmament and development are widely understood in general terms but for the purposes of this report it is worthwhile to be somewhat more specific. Disarmament is the process of reduction in the size of and expenditures on armed forces; the destruction or dismantling of weapons, whether deployed or stockpiled, the progressive elimination of the capacity to produce new weapons and the release and integration into civilian life of military personnel. The ultimate objective is general and complete disarmament under effective international control. The intervening process must be characterized by balanced reductions that ensure undiminished security for all States and provide for the adequate verification of compliance with agreed-upon reductions. There is a clear place in this process for arms limitation agreements that genuinely restrain the quantitative growth and qualitative refinement of arsenals, particularly as such agreements would be invaluable as confidence-building measures and would serve as stepping stones to actual reductions. Similarly, in addition to a global process of disarmament there is scope for unilateral initiatives at the national level and for regional arrangements although there will be distinct limits beyond which initiatives at these lower levels could not proceed. While it is difficult to predict the course that a disarmament process would follow, it is clear that, particularly in the initial stages, the reductions agreed upon will be modest and that ample time will be allowed to achieve them.

33. Development, in its broadest sense, refers to social and economic changes in society leading to improvement in the quality of life for all. At the most basic level, it means providing for every person the basic material requirements for a productive and dignified existence. Economic growth, that is, the expansion of output, is a prerequisite for sustained development but development cannot be reduced to economic growth. Development also means that everyone should have the opportunity - and with the opportunity, the responsibility - to participate fully in the economic and social process and to share in its benefits. More specifically, if the global development effort is to be morally and politically sustainable, it must endeavour to provide for a pattern of economic growth that would significantly diminish within a reasonable time-frame the prevailing disparities between States in the quality of life. Furthermore, in order to be sustainable physically, the global development effort should be demonstrably compatible with long-term resource availabilities and environmental constraints, insofar as it is possible to determine these limits.

34. Conceptually, the relationship between disarmament and development may take diverse forms. One form is obvious, undebatable, and of paramount importance: since the processes of arms accumulation and of development both require large-scale human and material resources and since resources are limited, pursuit of either process tends to deprive the other. Beyond the simple opportunity-cost effect, the arms accumulation process can hinder development in other ways. In this competitive sense, the relationship exists, whether or not action is taken on

it. Other forms depend on various kinds of action being taken. One action is to exhort those who make and influence decisions to view the basic connexion in all seriousness and to take full account of the benefits for development that a reduction in arms would yield. Other forms involve the establishment of mechanisms or institutions that could perform exhortative, symbolic, reallocational, or savings-producing roles. The extent of international agreement differs with respect to the various forms, with the first being unquestioned and the latter ones quite controversial. The present study aims to examine all of them.

#### The conventional exposition of the relationship between disarmament and development

35. As we saw in the introductory chapter, the notion of establishing a relationship between disarmament and development in the form of an institutional link has a long history in the United Nations. The opportunity for a highly advantageous revision of priorities in global resource allocation away from armaments toward economic and social development has been clearly apparent since the early years of the post-war era and this simple or conventional case for associating disarmament with development has become more compelling over time.

36. Today, per capita income in the developed countries, on the average, exceeds that in the developing countries by a factor of 12. It is true that this average relationship obscures major variations within each group and between them. It is also true, however, that hundreds of millions of people exist in conditions of such acute poverty that the label "standard of living" is utterly inappropriate. The World Bank estimates that there are now 570 million people who are malnourished, 800 million who are illiterate, 1500 million who have little or no access to medical services, 250 million children who do not go to school. <sup>17/</sup> These are numbing statistics and the costs of doing something about them often appear disconcertingly large. Yet, each year for the past 30 years, States have collectively allocated 5 to 8 per cent of the world's disposable resources to armaments. In 1980, global outlays for military purposes were of the order of \$500,000 million, roughly equivalent to investment in all the developing countries combined and nearly 19 times greater than the official development assistance to these countries provided by the member countries of the Organisation for Economic Co-operation and Development (OECD).

37. Between 1960 and 1980 the volume of resources devoted annually to military purposes increased by a factor of about 1.9, that is, almost doubled. What if the history of these decades repeats itself? This is not a far-fetched proposition as the increase in the volume of resources devoted to armaments over the past 20 years translates into an average annual rate of growth of just over 3 per cent. Given that world military expenditure in 1980 was an even \$500,000 million, a repetition of the performance over the 1960-1980 period will yield a global arms bill in the year 2000 of \$940,000 million (in 1980 prices). In the current prices of future years, in these circumstances, we will certainly be describing world military expenditures in terms of trillions of dollars by about 1990.

---

<sup>17/</sup> World Bank, World Development Report 1980 (Washington D.C., 1980).

38. Table II.1 displays a wider range of possibilities. While these are purely illustrative projections, the important point is that none of them is strictly infeasible from the economic standpoint, although, as we will show in chapter IV, the opportunity costs associated with sustained growth of military expenditures are likely to be very considerable. An annual rate of growth of 1 per cent in the value of resources devoted to armaments over the remainder of this century would probably be regarded as a triumph of restraint, but even in this case the cumulative value just of the additional resources devoted to military purposes - that is, resources in excess of those consumed if expenditure remained constant at \$500,000 million annually - would be \$1.1 trillion. At annual growth rates of 2 and 3 per cent - the former still modest by historical standards - the value of the additional resources denied the civilian sector would be equivalent to 28 per cent and 45 per cent respectively, of current world output. In this regard, it should be borne in mind that the prospect for the immediate future is one of acceleration in the rate of growth of global military expenditure.

Table II.1 Projected world military expenditure 1980-2000  
 (Millions of United States dollars, 1980 prices)

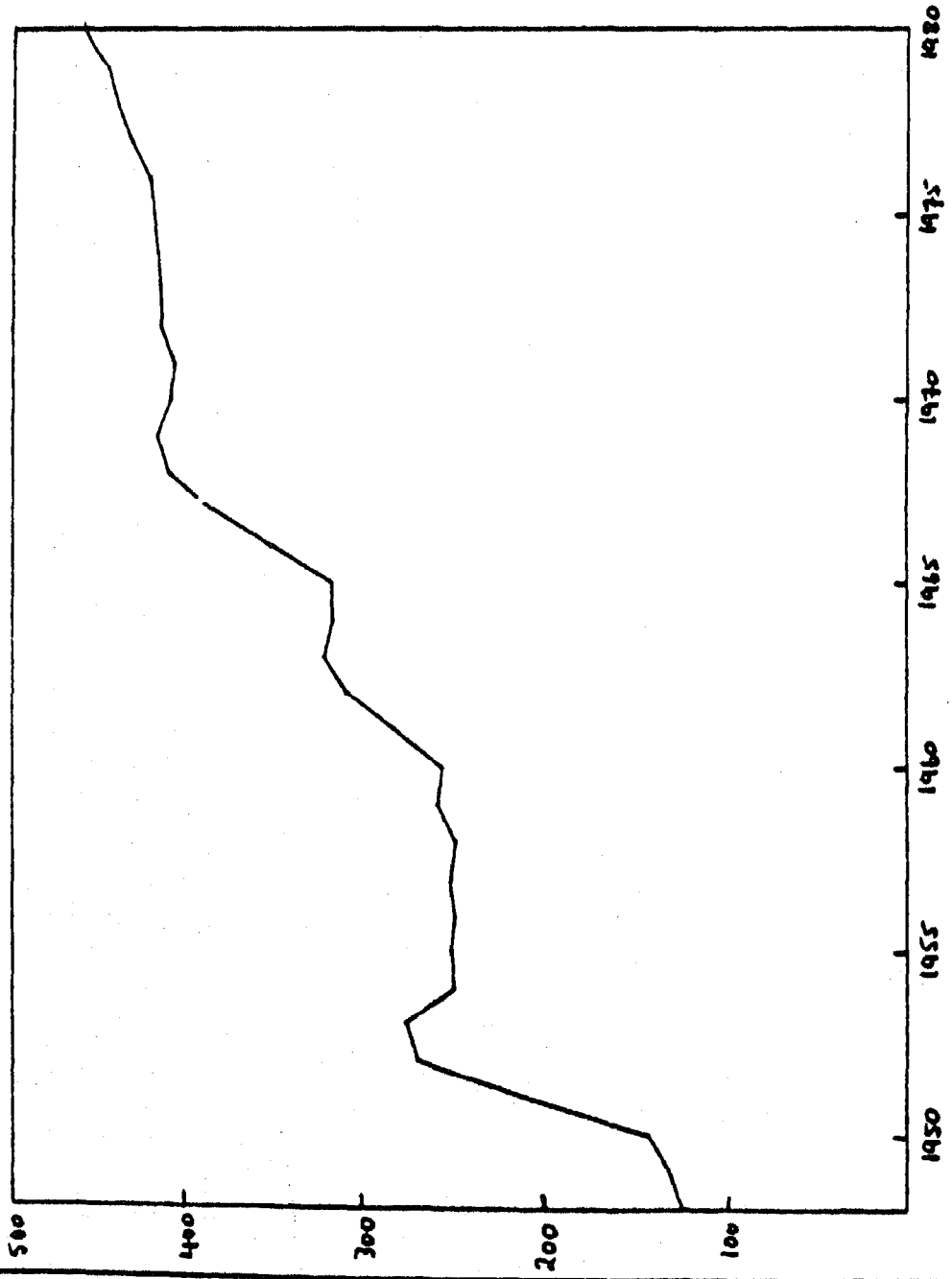
<u>Year</u>	<u>Average growth Rate</u>			
	1%	2%	3%	3.2%
1980	500 000	500 000	500 000	500 000
1990	552 310	609 497	671 958	685 000
2000	610 094	742 973	903 055	940 000

39. Twenty years is really not such a long period of time, particularly when measured against the fact that the negotiation of the SALT agreements occupied 10 years and that these negotiations have yet to concern themselves with significant reductions in the size and cost of the strategic nuclear arsenals. In short, continued failure to genuinely arrest the arms race and at least to stop further increases in the quantity of resources devoted to armaments will result in the irretrievable loss of enormous opportunities to improve the economic and social prospect of mankind. Nuclear war, should it ever occur, would for all practical purposes destroy civilization as we know it and render development objectives immaterial and meaningless.

40. It has been possible to point to the dramatic contrast between armament expenditures and unmet needs for over a quarter of a century but the desirable and necessary reordering of global priorities in resource allocation implied by the contrast has not taken place. One can only conclude, therefore, that - regrettably - this broadly moral and logical argument for encouraging disarmament for the sake of development has not in itself been sufficiently compelling to outweigh the of concern with military security, that is, concern about the use or threat of use force in disregard of the principles embodied in the Charter of the United Nations. It is true that in many, if not most, countries, the share of the gross national product (GNP) going to the military has declined in recent years and that social expenditures have accounted for a rising share of central government



Chart II.1. World military expenditure 1948-1980  
(Billions of United States dollars, 1978 prices and exchange rates)



Source: Compiled from various SIPRI publications.

expenditure. <sup>18/</sup> It is also true, however, that these changes have taken place despite virtually uninterrupted growth in the quantum of real resources devoted to armaments worldwide (chart II.1). Furthermore, it should be borne in mind that, before these favourable trends took hold, the resources devoted to armaments had reached massive proportions. These trends, therefore, do not reflect any diminution in the intensity of the global arms race, not to speak of its reversal.

41. In purely economic terms there is a potential relationship to the extent that, if disarmament occurs, then development will be facilitated. Discussion of this aspect of the relationship is postponed until chapter IV, where it is argued that disarmament would actually give rise to faster growth of output, which is a prerequisite for sustained development, although the problems in the process are not negligible. The fact remains, however, that at the international level, there exists no automatic market mechanism whereby the existence of unmet economic and social needs is transformed into a claim on the resources devoted to armaments. This transformation can only come about if political actors perceive it to be advantageous and feasible. The cogency of the moral basis for the relationship between disarmament and development is beyond dispute, but the experience to date is that this consideration has been persistently outweighed by national perceptions of security needs. In some countries, security has then been seen to require preserving the credibility of the nuclear deterrent, maintaining an over-all military balance, staying at the forefront of military technology and so on, which entails full participation in the arms race. What this means is that States regard military security as they see it as having a prior claim over development, the practical consequences being that the two subjects are tackled as essentially unrelated phenomena.

42. We have elected to organize this introductory discussion around the concept of security, as this appeared to be the most effective way of illuminating the complex and multifaceted relationship at the conceptual level between disarmament and development.

#### The concept of security

43. Security is a wider concept than that of military security alone. Economic as well as social aspects of this problem are of great importance. With this broader approach it becomes clear that the threat to security may be aggravated in many ways. Moreover, the spectrum of factors which may aggravate the threat to security and their relative urgency is not static but subject to continual evolutionary change. This being the case, the central political function at both the national and international level is to continually assess whether the available human and material resources are being disposed in a rational manner given the known and foreseeable threats and challenges to security.

44. The discussion in the remainder of this chapter is based on three themes that, in the view of the Group, embrace the primary and interrelated challenges to

---

<sup>18/</sup> United States Arms Control and Disarmament Agency, World Military Expenditure and Arms Transfers, 1969-1978, Washington, D.C., December 1980.

international security in the coming decades. The first of these is the arms race itself, where we will develop the view expressed in paragraph 1 of the Final Document of the Tenth Special Session of the General Assembly (resolution S-10/2) that "... the accumulation of weapons, particularly nuclear weapons, today constitutes much more of a threat than a protection for the future of mankind". In other words, the capacity of armaments to fulfil their purpose of providing for security is seen as increasingly open to question. In addition, however, it is beginning to be recognized that prevailing notions of what constitutes security are overly narrow and that armaments are, at best, impotent against many of the factors that challenge security if the latter is more broadly and realistically defined. When viewed in this broader perspective, the experience of the past decade has dramatized the fact that international peace and security are no longer threatened exclusively by the competition between East and West although their competition in armaments can be considered the greatest threat to peace and security. Rather, it has become apparent that the future security for all nations is and will be challenged by such factors as declining prospects for economic growth, by a variety of physical limitations and by the tensions arising from the increasingly inequitable distribution of the world's wealth. These latter themes - broadly, the non-military challenges to security - will be discussed together because they are all vital dimensions of the phenomenon of interdependence.

#### The arms race and security

45. Possessing adequate military power to ensure a high degree of freedom of fear from attack or other forms of military pressures is, of course, a major concern of States and providing for it is their sovereign right. The primary determinant of the military effort made by a country is its evaluation of the political and military situation and its resulting perception of direct and indirect threats. Similarly, it must be assumed, in the first instance, that individual States are in the best position to judge the utility of their efforts to provide for national security and to assess what economic sacrifices are acceptable for this purpose. Indeed, security from external attack and internal disorder is an essential prerequisite for sustained development. Areas that have been free of war since 1945, including, for example, Japan, Latin America, and for that matter most of the Warsaw Pact and North Atlantic Treaty Organization (NATO) countries, have experienced virtually uninterrupted growth over the period. It remains the case, however, that, from the global standpoint, the attempt by States individually to provide for their military security can result in widespread frustration and is now widely acknowledged to have done so. The arms race, of course, is primarily an expression of deeper political differences between States, but, as armaments accumulate, military security becomes both an intensifying concern and a more elusive state while at the same time the difficulty of resolving the underlying political issues is magnified. The dilemma is that the process - the competitive accumulation of armaments - has taken such firm root in the political, social, economic and cultural fabric of societies that the growing insecurity it breeds simply generates a demand for more armaments.

46. There are many armaments competitions now in progress in the world besides the central one between the two largest military powers and their allies. Whether reference is being made to the central one, as is usually the case, to all of them,

or to the interconnexions among them, they are much too complex to be comprehended by the term "the arms race". This should be kept in mind even though that term is used frequently for the sake of brevity. It should also be noted that the present report is not designed to undertake an examination of the "arms race" or races as such. Therefore, when we speak of the arms race almost as if it had a life of its own, disembodied from other aspects of international political life, we do not mean to deny that the arms race has deep and manifold connexions with the behaviour of States with respect to the use or threat of use of force in all its forms, as judged by conformity or non-conformity to accepted principles of behaviour embodied in the Charter of the United Nations. Also, although this report refers extensively to aspects of the arms race that have a particular bearing on the disarmament-development relationship, such as its technical and nuclear aspects, other aspects not discussed here at similar length, such as quantitative and conventional arms aspects, are also of major importance in many senses.

47. The post-war arms race has absorbed real human and material resources on a gigantic scale. This has been due in part to the fact that the size of the standing armies and arsenals have been significantly larger than those maintained, say, during the interwar period and also in large part to the stress placed on the qualitative improvement in weaponry. The process of accumulating arsenals has been repeated over and over as existing weapons have been replaced by more technologically advanced (and more costly) models and as technological developments yielded entirely new types of weapons to be accumulated in addition to the existing types. In this qualitative dimension, the post-war arms race has been dominated by the United States and the Soviet Union. Over time, other countries with the requisite resources have made increasingly significant contributions but the general parameters of what is technically possible in the way of weaponry and related systems - above all in the nuclear field - have been determined by these two countries.

48. The stress placed on the qualitative improvements in weaponry - the technological arms race - has also profoundly influenced the manner in which the race is conducted. As the complexity of weapons increased so did the time required for development, testing and deployment. The lead time or gestation period of a modern weapon system is now of the order of 7 to 10 years. Each side must therefore focus its attention not so much on the capabilities of the weapons the opponent already has, but on the capabilities of those he might be able to deploy 5 or 10 years in the future. This anticipatory process, strongly fueled by secrecy and prudently conservative assumptions on the opponent's scientific and technological prowess, both accelerated the pace of change and intensified the commitment to military research and development. When both sides are doing the same thing there is a high probability, given even roughly comparable technological opportunities and constraints, that each will eventually produce the developments anticipated by the other. Indeed, it would seem that it took only a few experiences of this kind in the early post-war years to generate the presumption in both the United States and the Soviet Union that what was technically feasible should be viewed as militarily and politically necessary.

49. In terms of the efficiency with which people can be killed and material things destroyed in war, this technological arms race can only be judged to have been extremely successful. But from the standpoint of international peace and security this process has produced a very dangerous situation.

50. The dangers inherent in the situation are most evident with respect to the nuclear arms race. In a recent United Nations study, it was estimated that the number of nuclear warheads now deployed probably exceeds 40,000 and that the combined explosive yield of these weapons is about 1 million times greater than the bomb dropped on the city of Hiroshima in August 1945. 19/ Table II.2, which is reproduced in full from this study, shows the estimated distribution of these warheads among the five nuclear-weapon States. It should be noted that four of the five nuclear-weapon States did not participate in the preparation of this study and also abstained from the associated resolution adopted by the General Assembly (resolution 35/156 F of 12 December 1980).

51. The danger presented by these nuclear arsenals, and particularly those of the Soviet Union and the United States, almost defies comprehension. It has been estimated that a general nuclear exchange between the two major powers, which would inevitably include direct strikes at population centres, would result in the immediate death of over 250 million people with tens of millions more succumbing in the ensuing days and weeks both within and beyond the borders of these States. 20/ The wider and longer range effects of such an exchange are exceedingly complex and essentially universal in scope. As noted in the report cited above: "... Figures and rough estimates may be given ... but there exists an uncertain limit beyond which such data have little meaning except as a categorical imperative that nuclear war must never happen." 21/ It is clear, in other words, that there is no conceivable national interest or complex of interests in the pursuit of which the large scale use of nuclear weapons could be construed as a rational act. Indeed, given the risk of escalation, this statement must apply to use of nuclear weapons on any scale.

---

19/ Comprehensive Study on Nuclear Weapons, A/35/392, (United Nations publication, Sales No. E.81.T.11), para. 9.

20/ International Herald Tribune, 7-8 January 1978, p. 1.

21/ Comprehensive Study on Nuclear Weapons ..., para. 143.

(Total number of warheads and total yield in Mt.)

<u>Nation</u>	<u>"Central strategic"</u>		<u>Other systems</u>		<u>Total b/</u>	
	<u>Warheads c/</u>	<u>Mt d/</u>	<u>Warheads d/</u>	<u>Mt d/</u>		<u>Warheads</u>
United States of America	9 000-11 000	3 000-4 000	16 000-22 000	1 000-4 000	25 000-33 000	4 000- 8 000
USSR	6 000- 7 500	5 000-8 000	5 000- 8 000	2 000-3 000	11 000-15 000	7 000-11 000
United Kingdom					200- 1 000	200- 1 000
China					< 300	200- 400
France					< 200	< 100
<u>Rounded grand total</u>					<u>37 000-50 000</u>	<u>11 000-20 000</u>

Source: Comprehensive Study on Nuclear Weapons, A/35/392 (United Nations publication, Sales No. E.81.I.11), table 2.

a/ These estimates were made for this report by the Swedish National Defence Research Institute in co-operation with the Institute for Defence and Disarmament Studies, Brookline, Mass. They are based on available open sources. Among these are SIPRI Yearbook 1980 as well as The Military Balance, 1979-1980. As is apparent from the table, there are substantial uncertainties in all the estimates. The largest single source of uncertainty is lack of knowledge regarding numbers and powers of weapons for aircraft delivery. In addition, some of these weapons are believed to have variable yields. Other uncertainties are introduced by the fact that different sources refer to different times, by differing assumptions as to the state of various systems under conversion, etc. Multiple re-entry vehicles have been counted separately, and assumptions have been made regarding possible reserves of certain weapons. It should be noted that calculations based on estimates of the amount of fissile material that could have been produced might lead to considerably higher figures for the possible number of warheads.

b/ Figures for the two super-Powers are rounded to the nearest thousands, for other nations to the nearest hundreds.

c/ Figures rounded to the nearest five hundreds.

d/ Figures rounded to the nearest thousands.

52. It is true that not a single nuclear weapon has been used in war since 1945. Similarly, the development of nuclear-weapon systems has been accompanied by enormous investments in fail-safe systems and in organizational arrangements to prevent their unauthorized or accidental use and in communication facilities to minimize the risk of miscalculation in a crisis. The simple fact remains, however, that men and machines are fallible but the situation that has been allowed to develop demands infallibility of both. It is only too easy to bury this terrifying fact in the subconscious recesses of the mind. But if we continue to do this, then at some point in time that unique set of circumstances will occur that will unleash these forces.

53. In the light of these observations - which could have been, and indeed were, made with equal conviction 20 years ago - it may seem little short of amazing that the current trend in the nuclear arsenals is steeply upward. But under the impetus of technological developments linked in a complex cause-effect relationship with deterrence doctrines this is precisely what is happening. In the United States and the Soviet Union - even if the SALT II treaty is ratified or unofficially adhered to - the number of "central strategic" warheads will almost certainly increase to well over 20,000 before the end of this decade. The United Kingdom, France and China are similarly engaged in modernizing and/or expanding their nuclear arsenals.

54. Even more disturbing than these trends in numbers of warheads, however, are recent developments in thought on how best to preserve the deterrent against nuclear war. It goes almost without saying that no one has ever set out to develop a nuclear weapons delivery system that is less reliable, less flexible and less accurate than its predecessor. Successive improvements in all these performance parameters have had two major consequences. First of all, each side has become steadily more concerned about the security or survivability of its own nuclear forces and made great efforts to disperse and protect these forces and to conceal their precise whereabouts. Secondly, the emerging capability to destroy at least some of the opponent's nuclear forces led inevitably to consideration being given to if and how this capability could be exploited to strengthen the credibility of the nuclear deterrent. This drift in strategic thought toward the notion of war fighting with nuclear weapons has a compelling internal logic which, in simple terms, boils down to the view that the threat to destroy a major portion of the opponent's nuclear forces is more credible than the threat to slaughter 100 million civilians so that deterrence is strengthened. What is deeply disturbing is that the former threat - the threat of a counterforce strike - is judged to be more credible because the decision to use nuclear weapons in this way will be easier to take. In other words, the adoption of a war-fighting doctrine - or in the absence of declaratory statements on doctrine, the clear pursuit of the necessary capabilities - amounts to a calculated lowering of the nuclear threshold in the belief that this will lessen the risk that the threshold will be crossed.

55. To compound this alarming picture it is now widely believed that the two major Powers are on a technological threshold in the sense that the generation of nuclear weaponry now in advanced development and scheduled for deployment during this decade will provide each country with a comprehensive counterforce capability against fixed targets on the opponent's territory. That is, each side will possess the theoretical ability, using a relatively small fraction of its own forces, to

destroy a very high percentage of the opponent's land-based missiles, bombers and strategic submarines in port should the opponent hesitate long enough in a crisis to permit this to happen.

56. A counterforce strike has exquisitely demanding requirements in terms of the timing and co-ordination of warhead delivery; the opponent would have thousands of surviving warheads on bombers and submarines with which to retaliate; and he may not hesitate but simply launch his own weapons before the incoming warheads detonate. The possibility that an imbalance in counterforce capabilities might bestow a psychological advantage on the leader is sufficient to produce a mutual determination to be on the right side of the imbalance. The nuclear prospect then, is one of ever more weapons and ever more acute pressures to be the first to use them: nuclear weapons will become even more of a threat for the future of mankind than they are today.

57. The nuclear arms race is a uniquely dangerous phenomenon and nuclear disarmament is by far the single most important requirement if we are to face the future with confidence. This fact, however, does not diminish the significance of the race - or rather, the multitude of races - in conventional weapons. Despite the existence of nuclear weapons, the post-war period has witnessed more or less continuous conventional warfare involving both nuclear and non-nuclear weapon States. Quite apart from the massive loss of life and destruction, the high incidence of local and regional conventional warfare amounts to a continuous flirtation with the supreme danger - the risk of escalation to the nuclear level.

58. Rough calculations suggest that conventional forces account for something like 80 per cent of all the resources devoted to armaments world-wide. <sup>22/</sup> Moreover, while there are just five recognized nuclear-weapon States, the arms race in conventional weapons is essentially a global preoccupation. The technological imperative mentioned above in connexion with nuclear weapons has been no less strong in the conventional area. Nor have the results been any less impressive. The range of types of weapons has grown enormously as technological developments permitted greater specialization. And within each type there have typically been in the last 30 years three or four generations - that is, major advances in capability - and a far greater number of interim refinements and improvements. All dimensions of weapon performance - range, speed, accuracy, reliability, destructive power - have been dramatically improved despite the fact that the cost of securing each increment in capability has risen steeply.

59. The thrust of technology toward greater range, speed, accuracy and destructive power has made it progressively more difficult for States to project an image of having a strictly defensive military posture. In making their assessments, States nearly always give greater weight to capabilities than to intentions. In short, under contemporary technological conditions, the fruit of attempts by States individually to provide for their security through armaments is an interactive

---

<sup>22/</sup> Frank Barnaby and Ronald Huisken, Arms Uncontrolled (Harvard University Press, 1975), pp. 11-12.



process that, at the very least, continuously raises the real cost of providing for military security. Indeed, from the global perspective, it would seem indisputable that the net result is a progressive diminution of security.

#### Non-military challenges to security

60. The range of contemporary challenges to the security of nations is far broader than the military power of potential adversaries. One can mention here the pronounced and almost universal drop in average rates of economic growth, looming scarcities of many vital raw materials and commodities, mounting concern over the long-term effects of environmental degradation and persuasive demands for a more just and equitable distribution of the world's wealth and opportunity. The interdependence of the global economic system ties all these elements together in a complex synergistic relationship. All the evidence suggests that we can overcome these diverse but closely interrelated problems, but only if the expansion of international co-operation and mutual accommodation is pursued far more intensively than has hitherto been considered necessary or desirable.

61. The physical limitations refer to the relationship of man to nature. The systematic investigation of the many facets of this relationship is comparatively recent but the results have been profoundly disturbing. The juxtaposition of prevailing economic habits and rates of population growth with supplies of energy, raw materials, food and the capacity of the environment to withstand abuse has revealed a host of related internal inconsistencies. It is widely felt that the world is on a course that cannot be sustained. Moreover, the changes that these physical constraints dictate are so far-reaching and will take so long to effect, even under optimum conditions, that we must consider taking the first steps to be an immediate priority. There are no easy or attractive alternatives to profoundly changing our ways and our expectations to conform with these physical realities, but delays will simply reduce the viability of the more palatable alternatives.

62. Economic growth and development cannot be achieved without a steady increase in the production and consumption of energy, although conservation and new technologies will permit some reduction in energy requirements per unit of output. It follows that securing the certainty of adequate supplies of energy over the longer term is of vital importance. We do not have that certainty today. In most countries oil is currently the predominant source of commercial energy but most projections show world oil exports reaching their peak by the end of the century and then declining steadily. At that time the temporary and isolated shortages that have been experienced over the past decade will become severe and widespread as the gap widens between demand and production. The world has switched from one source of energy to another before, but the period to effect the transition to a viable alternative is remarkably short.

63. The energy picture is further darkened by the fact that the two most readily available alternatives - nuclear power and coal - have serious limitations. A major consideration retarding the use of nuclear power to generate energy is the perception in States parties to the Treaty on the Non-Proliferation of Nuclear Weapons that the materials used in or produced by nuclear power reactors may also be used to make nuclear weapons. It is believed by these States that the spread of

nuclear power, in the context of an ongoing nuclear arms race, will result in the horizontal proliferation of nuclear weapon capabilities. In a similar vein, the combination of skilled and dedicated terrorist groups and ever-increasing amounts of deadly nuclear material being stored and transported all over the world is a very disturbing prospect. And reactor safety and the disposal of waste material are still a source of public concern.

64. Coal remains an abundant resource but its combustion is associated with the accumulation of carbon dioxide in the atmosphere and, together with other hydrocarbon fuels, with the phenomenon of acid rain. Carbon dioxide absorbs some of the heat that is re-radiated from the earth and can therefore lead to an increase in atmospheric temperature - the so-called "greenhouse" effect. Some scientists consider the climatic effects of the release of carbon dioxide to be the primary limiting factor in determining the amount of fossil fuel that can be safely burned over the long term. Even with the prevailing reliance on oil, vast tonnages of coal are being burned each year. Coal utilization would be more effective, economic and environmentally safer if the technologies for liquefaction and gasification mature and become viable for large-scale application, although these will not affect the problem of accumulation of carbon dioxide which is as true of other fossil fuels as it is of coal.

65. The need for a global transition to renewable energy sources is starkly apparent. So vast and urgent an undertaking requires a mobilization of resources and planning on a global basis. In the interim, States must devise conservation programmes to husband scarce petroleum resources while sustainable alternative energy sources are developed and brought into use on the required scale. Where it is climatically feasible, solar energy is perhaps the most attractive alternative capable of meeting an increasing part of the demand for energy. Utilizing wind power, geothermal energy, hydroelectric power, biomass, ethanol and the burning of wood can all be important supplementary sources. Some of these illustrate the interdependencies that global planning would have to take into account. For example, the acreage required to produce ethanol in viable quantities may conflict with the production of adequate quantities of foods. Similarly, reforestation to provide wood for fuel may also conflict with food production and with the demand for wood for other purposes, notably construction. A contrary observation is that many regions of the world urgently need major reforestation to prevent erosion and desertification and to restore agricultural productivity.

66. From the global standpoint, population has tended to grow faster than food production over the postwar period. <sup>23/</sup> Despite some remarkable accomplishments in agricultural productivity, events over the past decade have revealed that the global balance between the supply and demand for food is very delicate. World reserves of cereal stocks have not always been sufficient, the number of countries that consistently produce a surplus for export has declined steadily and recurring famines in parts of Africa and Asia have claimed millions of lives. In the late 1930s, all the major regions of the world with the exception of Western Europe,

---

<sup>23/</sup> Overcoming World Hunger: The Challenge Ahead, Report of the Presidential Commission on World Hunger, Washington, D.C., March 1980.

were net exporters of grain; 49 years later, all but two regions - North America and Australia/New Zealand - were importers. 24/ Approximately one half of the world's people now live in food deficit countries. With respect to rice, for example, the staple diet of more than one half of the world's population, production and consumption in 1979 were almost exactly balanced at about 250 million metric tons. Moreover, the majority of major producers were little more than self-sufficient; only 11 million metric tons or less than 5 per cent of total production was exported from one country to another and just two countries - Thailand and the United States - accounted for nearly one half of the total.

67. World grain production is expected to increase by nearly 40 per cent over the two next decades, sufficient to meet anticipated commercial demand for food. 25/ The additional production needed to provide for the basic nutritional needs of the malnourished - who, because of their poverty, cannot express effective commercial demand - is not daunting: about 32 million metric tons or 2 per cent of projected aggregate grain production in 1990. 26/ This comforting picture is quite deceptive, however, and not simply because 10-year and 20-year projections are highly uncertain. Perhaps the biggest problem is that the major increases in food production are projected to occur in the developed countries. In one estimation, the degree of food self-sufficiency in the developing countries is projected to decline from the prevailing 87 per cent to 74 per cent in the year 2000. 27/ In 1976, these countries imported some 50 million metric tons of grain at a cost of more than \$10 billion. By 2000, their food deficit is projected to grow to the order of 175 million metric tons and the real cost of grain will then be significantly higher than today. For the poorer developing countries - where this shortfall is likely to be concentrated - this will prove to be a crippling drain on the foreign exchange reserves so important to longer-term economic strength. It is imperative for these countries to create conditions conducive to an over-all increase in agricultural production as a basis for sustained economic growth.

68. Complete self-sufficiency in food for all countries is not possible, but the recurrent crises in the world food situation indicate the risks associated with allowing global food production to become more highly concentrated geographically than is the case now. On top of this, the general adequacy of global food production in the decades ahead - although technically feasible - will impose severe strains on available water resources and there is also considerable concern over the ecological consequences of the enormous increase in the quantity of chemical fertilizers needed to achieve projected production levels.

---

24/ See William Schneider, "Food, Foreign Policy and Raw Materials Cartels, National Strategy Information Centre, Inc. (New York, 1976), p. 31.67.

25/ Overcoming World Hunger: The Challenge Ahead ..., p. 34.

26/ Ibid.

27/ Ibid., p. 35.

69. At sea, as well as on land, demand has begun to exceed supply. Between 1950 and 1970 the world's fish catch increased more than threefold to some 70 million tons annually, the product of an enormous expansion in world fishing fleets and the application of sophisticated technologies to find, catch and process fish. Since 1970, however, the annual catch has stagnated as the offtake has exceeded regenerative capacity in one fishery after another. At every turn we find that the pressures of demand and the prevailing methods of attempting to meet these demands are straining the earth's four major biological systems - oceanic fisheries, grasslands, forests and croplands. The earth's grasslands support the animals that provide most of the world's meat, milk, butter and cheese, numerous raw materials for industry and energy for agriculture. Widespread denudation, soil erosion and desertification testify to the fact that rising numbers of cattle, water buffalo, sheep, goats and camels are overtaxing the grasslands. Similarly, the multiple demands for firewood, building materials, paper and new land for agriculture are resulting in a rate of exploitation of the world's forests that far exceeds regenerative capacity.

70. These few observations are illustrative of the fundamental and growing mismatch between man's need and capacity to exploit the earth's resources, both renewable and non-renewable, and the earth's ability to continue to provide them, a mismatch intensified by the diversion of part of the available resources to armaments. We have acquired or persist in habits - from the rate of procreation to the rate of change in fashions - that stand starkly revealed as unsustainable. A recent major United States study of these issues concluded: "If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically and more vulnerable to disruption than the world we live in now." <sup>28/</sup> The developing imbalance between man and nature threatens the well-being and thus the security of all nations, but the answer is not for each nation to defend what it has and endeavour to forcibly extract from others what it lacks. Moral considerations aside, we are much too proficient in the art of destruction for this to be a sensible alternative. The sensible choice is to tackle the causes of the problem, to bring requirements for food, energy, and raw materials into an equitable balance that can be sustained over the long term. There are many dimensions to this task, all of them large and exceedingly complex and all of them interconnected. Common sense demands that nations co-ordinate their efforts on both sides of the scale to achieve a sustainable balance, that is, to both increase the efficiency of economic activity and to adjust economic and social habits and consumption patterns to conform with resource scarcities and ecological limitations.

71. There is also the point that, if material development in the sense of higher living standards, achieved through faster economic growth, occur as a result of disarmament, then this may require still greater use of many of the world's resources. Again, the evidence is that this is not a critical problem, but it does mean that part of the extra income which is yielded may need to be devoted to solving the problem of those specific resources which are in short supply.

---

<sup>28/</sup> The Global 2000 Report to the President: Entering the Twenty-First Century (Washington, D.C., U.S. Government Printing Office, 1980), vol. I. p. 1.

72. There can no longer be the slightest doubt that resource scarcities and ecological stresses constitute real and imminent threats to the future well-being of all peoples and nations. These challenges are fundamentally non-military and it is imperative that they be addressed accordingly. If this is not recognized, if the international community fails to accept and persevere in the view that these challenges can only be addressed through voluntary and co-operative measures, there is a grave risk that the situation will deteriorate to the point of crisis where, even with a low probability of success, the use of force could be seen as a way to produce results quickly enough. This is far from being a remote possibility. In recent years there has been a marked tendency in international relations to use or to threaten the use of military force in response to non-military challenges to security.

73. A second major source of insecurity, again interpreting that term in the broad sense, is the large and widening gap in standards of well-being between developed and developing countries. In 1975, the developing countries (excluding China) accounted for 52.3 per cent of world population but for only 16.8 per cent of world GNP. Put in another way, average per capita income in the developing countries was just 8.5 per cent of that in the developed economies. This disparity is far greater if the comparison is confined to the poorest developing countries, those where per capita income in 1977 was less than \$200. <sup>29/</sup> This group of countries accounted for 21.1 per cent of world population but a mere 1.6 per cent of world GNP (chart II.2). Given the current concern over the adequacy of supplies of non-renewable raw material over the long term, a particularly disturbing dimension of this imbalance is that over the period 1971-1975 the market and planned developed economies, representing less than one quarter of the world's population, accounted for 80 to 90 per cent of the annual global demand for such key minerals as iron ore, aluminium, copper, manganese and tin. <sup>30/</sup> This is clear evidence that population growth outruns GNP growth.

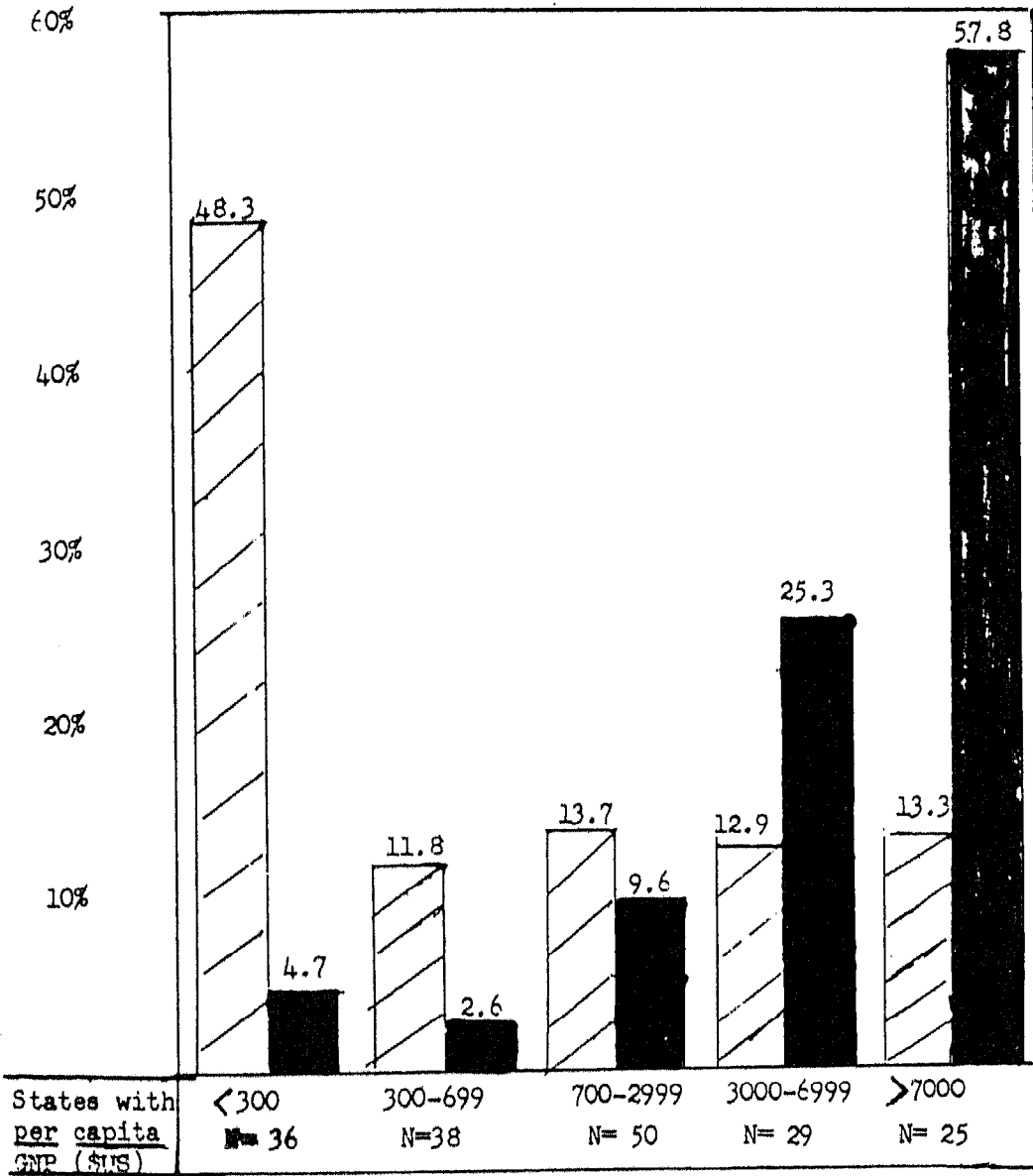
74. The existence of this gap affects the security of the richer nations in two important ways, one based on moral considerations, the other on more practical grounds of self-interest. One of the more attractive traits of the human character is the deep-seated sense of unease generated in those who are prosperous when confronted by those who are not just less prosperous but quite simply poor. The

---

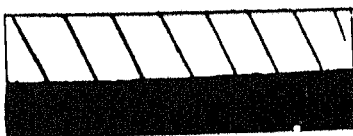
<sup>29/</sup> It should be mentioned that official exchange rates tend to understate the purchasing power of incomes in the poorer countries. In work being carried out under United Nations auspices to provide more realistic purchasing power comparisons, it was found that per capita income in India, to cite the most extreme example, was upvalued by a factor of more than 3. Generally speaking, income comparisons based on purchasing power parity rates of exchange change the picture of disparities only in degree. See I. B. Kravis, A. Heston and R. Summers. International Comparisons of Real Product and Purchasing Power (Baltimore and London, Johns Hopkins University Press, 1978).

<sup>30/</sup> The Global 2000 Report to the President ..., vol. II, pp. 206-207.

Chart II.2. Distribution of world population and GNP, 1978



Source: 1980 World Bank Atlas



Percentage of world population

Percentage of world GNP

N = Number of States in group

/...

historical experience, it is true, is overwhelmingly that of the rich endeavouring to sustain a state of ignorance, of insulating themselves from the fact of poverty but this, clearly, is an expression of the moral dilemma posed by inequality. At the international level, revolutionary developments in transportation and communication have indeed made the world a very small place. The gap between rich and poor nations has become steadily more visible and, therefore, more difficult to ignore or deny. In a remarkably swift reversal of political climate, the issue of greater equality between the peoples of various nations has been widely proclaimed as the principle moral imperative of our time.

75. The view that large inequalities of income and wealth are morally unacceptable has now been joined by a heightened sensitivity to the political hazards inherent in an interdependent world that remains sharply divided between rich and poor. If competition, rather than co-operation based on mutual interest, remains the hallmark of relations between States, it requires no rare powers of analysis to forecast the acute international tensions that result from and will accompany a growing and increasingly generalized excess of demand over supply. Even now, as we have seen, the level and rate of growth of demand is revealing resource scarcities and placing unsustainable pressures on ecological systems. A marked transformation of attitudes and behaviour is clearly in order if the newly effective demands of the developing countries for equal opportunities and justice in international economic relations are to be met without provoking a prolonged and potentially unmanageable resource-based conflict with the developed countries. This should not affect the right of developing countries to a socio-economic development that should meet their aspirations.

#### The new international economic order

76. To its credit, the international community has already taken an important step toward confronting the problem of international co-operation for mutual benefit and the difficulties and potential opportunities that it presents. The sixth special session of the General Assembly in April-May 1974 adopted the Declaration and the Programme of Action on the New International Economic Order (resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974). The Programme was designed to lead to the establishment of an international economic order that would redress existing injustices and thus could help to correct inequalities and bring about a marked reduction in the gap in standards of living between developed and developing countries. Other important steps that built on this initiative include the Charter of Economic Rights and Duties of States, the seventh special session of the General Assembly devoted to development and international economic co-operation and the International Development Strategy for the Third United Nations Development Decade (resolution 35/56). There were, and remain, significant differences among member States on whether the new order would require a radical transformation or merely the reform of the existing one, on the policy measures needed to bring about the described changes and on how rapidly it would be feasible to proceed.

Nevertheless, the Declaration and the Programme of Action were adopted by consensus, reflecting the growing awareness on all sides that the interests of the developing countries and developed countries could no longer be isolated from each other. The prosperity of the international community as a whole depends upon the prosperity of its constituent parts. The necessity was recognized to eliminate the widening gap between the developed and the developing countries and ensure steadily

accelerating economic and social development in peace and justice for present and future generations.

77. The widespread frustration and disappointment in the developing countries over their economic performance and long-term prospects naturally provoked a continuous search for solutions. One of the main themes that emerged at an early stage ran as follows. Many developing countries relied on a few primary commodity exports for the bulk of their foreign exchange earnings and for a disproportionately large share of national income. The price of most primary commodities moved erratically in the short run and unfavourably in relation to the prices of manufactured imports. This was, in part, owing to the fact that inflationary pressures on manufactured goods were stronger but also because manufactured goods are subject to technological improvements over time while primary commodities are not. Nevertheless, developing countries were kept in a state of excessive dependence on primary commodities because of their weak competitive position in the markets for processed goods in the developed countries. Consequently, the developing countries experienced a widening gap between import needs and export possibilities that had to be filled by capital inflows in the form of loans, investments or aid from the developed countries and multinational institutions. Aid and investments were on the whole inadequate so that the developing countries, in order to fulfil their development aims, resorted to the capital market with the consequences of a further accumulation of their external debt.

78. This challenge to inequality gathered force as the process of decolonization swelled the ranks of independent developing countries and as the majority of these countries felt increasingly frustrated in their development efforts. Sustained achievement of growth targets set in the International Development Strategy for the Second United Nations Development Decade proved impossible for most countries. Their terms of trade continued to move adversely, agricultural production remained uncertain, the trade deficits of developing countries in manufactured goods grew rapidly and official development assistance, on the whole, remained well below the target of 0.7 per cent of the GNP of donor countries. The share of developing countries in world exports of manufacturing was increasing very slowly but this expansion was distributed very unequally. Indeed, by 1977, just eight countries and territories (Brazil, Hong Kong, Malaysia, Mexico, the Philippines, Singapore, South Korea and Taiwan) accounted for almost 75 per cent of the total exports of manufactures by the developing countries. Moreover, whether a developing country pursued industrialization through a policy of import-substitution or export promotion, the almost universal experience was the creation of industrial enclaves employing a small fraction of the work-force in relative prosperity. Large segments of the population, often the majority, neither participated in nor benefited from economic growth. The World Bank estimates that, for the developing countries as a whole, the experience has been that approximately 75 per cent of the increase in aggregate income accrues to the top 40 per cent of income recipients. <sup>31/</sup> The ranks of the unemployed and the underemployed and those who lived in absolute poverty swelled inexorably. This experience has led to some attempts to recast development strategies so that fulfilling the basic needs of the

---

<sup>31/</sup> World Bank, World Development Report 1979, Washington, D.C., August 1979, p. 19.



broad masses of the population is seen as the first priority and raw economic growth regulated to the status of a necessary but not sufficient condition for this to occur. In passing, it might be noted that, particularly in so far as it springs from moral considerations, the volume and continuity of resource transfers from developed countries will depend heavily on policies in recipient countries that ensure that this redeployment of productive capacity has a direct and visible impact on the well-being of the poorest sections of the population.

79. These frustrations were compounded by the evidence that, within the existing international economic order, no plausible projections of the rate of economic growth in the developing countries would have any appreciable impact on the gap in per capita income: from the global perspective the distribution of income and wealth would remain highly skewed. In 1975, average per capita income in the developing countries was just one twelfth of that in the developed economies. The developing countries, however, are a quite heterogeneous group, even excluding the oil-exporting countries. In 1975, the gap in per capita income ranged from a massive 40:1 for the very low income countries of Asia and Africa to a little over 5:1 for the Latin American and Caribbean countries. According to the World Bank, even quite optimistic projections of economic performance, through 1990 would not diminish the over-all gap in per capita income. <sup>32/</sup> A narrowing of the gap in some countries, particularly in East Asia and the Pacific would be offset by widening differential in the countries of Asia, Africa, the Middle East and Latin America.

80. The proposal for a new international economic order, in essence, argued that the existing order be consciously altered or interfered with as necessary to provide both equality of opportunity and greater equality of condition. <sup>33/</sup> That is, all States should have effectively equal opportunities to determine the course of their political, economic and social development. But in a system characterized by radical inequality of condition, equality of opportunity would only lead to discrimination in favour of the stronger so that, at least for a time, there would have to be positive discrimination in favour of the developing countries in order to bring about a reasonable measure of equality of condition.

81. The initial statement on the establishment of the new international economic order proposed that these twin objectives be pursued in a variety of ways (General Assembly resolution 3202 (S-VI)). Considerable emphasis was placed on stabilizing and increasing the level of export earnings in developing countries. For raw materials and primary commodities, the principal measures suggested were price-stabilization funds, buffer stocks and a form of indexation to the prices of manufactured goods imported from the developed countries. For the manufactured exports of developing countries, stress was placed on preferential access to markets in developed countries. Industrialization of the developing countries was recognized as a necessary and vital component of the new international economic order and developed countries and multinational institutions were encouraged to adopt policies to accelerate the transfer of labour-intensive, raw-material processing and export-oriented production to the developing countries. At the

---

<sup>32/</sup> Ibid., p. 18.

<sup>33/</sup> These two terms are taken from Robert W. Tucker, The Inequality of Nations (London, Martin Robertson and Co., 1977), p. 71.

Second General Conference of UNIDO held in Peru in March 1975, it was declared that the target should be to increase the share of the developing countries in world industrial production to at least 25 per cent by the year 2000 from the then prevailing figure of about 7 per cent. 34/

82. The proposal for a new international economic order also addressed the question of the transfer of technology. Technological developments have made and will certainly continue to make very significant contributions to economic growth in all countries. However, modern industrial technology is concentrated almost exclusively in the industrialized and developed countries. Developing countries have not only become greatly dependent on the flow of technology, capital goods and technical services from the developed countries, but the gap between the two groups in indigenous technological capability has tended to become increasingly accentuated. 35/ In addition, this state of affairs has tended inevitably to produce a pattern of technological development and a consequent industrial structure that closely follows that of the industrialized countries. And, as implied above, there are growing misgivings in developing countries, including those that have been most successful in industrializing, whether this pattern of development is really suited to meet their particular socio-economic needs. Accordingly, the proposals in the new international economic order on this issue stress the need for developing countries to have continued access to modern technology on improved terms and to have this technology adapted, as appropriate, to the specific economic, social and ecological conditions in developing countries, and for measures to expand research and development capabilities in developing countries, particularly by means of greater assistance from the developed nations. On a closely-related theme, the proposal for a new international economic order suggested that all efforts should be made to formulate, adopt and implement an international code of conduct for transnational corporations to ensure that the activities of these corporations conform to national development plans and to encourage them to contribute to the new international economic order by transferring technology and managerial skills to developing countries on favourable terms and to reinvest rather than repatriate profits. Also of significance in this over-all context is the work on an international code of transfer of technology carried out in UNCTAD.

83. Another major theme of the proposal for a new international economic order was the substantial increase in financial resources to be made available to developing countries. An obvious first order of business was to point out once again that the net flows of official development assistance (ODA), as a fraction of the GNP of

---

34/ Lima Declaration and Plan of Action on Industrial Development and Co-operation, adopted at the Second General Conference of UNIDO, Lima, Peru, 12-26 March 1975 (see A/10112, chap. IV).

35/ In 1973, the developing countries accounted for just 2.9 per cent of global expenditures for research and development and for 12.6 per cent of the scientists and engineers involved in this activity (Colin Norman, Knowledge and Power: The Global Research and Development Budget, Worldwatch Paper 31, July 1979, p. 10).

donor countries, was well below the target of 0.7 per cent endorsed by the General Assembly in 1970. In 1975, net flows of ODA from the OECD countries that make up the Development Assistance Committee constituted 0.36 per cent of their combined GNP or just one half of the target. In subsequent years the fraction has been in the range of 0.33 to 0.37 per cent. Over-all data on the flows of economic aid rendered by the centrally planned economies to developing countries are not published. Besides an increase in the net volume of development assistance and other financial flows, the developing countries argued that these funds should be allocated exclusively on grounds of economic and social needs and that measures should be adopted to ensure that these transfers would be automatic rather than voluntary. Total capital flows to the developing countries are, of course, much larger than ODA - which amounted to \$26.7 billion in 1980 from the OECD countries - but it is also a fact that there is a significant reverse capital flow in the form of interest payments and profit remittances. The latter amounted to \$33.7 billion in 1980.

84. Similarly, the developing countries sought a larger and more effective voice in international financial forums, particularly the International Monetary Fund (IMF) and the World Bank. Inflation in the developed countries increased the import bill for developing countries and eroded the real value of their currency reserves. The general instability of the international monetary system since 1971, particularly the uncertainty of exchange rates, frequently had an adverse effect on the value of commodity exports from developing countries. The developing world also felt excluded from the decision-making circles that determined the quantity, rate of growth and accessibility of international liquidity. For example, of the \$9.3 billion created in the form of special drawing rights in IMF between 1970 and 1974, only 25 per cent or \$2.3 billion was granted to the developing countries.

85. Finally, the developing countries argued the need for a more conciliatory attitude in the developed countries regarding the repayment and servicing of external debt. A combination of circumstances in the 1970s - large increases in the price of oil, stagnating markets in the developed countries for exports from the third world and inadequate ODA - led to a disturbingly fast rate of increase in the external indebtedness of many developing countries. By 1977, nearly 12 per cent of the export earnings of the developing world was absorbed in servicing external debt. <sup>36/</sup> To address these several concerns, the developing countries demanded full and effective participation in all phases of decision-making for the formulation of an equitable and durable international monetary system.

86. All of these and many others remain active issues in the international dialogue on development. The commitment to forge a more equitable and more balanced international economic order was strongly reaffirmed in the International Development Strategy for the Third United Nations Development Decade (General Assembly resolution A/35/56). Moreover, despite a generally austere global

---

<sup>36/</sup> World Bank, World Development Report 1979 ..., p. 10.

economic climate over the past decade, a number of steps have been taken in many areas. In the crucial area of international trade, efforts have been made to reduce tariffs and other barriers to trade and to extend the general system of preferences. <sup>37/</sup> In 1979, agreement was reached to establish the Common Fund. Furthermore, developing countries have secured increased IMF quotas and improved arrangements for debt relief. In the field of food and agriculture, the International Fund for Agricultural Development was established in 1974 to foster the objective of greater food security in the developing countries. Food aid has also been expanded in the context of the Food Aid Convention and an International Emergency Food Reserve has been established with a target - as yet unmet - of 500,000 tons of cereals. In 1980, an Interim Fund for Science and Technology for Development was established, and the General Assembly, in its resolution 34/218 of 19 December 1979, initiated a programme of study to investigate appropriate longer-term arrangements. Finally, mention should be made of the negotiations in the Third United Nations Conference on the Law of the Sea, where the principle has been accepted that the resources of the oceans and of the sea-bed are part of the "common heritage" of mankind.

87. While these and other measures that have not been mentioned are important beginnings, the over-all progress towards laying the foundations of a new international economic order has been slow. The goals and objectives of the second development decade remain largely unfulfilled and the necessarily ambitious targets for the Third United Nations Development Decade are indicative of the magnitude of the task ahead (see table II.3). Primary responsibility for development rests with the developing countries themselves but the targets for the Third Development Decade and the longer-range objective of significantly reducing the gap in standards of living are quite unfeasible without the strong assistance and co-operation of the developed countries. Similarly, the deepening of co-operation and the expansion of economic relations among developing countries, both bilaterally and multilaterally, will play an important role in bridging this gap.

88. The call for a new international economic order was in every sense a historic initiative. It both reflected and took advantage of the fact of interdependence to articulate the reforms and changes needed to permit the developing countries to become full and constructive participants in the global economic system on an accelerated basis. It was, in effect, a plan of action for the co-operative management of interdependence, albeit for an extended interim period, for the particular benefit of the developing countries. Since 1974, it has become progressively more apparent that a comprehensive assault on underdevelopment is strongly in the self-interest of the industrialized countries. Since the new international economic order was couched in the context of economic relations among all groups of States, the phenomena of interdependence and the expansion of economic co-operation based on mutual interest now embrace international economic relations as a whole.

---

<sup>37/</sup> In February 1975, at Lomé, the European Economic Community and the countries of the African, Caribbean, and Pacific Group compiled a detailed convention on trade promotion, industrial co-operation and other matters (see A/AC.176/7).

Table II.3 Development in the developing countries: targets and accomplishments 1970-1990

(Percentage annual rate of increase)

Item	Target rate indicated in the International Development Strategy for the Second United Nations Development Decade, 1970-1980	Actual average annual rate of increase 1970-1978	Target rate indicated in the International Development Strategy for the Third United Nations Development Decade 1980-1990
GDP	6.0	5.5 a/	7.0
GDP per capita	3.5	2.8 b/	4.5
Agricultural output	4.0	2.9	4.0
Manufacturing output	8.0	6.8	9.0
Exports	7.1+	4.5	7.5
Imports	less than 7.0	9.3	8.0

Sources: Official Records of the Economic and Social Council, 1980, Supplement No. 2, (E/1980/3), annex I, table I, General Assembly resolution 35/56.

a/ For the low-income countries the figure was 3.2 per cent.

b/ For the low-income countries the figure was 0.6 per cent.

89. Ensuring the adequacy of energy supplies over the medium-term and long-term future is a strong global interest for political as well as economic reasons. The progressive increase in the real price of oil during the 1970s was certainly the single most important example of a more widespread readjustment of the relative price of raw materials and industrial commodities and a major development pointing to the state of structural disequilibrium in the international economy. The consequences were particularly severe for the non-oil-producing developing countries, with the higher costs of oil imports exacerbated by higher import costs generally due to rapid inflation in the developed countries. Given the magnitude and urgency of the task of developing major renewable and environmentally compatible sources of energy, this is one area that would profit enormously from co-operation and the division of labour in research and development. The protection of the land, air and sea environments is similarly a global interest and a goal that necessitates international co-operation, since emphasis by some and neglect by others will be self-defeating and a source of friction.

90. There are other compelling mutual interests that could be developed through the co-operative management of interdependence. The developing countries continue to be important export markets for the industrialized countries, both market and centrally planned economies, as well as being important sources for raw materials. It is recognized that the medium-term and long-term growth prospects for the industrialized countries are dependent on major growth of demand in the developing countries. The International Development Strategy for the Third United Nations Development Decade, for example, stated that the "... accelerated development of the developing countries is of vital importance for the steady growth of the world economy and essential for world peace and stability" (resolution 35/56, annex, para. 4).

91. The trouble, of course, is that these demands are at present latent rather than real. In striving to achieve their development goals during the 1970s - and in the process helping to combat the recessionist tendencies in the industrialized world - the developing countries have stretched their resources to the limit. They require large infusions of capital and technology, stable prices for their raw materials and free access to markets in the international economy. The full implementation of such a programme would imply far-reaching structural adjustments in the industrialized countries. For example, in one investigation into the implications of the Lima target for industrialization, it was concluded that the share of developing country exports in the total consumption of manufactures in developed market economy countries would have to increase fourfold from a little over 1 per cent in 1972 to about 4.5 per cent in 2000. 38/

92. The scale of adjustments with which the industrialized countries would have to cope in the context of accelerated progress toward a new international economic order should, however, be seen in the context of pervasive internal requirements for reindustrialization. Throughout the industrialized world, manufacturing

---

38/ Manufactures and semi-manufactures: The dimensions of the required restructuring of world manufacturing output and trade in order to reach the Lima target (report by the UNCTAD secretariat (TD/185/Supp.1), 12 April 1976).

technology, plant and industry location and the associated distribution and transportation networks are products of the era of cheap energy. Saving energy has now become something of an economic imperative and vast capital investments are seen as unavoidable if efficiency and productivity are to accelerate. In the United States, estimates of new investment requirements related to costly energy range from \$40 billion to \$80 billion annually or between one quarter and one half of all non-residential fixed investment. <sup>39/</sup> Seen in this broader context of change and adjustment, accommodating the needs of the developing countries for greater access to markets in the industrialized countries appears far less disruptive.

93. Indeed, it may plausibly be argued that the growing import penetration from some developing countries in the markets of manufactures in the developed countries, although modest in quantity, will stimulate supply-side adjustments in the economies of these countries. These adjustments are taking place at a time when the economies of these countries are in serious difficulties. In 1973, most of the industrialized economies were already in the early stages of a downturn in the ordinary business cycle and faced serious problems in the international monetary system which had led to the breakdown at the beginning of 1973 of the Bretton Woods System with its fixed-exchange rates. Towards the end of 1973 and in subsequent years, the substantial rise in oil prices aggravated the inflation and employment problems in most industrialized and developing countries and, as a consequence, had a serious impact on the balance of payments and international capital movements. Although it cannot be denied that part of the economic problems in the industrialized countries are of a structural character, some are of a cyclical nature and can be solved by internationally co-ordinated economic policies. Unfortunately, there is at the moment a lack of such co-ordination. What can be seen is that many developed economies are trying to solve part of their economic problems by accelerating protectionistic measures against the newly industrializing developing countries. In fact, this is a classical "beggar-thy-neighbour" policy which is in flat contradiction to a recent OECD report that concluded that the member countries "... should be striving ... further to open their markets to the developing countries, not for the sake of virtue but as a matter of the most pivotal and expedient self-interest". <sup>40/</sup> Current economic policies in a number of industrialized countries tend towards the control of inflation rather than the reduction of unemployment. In consequence, the present recession is being prolonged.

94. The centrally planned industrialized economies are also experiencing difficulties symptomatic of something deeper than a temporary loss of momentum. Here too, growth rates and productivity gains have dropped markedly. The costs of fuel and raw materials have risen sharply. Reserves are generally ample but tend increasingly to be located in remote and inaccessible areas so that extraction and distribution costs are higher. Output of oil and gas condensate in the Soviet Union is planned to rise by only 1 per cent per year over the next five years and, as the Soviet Union is a major supplier for the East European countries, one

<sup>39/</sup> National Economic Survey, The New York Times, 11 January 1981, p. 31.

<sup>40/</sup> OECD, Development co-operation, 1979, Review, (Paris, 1979), p. 31.

implication is that these countries will probably have to further increase their purchases on the international oil market. Agricultural production remains uncertain despite absorbing a major share of available human and material resources, and increasing the productive labour force over and above normal population growth to secure higher rates of economic growth has become less and less feasible.

95. In short, greater efficiency is no less of an imperative in these countries than in the market economy countries and it is freely acknowledged that capital and, above all, technology from the latter could play a vital role. Furthermore, given the renewed emphasis on increasing worker incentive and productivity there is a need to supplement the domestic production of consumer goods with imports from the market economy countries. Generally speaking, vast opportunities for mutually beneficial trade and therefore growth and development are being consciously missed despite the growing visibility of the penalties being paid as a result. In this respect, a negative influence on East-West trade is exerted by further, strong subordination of economic co-operation to strategic and political considerations by some developed market economies.

96. It should be apparent from these brief remarks that progress toward a balanced and sustainable pattern of global economic growth and development - the basic prerequisite for global security - would be immeasurably facilitated if these overlapping interdependencies were developed and exploited for mutual benefit, through the expansion of international co-operation and promotion of all flows of international economic and trade relations. Indeed, one might go a step further and suggest that it is strongly in the over-all self-interest of all the major groups in the world to bridge the existing economic and political divisions. Conversely, if each of these major groups, either by choice or because of a lack of choice, endeavour to pursue growth and development with a minimum of interaction with the others, the outcome will be distinctly second-best for all.

97. The development towards a new international economic order is strongly influenced by the arms race. Indeed, as we shall see in chapter IV, the economic and social consequences of the arms race are so detrimental that its continuation is incompatible with the implementation of such an order. 41/ Nearly a decade ago, a United Nations expert study concluded that while disarmament would be of great benefit to development, fundamentally, the two issues stood separately from one another, in the sense that each was to be sought vigorously in its own right and that efforts to promote development should be neither postponed nor allowed to lag merely because progress in disarmament was slow. 42/ This is still true - the Group believes that the fulfilment of and increase in aid commitments and other

---

41/ For an elaboration on this general theme, see Constantin Vlad et al., Disarmament and the New International Order, (Stefan Gheorghiu Academy, Bucharest, 1980 (report prepared for the Group)). See also para. 16 of the Final Document of the Tenth Special Session (resolution S-10/2).

42/ Disarmament and Development, ST/ECA/174 (United Nations publication, Sales No. E.73.IX.1).



economic co-operation measures should not be contingent on disarmament. We believe, however, that, in view of the greater urgency both issues have acquired in the context of subsequent developments, a re-examination of their relationship is now necessary.

98. Our exploration of the subject is still far from complete but the discussion in this chapter already permits the preliminary conclusion that there exists a strong conceptual relationship between disarmament and development. We have argued that the arms race has developed into a threat to the security of nations and that disarmament under effective international control, particularly nuclear disarmament, would directly enhance security. In addition, we have argued that there exists an array of intensifying non-military factors aggravating the security problems of States in the form of (a) a widespread reduction in the prospects for economic growth, (b) impending physical constraints - notably in the field of energy and selected non-renewable raw materials but also severe stress on the environment - and (c) the morally unacceptable and politically hazardous polarization of wealth and poverty.

99. A sustainable global development effort must specifically address the last of these factors and be consistent with known and foreseeable physical constraints. In other words, States should view their security and national interests in a wider and longer term perspective and recognize that important goals in this respect can only be accomplished through co-operation and mutual accommodation. Furthermore, economic growth is a prerequisite for development and, increasingly, States are being forced to recognize that their economic prospects are greatly affected by a pervasive interdependence with other States. There can be no doubt that efforts to deny or attempts to prevent the strengthening of interdependence would significantly darken the global economic prospect, most particularly for the developing countries. Conversely, developing interdependence and expanding international economic co-operation would be strongly in the economic interests of all States, especially over the medium term and long term.

100. Altogether, sustainable global development is heavily dependent on what we have termed the co-operative management of interdependence in its political, economic and physical dimensions. It only remains to ask whether such a perspective will emerge and endure if the arms race continues unabated. And the answer, surely, is no. Indeed, the political climate accompanying the arms race would appear to be the very antithesis of a genuine and enduring spirit of co-operation and mutual accommodation. The co-operative management of interdependence may be eminently sensible, perhaps even necessary, for the realization of global economic and social aspirations but such a prospect must be regarded as rather unrealistic as long as the arms race continues. In this fundamental respect, therefore, disarmament and development are strongly related.

101. The remainder of this report is predominantly concerned with the purely economic dimensions of the relationship between disarmament and development which, as will be seen, strongly reinforce the notion that major conflicts exist between pursuit of the arms race on the one hand and the achievement of the declared aspirations of the world community regarding development on the other.

### CHAPTER III

#### PRESENT-DAY UTILIZATION OF RESOURCES FOR MILITARY PURPOSES

102. Viewed from a historical perspective, the 35 years since the Second World War has been a remarkable period in many ways and one of the more conspicuous features of these years has been the magnitude and consistency of the global military effort. This can be seen most effectively in terms of global military expenditure over the past 60 years (chart III.1). In 1980, world military expenditure was as much as \$500,000 million or approximately 6 per cent of world output. <sup>43/</sup> In real terms this represents nearly a fourfold escalation over the post-war period and in excess of a twenty-five-fold escalation since the beginning of the century.

103. World military expenditure has climbed to these heights in fits and starts. Rapid escalation took place in the early 1950s with the Korean war, in the early 1960s with the United States strategic missile build-up and in the late 1960s with the war in South-East Asia and the Soviet strategic missile build-up. After each of these developments, the world figure settled on a new and higher plateau. It is also significant that the base figure was very high. In 1948, by which time the onset of the cold war had stalled post-war demobilization, world military expenditure was still well in excess of \$100,000 million (in 1978 prices), only marginally less than the figure on the eve of the Second World War. Furthermore, a number of factors have been at work that have exerted a more consistent upward pressure on military expenditure. One of the most significant of these has been the stress placed on qualitative improvement in weaponry. The United States experience has been that this emphasis has resulted, on the average, in an annual rate of increase of 5.5 per cent in the real cost of major weapons systems. <sup>44/</sup> Other factors include a slow but persistent increase in the number of men under arms, rising costs per person even under conscription, and the large number of States that have gained independence and set about creating national armed forces. Related in part to this last point, there has been a slow but persistent tendency for global military expenditures to become less concentrated geographically. In other words, although this expenditure is still heavily concentrated in NATO and the Warsaw Treaty Organization (WTO), the value of resources devoted to armaments has, on the average over the past 25 years, increased more rapidly outside these two alliances (see para. 165 below).

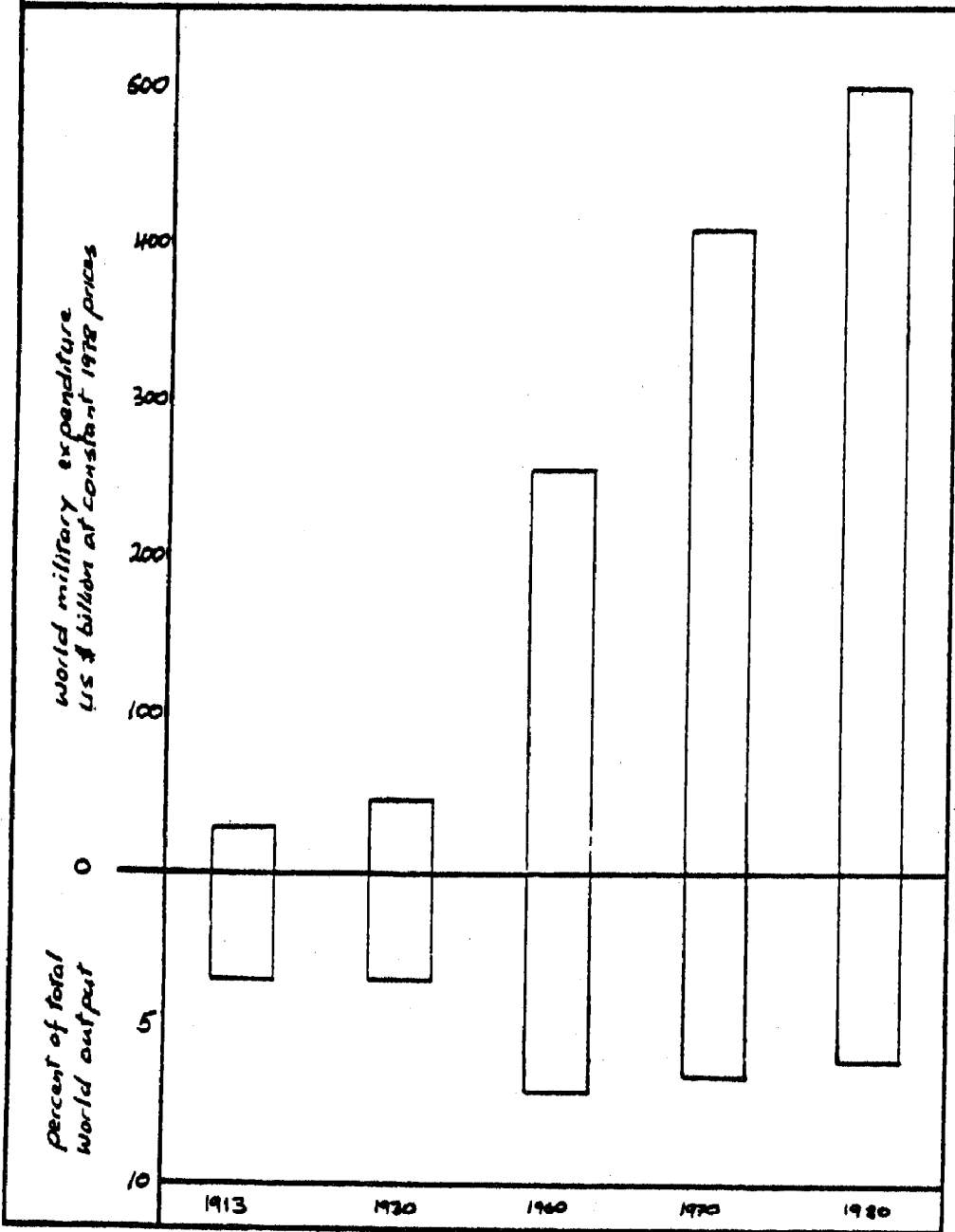
104. For most people, annual global military expenditures over the post-war period, have been too large to convey any real meaning; it is difficult to translate \$500 billion into anything comprehensible. To provide some perspective and to convey an impression of the sheer bulk of the resources devoted annually to military uses it has been pointed out, for example, that for many years world military expenditure was comparable to the combined GNP of all the countries in Africa and Latin America or, as mentioned earlier, that these expenditures are

---

<sup>43/</sup> World Armaments and Disarmament, SIPRI Yearbook 1981 (London, Taylor & Francis Ltd., 1981), p. XVII.

<sup>44/</sup> United States Congress, House of Representatives, Committee on Armed Services, Hearings on Military Defense, Authorizations for Appropriations for Fiscal Year 1976, April-May 1975, p. 1826.

Chart III.1. World military expenditure, selected years 1913-1980



Sources: SIPRI, Armaments and Disarmament in the Nuclear Age (Stockholm, Almqvist and Wiksell, 1976), p.12 and World Armaments and Disarmament, SIPRI Yearbook, 1981 ..., p.74.

nearly 19 times as large as all the official development assistance provided by the OECD countries to the poorer countries. On a smaller scale, it has been pointed out that the World Health Organization spent 10 years and somewhat less than \$100 million to eradicate smallpox, while, over the same 10 years, one country spent considerably more than that merely to develop a more advanced version of a small air-to-air missile. <sup>45/</sup> Indeed, in whatever field and at whatever level one makes these comparisons, the same peculiar priorities that have prevailed over the post-war period stand starkly revealed.

105. While the scale and trend of world armament can be most efficiently portrayed with financial data this approach tends to disguise another important economic dimension of this phenomenon, namely, the real human and material resources consumed in global military activities. Global military expenditure purchases the labour of tens of millions of people; it purchases a great deal of petroleum, minerals and other raw materials; and it is a significant source of demand for a wide range of industries. In the light of recent and prospective developments in the global economy this is a dimension of the contemporary arms race that urgently needs to be brought sharply into focus. To the Group's great regret and despite its best efforts to comply with the mandate to construct a reliable data base, relevant, detailed and comprehensive data in these areas remains virtually non-existent. Apart from being a major disappointment, this fact has made it much more difficult for the Group to execute its mandate in a balanced and realistic fashion.

106. The most important, and the most familiar, reason for this state of affairs is secrecy. Detailed information on raw material consumption and productive capacity in the military sector could be used to estimate the actual and potential rate of production of different kinds of weapons, the technological level of industry and so on. This information could also serve as a check on military budget data. Another probable reason is that since national defence is such a high priority objective its true cost, particularly the detailed cost in terms of real human and material resources, may be viewed in many countries as a quite secondary consideration.

107. In the view of the Group, these prevailing attitudes towards the generation and dissemination of information on military activities urgently need to be challenged and changed. There is at present a vicious circle in which excessive and unreasonable secrecy and the arms race tend to reinforce each other. A review of the post-war arms race would establish beyond any doubt that excessive secrecy has contributed to the intensity of the arms race by motivating the acquisition of weapons and yielding force levels that subsequently proved to be unnecessary or excessive, but which became irreversible due to inertia or countervailing actions by the adversary. This effect of secrecy is clearly of paramount importance, but the associated lack of data and information on the economic effects of military activities, particularly the real human and material resources consumed, is also very significant. The global economic prospect for the next decade or two is distinctly austere. The damage caused by the waste and irrational use of real

---

<sup>45/</sup> World Armaments and Disarmament, SIPRI Yearbook, 1976 (Almquist and Wiksell, Uppsala, 1976), p. 129.

resources is everywhere becoming more and more palpable. These circumstances surely require a more rigorous and systematic look at the real resources consumed by military activities than is evident today in all but a few countries.

108. Nevertheless, since a major concern of this report is to examine the economic consequences of the arms race and to assess the measures needed to facilitate the conversion and redeployment of real human and material resources from military to non-military uses, it is necessary to make the most of the data that are available. The remainder of this chapter will document as comprehensively as possible the prevailing use for military purposes of labour (including the scientific community), industrial capacity, raw materials and land. Wherever possible, global estimates have been developed although, as will become clear, the margins of error are probably considerable. The utilization of air, water and space for military purposes is not adequately documented, but these are three important resources which should be safeguarded against degradation from the production, deployment and stockpiling of weapons, in particular nuclear weapons, and from the disposal of by-products associated with these activities. The incidence of nuclear-weapon accidents, whether documented or otherwise, adds urgency to this concern.

109. Two other dimensions of the contemporary military scene are also treated separately. The first is military research and development. The global capacity for research and development - that is, the capacity to secure scientific and technological advances - is a resource of vital importance for the future of mankind but the fraction of this resource diverted to military pursuits has been and remains uniquely large. The second is the international trade in arms or more accurately, perhaps, the international traffic in arms, since these transactions are not recorded in international trade statistics. Apart from its political importance the traffic in arms has major economic ramifications, particularly because the importers are predominantly developing countries. The final section of this chapter is concerned with the more familiar measures of the economic burden of military activities utilizing financial data.

#### A. Labour

110. Tens of millions of persons around the world are engaged in military activities, whether as soldier, sailor, airman, bureaucrat, scientist, engineer or general worker. It has been estimated that over 100 million people are affected, directly or indirectly, by the \$500 billion that the world now devotes to military preparations. <sup>46/</sup> We have been unable to substantiate this figure, but the estimates derived below suggest that roughly 50 million people are employed in meeting the demand for military goods and services, either directly or indirectly.

111. Even this latter figure covers categories of labour that differ in the manner and the degree to which they depend on military outlays. For our purposes it is useful to distinguish between five categories of demand for labour that can be said to be generated or supported by military expenditures:

---

<sup>46/</sup> Ruth Leger Sivard, World Military and Social Expenditure, 1980 (Leesburg, Virginia, WMSE publications, 1980), p. 8.

(a) The labour force, including uniformed military personnel, engaged directly by defence ministries to render services or to provide goods and services that are exclusively military in character, that is, goods and services that for all practical purposes have no civilian utility whatever;

(b) The labour force engaged in supplying intermediate goods and services to the concerns engaged in meeting the direct demand from ministries of defence for finished and specialized military goods and services. This indirect employment supported by military expenditures relates to employment by subcontractors, by firms supplying the subcontractors and so on. There will clearly be at this level a lingering degree of specialization for military work, but this would diminish sharply as one moved down the manufacturing chain;

(c) The labour force in manufacturing and service industries engaged in meeting the direct demand from ministries of defence for goods and services that are little different from those of the civilian market;

(d) The labour force engaged in supplying intermediate goods to the concerns under (c), that is, a second category of labour services supported indirectly by military expenditures;

(e) The labour force stemming from the multiplier concept, which is quite distinct from the other four categories. All expenditure, including military expenditure, is subject to a multiplier effect that permeates throughout the economy. If, say, the multiplier in a particular country is estimated to be 2, expenditure of \$10 billion will ultimately result in a total increment in effective demand of \$20 billion. Provided the economy is not already at full employment, this means that, in addition to the workers directly or indirectly involved in the provision of defence goods and services, more jobs will be created as the defence expenditure ripples through the economy. Unlike the other categories of defence-related employment referred to above, however, these jobs cannot be said to be "absorbed" by the defence sector.

112. At one level, we are concerned to estimate the size of the labour force directly engaged in activities that have no civilian economic utility, that is, the work-force directly withdrawn from socially useful production for military reasons, or category (a) above. The relevant labour resources include the regular armed forces and those paramilitary forces that have similar functions and capabilities, civilians employed in defence ministries, scientists and engineers engaged in military research and development and the workers in industry directly engaged in the production of weapons and other specialized military hardware.

113. At the present time, the world's regular armed forces total some 25 million persons. This figure has risen steadily over the past 20 years, with net stability among the developed countries accompanied by increases in many developing countries. The global figure in 1980 was more than 10 per cent larger than in 1970 and nearly 30 per cent larger than in 1960. The countries of NATO and WTO account for slightly over 40 per cent of the total, China for about 17 per cent and the developing countries of Asia, Africa and Latin America for about 38 per cent. Although it cannot be documented statistically, it is important to observe that the range of skills and experience in the regular armed forces is very wide. A disproportionately large fraction would consist of able-bodied young men with, at

best, a high-school education and possessed only of basic skills in the handling of infantry weapons. At the same time, however, there would be significant numbers - running in the millions world wide - of mechanics, technicians, engineers, pilots and those with experience in organization and management. Indeed, the military's rising demand for skilled personnel of all kinds is a universally observed phenomenon.

114. Paramilitary forces are forces whose functions and duties fall somewhere between the civilian police and the regular armed forces. The number of persons in paramilitary forces with functions and capabilities - in terms of training, organization and equipment - that approximate those of the regular armed forces is estimated by the International Institute for Strategic Studies to be roughly 10 million world wide. <sup>47/</sup> By and large, expenditures for paramilitary forces are not included in reported military budgets. They remain relevant in the present context because it is reasonable to assume that an international climate that made possible the implementation of disarmament measures would also permit reductions in paramilitary forces. Indeed, disarmament measures may require such reductions.

115. A third category of labour is the civilians employed in defence departments. The data available on this category are far from complete but a very rough global estimate can be constructed as follows. In 1975, nine countries - Australia, Canada, Germany, Federal Republic of, France, Japan, Netherlands, United Kingdom, United States of America, and Union of Soviet Socialist Republics - employed some 2.5 million civilians in their respective defence departments (see A/32/88/Add.1, sect. II). These nine countries accounted for two thirds of world military expenditure, so that, assuming a linear relationship and making a small upward adjustment for the subsequent growth in the size and cost of the world's armed forces, it can be estimated that approximately 4 million civilians are currently employed in defence departments world wide.

116. The fourth category of labour, scientists and engineers engaged in military research and development (R and D), is of particular importance both in military terms and in terms of economic and social consequences. Military R and D development is discussed more fully below and here it can simply be noted that, world wide, an estimated 500,000 scientists and engineers are engaged in research and development for military purposes.

117. Thus far we have identified 39.5 million persons directly engaged in purely military activities, but the statement that this work-force is totally unproductive from the civilian standpoint must be qualified somewhat. The armed forces are frequently called upon for disaster relief operations, for example. In many countries the armed forces also engage in certain civilian activities. Similarly, a fraction of military R and D is basic research with potential civilian utility, provided, of course, the work is not classified as secret. Similarly, there is always the possibility that specialized military research and development may yield some civilian spin-offs. However, these qualifications do not alter the general significance of the fact that important human resources are being used for military purposes.

---

<sup>47/</sup> International Institute for Strategic Studies, Military Balance 1978-79, (London), pp. 90-91. In addition, many countries maintain paramilitary forces with purely police functions.

118. The final body of labour relevant to category (a), workers directly engaged in the production of weapons and other specialized military equipment, is perhaps the most difficult of all to estimate reliably. A recent survey by the International Metalworkers Federation suggested that 2.8 million workers were thus engaged in market economy countries. <sup>48/</sup> Unfortunately, similar figures are not available for most other countries of the world and because of that, construction of a reliable estimate is not possible. An extrapolation of the above figure to the world as a whole would suggest an industrial force engaged in military production at least of the order of 5 million. The general validity of this estimate can be verified as follows. In the United States in the late 1970s, 8 to 10 per cent of the labour force in manufacturing was engaged in the production of weapons and military equipment, or 1.5 to 1.8 million workers. <sup>49/</sup> Specifically for 1976, official United States data show that 1.54 million workers in industry were directly engaged in defence-related activities. <sup>50/</sup> In addition, approximately 250,000 workers were engaged in military production under the Foreign Military Sales Programme, giving a total of 1.79 million. <sup>51/</sup> Assuming that the United States accounts for 30 to 35 per cent of global arms production, the estimated total number of workers thus engaged is 4 to 6 million.

119. This is clearly a very rough estimate indeed. As we shall see, the estimate of the United States share in the global production of weapons and specialized military equipment is very approximate. Similarly, the assumption that the relationship between expenditure and employment is the same in all arms-producing countries as in the United States is obviously questionable. A further important difficulty is that it is not possible on the basis of available data to ensure that the above estimate refers exclusively to labour directly employed in the production of specialized military hardware and excludes indirect employment at the subcontractor and lower levels. The distinction is particularly important from the standpoint of gauging the approximate dimensions of the industrial conversion task associated with disarmament. Insofar as industrial conversion problems would arise with disarmament they would be heavily concentrated in the firms and industries

---

<sup>48/</sup> International Metalworkers Federation, Metalworkers Unions and the Armament Industry (Geneva, 1979), p. 7.

<sup>49/</sup> Jacques S. Gansler, The Defense Industry (Cambridge, M.I.T. Press, 1980); p. 4.

<sup>50/</sup> United States Congress, House of Representatives, Committee on Armed Services, Overall National Security Programs and Related Budget Requirements, December 1975, p. 11.

<sup>51/</sup> Congressional Budget Office, The Effects of Foreign Military Sales on the Economy, Washington, D.C., 23 July 1976. This study estimated that a complete ban on new arms export contracts would, directly and indirectly, result in the loss of 350,000 jobs in the United States. The 250,000 figure is our estimate of direct employment.



engaged in supplying finished military hardware. In the United Kingdom, for example, total defence-related industrial employment in 1978 was estimated to be 713,000 but only 40 per cent (288,000) of this represented workers directly engaged in producing specialized military equipment. The remainder was direct employment associated with the supply of non-specialized goods and services to the ministry of defence (100,000) and the indirect employment generated by both the specialized and non-specialized military demands (325,000). 52/

120. Most of the available information on defence-related employment does not clearly distinguish between direct and indirect employment nor between specialized and non-specialized output. On balance, it would seem that direct industrial employment associated with the supply of specialized military equipment world wide is closer to the lower figure in the range given above, that is, about 4 million.

121. Our global estimate of the labour force directly employed by the military for the supply of goods and services of a specialized character - including services provided by uniformed military personnel - is therefore about 43.5 million. This is the size of the labour force that has to be redeployed to economically productive work and is of immediate concern in the context of disarmament and the associated requirements for conversion.

122. We can also try to expand our frame of reference to encompass the other four categories of defence-related employment mentioned in paragraph 111 above. With respect to direct employment associated with military purchases of civilian goods and services, the data for the United Kingdom show this to be about 50 per cent of the direct employment from specialized demand. Crudely extrapolating this relationship suggests a global figure of about 2 million. There may be a conservative bias in this estimate because practically all countries could meet the military demand for civilian goods and services primarily from domestic sources; arms production, on the other hand, is concentrated in a handful of countries. There are clearly no major conversion problems associated with this category of defence-related employment. Given that steps would be taken by Governments to compensate for the effective demand lost through the implementation of disarmament measures, the output formerly purchased by the military can readily find another market.

123. Industrial employment sustained indirectly by military purchases is probably 50 to 100 per cent as large as direct employment, that is, a multiplier of 1.5 to 2.0. This is the range of estimates made for the United States; 53/ the figure for

---

52/ Chris Pite, "Employment and Defence", Statistical News, No. 51, November 1980, p. 19.

53/ The figure of 1.5 for the United States is from Department of Defense, National Defense Budget for FY 1979, Washington, D.C., 1978, p. 102; and the 2.0 figure is from M. H. Best and W. Connolly, The Politicized Economy (Lexington, Mass., C. D. Heath, 1976), pp. 55-56.

the United Kingdom is about 1.8. 54/ Taking a crude estimate of 6 million for total direct industrial employment world wide it follows that there are an additional 3 to 6 million industrial jobs indirectly supported by military expenditure. It should be stressed again that the output associated with this indirect employment will predominantly be directed, in the event of disarmament, toward civilian markets that would be expanding under the impetus of compensatory programmes.

#### B. Military industrial production

124. Modern military establishments place procurement demands on a wide range of industrial enterprises. In some cases, these enterprises exist solely to satisfy military demand - forging tank turrets or manufacturing artillery shells for example. In other cases, the industry may supply both military and civilian customers with quite similar products although the military variant will often reflect more stringent requirements as regards quality, precision and reliability. Finally, the military establishment purchases a wide range of products that are identical to those sold to civilian customers - transport vehicles and office equipment are examples here. In addition, of course, all these suppliers of finished industrial goods to the military place demands on the suppliers of components down to the suppliers of basic products such as aluminium, steel and plastic.

125. To estimate the magnitude of global military industrial production is no simple task. A logical starting point is the budget category "procurement" which is broken out in the official statistics of most of the major arms-producing countries. In the major Western arms-producing countries the share of procurement in the military budget falls in the range of 13 to 22 per cent. 55/ These data, however, tend to refer to purchases of major equipment and considerably understate the value of manufacturing output generated by military demand. The major omissions would appear to be production to meet export orders, components and spare parts and the wide variety of industrial products that are used or consumed by the military but are otherwise indistinguishable from civil products. In the United States, for example, the amounts for procurement in the military budget for 1975 and 1976 were \$15,200 million and \$16,000 million respectively, while shipments of defence products by manufacturing industry in those years amounted to \$29,210 million and \$34,000 million respectively. 56/

126. For the years 1976-1977 it is possible to document an estimate of \$95,500 million for military industrial production in the United States of America,

---

54/ Chris Pite, loc. cit.

55/ R. Väyrynen and H. Tuomi, Transnational Corporations, Armaments and Development, p. 18 (report prepared for the Group).

56/ Ibid.; and M. Kaldor, The Role of Military Technology in Industrial Development, p. 85 (report prepared for the Group).

Union of Soviet Socialist Republics, France, the United Kingdom, the Federal Republic of Germany, Italy and seven smaller Western European countries. 57/ It is difficult to assess by how much this figure should be inflated to yield a global estimate. On the one hand, many countries with substantial local defence production are omitted, including China, Japan, Czechoslovakia, Israel, India and Brazil. 58/ On the other hand, the figure cited would, on the whole, include production for export and the four major Powers covered by the estimates account for the lion's share of the international trade in arms. In other words, to take, say, a 20 per cent share of the combined military expenditure of the rest of the world as an estimate of military industrial production may imply considerable double counting.

127. Nevertheless, an estimate of \$105,000 million for global military industrial production in 1976-1977 would appear quite plausible, indeed, conservative. If one takes the SIPRI and the United States Arms Control and Disarmament Agency (ACDA) estimates of China's military expenditure - \$35 billion to \$40 billion in 1976 - the military industrial production in that country alone would bring our global estimate close to \$105,000 million. 59/ And there are many other countries known to have a significant military industrial capacity.

128. Our estimate of \$105,000 million represents 30 per cent of world military expenditure in 1976. This is plausible as a global figure, bearing in mind that military industrial production is a much broader activity than the procurement of major weapons. However, to reflect the incompleteness of our data and the contradictory influences to which our estimate is subject, it would seem sensible to use a range of 28 to 32 per cent of world military expenditure as an estimate of the value of industrial production given over to military use. Table III.1 shows these estimates for the period 1977-1980, using SIPRI data for world military expenditure.

129. These estimates reflect the fact that the overwhelming bulk of military industrial production is undertaken by the industrialized countries. Industrial production for military purposes in developing countries (excluding China) would amount to less than 5 per cent of the world total even though these countries account for nearly one half of uniformed military personnel and about 16 per cent of the world military expenditure. This approximate share for the developing countries is supported by ACDA, which estimated the value of arms and military

---

57/ M. Kaldor, op. cit.; see also D. Greenwood, West European Defence Efforts in the 1970s and Beyond (report prepared for the Group).

58/ World Armaments and Disarmament, SIPRI Yearbook 1981, ..., pp. 74-82.

59/ China recently broke an 18-year silence on its military outlays. Converted at the tourist rate of exchange (1.6 yuan to the dollar) the officially reported outlays are markedly lower than SIPRI and ACDA estimates. Specifically, \$8.05 billion in 1977; \$9.98 billion in 1978; and \$12.8 billion in 1979 (Beijing Review, No. 29, 20 July 1979).

equipment produced in these countries in 1979 at more than \$5 billion. <sup>60/</sup> The developing countries that have made the most significant investment in defence industries include Brazil, India, Israel, North Korea, South Africa and South Korea. <sup>61/</sup> Many other countries are making smaller but determined efforts in this field.

Table III.1 Estimated value of global military industrial production

(Millions of US dollars, 1978 prices and exchange rates)

<u>Year</u>	
1977	121,400 - 138,700
1978	123,200 - 140,800
1979	124,800 - 142,700
1980	127,500 - 145,700

130. The military demand for industrial goods is unquestionably significant; in our estimation the present size of this market is at least \$127,000 million. It is instructive, however, to break this aggregate figure down somewhat and place it in perspective by comparing it with national aggregates. From the conversion standpoint it is particularly important to know how large military industrial demand looms in relation to the economy as a whole, particular sectors within the economy and even particular firms. As a general rule one would expect the weight of military demand to increase as one moves down the scale from major components of GDP to firms specializing in producing military goods.

131. In a selected group of Western industrialized countries in 1977, the significance of military demand in relation to total industrial output and total manufacturing output fell in the range of 1.1 to 7.5 per cent and 1.6 to 8.7 per cent respectively. These percentages - even allowing for the likelihood of larger figures in some other countries - are significant but not dauntingly large.

132. One would expect somewhat higher fractions in the particular industries that produce the major items of military hardware - aircraft, shipbuilding, electronics, communications and so on. This is in fact the case. In the United States in the mid-1970s military demand accounted for about 45 per cent of the total sales of the aircraft industry and 75 per cent of all new construction in the

<sup>60/</sup> United States Arms Control and Disarmament Agency, World Military Expenditure and Arms Transfers, Washington, D.C., December 1980, p. 19.

<sup>61/</sup> By most criteria, South Africa and Israel should be classified as developed countries, so that our estimate of the share of developing countries in military industrial production would probably fall to less than 4 per cent. Owing to the lack of reliable data, assessments of the scale of defence production are quite subjective being based predominantly on the number of types and the complexity of the weapons in production. For this reason, the countries are listed alphabetically and no rank ordering is implied.

shipbuilding industry. 62/ The available data for the United Kingdom, France and the Federal Republic of Germany reveals a similar concentration of military business in selected industries. For example, the military share of the annual output of the aerospace industry (airframes, aero-engines and missiles) was 46 per cent in France and 70 to 80 per cent in the Federal Republic of Germany. For the United Kingdom, the share in 1980 was about 50 per cent. 63/ The structure of the defence industry in the leading arms-producing countries will be examined more fully in chapter V below.

### C. Raw materials

133. Among the most visible developments of the 1970s was the emergence of serious concern over the availability of adequate supplies of oil and minerals, that is, non-renewable raw materials for the support of human life and modern industry. Concern over supply has come to rival the traditional focus on effective demand as the key factor constraining growth. For the immediate future, the problem is seen in terms of security of access to supplies of raw materials, not the exhaustion of supplies per se. All calculations and projections indicate that there are ample materials available in the earth's crust to meet the world's needs for nearly every material through the end of this century. On the other hand, the end of this century is less than 20 years away, so that real natural scarcities are not such a distant prospect unless one is prepared to assume that timely discoveries of major new reserves will be made, and that these resources can be exploited technically and economically. Moreover, projections of demand vis-à-vis known reserves are inherently strongly based on the historical pattern and growth of consumption. Accelerated growth and industrialization in the developing countries in the context of a new international order could have a significant impact on the general validity of these projections. Table III.2 shows the relationship between proven reserves in 1974 and projected world demand 1974-2000 for 16 important non-energy minerals.

---

62/ Jacques S. Gansler, op. cit., pp. 176 and 185.

63/ R. Väyrynen and H. Tuomi, op. cit., p. 22 (for France and the Federal Republic of Germany) and Statement on the Defence Estimates 1981, p. 46 (for the United Kingdom).

Table III.2 The relationship between supply and projected demand for selected non-energy minerals

Mineral	Ratio of recoverable reserves (1974) to cumulative demand 1974-2000	Percentage change in world proven reserves 1970-1978
Aluminium	4.0	+ 317 (for Bauxite)
Chromium	5.7	+ 248 (for chromite)
Columbium	10.0	-
Copper	1.3	+ 64
Iron ore	4.5	+ 3
Lead	1.2	+ 43
Manganese	4.9	+ 142
Nickel	2.1	-
Platinum	3.1	-
Silver	0.4	-
Tin	1.3	+ 55
Titanium	4.4	-
Tungsten	1.2	+ 36
Vanadium	7.5	-
Zinc	1.1	+ 41
Phosphate rock	2.6	-9

Source: United States Congress, Joint Economic Committee, Special Study on Economic Change, vol. 2: Energy and Materials: A Shortage of Resources or Commitment? 96th Congress, 2nd session, 1 December 1980, pp. 211 and 214-215.

134. There is considerable geographic concentration of the world's reserves of oil and minerals: for more than a dozen industrially important minerals the share of the three largest reserve countries exceeds 50 percent. <sup>64/</sup> The significance of this becomes apparent when it is coupled with the fact that the consumption of minerals is even more highly concentrated geographically: the industrialized market economies - essentially North America, Western Europe and Japan - consume more than two thirds of the annual production of the nine leading minerals.

Consumption in the industrialized Socialist countries is in the range of 20 to 25 per cent of the world total for most minerals. The developing countries of Africa, Latin America and Asia (including China) used only 7 per cent of the world's aluminium production in the period 1971-1975, 9 per cent of the copper and 12 per cent of the iron ore. The major consuming nations have, as a result, experienced a significant decline in the degree of self-sufficiency in minerals. The United States, for example, in 1950, relied on imports for more than 50 per cent of its requirements for just four industrially important minerals: by 1976 the list had

<sup>64/</sup> H. Hveem and Raino Malnes, Military Use of Natural Resources: the Case for Conversion and Control (Oslo, 1980), p. 58 (report prepared for the Group).

grown to 23 minerals. Indeed, for at least 12 minerals, United States dependence on imports currently exceeds 80 per cent. Import dependence is even more acute in the European Economic Community and in Japan, where imports provide 75 per cent or more of such critical minerals as iron ore, nickel, copper, bauxite, chromium, asbestos, manganese, cobalt, zinc, lead and silver.

135. The anxiety over growing dependence on imported minerals stems primarily from the impact that a disruption of supplies would have on the general economic health of the consuming nation. Another major concern, however, is the effects of this situation on a nation's ability to wage war. There are several dimensions to this issue, including such negative ones as the increasingly explicit consideration being given in recent years to the possibility of the use of force as a means of preserving access to needed raw materials. The particular concern here, however, is the magnitude of the consumption of energy and minerals for military purposes.

136. The scale of global military activities suggests strongly that consumption for this purpose is not trivial. At the same time, the stress placed on the achievement of costly qualitative improvements in weaponry since the Second World War would mean that this consumption has not increased commensurately with global military expenditure. Similarly, the spectacular rise in the unit cost of weapons due to their complexity and sophistication has contributed to a gradual decline in the number produced. It can also be inferred from the emphasis on qualitative advances that the relative importance of iron and steel in military consumption has declined while that of aluminium, titanium and other relatively exotic minerals has increased. For example, approximately 20 to 25 per cent of the weight of current sophisticated combat aircraft is made up of titanium compared to 8 to 10 per cent for the models produced in the 1950s. This metal is also beginning to be used for the hulls of certain types of submarines. Similarly, aluminium has come into extensive use in the superstructure of modern naval vessels. As a final example, the materials required to build and deploy the 200 land-based mobile, intercontinental ballistic missiles include an estimated 10,000 tons of aluminium, 2,500 tons of chromium, 150 tons of titanium, 24 tons of beryllium, 890,000 tons of steel and 2.4 million tons of cement.

137. Estimating the global consumption of minerals for military purposes can only be done by extrapolating from data on the United States. This is a serious constraint because the United States, though a very large consumer, is by no means dominant. Moreover, it is difficult to find data on the global consumption of specific minerals that is comparable to the available data on United States military consumption. The estimates developed below should therefore be treated very cautiously.

138. Industrial production for military purposes is heavily concentrated in the United States, the Soviet Union and Western Europe, but even among these three groups comparative military expenditures offer only a very rough guide to mineral consumption for military purposes. The scope of the weapons production programme varies between these groups as does the degree of emphasis given to different types of weaponry. Similarly, technological capabilities vary and this could also affect the pattern of mineral consumption quite significantly. We can do little more than note these difficulties, but it is worth pointing out that the production of a

modern fighter-bomber or a medium-range surface-to-air missile will require roughly comparable quantities of metals wherever it is produced.

139. Table III.3 shows our estimates of the global consumption for military purposes of selected minerals. In order to convey some impression of the orders of magnitude involved it can be pointed out that, in the case of aluminium, copper, nickel and platinum, estimated global consumption for military purposes is greater than the demand for these minerals for all purposes in Africa, Asia (including China) and Latin America combined.

Table III.3 Estimated military consumption of selected minerals as a percentage of total consumption a/

<u>Mineral</u>	<u>Percentage</u>
Aluminium	6.3
Chromium	3.9
Copper	11.1
Fluorspar	6.0
Iron ore	5.1
Lead	8.1
Manganese	2.1
Mercury	4.5
Nickel	6.3
Platinum group	5.7
Silver	6.0
Tin	5.1
Tungsten	3.6
Zinc	6.0

Sources: E.E. Hughes et al., Strategic Resources and National Security: An Initial Assessment (Menlo Park, Stanford Research Institute, 1975).

The Global 2000 Report to the President ..., vol. II, pp. 206-207.

a/ These estimates were developed as follows: Data on the military share in United States national consumption and on the United States share in the world demand for these minerals was combined to produce estimates of United States military consumption as a percentage of global consumption. The global estimates were then derived on the basis of a crude judgement that the United States share in the global consumption of minerals for military purposes is approximately one third. This judgement was based on relative military expenditure, the relative value of military industrial production (see section B of this chapter) and surveys of the weapons production programmes under way around the world.



140. The final issue that warrants mention in this section is the consumption of petroleum for military purposes. Petroleum is much more important for the military sector than for the economy as a whole, its share being more than three fourths of total military energy consumption. Including indirect consumption, that is, including petroleum consumed in the production of military goods and services, this has been estimated at 5 to 6 per cent of total global consumption. Once again the absolute magnitude involved is very significant: 5 per cent of global petroleum consumption is more than that accounted for by France and close to one half of the consumption in all the developing countries combined (excluding China).

D. Land 65/

141. The available data on the land area used for military purposes is far too sketchy to permit a reliable global estimate to be made. What is almost certain, and unsurprising, is that from the global perspective the military use of land is quite small, less than half of one per cent of the total and perhaps as low as one third of one per cent. Having said this, however, it does not follow that the military use of land is without consequence. In absolute terms, the military sector still occupies much land: countries with a land area in the range of 0.3 to 0.5 per cent of the world total include France, Morocco, Paraguay, Sweden and Thailand. Moreover, there are vast areas of land in the world that are of no more interest to the military than to other land-users. In other words, despite its small relative demand, the military can and often does compete directly with civilian demands be they urban, industrial, agricultural, recreational or based on environmental concerns.

142. Military requirements for land have risen steadily over the course of this century owing to the increase in the size of standing armed forces and, more particularly, the rapid pace of technological advances in weaponry. As armed forces became progressively more mechanized and as the range and speed of weapons increased so did the land area required for purposes of training and manoeuvres. For example, exercises involving a full armoured division are considered by the United States Army to require an area of at least 235 square kilometres with up to 664 square kilometres being desirable for maximum benefit. Air Forces require much larger areas still, owing to the high speed of modern combat aircraft and the considerable range capabilities of air-to-surface munitions. Finally, of course, the areas used to test nuclear weapons cannot be too large. One could add here that, owing to considerations both of safety and security, military land requirements usually tend to be determined quite liberally.

143. Prevailing military trends suggest that, in the aggregate, military demand for land will continue to grow. Many countries in all parts of the world are increasing the size of their armed forces. Similarly, the number of countries

---

<sup>65/</sup> The material in this section is drawn almost exclusively from a single study: Malvern Lumsden, "The Military Use of a Scarce Resource: The Case of Land", SIPRI, 1980.

operating battle tanks, modern combat aircraft and missiles of all varieties is growing continuously. So too is the number of countries setting out to manufacture and, in some cases, to design and develop modern weaponry. All of these trends imply growing land requirements for training, manoeuvres and weapon-testing. Furthermore, as the accuracy of offensive weapons improves, there is greater incentive to give deployed weapons greater mobility, and to set aside larger areas of land for them to manoeuvre in. The deployment mode currently under consideration in the United States for the MX system involves an area of nearly 6,000 square miles. The Soviet Union already has land-mobile intermediate-range nuclear missile systems that presumably have comparable designated areas that are off-limits to civilians.

144. On the whole, the economic significance of the diversion of land to military use is considerably higher than the fraction of the total land used for this purpose might suggest. The amount of land in the world is nearly constant, but demand is growing relentlessly on every front: croplands, grazing lands, forests, urbanization and ground transportation networks. The amount of arable land in the world has in fact been increased by some 15 per cent over the past 30 years. <sup>66/</sup> It is reasonable to assume, however, that this has been accomplished to some extent at the expense of grazing land and forests and, to the degree that this is the case, it is not a viable alternative in the long run. Moreover, it is also the case that large areas of productive land are lost each year owing to such things as over-exploitation, desertification and salination. The restoration of these areas is a costly and time-consuming process.

145. In other words, the context in which the military use of land must be considered is one that recognizes that such use is totally unproductive and that it is frequently competitive with intensifying demands from the civilian sector. Perhaps the most disturbing aspect of the military use of land for future civilian use is that it is seriously degraded, often for an extended period. In some cases, such as nuclear-weapon-test areas - particularly, of course, the areas where atmospheric tests have been conducted - utility for civilian use is nil for an indefinite period of time. Moreover, the effects of atmospheric nuclear tests cannot be contained within the designated test area. Even with underground testing, accidents and miscalculations have occurred and have resulted in adverse effects beyond the test area. Training areas that see the large-scale use of tracked armoured vehicles become quite vulnerable to erosion through the destruction of vegetation and loosening of the topsoil. Artillery and bombing ranges are transformed into a mosaic of craters that are difficult to fill and remain unproductive for years, even if this happens owing to the absence of the fertile layer of topsoil. If the craters remain, they impede the use of agricultural machinery. Unexploded munitions constitute another long-term hazard. Actual warfare, of course, results in all these effects on a hugely magnified scale. The effects of modern warfare on land and other dimensions of the environment,

---

<sup>66/</sup> Julian L. Simon, "Worldwide Land for Agriculture is Increasing, Actually", New York Times, 7 October 1980, Op-Ed page.

including the use of chemical agents, have been exhaustively surveyed in several publications by the Stockholm International Peace Research Institute. 67/

#### E. Research and development

146. One of the most conspicuous distinguishing features of the military scene since the Second World War has been the extraordinarily rapid rate of change in weapons technology. It is this feature of the post-war arms race that is primarily responsible for the unique intensity of this race. For the past 30 years, new and improved weapons have emerged at an unmanageably rapid rate, compounding suspicions and uncertainties and creating in States, particularly the major Powers, a degree of preoccupation with military matters that is probably unprecedented. All too often technology has raced ahead of strategy and tactics. Similarly, the technological arms race has complicated the process of political assessment and efforts to control the race through negotiation.

147. In virtually all categories of major weapons a completely new model comes along every five to eight years, with an intervening period characterized by the continuous refinement and modification of the earlier model (or models). Moreover, the range of types of weapons in which this process occurs has expanded continuously as technological developments have made conceptually new weapons possible or permitted greater functional specialization. SIPRI estimates of the research and development input per unit of output in the military and civilian sectors in the United States of America, the United Kingdom and the Federal Republic of Germany, suggest that, at present, the average military product is some 20 times as research-intensive as the average civil product. 68/

148. These indications of the relative intensity of the military research and development effort are fully borne out by what is known or can reasonably be surmised about the global magnitude of this effort. Global expenditures on military research and development in 1980 were of the approximate order of \$35,000 million or approximately one quarter of the estimated \$150,000 million expended for all research and development. 69/ Twenty years earlier, in 1960, global military research and development amounted to about \$13,000 million 70/ but accounted for a

---

67/ See Ecological Consequences of the Second Indochina War (1976), Weapons of Mass Destruction and the Environment (1977), and Warfare in a Fragile World: Military Impact on the Human Environment (1979), all published by Taylor and Francis, Ltd., London for SIPRI.

68/ World Armaments and Disarmament, SIPRI Yearbook 1981, ..., p. 7.

69/ Colin Norman, Knowledge and Power: The Global Research and Development Budget, Worldwatch Paper 31, July 1979, p. 5.

70/ Ruth Leger Sivard, World Military and Social Expenditures 1978, (Leesburg, Virginia, WMSE Publications, 1978), p. 9.

significantly larger fraction of all research and development. This can be deduced from the fact that six countries - the United States, the Soviet Union, the Federal Republic of Germany, Japan, France and the United Kingdom - accounted for about 85 per cent of the world's research and development, and in five of these (all except the Soviet Union), it is known that the military share in total research and development was significantly higher in 1960 than it is today. 71/ Military research and development expenditure is even more highly concentrated than total research and development; just two countries - the United States and the Soviet Union - account for a similar share of military research and development. 72/ Adding France and Britain would push this fraction above 90 per cent.

149. Information on the number of scientists and engineers engaged in military research and development is even more sketchy than the financial data. The most recent survey of global research and development suggests that 2,279,000 scientists and engineers were thus employed in 1973. 73/ The best known estimate of the number engaged in military research and development is the SIPRI figure of 400,000 for the early 1970s. 74/ More recently it has been suggested that over 500,000 scientists and engineers are engaged in military research and development. 75/ In other words, approximately 20 per cent of the world's qualified scientists and engineers were engaged in military work during the 1970s. As with expenditure, this share would have been significantly higher during the 1960s and perhaps even higher still during the latter part of the 1950s.

150. It should be recalled that the 1972 study, Disarmament and Development, 76/ gives the share of military research and development as 40 per cent of expenditures (\$25 billion out of \$60 billion). As this figure, or even higher figures, are widely quoted in the public debate, it might be of some importance to stress the fact that the most recent estimates point to a share of resources used for military research and development of the order of 20 to 25 per cent as regards both manpower

---

71/ Colin Norman, op. cit., p. 18. In the early 1960s, for example, the World Federation of Scientific Workers estimated that up to 70 per cent of the world's scientific personnel were engaged in military work of one kind or another. See reply of the Government of the Union of Soviet Socialist Republics, E/3593/Add.1.

72/ SIPRI, Armaments and Disarmament in the Nuclear Age, (Stockholm, Almquist & Wiksell, 1976), p. 186.

73/ Colin Norman, op. cit., p. 10.

74/ SIPRI, Armaments and Disarmament in the Nuclear Age ..., p. 186

75/ Ruth Leger Sivard, op. cit., p. 9.

76/ ST/ECA/174 (United Nations publication, Sales No. E.73.IX.10.

and expenditure. Still, however, the absolute magnitude of expenditures for military research and development is extremely large and it remains by far the largest single objective of scientific inquiry and technological development. If a more accurate accounting were possible, the figures presented above would almost certainly appear conservative. For example, much of the expenditure on space activities in the United States and the Soviet Union has direct or strongly indirect military utility and is undoubtedly undertaken primarily for this purpose. More than \$10,000 million is spent on "non-military" space activities each year by these countries and others.

151. It is important to view military research and development with some perspective. The stock of knowledge at any given point in time is the direct result of the research and development effort over the preceding decades and, indirectly, of this effort over the preceding centuries. It is likely that the present stock of useful knowledge is much less than it might have been had we not pursued the arms race so enthusiastically. It is true that several technological developments of major significance for civilian life were brought to fruition at an early date because of their perceived military utility. This does not mean, of course, that progress in these spheres would have been slower in the absence of military research and development. It is possible that without the latter the requisite advances in the economic and social spheres could have been achieved more efficiently. An assessment of how far the development of the stock of really useful knowledge has been promoted or held back by the carrying-out of military research and development would require a special study the conclusions of which would rest more on hypotheses than empirical evidence.

152. It has been suggested that military demands have been largely responsible for the rapid increase in the resources devoted to research and development generally so that even the magnitude of the civilian efforts might be jeopardized by a process of disarmament and the reduction of tensions. This view might have some validity if the economic and social state of the world was robust and no significant future problems could be identified, but it could hardly be said that there is now a shortage of possible civilian projects on which defence R and D scientists could be re-employed. On a more positive note, it must be acknowledged that the military pioneered and perfected the systems approach on research and development. This has imparted a degree of predicatability to the accomplishment of scientific and technological advances unknown before the Second World War. For these various reasons, we can state with some confidence that the stock of useful knowledge and technology in the year 2000 will be immeasurably enlarged if we succeed in diverting to civilian ends a considerable fraction of the funds and manpower now programmed to work in the military field.

#### F. The international trade in arms

153. As a result of its magnitude, visibility and intimate association with local and regional warfare, the international trade in arms has emerged as a major topic of public and official concern. This trade is not officially recorded in international trade statistics so that there exists no comprehensive and official body of data on which to base an analysis. Major efforts have been made to fill

this information gap indirectly and it has been suggested that a United Nations register should be established to record the import and export of weapons on a world-wide basis. For the time being, however, significant gaps remain. In particular, there are no comprehensive data on this subject that are of any real value in analysing its economic impact on suppliers and recipients.

154. Only two sources - the Stockholm International Peace Research Institute (SIPRI) and the United States Arms Control and Disarmament Agency (ACDA) - endeavour to provide systematic estimates of the annual value of the arms trade. In each case, however, the data on values are predominantly constructed on the basis of observed transactions involving military hardware. As far as the suppliers are concerned, these values cannot really be considered to represent the costs of production and for this reason they cannot be closely compared with military expenditures, GNP or other aggregates. Much the same is true for recipients. Although virtually all arms transactions now involve payment, a wide spectrum of modes of payment are involved including barter arrangements, full or discounted prices, hard and soft loans, third-party payments and offset arrangements. As a result, the available estimates of the value of the international trade in military goods and services bear no necessary relationship to the actual financial and commodity flows associated with these transactions. This should be borne in mind throughout the discussion that follows.

155. The SIPRI value data cover only what it terms "major weapons" - aircraft, missiles, warships and armoured vehicles - which, primarily on the basis of data for the United States, are judged to account for about one half of the total trade in military equipment and services. ACDA endeavours to be considerably more comprehensive as far as military hardware is concerned, but excludes construction, training and technical services. The latter is a significant omission. Many of the countries that have made major purchases of sophisticated weapon systems have lacked the infrastructure to absorb, maintain and repair such weapons. Accordingly, suppliers have frequently undertaken large-scale training programmes and, for an extended interim period, provided technical personnel as part of a weapons deal. It is estimated, albeit crudely, that these "services" constitute approximately 15 per cent of the current global value of the arms trade. 77/

156. Table III.4 shows the value of the international arms trade in recent years as estimated by ACDA.

---

77/ M. Brzoska et. al., An Assessment of Sources and Statistics of Military Expenditure and Arms Transfer Data, p. 49 (report prepared for the Group).

III.4 ACDA estimates of the value of the trade in arms

(Millions of US dollars, in current prices)

Year	Recipients		
	Developed Countries	Developing countries	Total
1978	3 910	16 690	20 600
1977	4 115	15 185	19 300
1976	4 170	12 230	16 400
1975	3 510	9 090	12 600
1974	3 380	8 370	11 750

157. On the basis of the assumptions outlined above, the ACDA data should be increased by some 15 per cent to provide crude estimates of the aggregate value of the global trade in military goods and services. The resulting figure for 1978 is some \$23,700 million. The available information for more recent years suggests that the international market for arms remains bouyant, so that for 1980 or 1981 the international trade in arms was estimated to be well in excess of \$25,000 million. Moreover, there are good reasons to suppose that these estimates are on the conservative side. According to SIPRI, the cumulative value over the period 1977-1980 of the international traffic in major weapons was \$57,459 million (expressed in constant 1975 prices) or an annual average figure of \$14,365 million. Assuming an inflation rate of 9.5 per cent, the figure for 1980 in current prices would become \$22,614 million. Furthermore, as mentioned above, major weapons comprise only a part of the trade in weapons, military equipment and associated services. To make a flexible adjustment for this fact produces an estimate of the global traffic in militar goods and services in 1980 of \$35,000 million to \$45,000 million. 78/

158. In any event, even bearing in mind the limitations of the available data from an analytical viewpoint, it would seem to be an indisputable fact that the international trade in arms is of major economic as well as political significance. On the supplier side, this trade is dominated by four countries - the United States, the Soviet Union, France and the United Kingdom. According to ACDA, these four countries accounted for 80 per cent of the cumulative value of

78/ World Armaments and Disarmament, SIPRI Yearbook 1981 ..., pp. 197-198. It must be pointed out that SIPRI regards its data on the arms trade to be useful primarily to indicate trends. These calculations were made simply to justify the contention that the absolute value of the arms trade at present might be significantly larger than is commonly thought.

arms exports over the period 1974-1978. <sup>79/</sup> Another four European countries - the Federal Republic of Germany, Czechoslovakia, Italy and Poland - accounted for over 10 per cent, so that just eight countries supply over 90 per cent of the arms traded internationally. The economic significance of arms exports for these major suppliers will be considered more fully in chapter V, but it can be mentioned here that the benefits are diverse and include substantial foreign exchange earnings and greater stability in production and employment levels within the defence industry. The latter is a particularly important consideration in view of the diversity and high average level of skill of the labour resources involved and the consequent difficulty of reassembling such labour teams once they have been allowed to break up.

159. Another point on which all sources agree is that developing countries have long accounted for over one half of all arms imports: for the 1970s as a whole their share was of the order of 75 per cent. In itself, this is hardly surprising. The capacity of the developing countries to manufacture modern weapons is extremely limited. Similarly, the volume of the arms trade has been heavily influenced by the outbreak of war, and virtually all the wars since 1945 have been fought in developing countries although developed countries have frequently been involved directly or indirectly. The distribution of weapon imports within the developing world is also heavily concentrated in particular countries and regions. According to SIPRI estimates, for example, just five Middle Eastern countries - Iran, Saudi Arabia, Jordan, the Syrian Arab Republic and Iraq - accounted for over one third of all the major weapons imported by developing countries over the period 1977-1980. <sup>80/</sup> In the present context, however, our main concern is the possible economic ramifications of this particular distribution of the international trade in arms. There are many dimensions to the issue, but the one of particular interest here is the amount of foreign exchange that developing countries devote to the import of arms.

160. Unfortunately, we can only deal in rather loosely substantiated aggregates so that the results must be regarded as quite speculative. The attempt is worth while, however, if only to highlight the extent of our ignorance on an important dimension of the world armaments. As a starting point, we might assume that the nominal value of the global trade in military goods and services at present is \$26,000 million. The share of developing countries in the total is 75 per cent or \$19,500 million. Furthermore, our interest in the foreign exchange cost of arms imports stems from the fact that shortages of foreign exchange is frequently among the most serious obstacles to accelerated economic growth and development in developing countries. The major exceptions to this generalization are the member States of the Organization of Petroleum Exporting Countries (OPEC) which since

---

<sup>79/</sup> United States Arms Control and Disarmament Agency, World Military Expenditure and Arms Transfers 1969-1978 ..., p. 159.

<sup>80/</sup> World Armaments and Disarmament, SIPRI Yearbook 1981 ..., p. 198, table 7.7.



1974, have accounted for about 40 per cent of the total value of arms imports by developing countries. The balance after this adjustment is an estimate of \$11,700 million for the nominal value of arms imports by developing countries. This figure must be reduced further to allow for grants, discount prices, soft loans and partial or complete forgiveness of debt incurred for military purchases. There is no sensible basis on which to estimate the magnitude of the adjustment that should be made in this case, so we must be content with the statement that in the late 1970s non-OPEC developing countries may have been devoting up to \$10,000 million annually to the import of armaments. A comparison with the total military expenditure of this group of countries - approximately \$37,750 million in 1980 according to SIPRI - lends some plausibility to this estimate in that the share of procurement is probably of the order of 15 to 20 per cent or \$5,500 million to \$7,500 million.

#### G. Military expenditures

161. It is generally agreed that the nations of the world currently allocate to defence each year a volume of resources valued at in excess of \$500,000 million. This is far from being a precise statistic. There is no agreed definition of military expenditure: countries differ significantly in the categories of expenditure included in the reported defence budget. In some cases it is possible to construct a more complete figure for military expenditure from officially-supplied data, but in most cases this cannot be done satisfactorily. Indeed, more than one third of the above total consists of indirectly-constructed estimates based on theoretically questionable methodologies. Similarly, the necessary procedure of converting all expenditure to their equivalent in a single currency is fraught with methodological and practical difficulties. Much the same is true of the deflation procedure, that is, when expenditures are compared over time in constant prices.

162. What all this means, of course, is that the available data on world military expenditure are considerably less hard than they may appear. 81/ While this fact should always be borne in mind in using and interpreting the data, the utility of this information is great. Few would argue that the existing estimates of global military expenditure are seriously inflated or that the long-term upward trend in the aggregate is a distortion of reality. Problems do arise if the data are used to make detailed comparisons between individual countries and if inferences are drawn from such comparisons regarding relative military strength. But the data can certainly be used to analyse global and regional magnitudes and trends.

163. World military expenditure in 1980, in current prices, amounted to \$500,000 million or approximately \$110 for every man, woman and child on earth. Per capita military expenditure in the developed countries taken as a group is an order of magnitude higher than in the developing countries but, because the disparities in

---

81/ Brzoska et. al., op. cit.

over-all income per capita are even greater, the real burden of these expenditures is heavier in developing countries. 82/ The global military effort represents about 6 per cent of global output, roughly the same fraction as accounted for by the 340 million people living in Latin America or the 1.3 billion people living in Africa and South Asia. Global public expenditure for education has only recently overtaken military expenditure, although if the developing countries alone are considered the latter is still predominant. Global public expenditure on health remains considerably below military expenditure and, again, the asymmetry is particularly marked in the developing countries as a group. The global arms bill is roughly equivalent to the value of gross fixed capital formation in all developing countries combined. If one combines regular and paramilitary forces, there are still far more people wearing military uniforms world wide than there are teachers. Military objectives remain by far the most important single purpose of the world's research and development effort, eclipsing, for example, energy, health, pollution control and agriculture combined. 83/ Indeed, it appears that global military research and development is at least six times as great as all research and development performed in the developing countries.

164. One could go on in this vein almost indefinitely, but perhaps enough has been said to confirm that the global military effort consumes resources on a truly massive scale and that its relative magnitude is testimony to the distorted priorities that have prevailed over the post-war period. Moreover, there is no sign of abatement. Quite the contrary. The point was made in the introduction to this chapter that world military expenditure over the post-war period has moved up in spasms followed by a period of relative stability on a new and higher plateau. In the past, each upward surge was closely associated with a war or a major international crisis or the perception of a serious asymmetry in strategic nuclear capabilities. The present upward trend is not associated with a specific event. Rather, it appears to reflect a widespread perception that circumstances in general justify a gradual but sustained increase in military efforts. In this sense, the latest upswing may prove more difficult to reverse since there is no major war that can be brought to an end, no single crisis that can be defused and no particular gap in relative capabilities that can be bridged.

165. The distribution of global military expenditure remains very uneven although some notable changes have occurred over the past two decades (see table III.5). Generally speaking, there has been a significant decline in the NATO/WTO share although the member States of these two military alliances still account for nearly 70 per cent of the total. Significantly, however, the NATO/WTO share appears to be stabilizing at this figure. The offsetting increases have taken place in

---

82/ One calculation suggests that at current levels of per capita income, annual military outlays account for 156 million man-years of income in the developing countries against 46 million in the developed countries (see Ruth Leger Sivard, World Military and Social Expenditures 1980 ..., p. 17).

83/ Colin Norman, op. cit., p. 6.

Table III.5 Distribution of world military expenditures, 1955-1980  
 (Percentage)\*

Groupings	1955	1960	1965	1970	1975	1980
Nuclear weapon States <u>a/</u>	81.4	78.9	76.0	75.8	67.1	64.6
Four leading arms exporters <u>b/</u>	76.2	73.3	67.4	65.8	57.4	55.8
NATO and WTO	86.9	85.4	80.5	77.4	70.5	68.8
of which:						
United States and USSR <u>c/</u>	(68.7)	(63.7)	(48.9)	(47.4)	(31.9)	(27.1)
Other developed <u>d/</u>	9.8	10.1	13.6	15.4	16.0	15.1
Developing countries	3.3	4.5	5.9	7.2	13.5	16.1
of which:						
Middle East <u>e/</u>	0.6	0.9	1.3	2.2	7.3	7.8
South Asia	0.6	0.6	1.1	0.9	0.9	1.1
Far East <u>f/</u>	1.0	1.4	1.4	1.6	1.9	3.6
Africa <u>g/</u>	0.1	0.3	0.8	1.2	1.8	1.7
Latin America	1.0	1.3	1.3	1.3	1.6	1.8

\* Source: World Armaments and Disarmament, SIPRI Yearbook 1981, pp. 156-169  
 (for all foot-notes except c).

a/ United States, USSR, France, United Kingdom, China.

b/ United States, USSR, France, United Kingdom.

c/ As recognized by the international community dealing with these matters, official military budget figures for one of these countries are not directly comparable to those of most other countries, owing to differences in coverage and difficulties with currency conversion rates. SIPRI estimates for the share of the United States and the Union of Soviet Socialist Republics in world military expenditures are as follows:

<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
66.0	62.6	58.2	58.7	50.1	48.0

The well-known difficulties in comparing military expenditures over time and among countries are being addressed by several United Nations and national bodies. Further help in overcoming the difficulties would be provided by the wider participation of States in these efforts and the sharing of their information on technical aspects (see Economic and Social Consequences of the Arms Race and of Military Expenditures (United Nations publication, Sales No. E.78.IX.1), foot-note 63, pp. 33 and 36.

d/ Europe, excluding NATO and WTO, plus Australia, China, Israel, Japan, New Zealand and South Africa.

e/ Excluding Israel.

f/ Excluding China and Japan.

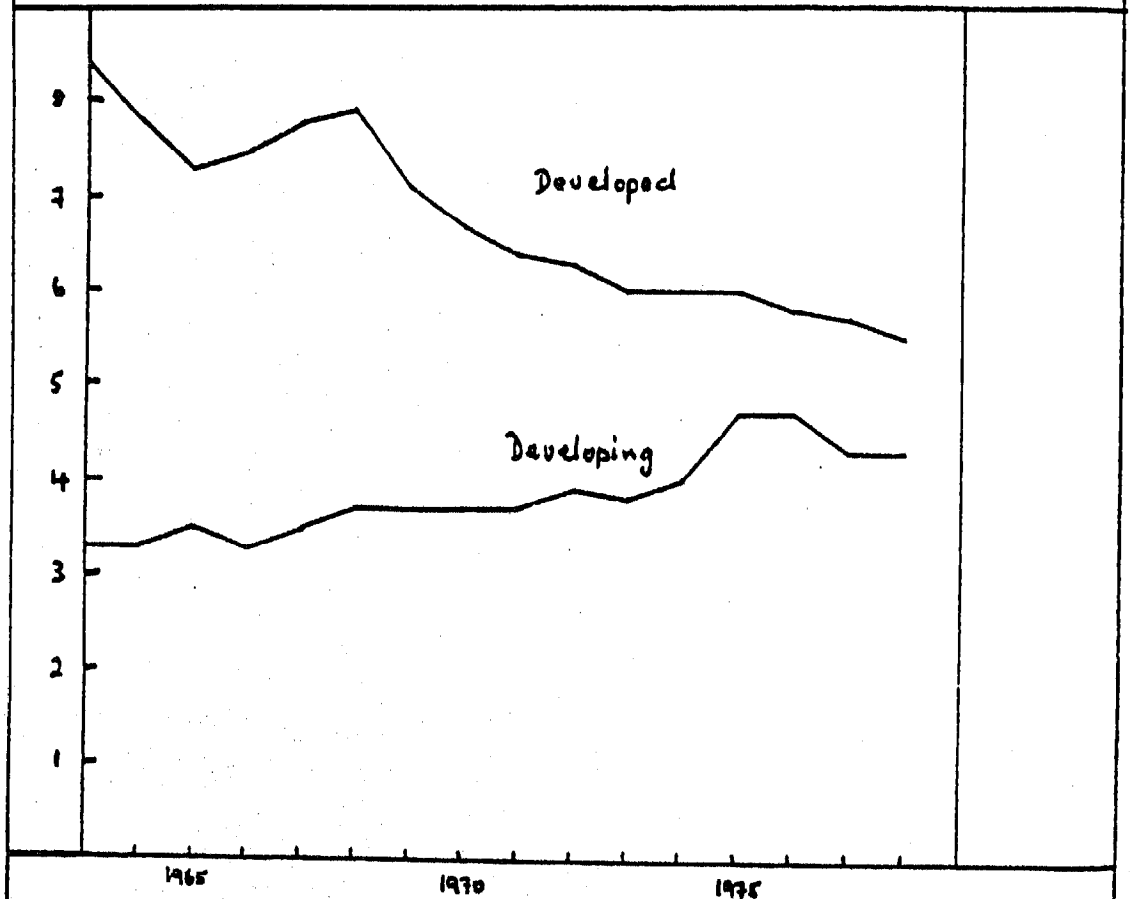
g/ Excluding South Africa.

virtually all regions of the world but, again, the picture is a very uneven one. China and, to a lesser extent, Japan, Israel and South Africa account for nearly all of the increases in the share of the other developed countries. Among the developing regions, the spectacular pace of militarization in the Middle East is clearly reflected. Even excluding Israel, this region accounts for nearly one half of total military spending by the developing countries. The share for Africa has also increased particularly rapidly although here, more than in any other developing region, the trend has been influenced by the emergence of new nations. Other factors have been a succession of wars over the past decade and an intensifying confrontation between the Black African States and South Africa. While these various qualifications are important, the central fact remains that the distribution of world military expenditure has been changing in a quite systematic manner over the past 25 years. In all the major regions of the world, the average rate of growth of military expenditure has at least equalled, and, in most cases exceeded, that of NATO and WTO combined.

166. Comparing military expenditure to major economic aggregates is a widely-used technique to convey some impression of the economic burden of these activities. The most popular measure is military expenditure as a percentage of gross domestic product (GDP). The global figure, as we have seen is currently about 6 per cent. This represents a decline from the post-war peak of around 9 per cent in the early 1950s. Given the high concentration of world military expenditure in a few States, it follows that the share of GDP devoted to the military must have declined in most of these States, although for the world as a whole this has not prevented almost continuous growth of real expenditure in absolute terms. Conversely, given that military expenditure in the developing countries, taken as a group, has risen significantly faster than the global average, one would expect an increase in the fraction of GDP devoted to defence in many of these countries. These disparate trends are visible in chart III.2. The very fast rates of growth of expenditure in the Middle East is clearly reflected; five of the six developing countries that devoted in excess of 10 per cent of GDP to the military in 1975 come from this region.

167. Another common measure is the proportion of central government expenditure or revenues devoted to defence. This is intuitively attractive because the central government budget is the immediate context in which trade-offs are made between military and civilian objectives. In other words, this measure could be used as an indicator of the degree of priority that Governments feel obliged to attach to providing for military security. There is, however, one important qualification to the literal interpretation of this measure. There are very significant variations between States in the extent to which the Government assumes direct responsibility in the economic and social spheres and, within countries, the scope of the State's responsibilities can change over time. If the government role is very large, even a large military effort will absorb a relatively low proportion of government expenditure and conversely if the role of government is comparatively modest. In other words, while this measure can be quite illuminating, it must be interpreted rather carefully.

Chart III.2. Military expenditure as a percentage  
of GNP, 1963-1978



Developed countries include NATO, WTO, other European countries plus Australia, China, Israel, Japan, New Zealand and South Africa.

Source: United States Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfer, Washington, D.C., various years.

168. These constraints can be minimized if we examine the proportion of military expenditure in total central government expenditure - where the degree of variation between countries is least - and do so at the level of global and regional aggregates as is done in table III.6.

III.6. Military expenditure as a percentage of central government expenditure, by regions, 1969 and 1978

	1969	1978
World	33.5	22.4
Europe	32.8	24.4
North America	41.3	22.6
Oceania	15.4	8.4
Middle East	28.5	24.3
Far East	31.5	22.5
South Asia	20.4	15.0
Africa	15.0	10.2
Latin America	13.5	10.9

Source: United States Arms Control and Disarmament Agency, World Military Expenditure and Arms Transfers 1969-78, Washington D.C., December 1980, p. 23, table 1.

169. Bearing in mind that Governments in all countries, (particularly, perhaps, developing countries) bear a major responsibility for providing the basic prerequisites for economic activity, these percentages are significantly large. By 1977, the situation had improved markedly compared to 1968, but it is worth pointing out that the effects of relatively greater diversion of government resources to the military in the past are still being felt today, in terms of education, health, housing, transportation networks and so on.

170. Another important dimension of world military expenditure is the international financial and commodity flows associated with military activities. By far the most important item here is the sale of arms, military equipment and associated services. It was suggested above that the annual value of this trade, in nominal terms, is currently of the order of \$26 billion at a minimum. This does not mean, of course, that this amount of money flows from recipients to suppliers each year. Within the market and Socialist industrialized nations, major arms deals are typically the subject of elaborate offset arrangements intended to minimize the direct drains on foreign exchange reserves. These arrangements can include the reciprocal sale of military hardware, co-production and agreement by the supplier

to place orders in the recipient nation for civilian goods and services. <sup>84/</sup> Where the recipient is a developing country, the same end is sometimes accomplished by making the cost payable in commodities or raw materials. Another item in this connexion is the provision by the major Powers to allied or friendly States of general financial assistance in recognition of the economic difficulties imposed by their military activities. This is called "security supporting assistance" in the United States. A third important item is the costs associated with the overseas basing of military forces. In the United States, these costs have averaged \$4 billion to \$5 billion during the 1970s; in the United Kingdom, £672 million in 1975. In both cases these expenditures are associated primarily with NATO and certain offset arrangements are in force to reduce the impact on the balance of payments. It is clearly impossible to estimate even roughly the true magnitudes involved here but it is apparent that the international financial system has somehow to accommodate significantly large and, occasionally, sharply fluctuating payments associated with military activities.

171. Another reason why defence expenditure is an imperfect guide to the resource cost of defence is that the financial data may overstate or understate the resources used. For example, the defence cost of forces who perform some civilian services (see para. 116 above) is overstated in the statistics, whereas the resource cost of conscripts is understated, because their wages would be higher if they were employed in civilian occupations. It is sometimes argued that when, as in many countries at present, a country has high unemployment, then the resource cost of employing people in the defence sector is almost zero. But this is only true if there is no other way in which the authorities can increase employment, and it is not true if unemployment results from Government policies which are aimed at other objectives, such as the control of inflation.

172. Financial data on military activities has the great virtue of being readily available and amenable to manipulation in many ways. This must be done cautiously, however. The quality of the available data is not particularly good and considerable care must be exercised in interpreting derived indicators of the economic burden of military activities. More important, perhaps, is that military activities do not consume money per se but land, labour, raw materials, industrial capacity and foreign exchange. The main purpose of this chapter has been to attempt to draw attention to this fact.

---

<sup>84/</sup> An example is the Defence Production Sharing Agreement between Canada and the United States which is intended to secure rough equality between Canadian imports of complete weapon systems from the United States and procurement contracts placed in Canada for components and subsystems for United States weapons.

CHAPTER IV

ECONOMIC AND SOCIAL EFFECTS OF A CONTINUING ARMS RACE  
AND OF THE IMPLEMENTATION OF DISARMAMENT MEASURES

173. Describing the negative effects of the global military efforts as socially harmful, economically unjustifiable, politically counterproductive, ecologically hazardous and morally intolerable has by now become a familiar theme in most contemporary analyses of the awesome implications of a continuing arms race. <sup>85/</sup> Despite these repeated warnings, a seemingly endless arms race continues to consume massive volumes of human, material and financial resources as described in chapter III. This fact cannot be attributed entirely to a lack of political volition.

174. Political volition, in some respects, is both a factor in and a consequence of its economic environment which is beginning to show unmistakable signs of unprecedented strain accumulated under the past patterns of utilization. In terms of the sheer magnitude of resources, the industrialized world consumed more petroleum and non-fuel minerals during the 25 years after the Second World War than those utilized in all previous history. In terms of patterns of consumption, more than 75 per cent of the resources were consumed by less than 25 per cent of the world population. <sup>86/</sup> The interrelated processes of over-development and under-development on the one hand and the continuing claims of a high level of global military activities on the other constitute twin assaults on the economic environment, which perhaps for the first time in human history, is signalling that the continuously expanding demands on global resources - few infinite, many scarce and some non-renewable - may over-ride the capacity of new technology to offset the constraints inherent in the natural systems on which life depends. <sup>87/</sup> Any assessment that the full effects of these constraints may not be visible for at

---

<sup>85/</sup> See Economic and Social Consequences of the Arms Race and of Military Expenditures (United Nations Publication, Sales No. E.78.IX.1); North-South: A Programme for Survival, (Cambridge, M.I.T. Press, 1980); The Global 2000 Report to the President: Entering the Twenty-First Century (Washington, D.C., 1980), vol. I; "Facing the Future", Interfutures (Paris, OECD, 1979), Reshaping the International Order: A Report to the Club of Rome (New York, Dutton and Co., 1976), Ruth Leger Sivard, World Military and Social Expenditures, 1980 (Leesburg, Virginia, WMSE Publications, 1980); World Armaments and Disarmament, SIPRI Yearbook 1980 (London, Taylor and Francis, Ltd., 1980).

<sup>86/</sup> See Richard J. Barnet, The Lean Years: Politics in the Age of Scarcity, (New York, Simon and Schuster, 1980). Also see W. Mallenbaum, World Demand for Raw Materials in 1925 and 2000 (New York, McGraw-Hill Inc., 1979; Mineralnye resursy promyshlennno razvitykh kapitalisticheskikh i razvivaiushchikhsya stran (Mineral resources of industrially developed capitalist and developing countries) (Moscow, 1974).

<sup>87/</sup> See Antony Dolman, Disarmament, Development, Environment: Three Worlds in One (study prepared for the United Nations Governmental Liaison Service, Geneva, November 1980.)



least a quarter of a century or more merely indicates the lead time available to political leaderships, both at the international and national levels, for examining the short and long term implications of their present policies. 88/

175. Political initiatives to examine immediate gains against future prospects necessarily involve calculations of the opportunity costs of a continuing arms race. 89/ The arms race has a pertinent bearing on the uncertain global economic prospects. 90/ These cannot be assessed entirely on the basis of the past and existing trends which broadly reflect the international situation after the Second World War of no direct military engagement between its two most powerful participants and an economic environment of no immediate constraints on global resources. As described in chapter II, the situation, in both those respects, has changed. The magnitude of resources required to sustain, expand and innovate upon the existing nuclear and conventional arsenals represents the most obvious aspect of their impact on the global economic prospects. Its other aspects include the unwholesome possibility of even a partial use of the existing or new weapons arsenals constituting serious discontinuities in the current global economic projections and the related risk that economic uncertainties could become a factor in accelerating the pace of the arms race.

176. Even optimistic projections envisaging no physical limits to the economic growth of the world as a whole for the next half a century admit that major uncertainties of the future constitute implicit breaks in their estimates. 91/ In the first place, the absence of physical limits on global reserves does not preclude the conditions of economic scarcity for some parts of the world owing to the fact of geographical distribution and also because in many cases the countries which possess the reserves or produce the materials are not the centres of consumption. This is particularly true of industrial raw materials where over-all physical scarcity through natural depletion of resources and reserves is not foreseen as a likely eventuality. Secondly, serious discontinuities in projections may occur owing to political rifts likely to emerge on, at least, three levels: social upheavals and civil unrest in the developing countries, notably in the main oil or commodity producing regions; local conflicts among some developing countries; and political and military differences between NATO and WTO with a possible aggravating impact on other conflict situations.

177. Economic and physical scarcities in a world full of declared and undeclared conflicts can easily result in militancy and confrontation leading to pressures for incurring new forms of and additional allocations for military activities. 92/

88/ See "Facing the Future", Interfutures ...

89/ See Bhabani Sen Gupta, "Arms Control Negotiations Among the Major Powers: The Toils of Sisyphus" (paper prepared for a UNESCO study on Obstacles to Disarmament, Paris, 1981).

90/ See Economic and Social Consequences of the Arms Race and of Military Expenditures, A/32/88 (United Nations publication, Sales No. E.78.IX.1).

91/ "Facing the Future", Interfutures, ... pp. 65-96.

92/ See Orlando Letelier and Michale Moffitt, The International Economic Order (Part I) (Washington, Transnational Institute, 1977), pp. 5-9.

The increasing militarization of the Indian Ocean in recent years, for example, appears to be closely related to the consideration that it contains sizeable percentages of the global total of mineral reserves besides being located en route to other strategically important regions, including the oil-rich Persian Gulf. 93/ The anxiety for an unimpeded access to resources, whether minerals, ore, water or fish, has been and continues to be a major, if not the primary, consideration in several conflict situations since the Second World War. According to the Global 2000 Report, the potential conflict over fresh water alone is underscored by the fact that, out of the 200 major river basins of the world, 148 are shared by two countries and 52 are shared by three to ten countries. 94/

178. Will the global resources situation emerge as a consideration in the future military outlays? Can the global economy sustain an indefinite expansion of its military activities? Are the future penalties of a continuing arms race likely to be less tolerable than those incurred in the past? Should the potential benefits of reversing the present trends in the arms race be viewed primarily as a mirror image of the existing consequences? These and other related issues, which constitute the central concern of this chapter, revolve around opportunity cost assessments of the arms race at national and international levels and involve attitudes besides resources.

179. This chapter examines some of the popularly held beliefs about the presumed positive effects of military spending on economic growth. In the light of the theoretical explanations and empirical evidence collected by the studies especially commissioned by the Group, this chapter also questions some of the conventional wisdom associated with the effects of the military sector on employment and technological spin-offs for the civilian sectors of the economy.

#### Opportunity costs of the arms race

180. As applied to military expenditures, the opportunity costs of the real resources purchased by these expenditures are the forgone benefits attached to alternative uses of these resources. There are many difficulties with assessing the

---

93/ According to a study prepared for the Group, the Indian Ocean region contains 20 per cent of rubber; 70 per cent of tin; 28 per cent of manganese; 32 per cent of chromium; 16 per cent of iron ore; 12.5 per cent of lead ore; 11.5 per cent of nickel; 10 per cent of zinc; 30 per cent of antimony, besides the world's largest known reserves of thorium and non-negligible reserves of titanium. The Indian Ocean sea-bed has large deposits of nodules like manganese, nickel, copper, cobalt and molybdenum. Just one square-mile patch of the Indian Ocean sea-bed could produce 30,000 tons of manganese, 3,600 tons of aluminium, 2,500 tons of cadmium, 17,000 tons of nickel and 650 tons of copper. See Swadesh Rana, P. K. S. Namboodiri, R. R. Subramanian, Reallocation of Military Resources from the OECD to Primary Sectors of LDC's: Mutuality of Interests: A Third World Perspective (report prepared for the Group).

94/ The Global 2000 Report to the President ..., p. 40.

opportunity costs in the military sector, the most important being in the measurement of the forgone opportunities embodied in military spending. <sup>95/</sup> A further problem lies in establishing indices that would permit intertemporal and international comparisons of prices and quantities of goods and services in the civilian and military sectors. This does not mean, however, that nothing definitive can be said about the economic and social effects of the arms race and the implementation of potential disarmament measures. It also would appear, on the basis of the reports commissioned by the Group, that military expenditures have definite negative effects on economic and social development.

181. Since all military expenditures are, essentially, government expenditures, a reduction of these expenditures may, on the one hand, promote government consumption and investment for over-all economic and social development. On the other hand, as a result of tax reductions, private consumption and investment may also be promoted. This tenet is in sharp contrast to the view, held in some quarters, that increased military expenditures have positive effects on economic growth and employment and, thus, on economic and social development, although the extent of these may vary according to the stage of development of the countries concerned, and the period of analysis. The conceptual error in this latter line of reasoning is that it does not make a comparison with a situation in which the resources now used in the military sector are used for alternative civilian production.

182. The findings of the studies commissioned by the Group strongly suggest that, irrespective of their current levels of development, all societies engaged in a steadily high or increasing military effort are pre-empting resources which could and would, otherwise, have been utilized for socially productive ends. <sup>96/</sup> These studies also support the existing evidence that any short-term economic benefits accompanying the military activities of societies with unutilized or under-utilized resources are likely to be negated by their long-term effects on economic growth. The fact that historically higher rates of economic growth and high levels of military spending have co-existed in the past, in some countries, does not provide evidence of a positive relationship between the two: if there was a relationship, the causation was possibly reversed, with high defence spending being possible because of high growth. Long-term growth rates of the developed economies have been partially depressed by the existence of large military sectors and the diversion of resources needed for investment to increase productivity has not been offset on a major scale by spin-offs from the dynamics of military technology. Moreover, in many important respects the present

---

<sup>95/</sup> See Michael Brzoska, An Assessment of Sources and Statistics of Military Expenditure and Arms Transfer Data (report prepared for the Group).

<sup>96/</sup> See Dan Smith and Ron Smith, Military Expenditures, Resources and Development; Seymour Melman, Barriers to Conversion from Military to Civilian Industry in Market, Planned and Developing Countries; Mary Kaldor, The Role of Military Technology in Industrial Development; Jose A. Encinas del Pando, Declaration of Avac ho: Analysis and Quantification of a Possible Agreement on Limitation of Military Expenditures in South America. (Reports prepared for the Group.)

socio-economic problems of the industrialized world like inflation and, possibly, unemployment might have been aggravated by the cumulative effect of their high levels of military spending.

183. Opportunity cost assessments of the arms race in its entirety impinge upon the whole gamut of international economic and political relations. Availability of additional resources for possible diversion into developmental channels will certainly be an obvious benefit, but meaningful military restraint by the major arms race participants may also change the entire economic outlook and the political context which both feeds and is fed by the current arms race. Each new round of de-escalation in the central arms race can become a basis for de-escalation at all levels of military competition and put both international economic order and détente on a more durable basis than the present one, where escalatory rounds in the central arms race complicate international relations through linkage-politics and linkage-economics.

184. Future projections of the potential benefits of military restraint cannot, however, be viewed only as a mirror image of the existing negative consequences of the arms race primarily because the penalties associated with it will be more unbearable than those suffered in the past. In the first place, devoting 5 to 6 per cent of global output to military ends might have entailed bearable penalties during conditions of relative economic ease but will be harder to sustain in situations of slower economic growth which cannot be attributed solely either to cyclical trends or to single cause explanations like the energy crisis. Secondly, the management of national economies through national means alone is no longer possible, for many countries, in a world of increasing interdependence. While the less developed economies continue to depend on the more developed ones for resource and technology transfers, the developed economies are also becoming increasingly sensitive to import-dependency for several strategic minerals and raw materials, including those vital for the sustenance and expansion of their military sectors. Analysing the actual state of dependency of seven major countries, namely, the United States, the Soviet Union, France, the Federal Republic of Germany, the United Kingdom, Japan and China, a study prepared for the Group suggests that besides energy, there are at least a dozen other materials which can adversely affect the GNP of the importing countries under shortage conditions. A 15 to 20 per cent cut in the supply of these can have serious effects on the economies of importing countries by creating stagnation and reducing production. 97/

97/ Those materials most likely to reduce GNP of the importing countries under shortage conditions are in decreasing order of impact: non-metallic titanium, platinum, cobalt, tin, chromium, aluminium, copper, silver, nickel and tungsten. The global reserves and utilization of almost all these materials shares a common pattern. In the first place, the share of the largest three or more reserve countries exceeds 50 per cent of the global reserves. For strategic materials like manganese, molybdenum, tungsten, chromium and platinum, this share goes beyond three quarters of the global reserve base and is concentrated in the largest three reserve countries. Secondly, the largest reserve countries are not necessarily the largest producers or consumers of these materials and neither the geographical nor the political proximities of the materials conform to the pattern of supplier-consumer dependency. See Helge Hveem and Raino Malnes, Military Use of Natural Resources (report prepared for the Group).

Impact of the arms race on economic growth and development

185. The continuing arms race will impede the world-wide prospects of economic growth and delay the developmental process with serious socio-economic consequences, particularly for the developing countries. The need for stimulating economic growth is recognized by all economic projections for the next decade which share two crucial conclusions: first, that world economic growth will be relatively sluggish; and second, that the rates of growth in the market economies will be a little lower than those of the centrally planned economies and the developing countries excluding the Sub-Saharan African region. 98/ Similarly, most projections about the future of the developmental process admit the urgency of meeting the twin challenges of alleviating absolute poverty and providing gainful employment to the growing labour force in the developing countries. It is estimated that, by the year 2000, these countries will have about 5 billion of the world population of 6.4 billion, with at least 800 million of them clinging to the poverty line. It is also estimated that between 1975 and the end of the century, these countries will have added more than 500 million to their labour force and more than two out of every five of them will either be less than fully employed or have no job at all. 99/ Poverty and unemployment or under-employment are universally known invitations for social unrest and political instability. The poorer sections of society, whether concentrated in small pockets in the generally well-off developed world or more broadly scattered among the developing countries, are more vulnerable to inflationary pressures than their better-off counterparts. The arms race, therefore, can be seen as having important socio-economic consequences to the extent that the phenomenon of unemployment and inflation are aggravated by military spending.

186. Economic growth and developmental processes are closely interrelated as speedier economic growth can improve the developmental prospects. But in assessing the impact of the arms race on both it is helpful to maintain the distinction largely because, in simple terms, economic growth is described as increases in real income per capita and this implies more production, higher income and more consumption. Development, on the other hand, implies not only the existence of economic growth but also changes in the structure of demand, supply and income distribution patterns, changes in socio-political institutions and the improvement of material welfare. As some of our studies have shown, military expenditures have deleterious effects on these macro-economic variables and, therefore, hinder, to say the least, the pace of economic growth and development. A similar situation occurs with international arms transfers in which developed countries play a leading role as suppliers. The opportunity costs of these transfers will be represented by the alternative civilian goods and services sacrificed by the supplier. But the development effects (imported technology, etc.) would be more than offset by the costs of infrastructural facilities needed for effective maintenance and operation of the weapons systems received. 95/

---

98/ See World Bank, World Development Report 1980, August 1980.

99/ Ibid. See also Ruth Leger Sivard, World Military and Social Expenditures 1980 ...; North-South: A Programme for Survival ...; "Facing the Future" Interfutures, ...

187. As a historical experience, economic growth represents various features reflecting the social, political and cultural characteristics of the peoples involved. These experiences have been interpreted differently and these interpretations are embodied in the different theories of economic growth and development. Whatever the theory and experience of economic growth in different countries, present-day experience as well as our studies show that the military sector and the civilian sector compete for resources in every country notwithstanding differences in social and economic organization or in the levels of economic development.

188. Besides directly competing with investment, military spending may indirectly affect economic growth in the civilian sector by constraining the growth rate of productivity, which depends heavily on research and development (R and D) expenditures. There is sufficient empirical and historical evidence to demonstrate that the civilian spin-off effects of military R and D in the past have been considerably exaggerated because, with a few exceptions, notably in electronics and to a lesser extent in aerospace, the gap between civil and military technology is rather wide and, in some cases, is growing wider still. <sup>99<sup>a</sup></sup> Moreover, the considerable time lag required to secure the civilian spin-offs from military technology is a significant constraint in situations where low productivity returns demand immediate inputs into research and development into the civilian sectors. Historical comparisons of the non-military or economically relevant R and D effort of the major industrialized countries yield a pattern of economic performance indicating that, in terms of expenditure and employment of professional manpower per unit of GNP, in the mid-to-late 1960s the intensity of non-military R and D was highest in Japan, with the United States lagging significantly behind both that country and the major Western European countries. A relative decline in capital productivity in the civilian sector, owing to insufficient R and D activities, has, as a result, a diversion of capital from the civil to the military sector.

189. An essential aspect of the demand-side approach to economic growth is the so-called multiplier effect of military expenditures. An interesting question in this respect is whether the multiplier effect of a given level of additional expenditure will be higher or lower than that of an equal increase in civilian

---

<sup>99a</sup>/ For a list of some possible peaceful uses of research and development resources currently devoted to military ends, see annex III of Disarmament and Development, ST/ECA/174 (United Nations publication, Sales No. E.73.IX.1). See also World Plan of Action for the Application of Science and Technology to Development (United Nations publication, Sales No. E.71.II.A.18).

expenditure. Based on some studies, it appears that the multiplier effect of military spending is somewhat lower than that of civilian spending. 100/ It should be noted that the studies mentioned above apply to a limited group of developing countries. Should these findings have a wider validity, the effects of additional military expenditures would be smaller than those associated with increased civilian expenditures.

190. With regard to capital formation, reduced military expenditures will have a positive impact on economic growth. For the most part, military expenditures do not contribute to production of capital goods and so do not increase the productive capacity of an economy. But they still compete for investible resources. Moreover, military procurement competes with civilian investment because both are generally directed at roughly the same industries, e.g., metallurgy, chemicals, and energy. An expansion of the demand for military procurement will thus tend to be associated with a relatively lower share for investment by causing supply bottle-necks that constrain investment. The extent to which reduced military expenditures will affect economic growth will depend, of course, on the way in which the released resources are used.

191. Many econometric investigations have pointed out that technological progress, in its broadest sense, is the major source of economic growth. Research and development outlays are the impetus for this process. In chapter III it is estimated, that some 20 per cent of the highly qualified technical and scientific research personnel is working in military-related R and D projects. In several other parts of this report, the arms race is described as a dynamic technological process. Therefore, it is quite understandable that, in common understanding, military research and development is seen as an important stimulant for economic growth and development. Nevertheless, this opinion is misleading. There are several basic errors in this way of reasoning. In the first place, nobody can deny that military R and D has a positive spin-off in some civilian sectors, such as the field of nuclear energy and space technology. But the opposite is also valid. Many technological breakthroughs in the civilian sectors also have a positive spin-off in the military sector. Several important technological developments have nothing to do with military research. Some of the studies commissioned by the Group provide quantitative and qualitative arguments to suggest that, in reality, civilian research is more effective for economic growth than military research. 101/

100/ See Jacques Fontanel, Formalized Studies and Econometric Analyses of the Relationships between Military Expenditure and Economic Development (report prepared for the Group); Lance Taylor et al., Defense Spending, Economic Structure and Growth: Evidence Among Countries and Over-Time (report prepared for the Group); see also Smith and Smith, op. cit.; and Jose A. Encinas del Pando, op. cit.

101/ See Smith and Smith, op. cit. See also Mary Kaldor, op. cit.

192. It needs to be emphasized that military R and D is competing with civilian R and D. The direct opportunity costs of military R and D are the lost opportunities in the civil research projects. Also, there is a lot of dissipation of resources in the military R and D. Many prototypes of weapon systems involving a high R and D component never become operational. 102/ Military R and D is extremely labour-intensive when it comes to highly qualified scientific and technical personnel. As a consequence, in the Group's opinion, the arguments in favour of civilian spin-offs of military R and D are outweighed by its diversion and displacement of human and technological resources from comparable civilian research. Bearing in mind the enormous technological input required to accelerate the developmental process, particularly for the benefit of developing countries, the enormous asymmetry between the military and civilian R and D becomes all the more conspicuous.

193. Based on different macro-economic models for different sets of countries, several studies commissioned by the Group suggest a high correlation between military expenditures and low rates of economic growth. 103/ This negative correlation has been explained by the effect which military activities have on the factors of production available for investment in the civilian sector. Since resources everywhere are limited, an increase in military expenditure and the consequent claim on real resources, leads to a reduction in resources such as capital, labour force, energy, minerals and R and D available for civilian expenditure.

194. If military spending had a stimulating effect on the economy of industrialized countries, then, ceteris paribus, one should expect stagnation to be more prevalent in those countries where military spending plays a less important role than in those where military spending is predominant. Correspondingly, non-military spending should have a lesser potential for preventing stagnation as compared to military spending. Such expectations, however, are not borne out by the experience of the wealthiest industrialized countries. A study of 18 industrialized countries with a GNP higher than \$4 billion, a per capita income higher than \$1,400 and a military expenditure/GNP ratio averaging 3.8 per cent - including the highest of 13.6 per cent and the lowest of 0.8 per cent during the period 1950-1968 - shows that the countries with the highest military expenditure/GNP ratio were growing more slowly than those with lower military expenditure/GNP ratios. 104/ Again, among the same group of countries, those devoting considerable resources to the development of military technology experienced slower rates of growth than those who were not leading developers in that field, their experience strongly suggesting that as a user of scarce skills

---

102/ See Economic and Social Consequences of the Arms Race and of Military Expenditures ... .

103/ See Jacques Fontanel, op. cit. See also Smith and Smith, op. cit.

104/ See Albert Szymanski "Military Spending and Economic Stagnation", American Journal of Sociology, vol. 79, No. 1, pp. 2-14. See also Smith and Smith, op. cit.



and resources the military R and D has a major long-term effect on distorting economies. Military programmes of greater technological sophistication create habits, skills and attitudes in R and D, production and marketing that are sometimes positively inappropriate when competing in civilian markets; unsuccessful competition in civilian markets reinforces the incentive to concentrate on the military sector, creating a vicious circle that affects such diverse areas as aerospace, heavy engineering, electronics and shipbuilding. 105/

195. In general, the economic growth effects of military spending on the centrally planned economies are no more and no less negative than those for the market economies. In both cases, the economic damage done by a continuing escalation of the arms race is cumulative and, therefore, the longer it is allowed to persist, the harder it will be to rectify. Most, if not all the market and centrally planned economies have recently experienced drops in their rates of economic growth, declining rates of return on investment and a sluggish increase in productivity. The centrally planned economies have been equally vulnerable to the military sector's propensity to compete with the investment demands because an intense policy of investment has occupied a key role in their attempts at mobilization of all their internal resources for the development of modern and efficient economic and industrial structures. 106/ Their broad developmental goals, of which sustained economic growth constitutes an important aspect, have not been fully attained and some of them are still poised at what the UNITAR study on Eastern Europe and the new international economic order describes as "the upper limit of medium development and the lower limit of high development". 107/ The per capita GDP of the countries of the Council for Mutual Economic Assistance (CMEA), for example, is about half that of the developed market economies, and their continuing efforts to close this gap are significantly affected by the extent to which they can mobilize their resources for larger investments and higher productivity. 108/

196. The need for higher productivity to compensate for a slower-growing work-force is acquiring a compelling urgency for the centrally planned economies in Eastern Europe who share the general European trends of declining population growth. The entire European region is likely to face a continuing decline in the growth of working-age population between 1980 and 1985, with a sharp break in the years 1985 to 1990 when the growth will fall about 40 per cent to a level lower than any experienced in the post-war world. 109/ For Eastern Europe and the Soviet Union -

---

105/ Daniel S. Grenberg, "Will military research and development hog it all?", The Washington Post, 18 November 1980.

106/ See Eastern Europe and the New International Economic Order: Representative Samples of Socialist Perspective, UNITAR, 1980.

107/ Ibid., p. 67.

108/ See The Council for Mutual Economic Assistance and the Development Process (report prepared for UNITAR by the Institute for World Economy of the Hungarian Academy of Sciences, 1981). (Hereafter cited as The CMEA and the Development Process.)

109/ "Economic prospects for the ECE region to 1990: Demographic and labour force trends" (EC.AD (XVII)/R.2), pp. 12-15.

the decline in fertility rates having started earlier than in the rest of Europe - the period 1980-1985 is projected as the peak of a combination of sharp decrease in the number of potential new workers and a possible high increase in those likely to retire from the labour force. Suggesting that reductions in military spending could contribute considerably towards mitigating the labour shortages by releasing resources for investment to increase productivity, a study prepared for this Group calculates that in the German Democratic Republic alone, every 20,000 people shifted away from the military sector can add up to 500 million marks to the over-all national income, representing a 0.3 per cent increase. Similarly, a reduction of defence spending by 20 per cent, of which only 10 per cent may be available for investment purposes in the German Democratic Republic, is calculated to be equal to 2 per cent of the entire investment volume of that country. 110/

197. The absence of a labour-force constraint in the case of China, with its abundance of people in relation to land and capital, does not detract from the need to restrain the military sector to promote the investment and productivity demands of a growing economy. China not only seems to need a more fully productive utilization of its working-age population, but both the fundamental goals of Chinese economy, namely, to ensure an adequate level of food, clothing and shelter and services for its growing population and to develop a modern industrial base, still remain unattained. 111/ The awareness that an expansion and modernization of its military sector may be competing for the inputs required for agricultural and industrial modernization is reflected in the recent Chinese pronouncements including those on budgetary cuts. 112/

### Inflation

198. The industrial market economies after having experienced high rates of economic growth in the 1950s and 1960s are currently facing the somewhat paradoxical phenomenon of stagflation, that is, simultaneous unemployment and inflation. Between the early 1960s and late 1970s, the inflation rate among these countries - as measured by the GNP deflator - increased from 2.5 per cent to 7.5 per cent. 113/ During the 1970s and the beginning of the 1980s, most of them also faced relatively high and growing rates of unemployment by historical standards. Between 1975 and 1979, for example, the total number of unemployed among the OECD countries rose from 15 million to 16 3/4 million, which was more than double the average of the period 1962-1972 which was about 7 1/2 million. 114/

---

110/ See Klaus Engelhardt et al., Effects of the Arms Race and Disarmament on the Labour Situation in Countries of Different Social Systems (report prepared for the Group).

111/ Michael D. Eiland, "Military Modernization and China's Economy", Asian Survey, vol. XVIII (1977), p. 1147.

112/ Gerald Segal, "China's Nuclear Posture for the 1980s", Survival, IISS, London, Jan./Feb. 1981, p. 11.

113/ Report of the Group of High-Level Governmental Experts on the Effects of the World Inflationary Phenomenon on the Development Process (TD/B/704), p. 58.

114/ Geoffrey Renshaw, "Employment, Trade and North-South Cooperation: An Overview" (report prepared for the ILO symposium on employment, international trade and North-South co-operation, Geneva, May 1980), p. 30.

199. The inflationary pressures on the developing countries are more severe: the average rise in the non-oil-producing developing countries in both 1979 and 1980 was reported to be 20 to 30 per cent as against 9 to 12 per cent for the industrialized countries. This can be attributed partly to the various well-known supply rigidities typical of the developing economies, including a lower degree of diversification corresponding to the limited flexibility of their production structures and the fact that the bulk of their exports tend to concentrate on a limited number of products, usually primary commodities subject to wide and abrupt price fluctuations. <sup>115/</sup> But a significant aspect of the inflationary pressures on these countries is also related to the worsening balance-of-payments problems stemming from their economic interaction with industrial countries suffering from high rates of inflation. The short-term debts of developing countries have piled up to \$50 billion and it is estimated that, by 1980, anything between \$1 to \$2 out of every \$4 borrowed abroad by them was going in servicing their debts.

200. The inflationary bias of economies supporting large military sectors can be explained both at a theoretical and empirical level. Theoretically, all causes of inflation such as demand-pull, cost-push and money-creation can be used to make clear that military expenditures can have an inflationary impact on every economy. On the demand side, periods of international tension accompanied by declared and undeclared military conflicts involving higher military expenditure generate inflationary pressures. Even where demand as a whole does not outstrip the level of output, proponents of the demand-pull theory of inflation claim that the concentration of non-personnel military expenditures in selected areas of manufacturing can, in combination with civil demand, result in severe bottle-necks and sharp price rises which subsequently affect costs and prices further up the manufacturing chain. Expanded military production leading to increased demand for various inputs tends to create shortages, particularly in situations of inelastic supply, and exerts an upward pressure on general price level by pushing up the costs of production.

201. The idea of a cost-push inflation in the military sector is somewhat more difficult to understand and to explain than the demand-pull theory. In inflation theories, the cost-push has to be of an autonomous character, that means that it is independent of other factors. Cost-push inflation has different characteristics, such as wage-costs inflation, mark-up inflation (profit inflation) and imported inflation. With regard to the wage-costs inflation, it is of importance that the production of military goods takes place in highly advanced industries, like electronics and metallurgy, with the highest productivity trends relative to other sectors of the economy. In general, wage rates are correlated with labour productivity. The military related industries belong to the so-called wage leaders, industries which take the first steps in wage-bargaining processes. In modern market economies, a wage-push in this industry will lead to an upward pressure on wages in other sectors with lower productivity trends, for example, the service sector, and, as a consequence, stimulated inflation. It is not impossible when military industries have a monopoly position that they succeed in

---

<sup>115/</sup> TD/B/704, p. 58.

improving their profitability. If one of the major arms producing countries expands its military production this will lead to an upward shift of prices of commodities used as an input in this production process. This will mean that cost-push pressures would be aggravated for other uses of these commodities.

202. On the monetary side, historical experience shows that increases in military expenditures were frequently accompanied by inflationary pressures, because those increases led to growth of money supply without a corresponding growth in output. This explanation of inflation suggests that a budget deficit will tend to be inflationary if it adds to the growth of the money stock, which it will probably do unless it is financed by borrowing from the non-bank public. 116/

203. The foregoing analysis suggests that military expenditure can contribute to the general rate of inflation if it is not offset by reductions in spending elsewhere in the economy, which could mean a reduction in employment or civilian consumption. Different explanations of inflation suggest different mechanisms by which this excess of expenditure feeds through into prices. Switching expenditure from military to developmental purposes will not of itself necessarily reduce inflationary pressures of this kind unless it expands the supply of goods and services.

204. In many Western European economies, the pace of inflation in the military sector has often outrun the inflationary rate in the economy as a whole. 117/ Many Western European economies have tried to mitigate the rising cost of sophisticated weaponry by reducing their inventories. As a follow-up on the 600 F-104 Starfighters, the Air Force of the Federal Republic of Germany will receive only 320 MRCA fighters; the inventories of other Western European air forces are being similarly trimmed. The numbers of modern ships and tanks in their inventories are also smaller than in those of their predecessors. But inflation in the military

---

116/ United States Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers, Washington, D.C., 1980, p. 33. See also The Defense Monitor, Center for Defense Information, Washington, D.C., Jan. 1974, vol. III, No. 3, and Lutz Köllner, Financial Disarmament, Developing Aid and the Stability of the World Monetary System (report prepared for the Group).

117/ In Britain, the price index for the aircraft industry rose by 38.9 per cent over the period 1963-1969, almost double the increase recorded for all capital goods (20.1 per cent). Between 1966 and 1972, the military price index in the Federal Republic of Germany rose from 100 to 135, while a corresponding increase in the consumer price during the same period was from 100 to 122.3. In Sweden, the price index in the military sector increased from 100 to 134.9 between 1963 and 1969, while consumer prices rose from 100 to 126. In 1971, the military outlays in the French five-year plan were reported to have been revised because inflation in military procurement raced faster than the 5 per cent for the general price index. In Denmark, military outlays were trimmed because of an erosion in the purchasing power of the budget for the armed forces, since their cost grew more rapidly than the general cost index (Ulrich Albrecht, "Armaments and Inflation", Instant Research on Peace and Violence (Tampere Peace Research Institute), No. 3, 1974, pp. 157-167).

sector has continued partly because reductions in quantity can result in the loss of economies of scale and a rise in unit cost. A lowering of the average unit cost by 20 per cent in the aircraft manufacturing sector, for example, may involve a doubling of the production line in the manufacturing country which may or may not have an adequate domestic market to absorb it. 118/

205. A growing tendency to seek export outlets to avail themselves of economies of scale to meet the rising costs of producing sophisticated weaponry is partially reflected in the increasing share of arms exports in the total exports of the major weapon producers. To the extent that the drive for seeking export outlets is pushed by the attempts to meet the rising costs of weapons production, the impact of inflation in the military sector of major military spenders extends far beyond its origins. Since most weapon importers belong to conflict-ridden regions, any additions to the nature and volume of weapons imported by one of the parties involved in an adversary relationship almost inevitably pushes up the imports by the other. A reciprocal compulsion to stay ahead in the arms race at regional level creates an adverse strategic environment affecting the resource allocation priorities of the developing countries whose share in the world-wide arms trade has been constantly on the rise.

206. Some commentators believe that the possibilities of controlling inflationary pressures emanating from the military sector run up against the substantial influence and established habits of what some reports submitted to this Group describe as, a relatively small number of "managers of defence industry" in major arms production centres of the world. 119/ The national base of this complex is generally confined to four major industries, namely, aircraft, electronics and communication, shipbuilding and repairing, and ammunition. But their activities involve numerous intermediate suppliers of raw materials besides a large number of trained people employed in the military sector. Their international operations include an increasing number of licensees, subsidiaries and co-producers all over the world. The functioning of this military-industrial complex has not been significantly challenged by considerations like cost minimization.

207. Since both complex technology and security concerns bar outsiders from conducting an expert scrutiny, the manufacturers and designers of exotic weaponry have a vast opportunity to push up the costs creating inflationary pressures because, generally, they see no adverse effects like closure of business if the actual costs of production outrun the original estimates. The crucial factor of financial solvency, critical for the survival of civilian undertakings, does not seem to threaten the military industry which, as Kenneth Boulding described it, operates in conditions of a grant economy in which allocations of resources and

---

118/ Two Way Street: U.S.A. - Europe Arms Procurement: The Klepsch Report (London, Brassey's, 1979), p. 59.

119/ Seymore Melman, op. cit.; Mary Kaldor, op. cit.; Marek Thee, The Establishment of an International Disarmament Fund for Development (reports prepared for the Group).

income are determined by one-way transfer as against exchange or two-way transfer characteristics of a market economy. The large government subsidies given to private contractors like Lockheed, Rolls Royce and Chrysler to maintain their industrial base and restore their financial solvency show that, even in market economies, the defence industry is spared the self-correcting mechanisms of financial solvency and an important military industrial firm rarely goes bankrupt nor does it always suffer a loss of business when its products do not conform to the specifications envisaged. 120/

208. The previous paragraphs contain an explanation of the possibilities of the inflationary impacts of military expenditures in the market economies. This explanation does not fit the centrally planned economies because they have a completely different socio-economic system, in which planning takes over the role of the market mechanism. Moreover, the general rise in prices is much lower than in the market economies and the developing countries. Also international comparisons in general price levels are of doubtful validity because of the different function of prices in different economic systems. Another important difference is that, if there are tendencies of a rising general level of prices in some centrally planned economies and, in fact, there were in the 1970s and the early 1980s, these will have less impact on other countries, because the participation in world trade is much lower than is the case with the market economies.

209. If in the centrally planned economies the military expenditures expand, this will mean that the capacity to produce other products will diminish. So the consequence is that, with a given demand for that product, the military expansion will create deficits of civilian products. In market economies this leads to price rises but in the centrally planned economies a rationing of the demand will be an inevitable result. Rising production costs of sophisticated weapon systems will have essentially the same effects as in other countries.

210. Although the CMEA countries are not very dependent on the import of commodities that are used as inputs for military production, there is, nevertheless, some imported inflation that may be a consequence of military expenditures in other countries.

### Employment

211. Employment effects of the world-wide military sector provide a telling illustration of the opportunity costs of the arms race. Maintaining a level of

---

120/ Reports of the performance of 13 major aircraft and missile programmes since 1955 - with a total cost of \$40 billion - showed that only 4 of these, costing \$5 billion, performed at as much as 75 per cent of design specifications. The production of the XMI tank with an estimated unit cost 30 times higher than that of the average Second World War tank is proceeding despite its below-specification performance: an average of 145 miles between failures of its major components and two hours of maintenance for every hour of operation (see Ruth Leger Sivard, op. cit.).

demand which supports an appropriate number of employment opportunities is generally accepted as an important goal of economic policy because, in the long run, the growth rate per head is determined primarily by the trend rate of increase in productivity, which undergoes substantial short-term fluctuations with increases and decreases in the levels of unemployment. Apprehensions about reductions in military spending resulting in a loss of employment opportunities figure often in assessing the effects of disarmament measures because, in addition to the direct employment of soldiers and civilians, the military sector is associated with a job-multiplier effect throughout the economy by a diffusion of its demand on defence-related industries. To meet these apprehensions, it is worthwhile to consider that the nearly 50 million people currently employed in defence-related jobs all over the world involve a global military spending that will soon exceed the staggering sum of \$500 billion a year, and there is no historical evidence to suggest that non-military spending of similar magnitude would not have created employment opportunities on a similar or larger scale.

212. Demonstrating the job-differentials created by comparative outlays on military and non-military sectors, a report prepared for the Group suggests that an average of two working places could be created in the civil branches of national economy at the expense of one in the military sector. The actual number of jobs created in the short time will, of course, depend on the specific branch of the military sector affected. 121/ The wages in the military R and D branch, for example, often tend to be six to eight times more than those generally paid in many research undertakings for civilian purposes. Decreasing the number of armed personnel or dismantling a major weapon system, on the other hand, may appear to create more job displacement owing to its chain effect on the teeth-to-tail ratio in military manpower including those absorbed in the designing, manufacturing and actual operation of the weapon system. But in the long run, the job opportunities lost by gradual disarmament measures are likely to be more than compensated by those created through non-military activities, and the employment effects of curtailing military expenditures will be equally beneficial to economies currently confronting either labour shortages or unemployment.

213. Several studies about the post-war economic reconstruction experience in the Soviet Union and Eastern Europe have confirmed that the reconversion of war-related military efforts into civilian sectors have in most cases surpassed the employment levels in the pre-war period. 122/ In the Soviet Union, for example, the industrial

---

121/ See Klaus Engelhardt, op. cit.

122/ See Institute for United States and Canadian Affairs, USSR Academy of Sciences, Urgent Political, Social and Economic Problems of the Present Stage of the Development of Mankind and Practical Ways of Diverting to Development Needs the Resources Now Absorbed by the Arms Race; Institute of World Economics and International Relations of the USSR Academy of Sciences, Economic and Social Effects of a Continuing Arms Race and of the Implementation of Disarmament Measures; Polish Institute of International Affairs, Arms Race and Global Problems of International Economic Relations (reports prepared for the Group).

wer in 1950 had increased by 3 million as compared to 1940: over the same  
d, employment in engineering increased by 250,000, in construction by  
,000, transport by 657,000, communication by 64,000. The total number of  
e employed in Soviet offices and factories in 1950 was 7.7 million more than  
40. 123/ Retrospective analyses of the post-war Soviet economy generally look  
with approval on the period 1946-1950 when a decrease in defence expenditure  
.6 per cent released 42.7 per cent additional funds for economic  
ilitation and development and another 27.6 per cent for social rehabilitation  
res. During 1946, the output of consumer goods increased by 8 per cent,  
stuffs by 12 per cent, and domestic goods 3.3 times. 124/

For the economies confronting unemployment, some pioneer investigations  
ed out mostly in the United States suggest that as a creator of jobs,  
ary expenditure may be among the least efficient type of spending. A study  
e forgone employment opportunities accompanying accelerated military spending  
oted that as many as 26 manufacturing industries in the United States  
red a job loss of 5,000 or more each owing to their growing non-competitiveness  
g the period 1964-1972, which coincided with increasing United States  
vement in the Viet Nam War. 125/ Another analysis of the years 1968-1972  
ates that the net annual job loss nation-wide, when the United States military  
t averaged about \$80 billion, was about 840,000 jobs: the net job gain in a  
tates being accompanied by net job losses in many others, including some of  
ost populous states. 126/ Contrasting the job opportunities associated with  
rogramme to develop the B-1 strategic bomber and a programme of tax reduction  
blic housing of equivalent magnitude, a study by the Chase Econometrics  
iates has concluded that, over a 10-year period, the B-1 programme would  
ate lesser employment primarily because of its heavy reliance on the  
'acturing sector, whose employment requirements are relatively low. 127/  
ar results are yielded by another study which contrasts the net output and

---

123/ Alexander Krusky and Mikhail Khlusov, "Post-War Economic Reconstruction  
the USSR" in Socio-Economic Problems of Disarmament by the Soviet Peace  
Committee, International Institute for Peace, Vienna, pp. 21-29.

124/ "Domestic goods include watches, bicycles, household goods, sewing  
machines, cameras, record players, radio sets, etc." (ibid., p. 31).

125/ Seymore Melman, op. cit., pp. 362-362.

126/ See Marion Anderson, The Empty Pork Barrel: Unemployment and the  
Budget (Lansing, PIRGRIM, April 1975).

127/ Chase Econometrics Associates, Economic Impact of the B-1 Program On  
the U.S. Economy and Comparative Case Studies (Cynnyd, Pennsylvania, 1975).



employment effects of comparable increases in the military budget on one hand and on the other, public expenditure on programmes like health, education, public assistance and environmental protection. 128/

215. The job-creating differential between spending \$1 billion on the military sector and the same amount on public service employment has been estimated to be roughly about 51,000 jobs in a major industrialized country like the United States. This can be attributed partly to the fact that, in the societies with a sophisticated military sector, non-personnel military expenditure is generally concentrated in the capital and technology-intensive fields of industry which tend to become labour-intensive only at the final assembly stage. For the less developed economies facing severe unemployment problems, the job-loss effects of higher military spending may be more far-reaching in the long run because the sustained emphasis on technological sophistication in the military sector usually raises the qualifications required of its personnel, with the result that its demand for labour becomes increasingly selective and may largely bypass the general worker on the so-called hardcore unemployed.

#### The arms race and the developing countries

216. The arms race puts unequal relative burdens on countries at different levels of per capita national income, to the detriment of the developing countries. Certain common characteristics make a large number of developing countries particularly vulnerable to the negative impact of military spending of external origin although their developmental prospects are also affected by their own military outlays. There are great differences among the situations of different developing countries, and, on the whole, all of them suffer highly negative direct and indirect economic effects from the arms race in general. Most of them gain, on balance, little or no net positive spin-offs. The developing countries' urgent need for steady inflows of external inputs, whether these be of aid, trade and capital or of technological know-how, ties their economic prospects closely to the global performance on achieving higher growth rates, controlling inflation and reducing employment, all these problems - as we have described earlier - being generally aggravated by higher military outlays among the industrialized countries.

---

128/ Employing a large input-output model of the United States economy in 1975 and assuming full employment to be the goal of fiscal policy, this study concludes that over a five-year period relative to the baseline budget of 1975, a 30 per cent decrease in the military budget would yield higher net output and employment if compensated by a comparable increase in outlays on the other sectors while an increase in the military budget of similar magnitude would produce the opposite effect, (Roger H. Bezdek, "The 1980 Economic Impact - Regional and Occupational - of Compensated Shifts in Defense Spending", Journal of Regional Science, Vol. 15, No. 2, 1975, pp. 183-198).

217. The World Bank Report of 1978, for example, had put forward some projections about the economic growth of the developing countries through 1985 on the basis of what was then viewed as a likely evolution of the international environment together with the assumptions about the performance of these countries themselves. Within a year, these projections were revised downwards to reflect the slower growth in the industrialized countries and the accompanying decline in world trade and external concessional assistance besides the restrictive patterns of commercial lending for the developing countries. The projected annual growth of the GDP of the developing countries for 1975-1985 was consequently reduced from 5.7 per cent to 5.2 per cent, primarily because the global economic recovery from the recession of 1974-1975 had been slower than anticipated. Slow and erratic growth in the industrialized countries, combined with other disruptive influences like inflation and exchange rate instability, also reduced the volume of growth of world trade from about 9 per cent a year between 1965 and 1973 to just over 4 per cent a year between 1973 and 1977; the growth of developing countries' exports also declined from 6.4 per cent to 3.6 per cent a year during the same period. The fuller implications of a decline in the industrialized world's capacity to absorb the imports from the developing countries can be grasped when it is recounted that, by 1976, they were purchasing two thirds of all the merchandise exports from the developing countries. 129/

218. For many developing countries in the early stages of their national independence, the concern for survival as independent nation-States within the territorial boundaries inherited at the time of emergence from a colonial status constitutes a major consideration in their national military outlays. The challenge of nation-building, which involves the function of providing socio-economic content to political freedom, has been accentuated for most of the newly-independent countries by an adverse strategic environment. The problems of nation-building are exacerbated by perceived threats emanating from the external environment, creating an overriding preoccupation with national security which, for all societies, irrespective of their level of development, constitutes the strongest single stimulus for military spending.

219. General calculations about opportunity costs and burden measurement of military spending by the developing countries run the risk of using generally inadequate and, sometimes, non-comparable data. Strong assumptions on their military outlays are generally based upon weak data. An important respect in which the reports commissioned by the Group go farther than many already available on the subject is the emphasis placed on the individual character of the experience of different developing countries in calculating the opportunity costs of military spending and identifying any causal linkages or definitive relationships between their military expenditures on the one hand and socio-economic problems on the other. The major problem areas identified in these reports as being in direct or indirect relationship with the military sector in the poorer countries are described below:

---

129/ See World Bank, World Development Report 1980 (Washington, D.C., 1980).

(a) Increases in military spending as a share of the GDP are associated with reductions in the rate of economic growth. A sample of 69 countries, in the period 1950-1970, shows that increased military spending tends to be related with lower investment and a greater tax burden. 130/ Similar results are yielded by another study of 70 developing countries, which concludes that any positive result in spin-off or modernization is either marginal or its narrow economic utility is tempered by its social and political implications. 131/

(b) The negative effect of military spending on the formation of fixed capital, consumption in real terms and inflationary trends may not be materially different for the developed and the less developed countries. A comparative study of one developed and one developing country concludes that any short-term increases in total consumption resulting from increases in the total wages paid after additions in military spending are followed by noticeable decreases in the long term because the growth rate has been appreciably reduced. 132/

(c) For an arms-importing developing country, the price paid for the equipment represents only an initial cost entailing substantial economic and political liabilities which go far beyond its subsequent operation and maintenance. A sample of 10 arms-importing developing countries portrays arms trade as of little or no productive economic value to the recipient country. 133/ Similar results are yielded by another sample survey of 37 developing countries, which concludes that the supplier-consumer relationship between an arms-exporting industrialized country and an arms-importing developing country works to the benefit of the former. 134/ The purely economic costs of weapons imports are made heavier by the political burden of absorbing a large number of technical personnel from the supplier country to handle the imported equipment, with the explicit political inhibition that the recipient country could not use it unless its military and political objectives were at least endorsed, if not shared, by the supplier country. 135/

---

130/ Lance Taylor et al., op. cit.

131/ Bruce M. Russett and David J. Sylvan, The Effects of Arms Transfers on Developing Countries (report prepared for the Group).

132/ Jacques Fontanel, op. cit.

133/ Jose A. Encinas del Pando, op. cit.

134/ Graciela Chichilnisky et al., The Role of Armament Flows in the International Market and in Development Strategies in a North-South Context (report prepared for the Group).

135/ Ali E. Hillal Dessouki, The Effects of Arms Race and Defense Expenditures on Development (report prepared for the Group).

(d) A high degree of vulnerability to political and cultural penetration accompanying arms purchases is discerned in a study of data covering 70 developing countries during the period 1960-1975. 136/ Such penetration is characterized by the emergence of export enclaves, patterns of uneven development, divergent returns to labour in different sectors of the economy and marginalization of substantial segments of the labour force creating social tension and political unrest. The study hypothesizes that an increase in marginalization of the labour force manifests itself both in a decline or stagnation of living standards and an increase in the number of the unemployed.

(e) Attributing a culture to the military sector which diffuses values of militarization, a case study of three developing countries concludes that not many newly independent countries have succeeded in evolving an indigenous military sector. 137/ The traditions, training, linkages and equipment supply-lines of developing countries' military establishments can frequently lead to their alienation from their own societies, to political interventionism and to excessive, non-productive demands being placed on national economies. Significantly, even among developing countries which have set up their own arms-producing sectors, dependence on expensive arms import has remained, inter alia, because of the military's constant pressure to keep abreast of the most sophisticated innovations possible. This conclusion is borne out by the fact that the setting-up of an indigenous arms-producing sector has not necessarily reduced the need for importing arms by some of the weapon-manufacturing developing countries. The list of the 15 arms producers, among the developing countries also contains nine of the 20 arms importers. 138/

(f) For a majority of developing countries, ambitious arms-production programmes are likely to overburden their industrial and manpower base because, by its very nature, manufacture of weapons is not possible in an enclave-type approach. Identifying six key industries as of vital relevance for arms production, namely, iron and steel, electronics, foundry, metallurgy, transportation equipment, and machine tools, a study of the arms production potential of 32 developing countries concludes that only 15 of them have the requisite base to move beyond the stage of assembling parts and simple manufacture; as many as five have not undertaken to produce at the level sustained by their industrial base whereas at least four are likely to experience technical and economic difficulties because their production programmes go far beyond their industrial base. 139/

(g) The almost inevitable dependence on imported technology may largely negate the effects of self-reliance advocated by many developing countries as the critical determinant for domestic manufacture of arms. If the policy of

---

136/ Russett and Sylvan, op. cit.

137/ Marga Institute, Armament Culture and the Diffusion of the Values of Militarization (report prepared for the Group).

138/ Herbert Wulf et al., Transnational Transfer of Arms Production Technology, op. cit.

139/ Ibid., pp. 42-45.

self-reliance forms a part of a strategy to challenge centre-periphery relations than one of its main objects has to be a breaking of the existing patterns of technological dependence. <sup>140/</sup> But military technology, directly or indirectly obtained, has rather limited potentials for innovation. It tends to adopt, rather than adapt itself to, its climate of operation. Innovative capacity is the hardest thing in the world to transfer. <sup>141/</sup> Technology can be transferred because the very definition of technology implies transferability in some degree depending on the receptivity of a different culture; but innovative capacity is more culture dependent. Even in the developed societies, many innovations fail because in the end they do not quite "fit". This problem is compounded when innovations in a society at one cultural and material level are attempted for duplication for the benefit of another society at quite a different level. Even from a purely national security approach, dependence on foreign technology components and critical spares may cause new problems: in the case of an actual conflict their continued supply may not be guaranteed; the co-operation of supportive foreign personnel may not be ensured; the technology may not be up-to-date.

(h) Almost all the studies identifying major problem areas mentioned above provide strong evidence of a triangular relationship between disarmament, security and development in the military spending of the developing countries. With few exceptions, all of them seem to incur military spending because they feel economically and politically insecure, a hardly surprising phenomenon considering that most of the major conflicts since the Second World War have been fought either in the territories of the developing countries or in their vicinity. A study about 36 developing countries with a growth rate ranging between 0.1 per cent and 9.9 per cent and military spending as a part of their national budget varying between 5 to 20 per cent, concludes that all of them have been actively involved in one or more of at least three types of security crises: (i) adversary relationship with neighbors; (ii) hostile groups threatening organized insurgency and secession; (iii) adverse strategic environment reflecting the conflicting major power interests extraneous to the immediate national security concerns of the developing countries themselves. <sup>142/</sup> At least 20 out of the 36 countries in the sample made hostile pairs; as many as 30 had faced secessionist and insurgency situations; almost two thirds of those experiencing one or more of the above-mentioned situations showed ascertainable evidence of the original conflict being intensified or extended owing to external involvement.

---

<sup>140/</sup> Raimo Väyrynen, Industrialization, Economic Development and the World Military Order (report submitted to the Group), pp. 474-479.

<sup>141/</sup> Harvey Brooks, "Technology, Evolution and Purpose", Daedalus, Winter 1980, pp. 79-80.

<sup>142/</sup> Swadesh Rana et. al., op. cit.

220. An awareness of the tension-generating potential of their socio-economic inadequacies, however, is unlikely to produce a willingness for national resource reallocations from the military sector into the developmental field because most developing countries tend to be resentful of all attempts at singling them out in the disarmament-development relationship. Attributing their under-development to their military spending seems to ignore the fact that quite a few among them continue to experience low or negligible rates of economic growth simultaneous with extremely low or negligible allocations to their military sector. Quite a few of the better economic performers among them also make sizeable allocations to the military sector although in these cases their social development performance may be affected. What is even more important, to over-emphasize the developing countries' responsibility in this sphere would be to lose all sense of proportion. While resources redirected from their own military spending might be expected to be more directly available for development purposes, it must be recalled that they account for a total of 16 per cent of world military spending, a major portion of which is concentrated in only one region. Thus the developed countries are responsible for the lion's share of the more than \$500 billion annually now poured into military expenditures, precisely the kinds of sum required to make a substantial impact on the global problems of under-development.

221. ~~The~~ experience of the past two decades has already shown that of all the **factors** likely to produce restraint in military spending by the major spenders **the least** persuasive, so far, has been the need for greater developmental aid. 143/ **Such** a situation will persist as long as the developing countries are projected **as** the primary beneficiaries of the disarmament-development relationship. If, on the other hand, development - including the need for sustained and accelerated economic growth of the developed world - is viewed as a global requirement, its linkage with disarmament becomes a matter of universal economic concern, particularly when it is realized that military activities impede not only economic growth but also may help to deny the major military spenders the capability to respond adequately to the emerging non-military threats to the national well-being as in the field of ecology and energy or to adjust to a world of dynamic economic competition and interdependence in ways which will maintain and enhance the welfare of their own peoples.

Global developmental priorities and the reallocation of resources released through disarmament measures

222. The estimated resource requirements of emerging developmental priorities necessitate a close scrutiny of future military outlays in all societies irrespective of their current levels of development and particularly those envisaging steadily high or increasing levels of military spending. Those concerned about the current national priorities of resource allocations in the market economies, for example, believe that during the early 1980s, the United States alone would need to increase allocations on public health by

---

143/ Issues at the Summit, Hearings before the Joint Economic Committee of the United States Congress, Washington, D.C., 1978, pp. 135-153 and pp. 185-189.

32.5 per cent, housing construction by 41 per cent, social security by 58.5 per cent and environmental protection by 154 per cent. 144/ The OECD estimates show that if measures to protect the environment remain at the level of the previous decade, the air pollution in Western Europe will go up by 70 to 80 per cent by the early 1980s. The United States National Planning Association has calculated that up to 45.7 billion dollars may be needed for a programme of environmental protection against nuclear and industrial pollution in the United States alone. The world has yet to find a satisfactorily reliable method of disposing of nuclear waste. And the energy crunch in itself will almost inevitably involve a serious reassessment of the continuing plans for devoting seven to eight times more money on military R and D as compared to the outlays on research for conservation and new sources of energy.

223. The need for greater investment in the fields of housing, construction, environmental protection and energy is shared by the centrally planned economies. 145/ Estimates released by the ECOSOC suggest that these economies will have to invest a relatively greater portion of their national incomes in the energy field in the coming decade than they have in the past. Between 1979 and 1990 these investments will need to rise from 3.2 per cent of net material product (NMP) (about 4.0 per cent of NMP including pipeline transport and distribution) to 3.7 to 3.8 per cent (about 4.4 to 4.5 per cent including transport and distribution). 146/ Energy is not the only field requiring greater investment in the centrally planned economies. Several studies about the economic prospects of these countries, including those submitted to the Group, repeatedly emphasize that one of the most profound obstacles to their full mobilization of all internal factors for development is the enormous diversion of resources currently claimed by the military outlays. The release of human resources from the military sector can relieve their labour shortages and the reallocation of material resources can speed up their process of industrialization with greater prospects for maximization of consumer satisfaction in their own societies besides enabling them to compete more effectively in international trade wherein their current share is not commensurate with their share in the global industrial output. 147/

144/ L. Lecht, Dollars for National Goals: Looking Ahead to the 1980s (New York 1974), pp. 25-30.

145/ See, for example, Nyitrai Ferenéné in The Hungarian Economy and Society in the Seventies (Budapest, 1981).

146/ "Energy Investment Prospects to 1990 in the ECE region", (EC.AD (XVIII)/R.5), p. 6.

147/ Based upon the experience of the CMEA countries, namely Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania and the USSR, a study published by the UNITAR says: "If we compare their share in world exports to their share in the world gross product (WGP), we find that it is in the proportion of 1:2. This means that, taken collectively (substantial divergences among CMEA countries do exist), their share in world exports is twice as low as their share in world production. In regard to industrial output, the proportion of exports is 1:3. In 1976 the share of seven CMEA countries in world exports was 8.8 per cent whereas their share in the WGP was 17-18 per cent, and their share in industrial production nearly 26-27 per cent" (Ervin Laszlo and Joel Kurtzman, Eastern Europe and the New International Economic Order, UNITAR, 1980).

224. For the developing countries, on the whole, the short-term consequences of reductions in their military outlays may be less clear-cut. For some of them, especially those with unutilized or under-utilized resources, there may be other structural constraints on their developmental performance, which means that military spending may not always be in competition with other kinds of spending. Also in some cases, the apparent spin-off effects of military efforts may sometimes appear considerable, as in the provision of trained manpower, for example. But even if this were the case, and there were no extra total output involved in a reallocation from the military sector, most of them could utilize the released resources for a more broad-based satisfaction of basic human needs. For those with substantial arms imports and inadequate inputs of capital and technology in the vital sectors of their economies, a relaxation of the balance-of-payment constraint will contribute significantly towards their economic growth prospects.

225. Even substantial reductions in the military outlays of the developing countries, however, will be only one factor in lifting the resource constraint on their developmental performance especially for those with negligible military spending anyway. The preponderant share of total investment will continue to have to come from domestic sources, but the need for catalytic resource transfers from the developed world would remain and the rechannelling of disarmament-released resources in industrialized countries could facilitate this transfer in a variety of ways, including trade stimulation, increasing investment, technology transfers, lending flows, and official development assistance.

226. The inadequacy of the resources internally available to the developing countries has been emphasized repeatedly in all the major international forums concerned with the new international economic order. While recognizing that the development of poorer countries is inconceivable without the mobilization of internal resources, the OECD studies, for example, reiterate that an increasing flow of external assistance will nonetheless be necessary throughout the next half century. The OECD estimates of the magnitude of external aid needed coincide with those of the World Bank, which calculates that an annual 5 per cent rate of increase in this flow in real terms is an indispensable minimum for acceptable growth of the developing countries.

227. As an illustration of the contribution which can be made by disarmament measures, one of the studies submitted to the Group projects the global economic prospects under three types of hypothetical scenarios, namely, a continued arms race, an accelerated arms race, and modest disarmament measures involving the release of some resources for reallocation to the developing countries. Utilizing the United Nations input-output model of world economy developed earlier and treating the year 1970 as the baseline, the study divides the world into 15 regions to assess the impact of the alternative scenarios of the global economy through the year 2000. 148/

---

148/ See Wassily Leontief, Worldwide Economic Implications of a Limitation on Military Spending (report prepared for the Group). See also Wassily Leontief and Faye Duchin, Worldwide Implications of Hypothetical Changes in Military Spending (prepared for the United States Arms Control and Armament Agency, Washington, D.C., August 1980).



(a) The baseline scenario assumes that the share of military outlays in GNPs and the geographical distribution of military industry would be roughly the same throughout the period 1970-2000.

(b) The accelerated arms race scenario envisages a hypothetical doubling of the share of GNPs for military outlays by the year 2000 in comparison with the baseline.

(c) In the disarmament scenario, the computed parity levels of the military spending of the United States and the Soviet Union as projected under the baseline scenario are assumed to fall by one third by 1990 and the new figure by a further one third by 2000. For all other regions, the projections assume that, as a share of GNP, the share of military spending declines to 75 per cent of the baseline figure for the year 1970 by 1990, and to 60 per cent of the baseline figure by the year 2000. The model also assumes that the relatively wealthy regions of the world - 8 out of 15 in the model - would transfer a fraction of their hypothetical savings under the disarmament scenario to the four poorest regions, namely, arid Africa, low-income Asia, medium-income Latin America and tropical Africa. Table IV.1 projects the gross dimensions of the global military efforts under the three alternative scenarios.

Table IV.1. Projected dimensions of the global military effort in 2000 assuming a continuing arms race (A); an accelerated arms race (B); and disarmament (C)

(Billions of 1970 US dollars)

	1970	2000		
		A	B	C
Military expenditure	214.6	646.0	1286.7	420.9
Military procurement	86.0	265.5	526.6	173.6
Arms trade	5.8	36.8	90.3	24.8

228. The model calculates that, relative to the baseline scenario, an acceleration in the arms race would adversely affect the global economic well-being in all but one of the regions described in the model. Besides having the negative impact on per capita consumption in various regions as shown in the table at the end of the chapter (table IV.3 (a)), it would also result in a decline of the world's stock of capital by nearly 12 per cent, a 4 per cent reduction in the value of non-military exports, and a decline of 4.5 per cent in industrial employment - some 11 million jobs - in the poorest regions of the world, namely, arid Africa, low-income Asia, medium-income Latin America and tropical Africa.

229. In contrast with the accelerated arms race, the disarmament scenario - relative to the baseline - yields higher per capita consumption for different regions, as

described in the table at the end of the chapter (table IV.3 (b)), and in addition brings about a higher world GNP (+ 3.7 per cent), a larger capital stock (+ 5.3 per cent) and a general increase in the agricultural output, including a 4.6 per cent increase in a given production, to mention only a few of the obvious economic gains.

230. Besides the global economic gains mentioned above the disarmament scenario also yields significant benefits for the poorest regions as described in table IV.2.

Table IV.2. Projected economic gains in the poorer developing countries under a disarmament scenario by 2000

	<u>Scenario</u>		
	Base	Disarmament	Percentage change
A. <u>Per capita</u> GDP (US dollars)			
Arid Africa	143.4	353.1	146.2
Low-income Asia	136.1	190.4	39.8
Latin America: resource-poor	418.2	488.1	16.7
Tropical Africa	244.9	381.5	55.8
B. Industrial employment (millions of man years)			
Arid Africa	20.6	48.4	134.9
Low-income Asia	134.1	177.6	32.4
Latin America: resource-poor	52.8	58.3	10.4
Tropical Africa	41.6	67.9	63.2
C. Capital stock (billions of US dollars)			
Arid Africa	57.3	135.8	136.9
Low-income Asia	364.4	501.3	37.5
Latin America: resource-poor	327.5	378.3	15.5
Tropical Africa	110.6	185.4	67.6

231. The model described above is highly aggregative, somewhat static and its detailed results are dependent upon a number of explicit and implicit assumptions. Some of these can be easily questioned as, for example, the maintenance of

parity levels between the military spending of the United States and the Soviet Union or, for that matter, the assumption that the developed countries will maintain full employment. Its main thrust lies in the basic projection that even modest disarmament released resources could make a significant contribution to the global economic prospects, including the developmental needs of the poorest regions in the world. Under a disarmament scenario, these needs can be met more easily than in the conditions of accelerated or continued arms race, which may restrict the margin of manoeuvrability available to the major military spenders in planning any major changes in the volume of aid transfers to the poorer regions. This conclusion by itself is of considerable significance when it is remembered that, in many cases, increases in military outlays by the industrialized countries have been accompanied by a decline in their aid transfers despite the repeated emphasis by most developmental experts that existing volumes of official developmental assistance are not adequate to meet the basic aid requirements for the poorer countries. As an illustration of the disarmament-released additional transfers which can considerably improve the present levels of official developmental assistance, chart IV.1 gives some alternative projections under the present levels and those that may be possible under disarmament conditions.

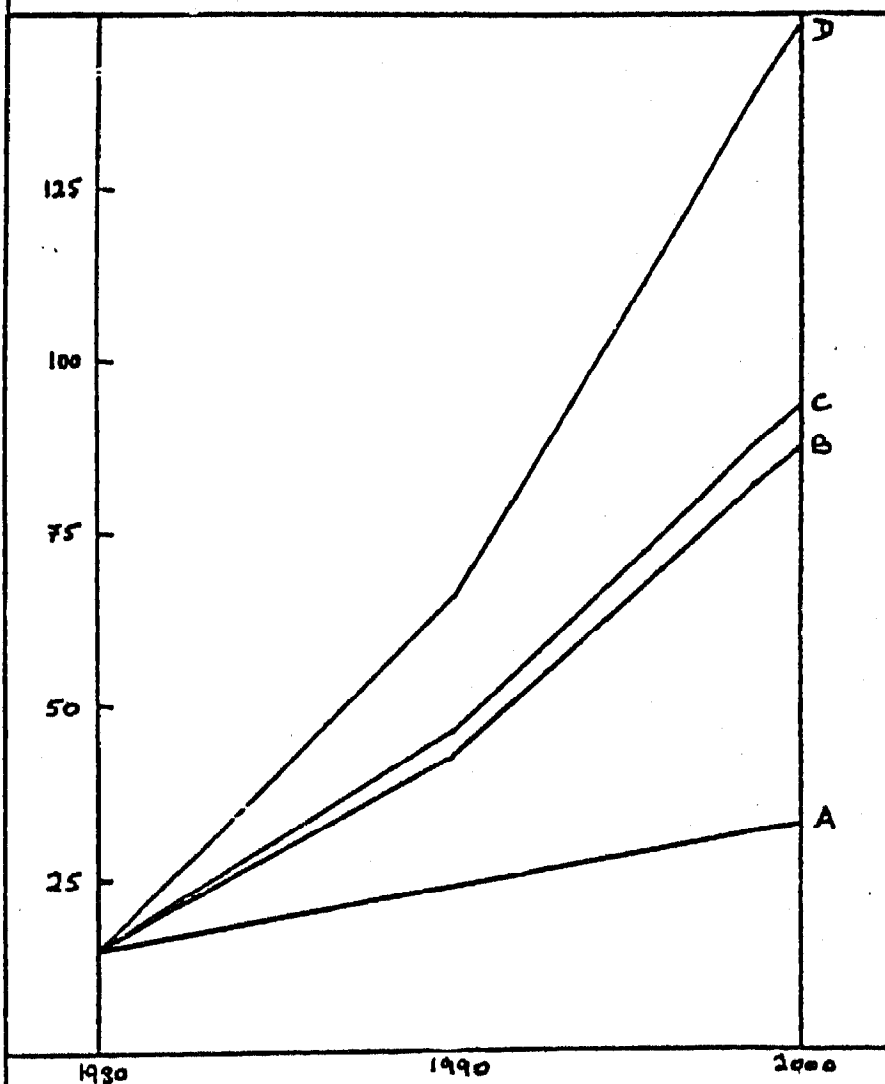
#### Catalytic effects of reallocation on the new international economic order and détente

232. No analysis of the totality of the socio-economic gains of disarmament measures can be completed without referring to its indirect catalytic effects, which may eventually produce a global politico-strategic climate more conducive to military restraint than the present situation where higher outlays on the military sector are often attributed to the continuing threats emanating from an adverse strategic environment. An outstanding feature of the prevailing international climate is the uncertainties characterizing the global exercise in rearranging the North-South relationship within the framework of a new international economic order and stabilizing the East-West relationship within the framework of détente. In both these respects, the catalytic effects of military restraint can considerably improve the results obtained so far because the politico-strategic considerations governing the arms race tend to interfere with the economic considerations demanding a co-operative management of global interdependence.

233. Reform of the international monetary system, rectification of trade imbalances, resolution of the existing balance-of-payment difficulties and an uninterrupted flow of capital, finance, and technology among the more developed and the less developed economies, constitute some of the basic prerequisites of a new international economic order. Disarmament measures can improve the prospects of international exchange in all these spheres because there are sufficient indications to suggest that the ongoing arms race has exacerbated the disruptive influences on the international monetary system, aggravated the balance-of-payment problems of the less developed economies and interrupted a

Chart IV.1. Alternative projections of official  
development assistance 1980-2000

(Billions of US dollars, 1970 prices)



- A. ODA assuming 0.35% of donor GNP 1980-2000.
- B. A plus 15% and 25% of disarmament savings in 1990 and 2000 respectively.
- C. ODA assuming 0.7% and 1.0% of donor GNP by 1990 and 2000 respectively.
- D. C plus disarmament savings as in B.

continuous flow of capital and technology transfers among the more developed and the less developed economies. 149/ This can be attributed in part to the depressing effect of large military outlays on the economic performance of major military spenders, but there have also been occasions when some of the most developed economies have deliberately withheld economic co-operation with their perceived adversaries or rivals in the arms race.

234. Successive crises on the international exchange markets and the international monetary system as a whole, imputable in part to the massive creation of international liquidity through the deficits of some reserve currency countries, have been significantly associated with galloping inflation and rapid increases in military expenditures. The growing international traffic in arms has also contributed to the balance-of-payment problems of the importing countries. This trend became more pronounced as considerations of meeting the increasing costs of production made many of the major weapon-producing countries re-examine earlier policies of using arms transfers primarily as instruments of promoting broader foreign policy goals of which economic profit motive was only one and not necessarily the major or the most important constituent. During the period 1967-1976, characterized by some major military crises in the Middle East and South Asia in addition to the world-wide economic repercussions of the energy crisis of the early 1970s, only 23 out of a total of 71 weapon-importing countries had a positive trade balance, with nine of them belonging to the oil-exporting region. The 48 countries showing negative trade balances included both the developed and developing countries and as many as 23 of them were both exporters and importers of weapons. 150/

235. The disruptive influence of the arms race has become a matter of particular concern in the field of international trade. The increasing preoccupation of the market economies with their immediate problems of stagflation is likely to affect their role as the largest participants in the aid and trade relations of the developing countries. In terms of their purchasing power, the market economies constitute the largest outlet for the manufacturing capacity of less developed countries, whose developmental prospects are materially affected by their export earnings which can facilitate the imports of capital goods for the modernization of their economies. Expanded economic interaction with the developing countries can also provide the market economies with a possible

---

149/ See Economic and Social Consequences of the Arms Race and Military Expenditures ... .

150/ See Polish Institute of International Affairs, Arms Race and International Economic Relations.

instrument for meeting the challenges of their own sluggish growth rates. 151/ But the full potentials of a mutually beneficial partnership of interests between the market economies and developing economies have not been fully explored so far partly because some market economies are resorting to protectionist measures in some sectors to tackle the problems of stagflation.

236. The raising of protectionist barriers will certainly aggravate the economic difficulties of the developing countries and may also prove counter-productive for the market economies. In the field of employment alone, a hypothetical \$1 million increase in both exports and imports from the developing countries can create more jobs than those that would be lost among the OECD countries. As illustrative investigation of this field suggests that 2,400,000 jobs in the OECD countries, in 1976, were attributable directly to exports to the developing countries, while 850,000 jobs in the OECD countries could be considered as "lost" or non-existent as a result of OECD imports from the developing countries. The balance-of-employment effects, therefore, from the levels of OECD exports and imports to and from the South was favourable to the extent of 1,550,000 jobs. 152/ Similar results are yielded by two of the studies commissioned by the Group. One of these concludes that an increase in the volume of trade between the Federal Republic of Germany and the developing countries, during the period 1972-1976, had directly and indirectly raised the gross output of the Federal Republic of Germany from over DM 53 billion to nearly DM 120 billion; during the same period the number of people directly or indirectly employed for exports to the developing countries reached over 1 million, representing 4.4 percent of the total labour force as compared to the 2.4 per cent similarly absorbed in 1972. 153/

---

151/ Hoping that the developing South could become an engine of growth for the developed but somewhat stagnant North, a participant in the Society of International Development meeting in Rome in 1978 said: "Keep lending them money so that they can spend on us, invest in food at their end so that the world food prices are kept reasonable stable; reduce trade barriers so that we can all buy the best at the cheapest; and develop their own national energy resources so that the demand for oil is not magnified even more. Add the impact of all this together and the third world will not only avoid major calamities that will reverberate into our system but will make a major contribution to the West's engine of growth without the concomitant of fast inflation". See also Arthur Lewis, "The Slowing Down of the Engine of Growth", American Economic Review, vol. 70, 1980, pp. 555-564.

152/ See Geoffrey Renshaw, op. cit.

153/ Rolf Krengel, Macro-Economic Effects of Disarmament Policies on Sectoral production and Employment in the Federal Republic of Germany, with Special Emphasis on Development Policy Issues (report prepared for the Group).

The other study draws a more strictly relevant conclusion about the comparable employment effects accompanying relative increases in military outlays and trade in non-military goods and services to suggest that in the event of a 10 per cent cut in world-wide military spending the job-loss effect for the Federal Republic of Germany would be only about 0.4 per cent of the labour force, a rather modest figure when compared to the potentials for employment represented by trade in non-military goods and services referred to earlier. 154/

237. In recent years, the developing countries have repeatedly stressed the need for expanded aid and trade with the centrally planned economies and for their greater involvement in international economic discussions. While admitting both the need and the desirability of larger aid for and trade with the developing countries, the centrally planned economies point out the limitations on their response in view of the global arms race. The CMEA countries also take part in economic co-operation with developing countries, although the possibility for its further rapid expansion depends on various factors, some of which are historical and outside their control. The CMEA countries, for example, envisage a doubling of the present share of the developing countries in their imports in the 1980s and a 15 per cent share of their exports during the same period. But they also emphasize that "it would hardly be possible to implement the plans for the 1980s in a world embarked upon an extremely costly and escalating arms race". 155/

238. In planning their economic relations with the developing countries, the centrally planned economies are affected by the economic situation and policies of the market economies because the two groups of developed countries tend to meet as competitors in the markets of the developing countries and also because the developing countries and some of the centrally planned economies have similar export patterns. 156/ Their need to co-ordinate their economic policies with both the market economies and the developing economies lies at the basis of their increasing interest in getting more actively involved in the new international economic order.

239. An intensification of economic interaction between the centrally planned and the market economies can be mutually beneficial for both. In the area of trade turnover alone, the centrally planned economies can achieve faster progress in realizing their aims of better consumer satisfaction and speedier economic growth through uninterrupted imports of crude oil, minerals, metals and grain in addition to chemical and food supplements, and the market economies can benefit directly through the increased employment opportunities created by expanded export outlets besides the indirect advantages to their taxpayers through increases in national revenues.

---

154/ See David Greenwood, West European Defense Efforts in the 1970s and Beyond (report prepared for the Group).

155/ See CMEA and the Development Process.

156/ Ibid.

240. The rate of East-West trade turnover, however, is closely related to the state of East-West détente. Politico-strategic considerations governing détente have historically affected East-West economic relations. During the peak of its progress, détente was accompanied by a sixfold increase in East-West trade turnover which surpassed the dynamics of the total world trade: periods of strain in détente have produced a list of some 2000 groups of items excluded from the East-West trade list on politico-strategic grounds. <sup>157/</sup> Since the second half of the 1970s, the dynamics of East-West trade have slowed down. This period has also witnessed a series of strenuous developments in East-West détente including an increased emphasis on higher military outlays during the last few years.

241. The emergence of détente had accompanied a considerable narrowing of the technological and military gap between the East and West but the political gap continues. The development of a more stable South capable of sustaining its independence through better economic performance is likely to reduce the areas of political conflicts among the East and West. Also of significance is the expansion of all forms of international economic co-operation, including trade relations. All this will put détente on a more stable basis than it has been during the last few years of its constant re-examination. Viewed in this context, any additional investment in the development of the developing countries may become an indirect contribution to détente. Greater flows of external assistance to the developing countries will further the prospects for development but relating this process to military restraint among the major military spenders is likely to create a new political climate which by itself may become a catalyst for military restraint. The amount of financial resources released for development through military restraint will be a major benefit for development, but the awareness that it is a conscious attempt at viewing development as an integral part of détente will be a major bonus for East-West relations.

---

<sup>157/</sup> See Polish Institute of International Affairs, Arms Race and Global Problems of International Economic Relations.



Table IV.3 (a). Effect on per capita consumption in 2000 of an accelerated arms race scenario relative to the baseline scenario of a continuing arms race

<u>Region</u>	<u>Percentage change</u>
Arid Africa	- 42.3
Asia, centrally planned economies	- 8.0
Asia, low-income	- 13.4
Asia, high-income	- 4.1
Latin America, resource-rich	- 6.3
Latin America, medium-income	- 5.1
North America	- 12.6
Oceania	- 2.8
Oil-producing developing countries	- 0.0
Soviet Union and Eastern Europe	- 19.3
Southern Africa	- 4.4
Tropical Africa	- 10.0
Western Europe, high-income	- 6.0
Western Europe, medium-income	- 11.7

Table IV.3 (b) Projected increases between 1970 and 2000 in per capita consumption under the baseline scenario and the additional gains in 2000 feasible with disarmament

<u>Region</u>	<u>Percentage</u>	
	<u>1970-2000 baseline scenario</u>	<u>Further gain in 2000 under disarmament</u>
Arid Africa	- 33.3	+ 166.7
Asia, centrally planned economies	+ 116.0	+ 2.9
Asia, low-income	+ 2.1	+ 47.6
Asia, high-income	+ 266.9	+ 1.1
Latin America, resource-rich	+ 244.0	+ 7.5
Latin America, medium-income	- 45.7	+ 21.3
North America	+ 67.3	+ 3.7
Oceania	+ 111.0	+ 0.7
Developing oil producers	+1 444.8	+ 0.0
Soviet Union and Eastern Europe	+ 200.9	+ 6.3
Southern Africa	+ 58.8	+ 1.4
Tropical Africa	+ 51.1	+ 65.8
Western Europe, high-income	+ 114.3	+ 1.2
Western Europe, medium-income	+ 15.6	+ 7.1

## CHAPTER V

### CONVERSION AND REDEPLOYMENT OF RESOURCES RELEASED FROM MILITARY PURPOSES THROUGH DISARMAMENT MEASURES TO ECONOMIC AND SOCIAL DEVELOPMENT PURPOSES

242. The terms conversion and redeployment describe the process of change whereby real human and material resources shift from the production of one set of goods and services to the production of another. The specific concern here is the shift of resources from the production of commodities and services for military purposes to goods and services that can contribute to economic and social development. More particularly, we are concerned with conversion and redeployment of the resources involved in the production of commodities used or consumed by the military and which have little or no civilian utility. A significant part of military demand is directed at goods and services that are essentially identical to those consumed in the civilian sector. In this case, the problem is the relatively minor one of ensuring that civilian demand fills the gap left by cutbacks in military spending. This is not the case with nuclear and chemical weapons, combat aircraft, missiles, warships, tanks and so on. The resources involved in producing these items are likely, in varying degrees, to be unsuited for the production of civilian goods, so that explicit consideration must be given to how their capabilities can be altered to permit the smoothest possible transition to the production of socially useful goods and services.

243. The groups involved in the development and production of modern weaponry and military equipment are conscious of their specialization and of the uncertainties they might encounter in the civilian arena. Disarmament measures are therefore viewed as a threat to both their means of livelihood and to established structures of power and influence. In the present economic and social settings, the existence of large groups dedicated to and uniquely specialized in meeting military requirements will inevitably translate into strong political and bureaucratic pressures to preserve the status quo. The political obstacles to disarmament are formidable enough without the added difficulty of opposition to it, direct or indirect, from groups acting in their perceived economic or bureaucratic interests. Simply stated, one major purpose of planning and preparing for conversion is to minimize opposition to disarmament measures emanating from these economic and bureaucratic considerations.

244. At one time it was thought that the issue of doing away with the military sector in modern industrial market economies would threaten the viability of the entire system. This hypothesis was usually based on the tendency in market economies towards under-consumption or for productive capacity to outrun effective demand, resulting in unemployment and excess capacity. This systemic tendency necessitated the injection of additional demand from outside the market system and, it was alleged, the capitalist system displayed a propensity to use arms production in this role. This view has been repudiated and it is now believed that whatever reputation arms expenditures had as a stimulant for market economies was quite undeserved. Moreover, in the industrialized countries, the focus of concern in economic policies has switched from a lack of demand to supply capacity limitation, whereas in the developing countries the concern continues to be inadequate supply

with which to satisfy major unmet needs. As the discussion in chapter IV has shown, the opportunity cost of the contemporary arms race is extremely high for all participants, irrespective of the type of economic and social system and of the level of development. The perceived requirements of national defence under contemporary conditions necessitates the investment of time, funds and manpower that, at best, will be of only modest benefit to other industrial sectors and that, over the long term, contribute significantly but indirectly to a variety of economic maladies. Thus, while this chapter is concerned specifically with the conversion of real resources from military to non-military uses, in a wider context, this issue can be seen as one of the more concrete dimensions of the conversion to a more balanced and realistic approach to national and international security, an approach that recognizes that military security has been overstressed to the detriment, in particular, of economic security.

245. Conversion and redeployment is not a phenomenon associated uniquely with disarmament. Any form of economic and social development represents a continuous process of conversion. Particularly in modern industrial economies, the factors of production must respond continuously to the development of new products and the phasing-out of old ones and to the introduction of new production techniques. <sup>158/</sup> Indeed, the pace of technological change and the extraordinary mobility of capital in recent decades has led most countries to undertake measures to facilitate necessary changes in the structure of industry and to adopt legislation to provide some protection for workers affected by such changes. The point here is to stress that modern industrial economies including, in particular, the economies with the largest military establishments, have a considerably inbuilt capacity to convert resources from one activity to another. The conversion from arms to production for civilian purposes will be, at the level of execution, merely one aspect of this process. Furthermore, as we shall argue below, any process of conversion and redeployment associated with disarmament measures if developed in the context of even more far-reaching structural adjustments and modifications of national economies and of the international economic system, could be productively integrated with these wider changes.

246. From the standpoint of placing the problems of conversion in perspective, a second important point to bear in mind would be that the process of disarmament is almost certain to be quite gradual. In other words, it is quite unrealistic to portray the conversion problem as involving, in a single step, the need to replace \$500 billion of demand or absorb tens of millions of persons into the civilian work-force. In practical terms, the scale of the conversion problem stemming from disarmament measures will be orders of magnitude smaller than this at any given point in the process. Indeed, it is far more likely that the rate of disarmament agreed upon will lag behind conversion capabilities or, to state the matter less

---

<sup>158/</sup> It is worth observing that this process is probably particularly rapid within the military industrial sector itself. In a similar vein, important insights into the conversion process might be gained from investigations into the experience of firms or plants that have switched from civil to military production.

pessimistically, there should be no difficulty in gearing the rate of disarmament to the rate at which the resources involved can move smoothly to alternative activities.

#### The historical experience

247. Most general investigations of the conversion issue take as their starting-point the extraordinary success of demobilization following the Second World War. In the United States between 1945 and 1948, some 10 million persons were released from the armed forces and the defence budget declined by nearly \$40 billion. Similarly, defence-related employment in industry fell from in excess of 12 million persons in 1945 to less than 1 million in 1946. <sup>159/</sup> In the United Kingdom, 7 million persons were demobilized within 16 months of the end of the war. In neither country, however, did unemployment in the immediate post-war years exceed 4 per cent. The experience in the Soviet Union was similarly positive. <sup>160/</sup>

248. It is true, of course, that the particular circumstances prevailing at the end of the war contributed enormously to the success of the conversion effort. In the Soviet Union and, to a lesser extent, the United Kingdom, the rebuilding of war-damaged towns and industries provided a major outlet for the production capacities released by demobilization. In the United States and also in the United Kingdom, a surge in consumer demand - produced by years of relative deprivation and accumulated savings - played a major role in sustaining aggregate demand. From the industrial standpoint, another important consideration is that for most plants and factories the problem was one of reconverting to the civilian products produced before the war. While these conditions undoubtedly facilitated post-war conversion, the fact remains that an enormous economic adjustment was accomplished far more smoothly than most experts had considered possible. Of particular importance in this regard is that the anticipation of major problems led to detailed planning of the measures needed to accomplish the transition from war to peace. This process began well before the end of the war and is considered by some to have contributed in a major way to the success of the conversion process. <sup>161/</sup> In the Soviet Union, the first post-war economic plan appeared within six months of the termination of hostilities. And in the United States, the Government was ready with an array of remedies including graduated demobilization, specific incentives for the mass production of consumer durables, low interest rates to encourage spending and generous adult education programmes.

---

<sup>159/</sup> United States Congress, House of Representatives, Committee on Armed Services, Overall National Security Programs and Related Budget Requirements, Washington, D.C., December 1975, p. 108.

<sup>160/</sup> Alexander Kursky and Mikhail Khlusov, "Post-war Economic Reconstruction in the USSR" in Socio-Economic Problems of Disarmament, International Institute for Peace, Vienna, 1979.

<sup>161/</sup> See Ulrich Albrecht "Researching Conversion: A Review of the State of the Art" in Experiences in Disarmament: On Conversion of Military Industry and Closing of Military Bases, Peter Wallensteen, ed., Uppsala University, Report No. 19, June 1978, p. 34.

249. As regards the over-all feasibility of converting resources from the production of military goods to civilian goods, the experience immediately following the Second World War is clearly very encouraging. Moreover, the manner in which it was accomplished merits a more detailed reassessment than has been made to date. It does not follow, however, that States with large armed forces and significant military industries can afford to adopt a sanguine attitude toward the conversion problems that arms control and disarmament measures will raise. The characteristics of the military sector have changed profoundly since 1945. Military technology, and therefore military industry, has diverged quite sharply from civilian technology and industry. The major military powers have significant human and material resources more or less uniquely specialized in fulfilling military requirements and which have no prior experience in the civilian field. The remaining discussion in this section draws largely on the experience in the United States but, given the conformity imposed by the technological arms race, it can probably be viewed as having some relevance for all the major participants in this race.

250. Even in the period 1946-1948, at least in the United States, the more specialized defence contractors - notably those in the aircraft industry - were an exception to the rule of successful conversion. The market for civilian aircraft did not, of course, fill the gap left by the termination of military contracts, and the experience with alternative product lines was quite disappointing. These experiments were for the part abandoned when rearmament and the Korean war restored the military market to significant levels. Subsequently, interest in diversification and conversion in the United States defence industry has been sporadic and temporary, coinciding with the periodic slumps in the military budget, for example, after the Korean war, in 1963-1964 with the end of strategic bomber production, the subsequent slowing-down in the ballistic missile programmes, and with the withdrawal from Viet Nam. The general picture has been one of considerable success in diversifying within the military and related high technology areas of the government sector and of diversification through merger and acquisition into a wide variety of civilian areas. On the other hand, the development and production of civilian products by the military divisions of these increasingly diversified corporations - that is, genuine conversion - has been almost negligible. <sup>162/</sup> The history of failure of such attempts has been reinforced by the belief - usually confirmed - that reductions in military demand will only be temporary. Of special importance is the fact that this combination of circumstances and experience has produced a "military industry" that is acutely aware that its high degree of specialization constitutes a serious handicap to competitive operations in the commercial field. Disarmament is therefore seen as a threat.

---

<sup>162/</sup> Murray L. Weidenbaum, "Industrial Adjustments to Military Expenditure Shifts and Cutbacks" in Adjustments of the U. S. Economy to Reductions in Military Spending, Bernard Udis, ed., United States Arms Control and Disarmament Agency, December 1970, pp. 451-452.

251. The most recent disturbance in the United States defence industry was, of course, the withdrawal from Viet Nam and the anti-military sentiments that lingered for several years afterwards. In constant price terms, total spending by the Department of Defense declined by some 35 per cent between fiscal year 1968 and fiscal year 1976. Procurement expenditures declined even more sharply with the result that defence-related employment in industry fell by more than 55 per cent over the same period, from nearly 3.2 million to about 1.4 million. 163/ It is likely that unemployment in the defence industry would have increased had there not been quite significant increases in the expert demand for armaments, particularly from the Middle East.

252. In 1967, President Johnson instructed the various Federal Agencies to accelerate and co-ordinate their planning for the adjustment to a peace-time economy. Although a number of official reports ensued, there has been no systematic investigation into how far this process of formal planning and preparation for adjustments to a significant reduction in military spending proceeded. Similarly, no major studies have appeared on the response of the defence industry to these cutbacks. It is reasonable to suppose that the adjustment process was seriously complicated by the crisis phenomena of the early 1970s and the prolonged global economic recession that followed. Such indirect evidence as is available is somewhat contradictory. We shall cite some evidence below to the effect that the large drop in military activity did not seriously exacerbate unemployment, that is, conversion was accomplished quite successfully. At the same time, however, most sectors of the United States defence industry have experienced high levels of excess capacity during the 1970s.

253. Because the experience is so recent, it is unfortunate that there are not more detailed studies available on the post-Viet Nam experience of the United States defence industry, although this may be due to the fact that no significant problems arose. None the less, there still exists a wealth of material generated in response to earlier military cutbacks. This material is now seriously dated but in terms of identifying the nature of the problem that will have to be addressed in any conversion process and in terms of proposals concerning the preparatory measures needed to facilitate this process it remains an invaluable starting-point.

254. The available information on conversion efforts in the Soviet Union since the Second World War is also somewhat dated but, on the whole, the experience appears to have been quite positive. In the late 1950s, the Soviet Union announced significant cutbacks in military personnel strengths and apparently had little difficulty in retraining and relocating the personnel involved. 164/ Similarly,

---

163/ United States Congress, House of Representatives, Committee on Armed Services, Overall National Security Programs and Related Budget Requirements ....

164/ "Economic and social consequences of disarmament" (E/3593/Add.1), p. 203, reply of the Government of the Union of Soviet Socialist Republics.

some time in the late 1950s or early 1960s, the Krasny Proletary munitions factory was converted to the production of machine tools. The conversion was completed in less than two years without the factory having to shut down and without the large-scale dislocation of workers. 165/

#### Defence industry characteristics

255. The conversion problems associated with disarmament are rightly considered to be concentrated in the industries that develop and manufacture weapons and military equipment. This is the component of the military sector as a whole where one is most likely to find the resources - personnel, plant and equipment - unsuited to satisfying civilian demands because of a high degree of specialization for military work. In order to anticipate the nature of the problems that a conversion process will have to address, it is instructive to look in as much detail as possible at the characteristics of defence industries. While one can expect to find significant differences depending on the economic and social environment in which these industries are located, there will also be important uniformities imposed by the very nature of military production. For this reason we have elected to arrange the following discussion by characteristic rather than by country.

256. In chapter III, the point was made that globally, this is an "industry" that directly employs perhaps 4 million persons in the production of goods and services specialized for military purposes. A very approximate estimate of the value of the output of this industry in 1980 was \$127 billion. This industry is, of course, highly concentrated geographically.

257. The distribution of workers directly engaged in military production must, of course, closely parallel the distribution of output. As explained earlier, it is very important in gauging the probable magnitude of the conversion problem in particular countries to distinguish between direct and indirect employment and between specialized and non-specialized military demand. Such problems as will arise will be heavily concentrated in the labour force directly engaged in meeting the military demand for specialized goods and services. Unfortunately, the available data is neither comprehensive nor sufficiently disaggregated to permit making these distinctions.

258. A second important characteristic of the global defence industry is its high degree of concentration in specific sectors. Modern armed forces are structured around costly major weapon systems - aircraft, missiles, warships and tanks - and the bulk of procurement expenditures are directed at the industries that supply these items. In addition, modern weapons and supporting equipment make extensive use of electronics. In that group of the important arms-producing countries where data is available, military demand accounts for shares of between 40 and 80 per cent

---

165/ "Economic and social consequences of disarmament: Conversion to peaceful uses of the resources released by disarmament" (E/4169/Corr.1), p. 5, reply of the Government of the Union of Soviet Socialist Republics.



of total production and employment in the aerospace sector, which is thus probably the sector most heavily engaged in military business. <sup>166/</sup> In the electronics sector of these countries, the shares of production and employment accounted for by military work currently appear to range between 20 and 30 per cent. <sup>167/</sup> These are wide ranges within which substantial national variations can be traced in the sources identified. Regrettably, because only a limited group of countries publish such data, it is impossible for the Group to generalize confidently on the degree of concentration in other important arms-producing countries, as should be done to judge the full extent of potential redeployment problems and opportunities.

259. The converse of the concentration of military demand in specific industries is the dependence of these industries on military contracts. In this regard, it is often observed that, particularly in the aerospace and electronics industries, the statistics cited above, in so far as they do not already include the R and D element, probably understate the degree of dependence as military orders may actually account for a disproportionately large share of the industry's research and development expenditure. To some extent new technologies developed for military purposes can be transferred to civilian products, usually with a considerable time-lag. The more important factor, however, is that military demand enable these industries to assemble and maintain the scientific and engineering teams that perform research and development.

260. Another dimension of concentration is that, within the industrial sectors most heavily involved in military work, a relatively small number of firms win a major portion of defence contracts. This concentration is not, in itself, unusual, but the unique characteristics of the military market and the enormous size of individual contracts have made it particularly conspicuous in the military sector.

261. The degree to which individual firms depend on military contracts is often illustrated by comparing the value of contracts received in a given year with total sales for that year, at least in the United States where the appropriate information is available. This is a misleading procedure because military contracts awarded normally cover work to be performed over a period of years. To illustrate, in 1978 General Dynamics was awarded military contracts valued at 129 per cent of the company's total sales for that year. In fact, if this procedure is properly applied, the degree of dependence of the major United States defence contractors on military business has declined quite sharply. The top 25 defence contractors went from nearly 40 per cent of their business in the defence

---

<sup>166/</sup> R. Väyrynen and H. Tuomi, Transnational Corporations, Armaments and Development, pp. 40-41 (report prepared for the Group); and "Economic and social consequences of the armament race and its extremely harmful effects on world peace and security" (A/32/88/Add.1), replies from Governments.

<sup>167/</sup> R. Väyrynen and H. Tuomi, op. cit., p. 56; A/32/88/Add.1; and Statement on the Defence Estimates 1981, Part 1, p. 46.

area in 1958 to under 10 per cent by 1975. 168/ On the other hand, a distinction must be drawn between diversification and conversion, and the fact is that this decline in dependence on military business has been accomplished through expansion and mergers. The defence divisions of these large corporations remain almost exclusively dependent on military contracts but the fact of diversification will make it easier for these major contractors to cope with a decline in their military contracts.

262. Very little information is available on the defence industry in the Soviet Union but, as one would expect, such indications as are available suggest a high degree of concentration of military production in specific industrial sectors. Most military production would take place in the machine-building and metal-working sector of industry. Of the 20 ministries that comprise this sector, it is evident from the titles that military production is concentrated in nine of them, 169/ suggesting, at least in selected ministries, levels of dependence on military contracts comparable to those found in the major Western arms-producing countries. Similarly, the technological pressures promoting specialization and the geographic concentration of the defence industry are also evident in the Soviet Union.

263. A third distinguishing feature of defence industries is the composition of the work-force. The post-war period has witnessed an extraordinary focus on the accomplishment of scientific and technological advances deemed to be relevant to weapons and warfare and on translating such advances as quickly as possible into operational hardware. The defence industry is constantly working with concepts, processes, techniques, materials and so on that, by civilian standards, are esoteric, and attempting to incorporate these things in products that will function in the harsh environment of the modern battlefield. Accordingly, one would expect that defence industries spend disproportionately large sums on R and D and employ disproportionately large numbers of scientists, engineers, technicians and skilled workers. Moreover, while the most specific data is available for the United States and France, it is reasonable to assume that defence industries everywhere exhibit similar characteristics. For the United States in 1978, R and D expenditure as a percentage of sales was 3 per cent on the average for all industries, 6.6 per cent for electronic components and 12.4 per cent for aircraft and missiles. Similarly, the all-industry average of scientists and engineers per 1,000 employees was 27, compared to 54 in electronic components and 80 in aircraft and missiles. 170/

---

168/ Jacques S. Gansler, op. cit., p. 39.

169/ The titles of these nine ministries are aviation, ship-building, electronics, radio, defence industry, general machinery, medium machinery, communications equipment and machine-building.

170/ National Science Foundation, National Patterns of Science and Technology Resources 1980, MSF-80-308.

For France in 1973, 7.9 per cent of the work-force in the defence industries were engineers compared to the all-industry average of 1.4 per cent. The same relationships for technicians and skilled workers were 19.8 per cent against 4.2 per cent and 42.1 per cent against 25.6 per cent respectively. 171/

264. A fourth characteristic with potential ramifications for the conversion process is the degree of dependence of the defence industries of some countries on exports. As we saw in chapter III, despite the limited utility of the available data, the international trade in arms now takes place on a scale that is undeniably of economic significance. The estimates generated in that chapter suggest that exports account for at least 20 per cent of the global production of goods and services specialized for military purposes. At the global level, armaments constitute less than 2 per cent of the goods and services traded internationally, but the picture changes quite drastically if the level of analysis is reduced to the four major arms suppliers and to particular sectors of the defence industry within these countries. It should be recalled that the estimated value of arms transfers is computed indirectly on the basis of observed deliveries of weapons and equipment and that these estimates have been roughly expanded to include such things as construction and technical assistance contracted for by a foreign military establishment. Similarly, the estimates do not necessarily reflect the value of the financial or commodity payments made for arms. Nevertheless, there is ample supplementary evidence for individual countries and firms that fully bears out the critical importance of arms exports for the defence industries of the major arms producers.

265. For a variety of reasons - including the technological imperative, the periodic nature of major orders for the national forces and a desire for a surge capacity in the event of war - the defence industry is prone to chronic excess capacity and most arms producers have sought exports to ameliorate this condition as well as for other reasons. Once again data are available only on a limited number of major arms-producing countries and the extrapolation to this category in general would be extremely hazardous. This reservation is doubly important in the case of arms exports because volumes tend to fluctuate widely in response to particular situations as well as the availability of military goods for export. The discernible range of export-shares in military goods production for selected

---

171/ Ignacy Sachs, Reflections on Conversion Strategies for Armament-Related Arms Industries, p. 42 (report prepared for the Group).

industries has been between 40 and 70 per cent for particular years. 172/ If such patterns have any wider applicability to arms-exporting countries in general they clearly have major implications for conversion possibilities.

266. The degree to which the State is in direct control of military industry is a fifth characteristic of direct relevance to the problem of conversion. In the Soviet Union and other centrally-planned arms-producing countries, state control of the defence industries is, of course, complete. But even in market-economy countries, the defence sector is, of course, dominated by the purchasing power and influence of the State and is frequently State-owned. In France, in 1980, more than one half of the workers directly engaged in military production were employed in state establishments or nationalized enterprises and much the same has probably been true in the United Kingdom, given the heavy government stake in the two dominant concerns, British Aerospace and Rolls Royce. The degree and type of state involvement in such countries varies with the policies of the Government of the day. On balance, direct ownership or heavy financial involvement by the State is characteristic of defence industries in nearly all countries, including developing countries. Only in the United States is private enterprise seemingly dominant but even here, in the aircraft industry, for example, approximately one third of plant space, a significant share of manufacturing equipment and all military maintenance and repair depots are Government-owned. Government-owned facilities and equipment are also of critical importance in other sectors of the defence industry.

267. Increasing government involvement in the defence industry, even in market economies, has been essentially unavoidable. For all practical purposes the Government is the major market for the products of the industrial sectors supplying military goods, and doing business in this market is very different from the commercial world. The first concern in developing and producing military products is not cost or price but that their performance be better or at least as good as those of potential adversaries. As is well known, this imperative, coupled with the commitment of enormous resources to military R and D, has resulted in an extraordinarily rapid rate of growth in the cost of developing and producing weapon systems. The development of a major weapons system now typically involves hundreds of millions or even billions of dollars, with billions more for production. No private concern can marshal resources on this scale and even if it could it would not commit them to a single product whose marketability was subject to so many factors outside the firm's control. The Government, therefore, assumes all the financial risks. Development and production take place only after a sale has been made and contracts signed. Buyer and seller collaborate in specifying the product and, to a reasonable approximation, price is established subsequently on the basis of the cost of meeting the specifications.

---

172/ Jacques S. Gansler, op. cit., p. 208-209; The Effect of Foreign Military Sales on the United States Economy, Congressional Budget Office, Washington, D.C., July 1976; Chris Pite, "Employment and Defence", Statistical News, No. 51, November 1980, p. 19; and R. Väyrynen and H. Tuomi, op. cit., pp. 37-38.

268. Bearing these various considerations in mind, one can attempt to list the characteristics of defence industries from the standpoint of the problems that these industries would encounter if conversion to non-military production became necessary. As regards labour, the emphasis on quality and performance in specialized branches of the military sector has led to the acquisition of skills and, more particularly, to the adoption of attitudes toward design and production that would be out of place in most commercial fields where high production rates and increased efficiency compete with quality as goals. This applies especially to the scientific and engineering labour that constitutes, as pointed out, a large fraction of the military industrial work-force. The skills required of the management personnel of military industrial enterprises are also quite unique to this field. On the one hand, few if any production activities in the commercial field rival the military sector in terms of the technical complexity of the product and the number of suppliers of parts and components involved. The experience that the military prime contractors have accumulated in systems management is one of the main reasons why Governments in the major Western arms-producing countries are so reluctant to see any of these concerns go under. On the other hand, dealing with the Government as a buyer is a unique challenge in marketing, requires the adoption of special accounting procedures and conforming in general with government regulations. Familiarity with government red tape is no small matter and requires extensive background and experience. Indeed, surveys in the United States have revealed this to be one of the main reasons why some private concerns are reluctant to become involved in defence-related production. 173/

269. Secondly, much of the capital equipment used in some branches of defence production is highly specialized and lacks the flexibility for application to civilian output. In sharp contrast to the Second World War, when civilian industry undertook to produce war material and then reconverted to production for the commercial market, the present situation is the product of a 30-year period during which military and civil technologies evolved partly on separate and divergent paths. A proportion of military industrial production takes place in facilities that are used exclusively for this purpose. Apart from the fact that a massive and sustained military R and D effort has yielded military industrial capacities that operate on a technological plateau considerably higher than the bulk of civilian industry, extremely demanding (or just different) military standards and specifications and the desire to have capacity available for mobilization also contribute to the separation of military from civilian industry. One of the more conspicuous results of this is that the defence industry tends to have a lot of

---

173/ See Michael D. Miller, "Measuring Industrial Adequacy for a Surge in Military Demand: An Input-Output Approach", Rand Corporation, Santa Monica, California, September 1978, p. ix.

excess capacity ranging, in the United States, from over 90 per cent in the munitions industry to between 30 per cent and 50 per cent in most other segments of the industry. 174/

270. There are several other features of the defence industry that tend to make the companies or enterprises involved apprehensive about disarmament measures and the prospect of having to convert to civilian production. For example, most defence-work is paid for on a continuous basis providing a very favourable cash-flow situation, particularly for financially weak companies. Similarly, companies accustomed to performing low-risk military R and D will be understandably nervous at the prospect of committing their own resources to the development and production of commodities for the uncertain and competitive civilian market. These concerns will be amplified by the fact that companies specializing in military work will have legitimate fears regarding their competitiveness in the civilian sphere owing to large overhead costs - because the work-force is dominated by managerial, scientific and engineering personnel - and because they lack skill or experience in the marketing of civil products. Furthermore, given the financial magnitude of military contracts and the long periods involved in development and production, the major contractors will, at any given point, have a substantial backlog of military work for both national and foreign military forces to complicate the process of conversion to non-military work.

271. Finally, there is the question of profit. The evidence here is inconclusive: depending on how the rate of profit is computed, whether this is done for large or small defence contractors and for prime contractors or subcontractors, it is possible to show that the rate of profit in military industry is both high and low compared to civilian industry. On the other hand, once a military contract has been secured the rate of profit is at least fairly certain owing to cost-plus pricing. Moreover, the magnitude of the profit that can be earned on a single military contract is often very large indeed and this can serve important corporate objectives even if the rate of profit is relatively low. It can also be mentioned that, at least in the United States, foreign military sales are significantly more profitable than domestic sales. 175/

272. It is clear that these various characteristics will be present to varying degrees depending on where military industry is located. Profits, for example, are not a significant force in the Soviet Union, motivating industrial concerns to enter or to remain in the military sector. Similarly, the managers of Soviet military industrial enterprises will not be concerned at their lack of experience in marketing civil productions, since this function would be performed by the central planning authorities. On the other hand, the evidence suggests that, owing to the high priority accorded to defence, managerial personnel in the Soviet military industrial sector are relatively insulated from the foremost managerial problem in the rest of the economy, namely, securing the supply of needed personnel and materials.

---

174/ Jacques S. Gansler, op. cit., p. 57.

175/ Jacques S. Gansler, op. cit., p. 205.

273. As regards the retraining of labour, it is often assumed that the workers engaged in the development and production of modern sophisticated weapon systems possess uniquely specialized qualifications and skills. In fact, the professional skills needed in this field are linked in most cases with production techniques that are identical or comparable with these for civil products. Some reorientation and retraining may be required for certain specialized occupations and skills, particularly in respect of R and D personnel. 176/ Informed judgement in the Soviet Union suggests that retraining for a period of up to one year for scientists and up to two years for certain engineers is needed for a successful transition to civilian work. 177/ An additional problem is that a significant part of the stock of knowledge possessed by scientists and engineers in certain specialized branches of the military sector is classified and would be wasted unless restrictions on its use were lifted.

274. Specialized capital equipment presents less of a problem. Where such equipment is owned by private concerns a variety of indirect measures can be adopted to make it attractive for them to divest themselves of this equipment and reinvest for civilian production. And where this equipment is owned or controlled by the State quite direct measures can be used. Since it is quite unrealistic, at least for an extended interim period, to expect States to totally demolish their military industrial capabilities, it would be highly desirable to reduce the gap between military and civilian industrial requirements. If military and civil production took place side by side at the plant level, all dimensions of the conversion problem would be minimized. To accomplish this, it would be necessary to curb the military appetite for performance and technological excellence which, in itself, would make an enormous contribution to slowing down the arms race and facilitate the achievement of arms control and disarmament measures. Since it has

---

176/ The following information supports this judgement:

"One study considered 127 production occupations in military aerospace; of these, 28 were described as basic crafts (e.g., plumber, electrician), while 93 could be immediately matched to one or more occupations in civil industry; the remaining 6 were estimated to require retraining for about half a year to be compatible with civilian occupations ... For R and D personnel, an American study estimated that in the event of general and complete disarmament only 13 per cent would find jobs in their converted former employment (e.g., transferring from military to civil aerospace); however, positing no significant government planning, it was still possible to identify compatible employment for all the rest except 4 per cent. Periods of retraining ranged from nil to 17 months."

(Dan Smith and Ron Smith, Military Expenditure, Resources and Development, report prepared for the Group).

177/ Seymour Melman, Barriers to Conversion from Military to Civilian Industry, p. 45 (report prepared for the Group).

proved impossible, to date, to control the pace and direction of military technology, it is important to note that, in the United States, even those who are concerned about the adequacy of the military industrial base consider that more integration of civil and military production is feasible and advantageous. 178/ Labour unions constitute another powerful constituency supporting greater integration of civil and military production, since, under present circumstances, employment stability in the United States defence industry is low and, to avoid unemployment, workers must be prepared to move from one concern to another depending on who wins the major contracts.

#### Military research and development

275. Notwithstanding that defence industry almost everywhere draws on results of R and D for non-military purposes, the human and material resources devoted to R and D for military purposes are to a significant extent located in the defence industry. At the same time, however, an amount of work on R and D for military purposes is performed in specialized laboratories, both public and privately owned, and in universities. In the Soviet Union, it appears that military R and D is quite rigorously separated from the production of weapons and equipment. In other words it is worth while to examine briefly the potential difficulties that the scientific community would face in the event of a significant reduction in military R and D.

276. It was pointed out in chapter III that an estimated 500,000 scientists and engineers are engaged in military R and D world wide, approximately 20 per cent of all the manpower devoted to research and development. In so far as there is a consensus of opinion on the capacity of these men and women to redirect their efforts to non-military ends it is that the problems encountered will be relatively minor. The military R and D effort is very broadly based; few areas of scientific enquiry are considered to have no potential military applications. Furthermore, scientific and technological advances, at least up to the point of their accomplishment, are neutral in the sense that they can be used for military or civilian purposes. In other words, it is widely felt that the problem of converting to peaceful purposes the human resources now devoted to military R and D is, in essence, one of the governmental decisions concerning the financing and orientation of scientific research.

277. This issue cannot, however, be so lightly dismissed. Reference was made in the previous section to the evidence that some of the personnel engaged in military R and D acquire attitudes toward scientific and technical problems that would have to be changed in essential ways to be useful in the civilian sphere. Moreover, some parts of the military R and D community will be engaged in areas and/or at levels that have little immediate civilian utility. In a similar vein, it is quite

---

178/ Jacques S. Gansler, op. cit., pp. 266-268.



possible that the composition of the military R and D community in terms of scientific discipline is such that the adoption of a science policy that places greater stress on economic and social needs will render significant numbers of scientists and engineers in particular disciplines redundant. The military R and D community itself will certainly be conscious of these possibilities, and their support for disarmament and conversion will clearly depend on evidence that the nature and magnitude of potential dislocations have been realistically assessed and that credible arrangements have been made to smooth the transition.

#### Uniformed military personnel

278. The conversion of uniformed military personnel is a separate problem, both quantitatively and qualitatively. Since the global figure for personnel in the armed forces is at least 25 million, even agreement on modest force-level reductions could involve the demobilization of millions of persons. Furthermore, since the civilian economy, to a reasonable approximation, already provides for the consumption needs of military personnel, their demobilization will constitute an addition to the labour market.

279. Reference was made in chapter III above to the wide variety and growing level of skills required of military personnel. In broad terms, this will clearly ease the transition to civilian work, but the available evidence suggests that significant problems can still be anticipated. In the late 1960s, it was estimated that 80 per cent of the military jobs held by enlisted men in the United States armed forces corresponded to only about 10 per cent of those held by male civilian workers. <sup>179/</sup> This fact, of course, suggests that vocational and educational training prior to demobilization will play a major role in easing the transition. Similarly, it will obviously be advantageous to ensure at least an approximate correspondence between the skills acquired before demobilization and employment opportunities in the civilian economy. And since the latter will be influenced by the conversion strategies implemented in the military industrial sector, it will be necessary to co-ordinate and integrate the conversion measures adopted in the various parts of the military sector.

280. It is worth while pointing out that the majority of countries will have some experience in transferring manpower from the military to the civilian sector. Conscription remains the most widespread arrangement for securing military manpower and this involves the continuous acquisition and release of labour resources. Of even greater relevance would be the experience with the flow-through of regular or career military personnel. In the Federal Republic of Germany, for instance, nearly 10 per cent of all uniformed military personnel are demobilized annually, mostly draftees but also regulars completing longer tours of duty. In addition, several of the major military powers have had more or less recent experience with significant reductions in military manpower, for example, the Soviet Union in the

---

<sup>179/</sup> Harold Wool, The Military Specialist: Skilled Manpower for the Armed Forces (Baltimore, the Johns Hopkins Press, 1968), p. 55.

late 1950s and the United States in the early 1970s. Project Transition, initiated by the United States Department of Defense in 1967, provided training and/or job counselling six months prior to discharge and actively involved both private industry and other government agencies in locating employment opportunities and preparing servicemen to meet the skill requirements. As broad evidence that this project was quite successful, it can be pointed out that total defence-related employment as a percentage of the labour force declined from 10 per cent to 9 per cent between 1967 and 1969, while the over-all rate of unemployment decreased from 4 per cent to 3.5 per cent. Subsequently, between 1971 and 1973, over-all unemployment in the United States economy fell from 6 per cent to 5 per cent, while defence-related employment continued to decline, from 7 per cent to less than 6 per cent of the labour force. 180/

#### Regional and subregional effects

281. Given that military industrial activity is heavily concentrated in a few industries, that a few major concerns dominate the market and that a relatively small number of major weapons systems account for a disproportionately large fraction of total expenditure, it is inevitable that the economic impact of military activities is particularly heavy in selected regions and communities within the arms-producing countries. Major military bases, often located in remote areas for strategic and security reasons, similarly provide the dominant rationale for economic activity in the surrounding region. For such subnational regions and communities - for example, Southern California in the United States and perhaps the region around the White Sea in the Soviet Union - the conversion issue will have to be addressed in a particularly thorough and imaginative fashion, since it will extend beyond finding alternative products and retraining workers to replacing a significant portion of the entire economic and social fabric of the region. In some cases, this will doubtless prove unfeasible so that workers and their families will have to be redeployed to other regions.

282. In order to tackle this particular dimension of the conversion problem, an essential requirement is the preparation of comprehensive and detailed information on how military expenditure works its way through the economy, with the objective of determining with a high degree of accuracy the direct and indirect employment effects in particular subnational regions and communities. Needless to say, this is not a simple undertaking. The pattern of effects will be different for different categories of military expenditure, for particular types of major weapons systems and will change over time as the mix of weapons in production changes. In the complex and interdependent economies of the major arms-producing countries the regional distribution of defence-related employment has been shown to be a wide-reaching amalgam of primary, secondary and higher-order linkages as well as

---

180/ United States Congress, House of Representatives, Committee on Armed Services, Overall National Security Programs and Related Budget Requirements ..., p. 109.

direct and indirect effects. <sup>181/</sup> The same will be true in other industrialized and developing countries with significant defence industries, although in the latter case many of the industrial linkages will extend overseas, particularly to the main industrialized arms suppliers.

283. Fortunately, all Governments have the capacity to assemble the relevant data, and analytical tools are available to process this information in the manner necessary to provide a solid basis for planning for conversion. Information on the primary regional distribution of military spending, coupled with inter-industry input-output models and data on industry and plant location can provide highly accurate estimates of the regional employment effects of general or specific disarmament measures. A considerable amount of illuminating work has already been done, particularly in the United States but also in the United Kingdom, the Federal Republic of Germany, Canada, Norway, Sweden and other countries. Most of the analysts involved reported being constrained by data limitations - the data was either not available, inappropriate or insufficiently detailed - so that this experience can serve as a guide to gaps in the existing data base.

284. As regards the particular issue of military base closures, there is also considerable experience on which to draw. For reasons of economy and because of shifting tactical and strategic requirements, many countries have closed down or relocated military bases. In the United States, between 1961 and 1973, there were 1,387 such closures and the Office of Economic Adjustment (OEA) in the Department of Defense has acquired considerable experience and expertise in helping the affected communities to organize and plan the adjustment, particularly in terms of acquainting community officials with the various Federal and state programmes available for manpower retraining, loans and grants for redevelopment and so on. While the OEA contribution has been significant, it has had no authority and no resources of its own to streamline and accelerate the adjustment process. Many of the affected communities ultimately benefited from the shift to a more stable and diversified economic base, but the transition period was long and painful. For this reason, proposed based closures, both in the United States and elsewhere - in Sweden, for example - continue to be vigorously opposed. On the whole, the experience with base closures, while providing invaluable material on which to draw, illustrates once again the need for elaborate and thoughtful preparation for conversion to non-military activities rather than ad hoc assistance after the fact.

---

<sup>181/</sup> To illustrate, it has been estimated that, if the B-1 strategic bomber had gone into production, over 5,000 companies throughout the United States would have received new business. Nor is this diversity of involvement a new phenomenon. A soviet statement some 20 years ago pointed out that, on the average, it took about 500 enterprises to produce a combat aircraft, about 300 to produce a tank and over 500 to produce a warship. See "Economic and Social Consequences of Disarmament" (E/3593/Add.1), p. 197, reply of the Government of the Union of Soviet Socialist Republics.

Measures to minimize the problems of transition

285. The foregoing discussion has, in passing, identified many of the policies and measures that could be adopted to facilitate the conversion process. An important conclusion that emerges is the need for planning. At all levels, from the central Government to the individual munitions factory and the military-dependent community, the question of doing without all or some military activity must be thought through to determine the character and magnitude of the difficulties that will arise and to evaluate the effectiveness and feasibility of possible solutions. In this fashion, it would be possible to develop a comprehensive strategy for conversion that addressed the specific concerns of the various groups that would be affected and allocated responsibility for the various aspects and phases of the process in the most efficient manner.

286. Primary responsibility for conversion, in an overall sense, will inevitably fall on the central government. This follows from the nature of the relationship between the Government and the military sector and is particularly true in regard to initiating preparations for a conversion process. The Government should take the lead, but the process of acquiring detailed knowledge on the nature and probable magnitude of the adjustment problems and devising measures and arrangements to overcome them would be a joint endeavour with industry, trade unions and officials in the most military-dependent regions and communities. 182/

287. The nature and extent of government involvement, following disarmament measures, in the process of conversion itself will vary from country to country, depending in large part on the type of economic system but also on many other factors. Each State, within its particular context, could take maximum advantage of the variety of resource allocation mechanisms available, ranging from central or indicative planning and budget allocations at the federal, state and local government level through the open market to direct negotiations between the management and workers of military industrial concerns and consumer groups, such as the innovative efforts undertaken in the United Kingdom by the shop-stewards of the Lucas Aerospace company.

288. It should also be emphasized, however, that the achievement of disarmament measures would represent a strategic opportunity to use the flexibility thus gained to address major economic and social problems, both at home and abroad. Governments in all States should be prepared to take maximum advantage of this opportunity through establishing broad priorities - both domestically and internationally - and taking appropriate steps at the macro and micro levels to ensure that the conversion process contributes, as far as is possible, to a pattern of resource use that reflects these priorities.

---

182/ In a study of the Norwegian economy, it was concluded that measures to minimize the problems of transition should have at least some of the following characteristics: be highly labour-intensive, give a good geographical spread of employment, tap a labour reserve, fill an unmet demand, be popular and visible, be publicly financed already, be relatively independent of other scarce or slowly developing resources (Olav Bjerkholt, Aadne appelen, Nils Petter Gleditsch and Knut Moum, Disarmament and Development: A Study of Conversion in Norway (report prepared for the Group), p. 78).

289. Governments in all countries can be broadly confident - at least over the medium and long terms - in their capacity to play a major role in maintaining the general level of economic activity in the event of significant reductions in military expenditure. On the key issue of employment, there is, as we have seen, persuasive evidence that virtually all possible alternatives to military expenditure and production will result in at least as many and, in most cases, more jobs being created. In planned economies, of course, the government has direct and comprehensive authority to accomplish this and in market economies, there exists a diversified arsenal of fiscal and monetary measures to complement the market system. 183/ In all cases, however, the Government must carefully dovetail disarmament with the time required to accomplish the conversion of the resources thus released so as not to overtax adjustment capabilities. The basic considerations determining the transition period are identifying new markets, developing new products, retooling to produce them and retraining management and production workers. In market economy countries, an additional important consideration will be the timing or compensatory fiscal and monetary policies to ensure that the stimulating effects coincide with military cutbacks. While the mix of compensatory programmes is of little consequence in the long run, it is very important in the short run owing to the varying time lags associated with different measures. For example, increases in non-military government spending will have direct and immediate effects while the full effects of a tax cut will not be felt for several years.

290. It is a widely held belief that the opportunity to apply science and technology more directly and systematically to economic and social problems is the most significant dividend that disarmament would bring. A nation's military, scientific and technical resources comprise manpower (scientists, engineers, technicians and technical management), facilities and equipment, and scientific and technical information. Each of these components requires separate attention for conversion purposes. The formulation of a national science policy that reflects economic and social priorities both domestically and internationally would be extremely useful in order to give direction and focus to the conversion effort. The specific requirements for adapting personnel in military R and D will vary considerably among and within the different categories of personnel involved. Determining the probable requirements for retraining, re-education and redeployment will require detailed knowledge of the composition of the military R and D community. Thought must be given to how and where retraining and re-education is to be done and who would pay for it.

291. As regards facilities and equipment, it would be necessary to compile a detailed national inventory as a basis on which to assess its adaptability to civilian R and D. Similarly, the stock of military, scientific and technical

---

183/ In centrally planned economies, the State is required by virtue of constitutional provisions to provide workers with new jobs compatible with their qualifications when conversion measures are implemented in any sector of the national economy, including the defence sector (Klaus Englehardt, Effects of the Arms Race and Disarmament on the Labour Situation in Countries of Different Social Systems (report prepared for the Group)).

information can be declassified and systematically canvassed for possible civilian applications. An important complementary measure would be to encourage civilian industry to be more receptive to R and D. This could boost productivity and also generate a demand for management personnel with knowledge and experience in the effective use of R and D resources, that is, the type of management personnel employed in disproportionately large numbers in the defence industry.

292. The ambition - and the need - to make science and technology more responsive to economic and social requirements will not be realized in a straightforward fashion. It is true that such sectors as civil aerospace, research into alternative sources of energy, further development of nuclear energy technologies so as to make them safer for civilian use, or the design of remotely-controlled underwater devices for the extraction of raw materials are similar to the highly specialized technologies in some areas of the armaments sector. On the other hand, such issues as coping with pollution, improving the effectiveness and availability of education and increasing agricultural productivity in the developing countries are enormously different from and far more complex than the technical problems confronted in transporting a man to the moon or delivering a nuclear warhead accurately to a target 5,000 miles away. It is perhaps no exaggeration to say that we are still quite ignorant as to how to apply R and D resources to such problems. Developing new methods, techniques and approaches for applying scientific and technical resources effectively toward the resolution of economic and social problems will require a great deal of thought and experiment.

293. The general approach to conversion just outlined with regard to military R and D can also be applied to military industry. The first order of business is to determine as accurately as possible which industries in which locations depend to a significant degree on military demand, the characteristics of the work-force involved and the type of plant and equipment used. Where plant, equipment and manpower - and by implication, the product - are not unduly specialized for military purposes, the Government can determine whether general compensatory monetary and fiscal policy, together with market forces, will suffice to maintain demand and employment or whether more specific measures would be desirable. Input-output models can be employed to anticipate the extent to which the pattern of demand associated with compensatory policies might differ from that associated with military outlays. Where the mismatch is significant, more industry-specific measures could be prepared for possible implementation. 184/

184/ The results of past studies have occasionally been surprising. It would seem reasonable to assume that such industries as primary iron and steel manufacture and primary non-ferrous metals manufacture would suffer from cutbacks in military outlays. A study of the United States economy, however - which assumed that the military cutbacks would be offset by equivalent new public expenditure on education, health, public assistance and the environment - found that these particular industries would gain significantly from the change. This is an indication of the complexity of the interdependencies in a modern industrial economy. See Roger H. Bezdek "The 1980 Economic Impact - Regional and Occupational - of Compensated Shifts in Defence Spending", Journal of Regional Science, vol. 15, No. 2, 1975, pp. 183-198.

294. At the other extreme - represented by the munition plans and the prime military contractors in aerospace, electronics and shipbuilding - the problems are rather formidable. The Government, in conjunction with management and unions in the industry, must determine what alternative uses for these resources are feasible and desirable, with the feasible alternatives clearly more important in the short run. Once these strategic judgements have been made, the requirements for retraining, re-education and redeployment can be gauged and programmes developed to satisfy them. Similarly, the data base and a broad strategy for the alternative use of military industrial resources are essential elements for determining the nature, extent and duration of specific measures - tax concessions, investment incentives and the like - needed to accomplish the transition. At least in market economies, the State would not have to concern itself with specifying alternative products in any detail or determining how they will be manufactured. Nor should it attempt to do so. Its role should be to guide and facilitate conversion and to alleviate the hardships imposed on the manpower resources displaced in the process. Nevertheless, to perform this role effectively the State must be well informed of the difficulties associated with developing and producing a new product and the time required to accomplish it. Similarly, it must be prepared to eliminate any unreasonable barriers to entry to the civilian markets that the former suppliers of military equipment hope to penetrate. It should be stressed again, however, that this central dimension of the conversion issue - the resources directly employed in meeting the military demand for specialized goods and services - is not overwhelmingly large even in the most heavily armed States. Moreover, a process of disarmament will be gradual rather than abrupt and this will further diminish the magnitude of the problem at any particular time.

295. One question that will have to be considered with particular care is whether the prime military contractors can convert to civilian production and still retain broadly the same structure. It was pointed out above that these concerns have developed unique capabilities in scientific and systems management, that their work-force is markedly top heavy with scientists, engineers and technical management personnel and that their marketing skills are oriented exclusively toward government procurement. Some analysts feel that conversion to civilian production will probably require that these large-scale units be broken up. <sup>185/</sup> Others, however, while granting the need to change habits and attitudes acquired in the military environment, argue that many important requirements in the civilian arena closely resemble large military projects in terms of scientific and technical input and requirements for strong capabilities in systems management. Examples here

---

<sup>185/</sup> Amitai Etzioni, "Societal Turnability: A Theoretical Treatment", in Adjustments of the United States Economy to Reductions in Military Spending, Bernard Udis, ed., ACDA/E-156, December 1970, pp. 547-598.

would include new sources of energy, exploiting the resources of the ocean, environmental protection and new systems for major cities in such areas as transportation and sanitation. 186/

296. In addition to requiring that military industry prepare and periodically review plans for conversion, a number of other preparatory steps can be taken to minimize the scale of the problems that will arise when disarmament measures are actually implemented. As mentioned above, it is considered possible and desirable, at least in the United States, to reverse the trend of increasing separation of military and civilian business. Measures to encourage this integration could include adopting commercial standards and business practices for military procurement and permitting defence contractors to charge research and development in preparation for conversion against military work. The objective would be to reduce the extent to which individual companies and plants were dependent on military work. Similarly, steps can be taken to gradually diversify the economic base of those regions and communities now heavily dependent on military contracts.

297. It is worth reiterating at this point that this discussion is directed specifically at the resources - human and material - specialized in and wholly concerned with meeting the military demand for goods and services. These are the resources that accomplish the final manufacture and assembly of specialized military products. The industries in which these resources are located - primarily aerospace, electronics and shipbuilding - serve both the military and civilian markets, and as one moves down the manufacturing chain from the level of the prime military contractor there is increasing scope for meeting both demands from the same production facilities. In the Soviet Union, for example, it was stated in 1971 that 41 per cent of the output of military industry consisted of civilian products and the current five-year plan (1981-1985) provides for a considerable expansion of such production. Similarly, it is estimated that about 60 per cent of the output of military industry in the United States in 1978 was for the civilian market. 187/

298. An excellent example of the scope and content of a strategy for conversion is provided by a bill (S.1031) introduced in the United States Senate in 1979. 188/

186/ Institute for United States and Canadian Affairs, USSR Academy of Sciences, Urgent Political, Social and Economic Problems of the Present Stage of the Development of Mankind, and Practical Ways of Diverting to Development Needs the Resources Now Absorbed by the Arms Race, p. 14.

For some examples of the application of the systems management capabilities in the United States defence industry to civilian problems in the late 1960s see Marvin Berkowitz, The Conversion of Military-Oriented Research and Development to Civilian Uses (New York, Praeger Publishers, 1970), appendix 7H, pp. 597-604.

187/ Seymour Melman, op. cit., p. 14.

188/ Bills with a similar intent have been introduced in the Senate and the House of Representatives for many years. None of them, including S.1031, reached the point of a vote in either chamber. New bills were introduced in 1980.

/...



The purpose of S.1031 is to facilitate the economic adjustment of communities, industries and workers to civilian-oriented activities in the event of reductions in military business. It provided for the establishment of a Defense Economic Adjustment Council composed of representatives of the major Federal Government departments, private industry and the labour unions. The Council would be supported by a professional staff of specialists in such fields as marketing and production engineering and would be authorized to secure whatever data and information it needed from any government or government-affiliated body. The duties of the Council would include the preparation and distribution of a Conversion Guidelines Handbook on such issues as the retraining and reorientation of managerial, professional and technical personnel and the redirection of physical plants to civilian production.

299. The bill further provided for the establishment of separate management and labour Alternative Use Committees at every defence facility employing more than 100 persons. These committees would be required - subject to penalties - to develop and keep up to date plans to permit complete conversion to civilian work within a period of two years, to identify the civilian personnel that would have to be released in the process and to make provision for their occupational retraining as necessary. Thirdly, the Bill provided for the establishment of a special Workers Economic Adjustment Reserve Trust Fund to be financed from budgetary savings resulting from military cutbacks (10 per cent of the computer savings) and from earnings in industry associated with military contracts (1.25 per cent of a contractor's annual gross revenue from sales to the Department of Defense). Other provisions in the bill offer income maintenance guidelines for the workers involved in retraining and redeployment. Finally, the Bill gave the Defense Economic Adjustment Council authority to earmark for communities seriously affected by military cutbacks an adequate portion of the economic development funds administered by various Federal agencies.

#### Alternative work

300. It was pointed out in chapter II above that experiences during the 1970s reaffirmed in a quite spectacular fashion that resources are indeed limited, even from a global perspective. The massive requirements for development so forcibly articulated in the context of a new international economic order; the oil crisis; mounting concern over access to other non-renewable raw materials; and the complex, synergistic relationships between pollution of the air, water and land environment have produced an impressively long list of national and international economic and social problems that require solution on a more or less urgent basis. In other words, identifying economic and social requirements that could use the resources now devoted to the arms race does not present the slightest problem. Indeed, the problem would once again be one of choice, of establishing priorities, since even disarmament would not eliminate the over-all scarcity of resources relative to demand. Significant disarmament could, however, provide a flying start, particularly as such a development would almost certainly provoke a more generalized rationalization in the allocation of resources.

301. In the long run all resources are perfectly malleable. The conversion to socially useful purposes of the resources now employed in the military sector is a

somewhat more constrained operation since it is not practicable to reduce a 45-year-old aeronautical engineer to a high-school graduate or a missile assembly plant to scrapmetal and refashion them in the desired manner. Nevertheless, there is an overwhelming consensus, based on solid experience, that the resources employed for military purposes can, over a period extending up to about two years, be adequately "refashioned" to work effectively toward meeting civilian needs. Finding civilian products to replace the military ones can best be done within the company itself, making use of the competence existing in the company. Past investigations into the conversion issue have identified a broad range of civilian activities to which military resources could be shifted, particularly, of course, within States with a large and diversified military sector but also in the context of international development. The latter perspective is of special interest in the present context and will be discussed separately below.

The national perspective: alternative work in the industrialized countries

302. As pointed out in earlier chapters, many of the major industrialized countries have in recent years experienced unusually high rates of inflation and unemployment and declining productivity growth. Some of them have severe pollution problems, decaying cities, declining standards in education and health care and increasing numbers of people who live at or near the poverty line. Particularly urgent problems in these countries are those surrounding energy. The development of commercially viable renewable sources of energy is an urgent priority and one to which military R and D resources could effectively be applied. Reverting to a greater reliance on coal seems virtually inevitable in the short run, but even here there are major research requirements to mitigate adverse environmental effects. There is every reason to believe that a focused and systematic research and development effort on the part of Government and industry could produce the necessary technological breakthroughs. Given the size and considerable urgency of the energy question and the common interest in providing global energy security, one could envisage an international energy agency to facilitate scientific exchange ... and minimize the duplication of effort.

303. In addition to providing alternative work for significant numbers of scientists and engineers now engaged in military R and D, one United States study has found that production workers in the military sectors could quite readily transfer their skills to solar development, production and installation. 189/ Clearly, once commercially viable solar systems had been developed, their production, installation and maintenance would be a vast undertaking with employment effects that would extend far beyond the (converted) military community. In a more general sense, the development of more energy efficient technologies for application throughout the manufacturing and transportation sectors of industry is a key requirement for so-called re-industrialization, and provides a variety of areas into which military R and D resources could be directed.

---

189/ Robert De Grasse, Jr. et al., Creating Solar Jobs: Options for Military Workers and Communities, a report of the Mid-Peninsula Conversion Project, November 1978.

304. Another area urgently in need of attention is the environment. An essential prerequisite to arresting environmental degradation and repairing the damages already done is a more comprehensive understanding of the complex, synergistic relationships between the air, water and land environments. A wide variety of disciplines from both the natural and social sciences would be relevant here, including all or most of those found in the military R and D community. Housing and urban renewal offer another outlet for a range of R and D capabilities and, subsequently, for massive reconstruction programmes. Such programmes call for the development of new materials, construction techniques and tools, coupled with imaginative planning to make cities and urban concentrations more liveable.

305. New transportation systems are sorely needed, particularly in urban areas, and have long been regarded as a major civilian alternative for the high technology industries in the military sector. This remains the case, but experience has confirmed the importance of ensuring that criteria other than performance and technical competence are factored in during the conversion process. In the United States in particular, upgrading the system of railroads is potentially an enormous market for military R and D and production capabilities. Rail remains the most fuel-efficient means of transporting people and goods. The newest rail systems incorporate very advanced technology, require major investments in rolling-stock and in new construction, particularly the separation of passenger and freight lines on high density routes. As regards health care, the enormous advances in methods of treatment have not been matched by the organization and delivery of services at affordable cost. The military sector's skills in organization and systems management could find applications in this area. Similarly, it is widely believed that the revolution in communication technologies has major applications in the field of education. Employment opportunities could be created here for engineers from the military sector. It will be recalled that engineers are expected to pose the most difficult problem as regards re-employment because the requirements for engineers in most civilian industries, as a percentage of the total work-force, is markedly lower than in military industry.

306. More detailed information is available in the literature on alternative civilian work for the resources now producing specialized goods and services for the military. The previous United Nations report on disarmament and development identified more than 70 possible alternative uses for military R and D capabilities. Alternative work for military industry has been the subject of active investigations in the United Kingdom in recent years. An important feature of this work has been the direct involvement of the workers concerned, particularly those at Lucas Aerospace and Vickers. This work has also yielded long lists of civilian products relatively suited to the capabilities of the plant, equipment and labour force now manufacturing military electronic systems, naval vessels, armoured vehicles and the like. <sup>190/</sup> Unfortunately, this initiative has been stopped well short of the implementation stage.

---

<sup>190/</sup> Disarmament and Development, ST/ECA/174 (United Nations publication, Sales No. E.73.IX.1), pp. 33-37. A more contemporary but still incomplete list, taken in large part from these recent investigations, appears in Dan Smith and Ron Smith, Military Expenditure, Resources and Development ... and is reproduced in Appendix II. See also Dan Smith, ed., Alternative Work for Military Industries (London, 1977).

307. A specific dimension of conversion of particular interest at the present time is the resources now devoted to the development and production of chemical warfare agents. Efforts are now being made to permit negotiations to begin on a convention that would prohibit the development, production, deployment and stockpiling of chemical weapons and the secure destruction of such stockpiles. A recent study by the Stockholm International Peace Research Institute concluded that conversion was technically feasible and would involve little or no disturbance for the work-force involved. <sup>191/</sup> On the one hand, it is considered technically feasible to break down stockpiled chemical warfare agents into their base materials and intermediate products and apply these to products useable for civilian purposes. Moreover, this process requires the same specially skilled scientific and technical personnel as are needed for the production of chemical warfare agents. On the other hand, it is quite feasible to produce commercial products such as pesticides, plasticizers and fire retardants in plants producing chemical warfare agents. Ironically, the very ease of conversion is a serious drawback in this case because it would be relatively easy to rededicate the facility to agent production. Unless there were to be a breakthrough on the question of on-site inspection, verification of compliance with a chemical warfare convention would probably require that the facilities be shut down and broken up.

308. Given the almost universal judgement that, with appropriate preparation and planning, the transitional problems associated with conversion can be readily accommodated and bearing in mind that disarmament will almost certainly be a selective and gradual process, it should be apparent that the industrialized countries, including, in particular, the major military powers, do not lack important civilian uses for the resources now dedicated to the military.

The national perspective: alternative work in the developing countries

309. It will be recalled that the developing countries still account for only about 16 per cent of global military expenditure and that this sum is heavily concentrated in a relatively small number of countries, particularly those in the Middle East region. With a few important exceptions, R and D for military purposes is negligible. The production and assembly of major weapons is considerably more widespread but, again, the scale of the effort is significant in only a few countries. By and large, the labour employed in the military sector will not be uniquely specialized for military work, and technology in military industry will not be so far removed from civilian industrial technology. It is true that industry in the developing countries is generally narrowly based and less dynamic than in developed countries so that the inherent capacity for adjustment and conversion is lower. On the whole, however, the problems associated with conversion would seem

---

<sup>191/</sup> SIPRI, Chemical Weapons: Destruction and Conversion (London, Francis and Taylor Ltd., 1980). See, in particular, pp. 74-75 and pp. 130-133.

to be relatively small in all but a few developing countries and the benefits from disarmament easier to realize. 192/

310. At some \$73 billion in 1980, military expenditures by the developing countries are by no means inconsequential. Moreover, the alternative uses to which these resources might be applied are particularly compelling so that, as in the industrialized countries, the State will have to consider very carefully how the opportunities opened up by disarmament measures can be exploited to alleviate the most urgent economic and social problems and to contribute toward placing the economy on a more sound and independent long-term path. In many developing countries, substantial disarmament would significantly ease prevailing financial constraints on the implementation of development plans. The reduction in the import of arms and spare parts and of capital goods and intermediate products for such local military production as is undertaken would release foreign exchange to alleviate bottle-necks in the programmes for industrialization and the expansion of agricultural production. The armed forces, the military bureaucracy and personnel in defence industries would provide a pool from which to reduce shortages of various types of skilled labour and of managerial personnel. Moreover, the diversion to the military of able-bodied, educated and skilled manpower from schools, universities and technical institutions could be minimized,

311. Reducing the incidence of hunger and malnutrition will clearly be a priority claimant on the resources released by disarmament measures both in the short term and the longer term. Education and health are two more areas which require vast resources even to make basic services and amenities available to all. In short, the developing countries will have even less difficulty than the industrialized countries in identifying beneficial alternative uses for the resources now consumed for military purposes and, on the whole, should find it easier to accomplish the transition.

The international perspective: alternative work in the context of a new international economic order

312. A structural transformation such as the conversion to civilian activities of the resources now employed for military purposes will be much easier to accomplish in a dynamic economic environment. Present economic difficulties may to some extent be symptoms not merely of a temporary cyclical downturn but of deeper structural problems. The saturation of major consumer markets and the emergence of serious supply-side constraints on economic growth - energy, raw materials and so on - all suggest the need in many countries for significant changes in the structure of industry, in the direction of future investment and in the pattern of consumer demand.

---

192/ It can also be mentioned that some developing countries have experience in this field. India, for example, managed large-scale demobilization following the Second World War. Similarly, Singapore, with co-operation from the British Government, successfully overcame the loss of substantial economic activity when the latter country withdrew its forces.

313. There is a body of opinion that holds that the industrialized nations cannot by themselves bring about world economic recovery. <sup>193/</sup> Specifically, it is widely and openly stated that an essential requirement is to make effective the enormous potential demands in the developing countries. The OECD countries are fully aware that their present economic situation would be significantly worse had not the demand for their exports from the developing countries remained relatively buoyant through the 1970s. There is growing support for the view that a more balanced pattern of world growth and development is strongly in the mutual interest of industrialized and developing countries for both economic and political reasons. Moreover, the expansion of international economic co-operation and the collaborative management of interdependence for mutual benefit and particularly towards the goal of diminishing prevailing asymmetries in the interdependence between industrialized and developing countries, can and should be fostered to encompass East-West, East-South, South-South as well as West-South relations.

314. Needless to say, broad agreement on where the solution lies is a far cry from the elaboration and implementation of a strategy to reach that solution. The Declaration and the Programme of Action for a New International Economic Order adopted in 1974 (General Assembly resolutions 3201 (S-VI) and 3202 (S-VI)) and their subsequent elaboration at the seventh special session of the Assembly (resolution 3362 (S-VII)) and in the International Development Strategy for the Third United Nations Development Decade (resolution 35/56) form the most comprehensive plan of action that exists at present. The broad outlines of this strategy were sketched in chapter II and will not be repeated here. Suffice it to say that the implementation of this strategy with deliberate speed is a vast undertaking, with commensurately massive requirements for resources and far-reaching implications for the structure and pattern of global economic activity. When one is speaking of new economic and social programmes requiring resources valued at several hundreds of billions of dollars the resource constraints imposed by the arms race become apparent. What is still more fundamental, one can legitimately wonder whether the adoption of such a bold and enlightened perspective is at all possible if international relations continue to be dominated by an arms race mentality.

315. The more specific questions to be considered here are first, in what ways could the resources now employed for military purposes contribute to accelerated economic development in the developing countries and secondly, are the transitional difficulties associated with conversion increased or lessened if the problem is cast in a framework of international co-operation? The latter question, to take it first, is an area that needs more investigation, but such indications as are available suggest that the conversion of resources from military to civilian uses would be facilitated if the process is integrated with programmes aimed at the achievement of a new international economic order. But even in the present context, it is difficult to conceive how the alternative work envisaged could be undertaken exclusively within national boundaries and even more so among developed or developing countries taken as separate groups when much work will have to be done in the global commons shared by all mankind.

---

<sup>193/</sup> See, for example, the OECD report, "Facing the Future", Interfutures, Paris, 1979, and World Bank, World Development Report 1979, Washington, D.C., 1979.

316. As mentioned above, economic adjustments of any kind are more easily accomplished in a dynamic economic environment and it seems to be agreed that an essential requirement here is strong growth and expansion of the world economy and, in particular, of the developing countries. In addition, however, there is evidence that imports of capital goods by developing countries would coincide to a significant extent with the productive capacities released by disarmament measures in the industrialized countries. In a case study of disarmament and conversion in Norway, for example, when increased resource transfers to developing countries were factored in as one of the options for conversion, it was found that the transfer policy least disruptive for the Norwegian economy involved goods and services that closely matched the new emphasis in developing countries on providing basic needs and promoting self-reliance; that is, agricultural machinery, fishing technology, machinery for mining, manufacturing, construction and hydropower plants and equipment and personnel for education and health programmes. <sup>194/</sup> Similarly, a case study of the Federal Republic of Germany found that existing development assistance programmes, even though predominantly untied, resulted in substantial business for the German economy with the benefits concentrated in the engineering, vehicle-building and metal-production sectors of industry. <sup>195/</sup> It will be recalled that military demand is also concentrated in these sectors so that a general expansion in the import capacity of developing countries would facilitate conversion.

317. As regards the first question, it would seem that the opportunities for the direct conversion of resources from military purposes to economic and social development purposes in the developing countries are most prolific in the field of R and D. The importance of science and technology for development can scarcely be overestimated. Indeed if it were not possible to be confident of the contribution that scientific and technological developments can make in solving the problems of underdevelopment these problems would seem quite hopelessly large. At present, however, the developing countries account for just 12 per cent of the scientists and engineers involved in R and D world-wide and for less than 3 per cent of global expenditures. Directing part of the military R and D resources in the industrialized countries to the economic and social problems of developing countries would go a long way toward correcting this imbalance. Over the short and medium terms, this might be characterized as temporary access to additional R and D capacity, but it is particularly important that the effort be made in such a way as to permanently strengthen the indigenous capabilities of the developing countries. Among other things, there is need for a great deal more research into how technology is transferred and the prerequisites for technology to be adapted and to take root.

---

<sup>194/</sup> Olav Bjerkholt, Aadne Cappelen, Nils Petter Gleditsch and Knut Moum, op. cit., pp. 51-53.

<sup>195/</sup> Rolf Krenzel, Macro-Economic Effects of Disarmament Policies on Sectoral Production and Employment in the Federal Republic of Germany, with Special Emphasis on Development Policy Issues (report prepared for the Group), p. 67.

318. The prevailing imbalance in R and D capabilities has placed the developing countries in a position of virtually complete technological dependence on the industrialized countries. This technology is costly to acquire and, as experience has shown, more often than not unsuited to the circumstances prevailing in most developing countries. Technology transferred under these conditions has tended to result in large-scale, capital-intensive enterprises appended to the predominantly agricultural indigenous economy, facilitating the concentration of power by minority elites and reinforcing social and economic inequalities within the developing countries. It has also tended to result in the shift of environmentally destructive industrial activities to the developing countries. In other words, if military R and D capabilities in the industrialized countries are to be converted to addressing the economic and social problems of the developing countries, it is essential that it be done as if these countries themselves possessed such capabilities. Only in this way can there be reasonable assurance that the results will be of maximum benefit and consistent with the development objectives and requirements of individual countries.

319. As with the industrialized countries, one of the foremost requirements in the developing world is for new and renewable sources of energy to supplement petroleum. While there need be no particular inhibitions about seeking high-technology solutions, the more important requirements would be that the devices be producible on a small scale and relatively easy to operate and maintain so as to permit their proliferation throughout the rural sector. Many developing countries lack even the technical and managerial resources needed to provide a base for developing an energy strategy, that is, to conduct geological and geophysical surveys of fuel minerals and other energy sources, examine conventional and new technologies and assess trends in the demand for commercial and non-commercial energy. Satellite technologies would be of great utility here.

320. Food production is another critical area. Under present conditions, many developing countries are projected to become more dependent on imported food over the next two decades. This is a serious hazard, both because the global balance between supply and demand could easily become quite delicate and because the real cost of food will almost certainly increase substantially so that major food import requirements will constitute an even heavier drain on foreign exchange reserves and, indirectly, on the capacity to sustain growth. There are a variety of research and development challenges in this field: the development of high-yielding varieties of staple food for the diverse soil and climatic conditions found in developing countries; pest control; methods of food storage and processing suited to local conditions; water management and irrigation technologies; and tools and equipment that use local raw materials, can be produced domestically and with low acquisition, operating and maintenance costs.

321. Recent advances in molecular biology hold particular promise for food-deficit developing countries. It is now considered possible to produce protein from bacteria and algae far more quickly and at considerably less cost than from animal and agricultural sources. It remains to translate this knowledge into facilities and processes suitable for application in developing countries. A recent investigation concluded that "... advances in enzyme engineering, microbial



genetics and fermentation technology ... point at new approaches to the development of small-scale processes that could form a logical take-off point for industrialization." 196/

322. Industrialization has been afforded central importance by the developing countries in accelerating their development in the context of a new international economic order. It has been estimated that attainment of the Lima target of increasing the share of developing countries in global manufacturing output to 25 per cent by the year 2000 requires a ninefold increase in the industrial output of the developing countries, necessitating investments of the order of \$400 billion to \$500 billion. 197/ Several possible foundations for an industrialization programme have already been mentioned and there can be no doubt that the military scientific and engineering capabilities in the developed countries could be applied in many other areas to provide an appropriate technological foundation for industry.

323. Two other areas in which the needs of the developing countries are very great and which offer considerable potential for the conversion of military R and D resources are health and education. For a variety of reasons, including, until recently, preparing for the possible use of biological weapons in warfare, the military in the industrialized countries has paid a great deal of attention to infectious diseases, food hygiene and the management of water and waste under field conditions. The knowledge acquired and the preventive capabilities developed have potentially great applications in improving health conditions in developing countries. It has also been suggested that military capabilities in the biological sciences could be readily applied to the fight against infectious diseases, particularly those in childhood, with military skills in organization and logistic planning providing essential backup to ensure the systematic and effective implementation of remedies. As mentioned previously, modern communication technologies and new media techniques offer great potential to make educational facilities more generally available in developing countries. Translating these capabilities into practical applications appears to be a fruitful alternative for the engineering and systems management capabilities of the military sector in the industrialized countries.

324. The reallocation of research, development and technological capacity to the information and communication networks of developing countries would be a major contribution to furthering their economic and social development. The World Administrative Radio Conference of 1979, the first of its kind in 20 years, undertook a comprehensive review of the world radio regulations dealing with the procedures governing the use of the radio frequency spectrum and the Geo-stationary

---

196/ SIPRI, The Fight Against Infectious Diseases: A Role for Applied Microbiology in Military Redeployment (London, Francis and Taylor Ltd., 1979), p. 139.

197/ UNIDO, The Technological Self-Reliance of Developing Countries: Towards Operational Strategies (UNIDO/ICIS. 133, November 1979), p. 7; and Report of the Third General Conference of the United Nations Industrial Development Organization (ID/CONF.4/22), p.32.

Satellite Orbit (the single equatorial orbit in which a satellite has to be placed in order to remain stationary with respect to the earth's surface). Developing countries find themselves at a disadvantage in many respects, not the least being the use of frequencies by the major weapon States for military purposes in ways inconsistent with accepted procedures. This has adverse effects on the capabilities of the developing countries to make use of radio frequencies for ~~communications. A crash programme to overcome illiteracy is another area in which~~ with the allocation of resources, developing countries could benefit.

325. This section is not exhaustive on the scope of alternative work. Mention needs to be made of the more or less predictable cycle of natural disasters and the need for vast quantities of resources to alleviate suffering and to help in reconstruction. Another area is the world-wide refugee problem which, again, needs vast quantities of resources to meet basic requirements for survival. These are two areas in which the international community has shown itself in recent times to be willing to assume a collective responsibility.

326. Similarly, no discussion of the potential alternative uses for military resources in an international framework would be complete without consideration of capital flows to developing countries. However much success the developing countries have in generating more resources internally and whatever is done in the fields of collaborative R and D, technology transfer, terms of trade and preferential access to markets in the industrialized countries, the achievement of high and sustained growth rates will require growing capital flows to fill the gap between domestic savings and investment requirements. A recent World Bank report estimated these requirements for what it called the "high case", an optimistic projection given a generally austere economic outlook for the global economy. 198/ The projection was labelled optimistic because it presumed strong policies in all countries to adjust to high and growing energy costs; that the industrialized countries would run large deficits in the balance of payments in order to maintain their demand for imports and avoid an excessive slowdown in world trade in the early 1980s; that the industrialized countries would provide sufficient aid, particularly to low-income countries to minimize debt-servicing difficulties; and that the developing countries would continue to make determined efforts to raise investment ratios and productivity.

327. The growth rates considered feasible under these conditions are shown in table V.1 for oil-importing developing countries. 199/ These comparatively modest

Table V.1. Projected average annual rates of growth of GNP in developing countries

	<u>1980-85</u>	<u>1985-90</u>
Low-income	4.1	4.6
Middle-income	4.9	5.7

198/ World Bank, World Development Report 1980 Washington, D.C., August 1980.

199/ Ibid., p. 6.

projections for growth - they imply a growth in GNP per capita of just 2 to 3 per cent annually over the next decade 200/ - lead nevertheless to an excess of investment over domestic savings amounting to 3.8 per cent of GDP in 1980 in the low-income developing countries and to 1.2 per cent of GDP in 1990 in the middle-income developing countries. 201/ The projected net inflow of foreign capital required to fill this resource gap in 1990 - including the more modest requirements of the oil-exporting developing countries - was \$177.9 billion. Projecting existing conditions, the World Bank estimates that \$62.1 billion, or 35 per cent of this sum, would be provided as grants or under concessionary terms and the remainder on commercial terms. In this case, however, the developing countries would, by 1990, be devoting nearly 85 per cent of new medium-term and long-term capital inflows to the payment of interest and principal on accumulated debt, leaving just 15 per cent for buying imports and adding to reserves. 202/

328. Clearly, the "existing conditions" governing international capital transfers are not satisfactory in the light of the requirements for investment and growth in the developing countries. The magnitude and perceived urgency of military requirements is a strong and direct contributor to this state of affairs. Military requirements siphon off significant investible resources in the developing countries on the one hand and, on the other, seriously restrict the volume of developmental capital that the industrialized nations can provide on concessional terms. Accordingly, disarmament measures would ease the constraints at both ends. In particular, significant disarmament would permit a major increase in the share of the total foreign capital requirements of the developing countries provided in the form of grants and soft loans.

---

200/ It should be noted that the growth targets set in the International Development Strategy for the Third United Nations Development Decade are significantly higher. See chap. II above.

201/ World Bank, World Development Report 1980 ..., p. 9.

202/ Ibid., p. 25.

CHAPTER VI

POSSIBLE INSTITUTIONAL MEASURES FOR THE INTERNATIONAL REALLOCATION  
OF RESOURCES FROM ARMAMENTS TO DEVELOPMENT

329. Disarmament and development have been central concerns of the United Nations throughout its entire history and a long series of General Assembly resolutions 203/ and special reports 204/ have highlighted the relationship between disarmament and development. A recurring theme within the United Nations treatment of disarmament issues is the prospect of additional resources for the developing countries becoming available through disarmament measures. Thus the Final Document of the Tenth Special Session of the General Assembly speaks of " ... the necessity to release real resources now being used for military purpose to economic and social development, particularly for the benefit of the developing countries" (resolution S-10/2, para. 94 (emphasis added)).

330. While this certainly includes increased development assistance, it also means more than that. The relationship between disarmament and development is a new perspective which aspires to transform the terms of discussion of these issues in a constructive way. Recent General Assembly statements on this relationship, including paragraph 16 of the Final Document, also assert that the arms race is incompatible with the new international economic order. Thus the requirements of development and the potential contributions of disarmament to development have now also come to be regarded in terms of broader structural changes in the international economy and in international institutions.

331. As we have seen in the foregoing chapters, the principal benefits of disarmament for development will be of a directly economic character, through reinvestment in the civilian sectors of economies now maintaining large military sectors, and as a possible catalyst for the attainment of goals of the new international economic order. The major share of investment requirements in developing countries will continue to be generated from their own internal

---

203/ Resolutions 380 (V); 914 (X); 1837 (XVII); 2387 (XXIII); 2526 (XXIV); 2602 (XXIV); 2667 (XXV); 2685 (XXV); 3470 (XXX); 31/68; 34/88.

204/ Economic and Social Consequences of the Arms Race and of Military Expenditures, A/32/88/Rev. 1 (United Nations publication, Sales No. E.78.IX.1); Reduction of the Military Budgets of States Permanent Members of the Security Council by 10 per cent and Utilization of Part of the Funds Thus Saved to Provide Assistance to Developing Countries, A/9770/Rev.1 (United Nations publication, Sales No. E.75.I.10); Disarmament and Development, ST/ECA/174 (United Nations publication, Sales No. E.73.IX.1), Economic and Social Consequences of Disarmament, E/3593/Rev.1 (United Nations publication, Sales No. 62.IX.1).

resources. Any increased official development assistance which might result, either through existing bilateral and multilateral mechanism or through a new fund for the international reallocation of disarmament savings to development, must be seen in this proper, supplementary perspective. While savings through reduced military expenditures would have substantial direct benefits for a number of them, possibilities for transfers additional to the existing ODA flows, will be particularly significant for the developing countries.

332. In considering the possible institutional arrangements for the transfer of disarmament related resources for the benefit of developing countries, this chapter examines the technical modalities, problems and perspectives of proposals for the establishment of a fund-type institution. In doing so, and in accordance with the mandate of the General Assembly (resolution 33/71 I), the Group gave particular consideration to the French proposal made at the tenth special session of the Assembly (see paragraph 344).

333. The current state of affairs in disarmament negotiations and development issues, viewed separately, does not give grounds for optimism. The more optimistic disarmament climate of the early 1970s has faded. The introduction of a new generation of weapons and the new mood of confrontation in East-West relations give rise to fears of yet another, more perilous and more costly round of the arms race. Negotiations on a new international economic order, after initial high hopes, have not yet made significant progress and the financial situation and development prospects of many developing countries have, in fact, deteriorated. Global negotiations within the framework of the United Nations have not yet started. Thus, at a time when progress on disarmament and development issues is minimal and seemingly beset by major differences in viewpoint, conflicting interests and lack of political impetus, proposals for a new disarmament fund for development, which would link the two issues, seem audacious. On the other hand, the current impasse in East-West relations and in the North-South development dialogue would seem to demonstrate the need for new perspectives and new impulses.

A. Proposals for fund-type institutions on the relationship between disarmament and development

Levels of political action

334. Whether and to what extent the favourable constellation of disarmament successes could be utilized for the benefit of development would depend, in part, of course, on the formation of opinion and political action, in the first instance in the development countries and in the international community, including the United Nations system. In addition to action in a national framework to rechannel some of the resources released through disarmament measures into development, such as through increased official development assistance international activities at either a regional or a global level might be undertaken.

335. The Declaration of Ayacucho provides an example of a regional arms limitation initiative, the provisions of which call for the reallocation of disarmament savings to developmental needs within a region. <sup>205/</sup> However, since the parties to the agreement are all developing countries, it would not entail any reallocation of resources by the developed great powers from armaments to development. Arms limitations treaties between the United States and the Soviet Union or their respective alliances might also provide for the allocation of a portion of the savings to development assistance, either bilaterally or through some existing or new international institution. Similar agreements might be concluded among NATO or WTO countries for the allocation of a percentage of disarmament savings to development assistance.

336. Given the particular concern of the United Nations with both disarmament and development, its involvement in some form in efforts to channel disarmament savings into development assistance seems natural and inevitable. Its activity might be limited to its role as a forum and a moral authority in which norms and expectations of the international community, in this case for the allocation of a portion of disarmament savings to some form of development assistance, are articulated and established. Beyond norm-setting, it may be desirable to establish some formal mechanisms within the United Nations system itself which would have the specific function of channelling, according to an agreed formula, resources from disarmament to development in addition to the 0.7 per cent target stipulated for ODA, and which could both symbolize recognition of the relationship between them and act as a catalyst for the adoption of substantive measures to give it practical effect. However, the ODA targets were fixed without reference to the possibility of disarmament; the results which may be obtained through ODA procedures and/or disarmament measures will be seen independently of each other.

#### Past proposals

337. Throughout the history of the United Nations there has been not only an emphasis on benefiting development through disarmament but also recurrent proposals for a specific institutional link to foster this reallocation of resources from armaments to development. As early as 1955, the establishment of an International Fund for Development and Mutual Assistance was proposed by French Prime Minister Edgar Faure. <sup>206/</sup> The proposed fund was part of a comprehensive and detailed "draft agreement on the financial supervision of disarmament and allocation for peaceful purposes of the funds made available", submitted to the United Nations Disarmament Commission in Geneva.

---

<sup>205/</sup> José Antonio Encinas del Pando, Declaration of Ayachucho (report prepared for the Group).

<sup>206/</sup> Official Records of the Disarmament Commission, Supplement for April to December 1955, document DC/71, annex 16.

338. According to this plan, States would agree to reduce their military expenditures by a percentage that would increase from year to year; the resources thus released would be transferred to the Fund. The Fund authority would be charged with setting up and policing a uniform definition of military expenditures with a standardized nomenclature for military budget items. States party to the agreement would have the obligation of communicating all documents relating to their military expenditures to the Fund. This plan represents an early proposal for disarmament through reduction in military budgets.

339. The draft agreement also envisaged arms limitation agreements which would then be converted into corresponding reductions in the military budget under the supervision of the Fund. In this later case, the monitoring of military budgets by the Fund would serve, as a means of verification of the agreed disarmament measures. Part of the resources released to the Fund through the agreed reductions in military budgets would be left at the disposal of the Government concerned, and another part would be made available to the Fund to be allocated for development. With a view to problems of conversion, it mandated that 75 per cent of the funds thus allocated would be spent in the donor country. In this scheme, budgetary control was seen as an attractive alternative to "material control" of a disarmament agreement by technical or other means. Another particular virtue of the plan in the view of Mr. Faure, was that it would be relatively self-enforcing. Each State would be required to turn over its stipulated contribution to the Fund and, if it actually concealed military expenditures in excess of the agreed reduction, it would in effect be penalized by this amount.

340. In March 1956, the Soviet Union proposed that a special fund for assistance to developing countries be established within the United Nations to be financed through military budget reductions (DC/SC.1/41). Two years later the Soviet Union renewed and elaborated this proposal. In a memorandum annexed to a request for the inclusion of an item concerning the reduction of military budgets, Mr. Gromyko, Chairman of the USSR Delegation, emphasized that the proposed budgetary approach was part of a "practical method of solving the disarmament problem" by "gradual, partial measures" (A/3925). The draft resolution, submitted to the First Committee, called for a reduction in the military budgets of the USSR, the United States, the United Kingdom and France of 10 to 15 per cent and the use of part of the savings for development assistance. 207/

341. In 1964, Brazil submitted a working paper to the Eighteen-Nation Disarmament Committee in Geneva entitled "Application of savings on military expenditures", which called for the establishment of an "Industrial Conversion and Economic Development Fund". The fund would be allotted not less than 20 per cent of the global value of reductions in military budgets which would then be utilized for financing development assistance. 208/ The Brazilian working paper emphasized that

---

207/ Official Records of the General Assembly, Thirteenth Session, Annexes  
agenda items 64, 70 and 72, document A/C.1/L.204.

208/ Official Records of the Disarmament Commission, Supplement for June to  
December 1964, document DC/209, annex I, sect. F.

the economic and social imbalance then prevailing in the world was, because of the social tensions it entailed, a serious threat to international peace and security and that the struggle against misery in the world would encourage the economic development of the world as a whole.

342. In 1973, the General Assembly adopted, at the initiative of the Soviet Union, 209/ a resolution calling for a 10 per cent reduction of the military budgets of States permanent members of the Security Council and the allocation of 10 per cent of the funds thus saved for social and economic development in the developing countries (resolution 3093 A (XXVIII)). The resolution also called on other States with major military and economic potential to participate. This was conceived, initially at least, as a one-time reduction in military budgets. A Special Committee would be set up to distribute the funds, which were to be additional to existing channels of development assistance and would be distributed without discrimination of any kind. A companion resolution introduced by Mexico 210/ called for an expert study of the technical and other problems associated with agreements for the reduction of military budgets (resolution 3093 B (XXVIII)). The resulting report led to a series of expert studies on problems of measuring, comparing and verifying the military expenditures of States. 211/ A standardized reporting instrument defining and detailing military expenditures has been developed and tested. The General Assembly, at its thirty-fifth session, adopted resolution 35/142 B calling upon all States to make use of that instrument in reporting their military expenditures to the Secretary-General. Thus, progress in resolving technical problems associated with agreed expenditure reductions has been made. So far, however, a world-wide response has not been forthcoming and it remains to be seen when this will be the case.

343. A number of new proposals for a fund-type institutional link between disarmament and development were made at the Tenth Special Session of the General Assembly, on disarmament, in 1978. President Senghor of Senegal proposed that a tax on armaments should be instituted based on the military budgets of States. This tax would amount to 5 per cent of military budgets and be paid to the United Nations to be used solely for development assistance. President Senghor suggested that such a tax would raise \$20 billion per annum in revenue (A/S-10/PV.17, p.13).

---

209/ See the letter from the Minister for Foreign Affairs of the USSR (Official Records of the General Assembly, Twenty-eighth Session, Annexes, agenda item 102, document A/9191) and the draft resolution submitted by the USSR (*ibid.*, document A/L.701/Rev.1).

210/ Official Records of the General Assembly, Twenty-eighth Session, Annexes, agenda item 102, document A/L.715.

211/ These reports on the reduction of military budgets were:  
1974: A/9770/Rev.1 (United Nations publication, Sales No. E.75.I.10);  
1976: A/31/222/Rev.1 (United Nations publication, Sales No. E.77.I.6);  
1977: A/32/194/and Add.1;  
1980: A/35/479 (United Nations publication, Sales No. E.81.I.9).



344. In his address to the tenth special session, President Giscard D'Estaing of France proposed the establishment of an International Disarmament Fund for Development which would channel funds released by disarmament into development needs (see A/S-10/PV.3, pp.2-30). This proposal, which was subsequently elaborated in a memorandum of the French Government (A/S-10/AC.1/28) envisioned the fund as a new United Nations specialized agency which would constitute a practical manifestation of the relationship acknowledged by the world community to exist between disarmament and development. Contributors to the fund would be those States which were both most heavily armed and most developed; beneficiaries of the fund would be those States which were least heavily armed and least developed. In principle, the fund would be based on the disarmament dividend approach, that is, on resources released by disarmament measures. However, the French proposal also provided for a transitional phase of the fund with an initial one-time endowment of \$1 billion, until resources derived from disarmament savings could become its long-term basis. In its transitional phase, contributions to the fund would be assessed on the basis of a State's level of armament, measured by the possession of certain types of weapon systems the existence of which, according to the proposal, could be objectively determined. Both contributor States and potential beneficiary States subscribing to the agreement establishing the fund would be fund members and the principle of balance between the two would be the basis of its decision-making. The fund would make grants or loans to developing countries or to intergovernmental organizations, utilizing as much as possible existing international agencies for the administration of its loan and grants. It was further proposed that payments made by contributor States through the fund should be counted toward the United Nations target of 0.7 per cent of GNP for official development assistance.

345. Mexico, while endorsing the French initiative, proposed the immediate opening of a special ad hoc account in the United Nations Development Programme (UNDP) on a provisional basis. Mexico stressed the need to establish practical procedures to channel and distribute to the developing countries a considerable part of the resources that might be released by effective disarmament measures (A/S-10/PV.3, p. 47).

346. Romania proposed the freezing and gradual reduction of military budgets on the basis of a concrete programme. In a first stage, the military budgets were to be reduced by at least 10 per cent and one half of the amounts released in this way would be transferred unconditionally to a United Nations fund for development, especially for the benefit of countries with a per capita income of less than \$200 (A/S-10/AC.1/23 of 12 June 1978.).

347. There have also been a number of recent proposals made by non-governmental organizations and individual experts for the creation of some such fund-type institutional link between disarmament and development. For instance, the report of the Independent Commission on International Development Issues (the Brandt Commission) proposed that consideration should be given to the establishment of a new world development fund to better meet the financial needs of developing countries and, in particular, to provide new sources of additional and long-term programme funding. The Commission suggested a number of potential new revenue

es which would have the requisite character of automaticity, inter alia, the ability of a tax on military expenditures or a tax on arms trade. Other questions included taxation of international trade in general, international in crude oil, energy consumption and durable luxury goods. 212/

features of the alternative approaches to a fund-type institutional link between disarmament and development

The perspective which underlies all of these proposals is that of a vast waste of resources for armaments, which could be better utilized to meet real needs and, in particular, the urgent requirements of development in the opening countries. Three basic contributory principles are found in the various proposals for promoting the relocation of resources from armaments to development:

- (a) The disarmament dividend approach in which the savings resulting from disarmament measures, or a portion thereof, are allocated to development needs;
- (b) The armaments levy approach in which national assessments for development contributions are based on some agreed measure of States' allocation of resources for military purposes;
- (c) Voluntary contributions on the model of numerous other United Nations and specialized agencies in which each State determines its own individual contribution.

Disarmament dividend approach

First of all, it should be noted that most agreements on disarmament and arms control which have so far been reached in the lifetime of the United Nations have released few, if any, actual resources. Thus, for example, the multilateral agreements restricting the military use of Antarctica, outer space and the sea-bed designed to prevent the introduction of armaments in certain areas not yet touched by the arms race. However important, they can hardly be said to have released any resources. Other international agreements such as the Partial Test Ban Treaty and Treaty on the Non-Proliferation of Nuclear Weapons also released no resources. In any case, this was not the primary significance of these treaties. Only the Convention on the Prohibition of the Development, Production, Stockpiling of Bacteriological (Biological) and Toxic Weapons and on Their Destruction can clearly be said to have released any real resources. Even major general agreements such as the SALT agreements were arms limitation agreements which set quantitative limits on the future deployment of certain types of weapons. The limits, however, were almost entirely set above existing force levels. In SALT I, for example, the United States, and the Soviet Union agreed to limit their deployment of anti-ballistic missiles to 100 each, a number which had

---

212/ North-South: A Program for Survival (Cambridge, Mass., MIT Press, 1980), pp. 12-123, 244, 252-253.

not yet been reached by either side. Any significant disarmament dividend resulting from these agreements is of a prospective nature rather than leading to the release of resources actually utilized for military purposes, that is, less resources were subsequently utilized for military purposes, than would probably have been the case in the absence of such an agreement. Even when resources are released there will be problems in connexion with verification.

350. Budgetary limits or reduction of military expenditures has been, parallel to arms limitation efforts, another disarmament strategy which has received considerable attention in the United Nations. Reference was made above to the 1973 General Assembly resolution (3093 A (XXVIII)) calling for a 10 per cent reduction of military budgets and the allocation of 10 per cent of the funds thus saved for development. This and similar proposals have been repeatedly made but with even less success than in the area of physical arms limitation measures. If the NATO and WTO countries were to agree on such a reduction, the current yield in additional development assistance would be of the order of \$4,000 million, which would represent an increase of about 14 per cent in global ODA. Larger reductions or a larger percentage allocation of the savings to development would yield correspondingly more.

351. Any disarmament dividend would have to result from reductions on a mutually agreed basis of military expenditures and from arms limitations strategies. The attention given to reduction of military expenditures as a disarmament strategy has generated considerable experience and expertise within the international community on the measurement and reporting of military expenditures. The familiar difficulties are technical, but primarily political, even assuming a willingness in principle of relevant parties to undertake such reductions in military expenditures: how to standardize the meaning of military expenditures, to compare prices cross-nationally and to monitor the agreed reductions. There are also potentially difficult problems of measurement in the case of arms limitations and disarmament agreements. If a portion of the resulting savings are to be allocated to a fund, the savings realized in the form of actually released resources or of prospective savings must be determined. In this case, the problem is to give a monetary value to agreed reductions in or limitations on force levels, much of which may consist of merely prospective and hence necessarily somewhat speculative savings.

352. As an example, reference could be made to one assessment of the impact of the Anti-Ballistic Missile Treaty of 1972 on United States military expenditures. <sup>213/</sup> According to the assessment, the agreement resulted in the termination of United States anti-ballistic missile deployments and advanced the cause of those favouring a slowdown in air defence modernization and a reduction in air defence force levels

---

<sup>213/</sup> Barry M. Blechman and Edward R. Fried, "Disarmament and Development: An Analytical Survey and Pointers for Action" (paper prepared for the Committee for Development Planning, January 1977), pp.8-9. See also the three illustrative cases of possible savings from arms control agreements (*ibid.*, pp. 14-16).

(estimated annual savings of \$5 billion in 1976 prices). On the other hand, both kinds of reductions might have occurred anyway, although perhaps at a slower pace, even in the absence of the Treaty. Expenditures on other components of the United States strategic arsenal increased after the conclusion of the Treaty, in particular, programmes to modernize offensive weapon systems, and over-all expenditures, after remaining relatively constant for several years, again began to rise. The assessment concludes that the Treaty probably brought about some net savings compared to the expenditure levels that would have been attained if the negotiations had not taken place or had failed.

353. As this example suggests, the problems of measurement are certainly not less complicated in the case of disarmament savings resulting from arms limitation measures and, because of the speculative element inherent in such prospective savings, are perhaps even more difficult to determine objectively.

#### The armaments levy approach

354. According to the armaments levy approach, the financial link between disarmament and development constituted by a fund would consist of pro-rating States' contributions to the fund for development in some relationship to their level of military effort. States with a higher level of military efforts would contribute correspondingly more to the development fund. The armaments levy might be based on absolute levels of military expenditures, on military expenditures as a percentage of government expenditures or as a percentage of GNP. The latter two possibilities raise additional problems of the reliability and comparability of national income accounts and of governmental budgeting data. Furthermore, the relatively high percentage of their GNP or government budgets that some developing countries spend on military efforts would obscure the dominant percentage of world military expenditures attributable to the developed countries and would run counter to the development assistance rationale of the fund.

355. As has already been stated (paras. 342 and 351), a series of studies on the problems of measuring, comparing and verifying absolute levels of military expenditures has been undertaken by the United Nations without leading to world-wide agreement. Other sources on military expenditures which are widely used, such as the publications of the United States Arms Control and Disarmament Agency and the Stockholm International Peace Research Institute are still subject to methodological and data limitations which limit their usefulness as a source of objective data on military expenditures 214/ and these sources would not be universally acceptable as a basis for a United Nations fund.

---

214/ See, in particular, Michael Brzoska, et al., An Assessment of Sources and Statistics of Military Expenditure and Arms Transfer Data (report prepared for the Group).

356. A tax on portions of military expenditures, for instance, the arms trade, has also been proposed - most recently by the Brandt Commission, although with some doubts as to its feasibility. In this case too, the problems of measurement of the arms trade, which are both technical and political, are similar to those encountered in measuring military expenditures as a whole. An additional objection to a tax on arms sales would be that the tax would at least in part be passed on, either directly or indirectly, to the importer of arms, which is, typically, a developing country. If so, the impact of the tax would not be progressive but regressive, falling most heavily on developing countries, and it would promote a redistribution from armaments to development assistance, at best, not between North and South but between different developing countries. Even registration of the international arms trade has been opposed by many developing nations on the grounds that such a measure would unfairly single out arms-importing nations.

357. A third approach to an armaments levy would be an assessment based on the possession of certain types of weapons that are indicative of national military effort and whose existence is generally known or can be ascertained by national technical means of verification. This approach would have the advantage of avoiding some of the technical problems of an armaments levy based on either total military budgets or arms trade.

#### Voluntary contributions

358. Voluntary contributions could also be employed as the basis for a special fund to promote the reallocation of resources from armaments to development. Such arrangements are already an important mode of raising funds for United Nations activities. UNDP, for example, relies on voluntary pledges to support its activities. In 1980 alone, States pledged \$724 million in voluntary contributions to UNDP, and over \$3,400 million in the years 1975-1980. 215/ However, if the disarmament fund were financed out of general voluntary contributions, the specific linkage between disarmament and development would have to be constituted by the purposes for which the special fund is used. The research reports for this study of the relationship between disarmament and development were, for example, financed by voluntary contributions to a special Disarmament Project Fund or by national undertakings in response to an appeal for support from the Secretary-General (see A/34/534). Similarly, a donation from the French Government has provided the initial funding for the new United Nations Institute for Disarmament Research (UNIDIR) at Geneva.

359. Another approach would be to link the source of funds to military efforts. For instance, the Secretary-General suggested, in his address at the special session devoted to disarmament in 1978, that States "devote to national and international disarmament efforts \$1 million for every \$1,000 million currently spent on arms" specifically earmarked for international study in the field of arms

control and disarmament and to intensify and broaden the scope of national programmes of information and study concerning disarmament (A/S-10/PV.1, pp. 23-25). In terms of current levels of military expenditures, this suggestion would, if followed, yield a sum of \$500 million for such activities. Such a linkage of disarmament efforts to levels of military spending would serve as an important "moral and political objective" (*ibid.*). Among other activities, the proposed World Disarmament Campaign may be financed through such voluntary contributions. Although an approach relying on voluntary contributions has proven successful as a basis for funding research and information-type activities, it remains to be seen whether it can be a basis for raising significant additional resources for a disarmament fund for development.

### Beneficiaries of a fund

360. The disbursement of the resources of a fund, if established, would have to reflect the purposes of the fund: disarmament and development and manifestation of the relationship between them. There have been a number of suggestions for allocating the resources of such a fund in addition to criteria usually employed in multilateral development assistance programmes. It has been suggested, for example, that it might be appropriate to give preference to States with a low profile in armaments and military expenditure. Alternatively, it is argued that any such discrimination would be inappropriate for a United Nations development fund and slight the legitimate security requirements of developing countries.

361. In addition to a preference in its disbursement for projects in States with a low military profile, it has been suggested that a fund might - depending on the availability of resources - offer a positive incentive in the form of matching funds for developing countries which are able through disarmament agreements to reduce their levels of military effort. <sup>216/</sup> This, it was suggested, would be feasible even at a minimum funding level of \$1 billion, because most developing countries have, in absolute terms, relatively low levels of military expenditure. This incentive could then be expected to be an effective one, given the high marginal benefits that such a matching formula would give to reductions in military budgets.

362. According to another suggestion, disbursement of the fund resources could be more project-oriented, embracing particular types of projects. A project-type orientation could either concentrate the disbursements on some specific international need to give it maximum visibility and/or select projects with a particular symbolic relationship to the disarmament/development focus of such a fund. It might, for example, focus its attention on conversion of military plants into civilian investments conducive to development; water quality projects; the

---

<sup>216/</sup> This is suggested by Blechman and Fried, *op. cit.*, p. 18, and Pierre Dabiez, Establishment of an International Disarmament Fund for Development (report prepared for the Group), p. 50.

development of renewable, environmentally compatible sources of energy; combating desertification; or the financing of commodity price stabilization proposals. It might also take as its special focus reconstruction needs and other projects in developing countries in the aftermath of wars or civil disturbances, and provide not only special funding but also build up a special expertise in this area. The practicality of special disbursement criteria would depend on a significant level of funding.

363. In the event of substantial disarmament successes which released significant funds through a disarmament dividend, it would probably be necessary to relate the disbursements and projects of the fund to the economic conversion needs of the developed countries concerned, at both a macroeconomic and microeconomic level. This would entail, in the case of very substantial disarmament dividend sums with a significant macroeconomic impact on the economy of the donor country, tying a portion of the disbursed funds to purchases in the economy undergoing conversion; where feasible, specific production facilities and manpower formerly employed in military production might be reoriented towards production for markets in developing countries. The idea of easing the problems of conversion for the developed countries with the aid of demand stipulated by development assistance to developing countries was an original element of the French proposal made by Edgar Faure in 1955. 217/

The French proposal for an international disarmament fund for development

364. The French proposal (A/S-10/AC.1/28) contains a number of distinctive elements which merit particular attention. First it is conceived as a means of manifesting and promoting the relationship between disarmament and development through its very existence. The means at its disposal will depend on the resources released as a result of any arms limitation treaties that may be reached. The first stage is only a prelude to the definitive stage; the initial funding can be considered to be at a modest level, and, likewise, the proposal to count the resources that may be transferred by the fund in assessing States' contributions toward the ODA target of 0.7 per cent can be considered too limited. However, the ODA target is still far from being attained. It was, moreover, stressed at the Sandefjord symposium 218/ that an initial amount of \$1,000 million could have a considerable impact if it were distributed to some of the poorest countries. These two elements of the proposal could be negotiated at the time of the setting-up of the international disarmament fund. This proposed initial level of funding represents a modest 0.2 per cent of current world military expenditure. This impression of relative modesty of the initial level of funding is reinforced by the provision in the French Government memorandum on the proposed disarmament fund which states that

---

217/ Official Records of the Disarmament Commission, Supplement for April to December 1955, document DC/71, annex 16.

218/ The Sandefjord Report on Disarmament and Development (Oslo, 1980) p. 99.

contributions to the fund are to be taken into account in evaluating contributions to official development assistance. Given the existing poor record of meeting the United Nations development assistance target, developing countries would certainly feel that Fund contributions should be net additions to existing levels of assistance and not be deducted from the United Nations target. This is also the opinion expressed in the research reports submitted to the Group. 219/

365. According to the French Government memorandum, the creation of the fund would take place in two stages: the first or transitional stage based on a levy on the armaments of the most heavily armed States would take place before any release of resources as a result of disarmament agreements. During this stage, \$1,000 million would be contributed by the richest and most heavily armed countries; during the second and final stage the fund would be supplied from resources freed through the implementation of disarmament agreements, concluded at the bilateral, regional or international level.

366. Also according to the French Government memorandum and additional information subsequently presented by the French Government for consideration by the Group, various criteria could be used in the transitional stage to identify "the richest and most heavily armed" countries. It being understood that the five permanent members of the Security Council would be automatically included, the following criteria could be utilized: 220/

As a criterion of wealth: a per capita GNP of more than \$1,100;

As criteria of armaments: a level of military expenditure in excess of 2 per cent of GNP;  
a volume of military expenditure in excess of \$US 1.5 billion.

By associating the first criterion with the two others, a list of contributory States would be obtained which would, according to the French proposal, probably fairly faithfully reflect the current situation. Of the sum foreseen as the contribution during the transitory stage, amounting to \$1,000 million, 50 per cent should be based on States' nuclear armaments and 50 per cent on conventional armaments. The criterion used to determine the relative contributions for the nuclear sector of the United States of America and the Union of Soviet Socialist

---

219/ This discussion of the French fund proposal draws heavily on the following reports prepared for the Group: Pierre Dabezies, op. cit.; Marek Thee, The Establishment of an International Disarmament Fund for Development: A Feasibility Study, Bulletin of Peace Proposals, vol. 12, No. 1, 1981; Ove Narvesen and Finn Sollie, Analysis of a Proposal to Establish an International Disarmament Fund for Development.

220/ This proposal is based on 1977 statistics and the figures refer to 1977 U.S. dollars.



Republics could be their numbers of vehicles, based on the SALT Agreement. The joint participation of these two countries would amount to 80 per cent of the whole sum. China, the United Kingdom and France would jointly contribute 20 per cent, that is to say 6.66 per cent each. For conventional armaments the following distribution is proposed:

- 20 per cent from the Navy - using large units as a criterion;
- 40 per cent from the Army - using the number of heavy armoured vehicles as a criterion;
- 40 per cent from the Air Force - using the number of combat planes as a criterion.

Data relating to this material would be supplied by statistics most frequently used internationally.

367. In the second and final stage, contributions would be determined by arms reduction agreements. In the view of the French Government, the world is as a whole overarmed and, while each State is the best judge of the resources it devotes to security, it is necessary to lower the security threshold at present universally deemed dangerous; the only way to reach this goal is for sovereign States to conclude bilateral, regional or world-wide arms limitation agreements. In this view, the States parties to these agreements would, through negotiations, determine what is for them the optimum security threshold, the level of which could be gradually lowered by subsequent negotiations. The real and financial resources released by these agreements, it is held, should become known at the same time that States succeed in concluding arms limitation agreements.

#### Other fund proposals and funding sources

368. We have referred to a variety of proposals for the reallocation of resources from military to civilian purposes in addition to earlier fund proposals and the recent French proposal. The common feature in these different proposals is that the source of funding is related to levels of, or reduction in, military efforts. The amount of funds they would generate depends on their respective armaments levy or disarmament dividend allocation ratios.

369. French-type proposals for a special disarmament fund are different from other development assistance programmes because of their distinctive funding, which constitutes an explicit link, real or symbolic, between disarmament and development. Other proposals for new special development assistance funds, such as the proposed desertification fund and commodities fund, are distinctive in terms of the type of assistance they provide, for example, capital development versus technical assistance, or have a specific regional focus. In so far as new funds for multilateral aid are generated, the other options would be to make such a fund merely a special account within some existing programme, such as UNDP, or to marry it as a new funding source with some special purpose fund. The decision whether an international disarmament fund for development is to be autonomous or incorporated into another United Nations organ will depend on a collective agreement; in any

case this has less importance than the fact that the fund should constitute a concrete link between disarmament and development. It is also important to make it known to the public where the resources for such a fund come from as well as the fact that these resources will be devoted to development purposes.

370. There has been in recent years increasing emphasis within the United Nations system on the need for both additionality and automaticity in funding for development assistance. This was also most recently underlined in the report by the Brandt Commission. This emphasis is, in part, the context for discussion of the possibility of taxation of military expenditures or arms transfers. Other possibilities suggested have included a general tax on international trade or on some particular commodity, for example, oil, 221/ a tax on the reverse transfer of technology (that is, immigration of labour, particularly skilled workers and professionals from developing countries), 222/ a tax on trade surpluses of developed countries with developing countries, 223/ a consumption tax on certain luxury goods, 224/ a tax on the exploitation of the global commons 225/ and even a United Nations lottery. 226/

B. Assessment of various proposals for measures to reallocate resources from armaments to development

371. Bearing in mind the mandate of the Group, the point of departure for any consideration of the various proposals made would have to be their political acceptability and, thus, their feasibility. An assessment of this decisive factor can of course be made either in an immediate or in a somewhat more long-term perspective. As matters now stand in the disarmament negotiations, it would seem

---

221/ The proposal is made, for example, by the Brandt Commission (North-South: A Program for Survival ...).

222/ General Assembly resolution 34/200 of 19 December 1979 requested the Secretary-General to carry out a study on the feasibility of an international labour compensatory facility.

223/ Proposed by the Group of 77 at the United Nations Conference on Science and Technology for Development.

224/ Most recently proposed by the Brandt Commission.

225/ Most recently such issues have been raised in the Third United Nations Conference on the Law of the Sea (see the informal text of the Draft Convention on the Law of the Sea (A/CONF.62/WP.10/Rev.3)).

226/ See Official Records of the General Assembly, Twenty-sixth Session, Fifth Committee, 1430th meeting; and document A/8985/Add.1.

that the latter alternative should be considered the more realistic one. The criterion of political feasibility would have to be applied to the various alternative approaches described in paragraphs 348-359, as well as to the proposal for a fund-type institution now under consideration.

#### Alternative approaches

372. The disarmament dividend approach is in principle certainly the most attractive contributory basis for a fund and it best reflects the United Nations strategy for disarmament. At the same time, however, many years of experience have shown the complexity of the problems of measurement of military expenditures and, consequently, of an assessment of savings caused by disarmament measures. It would seem desirable that future United Nations expert studies on standardization and reporting of military expenditure take more explicitly into account the unique problems involved in measuring disarmament savings resulting from arms limitation agreements, which is a somewhat different problem than the measurement of military budgets.

373. Until the technical and political difficulties of disarmament accounting have been overcome, a parallel approach might be to require the parties to arms limitation agreements to stipulate by mutual agreement the direct and indirect savings which would accrue to them over a period of years as a result of the agreement concluded, under the assumption that a fixed percentage of the disarmament dividend would go to a fund. The sums stipulated would have to be, in general terms, credible to the international community and to domestic public opinion in the States party to the agreement. This political solution would by-pass a great many problems of detail in the objective determination of disarmament savings in which military budget reduction proposals have been mired. The verification of the arms limitation measures involved would have to be resolved to the mutual satisfaction of the parties in the treaty agreement itself.

374. In the armaments levy approach, the resource linkage between disarmament and development seems to be to a large extent blurred, since it could imply that additional funds for development would be contingent on a continuing arms race. However, should a levy lead to a reduction in military expenditures and thus to the allocation of resources to the civilian sector, this would more than offset the funds that would have been raised by the levy, and provide additional resources for the developing countries.

375. Considering the amount of public debate on this, or on an armaments tax approach, it might, however, be necessary to assess it in somewhat greater detail. In paragraph 354 reference has been made to various ways of estimating the base of any armaments levy. It would appear that both for technical reasons and in terms of the goals of a disarmament/development fund, absolute military expenditures would be a preferable criterion for an armaments levy approach to financing such a fund.

376. Besides objections of principle as referred to above, paragraphs 355 and 356 deal with a series of difficulties which seem to encompass the armaments levy approach. It has been suggested in reports submitted to the Group that certain of the technical difficulties encompassing this approach would be eased if it were possible to develop a rather simple contributory scheme related to the levels of military efforts of States. One possible approach suggested is to set by negotiations a contributory share of the armaments levy to be made by the great Powers permanent members of the Security Council, reflecting their predominance in world military expenditures. The next step would be to reach agreement on contributory ratios reflecting their different levels of military effort. Here, as in this entire approach, it is held that general orders of magnitude upon which there is widespread agreement rather than exact figures would suffice. Thus, for example, if it is agreed the great Powers will contribute 60 per cent of the funds to be raised in a given year, the fund agreement might stipulate parity contributory shares of 24 per cent each for the United States and the Soviet Union and 4 per cent each for the United Kingdom, France and China - the lower share for China (relative to its military effort) being a recognition of its status as a developing country. The remaining 40 per cent contributory share could then be allocated among other States in proportion to their officially reported levels of military expenditures. 227/

377. A political solution by means of contributory shares of the great Powers might be feasible because, in contrast to the problems of measurement of military expenditures, agreement on general orders of magnitude would suffice where there is no issue of military security involved. The absolute sums in question would also be modest (initially to equal, for example, 0.5 to 1 per cent of annual military expenditures), giving little incentive for focusing on marginal differences in the estimates of relative military strength. It is also held that use of the official military expenditure data reported to the United Nations would be adequate for the purposes of the armaments levy in determining the contributions of the other Powers. In this case, the relative orders of magnitude, which such figures would reliably indicate, would suffice to give contributions an equitable relationship, if only approximate, to levels of military spending.

378. Another approach advanced in the technical papers commissioned by the Group would envisage the establishment of a contributory scale for an armaments levy based on groups of States defined both in terms of their level of armaments and their level of development. 228/ According to this approach, States subscribing to the Fund would voluntarily affiliate themselves to the appropriate group classification in consultation within the Fund agency.

---

227/ This general type of approach is suggested by Marek Thee, op. cit., pp. 56-58.

228/ This approach is exemplified by Pierre Dabezies, op.cit., pp. 40-49.

379. A tax on military expenditures, such as that suggested by the armaments levy approach could, like any tax, have two purposes. Its aim could be merely to raise revenues, or it could also be to deter some type of behaviour and encourage another type of behaviour. It has been suggested that an armaments levy could have the additional advantage of effectively deterring military expenditures which would be the object of such "taxation". However, small marginal "tax rates" (0.20 to 1 per cent) could not be assumed to have an appreciable impact on military spending because of the overriding non-economic considerations which determine such decisions. 229/

380. In paragraph 374, the view was expressed that the resource linkage between disarmament and development through an armament levy approach is blurred. Schemes with a much stronger, more practical and direct resource linkage between disarmament and development would serve better the goals of disarmament and the establishment of a new international economic order.

#### Voluntary contributions

381. Arrangements for voluntary contributions to international co-operation activities within and through the United Nations function in a number of cases - in some they do not. It is felt that while this method can be a basis for raising additional resources for a Disarmament Fund for Development, it would not raise significant amounts unless there were effective disarmament measures. There would, however, be no reason to exclude for the future any further examination of such possibilities particularly, perhaps, for some specific and well-defined purpose in the field of disarmament.

#### The French proposal for an international disarmament fund for development

382. The French proposal (A/S-10/AC.1/28), described in paragraphs 364-367, is a positive initiative aiming at establishing an institutional relationship between disarmament and development. As such, it merits careful consideration as to its technical feasibility and political acceptability. As was stated in paragraph 364, it also contains a number of distinctive elements which require particular attention. The Group, therefore, first made some general observations in order then to devote its attention to these elements of the proposal.

383. As a framework for assessing the fund proposal, it is essential to regard it as an important but limited institutional initiative, the significance of which would lie in its role as a seminal political act of the world community. 230/

---

229/ See, for example, the discussion of effectiveness of taxation in Dabezies, op.cit., pp. 37-38.

230/ This discussion of the French fund proposal draws heavily on the reports prepared for the Group, Pierre Dabezies, op.cit.; Marek Thee, op. cit.; Ove Narvesen and Finn Sollie, op. cit.

Though the relationship between security, disarmament and development is such (see chap. II above) that the security interests of States as they themselves define them are primary, disarmament will ultimately be based on political settlements at the world or regional level between groups of States. On the other hand, propagation of the disarmament-development perspective might facilitate the development of constituencies for arms limitations and disarmament, which is a precondition for the achievement of the requisite politico-military settlement.

384. In realistic terms, any such fund is bound to have only a limited impact on the over-all flow of resources for development, at least in the short term. Such a fund can only complement and facilitate the efforts to establish a new international economic order and promote each nation's own development efforts.

385. If sufficiently broad political consent could be brought forward, a disarmament fund for development might be able to contribute to the achievement of some important goals. First, such a fund would establish, in political-institutional terms within the United Nations system, the relationship between disarmament and development perceived by a growing consensus of the world community. Secondly, the establishment and presence of such a fund would be expected to contribute the growing awareness by Governments and by public opinion of the disarmament-development perspective. It would also facilitate the development of new international norms of solidarity by requiring principled commitment to reallocate a portion of any disarmament savings to development as well as practical reaffirmations of this commitment, even if initially at modest funding levels. Thirdly, the fund would demonstratively reallocate resources from the arms race to development.

386. The idea and ideal of the French fund proposal have a long history in the United Nations and have been endorsed in principle in many resolutions. Rather, the question is whether the establishment of such an institutional link would be more opportune now than in the past. The Group, therefore, devoted attention to the following distinctive elements of the proposal.

387. In paragraph 364, reference was made to the idea that contributions to the fund should be taken into account in evaluating contributions to ODA. The Group would like to recall, and endorse, earlier statements in reports by United Nations expert groups that the absence of disarmament measures and, consequently, the absence of savings, resulting from such measures could not be used as a pretext for not trying to achieve the targets stipulated by the United Nations for ODA. It would seem to be difficult to support that particular element of the proposal.

388. The proposal envisages the creation of the fund in two stages as outlined in paragraph 366, the first and transitory stage consisting of some kind of an armaments levy. This aspect has already been dealt with in paragraphs 374-380. The views expressed there are also relevant to this element of the French proposal.

389. In the second and final stage, contributions to the fund would be determined by arms reduction agreements: the disarmament dividend approach. In paragraph 372, the Group has defined its positive attitude towards this approach as in conformity with the United Nations strategy for disarmament. It is thus easy to endorse this approach as a basis for a disarmament fund for development, although the many technical and political difficulties for putting it into practice, discussed earlier in some detail, will have to be kept in mind. An additional difficulty is constituted by another element of the French proposal, namely the establishing of what is called "optimum security thresholds" to be ensured at a gradually diminishing level of armaments.

390. If the French proposal appears, for the moment, to be too ambitious in its entirety, it might be desirable and feasible to undertake some more modest initial steps. The form that these take would, of course, require more detailed technical and political discussions. One option might entail an effort to give such a fund a separate identity and visibility within the organizational structure of an appropriate existing institution. In this way institutional proliferation and administrative duplication could be avoided while at the same time a potential new source of funds could be tapped and the relationship between disarmament and development receive an important symbolical and institutional embodiment within the United Nations system. It might take, for example, the form of the 1978 Mexican proposal for a special disarmament fund account within the United Nations Development Programme (A/S-10/PV.3, p. 47). The fund so established could be based on the disarmament dividend principle of financing for increased development assistance, representing a clear commitment of the international community to this long-term goal. Initial funding in a transition period could be based on voluntary contributions, with some symbolic target figure expressed in terms of a percentage of military expenditures: perhaps that suggested by the Secretary-General in 1978 of \$1 million for every \$1,000 million spent on the arms race. Assuming a low level of funding in the initial phase of the fund, it might concentrate its resources on disarmament information activities and research, with special emphasis on the relationship between disarmament and development. Whatever future administrative forms are agreed upon, it is clear to the Group that there is a need for arrangements for the financial transfers of those parts of resources released through disarmament measures that should be devoted to the economic and social development in developing countries. The French proposal has its particular value in drawing the attention of the world community to this fact.

## CHAPTER VII

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

391. This investigation suggests very strongly that the world can either continue to pursue the arms race with characteristic vigor or move consciously and with deliberate speed toward a more stable and balanced social and economic development within a more sustainable international economic and political order. It cannot do both. It must be acknowledged that the arms race and development are in a competitive relationship, particularly in terms of resources but also in the vital dimension of attitudes and perceptions. The main conclusion of this report is that an effective relationship between disarmament and development can and must be established.

392. Economic growth and development would, of course, take place even with a continuing arms race but it would be relatively slow and highly uneven geographically. The co-operative management of interdependence, on the other hand, can be demonstrated to be in the economic and security interests of all States. But the adoption or rather the evolution of such an outlook is quite improbable if the arms race and failures to observe the principles of the United Nations Charter continue.

393. It would be virtually impossible to dispute the desirability of reversing the arms race in order to speed up the process of socio-economic development. But the very disappointing history of disarmament efforts on the one hand, and the less than satisfactory results so far in establishing a new international economic order on the other, have underlain the regrettable reluctance among some States to perceiving a disarmament-development relationship. Against this background, concrete measures within the framework of disarmament for development might have a psychological and political impact affecting positively the relations between developed and developing countries and thus international peace and security.

394. Several past studies on the relationship between disarmament and development, including a United Nations report on the subject in 1972, 231/ reflect a note of caution in projecting too close an association between them. In most cases, this cautious attitude reflects the concern that making two intensely desirable but, regrettably, unattained goals contingent upon each other could somehow be seen to detract from the urgency of achieving fast progress in each separately. Most of these studies, therefore, were content with projecting the enormous contrasts between the magnitude of resources claimed by the world-wide military activities and the relatively modest outlays required to provide for the basic unmet needs of the poorer sections of society, particularly in the developing countries. The relationship between disarmament and development thus acquired a strong normative content on the basis of its desirability.

---

231/ Disarmament and Development, ST/ECA/174 (United Nations publication, Sales No. E.73.IX.1).



395. The developing countries are still in urgent need of greater allocations to meet the expanding demands of their growing populations. But the developed world is also beginning to confront the cumulative results of its past patterns of resource-utilization. The market economies are facing serious socio-economic problems like unemployment and inflation. The centrally planned economies are also under considerable strain to make faster progress in achieving better consumer satisfaction and greater modernization in view of a slow-down in growth rates. For the world as a whole, the allocation of 5 to 6 per cent of global output for military purposes is becoming a questionable proposition in a climate of sluggish economic growth projections for the 1980s, as compared to the more favourable economic performance in earlier decades.

396. Another worrisome development in the changed socio-economic context for this study, however, is the growing uncertainty in East-West relations spilling into the entire field of international economic relations. The danger of politico-strategic considerations influencing these relations is more real than ever before. It seems likely that progress in establishing a new international economic order will be adversely affected by the arms race, which not only claims resources but also influences the scope and content of international economic co-operation. To the extent that achievements in the international economic order are affected by the dynamics of the arms race, the relationship between disarmament and development involves more than a contrast between the resources claimed by military activities and the basic unmet needs of the poorer sections of society. Also, the normative appeal to direct some of the armament-related resources into the developmental field acquires an element of self-interest if it can be demonstrated that the need for such a reallocation is shared by all social systems irrespective of their current levels of development.

397. A major objective of the present study, therefore, was to look beyond the strong normative and logical arguments to examine how the disarmament-development relationship might influence viable policy-options of States, firmly rooted in their own enlightened national interest. The moral and rational appeal of the relationship is not questioned, but is reiterated. Moreover, the Group has been able to assemble substantial historical and empirical evidence for viewing it as an economic imperative. This is in accordance with the directives given to the Group by the General Assembly, which specifically required that this study "should be forward-looking and policy-oriented and place special emphasis on both the desirability of a reallocation, following disarmament measures, of resources now being used for military purposes to economic and social development, particularly for the benefit of the developing countries, and the substantive feasibility of such a reallocation" (A/S-10/9, annex, para. 5 (emphasis added)). The terms of reference for the research undertaken for this study placed special emphasis on strengthening the socio-economic case for an empirically quantifiable and rationally imperative relationship between disarmament and development based upon the emerging mutuality of interests in a world increasingly pushed towards growing economic interdependence. This perspective also remained at the forefront of the Group's concern in conceptualizing the relationship between disarmament and development; in calculating the magnitude of real resources claimed by the world-wide military outlays; in assessing the opportunity costs of the arms race for societies at different levels of development and with different economic and social systems; in examining the technical feasibility of converting

armament-related efforts into developmental channels; in projecting the direct and indirect benefits of disarmament; and finally, in examining the possibilities for some institutional arrangements to facilitate the transfer of disarmament-related financial resources for the benefit of the developing countries.

398. The conceptual basis for this study is described in chapter II, which defines the framework and scope of the relationship between disarmament and development. After examining the conventional exposition of the subject, in the light of recent development, the Group has placed the disarmament-development relationship in the context of a triangular interaction between disarmament, development and security. To demonstrate that the threat to security may be aggravated in many ways, including those that go beyond purely military threats, it has approached the problem of security from a broader perspective. After taking cognizance of the dynamic spectrum of the emerging threats and challenges to security, the Group has argued that the arms race itself has developed into a threat to the security of nations and that general and complete disarmament under effective international control, particularly nuclear disarmament, would directly enhance security. Moreover, the Group has argued that there exists an array of intensifying non-military factors aggravating the security problems of States in the form of (a) a widespread reduction in prospects for economic growth, (b) impending physical constraints - notably in the field of energy and selected non-renewable raw materials but also severe stress on the environment and a growing world population - and (c) the morally unacceptable and politically hazardous polarization of wealth and poverty and insufficient development in the developing countries.

399. As with the concept of security, the Group has also adopted a broad definition of development which, besides the need for sustained economic growth, would involve the opportunity and responsibility for full participation in the economic and social processes and a universal share in its benefits as a result of profound economic and social changes in society. In projecting development as a global requirement, the Group has outlined the dimensions of economic interdependence and contrasted the benefits of co-operative management with the potential threats inherent in continuing an attitude of preserving the status quo. Relying upon recent experiences to demonstrate that the economic fortunes - and thus the security - of all nations are interdependent and destined to become more so, the Group has argued that failure to bring the arms race under control is likely to be associated with a vicious circle of confrontation and mutual denial, with declining prospects for mutually advantageous economic co-operation and shrinking options for all nations. Developments in East-West détente and in the North-South dialogue in recent years illustrate this possibility.

400. The incompatibility between the objectives of a new international economic order and the recent trends in the arms race, already recognized by the General Assembly at its tenth special session of the United Nations (resolution S-10/2), has been confirmed by the Group's findings on the spill-over effects of the arms race into the area of international economic relations. Drawing upon empirical evidence to substantiate this point, the Group's perception of the disarmament-development relationship suggests that its political recognition would, in the longer term, significantly expand the economic and social horizons of mankind. Adoption of policies reflecting this relationship should be viewed

positively rather than negatively, not as an unfortunate and hazardous necessity but as one of those all too rare opportunities in which the reallocation of resources results in a substantial increase in "output" both in the sector relinquishing the resources and in the sector that gains these resources. The appalling dimensions of poverty, the threatening scarcities, the destruction of the environment and the resultant global economic malaise are problems largely of our own making. It is, in principle, well within our collective technological and intellectual capabilities and within the earth's carrying capacity to provide for the basic needs of the world's entire population and to make progress toward a more equitable economic order at a pace politically acceptable to all.

401. In sum, the Group's study has confirmed that the sustained arms race represents a critical, and still intensifying, challenge for mankind. The danger of war is currently growing, owing to the new dimensions assumed by armaments competition - quantitative and qualitative, conventional and nuclear - and to the use or threat of use of force by States in non-conformity with the principles of the United Nations Charter. The greatest danger to all mankind, and one that would put its very existence in jeopardy, is the risk of any conflict leading to the use of nuclear weapons. The need to prevent this risk is becoming all the more urgent. At the same time - and this is an aspect that the Group's investigations have led it to emphasize very strongly - the protracted arms race has entailed serious economic and social consequences for the peoples of all nations. Taken together, these considerations underline the extreme urgency of abandoning the use of force in international relations and taking concrete measures toward disarmament, under effective international control.

402. The magnitude of resources claimed by world-wide military activities are described in chapter III. In it, the prevailing use for military purposes of labour, industrial capacity, raw materials and land is documented as comprehensively as possible. Wherever possible, global estimates have been developed, although the margins of error are probably considerable. Two other dimensions of the contemporary military scene are also treated separately, namely, military research and development, and the international trade in arms. This chapter also recounts some of the more familiar measures of the economic burden of military activities utilizing financial data.

403. According to the Group's estimates, some 50 million people are, directly or indirectly, engaged in military activities world wide. This figure includes: (a) some 25 million persons in the world's regular armed forces; (b) roughly 10 million world wide in paramilitary forces; (c) approximately 4 million civilians currently employed in defence departments world wide; (d) an estimated 500,000 scientists and engineers engaged in research and development for military purposes; and (e) at least 5 million workers directly engaged in the production of weapons and other specialized military equipment.

404. Bearing in mind that military industrial production is a much broader activity than procurement per se, the Group's estimates provide a plausible range of 28 to 32 per cent of world military expenditure as the approximate value of industrial production given over to military use. Conservative calculations suggest that global military industrial production in 1980 amounted to \$127,500 million.

405. The Group's calculations and projections about the use of raw materials for military purposes are made against the background of serious concern over the availability of adequate supplies of oil and minerals, that is, non-renewable raw materials. While visualizing no immediate exhaustion of supplies till the end of the century, the Group foresees some difficulties in terms of dependable access to supplies of raw materials. Realizing that current projections of demand vis-à-vis known reserves are based largely on the historical pattern and growth of consumption, the Group feels that accelerated growth and industrialization in the developing countries could have a significant impact on their general validity. Very rough extrapolations based upon published estimates of the United States share in the consumption of a selected group of non-energy minerals for military purposes, suggest that anything between 3 to 11 per cent of 14 such minerals are utilized world wide for military purposes. The use of petroleum for military purposes, including indirect consumption in military industry, has been estimated at 5 to 6 per cent of total global consumption.

406. The available data on the land area used for military purposes is far too sketchy to permit reliable global estimate. While it is negligible as an absolute share of world-wide land utilization and vast areas of land in the world are of no more interest to the military than to other land users, the military use of land is not without consequence. Moreover, as an indication of trends, military requirements for land have risen steadily over the course of this century owing to increases in the size of standing armed forces and, more particularly, the rapid pace of technological advances in weaponry. Despite its small relative share in the use of land, the military can and often does compete directly with civilian demands, be they urban, industrial, agricultural, recreational or based on environmental concerns.

407. The absolute magnitude of expenditures for military research and development is extremely large and it remains by far the largest single objective of scientific inquiry and technological development. Global expenditures on military R and D in 1980 were probably of the order of \$35,000 million or approximately one quarter of all expenditures on R and D. Approximately 20 per cent of the world's qualified scientists and engineers were engaged in military work during the 1970s. It has been estimated that the average military product is some 20 times as research-intensive as the average civil product. The world military R and D effort also has some characteristics which cannot be reflected in a statistical portrayal. In the first place, the technological arms race has complicated the process of political assessment and efforts to control the race through negotiation. Secondly, military R and D expenditure is even more highly concentrated than total R and D. While six countries account for about 85 per cent of total R and D, just two countries account for a similar share of military R and D.

408. Since international trade in arms is not officially recorded in world trade statistics, no comprehensive and official body of data is available. Rough estimates, however, indicate that almost \$26 billion is annually traded in the international traffic in arms. Besides the transfer of military hardware, arms transactions also involve large-scale training programmes and, for an extended interim period, technical personnel as part of a weapons deal. Crudely estimated, these "services" constitute approximately 15 per cent of the current global value of the arms trade.

409. In purely financial terms, world military expenditures, by 1980, had reached an astounding \$500,000 million dollars, or approximately 6 per cent of world output. This is an amount roughly equivalent to the value of gross fixed capital formation in all developing countries combined and some 19 times as large as all the official development assistance provided by the OECD countries in 1980.

Although military expenditure has declined as a percentage of world output since the 1950s, it has continued to grow in absolute terms, even after adjusting for inflation. Current international tensions and the introduction of a new generation of more deadly and expensive weapons may well add to military expenditure in the absence of disarmament measures. If a 2 per cent annual rate of increase is assumed, which is modest by historical standards, this will mean total expenditures of \$742,973 million (at today's prices) in the year 2000, or in just 20 years; assuming a 3 per cent rate of increase, the corresponding figure would be \$903,055 million by the turn of the next century. At these rates of growth, the value just of the additional resources that will be denied the civilian sector over the next 20 years - that is, resources over and above the annual expenditure of \$500,000 million - will be equivalent to one quarter and nearly one half respectively of current world output.

410. In chapter IV, the Group examined a series of questions: Can a world faced with a universal slow-down of economic performance afford to continue the use of real resources for military purposes on the scale just summarized? Is it possible to demonstrate that the present socio-economic problems are, to some extent, a cumulative result of the past patterns of military consumption? Will the multiplicity of costs conventionally associated with military outlays be less tolerable in the future than those perceived in the past? What are the direct and indirect benefits likely to follow a reversal of the present trends in the arms race? These and other related issues are addressed in that chapter, which analyses the socio-economic consequences of the arms race and the implementation of disarmament measures. This subject, already dealt with extensively in two previous United Nations studies and several other documents, has been given a more empirically quantifiable treatment in that chapter, which relies heavily on the findings of the world-wide research, specifically commissioned by the Group, to assess the burden of military spending on economies at different levels of development.

411. The historical and empirical evidence analysed by the Group has made it take a position that military outlays, by definition, fall into the category of consumption and not investment. Consequently, steadily high or increasing military outlays are likely to have a depressing effect on economic growth, directly through displacement of investment and indirectly through constraints on productivity which itself depends to a considerable degree on the R and D effort currently biased in favour of military technology. The coexistence of high levels of military spending and high rates of economic growth in the past cannot be taken as evidence of a causal relationship between the two. The availability of unutilized and under-utilized resources among the less developed economies may produce short-term results suggesting a parallelism between high rates of growth and significant military spending. But in the long term, the totality of adverse socio-economic consequences of sizeable military outlays outweigh any immediate spin-offs.

412. In calculating the opportunity costs of military outlays, the Group found it relatively simpler to assess the sacrifices entailed by national military expenditures than to project the direct and catalytic effects of reversing the global arms race. Recognizing (a) that all military expenditures are essentially government expenditures and, hence, a part of the budget or planning mechanism of Governments, and (b) that socio-economic functions basically reflect a welfare commitment on behalf of the State, the Group has argued that any additional resources released through military spending reductions can enable the State to expand its social welfare commitment both directly and indirectly. Direct reallocations can contribute towards improvements in social goals such as education, nutrition, medical care, housing and transport and policies of tax reduction can contribute indirectly to civilian consumption and investment.

413. The Group's projections about the direct and catalytic effects of reversing the present unwholesome trends in the world-wide arms race are built on the premise that the dynamics of the arms race involve more than a number of its participants and a sum total of the resources nationally consumed by military expenditures. The spill-over effect of politico-strategic considerations into the areas of international economic relations, referred to in chapter II, has been elaborated to supplement the arguments in favour of reversing the arms race. As stated in earlier United Nations reports, the arms race has complicated the process of stabilizing the international monetary system, aggravated the balance-of-payment problems and distorted the desired evolution of international exchange in a period of growing economic interdependence. The Group's understanding of the degree of economic dependence among different socio-economic systems also emboldens it to suggest that the catalytic effects of disarmament will broaden the base of East-West détente, and the diversion of some of the disarmament-related resources for the benefit of the developing countries will strengthen this process.

414. In accordance with the explicit directives from the General Assembly, the Group has given special attention to the burden-measurement and opportunity costs of the arms race for the developing countries. Military outlays put unequal burdens on economies at different levels of national income, working thereby to the detriment of less developed economies. Also, their urgent need for an uninterrupted flow of external inputs like capital, finance, trade and technology makes the less developed economies susceptible to the effects of military outlays in the developed world, in addition to the burden of their own military spending. The developing countries are, thus, the worst affected victims of an adverse strategic environment dominated by the seemingly endless arms race among its major participants.

415. But policies pursued in implementing the disarmament-development relationship to the benefit of the developing countries will also improve the universal economic prospects. The catalytic effect of strengthening the economic content of détente will by itself be a major dividend for East-West relations. Besides, an improved economic performance by the South will stimulate demand in the North and significantly improve its employment opportunities. Rough estimates about the global consequences of gradual reductions in military spending, proportionate to the magnitude of current military outlays among different countries, suggest that

the diversion of a part of released resources to developing countries will (a) substantially improve the per capita GDP, industrial employment and capital stock for the developing countries; and (b) provide significant economic gains for all the regions in the world including the most developed. Projections based upon the United Nations input-output model of the world economy indicate that, by the year 2000, even a modest degree of military restraint - the scenario modelled only assumed a progressive decline from current levels in the share of military expenditure in GNP, not a decline in the level of world military expenditure in absolute terms - could result in a 3.7 per cent increase in world GNP, a larger capital stock and an increase in world agricultural output, to mention only a few of the more obvious economic gains.

416. The need to view disarmament-development relationship in a dynamic economic environment has been further elaborated in chapter V which examines the technological feasibility and economic potentials of the process of conversion from military to civilian purposes. While recognizing the importance of the post-war conversion or reconversion experience, the Group has argued that the problem is now so influential and ingrained that preparing for its solution cannot be deferred until disarmament measures are agreed upon. The character of the military sector has changed dramatically over the post-war period and conversion of resources now used for military purposes will be qualitatively different from the demobilization exercises following past world conflagrations and military conflicts.

417. The world-wide defence industry is characterized by a high degree of geographical and sectoral concentration. It also involves a considerable degree of specialization in its work-force and a very pronounced emphasis on research and development, particularly in economies with sophisticated military sectors. This apparent exclusiveness of the defence industry should not, however, prove to be an insurmountable problem because:

(a) Conversion and redeployment is not a phenomenon uniquely associated with disarmament. Any form of economic and social change represents a continuous process of conversion. Particularly in modern industrial economies, the factors of production must respond continuously to the development of new products and the phasing-out of old ones and to the introduction of new production techniques;

(b) A significant part of military demand is directed at goods and services that are essentially identical to those consumed in the civilian sector. In this case, the problem is a relatively minor one of ensuring that civilian demand fills the gap left by cutbacks in military spending. Primary responsibility for conversion, in an over-all sense, will inevitably fall on the central Government, particularly in regard to initiating preparations for such a process. The nature and extent of government involvement, following disarmament measures, in the process of conversion itself will vary from country to country, depending in large part on the type of economic system but also on many other factors.

418. A relatively major problem in preparing for conversion, however, pertains to resources unsuited for the production of civilian goods such as those involved in combat aircraft, missiles, warships, tanks and so on. The primary need here would be for advance consideration of how their capabilities can be altered to permit the

smoothest possible transition to the production of socially useful goods and services. A commitment to preparing for conversion will be an investment in minimizing the problems of transition. Such a commitment would entail thinking through the problems likely to be encountered by workers, industries and communities in the event of reductions in military business and devising measures and arrangements to overcome or minimize them.

419. The opportunity to apply science and technology more directly and systematically to economic and social problems is probably one of the most important dividends that disarmament would bring. As a potential asset for socially productive uses, the R and D component of the military outlays has the utmost significance. The previous United Nations report on disarmament and development identified more than 70 possible alternative uses for military research and development capabilities. <sup>232/</sup> The Group's investigations suggest that production workers in the military sectors could quite readily transfer their skills to the development, production and installation of solar energy devices. Environment is another area likely to gain from a possible rechanneling of military R and D. An essential prerequisite to arresting environmental degradation and repairing the damage already done is a more comprehensive understanding of the complex, synergistic relationships between the air, water and land environments. A wide variety of disciplines from both the natural and social sciences would be relevant here, including all or most of those found in the military R and D community. Housing and urban renewal offer still another outlet for a range of R and D capabilities and, subsequently, for massive reconstruction programmes. New transportation systems, particularly in urban areas, are sorely needed and have long been regarded as a major civilian alternative for the high technology industries in the military sector.

420. While advance preparations for conversion will go a long way in mitigating the displacement effects on personnel and industries, a diversion of the converted human and material resources into the less developed economies could provide an additional cushioning effect against any major economic disruption in the economies with high military spending. In this respect, prevailing and prospective economic conditions throughout the industrialized world are clearly not favourable. Their economic difficulties are to some extent symptoms, not merely of a temporary cyclical downturn, but of a more profound economic malaise. The saturation of major consumer markets and the emergence of serious supply-side constraints on economic growth - energy, raw materials, pollution and so on - all suggest the need for significant changes in the structure of industry, in the direction of future investment and in the pattern of consumer demand. The Group's argument about the transitional difficulties associated with conversion being lessened, if cast in a framework of international co-operation, is based upon growing evidence suggesting that the pattern of imports of capital goods by developing countries would coincide significantly with the productive capacities released by disarmament measures in the industrialized countries. More than one of the Group's case studies of disarmament and conversion have indicated that, when increased resource transfer

---

<sup>232/</sup> See Disarmament and Development . . . , pp. 33-37.



to developing countries were factored in as one of the options for conversion, it was found that the transfer policy least disruptive for the converting economies involved goods and services closely matching the new emphasis in developing countries on providing basic needs and promoting self-reliance, that is, agricultural machinery, fishing technology, machinery for mining, manufacturing, construction and hydropower plants and equipment and personnel for education and health programmes.

421. Possible institutional arrangements for the transfer of additional resources released through disarmament measures to the developing countries are considered in chapter VI which examines the various proposals made in the United Nations to that effect. In doing so, and in accordance with the mandate of the General Assembly, the Group gave particular consideration to the French proposal, made at the tenth special session for the establishment of an international disarmament fund for development. It is realized that the Second Disarmament Decade and the Third United Nations Development Decade are passing by without concrete achievements on either front, thus giving little scope for optimism. But in its examination of the technical feasibility and political realism of a fund-type institutional link between disarmament and development, the Group's view was influenced by its general position that resources involve more than finances.

422. Three basic contributory principles are found in the various proposals for promoting the reallocation of financial resources from armaments to development:

(a) The armaments levy approach, in which national assessments for development contributions are based on some measure of States' allocation of resources for military purposes;

(b) Voluntary contributions on the model of numerous other United Nations organizations and specialized agencies;

(c) The disarmament dividend approach, in which the savings resulting from disarmament measures, or a portion thereof, are allocated to development needs.

423. In the armaments levy approach, the financial link between disarmament and development is established through a fund which prorates States' contributions to development in some proportion to their levels of military effort. Under such a scheme, the States with a higher level of military effort would contribute correspondingly more to a development fund. It was agreed that, in the long run, an armaments levy could not serve as a desirable and practical basis for raising additional resources for development. In this context, to accept this approach would be to accept a continuing arms race. The Group's reaction to a voluntary fund was more favourable, primarily because this approach has often worked well in implementing some of the United Nations programmes through its various organs and specialized agencies. It was felt, however, that while this method could be a basis for raising additional resources for a disarmament fund for development, it would not raise significant amounts unless there were significant disarmament measures.

424. In the context of a disarmament-development relationship, the Group considered a disarmament dividend approach as the most attractive among the three examined. This approach was also found implicit in the second phase of the French proposal,

although the initial stage of its implementation relies mostly on an armament-levy type of approach. This attempt to combine a levy with a dividend certainly constitutes an important political initiative, but its full technical implications remain to be examined both on grounds of feasibility and acceptance by the major military spenders.

425. The Group's analysis of military spending as an impediment to economic growth, and of the arms race as an obstacle to the establishment of a new international economic order, has strengthened the economic case for a disarmament-development relationship. By projecting the arms race as a threat to international security, and by outlining the dimensions of non-military threats to national security, the Group has attempted to point out the strategic considerations pertinent to a realistic assessment of the potentials of reversing the arms race and reducing national military outlays. In suggesting that policies aimed at implementing the disarmament-development relationship are likely to broaden the base of East-West détente and put the North-South dialogue in a mutually advantageous frame of reference, the Group has indicated the political potentials of a rationally imperative range of alternatives.

426. On the basis of its findings and conclusions, implicit in this entire report and more explicitly summarized above, the Group makes the following recommendations:

1. Most Governments have, in the past, shied away from any thorough public cost-accounting of military activities. The presumption has been that, to a first approximation, the requirements of military security must be met regardless of cost. The evidence assembled in this report suggests strongly that this attitude cannot be sustained. It is widely acknowledged that the true foundation of national security is a strong and healthy economy but the evidence is well nigh overwhelming that the contemporary military establishment significantly distorts and undermines the basis for sustained economic and social development. Furthermore, the arms race is in fact accompanied by a growing sense of national insecurity. Thus, to the extent that military expenditures do not purchase security they represent a pure waste of resources. Accordingly, the Group recommends that all Governments, but particularly those of the major military Powers, should prepare assessments of the nature and magnitude of the short and long-term economic and social costs attributable to their military preparations so that their general public be informed of them.
2. The structural changes associated with the conversion of military resources to civilian purposes and, even more so, those implied by the movement toward a new international economic order require a strong and sustained political commitment. Moral considerations will undoubtedly be influential in producing this commitment but of decisive importance is that all parties also perceive such changes to be in their own interests. In particular, the costs and benefits of moving toward a new international economic order are difficult to compare in conventional ways. The costs tend to be felt sooner than benefits are received. There can be little doubt that, especially in the long term, all societies would reap major benefits from a reduction in the economic

weight of military activities and that there is a strong mutuality of interests between industrialized and developing countries in utilizing a significant fraction of the resources thus released to accelerate the economic and social development of the developing countries. The Group recommends that Governments urgently undertake studies to identify and to publicize the benefits that would be derived from the reallocation of military resources in a balanced and verifiable manner, to address economic and social problems at the national level and to contribute towards reducing the gap in income that currently divides the industrialized nations from the developing world and establishing a new international economic order.

3. The Group's mandate noted that construction of a comprehensive and reliable data base was highly desirable. This did not prove possible. Most countries in the world, including some which have very high military expenditures, provide very little information or analysis on resources devoted to their military effort. This hampers analysis of that effort's social and economic effects and conversion possibilities. An essential step in promoting awareness of the disarmament-development perspective, and fostering the desirable reallocation of resources, is to move towards remedying these information and analysis gaps. The steady reduction of secrecy about military efforts and their economic and social effects and the gradual elimination of the arms race are both necessary to break the present vicious circle in which the arms race and unreasonable and excessive secrecy tend to reinforce each other. As well as helping build confidence in the objectives of disarmament and détente, the public release of data and information on the military effort, their collection and analysis and their dissemination will make the negative costs side of the balance sheet of the arms race much more evident to decision-makers and the general public. Improved reporting will also be an important element in enhancing prospects for proposed agreements on reducing military expenditures or other financial transfer schemes discussed above. The United Nations has done valuable work on standardization of military expenditure and in resolution 35/142 B called for all States to report them to the United Nations. Expanded disarmament accounting, while including this, would call for broader reporting of resources, social and economic effects and preparations for conversion. Such efforts must, however, be based on the willingness of national Governments to provide such reporting to their own people and to the world community. In order to fill the above-mentioned major gaps in the existing data, the Group therefore recommends a fuller and more systematic compilation and dissemination by Governments of data on the military use of human and material resources and military transfers, taking into account the needs of the United Nations in terms of the above resolution.
4. The issues addressed by this report regarding resource utilization, impact of the arms race, conversion problems and possible measures for reallocating resources could be appropriate points of reference for United Nations research, planning and educational programmes. The Group

recommends that the disarmament-development perspective elaborated in this report be incorporated in a concrete and practical way in the ongoing activities of the United Nations system. The Group notes, for example, that the comprehensive programme for disarmament, now under negotiation in the Committee on Disarmament, may take account of the relationship between disarmament and development. The United Nations organs and agencies concerned with international development issues and the implementation of the International Development Strategy for the Third United Nations Development Decade could give greater attention to the parameter of the allocation of resources for the military sector world wide and its implications for development prospects. In this context, UNCTAD has a major role to play. Research on the new international economic order and on future social and economic projections within the United Nations might incorporate more explicitly the relationship between the arms race, the achievement of the goals of the new international economic order and future development in the different regions of the world. United Nations research institutes relevant in this context would be UNITAR and United Nations Institute for Disarmament Research. The Centre for Science and Technology for Development might give more attention to the benefits, or the distorting effects, of the importation of military technology and to the allocation of skilled manpower to the military sector in developing countries. The United Nations Centre on Transnational Corporations might give greater attention to the central role of transnational corporations in the production of and trade in arms. Problems of manpower conversion in different regions of the world and in various industries might receive greater attention in organizations and agencies, such as ILO and UNIDO, which deal with these issues. The United Nations Environment Programme (UNEP) might undertake to seriously examine the adverse environmental impact of military activities pointed at in various chapters of this report. The disarmament information and education activities of UNESCO might give greater emphasis to the relationship between disarmament and development, since this relationship is not only a subject for research and analysis but also for education. Each agency must judge for itself how the goal of integration of the disarmament-development perspective is best achieved in its programme and activities, but in view of the large number of organizations and agencies involved, some co-ordination may be desirable to avoid undue duplication of efforts.

5. The actual conversion of resources now employed for military purposes presents no insurmountable problem, particularly as the disarmament process will almost certainly be a gradual one. Some of the resources released from the military sector will be unsuited for direct redeployment to address economic and social problems, so that there will be a transition period during which manpower is retrained and physical assets adapted, to the extent feasible, for civilian operations. For this transition to be as smooth as possible and to involve the minimum of waste through unemployment of resources, it is vital that every effort be made to anticipate the extent and character of the conversion problems that will arise. Furthermore, since the resources released through

disarmament measures will be finite, it will be necessary to consider very carefully the alternative uses for these resources in order to maximize their contribution to the solution of economic and social problems both in the national and international contexts. Preparing for conversion is not only of significance in the event of disarmament, but also important for improving the domestic disarmament climate in that it assures those who are dependent for their livelihood on military production of alternative employment and engages diverse groups and institutions in society in an ongoing disarmament process. The process of conversion will be the final step in the execution of any negotiated disarmament measure. It seems clear, however, that preparation for conversion should be among the first steps on the road to disarmament. The Group recommends that Governments create the necessary prerequisites, including preparations and, where appropriate, planning, to facilitate the conversion of resources freed by disarmament measures to civilian purposes, especially to meet urgent economic and social needs, in particular, in the developing countries. One might envisage, *inter alia*, the creation of a core of people within each country with a significant military establishment with knowledge and expertise on conversion issues; the development of contingency conversion plans by plants engaged in specialized military production; the broad involvement of all affected parties in conversion planning, including management, trade unions and national defence research institutes.

6. Preparations for conversion, particularly if carried out in relation to disarmament measures under negotiation or agreed upon, could foster international confidence: a society that is prepared for conversion is a more credible proponent of disarmament measures. Moreover, the undertaking of such preparations is not costly. For these reasons, the Group feels that it would be beneficial if Governments were to report on their experiences in and preparations for solving the problems of conversion in their respective countries. Such reports would become a generally available body of knowledge on conversion issues and could lead to a fruitful cross-fertilization of ideas on how particular problems can be solved. The Group therefore recommends that Governments consider making the results of experiences and preparations in their respective countries available by submitting reports from time to time to the General Assembly on possible solutions to conversion problems.
7. The achievement of disarmament measures which release real resources will, in the first instance, benefit most directly those States that are able to reduce the amount of their resources allocated to the arms race. The conversion process itself and any agreed verification and enforcement measures will entail some initial costs; nevertheless, the benefits of disarmament in terms of resources released for social and economic development will be substantial. Practical measures by which disarmament may redound to the benefit of development in the developing countries can take many forms. Besides bringing about changes in economic relations to the benefit of developing countries, it is widely recognized that increasing the magnitude and predictability of flows of capital to

developing countries as grants or on concessional terms is of vital importance. One proposed way of fostering these flows would be to establish a special fund for development to be financed from budgetary savings related to the implementation of disarmament measures as well as from a levy on armaments or voluntary contributions. An international disarmament fund for development, as thus proposed by the French Government in 1978, would represent a direct institutional relationship between disarmament and development and would also be seen as a concrete symbol of the wider relationship between these two phenomena. The Group is of the opinion that the disarmament dividend approach to financing such a fund is most in accord with the United Nations conception of disarmament and development and the most feasible. The Group recommends that further consideration be given to establishing an international disarmament fund for development and that the administrative and technical modalities of such a fund be further investigated by the United Nations with due regard to the capabilities of the agencies and institutions currently responsible for the international transfer of resources.

8. An increased volume of research and information activities related to disarmament and development both at the national level and within the United Nations requires increased co-ordination. The disarmament and development perspective is both interdisciplinary and interdepartmental, there being no special centre of expertise in the international dimensions of the relationship between disarmament and development nor any part of the United Nations system with this particular focus. The two bodies having lead functions in the fields of disarmament and development are the Centre for Disarmament and the Office of the Director-General for Development and International Economic Co-operation, respectively. Bearing this in mind, the Group recommends that the Secretary-General take appropriate action, through the existing interagency consultative mechanism of the Administrative Committee on Co-ordination, to foster and co-ordinate the incorporation of the disarmament and development perspective in the programmes and activities of the United Nations system.

9. The General Assembly has called for the mobilization of world public opinion on behalf of disarmament. Improved reporting of the data, research, official reports and scientific publications on the relationship between disarmament and development will have little impact unless they contribute to the formation of well-informed public opinion on the dangers of the arms race and on the difficulties as well as the benefits of disarmament and thus to promoting the achievement of the latter. The communication of an awareness of the relationship between disarmament, development and security to as broad a public as possible is therefore most desirable. The Group has recommended that Governments undertake to inform their own people of the social and economic consequences of the arms race and the potential benefits of disarmament measures. The Group further recommends that the Department of Public Information and other relevant United Nations organs and agencies, while continuing to emphasize the danger of war - particularly nuclear war -

should give increased emphasis in their disarmament-related public information and education activities to the social and economic consequences of the arms race and to the corresponding benefits of disarmament. In this respect, as in the case of education for disarmament and peace studies in general, non-governmental organizations have a particularly important role to play as they have shown a strong interest in and awareness of these questions in numerous countries. The expanded and intensified liaison between the United Nations and non-governmental organizations, initiated by the special session devoted to disarmament, in 1978, should be further encouraged and developed in order to make increased United Nations research and information activities in the area of disarmament and development available to the widest possible public.

APPENDIX I

Commissioned research reports received by the Group of  
Governmental Experts

Projects financed from the United Nations Disarmament Fund

<u>Author</u>	<u>Title</u>
A. Bolaji Akinyemi et al. Nigerian Institute of International Affairs Lagos, Nigeria	Disarmament and Development: Utilization of Resources for Military Purposes in Black Africa
Graciela Chichilnisky and Michael de Mello Department of Economics Columbia University New York, United States of America	The Role of Armaments Flows in the International Market and in Development Strategies in a North-South Context
Pierre Dabezies Centre for Defence Policy Research (CEPODE) Paris, France	Establishment of an International Disarmament Fund for Development
Ali E. Hillal Dessouki Faculty of Economics and Political Science Cairo University Cairo, Egypt	The Effects of Arms Race and Defence Expenditures on Development: A Case Study of Egypt
José Antonio Encinas del Pando University of Lima Peru	Declaration of Ayacucho
Jacques Fontanel UER, Faculty of Economic Sciences University of Grenoble France	Formalized Studies and Econometric Analyses of the Relationship between Military Expenditure and Economic Development. Examples: France and Morocco
David Greenwood Centre for Defence Studies University of Aberdeen Aberdeen, Scotland	West European Defence Efforts in the Later 1970s and Beyond



8. Godfrey Gunatilleke  
Director  
Marga Institute  
Colombo, Sri Lanka  
Armament Culture and the Diffusion of the  
Values of Militarisation
9. Helge Hveem and  
Raino Malnes  
International Peace Research  
Institute  
Oslo, Norway  
Military Use of Natural Resources. (The  
Case for Conversion and Control)
10. Mary Kaldor  
Science Policy Research Unit  
University of Sussex  
Brighton, United Kingdom  
The Role of Military Technology in  
Industrial Development
11. Wassily Leontief and  
Faye Duchin  
Institute for Economic  
Analysis  
New York University  
New York, United States  
of America  
Worldwide Economic Implications of a  
Limitation on Military Spending
12. Seymour Melman  
Department of Industrial  
Engineering  
Columbia University  
New York, United States  
of America  
Barriers to Conversion from Military to  
Civilian Industry - in Market, Planned and  
Developing Economies
13. Ikenna Nzimiro  
Department of Sociology and  
Anthropology  
University of Nigeria  
Nsukka, Nigeria  
Economics and Social Effects of (Military)  
Arms Build-Up in Nigeria: Implications  
for National Development
14. Swadesh Rana, P. K. Namboodiri  
and R. R. Subramanian  
The Institute for Defence  
Studies and Analyses  
New Delhi, India  
Reallocation of Military Resources from  
OECD to Primary Sectors of LDCs:  
Mutuality of Interests: A Third World  
Perspective
15. K. Nagaraja Rao and  
Jack Ruina  
Centre for Policy  
Alternatives  
Massachusetts Institute of  
Technology  
Cambridge, United States  
of America  
Disarmament and Development: The Case  
of Relatively Advanced Developing  
Countries

16. Bruce M. Russett and David J. Sylvan  
Department of Political Science  
Yale University  
New Haven, United States of America
- The Effects of Arms Transfers on Developing Countries
17. Ignacy Sachs  
International Research Center on Environment and Development  
Paris, France
- Reflections on Conversion Strategies for Armament-Related Arms Industries
18. Dan Smith and Ron Smith  
Department of Economics  
Birkbeck College  
London, United Kingdom
- Military Expenditure, Resources and Development
19. Ove Narvesen  
Norwegian Institute of International Affairs  
Oslo, Norway  
and  
Finn Sollie  
Fridtjof Nansen Foundation  
at Polhogda  
Lysaker, Norway
- Analysis of a Proposal to Establish an International Disarmament Fund for Development
20. Marek Thee  
Research Director  
International Peace Research Institute  
Oslo, Norway
- The Establishment of an International Disarmament Fund for Development - a Feasibility Study
21. Peter Wallensteen  
Department of Peace and Conflict Research  
Uppsala University  
Sweden
- New Wine and Old Bottles
- B. Nationally Financed Projects
1. Jean Thomas Bernard  
Department of Economics  
University of Laval  
Quebec, Canada
- The Impact of Disarmament on the Canadian Economy

2. Olav Bjerkhold,  
Aadne Cappelen,  
Nils Petter Gleditsch and  
Knut Moum  
International Peace Research  
Institute  
Oslo, Norway  
Disarmament and Development: A Study of  
Conversion in Norway
3. Michael Brzoska, Peter Lock  
and Herbert Wulf  
IFSH Research Unit  
Universität Hamburg  
Federal Republic of Germany  
An Assessment of Sources and Statistics  
of Military Expenditure and Arms Transfer  
Data
4. Eckehart Ehrenberg  
Universität Bonn  
Federal Republic of Germany  
Political and Economic Obstacles to  
Disarmament Efforts in Developing Countries,  
Egypt, Iran, India
5. Klaus Engelhardt  
Institute for International  
Politics and Economics  
Berlin, German Democratic  
Republic  
Effects of the Arms Race and Disarmament  
on the Labour Situation in Countries of  
Different Social Systems
6. Institute for African Affairs  
USSR Academy of Sciences  
Moscow, USSR  
Comparative Analysis of the Economic  
Situation of African Countries, the  
Resource Requirements for Development,  
Military Expenditure and Factors Affecting  
the Arms Race on the Continent
7. Institute of Oriental Studies  
USSR Academy of Sciences  
Moscow, USSR  
The Arms Race and the Economic and Social  
Problems of the Developing Countries
8. Institute for United States  
and Canadian Affairs  
USSR Academy of Sciences  
Moscow, USSR  
Urgent Political, Social and Economic  
Problems of the Present Stage of the  
Development of Mankind and Practical Ways  
of Diverting to Development Needs the  
Resources Now Absorbed by the Arms Race
9. Institute of World Economics  
and International Relations  
USSR Academy of Sciences  
Moscow, USSR  
Economic and Social Effects of a Continuing  
Arms Race and of the Implementation of  
Disarmament Measures
10. John Høsteland  
Resource Policy Group  
Oslo, Norway  
Stabilizing Raw Materials Prices Through  
Redeployment of Armament Spending

11. Lutz Köllner  
Sozialwissenschaftliches  
Institut der Bundeswehr  
Munich, Federal Republic  
of Germany  
Financial Disarmament, Developing Aid and  
the Stability of the World Monetary  
System
12. Rolf Krengel  
Deutsches Institut für  
Wirtschaftsforschung  
Berlin, Federal Republic  
of Germany  
Macro-Economic Effects of Disarmament  
Policies on Sectoral Production and  
Employment in the Federal Republic of  
Germany, with Special Emphasis on  
Development Policy Issues
13. Wassily Leontief and  
Faye Duchin  
Institute for Economic  
Analysis  
New York University  
New York, United States  
of America  
Worldwide Implications of Hypothetical  
Changes in Military Spending. (An Input-  
output Approach)
14. Polish Institute of  
International Affairs  
Warsaw, Poland  
Arms Race and Global Problems of  
International Economic Relations
15. Ernie Regehr  
Research Director  
Project Ploughshares  
Institute for Peace and  
Conflict Studies  
University of Waterloo  
Waterloo, Ontario, Canada  
The Utilization of Resources for Military  
Purposes in Canada and the Impact on  
Canadian Industrialization and Defence  
Procurement
16. Lance Taylor  
International Nutrition  
Planning Program  
Massachusetts Institute of  
Technology  
Cambridge, United States  
of America  
Defense Spending, Economics Structure and  
Growth: Evidence Among Countries and Over  
Time
17. Raimo Väyrynen and  
Helena Tuomi  
International Relations  
University of Helsinki  
Helsinki, Finland  
Transnational Corporations, Armaments and  
Development, a Study of Transnational  
Military Production, International Transfer  
of Military Technology and their Impact  
on Development

18. Constantin Vlad  
Director  
Institute of Political  
Sciences and Study of  
the National Question  
Stefan Gheorghiu Academy  
Bucharest, Romania  
Disarmament and the New International  
Order
19. Herbert Wulf, Michael Brzoska  
and Peter Lock  
IFSH Research Unit  
Universität Hamburg  
Federal Republic of Germany  
Transnational Transfer of Arms Production  
Technology

APPENDIX II

List of possible products for converted military  
 industrial capacity a/

The following list is presented in order to indicate the range of conversion options available. To identify the industries which, after conversion, might take up the options listed, the following abbreviations are used:

- Ae: Aeroengines;
- Ai: Airframes (including missiles);
- E: Electronics;
- S: Shipbuilding; and
- T: Tanks and other vehicles.

Agriculture

Machinery and equipment	Ai/S
Pumping Plant and pipeline for irrigation	S/T
Sugar beet crushers	S

Construction

Industrial soundproofing	Ai
Machinery and equipment	S
Pre-fabricated bridges for disaster relief	S
Pre-fabricated parts for all kinds of buildings and structures	Ai

Ecological

Anti-pollution devices	S
Processing plants	Ai/E
Recycling machinery and plant	Ai/S

Energy

Adaptable power units for community energy systems	E
Boilers for power stations;	S
Condensers and evaporators for oceanic thermal energy	S
Fuel-cell power plant	E
Heat exchangers	E/S
Heat pumps	E/T

---

a/ Dan Smith and Ron Smith, Military Expenditure, Resources and Development  
 (report prepared for the Group).

Integrated energy systems	Ai/E
Nuclear material disposals	Ai
Oilfield machinery and equipment	S
Oil spillage pumps	T
Power packs for oil pumping	E
Standby power units for computer industry	E
Submerged oil production systems	S
Tidal barrage systems	S/T
Wave power systems	S/T
Windmills	Ai/E/T

### Industrial machinery and equipment

Advanced machine tools	Ai/E
Ball screws and other precision components	E
Blowers and fans	E/S
Fluidized bed boilers	S/T
Industrial process furnaces and ovens	S
Machinery for: food products, textiles, woodworking paper industries, printing industries, marine agriculture and other specialized uses	S
Mechanical power transmission equipment	S
Pumps and compressors	S
Quality control test facilities for industry	Ai

### Marine technologies

(in addition to those listed elsewhere)

Submersibles and other equipment for marine mineral exploitation and agriculture	Ai/E/S/T
Tanks for fish farming	S

### Medical

Decompression chambers	S
Electronics for intensive care and medical analysis	E/T
Equipment for the blind	E
Medical mass screening systems	T
Pacemakers	E
Personalized equipment for the disabled	E
Renal dialysis machinery	E
Surgical heat exchangers	E

### Metalworking

Castings and engravings	S
Containers	Ai/S
Fabricated metal products	S
Iron and steel forgings	S

Machine tool accessories	S
Machinery for metal cutting and forming	S
Sheet metal work	Ai/S
Special dies, tools and jigs	S

Offices and service industries

Automated stockholding and issuing systems	E/S
Automated merchandising machinery	S
Commercial laundry machines	Ai/S
Electronic office equipment	E
Office and other metal and wood furniture	S
Refrigerators and air-conditioners	Ai/E/S

Transport

Air safety and air traffic control systems	E
Automatic speed/distance warning and braking systems	E
Canal gates and heavy duty pumps for canals	T
Caravans and trailers	S/T
Civil helicopters	Ai/Ae/E
Diesel engines for locomotives	S
Gas turbine engines for ships	Ae
Helium airships for airfreight	Ai/Ae/E
Hydrofoils	Ai/S/T
Industrial trucks	S/T
Integrated engine battery cars	E
Locomotives	S
Monorail development	Ai/E
Mopeds and motorcycles	T
Pipe-laying and freight barges	S/T
Remotely piloted vehicles for (e.g.) crop-spraying	Ai/Ae/E
Retarder braking systems for trains and coaches	E
Road-rail vehicles	Ai/E
Rolling stock	Ai/E/T
Short-to-medium range civil freight and passenger aircraft	Ai/Ae/E
Other braking systems for all kinds of vehicles	E

Others

Brewing equipment	T
Cable-laying equipment	S
Conveyors	S
Electronic libraries and teaching aids	E
Elevators	S
Firefighting equipment	T
Heavy earth-moving equipment	T



High-speed motors	E
Linear motors operating pumps and compressors	E
Micro-processors	E
Mining machinery and equipment	S
Reconstruction of piers	S
Telecheiric devices for application in dangerous environments	E
Wider application of gas turbine engines	Ae

---

Sources: Kaldor (1977); Labour Party Defence Study Group (1977); Lucas Aerospace Combine Shop Stewards Committee (1976); Smith, D. (1977a, 1977b); Vickers National Combine Committee of Shop Stewards (1978).

APPENDIX III

Reservations expressed by some experts on the study

F. Horst Becker (Federal Republic of Germany)

[Original: English]

Chapter II

Paragraphs 51-56

The discussion of nuclear arsenals and strategies in paragraphs 51 through 56 of chapter II contains controversial and unbalanced elements. The issues dealt with here are exceedingly complex and cannot be adequately analysed in such a brief manner. Moreover, they fall outside both the mandate given to the Group and the scope of the studies commissioned by the Group. Competence in these matters resides in other fora; in fact, the 1981 Committee on Disarmament report contained an extensive passage on the doctrine of nuclear deterrence.

Paragraph 80

Reservations made by a number of countries regarding the adoption of United Nations resolutions and documents on a new international economic order are inadequately reflected in this paragraph and in other passages in this section of chapter II.

Paragraph 83

In this case, the useful and relevant inclusion of an estimate by OECD of the aid coming from the centrally planned economies - 0.1 per cent of their combined GNP in recent years - was voted down. Another negative aspect of this paragraph is the uncritical use of statistics. Data on flows of official development assistance - a net concept - are compared with interest and profit flows - a gross concept.

Paragraph 93

In this paragraph, statements are made which do not appear to be borne out by the facts. The Group was united in its view that protectionism is not the answer to the economic problems of the developed countries; but this is also the declared attitude of most of these countries and there are very few of them where protectionist measures could be said to be accelerating. Thus

the assertion that "many developed economies are ... accelerating protectionist measures against the newly industrialized developing countries" is wrong.

Paragraph 95

The last sentence of this paragraph is unacceptable.

Mr. Hendrick de Haan (Netherlands)

[Original: English]

Chapter II, paragraphs 51-56

The discussion of nuclear arsenals and strategies in paragraphs 51 through 56 of chapter II contains controversial and unbalanced elements. The issues dealt with here are exceedingly complex and cannot be adequately analysed in such a brief manner. Moreover, they fall outside both the mandate given to the Group and the scope of the studies commissioned by the Group. Competence in these matters resides in other fora; in fact, the 1981 Committee on Disarmament report contains an extensive passage on the doctrine of nuclear deterrence.

Mr. Daniel Gallik (United States of America)

[Original: English]

Chapter II

Paragraphs 51-56

The discussion of nuclear arsenals and strategies in paragraphs 51 through 56 of chapter II contains controversial and unbalanced elements. The issues dealt with here are exceedingly complex and cannot be adequately analysed in such a brief manner. Moreover, they fall outside both the mandate given to the Group and the scope of the studies commissioned by the Group. Competence in these matters resides in other fora; in fact, the 1981 Committee on Disarmament report contains an extensive passage on the doctrine of nuclear deterrence.

Paragraph 80

Reservations taken by a number of countries on the adoption of United Nations resolutions and documents on a new international economic order are inadequately reflected in this paragraph and in other passages in this section of chapter II.

Paragraph 83

In this case, the useful and relevant inclusion of an estimate by OECD of the aid coming from the centrally planned economies, 0.1 per cent of their combined GNP in recent years, was voted down. Another negative aspect of this paragraph is the uncritical use of statistics. Data on flows of official development assistance, a net concept, are compared with interest and profit flows, a gross concept.

Paragraph 93

In this paragraph, statements were made which do not appear to be borne out by the facts. The Group was united in its view that protectionism is not the answer to the economic problems of the developed countries; but this is also the declared attitude of most of these countries and there are very few of them where protectionist measures could be said to be accelerating. Thus, the assertion that "many developed economies are ... accelerating protectionist measures against the newly industrialized developing countries" is wrong.

Paragraph 95

The last sentence in this paragraph is unacceptable.

Chapter IV

Substantial portions of this chapter were initially drafted under the hectic conditions of the last session in a very commendable effort to achieve a complete report, but without time for adequate review and discussion. The treatment of several aspects of this chapter, such as inflation, was not concurred in by myself and other experts, but was adopted under the majority rule procedure prevailing during consideration of this and a number of other chapters. There was an uneven application, in this and other chapters, of the majority rule procedure, which was adopted after the growing number of reservations by experts from East, West and South and the slow rate of progress made it apparent a complete consensus report was impossible. For example, although a majority favoured inclusion of a table showing SIPRI data on the military share of GDP by country, including an estimate for the USSR, this was not done and the issue was brought to compromise by constructive efforts on all sides. On other decisions carried by one or two votes in which I was in the large minority, no effort was made by the Group to reach compromise.

The selection and interpretation of source material in this chapter and elsewhere reflects an unresolved conflict between the aims of urging a particular viewpoint and giving an objective analysis. This is regrettable; a more objective case for the urgent need to take positive cognizance of the disarmament-development relationship would have been more persuasive.

Chapter VI, paragraph 390

The statement in the penultimate sentence that there is, implicitly right now, "a need for arrangements for the financial transfers of those parts of resources released through disarmament measures that should be diverted to the economic and social development in developing countries" is inconsistent with the previous discussion and with reality.

Mr. R. F. Haselden (United Kingdom of Great Britain and Northern Ireland)

[Original: English]

Chapter II

Paragraphs 51-56

The discussion of nuclear arsenals and strategies in paragraphs 51 through 56 of chapter II contain controversial and unbalanced elements. The issues dealt with here are exceedingly complex and cannot be adequately analysed in such a brief manner. Moreover, they fall outside both the mandate given to the Group and the scope of the studies commissioned by the Group. Competence in those matters resides in other fora; in fact, the 1981 Committee on Disarmament report contains an extensive passage on the doctrine of nuclear deterrence.

Paragraph 80

Reservations taken by a number of countries A/PV.2229 of 1 May 1974) on resolution 3201 (S-VI) of 1 May 1974 concerning the establishment of a new international economic order are inadequately reflected in this paragraph and in other passages in this section of chapter II.

Paragraph 83

In this case, the useful and relevant inclusion of an estimate by OECD of the aid coming from the centrally planned economies (0.1 per cent of their combined GNP in recent years) was voted down. Another negative aspect of this paragraph is the uncritical use of statistics: data on flows of official development assistance - a net concept - are compared with interest and profit flows - a gross concept.

Paragraph 93

In this paragraph, statements were made which do not appear to be borne out by the facts. The Group was united in its view that protectionism is not the answer to the economic problems of the developed countries; but this is also the declared attitude of most of these countries and there are very few of them where protectionist measures could be said to be accelerating. Thus

the assertion that "many developed economies are ... accelerating protectionist measures against the newly industrializing developing countries" is wrong.

Paragraph 95

The last sentence of this paragraph is unacceptable.

Chapter IV

Despite the efforts of members of the Group it remained the case that on some issues in this chapter a substantial minority of experts did not agree with the majority view. The analysis of inflation provided an example of this: the space accorded to this subject in the report was out of proportion to the contribution which military expenditure as distinct from other expenditure has made to inflationary pressures.

C. A. Hill (Jamaica)

[Original: English]

Chapter VI

The Group's report as a whole, dealing as it does with the most crucial problems and opportunities facing humanity, must necessarily be somewhat visionary. This chapter, however, both exceeds and falls short of the required vision. By giving such distinct, prominent and detailed coverage to the possibilities and mechanisms for direct development assistance transfers as a result of disarmament, however desirable they may be, it implicitly exaggerates the imminence of such prospects. On the other hand, and more importantly, it raises the risk that international development co-operation will again be viewed much too narrowly, namely as a matter of development assistance transfers. In fact, any such transfers are far less important to the development outlook than are the efforts of developing countries themselves and changes in the areas of trade, technology and resource use, and an effective and dynamic international division of labour. All of the latter changes, as other parts of the report help to demonstrate, would ultimately be much advanced by disarmament measures and are also central to the medium- and long-term interest of the developed countries.

Mr. Masayoshi Kakitsubo (Japan)

[Original: English]

Chapter II, paragraph 83

The economic aid coming from the centrally planned economies which was estimated as 0.1 per cent of their combined GNP in the second draft report is expressed simply "not published" in the third draft report. To keep balance with the ODA from OECD countries, the ODA from the centrally planned economies should also be expressed in a percentage figure.

Mr. Sten Lundbo (Norway)

[Original: English]

Chapter II, paragraphs 51-56

These paragraphs go very sketchily into a complex and sensitive area and further than the Group's special competence and its commissioned studies would justify. These issues cannot be analysed adequately in this forum.

Mr. Pradelle de Latour Dejean (France)

[Original: English/French]

Chapter II

Paragraphs 51-56

The discussion of nuclear arsenals and strategies in paragraphs 51 through 56 of chapter II contains controversial and unbalanced elements. The issues dealt with here are exceedingly complex and cannot be adequately analysed in such a brief manner. Moreover, they fall outside both the mandate given to the Group and the scope of the studies commissioned by the Group. Competence in these matters resides in other fora. In fact the 1981 Committee on Disarmament report contained an extensive passage on the doctrine of nuclear deterrence.

Paragraph 80

Reservations taken by a number of countries on the adoption of United Nations resolutions and documents on a new international economic order are inadequately reflected in this paragraph and in other passages of chapter II.

Paragraph 83

Since a figure provided by OECD was used to indicate the participation of the industrialized countries in official development aid, the French expert cannot subscribe to the decision to delete the line indicating that the share of the USSR and its European allies in that aid was limited to 0.1 per cent of the GNP for the last few years.

Paragraph 93

The French expert could not agree to the insertion of a sentence implying that, generally speaking, the developed countries "were accelerating" the adoption of protectionist measures prejudicial to the newly industrialized countries.

Paragraph 95

The French expert cannot agree to the final sentence in this paragraph on East-West trade. The word "negative" cannot be applied to East-West trade, which shows a higher growth rate than that of world trade generally. Moreover, the imports of the socialist countries of Eastern Europe are often affected by the lack of foreign exchange reserves.

Chapter IV

The French expert wishes to enter a reservation on the chapter as a whole because it does not generally reflect the view of a large number of experts. Inter alia, attention should be drawn to the refusal to include in the report statistics from SIPRI comparing the military expenditure of the largest industrialized countries as a percentage of GNP. That statistical table was considered by a very large number in the Group as indicative and useful, all the more as, according to the general view, it was accompanied by an explanation giving the sources and estimates used.

Chapter VI, paragraphs 387-390

By resolution 33/71 I, the General Assembly had asked the Secretary-General to transmit to this group of experts, for their consideration, the proposal to establish an international disarmament fund for development put forward by the President of the French Republic at the tenth special session of the General Assembly on disarmament. The proposal was duly considered. However, the French expert did not join in supporting the above-mentioned paragraphs because they do not entirely reflect the views expressed by the experts.



Mr. I. Sy (Senegal)

[Original: French]

Chapter VI

The evaluation given in chapter VI of the proposal to establish a tax on military expenditure is based on the argument that a tax on military expenditure would have the effect of making development aid dependent at least on a continuation of the arms race if not on increases in military expenditure. But that is not necessarily so. Assuming that the tax is 5 per cent, it would yield an amount of over \$20 billion just by taxing the military expenditure of the United States and the Soviet Union. That sum represents about two thirds of all international government development assistance. It is hard to conceive that the two Powers, confronted with such a heavy tax, would go right ahead and increase their military expenditure without a second thought. If they did, the only effect would be to increase the amount of the tax since it is a percentage of over-all military expenditure. On the contrary, and most probably, if that happened, the two Powers would try to reduce the amount of the tax. The result would be a reduction in military budgets and, consequently, a slowdown in the arms race. Thus, the tax on military expenditure would encourage progress on disarmament and, most important, would help to create additional resources for developing countries. For, needless to say, the problems facing those countries are urgent and require speedy action. The approach which holds that those additional resources can be obtained for the developing countries solely from the funds released by the disarmament agreements is over-optimistic. For the rate at which arms control, and a fortiori, disarmament agreements are concluded is desperately slow and subject to all kinds of political ups and downs. Moreover, it is a passive approach (it quietly awaits the adoption of disarmament measures), whereas a tax on military expenditure has the effect of stimulating a reduction in armaments and the transfer of resources to the developing countries. What is more, it is technically feasible, as shown in paragraphs 375 to 378 of chapter VI of the report. While it is true that lack of political will appears to be the main obstacle today to establishing a tax on military expenditure, that lack of political will should not be confused with feasibility, as is the case in several paragraphs of the report.

Mr. Bernard Wood (Canada)

[Original: English]

Chapter II, paragraphs 51-56

Paragraphs 51 to 56 on nuclear strategy issues go very sketchily into a complex and sensitive area, further than the Group's special competence, and its commissioned studies would justify. These issues cannot be analysed adequately in this forum.

Chapter VI

The Group's report as a whole, dealing as it does with the most crucial problems and opportunities facing humanity, must necessarily be somewhat visionary. This chapter, however, both exceeds and falls short of the required vision. By giving such distinct, prominent and detailed coverage to the possibilities and mechanisms for direct development assistance transfers as a result of disarmament, however desirable they may be, it implicitly exaggerates the imminence of such prospects. On the other hand, and more importantly, it raises the risk that international development co-operation will again be viewed much too narrowly, as a matter of development assistance transfers. In fact, any such transfers are far less important to the development outlook than are the efforts of developing countries themselves and changes in the areas of trade, technology and resource use, and an effective and dynamic international division of labour. All of the latter changes, as other parts of the report help to demonstrate, would ultimately be much advanced by disarmament measures and are also central to the medium- and long-term interest of the developed countries.

-----