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Demilitarization and Conversion

World Social Summit
Copenhagen, March 1995

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The authors are members of the staff of the Bonn International Center for Conversion (BICC). Dr. Michael Brzoska is head of the research department, Kees Kingma is project leader of demobilization and demilitarization projects, Dr. Herbert Wulf is director of BICC.

Background Paper for the Panel

Demilitarization and Conversion

Conversion of Military Structures—A Challenge for the International Scientific Community and an Opportunity for Global Security and Social Development

at the World Social Summit

Copenhagen, 8 March 1995

Bonn International Center for Conversion

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Demilitarization and Conversion

Conversion of Military Structures - A Challenge for the International Scientific Community and an Opportunity for Global Security and Social Development

prepared for the World Social Summit, Copenhagen, March 1995

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I. Introduction

When the Soviet Union collapsed and the East–West confrontation ended there were hopes and predictions of a huge and long-awaited ‘peace dividend.’ It was hoped that military spending and weapon stocks could be reduced, military research and arms production reoriented to peaceful purposes, armies demobilized and military barracks handed over for civilian use. Disarmament and demilitarization, if properly managed through systematic conversion efforts, could help to reach some of the aims which are at the center of the deliberations at the World Social Summit: to attack poverty, build solidarity and create jobs. Five years later, the elusive ‘peace dividend’ has not materialized to the extent that optimists had predicted. In fact, in some countries there have been large costs associated with reductions in military resource use. However, to conclude from this that there are no net benefits from conversion is premature. Such judgment is based on an incomplete understanding of conversion and a narrow policy approach that ignores the possibilities arising from a redistribution of gains and costs. There is good reason to conclude that the resources freed in the military sector are beneficial for improved social and economic development.

Unfortunately, conversion has so far not been a guided process—neither by the priorities of economic or science policy, nor by those in charge of security planning. That is one reason why contributions to social development have so far been limited. To date, most of the post-cold war conversion efforts do not stem from concrete formulations of arms control and disarmament policies or from a conscious assessment of national and international security. Financial constraints on national budgets, rather than international disarmament or peace policies, were the driving force behind demilitarization and conversion efforts. Because the changes in the international system after the political upheaval in the former Soviet Union were so drastic and required little interpretation, minimal attention was paid to the nature of the linkages between larger issues, such as economic development and international security, and the conversion effort taking place at the national, regional or local level. However, these linkages are real and must be addressed.

Overcoming this narrow and piecemeal approach—in favor of a comprehensive and globally oriented concept of conversion essential to the management of disarmament and demilitarization—may contribute to the utilization of a ‘peace dividend’ for socio-economic development. Such a comprehensive concept of conversion has several essentials:

- The issue of conversion needs to be *broadened* beyond the issue of industrial conversion.
- Conversion has a distributive element. If left to the market alone, conversion can produce unwanted results. Through proper management, conversion can instead contribute to improvement in *economic and social development*.

- Conversion and *security* will have to be linked. The commodities and activities which are the focus of the conversion effort—military bases, armies, weapons, budgets, production facilities, weapon laboratories and so on—are the product of national and international decisions related to security.
- In order to facilitate the proper management of conversion, another element is important, namely the *role of science*. Large numbers of ‘the best and the brightest’ worked on military projects in the past. Many of them can now contribute to socio-economic development. Scientists can help to make the most out of the conversion process.

Following an overview of the concept of conversion and the benefits and costs deriving from it, the issues of the ‘peace dividend’ and its reallocation, the contributions of science and the relation to security in various ways, will be taken up. This paper will then draw conclusions on how conversion can be used most effectively and efficiently for social development worldwide.

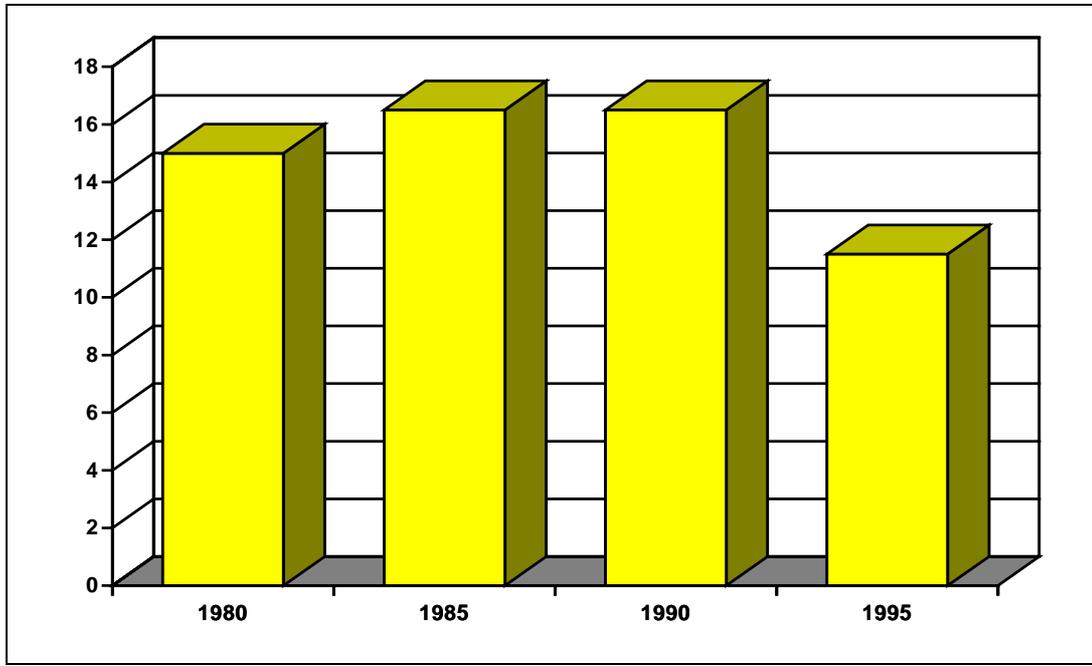
2. Elements of a comprehensive concept of conversion

Although most countries of the world and many different sectors of the economy are affected, the debate over conversion—whether, when, and how to do it—is usually narrowly confined to conversion of the arms industry in industrialized countries. This is understandable given the major resources invested in this sector and the problems involved in reductions of arms production. Prominent among them, and directly related to the topics of the Social Summit, is the issue of employment in the arms industry.

Employment in arms production worldwide decreased dramatically in the first half of the 1990s—from about 16 million to not more than 11.5 million in a five year span. While the data presented in Table 1 are in many instances rough estimates, the general trend is well established. The loss of employment in arms production is a serious problem in only a few countries and has been most manifest in Russia. In fact, job losses in Russia alone account for more than 60 percent of the estimated global job loss in arms production. Much lower absolute job losses have occurred in the United States, Western Europe, Eastern Europe and a number of developing countries. In several countries—such as Argentina, Belgium, Brazil, Germany, Poland and Slovakia—the arms industry has made deep cuts, though compared to total industrial employment in these countries the numbers are relatively small. The consequences of job losses differ widely depending mostly on the general capacity of the economy to create demand for civilian goods.

Figure 1: Jobs in the global arms industry

(in million)



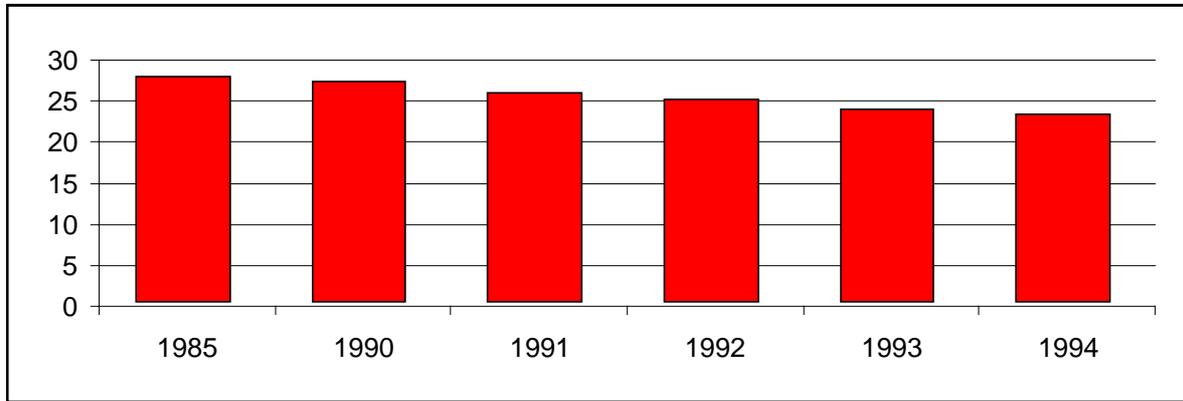
For details see appendix Table 1

A larger number of countries are going through another form of disarmament, namely the reduction of the number of personnel in the armed forces. The size of the armed forces has dropped from more than 26 million in 1990 to less than 23 million in 1994. This downward trend has been most pronounced in the European NATO countries and Russia (the upward trend for ‘Other European countries’ is a result of the classification of European non-Russian CIS countries in this category from 1992). Little reduction has occurred, on the other hand, in the Middle East and Central Asia. There is a clear link between the level of conflict and demobilization. In Africa, the end of a number of wars has contributed to a decrease in the number of people under arms². The consequences of demobilization differ widely and depend to a large extent on the general state of the economy. Developing countries with weak economies—such as Mozambique, Eritrea, Nicaragua, El Salvador and Cambodia—have

² Due to the integration of former ‘opposition forces’ in national armies and the inclusion of the Eritrean army, the reductions are not fully reflected in the totals in Figure 2 and Table 2.

Figure 2: Development of the armed forces

(in million)



For details see appendix Table 2

greater difficulties in coping with the costs of demobilization and reaping the benefits of the reintegration of soldiers into the economy than industrialized states with large demobilization programs.

While industrial conversion and demobilization exercises capture much of the international attention devoted to conversion, they are but part of the consequences of the shift of resources out of the military sector. The broadening of the conversion debate and practice to include all dimensions of conversion is a critical step in generating the level of attention and resources required to maximize net benefits for human development. A first step in this direction is to grasp the various forms that disarmament and demilitarization, and thus conversion, can have. A broader conversion agenda includes at least the following six processes:

- *Reallocation of financial resources:* If the process of disarmament continues, there is a substantial potential for savings. The true ‘peace dividend’ is the opportunity to reallocate resources to productive activities.
- *Reorientation of military research and development (R&D):* Programs for the reorientation of military R&D can contribute to research in a number of different fields, including two of the major global challenges: human development and environmental management. Furthermore, science also has a role in promoting, facilitating and supporting practical conversion efforts.

- *Industrial conversion:* Within the past few years, the global arms industry has rapidly reached a situation in which radical ‘down-sizing’ of capacities is required. Reduced arms production and large over-capacities are a consequence of military budget cuts. To make constructive use of excess capacity for non-military production and offer job opportunities to redundant defense workers is a major conversion challenge.
- *Demobilization of armies:* Manpower adjustment is required both for military personnel and civilian employment in the armed forces. Short- and medium-term social instabilities are not unusual during demobilization periods. Supporting reintegration into the civilian society is a principal task in order to remove barriers to demilitarization.
- *Reallocation of military bases:* Base closures and the dismantlement of military installations are usually expected to result in economic dislocations. However, conversion of military sites offers a variety of opportunities for productive use. The success of conversion depends on many factors, especially the general state of the economy and the overall condition of the base and its surrounding neighborhood.
- *Alternative use or scrapping of surplus weapons:* In Europe, the numbers of weapons in many categories are being reduced substantially. In some other areas of the world, the end of wars or reduced levels of conflict allow similar steps. Different methods for managing surplus weapons are available to governments. While scrapping of surplus weapons is often costly, export is the cheapest but most counter-productive method. Availability of surplus weapons can contribute to the aggravation of tensions and reduce the likelihood of disarmament and conversion.

All six of these dimensions of the conversion effort are related in a critical way to economic development. In the short-term the economic dimension of conversion may be of purely local or national concern. This can be seen as states make decisions to reduce military activities primarily as a result of short-term budgetary constraints flowing from poor economic conditions. Such financial constraints have led to policies which do not effectively manage the drawdown. Since the shrinkage is not based on a rational, security, arms control, disarmament or peace policy, but rather on a fragmentary approach to cope with economic difficulties, the possibility of improved economies may reverse the momentum towards conversion. Successful long-term disarmament requires a more stable foundation than merely a lack of funds.

As a first conclusion, we find the need for a comprehensive conversion approach to enable a more functional and institutional linking of socio-economic, scientific and security elements of the conversion process, especially among states and the evolving international security and economic system.

3. Benefits and costs of conversion

The magnitude of conversion now underway is unprecedented in modern history. Since conversion is a truly global issue, states must interact and coordinate their policies if the investment is to come to fruition. A major question is how large the benefits and costs of conversion actually are.

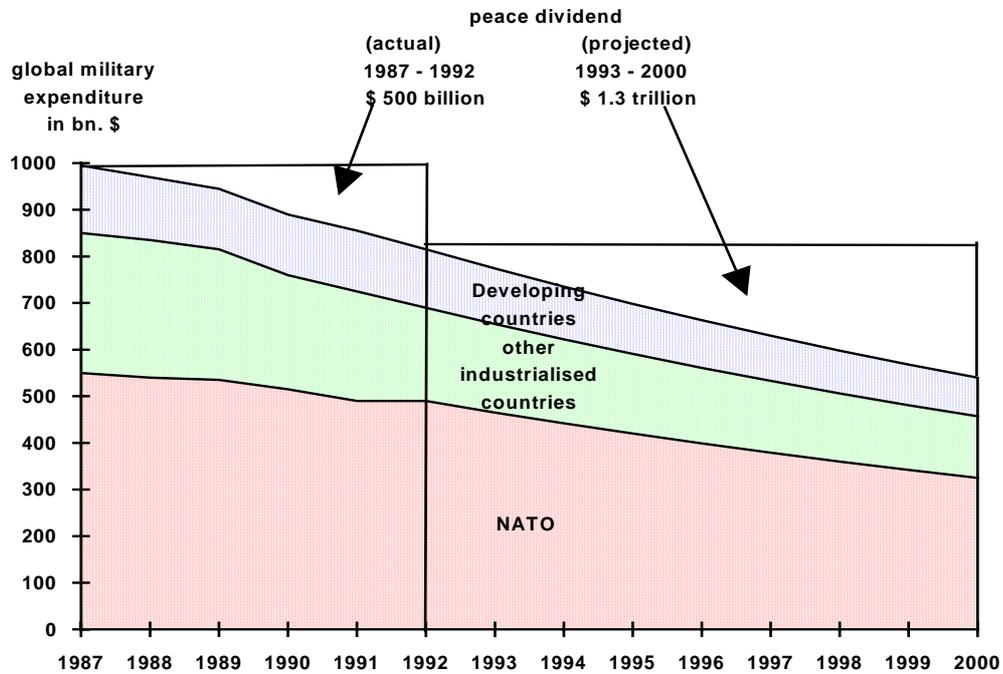
In the first few years following the end of the cold war, there were great hopes for a 'peace dividend.' Many competing claims were made for the resources freed through disarmament. An important early attempt to capture the potential of the 'peace dividend' was the estimation of worldwide savings from military expenditures (UNDP, 1992 and 1994). Comparable to calculations of 'rents,' actual expenditures can be compared with projections of a constant expenditure on a high level (see figure 3). Taking the historic high of global military expenditures in 1986 as the starting point, actual savings in military expenditures of US \$500 billion for 1987–1992 can be estimated. From the much lower starting point of 1992,³ an additional saving of US \$1,300 billion for 1993 to 2000 can be projected, assuming constant trends.

There are numerous claims on the additional resources available for civilian purposes. For instance, in Germany the costs of unification—more than US \$100 billion per annum—has more than swallowed decreases in military expenditures. In the United States, reductions of military expenditures are occurring at a time when the budget deficit is being attacked.

In some countries, parts of the savings are illusory. For instance, the Soviet/Russian Gross Domestic Product (GDP) declined dramatically during the period 1986–1994. It would not have been possible for Russia (or the Soviet Union) to maintain its 1986 level of military expenditures for many more years. In other countries, there were similar parallel reductions in military expenditures and GDP. In addition, savings in military expenditures led to losses in income for those formerly employed in arms industries and the armed forces. There is a difference here between the budgetary and the macro-economic view of the subject. From a budgetary view, savings in military expenditures are more or less free resources that can be put to other uses, for instance to increase transfers to developing countries. From the macro-economic point of view, savings in military expenditures must be offset by increases in other types of demand if the level of income is to remain stable (Hartley et al., 1993). Transfers to other countries therefore represent transfers of income from one country to another.

³ There is a lack of accurate recent data on military expenditures. Presentation of actual global spending is limited to the year 1992; data after 1992 are projections based on the trend 1990–1992.

Figure 3: Military expenditure (1987–1992) and the peace dividend (actual and projected)



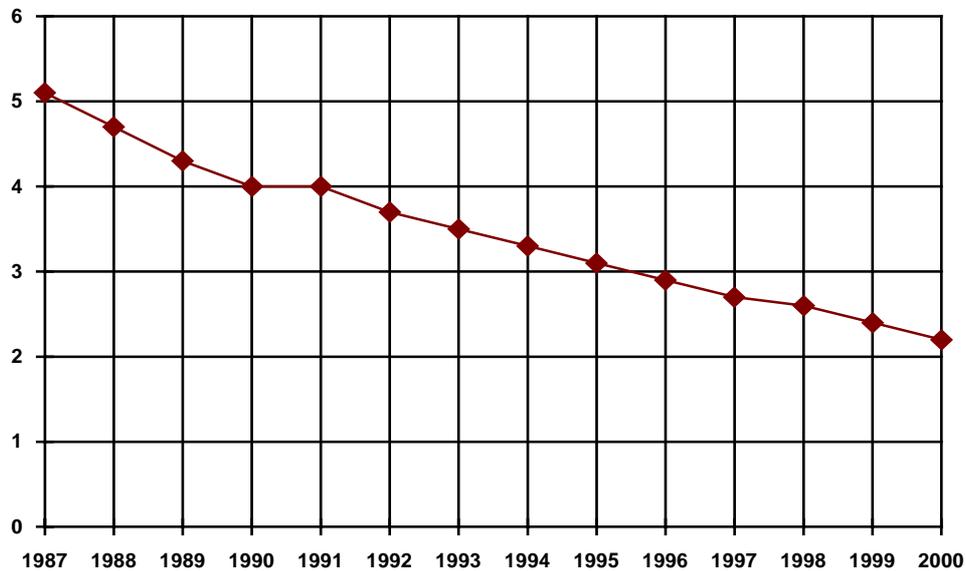
Source: Laurance *et al.*, 1995

A measure of savings that partly takes account of this problem is the reduction in the ‘military burden.’ The ‘military burden’ is defined as the share of military expenditures in GDP. The global military burden declined substantially between 1986 and 1992, for which data exists. Instead of 5 percent of global GDP in 1987, only 3.7 percent of global GDP was used for military purposes in 1992. An additional 1.3 percent of world GDP was available for other than military purposes in 1992. If trends in military expenditures and GDP growth would continue, as they did in the years 1990–1992, by the year 2000 an additional 1.5 percent of world GDP could be spent on civilian purposes.

Potentially, longer-term benefits from disarmament and conversion are much larger than short-term benefits. This is the basic argument of classical economics since the time of Adam Smith: expenditures on the military are not productive. There is very little contribution to the future production of goods through investment into machines or people. In contrast, shifting resources to civilian use can produce benefits beyond possible savings in military expenditures:

Figure 4: World military expenditures

in % of World GDP



For details see appendix Table 3

- there will be more investment into productive economic activities;
- demobilized soldiers may have skills useful for the civilian economy;
- base closures may free valuable land holdings;
- highly qualified scientists may become available for civilian research; and
- the reduction in tension may result in an increased savings rate, lower interest rates, and thereby higher growth rates. The relationship between reduced international tensions and increases in savings rates is well established for the cold war period (Russett *et al.*, 1994; Russett and Slembrod, 1993).

Disarmament and conversion lead to budget savings and can stimulate increases in income, but they also produce additional costs:

- disarmament treaties, such as the Chemical Weapons Convention, require costly verification and destruction of weaponry;
- demobilized soldiers may be eligible for early retirement or severance pay, or they may need re-training or re-integration subsidies; and when most of the demobilized soldiers are old, sick or disabled—which often is the case in Africa—the public health system or the communities and families will have to take up additional burdens;
- the environmental clean-up of former military bases proves to be very costly; the cleaning up of the military bases in the United States that have been or will be closed before the end of the century is projected to cost more than US \$8 billion in the period 1990–2001 (based on data from the US Office for Management and Budget—OMB; budgets and projections); and
- arms industries and research laboratories may need government assistance for transformation and conversion; former employees may need unemployment benefits.

Some of these costs, such as assistance to arms industries in transition, are investments and designed to result in future economic growth. Others, such as early retirement pay, are consumptive.

The balance of costs and benefits in the various aspects of conversion can be shaped by the quality of the management of the process. Good management can increase benefits and decrease costs. The absence of such management is likely to produce sub-optimal results, as does an ignorance towards market forces. Good conversion management occurs at many locations in a large number of countries: in the context of, for example demobilization programs in some African countries, base closures in Europe, or arms industry conversion in Western Europe. Good local and regional conversion management is necessary to translate the effort into human development.

Yet, an exclusive focus on local and regional conversion management misses important aspects of conversion. One of these aspects is the role of science that will be picked up in the next section. The other is the distributive aspect of conversion. The costs of conversion occur predominantly in those countries that had large military sectors. For instance, loss of employment in arms production is concentrated in a few countries, as is the cost of environmental clean-up of bases and the costs of scrapping weapons. Particularly in the short run, some countries bear high conversion costs.

The benefits from conversion, at least in the short and medium term, tend to accrue more than proportionally in countries that have comparatively small military sectors (Leontieff and Duchin, 1983; Arora and Bayoumi, 1993). Such countries tend to have more flexibility to profit from shifts in demand for civilian products, since they generally were more competitive in civilian sectors anyway.

Likewise, reductions in interest rates that can come about with decreases in military expenditures benefit mostly those companies that are best suited to expand civilian production. These are, in all likelihood, companies already engaged in civilian production. Companies highly dependent on military sales need time and money for restructuring and conversion. These benefits are only partly offset through the increased availability of resources, for example experienced scientists or trained workers in countries that used to have large military sectors.

To the extent that conversion leads to an unbalanced distribution of costs and benefits, it has counterproductive consequences. If left to market forces alone, conversion has the tendency to depress economic activity in countries with large military sectors and to foster economic activity in countries with small military sectors. Not all of the countries with high costs of conversion have difficulties in coping with these costs. Industrialized countries with growing economies and good regional conversion management have comparatively few problems, even if the scope of conversion is as demanding as it is in Germany. Even so, the European Union (EU) resolved to arrange for some transfer of funds for conversion within the EU in the framework of the KONVER program, with Germany as the largest beneficiary.

The issue of distributing the gains from peace has received much attention in the past, as shown in the next section. One conclusion of this section is that such gains exist—less so in the form of immediate savings from budgets, but rather because benefits outweigh costs in the longer-run. From this it can be inferred that there is some room for the international transfer of resources for social and economic development, but that it cannot be separated from general questions of North–South resource redistribution. A second conclusion is that benefits and costs of conversion are not equally distributed. This implies that an international resource transfer to facilitate conversion, in cases where there are high costs of conversion, is justified.

4. Redistributing resources through conversion

Internationally, several claims on the ‘peace dividend’ exist. The resources that have previously been used for military purposes could indeed make considerable contributions to sustainable human development in a safer world. Worldwide military expenditure in 1992 stood at US \$810 billion (see Figure 3), while the flow of Official Development Assistance (ODA) from OECD countries in that year was US \$55 billion (OECD, 1994). A meeting of leading thinkers on environmental and development issues in the Hague in November 1991 recommended that all countries, industrial and developing, should commit themselves to reducing military expenditures in the 1990s by at least three percent a year (Pronk and Haq, 1992, p. 19). They suggested that a sizable part of the resulting ‘peace dividend’ would have to be mobilized for sustainable development. The “Agenda 21,” adopted in Rio

in 1992 constitutes a major commitment in this direction. Despite these high level official recommendations and commitments, developing countries have not however, benefited financially from the end of the cold war. The additional resources promised in the Rio Declaration have not yet been channeled to environmental clean-up and development activities in developing countries. According to the chairman of the OECD Development Assistance Committee (DAC) “there is little evidence that ODA flows will respond to the commitment made at the Earth Summit in Rio de Janeiro in 1992 to work towards the 0.7 percent target” (OECD, 1994, p. 7). In fact, ODA from OECD member countries declined by 8 percent in 1993 and the trend continued in 1994. A further reduction of ODA would be in line with experiences of earlier decreases in international tension, such as in the early 1970s. It would reinforce the impression that ODA was to some degree an issue of power competition.

Several mechanisms have been proposed in the past to use the resources freed by the demilitarization process for social development. As early as 1950 a UN General Assembly resolution emphasized the need to restrict the use of scarce human and economic resources for military purposes by Member States and to invest instead in the welfare of developing countries. In 1974 a report was published suggesting the reduction of the military expenditures of the permanent members of the Security Council by 10 percent in order to fund development assistance. Several such initiatives were brought forward by individuals and governments culminating in 1978 in the French Government’s proposal to the Special Session of the UN General Assembly on Disarmament to create an International Disarmament Fund for Development (United Nations, 1981; Thee, 1981; Fontanel and Guilhaudis, 1988). There was not much enthusiasm for the French proposal. A major objection was that it would only create another international bureaucracy in charge of distributing funds.

The South Commission, chaired by Julius Nyerere, former President of Tanzania, expanded on the French proposal with its proposal in 1990 to create a Peace and Development Fund. The Fund would contain a substantial amount of the resources to be released by the reduction in defense budgets in the industrial countries. “A significant proportion of the Fund’s resources should be applied to assisting developing countries in meeting their needs through wide-ranging programs for expanding their stock of skilled manpower through: scholarships; fellowships; the establishment and expansion of higher education facilities, including centers of excellence; on-the-job and in-firm training; and contacts between scientists and technologists and institutes of higher learning” (South Commission, 1990, pp. 265–266).

Another approach was suggested by the Brandt Commission in 1980 (Independent Commission on International Development Issues, 1980). It proposed the introduction of a tax on arms transfers. This idea was echoed in several subsequent proposals, but has not gathered much international acceptance,

partially because data on arms transfers are still too unreliable. They would tend to become even less reliable, if such a tax would be introduced. A more fundamental argument against such a tax is that there would be a positive correlation between the amount of finance mobilized for development and the value of weapons exported and imported. The positive aim of development would thereby be linked to the criticized transfer of arms. It makes more sense to seek agreement for parallel reductions in arms exports and limitations of military expenditures in recipient countries.

For several years, Oscar Arias, the Nobel Peace Prize Laureate and former President of Costa Rica, has been proposing the establishment of a Global Demobilization Fund (UNDP, 1994, p. 59). He calls for the nations of the world to commit themselves to at least a 3 percent a year reduction in their military spending over five years. The rich nations should earmark at least one-fifth of these savings towards the proposed Global Demobilization Fund. Developing countries should contribute a smaller proportion of their savings to the Fund; he has suggested one-tenth of the savings. Even the countries which do not reduce their military expenditure should contribute to the fund—as if they had reduced by 3 percent. The proposed fund is to reward primarily, but not exclusively, the demilitarization efforts of developing countries; and could further stimulate the current reduction in military expenditure by linking it to the consolidation of world peace. In a special section of UNDP's 1994 *Human Development Report*, Oscar Arias proposed that leaders gathered at the World Social Summit should decide on the management of this Global Demilitarization Fund. The designated institution should have sufficient capacity and authority to administer the funds justly and efficiently. The proposal does not specify where the resources would be used and how the allocation would have to take place. Using 1994 as the base year, the Arias proposal would yield about US \$85 billion during the period 1995–2000, an average of about US \$14 billion per year (UNDP, 1994).

The Arias proposal has been further developed by Michael Renner in a recent paper of the Worldwatch Institute (Renner, 1994). Renner sees the fund serving three purposes: 1) assisting countries which adequate resources for coping with the legacies of war; 2) financing the destruction of weapons and economic conversion; and 3) building an effective, alternative global peace system.

The Commission on Global Governance also picked up on the Arias proposal. It argued that “to provide positive incentives for reductions in military spending, a Demilitarization Fund should be established to provide assistance to developing countries in reducing their military commitments” (Commission on Global Governance, 1995, p. 126). According to the Commission, such a Fund should focus its financing on defense conversion activities in developing countries, which mainly implies the disarmament and demobilization of armed forces.

Obviously, proposals to redirect the gains from peace have attracted interest from a wide range of individuals and institutions. Our short review indicates the gradual shift in the preferred resource allocation from broad development and environmental rehabilitation purposes to the more narrow issues of conflict resolution, peace-keeping, demobilization, demilitarization and post-war rehabilitation—all related to conversion. This shift is in line with the earlier argumentation in this paper for transfers of funds to facilitate conversion in countries where there is a lack of resources to make the necessary investments in order to reap the potential benefits from conversion. However, as was argued earlier, there is also room for transfers of funds for larger socio-economic goals.

Despite their initial attention, none of the ideas for institutionalized transfer of resources has made much headway. A number of conceptual and practical issues have not yet been addressed convincingly:

- *Link to the reduction in military expenditure in the contributing countries.* Most proposals foresee contributions as a fixed share of defense cuts, but automatic and mandatory contributions are very difficult to negotiate. Also, there is the question of how countries with very low GDP per capita should be treated. They will probably be recipients of allocations from a fund. Countries with simultaneous decreases in GDP, such as Russia, would have little capacity to contribute to a fund. Finally, such a mechanism might even work as a disincentive to disarm. “The endeavor might come to be regarded as a ‘tax’ on disarming, when the activity that should be ‘taxed’ is arming” (Renner, 1994, p. 53).

Mandatory contributions would also require considerable improvements in the transparency and reliability of military expenditure data. An alternative would be to make contributions voluntary. But what would then be the difference to existing types of development assistance? Ultimately, the question is one of North–South resource transfers in general, and brings us back to the debates on the 0.7 percent commitments for ODA. It may make most sense to leave the discussion in that framework. The scope for increases in resource transfers is obvious when more civilian GDP is available—both because of the decrease in the share of military expenditures in GDP and because of more productive use of resources and thus growth of GDP. The argument that countries with small military sectors may benefit most from disarmament and conversion in the short term adds additional caution to link contributions to a fund too closely to reductions in military expenditures.

- *Width of the activities funded by the mechanism.* The many issues on the table at the Social Summit demonstrate the need for additional development assistance, as well as the need for improvements in its management. Funding conversion efforts in developing countries, whether they be

demobilization, industrial conversion or scrapping of weapons, have an increasing level of attraction for donor countries. What should be the balance between these activities?

The scope of the activities to be financed would obviously depend on the size of the fund. If the fund would be relatively small, funding of the disarmament, demobilization and reintegration of ex-combatants could be the first priority, serving several objectives at the same time. If these exercises are managed well, they would free up financial and human resources for more productive activities and would improve human security. Other early priorities could be demining and other efforts to eliminate or control small arms and other weapons. This might include assistance in funding international arms control institutions, such as the Organization for the Prohibition of Chemical Weapons (OPCW) in the Hague. Additional funds might be used for additional measures, such as activities on conflict resolution, war prevention and peace-keeping.

Care has to be taken to avoid the impression that military- and war-related activities are privileged over civilian problems. For instance, spending on post-war reconstruction over humanitarian relief and development activities in poor countries without a legacy of armed conflict. This leads to the larger question that measures related to conversion have to be integrated into broader development and environmental rehabilitation programs. In the end, all conversion problems become development problems, but it may make sense to concentrate on conversion problems as a first step within the scope of a limited fund.

- *Criteria for allocation of the funds.* If the funds are to be used for activities at the national level, principles for the allocation will have to be decided upon. First of all there would be the criteria for need. Poorer countries which lack the resources to support development efforts would be entitled to receive more per inhabitant than richer countries. Criteria would also be required to have the transfer function as an incentive for further cuts in military expenditure. Of course, genuine security interests of countries should not be denied. The establishment of criteria for allocation of resources will face the dilemma that countries with the largest conversion challenges at this moment are in the former Soviet Union and Eastern Europe. In these countries the largest number of people are affected by conversion and the issues play a considerable role in general economic policy. However, that does not automatically imply that these countries will receive the largest support. In poorer developing countries the conversion issues are often smaller, relative to the overall development challenge, but governments of these developing countries have less resources to address them.
- *Institutional set-up in which the resource flow will be managed.* A major obstacle to earlier proposals has been the fear that donors will set up an additional bureaucracy. However, it should

not be assumed that such a funding mechanism necessarily requires a separate institution to manage the resource transfers. If substantial financial resources would become available for human development in developing countries, the countries that generate these resources might well decide themselves about the way they would like to channel these resources. This could be through the UN development agencies, the International Development Association (IDA) of the World Bank, their own bilateral programs or through NGOs. Most of these organizations already have considerable experience in the support of development activities aimed at human development and security. Some have already started to support the demobilization and reintegration of ex-combatants. Of course this does not deny that there is a significant need to improve the responsiveness and efficiency of many of these organizations. The allocation of the resources should then be dealt with through improved coordination, based on agreed national allocations.

If the focus is on narrower conversion activities, peace-keeping and non-violent conflict resolution, a strengthening of international institutions dealing with these issues might be required. Yet again, with improvements in communication and coordination much could be achieved. The establishment of one or a few institutions that governments, NGOs or private enterprises in developing countries could turn to if they require assistance in the field of conversion could foster such efforts. A modest beginning has been made with the establishment of the Bonn International Center for Conversion (BICC), which has been set up as a clearing-house of information on conversion issues.

One conclusion in this section is that, while there are many valid conceptual and practical objections to it, a fund for demilitarization, conversion or peace, or whatever it might be called, is basically a good idea. This is true for both the donor and the recipient side. The fund will at least keep up the moral pressure on rich countries to commit at least a portion of the benefits from conversion to developing countries. In recipient countries, it highlights needs that are not sufficiently dealt with by current ODA policies. A second conclusion is that such a fund is more likely to come about if it is voluntary, does not create much bureaucracy and is clearly linked to demilitarization and conversion in developing countries.

To avoid misunderstanding, arguments in favor of demilitarization and conversion are not intended to belittle the security problems that exist in many parts of the world. Resources previously spent on security will most often still have to be spent on security, but these expenditures should be increasingly directed towards conflict prevention and peace building, rather than the means to settle conflicts violently. Up-stream prevention of conflicts requires less resources than dealing with them once they have become violent, and a general reduction in the means for violent conflict resolution increases the security of all.

Finally, the above discussion should not detract from the fact that using the gains from peace for social development implies much more than only channeling funds through some central mechanism to development projects. First of all, peace as such tremendously increases the way people can develop and express themselves. Secondly, the confidence in stability is a key condition for investment and employment creation. Thirdly, all resources saved from the military budget, even if not explicitly transferred to social purposes or to other (poorer) countries are more productively used than before.

5. Reorientation of science for social development

Science and technology were an integral part of the arms races during the cold war period. They were both an engine for new weapons developments, such as new generation nuclear warheads and laser technology, as well as an instrument in the hand of strategists requiring additional capabilities (Long and Reppy, 1980; Gledisch and Njølstad, 1990). The end of the cold war has not stopped efforts in the laboratories to develop new weapons. Internationally agreed limits on military R&D currently only exist for biological and chemical weapons, and in the non-nuclear states that have ratified the Nuclear Non-proliferation Treaty.

During the cold war, OECD countries and the Soviet Union together conducted the bulk of military R&D: about 95–98 percent of global military R&D (Brzoska and Lock, 1988). Unfortunately, little data are available on recent trends in military R&D—even less than on other military activities. The best data are available for OECD countries. Their expenditure on military R&D declined (see Table 4), but military R&D as share of total government sponsored R&D remained at high levels in a number of countries, such as the United States, United Kingdom and Spain. R&D spending has been more resilient than other types of military activity, at least in a number of major Western industrialized countries.

Regarding the number of scientists and engineers working in military R&D, even less firm data are available than on expenditure. A conservative estimate at the end of the cold war put the number at 1.5 million. Other estimates were considerably higher (Thee, 1990). New data that have become available on the Soviet Union suggest that in that country alone more than 1 million persons worked in military R&D in the late 1980s (OECD, 1993, pp. 62–63). This number includes persons with a wide range of qualifications.

OECD and CIS countries continue to be by far the largest spenders on military R&D, but there have been large reduction in CIS countries, most pronounced in Russia. According to official statistics, the share of R&D in total military expenditures (that also decreased substantially) dropped from almost 20 percent in 1989 to just above 10 percent in 1992 (OECD, 1993, p. 63). Because of the deep economic and fiscal crisis in Russia, civilian R&D was reduced at a similar pace. Thus the share of military

R&D in total R&D seems to have remained at about 70 percent (OECD 1993, p. 165, pp. 62–63). Because of the lack of opportunities to move out of military R&D into civilian research, many Russian scientists, despite poor incomes, continue to stay on in military R&D establishments. Thus the decline in official employment figures has not been as pronounced as would be expected from data on R&D spending, or as it has been in military production in Russia (Gonchar, 1994).

In some OECD countries smaller decreases in military R&D spending have been accompanied by simultaneous decreases in the share of military R&D in total R&D spending (see Table 4). However, even in these countries scientists have not always found appropriate employment in civilian R&D or industry. To some extent, this is a repercussion of the specifics of military R&D. Military R&D tends to be highly secretive, leading to compartmentalization of the know-how and capabilities of scientists and engineers. In the past, military R&D was often generously funded with little regard to cost. Inventions and products in the military sector are judged by their performances, not their performances in relation to costs. Thus cost consciousness is often not well developed. Military R&D is concentrated around a number of high technologies that are not always useful for civilian purposes. For instance, ‘hardening’ of computers against nuclear explosion induced Electro-Magnetic Pulse (EMP) through the use of special chips has never been a concern in civilian industry. Civilian aircraft do not need to be ‘stealthy,’ now a major military capability, but fuel-efficient, a lesser criterion for military planners.

The specificity of military R&D is not only a problem for many individual scientists who try to find employment in civilian research, but also a more general phenomena with economic consequences. It has reduced the applicability of inventions in the military sector to civilian purposes, which is often called the ‘spin-off’ from military R&D. Recent micro- and macro-economic studies have demonstrated that ‘spin-off’ is limited. Instead, increasingly there is ‘spin-on’—the use of technology for military purposes that was first developed for civilian applications, such as personal computers, or new types of diesel engines (United Kingdom, 1991; Alic *et al.*, 1992; Gummet and Reppy, 1987).

Despite characteristics that make military R&D specific, there can be no doubt that substantial human capital exists in the military sector and that much know-how becomes available with reductions in military R&D. Scientists have received an education that very rarely has been specifically oriented towards military needs, and they have continued to absorb information and knowledge. Teams have developed productive divisions of labor. Laboratories have been equipped with advanced installations.

Obviously, there needs to be a determination of which of the types of technology that come out of the redirection of military R&D are of use for civilian purposes. The market is a powerful instrument in making these selections in the interests of the users and consumers of such technologies. However, markets are not sufficient in making the selection:

- in cases where there is no sufficient effective demand, for instance in poor countries or for the needs of socially underprivileged groups;
- in cases of future needs that are not related to current effective demand; and
- in cases of markets that are deemed inappropriate, such as the market for nuclear weapons.

The market approach has to be complemented with selection based on other, societal criteria, such as international security (in the case of nuclear proliferation), social needs and future possibilities. Scientists are often called upon to contribute to the formulation of such criteria and to assist in the selection of technology that has to be made by societies, especially when it comes to future needs and possibilities. Conversion provides an additional opportunity for scientists to exercise that role. Scientists can contribute to the formulation of conversion policies, the identification of areas where research would have major impact and the specification of how resources released from military R&D can best contribute to the attainment of the established goals.

Of course, scientists are also important in the conduct of conversion. Some, such as environmental experts, industrial engineers and economists are already engaged in practical conversion work. A larger contribution from science, including social science and management science, would improve the efficiency of practical work.

The voice and support of the scientific community could also be of use on the larger issues of conversion, such as the above-mentioned transfer of financial benefits to where they are needed or the most appropriate use of accumulated know-how released from military R&D. They can contribute to the improvement of a comprehensive concept of conversion and advise on the feasibility of operational strategies. Of course, it is not just a question of the scientists getting their act together, but also a challenge for scientists to open up towards a dialogue with all other possible stakeholders. In earlier times, scientists were well respected advisors on military strategy and the development of new weapons. Now they are in the position to contribute to conversion and social development through creative thinking, open dialogue with all segments of society, and through international exchange.

6. Security aspects of conversion

In a comprehensive concept of conversion, and in order to be able to assess the impact and potential of conversion for social development, conversion has to be seen in its relation to security. The importance of the link to security can be illustrated by the following practical examples:

- if demobilized soldiers are not reintegrated into society, they might retrieve their guns again—at home or abroad;

- if weapons become ‘surplus’ after a peace treaty has been signed between warring parties, they need to be dismantled or at least controlled in order to prevent their transfer into still ongoing conflicts in the region or elsewhere;
- control over nuclear weapons that become redundant as a result of arms control agreements becomes an important security issue;
- arms exports are seen by interested groups as a remedy to over-sized arms production facilities and a safety net against job losses;
- unemployed nuclear scientists might well facilitate nuclear proliferation; and
- under-utilized weapon laboratories and design bureaus tend to intensify lobbying for weapon modernization, thus fueling an arms race.

All these examples represent conversion challenges. The international security element in these and many other cases is important because increases in interstate tension—real or perceived—might reverse the process of down-sizing of military activities. In the short- and medium-term, conversion takes place within national boundaries, based on private enterprises and local, regional or national governments acting in their own interests. In the longer run, however, conversion is tied to the perception of threats to national security. Security considerations should therefore be integrated into the conversion effort.

One good example for a concerted effort to link conversion and security would be a parallel decrease in arms exports and military expenditures by recipient countries. Resources that are now used for military purposes could be freed without fear of reductions in military security. Instead, the security of all would increase. An arms exporting country cutting sales would not be punished by way of increases in arms exports of other countries. All could benefit from increased demand for and sale of civilian goods. The spiral of escalation that is now often set in motion through the export of arms could be broken. Currently, it is of special importance to limit the export of weapons made surplus through disarmament. If this is not done, these fruits of disarmament may become the seeds of new arms races elsewhere.

The principal reason for the continued high level of military spending and the hesitant emergence of the conversion process is the slowness of reform in security policies in most countries and military alliances. Despite the changes in the world political climate which call for new structures and mechanisms for peace and security, few have yet been realized. Three factors have contributed to this slow pace of change (Laurance and Wulf, 1995):

- *Parochial interests.* The armed forces are slow in adjusting for fear of loss of privileges. In addition there is the economic self-interest within the arms industry and the weapon laboratories.
- *Maintaining defense capabilities.* Two types of genuine security consideration play an important role in maintaining existing military capabilities. First, the emergence of new conflicts (particularly ethnic and territorial conflicts in Europe, but also the experience of the Gulf War) have led to the formulation of new threat perceptions, and UN peacekeeping operations also require military capabilities. Second, there is concern in some of the major arms-producing countries that reduced arms development and production will lead to a loss of what is considered to be an essential ‘defense industrial base.’
- *Continued confusion and inertia in security policy.* Although many governments have begun to rethink their security policy this process has had only a limited effect on force structures and procurement planning. To do a little less of the same is the overriding principle of governments’ policies.

Conversion processes would clearly benefit from increased clarity on the concept of security. Security and conversion can reinforce each other. The relationship between conversion and security could be seen as working in two ways:

- 1) Improved security and security perceptions enable more disarmament, which in turn allows conversion to make these resources available for civilian activities.
- 2) Conversion, if managed well, channels resources to productive activities, leading to increased employment, social justice and decreasing social tension. Scrapping or controlling ‘surplus weapons’ increases the security situation directly by preventing their eventual disposition into the wrong hands.

This paper will not discuss the development of different concepts of security, but will illustrate that clear shifts have taken place over the past decade or so in how security should be perceived and defined. In broad terms, there has been a shift from the security of states ensured by military means to the security of people through prevention of conflicts and other threats. This shift is largely the result of the end of the East–West conflict, changes in economic and military power balances, increased environmental awareness, and—last but not least—an increasing recognition that people should be the ultimate beneficiaries of security and development policies.

Traditionally, the concept of security has dealt with the protection of sovereign states (*national security*) and their people against external attacks. This concept has a strong emphasis on protecting the state by military means (*military security*). Subsequently, concepts of common security and

collective security have been developed and used. The term *common security* was used in the report of the Palme Commission (Independent Commission on Disarmament and Security Issues, 1982). At the time—during the heyday of the cold war—NATO and the Warsaw Pact threatened each other’s populations with ‘mutually assured destruction.’ The Commission emphasized that security cannot be achieved against an adversary, but only together with him. However, in retrospect, the concept was developed mainly to address the large threats in a bipolar world.

In a *collective security* system governments of all states accept that the security of one state is the concern of all, and they agree to join in a collective response to aggression or coercion to gain advantage. The UN Charter aims to establish a system based on this concept. If peaceful means fail to adequately address a threat to the peace, breach of the peace or act of aggression, the UN Security Council is allowed to authorize other means in accordance with Chapter VII of the UN Charter. The ‘Agenda for Peace’ presented by the Secretary-General in 1992 was an effort to map out ways towards a collective security system (Boutros-Ghali, 1992). A true system of collective security would have a major impact on conversion, since it would allow for considerable disarmament (Laurance and Wulf, 1995). However, political and security developments over the past five years show that basing current conversion policies on a blueprint of collective security might not be useful (Roberts, 1993).

A more recently developed concept is that of *cooperative security*. The major objective of cooperative security is to move from a security system based on deterrence to one based on reassurance. It emphasizes the process that is required to change the present military based security concept. The concept has several phases in which confidence building and risk reduction proceed along with disarmament and restructuring of defense capabilities (Forsberg, 1992). Cooperation, transparency, gradual disarmament, industrial conversion, demobilization, demilitarization, even humanitarian intervention—all these processes are part of the concept of cooperative security. It takes current anxieties seriously, allows for a gradual process of reform, changes to and a decrease of military activities, and envisages a world in which military force no longer plays a dominant role.

Over the past decade an increasing number of arguments have been put forward to include *environmental security* in the concept of security. The Brundtland Commission noted in 1987 that “The whole notion of security as traditionally understood—in terms of political and military threats to national sovereignty—must be expended to include the growing impacts of environmental stress—locally, nationally, regionally and globally” (World Commission on Environment and Development, 1987, p. 19). It has been argued that national security should be redefined in order to include all the threats that come from environmental changes such as increasing population pressure, depletion of non-renewable resources, genetic erosion, soil degradation and climate change (Mathews, 1989). Environmental degradation is already proving to be an important factor in the development of several conflicts around the world.

The *Human Development Report* has recently made an effort to contribute to the redefinition of the concept of security from the perspective of people and their communities (UNDP, 1994). It suggested the notion of *human security* as an all-encompassing concept. The concept includes economic security, environmental security, food security, health security, personal security, community security and political security (UNDP, 1994, pp. 24–25). “It means safety from the constant threat of hunger, disease, crime and repression. It also means protection from sudden and hurtful disruptions in the pattern of our daily lives—whether in our homes, in our jobs, in our communities or in our environment” (UNDP, 1994, p. 3). As presented, the concept does not provide links to the more ‘traditional’ security threats, from a state sovereignty perspective; but in our view it allows for a link with the concept of cooperative security.

National security, based on military means, was the guiding principle of the cold war period. A combination of the concepts of cooperative and human security could be the underlying guide in the post-cold war world. Such a broader concept of security corresponds well with the comprehensive concept of conversion. Security requirements shape conversion in certain ways, stressing its contribution to global human development, while not ignoring issues of national security. These new security concepts help to show the link between conversion, social development and security. As phrased by the UN Secretary-General in his “Agenda for Development,” “Arms control and disarmament reduce the threat of destruction, economic decline and tensions that lead to war. A world of lower military expenditures, reduced military establishments, smaller stocks of weapons and less environmental destruction by military-related activities is not only desirable in itself, but propitious for development” (Boutros-Ghali, 1994, p. 9).

Conversion is a process that is part of security policy, since it contributes to building confidence and allows resources to be shifted to more productive purposes—creating employment, cleaning up the environment, redirecting research to new environmentally friendly technologies and so on. It contributes to addressing the root causes of conflict rather than deterring aggression. Thus, security policy based on a broad concept can act as a guide for conversion as well.

7. Summary: Military conversion for social development

With the reductions of global military expenditure in recent years and the end of the East–West arms race, major opportunities for conversion exists. Conversion is often looked at as a narrow problem of retooling arms factories for civilian production. In fact, the reduction in military activity that resulted from the end of the cold war has many more facets. Conversion, if broadly defined, can contribute to the goals of the Social Summit in a number of ways. Here, in addition to proposing the application of a comprehensive and broadened concept of conversion, four interrelated aspects were highlighted: financial resources from disarmament and their distribution, the management of this process, the role

of science and scientists in conversion, and the link between conversion and security. The findings can be summarized as follows:

Redistribution of Financial Resources

- *Considerable resources have become available through disarmament since the end of the 1980s.* These resources cannot simply be equated with the savings in military expenditures. Some of these savings are illusory, because national income has decreased alongside military expenditures. Others have to be balanced against the costs of disarmament, including investments in conversion. Yet the ‘peace dividend’ is real. Using a lower percentage of GDP in the military sector frees resources for non-military investment which in its turn drives socio-economic development.
- *Some of the benefits from the release of resources from military use should be redistributed.* Such a redistribution would benefit human development and security world wide. Costs and benefits of conversion are not equally distributed. In some areas, costs will be larger than direct benefits. To optimize the contribution of conversion to the reduction of poverty, creation of jobs and increase in human security, the financial gains from peace should be channeled to those areas where they create the largest social benefits.
- *There are opportunities for redistribution of some of the gains from peace from North to South and from West to East.* No transfer mechanism is perfect, but without any provision for transfer of resources it is likely that well-to-do countries will benefit much more from disarmament and conversion than countries in dire need of resources for human development.
- *This redistribution should be directed first of all at measures to support conversion, peaceful conflict resolution and peace building in developing countries.* In this way, the momentum for further disarmament and conversion can be kept up without decreasing international security. The resources should also be made available for more general human development goals.

Conversion as the Management of Disarmament

- *The quantity of these resources depends on proper management of the conversion process.* This process often needs (government) investment in order to bear fruit. It usually makes good sense to provide capital from the outside if it is not available within the country—for instance, for industrial conversion, demobilization and reintegration programs, weapon destruction, environmental clean-up and reorientation of military R&D.
- *Disarmament will create short-term pain, but there will be long-term gain.* In the short-term the costs of disarmament are dominant, but in the long term benefits emerge. Lengthy adjustment

periods are necessary in certain sectors. The investment in conversion programs and the proper management of these programs has the potential to shorten the transition time, promote economic growth and reduce social hardships.

- *Additional efforts should be made for the coordination of and communication about conversion.* This way costs can be kept low, benefits maximized and transfers channeled. Lessons of good and bad management are learned worldwide. Their comparative compilation, in the UN system or outside, can facilitate the success of conversion. Science and research are an important source for both advice and practical support on conversion.

Role of Science

- *Large numbers of scientists, and their know-how, have become available for civilian purposes.* Disarmament facilitates the release of scarce resources in the field of R&D. With the resources freed from military R&D, new and old problems can be tackled with more resources. Many of those researchers and scientists that used to work on military projects can now be put to work in civilian projects.
- *A special effort should be made to use scientific resources for conversion.* Science can profit from conversion and conversion can benefit from science. It is not only through reallocation of R&D funds and reemployment of scientists from military to civilian research that scientists can contribute to conversion. They can also help in the improvement of conversion management. Most importantly, they are in a good position to help balance market imperfections in the allocation of finances and human resources coming out of disarmament and conversion.

Security and Development

- *Conversion is closely linked to international security.* Security is more than national or military based security. There is a continuing need for reductions in military threats and increases in human security. Conversion largely depends on disarmament, and disarmament is a function of security. Again, progress on the conversion front will contribute to improvements in peace and security.
- *A parallel decrease in arms transfers and military expenditures would increase international security.* Excessive exports of armaments are counterproductive to conversion. This not only concerns newly made weapons, but increasingly also weaponry made surplus through disarmament. Efforts should be made to prevent weapons retired in one country from contributing to the build-up of armories in another country.

A Comprehensive Concept

- *Conversion, development and security make better sense if they are understood comprehensively.*
In order to improve the impact of conversion on social development, broad and dynamic concepts of security have to be used. Concepts such as cooperative and human security—which have links to broad concepts of development—are a good starting point. These will help to optimize the contribution that conversion can make to confidence building, employment creation, social justice and environmental improvement. Increased security on the basis of these concepts allows for more disarmament and conversion, which again makes additional resources available for social development. Conversion can make contributions on a number of fronts by providing financial resources, scientific know-how, incentives for further disarmament, and more security, but for that it needs to be understood in all its aspects.

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