DEFENCE INDUSTRY CONVERSION IN U.S.A AND THE SOVIET UNION/RUSSIA

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RAKESH KUMAR

Centre for International Politics,
Organisation and Disarmament
School of International Studies
Jawarharlal Nehru University
New Delhi - 110 067
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जवाहरलाल नेहरू विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110 067

CENTRE FOR INTERNATIONAL POLITICS,
ORGANISATION AND DISARMAMENT
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CERTIFICATE

Certified that the dissertation entitled "**DEFENCE INDUSTRY CONVERSION IN U.S.A. AND THE SOVIET UNION/RUSSIA**" submitted by Rakesh Kumar in partial fulfilment of the requirements for the award of the Degree of **Master of Philosophy** is his original work. This dissertation has not been submitted for any other degree to this University or to any other University to the best of our knowledge.

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Kanti Bajpai 10/7/97

Dr. KANTI P. BAJPAI
CHAIRPERSON

Chairperson
Centre for International Politics,
Organisation and Disarmament
School of International Studies,
Jawaharlal Nehru University
New Delhi - 110 067

Kanti Bajpai 10/7/97

Dr. KANTI P. BAJPAI
SUPERVISOR

GRAM : JAYENU TEL. : 6107676, 6167557 TELEX : 031-73167 JNU IN FAX : 91-011-6865886

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RAKESH KUMAR

INTRODUCTION

Poverty, destitution and social conflict are rife in large parts of world. Even today, under–nourishment and hunger characterise the existence of at least 1 billion people. Mass poverty and the growing economic and social gaps between and within the nations are direct threat to world peace. On the other hand, the arms race is being pursued not only by the developed nations but also by the Third World which is the home of most of the poor. The "military economy" has become a substantial and permanent component of the economy of many states. Tens of millions of people are engaged in the armed forces and in the manufacture of military products, and tremendous resources are being squandered on the creation of the means of destruction. Even if underdevelopment and world poverty have a number of structural economic and political causes, it is obvious that the arms race is devouring resources which could otherwise have been used in international development.

It is commonly assumed that the only important question that arises in connection with disarmament or arms control is how it may be brought about. But the questions must be asked, what is it for ? Unless there can be some clear conception of what it is that disarmament or arms control is intended to promote, and to what extent and in what ways it is able to do so, no disciplined discussion of this subject can begin.

Today the world is faced with a choice – either it can continue the

arms race at its present pace or an attempt has to be made to create a more stable and balanced world economic order. Both cannot be done simultaneously as the arms race and development compete for the same resources.

Disarmament or arms control releases economic resources, so to utilise these resources there has to be planning for defence industry conversion. Employees in the defence industry should never have to regard disarmament and reduced military orders as a threat to their means of livelihood. Disarmament is a most positive process and no one should have cause to look upon it as a negative one. In the absence of competent conversion planning, economic upsets in the defence industry areas would probably follow military cutbacks. As Seymour Melman puts it, "Competence for industrial conversion to civilian work is a precondition for ability to consider peace or disarmament proposals on their own merits."[1] That is, the renovation and modification of equipment is vital during a period of disarmament in order to mitigate the effects of a reduction in new orders.

Here it become important to define what is meant by arms control, disarmament and conversion. Nowadays the term "disarmament" and "arms control" are often used interchangeably, but there are some basic differences

[1] Seymour Melman, "Characteristics Of The Industrial Conversion Problem", in Seymour Melman (ed.), The Defence Economy : Conversion of Industries and Occupations to Civilian Needs, New York, Praeger Publishers, 1970, p.4.

between the two. The latter may be broadly defined as "comprising international agreements to stabilize or limit armaments by changing their composition or deployment or inhibiting their further development, in order to reduce the likelihood of accidental or unintended wars or to limit the scope or destructive effects of war."[2] While disarmament is viewed as a type of arms control, it is different as it "aims not to reduce the likelihood or severity of war, but to render it impossible."[3] Under some circumstances, arms control may involve an increase in national military capabilities and defence expenditures but disarmament, on the other hand, "under almost any realistic assumptions, implies a major reduction in national military capabilities and defense expenditures leaving only residual, minimal, or purely defensive capabilities in national hands."[4] Disarmament is both a goal and a process. It can either be unilateral, bilateral or multilateral.

With disarmament there arises the question of "conversion". Conversion refers to the transfer of labour, capital and other productive resources from unproductive military use to alternative civilian-oriented activity. It involves the changing of defence industries so that they can produce civilian goods and survive when there is a cut in defence expenditure or when there is disarmament. "Both our physical security and

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[2] Emile Benoit, "The Disarmament Model" in Emile Benoit and Keneneth E. Boulding, (ed.), Disarmament and the Economy, New York, Harper and Row, 1963, p.29.

[3] Ibid., p.29.

[4] Ibid., p.29.

our economic well being require that a significant fraction of the productive resources currently being poured into the militaries of the world be shifted to productive, civilian–oriented activity. To do this efficiently and smoothly, with minimal disruption and pain during the transition, is the mandate of economic conversion."[5] Seymour Melman writes that "Economic conversion from military to civilian economy includes the formulation, planning and execution of organizational, technical, occupational, and economic changes required to turn manufacturing industries, laboratories, training institutions, military bases, and other facilities from military to civilian use."[6] Economic conversion involves more than just a move away from all things military. It is an essential tool to restructure an economy, to create a more just, equitable and sustainable society.

Conversion can be of two types – 'Conversion by Command' and 'Conversion by Community.' Conversion by command is an example of a structural effort to convert. Conversion is here seen as a matter of decision – making by those in power. As society creates technology, and defence industry no longer is needed, it has to convert. In the case of conversion by command, direction comes from the policy makers. Conversion by community is where local citizen groups, local authorities, trade unions

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[5] Llyod J. Dumas, "Economic Conversion : The Critical Link," Bulletin of Peace Proposals, Vol.19, No.1, 1988, p.1.

[6] Seymour Melman, "Economic Alternatives to the Arms Race : Conversion from Military to Civilian Economy," In Materials on Conversion and Reindustrialisation : Alterna-tives to Pentagon Industrial Policy, Mimeo, 1987, p.13.

and/or peace groups have taken the initiative or have been recruited for the conversion process. The technological frame is either to reduce the dependence of the local community on military orders and to create alternative employment, or to demonstrate the strength of the approach as a peace proposal.[7]

But conversion is easier said than done. Conversion of defence industries brings a lot of problems with it. An objective appreciation of defence industry activity is a primary requirement if one wants to cope with the conversion problem. Many scholars have assumed that, since defence industry firms have been operated by competent men, it therefore follows that these same men should be able to convert quickly the physical and the human capital that they utilise to civilian uses. But this expectation falls afoul of several characteristics of defence industry and military-serving occupations.

The managers and technologists of defence industry have become expert in serving one customer, the government. As a result they have become trained in satisfying the special technical requirements of military hardware and military services. The nature of the requirements gives secondary importance to cost considerations, which are important in the commercial sphere. Also, serving the single customer, namely, the government, produces a special kind of marketing skill that features

[7] Tarja Cronberg, "Civil Reconstructions of Military Technology: The United States and Russia", Journal of Peace Research, Vol.31, No.2, 1994, pp.209-210.

negotiation methods more similar to the sphere of diplomacy than to the practices of the commercial market place. Furthermore, the largest defence contractors have tended to operate in a non-competitive fashion in the military sphere since single sources are necessarily utilised for the very largest of the military system development and production contracts.[8]

The pragmatism of conversion has a number of different dimensions. On the one hand, it involves the carefully thought out planning of precisely how to change the product line of a given factory from weapons and related products to some particular good or collection of goods serving civilian markets. The profit potential of various possible alternative products must be evaluated. Modifications of plant and equipment, details of work-force retraining, reorientation of workforce and a plan for financing all this must be worked out. Finally, a coordinating schedule for this complex of interconnected conversion activities must be developed and implemented.

On the other hand, conversion is a practical political strategy. Advanced planning for conversion should reassure those whose livelihood currently depends on the continued funding of military projects that the curtailment or elimination of these activities will not cost them their jobs. Consequently, those who live in areas heavily dependent on military spending will not feel compelled to equate cutting military spending with

[8] Jurgen Brauer and John T. Marlin, "Converting Resources from Military to Non-Military Uses", Journal of Economic Perspective, Vol.6, No.4, Fall 1992, pp.148-49.

cutting their throats economically. Without advanced planning for conversion, any attempt to cut military programmes, no matter how poorly conceived or irrelevant to the nation's security, will be seen as a move against jobs. So for those who represent militarily dependent areas, political damage if not political suicide is likely to be the result in case they support military cuts. Thus, "advocacy of conversion is a clear political strategy for removing at least an important part of the internal pressure that keeps the arms race alive."[9]

All of this is to say that there is no basis for assuming an automatic, built-in capability for converting swiftly from military to civilian operations when that becomes a requirement. Rather, there is reason to expect that conversion capability has to be developed and requires at least the same sort of detailed planning as new-product development in the commercial sphere. There are two solid reasons for economic conversion planning, as Seymour Melman rightly puts it: "first, to facilitate reconstruction of the damage owing to a permanent war economy; second, to relieve disarmament negotiations of the fear that a reversal of arms race carries unacceptable economic penalties."[10]

To implement a conversion plan successfully, one should learn from the experience of the past. For this, the most suitable countries to be studied

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[9] Llyod J. Dumas, "Economic Conversion : The Critical Link," Bulletin of Peace Proposals, Vol.19, No.1, 1988, p.7.

[10] Seymour Melman, "Law for Economic Conversion : Necessity and Characteristics". Bulletin of Peace Proposals, Vol.19, No.1, 1988, p.143.

are the U.S. and the Soviet Union/Russia, as these are two countries whose economy had great dependence on the military sector. Also both countries have taken some steps towards conversion. These two countries are also most suited for the study of conversion problem as one is a capitalist market economy and the other was a communist command economy which is experiencing conversion in a period of transition. So looking at these two countries will give as an insight into the problems and prospects of conversion in market and command systems and will serve as a guide for various other countries. I therefore propose to study the experience of these two countries.

Chapter 1 will look into the debate on conversion. Here I will deal with the various arguments for and against conversion. Also in this chapter I will examine how it has become important at this juncture and what are the requirements for a successful conversion.

Chapter 2 will look into the experience of the Soviet Union/Russia and I will focus on steps taken by the government, the problems faced by the relevant industries and the reasons for those problems. The chapter will also deal with the question of why it was important for these industries to convert.

Chapter 3 will deal with the experience of the U.S. It will focus on the few American industries which underwent conversion and lessons derived from their experiences.

The final chapter will analyse the different problems faced by industries of the Soviet Union/Russia and the U.S. during conversion and will attempt to assess the future of conversion in the global economy.

CHAPTER I

THE DEBATE ON CONVERSION

The military economy has become a substantial and permanent component of the economy of many states. Tens of millions of people are engaged in the armed forces and in the manufacture of military products, and tremendous resources are being devoted to the creation of the means of destruction. It is quite natural, therefore, that when problems of disarmament are discussed there arise important and complex questions of its socio-economic consequences, of the possibility of switching the resources currently used for military purposes to peaceful needs, of the influence of this process on the development of the economy, on the level of unemployment, and so on.

DEFENCE EXPENDITURE : A BURDEN TO THE ECONOMY

"The degree of material well-being generated by any economy depends not only on its ability to fully employ the productive resources (labour, capital, materials, energy, etc.) available to it, but also on its ability to employ them in ways that contribute to the societal standard of living."[1] Resources that are used to produce ordinary consumer goods and services (such as food, clothing) clearly add to present material living standards.

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[1] Lloyd J. Dumas, "Military Spending and Economic Decay", in Lloyd J. Dumas (ed.), The Political Economy of Arms Reduction : Reversing Economic Decay. Colorado, AAAS Selected Symposium, Westview Press, 1982, p.1.

Resources employed in the production of producer goods and services, such as industrial machinery, rail transportation systems, factory buildings, insurance services and engineering services are also productive, but through a less direct route. This class of goods and services expands an economy's ability to produce, and by doing so they increase the supply of consumer-oriented product in the future, which increases future material well-being. Hence, it contributes not to the present, but to the future standard of living. There are also categories of mixed goods, i.e., both consumer and producer goods combined, the most prominent examples of which are probably education and health care. The resources used in the production and supply of mixed goods can, therefore, also be considered productive since they augment both the present and the future standard of living.

On the other hand, military-oriented production falls into a wholly different category. It does not add to the supply of consumer goods or to the supply of producer goods, and so their contribution to the present or future material standard of living is nil. When resources which have been idle are put to work, they will reduce unemployment, generate income and at least in the short-run enhance prosperity. But in the long run they will be a drain on society, if they are engaged in unproductive activity. As resources are being used unproductively, it will result in an inefficient distribution of the factors of production and hence things which have to be done will not be done. In the process, the economy and the society will suffer, irrespective of the nature of the economy. As correctly put by Lloyd Dumas, "the issues of the

use to which resources are put is so fundamental and so overriding in its impact on the ability of an economy to efficiently generate economically useful goods and services that economic systems as distinct as those of capitalism and communism experience similar structural problems when resources are diverted from contributive use. This is particularly true over the long run."[2] Neither capitalist nor socialist economies are capable of overriding negative economic effects of persistently high military spending.

Military goods require valuable economic resources for their production, though they do not produce economic value as they neither contribute to the material standard of living nor to any productive capacity of the economy, as has been discussed. They, therefore, impose a real cost on society. This cost is best measured not purely in terms of money, but rather in terms of the sacrifice of the economically and socially useful goods and services that could have been produced with the labour, materials, energy, and machinery, which were instead devoted to military production.

In their efforts to preserve and expand arms production and to stave off disarmament, researchers connected with the "military–industrial complex" (MIC) widely use the argument of growing military spending as a factor contributing to a higher rate of employment and absorbing unemployment. But it can be argued that if the same resources had been used for civilian purposes, they would have generated more employment because,

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[2] Ibid., p.2.

in general, military technologies are more capital–intensive than civilian technologies. So instead of easing the situation of employment, military spending tends to aggravate it.

Another myth which goes with military spending is that military spending is, in some way, beneficial for economic development. This is doubtful. High military spending means either high taxes or less expenditure on non–military sector by the government. Both go against the well–being of an ordinary man. High taxes means citizens can spend less on food, clothing, education, health, and other goods and services, as their personal disposable income declines, i.e., citizens will spend less on all those items which increase their living standard. High taxes on the corporate sector means it will have less of a surplus to reinvest and hence the future well being of the society will suffer. Less expenditure in the non–military sector means decreased expenditure in the social sector. This also goes against the well–being of citizens as they are the beneficiaries of government expenditure on social services. Military expenditure sustained by deficit–financing increases the money supply in the economy, resulting in inflation. This affects the public adversely by eroding the purchasing power of its money.

The defence industry accounts for a labour force which is one of the best paid. This labour force does not create any socially useful goods or services. They do, however, create a considerable volume of additional effective demand, which puts a greater burden on the consumer goods

industry, as military spending increases purchasing power without increasing the production of consumer goods. As rightly pointed by the Soviet Peace Committee,[a] the growth of military spending can be offset by increasing taxation, state debt or emission of money. Such methods inescapably result, however, in higher prices inside the country and tend to undermine confidence to [sic] its currency on the international market and thus to lead to its depreciation, to inflation."[3]

Arguing along the same lines, Dumas[4] has pointed out that proponents of arms production argue that military spending is beneficial for the economy as it creates jobs and provides additional sources of demand to stimulate economic activity and it drives the discovery of new technology with important applications to civilian purposes, technology that ultimately results in rising productivity and better products. And by the threat it poses to other nations, a high level of military expenditure guarantees access to both needed raw materials and profitable markets. Dumas suggests that these arguments are only partly true. Military expenditure does create jobs, but nearly every other form of public expenditure creates more jobs, dollar for dollar. Military expenditure also inject money into the economy and can, therefore, be used as a tool for short-run economic stimulation. However,

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[3] Vladimir Vaneev, "The Conversion : Some Conceptions", in Disarmament Commission, Soviet Peace Committee, Socio-Economic Problems of Disarmament, Vienna, The International Institute For Peace, 1978, p.5

[4] Lloyd J. Dumas, "Economic Conversion : The Critical Link", Bulletin of Peace Proposals, Vol.19, No.1, 1988, pp.1-2.

when high levels of military expenditure persist for an extended period, they interfere with the efficient allocation of resources. The result is a long term deterioration in the ability of the economy to function. In the case of military research and development, this does result in technologies that "spin-off" to civilian applications. But heavy emphasis on military R&D creates a kind of internal 'brain drain' that tends to retard progress in civilian technology far more than can be compensated by the spin-offs. Finally, while the threat posed by a large military may at times be an effective form of coercion, it is often far less effective than non-military, non-coercive means of assuring access to materials or markets, as is well illustrated by the ability of the powerful Japanese economy to effectively achieve objectives without any significant accompanying military threat.

While evaluating the negative economic consequences of non-productive military spending, the Soviet Peace Committee report has pointed out six main fallouts. Though the study by the Committee was done in the late 1970s, its findings in this area are still valid and worth reviewing :

(i) The arms race diverts tremendous manpower resources from peaceful utilisation. It deprives many countries from rationally utilising large-scale labour and capital resources and thus has a negative effect on the development of their economy. The militarisation of science slows down scientific-technical progress in the civilian branches of the economy. The spin-offs are sometimes used in the civilian field, but

the price paid for this outweigh its advantage. And greater specialisation of military R&D reduces the application of its results to the civilian sphere. The utilisation of resources for military purposes entails considerable economic losses.

(ii) In many countries big production capacities have been created in the defence industry which remain idle to a considerable extent and are intended to ensure a rapid increase of military production in the event of international tensions and war. All this means a deadening of capital from the view point of society's economic interest. Excess production capacities in the defence industry are not used for the output of goods and, more than that, their preservation entails big irrational spending.

(iii) One of the results of the arms race is that tremendous amounts of the most valuable type of raw materials and resources that are in short supply, such as energy, are diverted from their peaceful utilisation. For mobilisation purposes, some countries have created huge stockpiles of strategic raw materials and other products designed for the boosting of military production in the event of war.

(iv) The arms race absorbs tremendous financial resources. By diverting these resources from peaceful utilisation, military preparations thereby impede the solution of many economic problems, substantially restrict capital investments in peaceful economic fields, and slow

down the development of productive forces. Huge military spending particularly increases the growth of monetary–financial difficulties. The big deficits of government budgets are largely due to the high level of military allocations. Deficit financing is accompanied by a rapid growth of the state's debt. In turn, this results in an additional emission of money into circulation, which is one of the main causes of the growth of inflation. For the arms importing country, it is a drain of precious foreign exchange reserves and may result in a deficit in the balance of payments.

(v) Militarism and the arms race prevent a full utilisation of the advantages of the international division of labour, impede normal economic ties between states, especially those with different social systems. This was witnessed during the period of the Cold War. The restrictions on mutually advantageous international trade increases the cost of living, both in socialist and capitalist countries.

(vi) On the whole, these and other consequences of militarism and the arms race result in a situation where society is denied the possibility of making productive use of labour, material, financial and other resources. These "lost opportunities" are associated with tremendous economic losses which lend themselves with difficulty to a quantitative assessment. As a result of military preparations, society forgoes the production of consumer goods whose real value is larger

than the monetary value. Taking the non-utilised economic opportunities into account will make it possible to realise better the burden of the arms race.[5]

NEED FOR CONVERSION

From the above discussion, it is clear that the resources and money squandered in military production are a wastage. To stop such wastage of scarce resources, there is need for conversion of military production into civilian use, partially or wholly, depending on the security concerns of the country involved.

One of the arguments widely used by skeptics of arms reduction is that any cut in military expenditure will bring a certain degree of economic degradation and a growth in unemployment. The armed forces and defence industry employ a great number of personnel in a number of ways. The first is military personnel who serve in military units as a professional army. Some of these personnel are engaged in research and development, intelligence, and so on. The second group is civilian personnel employed by military units, schools and other agencies attached to the services. And the last is the personnel who get employment in the procurement of materials and services by the defence sector. Thus, it is often argued that any cuts in defence spending will adversely effect employment level at these levels.

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[5] Rachik Faramazyan and Vladimir Konobeyev, "Economic Aspects of Disarmament". in Disarmament Commission, Soviet Peace Committee, Socio-Economic Problems of Disarmament, Vienna, The International Institute For Peace, 1978, pp.36-39.

To counter the adverse effect of cuts in defence expenditure, conversion has been suggested as a solution. In an era where reductions in defence expenditures are increasingly being talked about, the only way to negate the adverse effect of it on the economy, in terms of employment and aggregate demand, is to convert the production facilities of the defence industry. When the defence industry is facing a shortfall in demand and the trend is not going to change in the near future (or it may happen that it will never change), then the industry has to reallocate its resources so that they can produce some other products, for which there is demand in the market. Defence firms can protect themselves against the fluctuations in defence orders by buying other non-defence businesses, so that profits can be kept up even if defence contracts are lost. But such diversification will not protect the jobs of workers employed in the defence plants owned by that company, nor does it protect the economy of the communities in which the defence plants are located. Only conversion, i.e. alternative civilian activity at those plants, will give the workers and communities this kind of economic security in the event of cutbacks in defence activity at their local plant or military base. So, the maintenance of employment is an important reason why the defence industry should convert and diversify their operations. The conversion process must be initiated so that employment and profitability do not decrease with orders from the armed forces. A defence producer should not have to be forced to dismiss personnel if there is a cut in defence expenditure.

Quantitatively, the defence industry may account for only a small percentage of the output of goods. However, qualitatively it is equipped with the most up-to-date and sophisticated means of production and makes use of the most advanced technology. The workers, engineers and scientists engaged in such industries are best in their respective fields. The conversion of this industry will mean application of these most up-to-date technologies, the latest technological methods and techniques of production, as well as the best work-force for civilian purposes. Numerous working people presently employed in the production of armaments and military hardware will contribute their skills to the production of goods in civilian demand. Instead of unproductive armaments and military hardware, the defence industry will be used in the interests of society as a whole and for the maximum satisfaction of mankind's pressing economic requirements.[6]

Conversion planning is vital if political leaders are to be freed from pressures which are generated by an arms reduction. In the absence of any proper conversion planning, cuts in defence expenditure will be seen as cuts in the incomes of the people who are dependent on it. If a company is so dependent on the defence sector that any cut in defence expenditure calls for dismissals, then the desire to maintain employment could improperly influence decision regarding defence procurement. Cuts in defence expenditure will pose a threat to political leaders, especially to those who

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[6] Vladimir Vaneev, "The Conversion : Some Conceptions", in Disarmament Commission, Soviet Peace Committee, Socio-Economic Problems of Disarmament, Vienna, The International Institute For Peace, 1978, p.8.

are from military dependent areas, and hence may deter them from any defence cuts, no matter how genuine those cuts may be. For the political leader to be free from such pressures, proper conversion planning is required. Conversion can contribute to the disarmament process and strengthen the political will to reallocate financial resources to non-military use.[7]

Allocations for military research and development (R&D) claim a substantial share of general military spending. R&D occupies a large number of special scientific institutes, laboratories and design bureaus. A conversion of military R&D will make it possible to release a considerable number of scientists presently engaged in military fields for fundamental scientific research in peacetime branches of science and technology. The attention of many researchers will be directed towards solving problems connected with the restructuring of the economy for peaceful purposes. The scientific research and designing establishments and institutes belonging to military agencies and industrial corporations will be transferred to the implementation of R&D in such important fields as the peaceful utilisation of nuclear energy, the search for new sources of energy and new methods of its production, distribution and use, carrying out medical-biological research for control of various diseases, and other kinds of research.

[7] Ann Markusen and Joel Yudken, Dismantling The Cold War Economy, New York, Basic Books, 1992, p.xvi.

Finally, it is reasonable that the whole nation should have a responsibility to the men and women who have served in defence industry and related work. They have gone into these occupations because the nation as a whole has regarded the occupations as important. It seems only fair that the nation, as an act of responsibility, should facilitate the occupational change-over that will be required for many of these men and women.[8]

So, conversion can be a powerful tool with which to advance the agendas and goals of peace movements. Economic conversion and the peace movement can reinforce each other to overcome the problems of militarisation. The conversion process is needed to prevent a disarmament process from leading to massive unemployment of labour and capital. A conversion process, including retraining of military workers, and the lending to them of financial support in the transition period, is clearly needed to implement a reversal of the arms race without creating major social and economic havoc. Conversion will help re-channel freed economic resources, earlier used by the military establishments, to economic reconstruction, repairing deteriorating public infrastructure, and improving living standards. For instance, advances in the technology of pollution control in general and toxic waste treatment in particular would not solve environmental problems, but would certainly mitigate them. A major R&D effort directed at producing cheap and abundant energy from renewable resources would have many benefits, economic and otherwise.

[8] Seymour Melman (ed.), The Defense Economy : Conversion of Industries and Occupations to Civilian Needs, New York, Praeger Publishers, 1970, p.ix.

WHY CONVERSION NOW

For many years, conversion from military to civilian production was considered to be a problem for the future, not the present. But in the 1990s and beyond, the situation is different. Disarmament is no longer a distant vision, safely confined to a utopian future, but a reality. With the end of the Cold War, international disarmament, which is a prerequisite for reductions in defence expenditures, is taking place. The U.S. and erstwhile Soviet Union were the main adversaries during the Cold War. But with the demise of the Soviet Union, the Cold War has ended. There is increasingly a view that the kind of military expenditures which were borne during the Cold War are no longer necessary. There are now other priorities to which the world can turn its attention and resources: people living below the poverty line, environmental protection, crumbling public infrastructure in a great number of countries, education, to name just a few.

Defence spending and activity have undergone a slow but steady decline marked by intermittent upturns. The gradual reduction and consolidation of the defence infrastructure has been going on for quite some years, which has increased in recent years with the main players in this field, the U.S. and Russia, signing a number of treaties to reduce their respective size of military and weaponry. The current downsizing of defence establishments are likely to be permanent in nature, as one cannot envisage any potential large-scale threat capable of causing a reversal of the downward trend in defence spending.

The disarmament which has taken place in the last few years is, however, neither complete (covering all types of armaments) nor general (applying to all countries). Nevertheless, the conversion process can be started. Experience to date has shown that it takes a long time, often as much as ten years, to design and develop competitive products for the civilian market. Many ideas must be tried out before successful ones are found. Creating new, profitable civil products is thus time consuming and requires long-term planning. So, waiting for complete disarmament as a prerequisite for conversion to start would be both irrational and economically irresponsible.[9]

Sustaining the production capacity of defence industry is no longer feasible through foreign sales. Expanding arms exports is not a viable alternative for the arms industry as a whole, as most of the countries are decreasing their military spending. Moreover, several of the world's key industrialised and industrialising nations have greatly expanded their arms exports, creating stiffer competition for the once dominant Soviet and United States arms traders. Only in exceptional cases do arms exports ease the economic situation of the defence industry. Changing conditions in the international arms *bazaar* is making it more difficult to export the same volume of weapons.[10]

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[9] Inga Thorsson, In Pursuit of Disrmament : Conversion from Military to Civil Production in Sweden, Stockholm, Report by Special Expert, Vol.1A. Liber, 1984, p.301.

[10] Ann Markusen and Joel Yudken, Dismantling The Cold War Economy, New York, Basic Books, 1992, p.211.

Why conversion has become more important today is more evident from the experience of the United States arms industries, as found by the The Center for Strategic and International Studies (CSIS) Group : "Defense spending in the United States peaked in 1985. The armed forces have dropped from some 2.1 million men under arms in 1986 to approximately 1.7 million today with a further planned reduction to 1.4 million. Since then, defense spending has fallen by more than 25 percent overall. Procurement spending, the purchase of weapons systems, has fallen by 50 percent. More than 140 major weapons systems have been cancelled over the past four years. Reflecting this decline, defense contractors have reduced their activities, investments, and manpower accordingly. Two rounds of the Base Closure and Realignment Commission led to the decision to close or reduce activities at some three hundred military facilities both in the U.S. and abroad. The defense industrial base (broadly defined as the combination of private and public R&D, manufacturing, and infrastructure directed toward building, maintaining and supporting the armed forces) is undergoing such a fundamental and broad-based transformation as to be largely unrecognizable compared with only a decade ago."[11]

PROBLEMS WITH CONVERSION

From the above discussion it is clear that conversion is one of the necessities of our time and should be started without further delay. But

[11] A Consensus Report of the CSIS Senior Group on Defense Conversion, Critical Issues in Defense Conversion, Washington D.C., 1994, p.16.

conversion is not an easy thing to do. As rightly pointed out by Dumas, "the difficulty of transferring resources smoothly between any given pair of activities depends on two factors : (1) the volume of resources to be so transferred; and (2) the degree of similarity between the activities. Transition difficulty depends positively on the former, and negatively on the latter."[12]

The main problem of converting technology from military to civilian oriented work arises due to the difference in military and civilian technology. Although in many cases military and civilial technology are closely related, there are a large number of cases where the technologies used are different. There are technologies used in the defence-industrial sector which do not have any significant civil applications. Researchers, engineers, technicians and skilled workers who work with specialised military technology cannot easily transfer their knowledge to the civil sector. The highly specialised nature of military R&D makes the transfer to non-military applications difficult. We may distinguish between two types of specialisation: industrial specialisation and regional specialisation. Industrial specialisation refers to industries, firms and occupations specialised in defence, whereas regional specialisation refers to the direct or indirect dependence of many firms in a region, regardless of their products,

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[12] Lloyd J. Dumas, "The Conversion of Military Economy : The United States", in Lloyd J. Dumas (ed.), The Political Economy of Arms Reduction : Reversing Economic Decay, Colorado, AAAS Selected Symposium, Westview Press, 1982. p.27.

on military demand. Regional specialisation intensifies the problem of conversion because mobility is difficult over long distances than from industry to industry over a short distance. So, when both types of specialisation are present, conversion becomes more difficult.[13]

The need to become expert in a very narrow range of knowledge has led to extreme specialisation of scientists and engineers engaged in military-related work. The highly specialised nature of military R&D makes the transfer to non-military applications difficult. Cost considerations take a backseat in the defence industry. The success of military technology depends less on its cost and more on its effectiveness. It is said that the personnel involved in military R&D are not suitable for civilian work, mainly because of a lack of concern about costs and ignorance of civilian markets. Successful design for the civilian market requires a very heavy emphasis on the implications for the cost of producing the ultimate product. This implies that designers, rather than being extremely specialised, should have a fairly clear concept of the overall design of the product and the interactions of its subcomponents. This, together with a basic understanding of the effects on cost of modifying the design in one way or another, will enable them to trade off changes in one part of the design against changes in

[13] Roger E. Bolton, "Defense Spending : Burden or Prop?", in Roger E. Bolton (ed.) Defense and Disarmament - The Economics of Transition, Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1966, p.8.

the other to achieve desired product performance at the lowest possible cost.[14]

The management of military industrial firms operate in a very different atmosphere from that which prevails in civilian-oriented enterprises. The corporate culture and approach to business in military - oriented industries often differs dramatically from a more free-market environment, which characterises a civilian product market. So these two areas demand different skills and marketing techniques and different organisational set-ups. Civilian markets consist of many buyers and sellers, dealing with relatively inexpensive items bought in large quantities, with market forces impersonally determining the price. Military markets, in contrast, often operate with few buyers (governments) and very few suppliers, producing a limited number of extremely expensive goods, with prices set through a process of formal negotiation. So defence industries lack expertise in mass marketing and in making high-volume, low unit-cost items. Their distribution network, in the commercial sense, is nonexistent and product servicing limited. They know nothing of market research. Civilian goods industries battle on the basis of cost, whereas military goods industries under cost-plus pricing, where almost any price is paid for a unique level of performance. In other words, much of the work of the

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[14] Lloyd J. Dumas, "The Conversion of Military Economy : The United States", in Lloyd J. Dumas (ed.), The Political Economy of Arms Reduction : Reversing Economic Decay, Colorado, AAAS Selected Symposium, Westview Press, 1982, p.28.

defence industry is performed under cost-reimbursable procedures : they are paid whatever costs they incur, which encourages large technological risks.[15]

Furthermore, the military industrial firms are often assisted by government funding as they often get "progress payments" i.e. instalment payments made by the government as different stages of the production process are completed. Also, since they mainly sell to their own governments, their products are often sold before it is produced. All this greatly alters the mode of financing, substantially lowering the need for equity funds which is the major source of finance in case of civilian goods industries. Often defence industries find access to the capital markets difficult because financial institutions are reluctant to lend to companies without track records in civilian markets.[16]

The reorientation and retraining of workers engaged in defence industry poses a major problem because a large number of people are potentially involved. The training is not so much to undo the effects of having been employed in military-related work, but rather to bring their skills into more perfect congruence with the best civilian opportunities available. The civilian re-employment of the workers displaced by cutbacks

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[15] Jurgen Brauer and John T. Marlin, "Converting Resources from Military to Non-Military Uses", Journal of Economic Perspectives, Vol.6, No.4, Fall 1992, pp.148-49.

[16] Lloyd J. Dumas, "The Conversion of Military Economy : The United States", in Lloyd J. Dumas (ed.), The Political Economy of Arms Reduction : Reversing Economic Decay, Colorado, AAAS Selected Symposium, Westview Press, 1982, p.30.

in military expenditures creates a more complex problem when the unions are present. If workers are being transferred into industries or lines of work where the ordinary jurisdiction of unions is not of the current union, then the union may create problems in such transfers.[17]

Also, the conversion of machinery involved in defence production poses problems. Some of the industrial equipment and facilities currently employed in the service of the military are sufficiently general purpose in nature to be directly usable in civilian-oriented work. But some, such as certain types of extremely high capability machine tools and highly specialised equipment, are not so directly transferable. Nuclear weapons facilities represent an interesting special case. It would be extremely surprising if there were a single nuclear weapons facility that is untouched by continuing radiation problems. It is certain that manufacturing facilities and waste facilities dealing with nuclear materials house at least some equipment that is heavily contaminated. In addition, leakages of radioactive materials into the soil at all such locations are a virtual certainty, rendering portions of the site and perhaps associated water supplies hazardous. This means that some parts of nuclear weapons facilities may have to be reckoned as a dead loss in planning conversion. But this is not equivalent to saying that activities carried on at such facilities are non-convertible. Even if the

[17] Ibid., p.33.

whole physical facility were unusable for productive civilian alternatives (which is very rare), the labour force is an extremely valuable resource.[18]

Resistance by the principal manufacturers of armaments is another problem which any conversion plan has to face. The economic interests of military industrial firms that extract profits from military orders and market output without any competition worth mentioning will be resistant to conversion. Any switch from military production to civilian production will greatly affect the size of the firm's profit as civilian markets do not usually provide super-normal profits. So any move towards conversion will be greatly opposed by the MIC.[19]

All this is to say that a lot of problems are associated with the process of conversion. There are generations of managers, engineers, scientists, production and maintenance workers whose employment experience includes little or nothing but military-oriented work. Many contemporary military industrial firms have never operated in civilian markets. Their managers face problems at both ends of the business spectrum-in obtaining supplies and finding markets-and in between in running responsive factories. Even those firms that are major producers of both military and civilian products, typically have operationally separate, insulated divisions which in effect function as wholly owned subsidiaries reporting to the same overall top

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[18] Ibid., pp.34-35.

[19] Rachik Faramazyan and Vladimir Konobeyev, "Economic Aspects of Disarmament". in Disarmament Commission, Soviet Peace Committee, Socio-Economic Problems of Disarmament, Vienna, The International Institute For Peace, 1978, p.59.

management. For the major modern military producers, serving the military is no short-lived aberration; it is the norm. So for conversion planning to be successful, a lot of things have to be done. The following section of this chapter deals with this and discusses some of the policy measures for successful conversion.

REQUIREMENTS FOR SUCCESSFUL CONVERSION

An economically and socially successful conversion process requires considerable planning and preparation. There is no simple formula for making a competent selection of new products for a military-serving facility. Careful attention must be given not only to market requirements but also to the suitability of people and equipment for prospective new work. Successful conversion requires at least three things. First, a careful analysis must be made to identify appropriate civilian alternatives for the resources released from military-related activities . Second, there must be a careful development of programmes for the efficient re-allocation of resources for their new civilian-oriented functions. Lastly, attention is necessary to the human resources involved. Various social services must be provided for them during the period of transition, including income maintenance, employment services, and relocation and educational assistance where required.[20]

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[20] Lloyd J. Dumas "Conversion of Military Economy :United States". in Lloyd J. Dumas (ed.), The Political Economy of Arms Reduction: Reversing Economic Decay, Colorado, AAAS Selected Symposium, Westview Press, 1982 p. 39.

For the conversion process to be effective, it requires the detailed specification of different alternatives for each facility and each area undergoing this transformation. One has to analyse the nature and quantity of all the production resources involved in the transformations – the types and numbers of machines and their capabilities, the skill and experience mix of the labour force, and the characteristics of the site, including its size, terrain and location. Then one has to lay out a list of alternatives in which these resources can be used in the best way. This will minimise the social cost of transition, as well as its direct financial cost. The initial resource analysis will in itself suggest at least broad classes of feasible alternatives, selecting from which will increase the probability of success in new activity. The "success potential" of each of the alternatives should be evaluated through proper market research. This primarily involves a study of what is called the "marketability" of the product, which involves an analysis of the demand for the product at the range of prices that would permit a sufficient margin of profit to make this product line attractive to producers.[21]

The engineers and scientists involved in the defence industry have different priorities (as pointed out in the earlier section) than those involved in civilian R&D. So, the engineers and scientists performing defence work must be retrained and re-oriented, before they can be successful in civilian research and development. Complete retraining is clearly not required, since much of the mathematical, scientific and engineering knowledge they

[21] Ibid., pp. 39–40.

already have is also required for civilian work. But de-specialisation and increased cost sensitivity are required to establish firm connections with civilian design realitities. This conversion process must not end here; rather it should be extended to the educational institutions responsible for the training of engineers and scientists. Existing engineering and scientific intstitutions, once reoriented themselves, should be fully competent to carry out transitional retraining of the sort needed to produce a smooth and efficient conversion process.[22]

For the success of the conversion process, the total involvement of management is very important. Management which is uninterested in and lacks the drive to change the direction of a company can be a serious obstacle for companies which otherwise have good prospects of converting successfully to civil-sector production. The opposite is also true. In companies for which the overall conversion prospects are not bright, a talented and concerned management can overcome many of the obstacles to conversion by active and well-directed efforts. To ensure the active and positive participation of management they should be provided the right incentives. They should be given enough support from the government. The military industrial companies should be given guarantees by the government that the inevitable losses they will suffer as a result of conversion will be compensated. The government should pursue an economic policy which

[22] Ibid., pp.28-29.

encourages demand for the additional civilian output that will appear on the market as a result of the conversion of military production.

But the incentive given to management is not enough. Since the environment in which the defence industry works is very different from civilian industry, the organisational set-up is also different. So, the attitude of the management of the defence industry should be suitably changed. One cannot expect managers accustomed to operating in a situation in which there is no risk, in which high costs are not considered as a handicap and only limited customers need to be serviced, to suddenly operate successfully in risky, cost-sensitive, multi-customer civilian markets without substantial retraining and re-orientation. Management training centres of various large civilian-oriented corporations should be used to assist in the process.

Even with all the planning and schedule in hand, there will still be a significant time period needed to change over from military to civilian work. Accordingly, preparation for conversion should provide for income maintenance to the people involved. Workers undergoing occupational transition must be helped in finding new jobs, in getting whatever retraining is necessary and in financing a move when relocation is required. This can be done by providing appropriate social services. An effective public programme of employment services will make them aware of the nature and location of the new employment opportunities which best match their skills. Along with counselling services, this will be of vital importance in enabling

them to plan whatever specific retraining they may need. In addition, the employment service will facilitate the process of direct placement of dislocated employees into new jobs. Governments can make the transition smoother by providing special tax or other incentives to employers for providing employment to this displaced labour.

For a successful conversion to take place, the role of government is important. With government assistance in the form of concessional loans and development grants, large civil–sector investments in the defence industry can take place. Governments can also provide much needed support to affected workers in the form of unemployment allowances. It can also give incentives to the management of defence enterprises by creating demand for their civilian products and by providing them concessions such as tax exemption. Its macroeconomic and trade policies should be coordinated with an economic development strategy and its conversion efforts. Trade policies that help to manage the transition – instead of letting it expose workers and communities to instant economic death – should be implemented. Macroeconomic policies that keep real interest rates low and demonstrate a concern for unemployment, not just inflation, should also be pursued. All this will give clear and positive signals to the converting industry and will also help in fighting the economic setbacks caused during the transition.

The above discussion shows that a conversion of military production can be successful only if proper planning has been done in advance with the

proper assistance of the government and on condition of the adoption of a number of measures on a national scale. Conversion planning should take a larger time-horizon into consideration, preparing firms, workers and communities for the transition rather than throwing them rudely into a series of sudden changes. This requires, in particular, the drafting of a detailed programme of conversion in due time, taking into consideration the specialities and peculiarities of the different military firms. Companies, communities and individuals would need increased government support during a period of conversion. Even if all the money saved by cutting the defence budget is used for conversion assistance, it is still likely that the economy would perform better than before. Solutions to most problems can be found. What is required is the joint effort of the government and the interested industrial enterprises.

CHAPTER II

THE SOVIET/RUSSIAN EXPERIENCE WITH DEFENCE CONVERSION

The former Soviet Union had a defence industry of formidable size, which was largely inherited by Russia. Its development was a matter of highest state priority for several decades. With privileged access to resources of relatively high quality, it became the most capable sector of the economy, able to develop and manufacture weapon systems competitive with Western equivalents. Although never isolated fully from the civilian economy, the defence sector was relatively autonomous. But the defence industry , once the pride of the Soviet Union, was proving to be an economic burden in the late 1980s. Soviet politicians had agreed on the urgent need for an economic transformation. That no economic reform would be successful without reforming the giant Military Industrial Complex (MIC) was clear to the leaders of the erstwhile Soviet Union and later to the leaders of Russia.

The conversion of the MIC was started in the second half of the 1980s under the leadership of Mikhail Gorbachev. After the collapse of the Soviet Union and the communist system, one of the most important components of Russia's ongoing economic reforms has been the conversion of the MIC from defence-related production to civilian production. While attempting to

build a new Russian nation and state, the economy is being converted to a market system and efforts are being made to establish the foundations of a democratic political order. Having inherited the major part of the former Soviet armed forces and defence industry, Russia is attempting to restructure them to meet the country's national security needs in accordance with new domestic and international circumstances.

The MIC is of great importance for an understanding of the present situation in the Russian economy for at least two reasons. First, the MIC is by all accounts a major if not a dominant force in Russia's industry, widely perceived, for example, by the Soviet leadership as a sector with successful experience in product innovation. Second, since the days of Gorbachev's perestroika, a great deal of hope has been placed on the MIC conversion potential by Soviet and Russian leaders.

While taking the conversion debate further, in this chapter I will outline the experience of the former Soviet Union and of Russia and will also discuss some of the major problems faced in the process.

SIZE OF DEFENCE INDUSTRY IN SOVIET UNION

The use of the forces and resources of the then military complex to help the civilian sector had paramount significance for the former Soviet Union. Unlike the case of Western countries, where the defence industry plays a relatively modest role, in the erstwhile Soviet economy the military complex held pride of place, consuming the lion's share of its best

manpower and material, and scientific, technological and financial resources. The main goal of the Soviet MIC during the Cold War period was to achieve strategic parity. The Soviet Union reached this target in the early 1970s and even outstripped the West in some fields after that. In 1988, for example, the USSR manufactured three times as many tanks and twice as many missiles as the NATO countries combined.[1]

In the former Soviet Union, the defence industry comprised nine (since 1990, eight) vertically integrated ministries, each looking into certain types of military hardware and a wide range of civilian output. The actual amount of defence expenditure in the former Soviet Union is not easy to calculate, as there was no official and reliable measure of this expenditure. The budget for the Ministry of Defence covered only part of total expenditures. However, Western estimates, from intelligence or academic sources, varied enormously, from 9.5% to 17% of GNP.[2] Earlier, it was supposed that the Soviet leadership, at least, had some knowledge of the right answer to this question. It turned out, however, that this was not the case. The estimates of this expenditure have been even more diverse, from 12–14% of GNP by the economist Aleksei Kireev upto an extraordinary 40% by Dimitri Yazov, the Minister of Defence during the last phase of Soviet

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[1] Alexei I. Izyumov, "The National Experience of the USSR", Disarmament, Vol.XIV, No.1, 1991, p.57.

[2] Laure, Despres, "Conversion of Defence Industry in Russia and Arms Exports to the South", Communist Economies & Economic Transformation, Vol. 6, No.3, 1994, p.367.

Union.[3] The official Soviet budget puts the figure of military expenditures for the year 1990 at 70.9 billion roubles or 8% of GNP, whereas academician Yuri Ryzhov, who headed the committee on Science and Education of the Supreme Soviet of the USSR, was of the opinion that the total amount of Soviet defence spending was close to 200 billion roubles, or more than 20% of GNP, for the same year[4].

The discrepancies between estimates of military expenditure and actual outlays in terms of percentage of GNP were unavoidable, mainly because of the lack of economic rationality in the price system. In particular, the relative prices of armaments were extremely low. Because of a command economy, prices were not market determined and the price of armaments did not reflect their true value. Since the beginning of *glasnot*, however, information on other less comprehensive but equally significant indicators of the defence sector have been published. All of them indicated that the burden of defence on the economy was very high. For instance, according to some Soviet economists, armaments and military investment in 1988 totalled 30 percent of the production of goods. In the same way, 70% to 80% of total research and development (R&D) funding was for military purposes, a much higher percentage than in any other country. Depending on the definition of the military sector, it was estimated that this included 3000

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[3] Ibid., p.367.

[4] Alexei I. Izyumov, "The National Experience of the USSR", Disarmament, Vol. XIV, No. 1, 1991, pp.55-56.

to 5000 enterprises, employing 6.5 to 14.4 million workers.[5]

According to Soviet terminology, the military–industrial complex, in the narrow sense of the term, included the enterprises and research facilities under the nine different industrial ministries, which were themselves under the jurisdiction of the Military Industrial Commission. As early as the 1970s, however, 42% of their production was civilian (in Soviet prices, i.e. probably a much lower percentage in world prices). In the wider sense of the term, it also included a 'second circle' of civil enterprises, partially producing for military purposes. Obviously, it also included the Soviet armed forces, the fighting units and the *Tyl* (the Rear), i.e. the procurement service, health service, military shops, auxiliary farms and *sovkhozy* (collective farming), unit producing uniforms and furniture, military building troops, military railway troops and so forth.[6]

The nine ministries under the Military–Industrial Commission alone employed 7.6 million workers in 1987. The geographical concentration was very high indeed. They employed 24.8% of the industrial labour force in Russia, 17.4% in Belarus and 18.6% in Ukraine. Some areas like Leningrad with 34.4%, Voromezh and Kaluga with 40% to 60% of the industrial labour force employed in defence industries were more dependent.[7]

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[5] Laure Despres, 'Conversion of the Defence Industry in Russia and Arms Exports to the South', Communist Economies & Economic Transformation, Vol.6, No.3, 1994, p.368.

[6] Ibid., p.368.

[7] Ibid., pp.368–69.

All this establishes the fact that defence industry had a very important and prominent role in the former Soviet Union. This implies that the success of the entire economic reform very much depended on the success of the conversion policy. The conversion itself was much more complicated than in a Western economy, even a highly militarised one. This was so because the structural relationships between the civilian and the military productive sectors were very different than in the West.

THE SOVIET EXPERIENCE IN CONVERSION

In the course of its history, the Soviet Union has had four periods of conversion. Two of them came as a result of the conclusion of major wars and the other two, including the last one, occurred in peace time. While the main focus in this chapter will be on the last period of conversion, which started in late 1988 and went till the disintegration of Soviet Union, we will begin with a brief history of three other conversion periods.

Conversion in Earlier Periods

The first period resulted from the massive demobilisation of armed forces after the civil war of 1918–1920. From 1920 to 1924, the Red Army was reduced to one–tenth of its former size from 5.5 million to 562 thousand.[8] This released a large number of young men into the labour market which helped the post–war revival of the economy and contributed to the

[8] Alexei I. Izyumov, "National Experience of the USSR", Disarmament, Vol.XIV, No.1, 1991, p.59.

success of the market-oriented "New Economic Policy" declared by Lenin. Conversion of defence enterprises was relatively easy as at that time defence industries produced primitive armaments and, moreover, did not constitute the dominant part of the country's economy.

The second period of conversion took place after World War II and continued till the end of the 1940s. The decision to start conversion was taken by the Soviet leadership headed by Stalin during the final stages of the war. Conversion was accomplished relatively smoothly, largely due to the fact that for most factories conversion meant the return to their original production. During the war, many civilian firms had been transformed and re-equipped to produce armaments. Thus for them a return to civilian production actually was a reconversion. But the human side of conversion was not handled properly. The state did not provide adequate facilities for the retraining and relocation of the millions of servicement returning from the war, many of whom had been recruited into the Army at a young age and did not have any profession. That led to such negative consequences as a rise in the number of those temporarily unemployed and a rise in crime.

The third conversion period, the first in peace time, was started in the late 1950s at the initiative of Nikita Khrushchev and continued till 1963–64. Khrushchev's conversion involved the demobilisation of more than 2 million servicemen as well as reduction of the Soviet military budget and the

scrapping of certain types of military hardware such as navy ships.[9] The saving in military expenditure was directed to the civilian economy and helped to raise the living standards of the population. In the period 1958–1965, these savings contributed to doubling the level of pensions and the volume of residential construction.[10] However, Khrushchev's conversion was accomplished in a command, bureaucratic way, with no due planning or consideration of its social consequences. There was also no comprehensive retraining system for the discharged officers.

Conversion in the Gorbachev Era

A serious effort on the part of Gorbachev and his assistants to start reducing military expenditures can be traced to 1987 and 1988 when the decision was finally made to pull out of Afghanistan and sign agreements with the West to reduce nuclear and conventional armaments. Then in December 1988, Gorbachev announced a reduction in the armed forces. It was also becoming clear by then that the economy could not really survive, let alone 'accelerate' (which was Gorbachev's inital desire), without drastically re-allocating resources from the military to civilian use.

Conversion reportedly started in more than 420 enterprises and in 200 institutes and design bureaus belonging to the defence industries. In 1990 alone, more than 500,000 people in the defence sector began to work for

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[9] Ibid., pp.60–61.

[10] Ibid., p.61.

civilian production.[11] Some military enterprises also took over the least efficient civilian factories under their control in the hope of making them more efficient. Thus in 1988, all enterprises belonging to the ministry dealing with food processing equipment were brought under the control of one of the ministries dealing with defence.[12]

Meanwhile, the Soviet government struggled to formulate a defence conversion policy. In 1991, orders were passed down through the defence-industrial ministries to increase civilian-oriented production and cut military production. Bearing in mind the supposed higher efficiency and quality of management of the MIC, the Soviet leadership decided at first to increase its civilian production and to transfer to it a number of civilian enterprises. Under Gorbachev, the Soviet government had counted a great deal on the defence-industrial ministries to increase output of consumer durables and to provide the machinery to modernise consumer industries-principally food processing and light industry. In 1988, the machine-building ministries responsible for the manufacture of machinery for the light and food industries were dissolved and their facilities handed over to the defence industry in the hope that the superior management and design and R&D in the defence-industrial ministries would revive production and accelerate technical progress.[13]

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[11] Ibid., p.62.

[12] Ibid., p.62.

[13] James H. Noren, "The Russian Military - Industrial Sector and Conversion", Post-Soviet Geography, Vol.35, No.9, Nov. 1994, p.501.

Conversion should not be limited to the military industries alone, rather the military must join in the conversion effort. With this view, decommissioned hardware and stocks which can be used for civilian purposes were sold by the military depots. It has been reported that stocks of military supplies and dual-use equipment worth 365 million roubles were sold in 1989, including automobiles. small ships, radio equipment and fuel.[14]

The Air Force also joined the conversion effort by establishing a special permanent service which took charge of the transportation of civilian loads on military planes. In 1989 alone, about 45,000 tons of such loads were carried by the Air Force.[15] In the meantime, the Soviet Navy established a special department responsible for selling out of service navy ships to domestic and foreign buyers. In 1989, 17 old submarines and a cruiser were sold by this department to a foreign company as scrap metal.[16] The Defence Ministry was also turning over to agriculture some of the 42 million hectares of land (about 2 percent of the territory of the former USSR) that it controlled at that time.[17] Also in co-operation with the State Committee for Labour, the Ministry of Defence was planning to establish a retraining programme for military personnel being discharged from service in the wake of the decision to reduce Soviet armed forces.[18]

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[14] Alexei I. Izyumov, "The National Experience of the USSR", Disarmament, Vol.XIV, No.1, 1991, p.62.

[15] Ibid., p.62.

[16] Ibid., p.62.

[17] Ibid., p.63.

[18] Ibid., p.63.

A detailed programme was prepared by the Gosplan, the State Planning Committee, before the disintegration of Soviet Union. It presented the programme for converting the defence industry over the period 1991–1995. This programme was for a sharp increase in civilian production in military facilities, such as the ministries dealing with general and medium–scale machine–building, defence, ship–building, electronics and radio, and aviation industries. Each ministry was assigned one of the twelve priority areas of military – civilian conversion: consumer durables; farm machines; equipment for light industries and food processing; trade and public catering; medical technology; electronics; computers; communications, TV and radio broadcasting; civilian ships; civilian aircraft; space technology for peaceful purposes; and new materials and technology. It was said that when the conversion process was completed, the share of civilian goods in the total output of the defence industries would rise from about 45% to 60–65%. The volume of civilian production would increase from 30 billion roubles in 1990 to 70 billion roubles in 1995.[19] Though this plan was never implemented because of the disintegration of the Soviet Union, it clearly states the priority which conversion was given in this final phase of Soviet planning.

After Gorbachev signed the Intermediate Range Nuclear Forces (INF) Treaty with the United States, three of the four factories that used to produce

[19] Ibid., p.63.

missiles shifted part of their capacity to civilian production. The Votkinsk machine tool plant in the Udmurt Autonomous Republic, the Petropovlovsk facility in Kazakhstan, and the Barrikady engineering works in Volgogrod, started building metal cutting machines, bicycles and even baby-carriages. Meanwhile, Kranlod, a Soviet-West German venture in Odessa, began to transform several hundred SS-20 launchers into self-propelled hoisting cranes. Several missile design laboratories have also been reoriented towards civilian works.[20]

Although these plans were extensive, they didn't bear fruit. In reality, the results of conversion in the former Soviet Union showed that the implementation of various conversion initiatives fell far behind plan. By the end of 1989, out of a planned 120 new types of civilian goods, the defence industry managed to start producing just 23, and only 15 percent of the new products met international quality standards.[21] The factories that were converting experienced great difficulties, both in finding supplies for their new lines of production and in creating adequate technology at acceptable costs. In the next section, we will look into some of the major obstacles which the defence industries of the former Soviet Union faced while converting.

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[20] Michael Renner, Economic Startegies after the Cold War : Strategies for Conversion, Hampshire, United Nations Institute for Disarmament Research, Dartmouth Publishing Company Limited, 1992, pp.45-46.

[21] Alexei I. Izyumov, "The National Experience of the USSR", Disarmament, Vol.XIV, No.1, 1991, p.63.

PROBLEMS AND DRAWBACKS IN THE SOVIET CONVERSION PROGRAMME

The massive reallocation of resources from military to civilian uses in the period of transition from a centrally planned economy to a market economy is not an easy task, especially when the situation is further complicated by a deep economic and social crisis. Even under these conditions, conversion could be accomplished more efficiently, provided it is planned more carefully and adjusted in due manner in the changing structure of the economy. One of the major reasons for the failure of conversion in the Soviet period was the lack of a conversion plan. The Presidential Council approved the Conversion Program of the Defence Industry upto 1995 in December 1990, which gave only 'clearly defined priorities', but it was not a plan in the administrative sense of the term. This means that the enterprises received no directives, no procurement plan, no funding for conversion during the last couple of years of the Soviet Union.

The decision to start conversion was not preceded by serious preparation. It came as a surprise to many military-production facilities, which often learned about the reduction or cancellation of large military orders only three to six months before production was to begin.[22] According to one estimate, 20 percent of the MIC did not receive any military-state

[22] Ibid., p.64.

orders at all in 1991, the last year of Soviet rule.[23] Since no well-considered plan for conversion was drafted, these orders were often unmatched by funds and raw materials and took little account of the technical possibilities of the enterprise involved. Also, often the conversions in the Soviet period were imposed from above, without taking into account the enterprise's real capacities, and hence became a headache for the managers of defence plants. Although the use of defence resources to shore up the consumer-goods sector or agro-industrial complex is a good idea in principle, in practice it took some absurd forms in the former Soviet Union. For example, instead of concentrating on producing and designing badly needed passenger planes, some factories in the military aviation industry forced their specialist in aerodynamics, fuselage and chassis production to design machinery for canning tomatoes or processing pasta.[24]

Another problem which the former Soviet Union faced in conversion was that the central bureaucracy had a strong say over what items individual military enterprises should produce, often without properly taking into account local conditions, such as available funds, supplies of raw materials, workers' and managers' expertise, and technical capabilities.[25] Often the

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[23] Laure Despres, "Conversion of Defence Industry in Russia and Arms Exports to the South", Communist Economies & Economic Transformation, Vol.6, No.3, 1994, p.371.

[24] Alexei I. Izyumov, "The National Experience of the USSR", Disarmament, Vol. XIV, No.1, 1991, pp.64-65.

[25] Michael Renner, Economic Strategies after the Cold War: Strategies for Conversion, Hampshire, United Nations Institute for Disarmament Research. Darmouth Publishing Company Limited, 1992, p.49.

civilian output to be produced by military enterprises were not according to the existing facility of such enterprises. Gosplan, the State Planning Committee, surveyed the types and quantities of products desirable and distributed them among different ministries who, in turn, allotted projects to individual factories. There was no necessary connection between the character of the new civilian products and the previous work of the enterprise. The alternative products selected were not always a good match for the resources of the factories targeted for conversion. Of 585 consumer goods to be manufactured in 1988–89 by all military factories, only 126 were successfully produced, and only 15 percent of them met international quality standards.[26] Also because of lack of reorientation, the price and quality of these products were not as desired.

Conversion which implies a move away from the military frame of reference was given an unusual twist in the Soviet Union. Instead of reducing the base of the military sector, the defence industry was given more production facilities, which were previously under the purview of a civilian ministry, with the task of revitalising them. In March 1988, the Ministry of Machine–Building for the Light and Food Industries was disbanded and many of its 260 enterprises were transferred to the ministries of the defence industries. In 1989, the defence complex was given authority over additional industrial capacity and research facilities previously under

[26] Ibid., p.49.

the control of the Ministry of Communication. In effect, this was a case of inverse conversion.[27]

The defence industry in the former Soviet Union was to play an anchor role in modernising the Soviet economy because its leader had little faith in the ability of the stagnant and backward civilian sector to improve living standards. There is a high probability that such a policy will backfire simply because the defence industries are accustomed to work without regard to the costs involved, a practice that if simply transferred to the civilian sector could have disastrous results. And this is what happened in the case of Soviet conversion, as most of the civilian products produced by the converted defence industry were very expensive and hence not suitable for the civilian market.[28]

Another obstacle was secrecy and the separation of the military and civilian sectors of the economy. In the West, the military industries usually actively interact with their civilian counterparts, but the Soviet military enterprises were barred from the rest of the economy by high barriers of secrecy. This was a major obstacle to conversion of the defence industry. Some efforts were made to break down the defence sector's extreme separation and to develop civilian "spinoffs" from the military-space

[27] Ibid., p.50.

[28] Ibid., p.50.

industry, but these steps towards technology transfer were very tentative in nature.

Another drawback of the Soviet conversion effort was that no conversion of institutional control took place. The facilities to be converted remain under the jurisdiction of the defence bureaucracy. The Military-Industrial Commission of the USSR Council of Ministers and the defence departments of Gosplan were entrusted with supervising the switch to civilian production, and the Supreme Soviet Committee on Defence and State Security, which was supposed to oversee the process, was made up mainly of (former) representatives of the MIC.

Also, the defence industries had little incentive to switch to increased civilian production. Though the Council of Ministers decreed in September 1988 that they can retain profits from production of consumer goods, without a wholesale market for such goods, with a rigid state order system, and with the disadvantage of primitive business information, they had little room to manoeuvre for resources and profits. Under these circumstances, in order to keep their former level of wages and to find the funds for conversion, factories were dependent on the government at large. In 1989, the government earmarked 240 million roubles, and, in 1990, it allocated 350 million roubles just to maintain the level of salaries in the defence industries.[29]

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[29] Alexei I. Izyumov, "The National Experience of the USSR", Disarmament, Vol. XIV, No. 1, 1991, pp.65-66.

CONVERSION IN RUSSIA

Russia inherited most of the weapon development and production facilities of the Soviet Union after its disintegration. It also inherited the Soviet defence conversion policy. The new Russian government came to power with a firm commitment to demilitarise the Russian economy. After the August 1991 coup, even before the Soviet Union disappeared, the Russian government decided on radical structural reforms in the military industrial sector. From 1 September, budgetary state funds to the defence industrial ministries were stopped. From 15 November, they were turned into 'corporations' with directorates becoming 'concerns', under the Russian Ministry of Industry. This huge ministry quickly disappeared because of its inefficiency. In March 1992, Boris Yeltsin signed a presidential decree on the conversion of defence industries, but it was more a general declaration of intent than a precise blueprint for actions.[30]

In July 1992, the Prime Minister of Russia, Gaidar, set out his proposals for reform. Military expenditures were to be reduced by 50 percent in 1992, state orders for armaments by 70 percent, military R&D funding by two-thirds.[31] But his programme was no more convincing than the earlier attempts. He found that a large number of scientists and experts were leaving defence enterprises and research centres. To stop this

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[30] Laure Despres, "Conversion of Defence Industry in Russia and Arms Exports to the South", Communist Economies & Economic Transformation, Vol. 6, No.3, 1994, p.371.

[31] Ibid., p.371.

migration he announced that defence enterprises with well-designed and export-oriented projects for conversion would receive government money. Six high technology sectors were to receive priority - transport and communication; agriculture and consumer goods industry; the energy and energy savings complex; the chemical and timber industries; the chemical industry; and the ecological complex. At the same time, another decree by Yeltsin instructing military enterprises to maintain their military production capacity confused the management of the MIC.

But all was not bad for the defence industry. For the first time in this century, the Russian armed forces have a civilian in a top post. Andrei Kokoshin was appointed First Deputy Minister of Defence in April 1992. Kokoshin was one of the Soviet Union's leading experts on international security issues. In his new post, he became responsible for the military-technical policy of the Russian armed forces, including reform of the acquisitions system. Kokoshin realised that the defence industry was crucial for the achievement of high economic growth rates. The defence industry alone possessed a competitive, high-technology capacity, and there was no alternative but to use it as the base for entry into the world market, exploiting existing strengths in the aerospace industry, ship-building, high quality steels, composite materials and lasers.[32] On taking up his duties in the Russian Ministry of Defence, Kokoshin began to put his ideas into

[32] Julian Cooper, "Transforming Russia's Defence Industrial Base", Survival, Vol. 35, No.4, Winter 1993, p.149.

practice. From the start he argued that it was necessary to institute a national industrial policy (NIP) providing for the effective use of the defence industry, in particular for the development of competitive civilian products.

The NIP elaborated by Kokoshin was unveiled in August 1992. It provided for a fundamental transformation of the defence–industrial base inherited from the Soviet Union, in order to achieve two principal goals. First, the restructured defence industry was to provide the core of the new Russian economy, forming what Kokoshin terms 'locomotives' for its development. Second, the transformed defence industrial base was to create conditions for the maintenance of a capability to develop and produce advanced military equipment, including high–precision weapons, command, control and communications technology, and equipment for rapid deployment of forces. A number of industries underwent transformation which included the Saratov aviation works, the first defence sector plant to undergo privatisation; the vast Omsk Polyot association, which produces rocket engines and was preparing for production of the AN–74 aircraft; the Sukhoi and Ilyushin design organisations; and the radio industry's Antei and Almaz associations, both involved in the development and production of the air–defence missile system. Almaz, which produced the S–300 PMU1, the Russian equivalent of the US Patriot, took the initiative in forming a joint stock company known as ROS. Shareholders of ROS, besides Almaz itself, included the Fakel missile design bureau, a number of factories, a commercial bank (Inkombank), the Central Industrial Investment Voucher

Fund, and the arms exports companies Spetsvneshtekhnika and Oboroneksport. The company intended to seek sales for its military and civilian products, and through its commercial structures intended to invest in promising conversion programmes and high-technology civilian projects.[33]

A lot of MIC managers by themselve started transforming their respective industry's structure. In spite of instructions to military units and the Ministry of Defence firms from the Supreme Military Command of the CIS armed forces forbidding their participation in cooperatives or shareholding companies, they do participate along with MIC enterprises and research facilities in the 'wild privatisation' movement. The press provided evidence of real conversion towards civilian production. For instance, it reported that Arsenal in Saint Petersburg is producing gas pistols, Kruinishev in Moscow is producing kitchen furniture, medical lasers, snow slides and refrigerated milk tanks.[34] A substantial part of the Russian defence industry is situated in Siberia. There, too, many conversions have taken place. For example, the Tomsk Measing-Instruments Plant has begun producing berry-picking pails; the Omsk Hoist-Machinery Plant has started producing rakes and hoes; the Tiumen Shipyard has started producing shovels and so on.[35]

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[33] Ibid., p.151.

[34] Laure Despres, "Conversion of the Defence Industry in Russia and Arms Exports to the South', Communist Economies & Economic Transformation, Vol.6, No.3, 1994, p.373.

[35] S.V. Kazantsev, "Russia's Defense Complex – Finding Its Place in the Market", Problems of Economic Transition, Vol.38, No.12, Apr.1996, p.39.

The long-term prospects are good for the aircraft or space industries. Good opportunities are attracting foreign capital. For example, Myasbhchev signed two cooperation agreements, with an Indian and with a German firm, to manufacture business aeroplanes, the prices of which are expected to be 30% to 50% lower then their competitors. Another niche is commercial launching of civilian satellites at extremely attractive prices. In the Soviet Union era, Western manufactured satellites were not allowed to enter Russia, which prevented such launchings. After Yeltsin met Clinton in Canada in 1992, the first commercial Russian launching took place successfully in March 1993. Because of all this, the share of civilian production in Russian industrial production has notably increased from 40-50 percent in 1990 to 60 per cent in 1991 and more than 80 per cent in later years.[36]

During 1992-1994, implementation of special conversion programmes for the development of machinery and equipment for timber industry, housing and road construction, agricultural processing plants, trade, food service and consumer industry, created capacities for the production of equipment for these sectors. But, the social importance of the development of these industries calls for further development, which led to the formulation of the Special Purpose Federal Programme in 1995 for the

[36] Laure Despres, "Conversion of the Defence Industry in Russia and Arms Exports to the South", Communist Economies & Economic Transformation, Vol.6, No.3, 1994, p.373.

conversion of the Russian defence industry. The main features of the programme are:[37]

i. Modernisation and reorientation of the converted facilities towards hi-tech and competitive civil goods for the principal branches of the national economy and elimination of military dependencies in civil aviation hardware; civil ship-building parts; equipment for the fuel and energy industry; and scientifically advanced medical hardware.

ii. Completion of the structural reconstruction of the defence industry through creating scientific and other enterprises viable under market conditions, as the foundation of stable and diversified structures.

iii. Preservation and effective employment of internationally competitive scientific potential in aircraft and ship-building and electronics (in priority sectors) as a foundation for the creation of modern materials and productions in machine-building and instrument-making.

iv. Provision of social safety nets for individuals discharged from military employment by means of creating additional employment opportunities in the civil sector of the economy, and relieving social tensions in areas with a high concentration of defence enterprises.

v. Development of exports of machine tools and advanced technologies, and inclusion of Russia in the international division of labour.

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[37] "Conversion of the Russian Military Industry, 1995-1997 - Excerpts from the Special Purpose Federal Program", The Monitor, Vol.2, No.1-2, Winter-Spring 1996, p.27.

vi. Creation of conditions for attracting private investment in order to step up the production of the principal items, under conditions of limited state funding.

Though the programme was approved by the Russian government in December 1995, its results are yet to be seen. But the implementation of this programme will (i) allow for rapid conversion of the accumulated scientific, technical and productive potential to the needs of Russia's civil economy; (ii) help organise wide cooperation among the main program participants; (iii) create conditions for the stabilisation of the production of civil goods; (iv) achieve growth of production of certain promising items, and (v) protect the employees laid off as a result of conversion. This programme is a step in the right direction as it deals with the different problems which conversion programmes were facing, to which we now turn.

PROBLEMS AND CONSTRAINTS IN THE RUSSIAN CONVERSION PROGRAMME

Even before the introduction of conversion, the Russian defence industries used to produce significant proportions of civilian products. By the end of 1991, defence complex enterprises supplied a considerable part of the nation's non-military products – 100 percent of the television sets, sewing machine and cameras; 98 percent of the tape recorders and refrigerators; 95 percent of the computers; 81 percent of the engine blocks,

and so on.[38] So, the production of civilian products were not a new phenomenon for the MIC, but still they faced a lot of problems during conversion.

One of the major problems in the conversion process was simply the sheer size of the Russian defence sector. In addition, the production characteristics of the defence industry – low volume rather than mass production, production of extremely high standards – make it difficult to convert physical plants. Even when conversion might be contemplated, the continuing responsibility to maintain a mobilisation base i.e. to maintain a capability for rapid re-conversion to military production, raised production costs and narrowed the space for manoeuvre. Apart from all these, the dead weight that the defence industry had to bear in terms of housing and other social infrastructure attached to its enterprises made the conversion more difficult.

When an economy undergoes a major demand shift, government intervention is warranted. In particular, the government should adopt quick procedures for contract settlement to avoid a working and fixed-capital freeze. But this was not the case for the Russian defence industries. Deprived of the national economic plan and the guidance of an all-powerful Military Industrial Commission (VPK), the Russian defence industry was subject to great uncertainty. In the initial years, after the disintegration of

[38] Iurii Khromov, "Conversion, Reforms and Security", Problems of Economic Transition, Vol.36, No.7, Nov.93, p.41.

the Soviet Union, there was no military doctrine and no long-term programme for military production in Russia. Also there was no unified concept of what the MIC should look like. The industrial ministries - Defence, Finance, Economics and the State Committee for the Defence Industry - studying the problem have tended to view the role of the complex from the perspective of their narrow departmental interest. In short, in the absence of any supervisory authority of the VPK kind, lack of coherent policy was a major drawback in the Russian conversion programme.[39]

The Russian Federal government was unable to provide clear-cut policy directives to the Russian defence industries undergoing conversion. Often different government offices sent conflicting signals to enterprises which complicated the situation further. A majority of Russian military enterprises experienced a reduction in government procurement orders They were operating in conditions of uncertain demand and were borrowing from banks and each other. While domestic demand was uncertain, the estimates of foreign demand were too optimistic. The Russian Ministry of Foreign Economic Relations planned to export $ 7.5 billion of weaponry and ordered a military output of 37.1 billion roubles (in 1991 prices). Such large orders only confused the already confused defence enterprises - whether to go for conversion or not? Also the export demand was not forthcoming. According to estimates of the same ministry, actual exports were of the order

[39] James H. Noren, "The Russian Military-Industrial Sector and Conversion", Post-Soviet Geography, Vol. 35, No.3, Nov. 1994, p.507.

of $ 1.8 billion.[40] Such a great disparity between the level of aggregate demand and actual output placed a great burden on the defence industries and led to a severe cash crunch to already cash-starved defence enterprises. Also, this led to acute inter-enterprise arrears, which appeared regardless of the price overshooting and working capital crunch.

Another problem arose because of large economies of scale which many military enterprises enjoyed. Under such conditions, they should have been closed rather than maintain manufacturing on a reduced scale right from the start of the stabilisation episode of 1992, because it was not economically feasible for many of them to operate at lower production levels. Also, the government expected that many of them would switch production to civilian goods in the virtual absence of a financial market. But this did not happen. In fact, the lack of government subsidies also led to mounting inter-enterprise arrears. In such conditions, profitability and market viability were hardly correlated at all, which made market selection of viable defence-related enterprises prone to a number of negative externalities.

The Russian defence conversion programme faced problems in addition because the decrease in defence orders were quite unexpected and too sharp. *Pravada* (August 31, 1994) reported that the state order for

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[40] Evgenii Kuznetsov, "Adjustment of Russian Defence-related Enterprises in 1992-94: Macroeconomic Implications", Communist Economies & Economic Transformation, Vol. 6, No. 4, 1994, p.493.

defence had been slashed by more than 80 percent since the end of 1991, with an initial reduction of 67–68 percent in early 1992. Moreover, there was no substituting increase in demand from the civilian sector. The natural focus of defence plants undergoing conversion would be the market for civilian machine-building products. However, this market was also in a downslide just as defence orders were decreasing. Both defence and civilian machine-building suffered from an economy-wide malaise. By 1993, the decline in production was being propelled mainly by a fall in effective demand. For example, the Lickachov automobile assembly plant (ZIL) in Moscow, after "operating stably" in 1992–1993, found that it was having problems selling its motor vehicles, mainly because of the inability to pay on the part of traditional consumers, namely, the army, agriculture, industrial enterprises. The Kirov Tractor Plant in St. Petersburg stopped production of tractors for two months in mid 1994 because of a lack of demand.[41]

The demand for consumer durables also turned downward. The main reason for this was the uncertainties introduced by high inflation rates and the lack of clarity in ownership rights. Being the original focus of many conversion plans, this downward trend in demand of consumer durables posed additional problems in successful implementation of conversion plans. The fall in real income led to contraction of the market. Foreign competition also became a significant factor. Most potential and actual customers prefer

[41] James H. Noren, "The Russian Military-Industrial Sector and Conversion", Post-Soviet Geography, Vol. 35, No. 9, Nov. 1994, p.507.

the products of foreign manufacturers as soaring prices of consumer goods of domestic origin outpaced the fall in the exchange rate, making foreign goods more attractive.

The best option for the enterprises going for conversion is the product which uses the technology already assimilated by them or for which there is effective demand (present or future) or both. In the first years of conversion, Russian defence enterprises changing over to the production of civilian products were oriented partly toward their basic technologies and partly, considering that it is possible to sell anything in Russia's scarcity ridden market, toward choosing a type of peaceful product randomly. But a number of technologies cannot in principle be used to produce any kind of civilian products. This resulted in a situation in which many converted enterprises began producing one or another product – washing machines, spare parts for cars, trucks and trains, furniture, household goods, toys, and sporting goods – and were forced to fight one another, both over markets for raw materials and supplies and over customers. Opting for one or another product, enterprises did not particularly think about their place and role in the market, especially because of distorted feedback from the unsaturated and unbalanced market.[42]

In the Soviet era, one of the most secret aspects of the country's national security regime was the system of preparation for industrial

[42] S.V. Kazamtsev, "Russia's Defense Complex: Finding Its Place in the Market", Problems of Economic Transition, Vol. 38, No. 12, April 1996, pp.37–39.

mobilisation in the event of war. With the collapse of the Soviet Union, the transition to a market economy and concentration of the defence industry in Russia, the question of reforming the mobilisation system has come to the forefront as an issue of concern. Since the end of the Soviet Union the traditional mobilisation system has undergone progressive collapse. Funding for the maintenance of the mobilisation capacities has almost completely disappeared. Many defence enterprises found themselves in the frustrating position of being unable to convert facilities to civilian purposes because they have mobilisation responsibility. In the absence of funding, the maintenance of these mobilisation capabilities has to be funded by the enterprises themselves, which severely reduced their profit margins and in some cases led to resorting to bank credit. So in such cases, lack of clear directives from the federal government and lack of provision for easy credit let to failure of conversion programmes.[43]

Often the actions of the government led to confusion amongst defence enterprises. When the drastic cuts of 1992 were announced, it was also emphasised that they should be considered a part of the stabilisation package, and for that matter were supposed to be temporary. Because of this, the conversion process did not start then and there, as enterprise managers waited to start civilian conversion till more information on future demand arrived and it became clear that these cuts were going to be a

[43] Julian Cooper, "Transforming Russia's Defence Industrial Base", Survival, Vol. 35, No. 4, Winter 1993, pp.154–55.

permanent feature. Also, the defence enterprises did not have simple directives from the government, as more than one ministry, with overlapping areas of action, were overseeing their function and often gave contradictory orders.[44] Each agency tries to influence the policy of defence enterprises and tries to assert power. Such bureaucratic rivalry and competition within the government itself precludes the elaboration and implementation of coherent policies, which is a must for any conversion plans to be successful.

In the lack of demand for their products, the MIC found sources of alternative funding quite limited. In earlier years, the defence industry had unquestioned access to loans but with the collapse of the Soviet Union, the MIC was finding loan raising a difficult task. Such lack of funds only made the implementation of conversion more difficult. The burdens of taxation and social support compounded the MIC's financial problems. Tax rates were too high according to many enterprise managers. Financial difficulties also meant that enterprise could not afford to pay for social overheads at levels provided previously. Before wages were deregulated, the MIC was in a position to compete for workers by offering housing, nursery schools, and medical care. By 1994, the financial position of the MIC had reached crisis proportions. In January, many enterprises did not resume production after the holiday, until the 10th or 20th of the month because they could not pay for electricity or salaries. The Russian Ministry of Defence reported on

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[44] Evgenii Kuznetsov, "Adjustment of Russian Defence-related Enterprises in 1992-94: Macroeconomic Implications", Communist Economies & Economic Transformation, Vol. 6, No. 4, 1994, p.502.

January 22 that about 70 percent of the defence enterprises engaged in fulfilling state orders had halted production.[45]

Highlighting the major drawbacks of the Russian conversion programme, one can say the following:

(i) that it was based on old, centralised planning,

(ii) that it focused on old methods of producing civilian goods in the defence industry, especially on building new facilities rather than converting defence plants,

(iii) that it ordered high-technology facilities to be converted to production of low-technology goods,

(iv) that it was not based on economic criteria; and

(v) that it downplayed the regional dimension of conversion.[46]

The Russian approach to conversion placed more responsibility on the enterprises to adapt to the cutbacks in defence programme than did its Soviet predecessor. The Russian government did provide some assistance for conversion, but how much of this money supported conversion is questionable. A large share of it was used to pay wages and to cover other current operating costs rather than to finance the investment necessary for conversion. Even where conversion took place, it has proceeded without

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[45] James H. Noren, "The Russian Military-Industrial Sector and Conversion", Post-Soviet Geography, Vol. 35, No.9, Nov. 1994, p.509.

[46] Ibid., p.510.

clear guidance. As a result, most defence enterprises have been pushed to the brink of bankruptcy. Cuts in military procurement must be accompanied by sizable allocations (grants or credits) to the civilian component of the MIC. This, however, did not occur so the result was stagnation rather than restructuring.

COPING STRATEGIES FOR RUSSIA

A number of defence industry firms have begun to play a more active role in overcoming the obstacles of conversion. However, the conversion effort faces a lot of problems which are yet to be overcome. The experience of Russia during the past few years convincingly attests to the impossibility of resolving the conversion problems of defence enterprises in isolation from market reforms. Also the malfunctioning of many of Russia's defence industry is exerting a negative influence on the government's macro-stabilisation efforts since the continuing recession and rising unemployment impose serious limitations on the effectiveness of economic policy. One of the main failures of the conversion of the defence industry had been that it did not become the connecting link between the macroeconomic (financial stabilisation) and the microeconomic (privatisation, the creation of a competitive environment) components of reform, which are still poorly coordinated with one another. There is an obvious need for parallel movement in both directions, and conversion could actually be the new impetus for this – in macro-economics through reduction of budget

spending, due to the partial commercialisation of the defence industry, including arms exports; in micro-economics, through the development of competition in markets for civilian products, technology transfer from the military sector, and so forth.[47]

Along with the uncertainty created by high inflation, defence enterprises face the no less significant uncertainty related to the level of military procurement and maintenance of mobilisation capabilities. While for the majority of enterprises this uncertainty provides an impetus to cease military production altogether, others adopt a 'wait and see' attitude. The matter of utmost importance then is to provide a clear signal to every military enterprise telling it what level of defence procurement it should expect in coming years. Similarly, the government should adopt a (presumably short) list of critical military enterprises which would remain in state ownership. Enterprises which are not on the list should be allowed to be privatised in an irreversible manner. It is the high uncertainty by the government with respect to the level of defence procurement and particularly privatisation that hinders enterprise restructuring and Western investment.[48]

The reallocation of labour from the defence sector to civilian production can be accomplished in three ways. First, one way is to continue

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[47] Iurii Khromov, "Conversion, Reforms, and Security", Problems of Economic Transition, Vol. 36, No.7, Nov. 93, pp.41-42.

[48] Evgenii Kuznetsov, "Adjustment of Russian Defence-related Enterprises in 1992-94: Macroeconomic Implications", Communist Economies & Economic Transformation, Vol. 6, No. 4, 1994, pp.497-98.

to rely on voluntary labour releases prompted by low wages – enterprises that do not close but reduce their size gradually. But this strategy is not appropriate for the Russian defence complex because of limited labour mobility. Second, owing to strong scale economies in manufacturing of complex systems, many enterprises should be closed rather than maintained at a reduced activity level. For this the government should take the initiative. But it is politically next to impossible for the government to take the responsibility of shutting down large enterprises as it would affect a very large portion of the population. This calls for the third strategy in which, first, the responsibility for closures should be transferred from the government to the private sector. It is assumed that it is easier to shut down enterprises when they are in private hands. This strategy, to be viable, should focus on the breaking down of the large industrial firms into smaller units which (rather than the initial large enterprises) would be subject to closure. Otherwise, it is impossible to shut–down large enterprises just because of their size, irrespective of their form of ownership.[49]

The government should strengthen the social safety net for the displaced defence industries workers. This is more important because of three basic reasons. First, defence industries used to be more generously endowed with welfare facilities than civilian ones. Second, additional incentives are required to encourage resettlement of the population with very limited alternative employment. Third, the special social status of the

[49] Ibid., p.498.

military complex's employees, coupled with the current dramatic decrease in their incomes, creates particularly low tolerance for income inequality.

The military R&D establishments are over-staffed. Because of high wages and other perks, hardly anyone would ever leave these organisation voluntarily. There is a need for reform in military R&D institutions also. First, the number of military R&D institutions must be reduced substantially. Second, a small number of civilian, federally funded R&D establishments should be created which would employ researchers on a competitive basis. Third, the government should assist Russian institutes to enter the world market and monitor their foreign economic activity.[50]

The economic reforms, which are a means of demilitarising the economy, cannot be a success unless they include management of the conversion of military production – total deregulation of some enterprises in the MIC, indirect regulations (tax exemptions, subsidies, etc.) of others, and direct state intervention (state orders, budget financing) vis-a-vis others.[51] The results of the first stage of the reforms suggest that "shock therapy" is evidently inapplicable to a rigidly centralised multibranch complex like the MIC. But a well-conceived, phased programme for the conversion of Russia's defence industry, with the preservation and transformation of its technological and scientific research nucleus, could even now lay the basis

[50] Ibid., p.500.

[51] Iurii Khromov, "Conversion, Reforms, and Security", Problems of Economic Transition, Vol. 36, No. 7, Nov. 93, p.42.

of a new model of economic growth and make it possible to draw closer to the initial goals of financial stabilisation.

Without the modernisation of production and the retraining of the work force, no appreciable effect can be expected from the conversion of defence industry enterprises to civilian production. But the technological nucleus of the defence industry must not be scattered in the production of sauce pans and irons, but to the contrary must be strengthened in the area of development of "critical" technologies that determine not only the military might of any country today but also its future economic development and its position in the international arena.

In the end, it can be said that though, till date, the effort of Russia to convert its military establishments has not been very successful, that doesn't meant that the future also is bleak. For a successful conversion, proper planning with proper sustained support of the government is required. The Special Purpose Federal Program of 1995 is the right step in the right direction, but close monitoring is required by the Russian government so that it is implemented with the right spirit.

CHAPTER III

THE AMERICAN EXPERIENCE WITH DEFENCE CONVERSION

U.S. military spending as a proportion of GNP has declined steadily since the mid-1980s. The end of the Cold War has given rise to calls for even more cuts in military spending. The Soviet threat is considerably reduced. Defence reinvestment is no longer simply a desirable policy goal; it is a necessity. It is becoming difficult to sustain a defence-industrial base with shrinking defence budgets. This became clear by the late 1980s. Also, the ill-effects of defence dependency, which makes key economic sectors unfit for commercially competitive markets, can be cured only by cutting defence budgets and redirecting national resources into broad industrial development. But any cuts in the defence budget is resisted by the MIC. Also the communities which are dependent on defence projects try to stop such cuts by pressurising their political representatives because radically alternative economic development ideas seems to them like a distant dream.

Although the restructuring and reduction of the defence-industrial base is a necessary objective, it is also a minefield through which a path must be carefully charted. For the coming years, the U.S. must make a bold new set of national commitments to address fundamental economic and social problems. The federal government has to take a leadership role in this, working in collaboration with local people and the state and private sectors to moblise the necessary economic, financial, technological and human

resources. Changing the direction of the economy and converting it will take a lot of courage, entrepreneurship and creativity. But it can be done with proper planning. Without a long term plan for downsizing, restructuring and reinvesting, the country risks losing not only unique defence assets but also assets that could be productive in other applications. Although it is clear that the U.S. Department of Defence (DOD) can no longer afford to support all of its R&D capabilities, engineering facilities and bases, it is not self-evident that these assets have no value for the country, the local communities, or the private sector.

BACKGROUND

Over the decades, economic growth in the civilian sector of the U.S. has become more and more sluggish. The employment generated by military spending and in the defence-initiated commercial high technology sectors have not been able to balance the losses in other areas of the industrial economy. From 1980 to 1985, during the height of the Reagan administration build up, defence manufacturing added 6,00,000 jobs to economy, but 1.6 million jobs were lost in the non-defence industry.[1] For a better industrial future, the U.S. has to take the path taken by non-military spending Japan and Germany, that of mass production of consumer goods of high quality and the preeminence of "leading edge" technologies devoted to socially useful ends. To support such an about-face, the country's infrastructure and

[1] Ann Markusen and Joel Yudken, Dismantling the Cold War Economy, New York, Basic Books, 1992, p.6.

human capital would need considerable refurbishing and retraining, respectively.

In the aftermath of the Vietnam War, most U.S. companies resorted to diversification measures. But by then defence activities had become so specialized and differentiated from the rest of the economy that it could not easily turn to commercial alternatives. Also, there was no retraining of the workers, no retooling of military production lines to move into civilian markets, and no planning for the transition into alternative markets through the reuse of existing resources. A number of well-publicised failures also acted as a deterrent to conversion and helped propagate the idea that the big defence industries could not do anything else well. One such experience was that of Boeing-Vertol in Philadelphia which tried to follow the conversion path - without, however, the kind of preparation and reorientation that are crucial. The company sought to decrease its dependency on military orders after the Vietnam War by manufacturing trolley cars for the Massachusetts Bay Transit Authority. But the car failed to meet crucial civilian design criteria such as simplicity and durability. They proved so unreliable and required such costly repairs and modifications that most of them were taken out of service after only a few years. Similar problems have been encountered by the Rohr Corporation and Westinghouse Military Electronics, which manufactured trains and electronic controls, respectively, for San Francisco's Bay Area Rapid Transit System, and by Grumman Corporation, which produced motor buses for New York city. Production of

televisions, refrigerators and solar energy systems by Rockwell and Grumman were also not commercially successful. But the problem faced by these companies were not of similar nature. Those firms that paid more attention to civilian design and marketing were more successful than those that stuck to the overdesign typical of military work. None of the companies, however, transferred a significant share of their existing equipment or their employees to these new civilian ventures.[2]

Faced with the choice of either going commercial with their own R&D initiatives or searching for another angle on the federal government, most military industries chose the latter. Working in collaboration with the Pentagon, they designed a whole new generation of Cold War weaponry (Trident submarines, MX missiles) and a lot of radically updated conventional arms (Bradley fighting vehicles, new fighter bombers, Patriot missiles). Many firms were so pessimistic about their ability to do anything else other than defence work that they adopted the strategy of simply lying down and laying off workers till the next buildup begins, which was inevitable in their view.[3]

Even with the defence budget declining in recent times, many firms who are dependent on it are reluctant to take bold steps to alter their course.

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[2] Michael Renner, Economic Adjustments after the Cold War : Strategies for Conversion, Hampshire, United Nations Institute for Disarmament Research. Dartmouth Publishing Company Limited, 1992. p. 58.

[3] Ann Markusen and Joel Yudken, Dismantling the Cold War Economy, New York. Basic Books, 1992, p.7.

It is not hard to see why. The experience of plant closings and job losses in other sectors of the economy in the past decade has shaken workers, communities and politicians simultaneously. Switching from military to commercial production is not easy even in better economic times, let alone during the recession periods. In the short run, reallocation of national spending from military production to civilian would require a different structuring of the work force. Furthermore, shifting from military to commercial production could temporarily cause inflationary pressures in some industries and regions while creating considerable displacement and recession in others.

A key source of resistance to defence spending reductions are politicians. Members of the U.S. Congress find it difficult to vote for budget cuts that will effect their own districts, even if they favour military budget cuts in principle. When local economies are greatly dependent on the military enterprises of that area and there is no alternative employment for the workers, then the pressure on individual members of Congress to oppose the cuts increases all the more. According to one estimate, in 1991 at least 6.7 million American work in military-related jobs, not including those whose livelihood is dependent on defence-related space and energy projects or on foreign arms sales.[4] Dependent on these workers are not only their families but also other sectors of the local economies which are supported

[4] Michael Renner, Economic Adjustments after the Cold War: Strategies for Conversion, Hampshire, United Nations Institute for Disarmament Research. Dartmouth Publishing Company Limited, 1992, p.8.

through their expenditures on different goods such as food and clothing. Any cut in the defence budget will substantially affect many such local economies. Worker unions and local communities know this. So many of them have played a lead role in crafting conversion legislation that would set up programmes to absorb these shocks. Some communities have initiated conversion task forces, impact assessment and special conversion projects. Yet many are reluctant to adopt so-called alternative use planning if no provision is made for those left behind.

CONVERSION IN AMERICA

Defence spending and activity have undergone a slow but steady decline marked by cyclic upturns. Although neither as extensive nor as systematic as the current downsizing, the gradual reduction and consolidation of the defence infrastructure has been going on for nearly three decades. The current downsizing of defence has been going on since the defence budget peaked in 1985. What distinguishes this downsizing from previous cycles is not only the extent of the reductions but also their likely permanence.

Defence redeployment is already will under way. The strength of armed forces has dropped from some 2.1 million men in 1986 to approximately 1.7 million in 1994 with a further planned reduction to 1.4 million. Since then, defence spending has fallen by more than 25 percent overall. Procurement spending, the purchase of weapon systems, has fallen

by 50 percent More than 140 major weapon systems have been cancelled since 1990. Accordingly defence contractors have reduced their activities, investments and manpower. Two rounds of the Base Closure and Realignment Commission led to the decision to close or reduce activities at some three hundred military facilities both in the U.S. and outside.[5]

Though the focus of manpower reductions has been largely on military personnel, reductions in defence procurement have resulted in reduced economic activity in the private sector also. More than a million jobs have been lost in private industry. In many cases, defence firms have reduced their workforce by 50 and even 60 percent. But the reductions in civilian employees of the Department of Defense (DOD) have not been nearly as severe. While DOD procurement has dropped by more than 50 percent, the number of people employed in the acquisition system has experienced only a modest decline.[6] This means that there are more civilian employees like contracting officers and auditors, chasing fewer contracts. In order to free up crucial funds to support necessary defence activities as well as defence conversion, the DOD needs to undertake major reductions in civilian employees of the department, the armed services and defence agencies.[7]

The burden of declining defence spending has been felt most severely by private industry. In addition to simply downsizing, many companies have

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[5] A Consensus Report of the CSIS Senior Group on Defense Conversion, Critical Issues in Defense Conversion, Washington D.C., 1994, pp.16.

[6] Ibid., p.6.

[7] Ibid., p.6.

gone through dramatic and difficult restructuring and consolidations. They moved rapidly to adjust themselves in a changing market environment. Some companies, such as General Dynamics, have chosen to restrict their defence operations to a set of core activities. Others, such as Martin Marietta and Lockheed, have acquired business units from their erstwhile rivals, thereby creating concentrated capabilities in areas such as tactical aviation and space launch. Still other companies producing defence products which have no commercial counterparts, such as ammunition makers and submarines builders, have attempted to hold on to critical capabilities in shrinking markets, often by merging with competitors. Many have looked to foreign sales as a way to reduce their dependence on the U.S. defence market.[8]

Small and medium sized corporations, especially those that were highly dependent on defence contracts, are having great difficulty in facing the downsizing. Unlike some larger firms which have a diversified product base and have greater access to marketing capabilities and capital, these smaller firms have fewer resources for conversion or diversification. A significant proportion of such firms survived solely by doing business with larger defence corporations, making them essentially dependent on defence budgets.

To overcome the political obstacles, the Defence Base Closure and Realignment Act 1990 was written which set up mechanisms to guide the

[8] Ibid., pp.16 –17.

base closure decision-making process. In July 1991, the base closure commission recommended closure of 25 bases and 10 military research laboratories. Together with proposed consideration of other facilities, an estimated 80,000 military and 37,000 civilian jobs were to be eliminated. Apart from the question of which bases will be closed or trimmed, the size of the U.S. armed forces was to be reduced by 4,42,000 soldiers by 1995, from 2 million in 1991.[9] How many of these recommendations have been implemented is not yet clear, but it clearly signifies the permanent nature of defence downsizing.

SELECTED INITIATIVES IN THE U.S.

Four conversion efforts from the 1980s are most significant for their innovativeness and political significance: the General Dynamics Quincy Shipyards, near Boston, Massachusetts, where navy vessels were made; the McDonnell Douglas Aircraft Plant in Long Beach, California, where commercial jetliners and air force transports were made; the Blaw-Knox Foundry in East Chicago, Indiana, where heavy castings for the army's M-60 tanks were made; and the Unisys Plant in St. Paul, Minnesota, where military computer systems were made. The study of these four cases will be helpful as they cover all three major services, an array of military systems, and different regions of the country. A further look at what happened at

[9] Michael Renner, Economic Adjustments after the Cold War: Strategies for Conversion, Hampshire, United Nations Institute for Disarmament Research. Dartmouth Publishing Company Limited, 1992, p.62.

these facility will throw considerable light on the potential and pitfalls for facility conversion.

Quincy Shipyards

Quincy Shipyards was a 180 acre facility belonging to General Dynamics in the south of Boston, which employed more than 5000 workers till the mid-1980s. In 1982 it was facing closure when its effort to make liquified natural gas tankers for the commercial markets failed and competition in the military segment increased. At that point, the South Shore Conversion Committee (SSCC) was formed, which was an alliance of union and community activists. Without management, outside consultants or local governments help they researched alternative uses and proposed that it should try to make an ocean thermal-energy conversion plant ship, developed at Johns Hopkins University, to produce electricity at sea. They also identified some other products like oil rigs and bridge spans which would not require major investment. The Committee hoped to link up shipyard workers nationally with the peace effort, redirecting the industry towards civilian activities.

But soon this effort ran into a number of organisational problems. Because of a $20 million adverse tax settlement with General Dynamics, the local community was not in a position to support the alternative use planning financially. The management of General Dynamics were also opposed to any such conversion effort. The company claimed to have researched alternatives

such as drill rigs, pressure vessels and large-mounted chemical processing plants without finding available products. So the top management decided to refocus its efforts on getting new navy contracts.

The efforts of management paid off when in 1983 it won a $ 409 million contract for making cargo ships for the navy's rapid deployment force. This led to the revival of the shipyard and its work force increased to nearly six thousand. The new contract led to dumping of all conversion efforts, despite the fact that the navy contracts were to be short-lived. In 1986 the entire shipyard was closed, and all six thousand workers lost their jobs. A year-long campaign by SSCC in 1986-87 put pressure on the Massachusetts state government to act, which later found that any kind of ship building is financially impractical. In the end, it supported the buy out plan, but lack of capital prevented its realisation. Worker buyout didn't materialise because of the price that General Dynamics was asking for the site. Nowadays, the site is being used by the state for storage and shipping large equipment.[10]

The SSCC did not enjoy the support of management, which was one of its major drawbacks, and because of this its plans were never tried. Nor did it help much in the larger movement toward conversion planning. If anything, the Quincy Shipyard's experience appears to have convinced the people involved in conversion efforts to concentrate on the demand side, to

[10] Ann Markusen and Joel Yudken, Dismantling the Cold War Economy, New York, Basic Books, 1992, pp.229-231.

push for changes in government spending, rather than targeting the point of production. Whatever be the result of the effort, to its credit SSCC's attempt to convert Quincy Shipyard was one of the pioneering conversion efforts.

McDonnell-Douglas Aircraft

In the early 1980s, the long-standing financial difficulties of the former Douglas Aircraft Company in Long Beach, California, came in to the open. Once the leader in commercial aviation, the company never recovered from Boeing's entry into this market in the late 1950s. In 1967, McDonnell Aircraft of St. Louis stepped in to rescue Douglas, but unfortunately the merger did not return Douglas to its former profitability or production levels. By the early 1980s, the plant was operating at about 20 percent of its capacity.[11]

McDonnell has always been more heavily defence-dependent than Douglas. So under McDonnell's command, Douglas business was also radically changed from a mix of 70 percent commercial and 30 percent military to 70 percent military and 30 percent commercial.[12] McDonnell-Douglas did nothing about the continued decay of the Long Beach plant's commercial work. Instead, the company was hoping for a C-17 cargo carrier contract, even though it had yet to be approved by the government.

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[11] Ibid., p.231.

[12] Ibid., p.231.

Although management seemed to be ignoring Douglas's commercial prospects, the workers were not so indifferent. After the 1982 layoffs, in which about over 7000 workers were removed, they sought alternatives.The Los Angeles Coalition Against Plant Shutdowns was formed which consisted of representatives of labour, community and religious activists. They met with union leaders to discuss conversion planning. The state also helped by appointing the Mid–Peninsula Conversion Project (MPCP) (now known as the Center of Economic Conversion) as a consultant. Several feasible alternatives for the plant, like light–rail transit assembly and commuter aircraft production, were identified by the ad–hoc planning group formed with the union, state representative, MPCP, outside experts and an unofficial representative of the engineers union at Douglas.[13]

By this time, Douglas management also became interested in the rail–transit work, as that was the most attractive. Management and the union, working together with MPCP and the state as technical assistants, began exploring the possibility of setting up a labour–management committee to oversee the development of new product ideas. Both labour and management felt that they had stakes in the effort, and the involvement of state representatives facilitated their working together.

Unlike the Quincy Shipyard case, here both management and unions worked together, but the effort of conversion was not very successful. A few

[13] Ibid., p.232.

reasons can be cited it. First, Douglas did not act fast enough to get the subcontract to make vehicles for the San Francisco–San Jose line which was awarded to the Japanese company, Sumitomo, and for which the vehicles were to be assembled in the U.S. Instead, the subcontract went to a northern California plant. Second, a strike for better wages and other benefits side tracked the effort. Most significant, however, was the apparent opposition of top McDonnell–Douglas management in St. Louis towards the effort. It had earlier rejected Douglas's attempts to move into new product lines and continued to stress military work. Although the Douglas plant management remained interested up to the eleventh hour, the transit project was abandoned when Congress approved the C–17 for the Douglas Aircraft Company.[14]

In retrospect, it can be seen that the decision not to pursue the transit project and other alternative products development was shortsighted. Although the Douglas facility boomed for several years during the Reagan build–up, after that it again started facing massive retrenchment and its future became bleak in the absence of new military projects in sight. Finally, Unable to cope with the growing competition in the civilian aircraft market, it decided to merge with Boeing in 1996.

Blaw–Knox Foundry

The Blaw–Knox Foundry of East Chicago, Indiana, was a well established plant, doing business for the past 83 years when it was finally

[14] Ibid., pp.232–233.

closed in 1986. For most of its life, the plant produced huge castings for the steel industry and even constructed entire steel mills. During World War II, besides making castings for ships, power plants, and mining equipment, it produced hulls and turrets of military tanks and related equipments. But till 1968, even at the height of the Vietnam War build up, tank sales accounted for only 15 percent of production. For decades, the plant employed about 1400 workers steadily.[15]

After it was taken over by White Consolidated in 1967, new plant management quietly changed its capacity towards the military market, capitalising on the plant's production of the M-60 tanks for both the army and exports, especially to the Middle East. "By the late 1970s the plant was making four or five tanks a day, working three shifts, and employing 2500 workers. Meanwhile, its steel business languished as foreign competitors...especially the Japanese, made considerable inroads into the steel mill markets."[16] But the new management did not seem to care, as by then its tank production accounted for 85 to 95 percent of the output.[17]

But Blaw-Knox ran into trouble in the mid-1980s when the M-60 tank was replaced by the M-1 which did not require the castings that were the speciality of Blaw-Knox. In 1984, the Blaw-Knox Steering Committee was formed consisting of representatives from the union, management, the

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[15] Ibid., p.233.

[16] Ibid., p.233.

[17] Ibid., p.233.

community and local and regional economic development agencies. They commissioned a study by A.D. Little, Inc., which recommended a $20–24 million plan of retooling to produce smaller commercial castings. But, although Blaw–Knox had been a profit making enterprise till then, it was cash starved because of the step–motherly treatment of its parent company, White Consolidated, which never used the profit in the development of the Blaw–Knox plant. Apart from this direct cost involved, there was some other indirect costs also. It was calculated that retooling would cost a total of 1334 jobs and $30.9 million in personal income would be lost, as well as $12 million in lost tax revenue and $7.8 million in higher government unemployment benefit payments.[18] So, the alternative use plan was never implemented and the plant was finally closed down after it was taken over by NESCO from White Consolidated in 1986.

The Blaw–Knox effort failed mainly because of the lack of cooperation from the higher management. Also, there was a lack of leadership in the committee. The local union refused to take a leadership role. "The Blaw–Knox effort did not save jobs. But it has borne fruit in the continuing efforts of the Calumet Project to avert plant closings and facilitate management turnover of endangered plants. In late 1989 the project published a much–quoted retrospective study of Blaw–Knox and more than a dozen other closings in the area, concluding that many of them,

[18] Ibid., p.234.

including Blaw–Knox, could have been averted had certain public policies and institutions been in place."[19]

Unisys Defence Computer Systems

When the Sperry and Burroughs corporations merged in 1986, Unisys Defence Computer System was formed by combining their military work in St. Paul, with 5000 workers. Unisys produced naval computers, weapon guidance systems, and communications equipment. But it soon started facing a series of difficulties. Charges of bribery were levelled against it and soon the U.S Navy, which accounted for more than 70 percent of the company in annual military sales, announced that it was shifting from military to commercial specifications for its systems components. The sales of the company declined drastically and it started a series of lay–offs.[20]

Then the International Brotherhood of Electrical Workers (IBEW) supported by Jobs with Peace, the Minnesota Economic Conversion Task Force, and the Working Group of Economic Dislocation, created an Alternative Use Planning Committee in 1989. This conducted a skill audit and gathered over 40 alternative product ideas, including pollution control equipment, water conserving irrigation systems, automobile computers, home security systems, and monitoring systems. The study concluded that all these could be manufactured with little or no change of equipment, and with

[19] Ibid., p.235.

[20] Ibid.,p. 235.

the existing work force.[21]

The management, however, opposed any such alternative use planning, which was the main reason for its failure. Management rejected the idea of conversion by claiming that Unisys was already a "converted company", because it had other divisions producing for commercial markets. But the effort at Unisys plant helped in spreading awareness among the policy makers about how to do alternative use planning. The project could not achieve its ultimate goal but the case highlights the depth of structural problems hampering conversion.

LESSONS FROM THESE CONVERSION EFFORTS

Almost all the conversion efforts analysed above faced opposition from the management. Except for the McDonnell–Douglas case, in all other cases management was adamantly opposed to any alternative use project. Even in the case of McDonnell–Douglas the management got interested but very late which clearly hampered the company's conversion prospect. On the other hand, all the cases demonstrated willingness on the part of labour and local communities to explore new products for production. Still, the efforts did not bear fruit. What is clear therefore is that unless and until management and labour work together to find suitable conversion pathways, the efforts are likely to fail.[22]

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[21] Ibid., pp.235–36.

[22] Ibid., p.237

In addition to support from mangement, unity amongst labour is crucial for a successful conversion. A united effort on the part of labour can exert more pressure on management and can make them join the conversion effort, as is evident from Douglas's case. Lack of unity and/or coherence between labour itself can make the management more reluctant to join the conversion process as happened in the Quincy and Blaw-Knox cases. Labour, as such, may lack the organisational skill, but the participation of larger trade unions can overcome this shortcoming. The large unions also have access to a larger pool of funds. In the case of Blaw-Knox's effort, conversion was dropped because of the lack of funds required for retooling.

Lack of farsightedness on the part of management was also responsible for the failure of conversion efforts. In general, management failed to see that the military build-up of the Reagan era was temporary in nature and that they would again face a demand constraint if they relied heavily on military orders. Upon getting military orders, they dumped all conversion efforts in the case of Quincy Shipyard and McDonnell-Douglas. Once the military orders ceased to come, these company started facing closures.[23]

The lack of expertise available with the group promoting conversion was also a major shortcoming of conversion efforts. Help came from different quarters such as academics, and engineers, but even then the

[23] Ibid., p.238

conversion groups failed to come up with or market new and saleable products. The labour unions and communities did come out with feasible alternatives, such as in the McDonnell-Douglas case, but this is not sufficient for a successful conversion. Co-ordination between different units and effective marketing strategies are also required. This depends on the skill of an entrepreneur. So, cooperation between labour and management is a must, even if the product is commercially viable.[24]

The time factor is also very important for a successful conversion. The proper assessment of plants slated for conversion should be available with the plan designers as soon as possible, as some facilities can be found too old or too expensive to refurbish. In such cases, much time and money can be saved by not planning commercially non-feasible plans. Getting technical assistance in a timely fashion is crucial. Also, timely assistance and cooperation from management is important. Otherwise a feasible product may also fail to take-off and all efforts will be lost.[25]

The lessons of these cases can be applied to the increasing number of military-related plant closings. The progress these conversion groups have made in increasing their sophistication and cooperation is visible. Proposals for conversion legislation have reflected the experience of local organising efforts. The Minnesota legislation mandates the creation of alternative use

[24] Ibid., p.238

[25] Ibid., p.239.

committees at every defence-related facility, reflecting the needs articulated by the Unisys workers. While few states have passed effective conversion legislation, many states have conducted studies on military spending and conversion, and are considering proposals.[26]

ADMINISTRATION/GOVERNMENT INITIATIVES

In recent years, the U.S. government has initiated measures to change the procurement system of DOD and has also increased support for dual-use technology. The Clinton administration has increased its intervention in the functioning of the DOD and is deciding on how it should do its business. The National Performance Review of the Vice-President of the U.S. discusses issues such as privatising or upgrading the performance of a number of DOD functions. The administration also wants to see the civilian share of the total federal $70 billion R&D budget climb from its current level of 41 percent to 50 percent by 1998. In addition, it advocates that 10-20 percent of laboratory R&D budgets be devoted to cooperative research with industry.[27]

The government programmes are trying to promote diversification and create dual-use capabilities in industries engaged in defence production. Redundant and excess military facilities are being transferred to local communities so that alternative use of them can be implemented, and for this legislation is being introduced. In order to tackle the problems of defence

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[26] Ibid., pp. 237-239.

[27] A Consensus Report of the CSIS Senior Group on Defense Conversion, Critical Issues in Defense Conversion, Washington D.C., 1994, p.21.

workers, the government is making budget provisions. The government has allotted money under different heads for this : $24 million for pensions to those retiring early; $200 million for programmes to tide over military and civilian employees of the Pentagon until they get re-established ; and more than $200 million for the retraining of former Pentagon and defence industry employees.[28]

For the conversion process to be successful, gainful employment to the workers rendered jobless by cuts in the defence budget is a must Government policy plays an important role in this area.Washington has taken major steps in this direction and is inducing companies to hire these workers. A larger share of training costs is being borne by the government Displaced workers are also being provided incentives to adopt other employment. The conversion package provides $168 million for programmes to help communities to plan for economic development and diversification in the wake of layoffs at local military bases or defence companies.[29]

In 1994, the government allotted $2 billion, over the period of 4 years, to support the conversion of defence R&D to the manufacturing of commercial products. For this, the Technical Reinvestment Program (TRP) managed by the Advanced Research Projects Agency (ARPA) has been created. Other government initiatives that support defence conversion programme include:

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[28] Ibid., p.21.

[29] Ibid., p.22.

(i) the cooperative R&D Agreement (CRADA), which allows federal laboratories to share its research efforts with private industry;

(ii) the Federal Laboratory Constortium for Technology Transfer (FLC), which provides $54 million over a period of three years, including matching funds, as part of the TRP; and

(iii) the Technical Access for Product Innovation programme, which helps small, defence-dependent businesses to gain access to laboratories and apply federal technology to product development and diversification.[30]

So in recent years, governments are trying seriously to reform the existing acquisition and defence industrial system, on the one hand, and helping defence-dependent industries to cope with such reforms, on the other hand.

POLICY IMPLICATIONS

From past experience, one can say that at the level of managers in the defence industry there is a belief that efforts to change over to new products are doomed to failure and that a defence build up will always come back to bail them out. Managers generally fail to see that business with the Pentagon is not so lucrative now and that with time the defence budget will go on decreasing. The permanency of downsizing threatens to make defence industry conversion a necessity.

[30] Ibid., p.22.

One way to deal with domestic military cutbacks were to promote foreign sales. But this route will not work as most nations are reducing their defence spending. Also, several of the world's key industrialised and industrialising nations have started exporting arms, creating stiffer competition. So, if the defence cutbacks continue and foreign sales languish, only commercial product development can help defence firms. What America needs is a systematic economic development strategy aimed at delivering a healthy environment instead of piling up weapons. Thus, proponents of conversion argue that an economy devoted to personal and public health, a clean and sustainable environment and the stabilisation of community and workplace life would be more productive and would achieve a higher standard of living for everyone.

There is a need to restructure the defence industrial base and for this proper planning must be undertaken. It should identify the industries which are critical and unique and those which apply dual-use technology and can be successfully converted. Planning must include both the private and public sectors of the industrial base and hence be comprehensive. Outlining broad guidelines for the planning, CSIS reports have pointed out that "it should consider the issues of how to engage the commercial sector in the business of defence and how to preserve needed capabilities that are not commercially available. It should examine where the global commercial distribution system is sufficient to meet the DOD's needs and where there are critical vulnerabilities in relying on offshore production. It should

explore ways to reduce barriers to diversification/conversion by defense industries and provide some transition assistance to communities, workers, and companies to cushion the impact of change.... It should tie DOD investments into the larger economic security issue, creating synergy in technologies critical to both military security and economic competitiveness. Each of these steps represents an integral milestone on the roadmap for achieving defense conversion and more important for consolidating and integrating the nation's technology and industrial bases."[31]

Without a long-term plan for downsizing, restructuring, and reinvesting, the nation risks losing not only defence-unique assets but also assets that could be productive in other applications. The facilities, both production as well as R&D, which can't be supported by decreasing defence budgets should be transferred to the private sector or local communities, so that it can be used for production of some other product. Dual-use technology is the need of the times as a defence-unique base is hard to sustain for very long . The investments by DOD should be tied to larger economic welfare. The government and the private sector should fund projects which can develop technology to enhance competitiveness and lower the costs of production in the converted facilities.

But at any point of time, national security cannot be put at risk, whatever the cost may be. So, proponents of defence conversion argue that

[31] Ibid., p.2.

the DOD must assess the future security needs of the nation and must plan accordingly. There are some strategic weapon programmes which the U.S. may require in the future. Such programmes should be preserved even in case of defence cuts. But the weapons which have become obsolete and will not be required by the country in the future should be dumped and the facilities should be converted for commercial production.

The reduction of the defence industrial base poses two fundamental challenges to the DOD. The first is to assure the nation that it can get what is required for national defence – now and in the future – at an affordable price. As industry shrinks, critical skills and capabilities, both for design and engineering and production of new weapon systems, may vanish, endangering the technological edge of the U.S. The second challenge is to assist, wherever possible and affordable, the transfer of skills and capabilities built up by the defence industry over more than 40 years to the civilian economy., Such transfers can be made on the basis of economic logic – where they can contribute to the non–defence economy, generate a profit, and in case of government facilities, serve the public good.[32]

Successful conversion demands a lot from the government. Proponents therefore argue that the government should set in place an integrated programme for defence conversion and reorganisation with clear policy directives. The DOD must create a new kind of industrial base, which will

[32] Ibid., p.23.

be able to meet the demands of the nation in case of emergency, while surviving largely in the basis of commercial markets alone. A lot is at stake in the conversion process as its failure will lead to plant-closure and unemployment as well as destruction of the country's defence capabilities.[33] So, it should not be taken lightly and should be seen in a long-run perspective. Feasibility studies should not look for a short period, but should look into the long-run possibilities and during the transition period the government should be more than willing to help the affected companies and workers.

Success of conversion depends greatly on government action, so it should get its own house in order. The streamlining of defence corporations has not been matched by a similar degree of downsizing on the part of the government. Such downsizing by the government will give the correct signal to private enterprise, namely, that the government is serious about defence downsizing. This will clear doubts about the permanency of defence cuts. It will also bring down the cost of defence and will release much needed cash for conversion. Apart from this, as stated by the CSIS report, "if defense conversion is to work, the government needs to address a number of issues that go beyond the purview of the Department of Defense alone. Antitrust, tax, and regulatory policies need to be re-examined in light of the need to support the defense corporations that are downsizing into more efficient

[33] Ibid., p.24.

production entities. Current policy is unnecessarily hostile to the rationalization of the industrial base."[34]

Defence conversion needs to address more than the provision of aid for those individuals, communities, and corporations affected by defence downsizing. The defence conversion programme must be integrated to future U.S. economic and defence planning. Summarising the defence conversion programme, one can identify at least six basic objectives :

(i) To preserve critical, defence-unique capabilities : Some capabilities with the defence industrial base are critical for even a reduced defence posture and are unique to defence. No commercial equivalents or alternative markets exist for the items needed. As long as need exists, such capabilities will have to be identified, subsidised, and preserved.

(ii) To expand the industrial base available to defence : A number of commercial equivalents for items that DOD buys are as good as, if not better than, those provided by the defence-unique firms. Such commercial firms should be brought into the industrial base available to defence.

(iii) To help defence firms convert or diversify their operations : There is simply not enough DOD business to sustain all of the defence firms, yet they offer important expertise and manufacturing capabilities in

[34] Ibid., p.3.

defence. Some firms will have to find other markets or alternative ways to apply their expertise. The government should assist in their efforts to restructure themselves for the commercial market through transition assistance programmes, providing access to capital markets and so on.

(iv) To integrate defence investments – past and future – into the larger economic strategy : Past investments in facilities, R&D establishments, and depots need to be rationalized to fit contemporary needs. Some of these assets may have latent value simply because of the years of sunk investment, if not to DOD, then possibly to organisations, communities, or companies. The process of transferring assets to the private sector or state and local government should also be smoothed out.

(v) To ensure that core defence R&D needs are met : The DOD's core R&D needs must be clearly articulated so that defence laboratory assets can be rationalised or applied to other purposes. Due consideration should be given to make investments in such areas which help in developing dual–use technology.

(vi) To assist the defence work–force and communities : The ways of assisting the defence work–force and communities that rely on defence infrastructure to diversify their skills and local market strengths will have to be improved. Retraining programmes for defence workers and military personnel must be linked to specific job

opportunities, and companies must be encouraged (i.e. subsidised) to participate in these programmes.[35]

The defence industry of the U.S. is facing great challenges in its attempt to participate in commercial markets. Forty-plus years of the Cold War have cultivated a set of business institutions and practices that are rigid, unfit for commercial markets, and suitable for a single client like the Pentagon. Changing basic business cultures and converting military-dedicated laboratories and scientists to new ventures will not happen overnight. It is not that plants, their management, and their work-forces cannot be converted to civilian uses, but for this a huge attitudinal slift is needed and then only they can be converted in a way that conserves resources and communities. Companies can only do it in the right environment and with proper incentives. They need training in conversion, and they need time for the transition. During the transition, the role of the government as a protector of the public interest and as a conservator of the nation's economic resources comes into play. Without the government's participation, it is simply too easy for companies, workers and communities to go back to military work and try to survive within the constraints of existing defence budgets. General awareness among the people is necessary for building a support system for conversion as only then can the government allot the needed funds for conversion. The public will have to accept that the defence industry is of a unique nature, non-market in character, and that the nation owes the military-industrial community some help in adjusting to a post-Cold War world.

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[35] Ibid., pp.4-6.

CONCLUSION

With the end of the Cold War, disarmament is taking place even though there is a long way to go. Two main players, the United States and Russia, are undergoing defence downsizing. With disarmament and downsizing, arises the question of defence conversion. Conversion reinforces and strengthens their intention to disarm. As discussed in Chapter 1, a good conversion effort can make disarmament less painful for the community dependent on defence production. Conversion is also needed for the productive use of the resources so far engaged in military production. Moreover, conversion can act as an international confidence - building measure : it underscores a country's intention to disarm.

As noted in Chapter II and Chapter III, the efforts at conversion in the Soviet Union/Russia and the United States have not been very successful. A very low proportion of industry which underwent conversion was able to produce civilian products successfully. But this doesn't mean that the future is altogether bleak. Lessons have to be learnt from earlier experiences and accordingly a future plan of action has to be chalked out. Looking into the various Soviet/Russian and U.S. experiences, one finds that certain features, challenges and promises were common to both countries, but substantial dissimilarities also existed.

The main difference between the Russian and the United States effort at conversion was the origin of conversion. In the case of Russia, it was the

central government which initiated and formulated the implementation of the adjustment processes. Right from the days of Gorbachev's conversion, the conversion effort has been led by the top leadership. Often this effort lacked the proper information about the capacities and capabilities of the factories that were to be converted. In the case of the United States, however, the response to military cuts has essentially been from the bottom up, with the strong involvement of workers, local communities, trade unions and management. The size of the defence budget is of course decided by the Federal government, but the defence industries and state and local governments plus community activists try to formulate a rational course of action.

There is no denying the fact that the role of the government is very important for conversion to be successful. But the government's role should be played carefully and with subtlety. The experience of the Soviet Union/Russia shows that the authoritarian attitude of government will not help in conversion; rather it may complicate the process. If the government issues a directive without taking into consideration the firm's capacity, it can lead to the failure of any effort to convert. On the other hand, the experience of the United States shows that the government can't remain overly low key or indifferent. In most of the cases discussed in Chapter III, the U.S. Federal government played very little role in the conversion planning, which can be said to be one of the reason behind their failure.

The experience of the Soviet Union/Russia and the United States clearly shows that the right mix of local effort and government initiative is required for the conversion to be successful. It is probably best to leave conversion planning in the hands of the management and workers because they know the strengths and weaknesses of their company best. The experience of McDonnell–Douglas Aircraft Company shows that they are capable of coming out with economically feasible alternative products if given the proper help by different quarters, such as market research organisations, governments and other community agencies. The role of the government should be restricted to providing broad policy directives and assistance as and when required by the people engaged in the conversion process. This would include funds and a legal framework. Only a broad definition of the government's role is possible here, but the actual degree of government participation will vary from country to country depending on the conditions and development of the country's economy. Russia, with its underdeveloped market economy and uncertain political situation, calls for more active participation on the part of the government, whereas in the case of the U.S., where the market is fully developed, government intervention will be far more restricted.

The government should also use the policy of "carrots and sticks" to speed up the process of conversion. It can provide tax incentives or other concessions to defence industries that are engaged in a sincere attempt to overcome their defence dependence and orientation; and it should impose

some burden or penalty on industries which oppose such structural adjustments.

Whatever be the nature of the economy, the role of management in conversion is also very important. A well intended effort is required on the part of the management, which can only be supplemented by the government's initiatives. No matter how good the plan for conversion is, it is bound to fail without the help of the management. The cooperation of the labour force is also vital. A strike by workers was one of the reasons for the failure of McDonnell–Douglas Aircraft Company's effort to convert.

The availability of funds is also very important. Though both Russia and United States provided for financial help to companies which wanted to convert, this was clearly not enough. Governments interested in promoting conversion should provide for access to easy finance and, in some cases, should bear some of the costs of the transformation.

The main reason behind defence development is to ensure the country's security. Any attempt to downsize defence, to convert, should not be seen as a compromise with the country's security. The government should clearly identify the area and capacity which it will require for future security needs and should preserve it. The rest it can target for conversion. The best option to decrease the burden of defence is the development of dual–use technology – technology which can be simultaneously used by the military as well as the civilian sector. Such technology can on the one hand

ensure a technological edge in the military sphere and, on the other hand, it can be deployed to improve the standard of living by successful use in civilian production.

Bold initiatives, guided by a strong democratic leadership and backed by a committed, well–informed public, are required for successfully implementing a conversion programme. Success of restructuring will hinge upon at least three factors : energetic downsizing of the military industrial facilities, restoration of the growth of the economy, and increasing managerial participation in conversion efforts. The problem of conversion can more easily be overcome in the case of the United States. The Russian case demands much more effort from the political leadership of that country as it is going through a series of tumultuous changes on the economic and political front.

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