
Annexe A. Research questions

The workshop contributors were asked to highlight issues unique to their country. The instructions and research questions listed below were intended to assist them in preparing material which would facilitate a comparative analysis of national arms procurement decision-making processes.

The questions are arranged according to four themes around which the research was conducted: (a) military and politico-security issues; (b) defence budgets, financial planning and audit; (c) techno-industrial issues; and (d) organizational behaviour and public-interest issues. Some questions are deliberately repeated in the different themes so as to ensure that the varying perspectives of the contributors, who represent many different academic and professional disciplines and backgrounds, are reflected.

Contributors were asked to base their papers on strong empirical evidence and published data, but they were also encouraged to draw on their own experience and first-hand knowledge in refining their analyses.

Military and politico-security issues

Effects of security threats and operational doctrines on force planning

Discuss the effects of threat perceptions, security concepts and operational doctrines on force planning. How are military technologies tailored to the requirements of developing balanced force structures in terms of intermediate and long-term planning profiles? This topic should be addressed by someone with military experience.

Threat assessment

Discuss the methods and processes used for carrying out threat assessments, identification of strategic objectives, prioritization, and implementation and review of national security policies and alternatives. Describe and examine the efficacy of the arms procurement process as it develops from security policies into arms procurement plans and military capabilities.

Long-term forecasting

Examine the types of methodological research carried out on long-term forecasting for the development of balanced force structures. Discuss the methods of carrying out force structure analyses and examine such aspects as: (a) sequential analyses of operational scenarios; (b) the evolution of operational concepts; (c) the integration of service-specific threat analyses into defence force analyses; (d) operational and technical assessments of alternative systems; (e) estimates of resource availability; (f) budget simulation; (g) balancing defence plans with the available resources; and (h) balancing resource levels with required military capabilities.

Defence White Papers

Analyse the content of long-term planning guidelines or White Papers on national defence policy and the sequence of their evolution and development. Do such guidelines contribute to creating a comprehensive framework for policy planning and implementation, or to incrementalism and ad hoc accommodation? In the absence of a defence White Paper or long-term guidelines on national security, discuss any drawbacks experienced in equipment procurement prioritization. Does the absence of a defence White Paper allow non-defence factors to influence or inhibit monitoring of long-term defence planning and limit comprehensive analyses?

Procurement budgets and external threats

Do changes in procurement budgets reflect an increase in perceived external threats or vice versa? Or are changes in procurement budgets related to other factors? Is there a process for examining alternatives to procurement decisions that are made? Give examples if possible.

Responses to emergent military threats

Examine the criteria and planning considerations for the development of balanced force structures for meeting conventional threats. Discuss the following: (a) arms procurement responses to the mobilization requirements of emergent conventional military threats, low-intensity threats, small-scale conflicts in peacetime or other commitments such as UN operations; and (b) the effects of recent conflicts, other political/ military factors or technological changes that could affect procurement planning.

Constraints on arms procurement planning

Discuss the types and level of constraints on designing desired force structures or on arms procurement planning. Examples of such constraints include: (a) budgetary; (b) political (international/domestic); (c) arms or export control-related; (d) human resource-related; (e) technological or domestic industry-related; and (f) constitutional.

Political leadership and arms procurement planning

Examine the relative influence and control of civil and political leadership over arms procurement plans. To what extent do political guidelines, force design parameters and defence commissions contribute to developing a balanced force planning process? How do the security planning processes lend themselves to public accountability and to addressing dissenting opinion?

Influence of foreign and security policies on arms procurement

Examine the influence of foreign and security policies on arms procurement decision making. Discuss the following: (a) domestic arms procurement processes in relation to the country's position on international arms control initiatives; and (b) the impact of international technology export controls on the selection of arms supply sources. An expert in foreign and security policies or export control should address this topic.

Relationship to technology control regimes

Assess the country's relative position in technology control regimes and the level of acceptance of the export administration policies of major arms suppliers. Examine the experience of: (a) transferring generic technologies and manufacturing 'know-how'; and (b) developing 'know-why' capacities to enhance technological self-reliance.

Commitment to international arms control initiatives

Discuss the perceptions of various actors in the arms procurement decision-making process regarding national obligations towards international conventional arms control and transparency initiatives such as the UN Register of Conventional Arms. How are the relevant actors informed of continuing developments in international arms control discussions and related national commitments?

Risks and effects of export controls and embargoes

Examine the methods for political evaluation of the effects of export controls and UN or suppliers' embargoes. Analyse factors considered in decisions about procurement from foreign suppliers and the criteria governing the choice between suppliers. Discuss a formal or optimal model for the procurement of equipment and major conventional weapons from foreign sources with reference to joint ventures as well as direct 'off-the-shelf' imports.

Foreign supply vulnerability and risk assessment

Discuss the criteria for determining foreign supply vulnerability and acceptable levels of military/political risk in procurement policy. Analyse: (a) methods of risk assessment, including responses to disruptions in foreign supply; and (b) substitutability and alternative supply sources. What factors and actors are most important to this analysis?

Technology: isolation vs participation

Discuss the implications of technological isolation as opposed to participation in international technology transfer. Examine possible approaches to: (a) technology-related confidence building; (b) reducing problems in integrating with international science and technology initiatives; and (c) facilitating access to technology and learning.

National security, military security and military capability objectives

Discuss the perspectives of different actors in the arms procurement process concerning the relationship between national security, military security and military capability objectives. Examine the relevance of accountability and transparency in rationalizing arms procurement, inducing regional confidence and security, and restraining the use of extra-constitutional influences. Discuss ways of harmonizing the expectations of transparency with the military's legitimate need for secrecy. An expert on security issues or from the military should address this topic.

Conflicting security objectives

From the perspective of military, political and socio-economic development priorities, discuss the different interpretations of the participants in the procurement process of the broader objectives of national security, military security and military capability. Analyse possible approaches that could harmonize such conflicting interpretations.

Effects of public accountability on the arms procurement process

Examine the assumption that higher levels of public accountability in the arms procurement process could help to improve the quality of analysis and impede the use of extra-constitutional procurement methods that lead to delays, poorer performance or cost overruns in arms procurement programmes. Also present an opposing viewpoint.

Transparency in defence budgets and accountability in arms procurement

International arms control initiatives assume that transparency in military expenditure is a suitable means of promoting restraint of military build-ups and preventing the diversion of scarce national resources to the military. Compare the effectiveness of transparency in defence budgets with accountability in arms procurement plans as elements of arms control initiatives in terms of their measurability, verifiability and confidence-building value.

Security implications of transparency

What kinds of action, plan or policy relating to arms procurement could be discussed transparently in keeping with the legitimate requirements of military confidentiality? Analyse the implications of transparency for military security in relation to its application in regional confidence-building measures.

UN General Assembly Resolution 46/36 L

Discuss the implications of the transparency levels outlined in UN General Assembly Resolution 46/36 L for requirements of military confidentiality in relation to: (a) military holdings; (b) domestic arms production; and (c) arms procurement through foreign sources.

Organizational behaviour resisting public accountability

Analyse the organizational behaviour of military bureaucracies and factors contributing to their resistance to public accountability or legislative oversight.

The determinants of recipient dependence and their effects on autonomy

Arms procurement policies and practices have to a large extent been determined by predominant supplier–recipient relationships. During the cold war regional political and strategic necessity led to relationships of dependence. Examine the determinants of recipient dependence on a single or predominant arms supplier.

Determinants of recipient dependence

The determinants of recipient dependence on a single or predominant arms supplier could include the following aspects: (a) the relationship of threat perception and strategic support; (b) the degree of self-sufficiency; (c) the ability to increase domestic arms production; (d) the effects of diversification and availability of alternative suppliers; and (e) the domestic capacities for training, maintenance and availability of spare parts. Examine the consequences and effects of such dependence on political autonomy and foreign policy; domestic policy; strategic advantages or limitations; military–technological self-reliance; operational autonomy during armed conflict; and the opportunity costs of discontinuity in arms supply relationships.

Implications of financial concessions from a single or predominant arms supplier

Different modes of payment for arms could include: (a) grants for arms transfers; (b) military aid; (c) credit or cash sales; and (d) offsets or barter. While predominant suppliers might subsidize the procurement budgets of recipients, relationships of dependence can create distortions in long-term defence planning and capacity building. Concessionary financial terms restrict options to the supplier's major weapon platforms which, more often than not, are optimized for the recipient's requirements. It may be cheaper and more convenient to buy off-the-shelf equipment when domestic production is limited by national technical infrastructure or other considerations.

Strategies and countermeasures against recipient dependence

Examine the strategies and countermeasures against the development of recipient dependence in arms transfers, licensed production, and joint R&D and co-production projects.

Effects of arms dependence relationships

Through a specific case study, discuss: (a) the political and strategic necessity leading to the development of a relationship of dependence; (b) the influence of supplier capacities on the needs of the recipient; (c) the effect on public debate and legislative oversight; and (d) the effects of a large inventory of equipment from a predominant supplier on the military's operational autonomy in the recipient country.

Defence budgets, financial planning and audit**Budget planning**

Examine the defence budget planning process and the influence of cost and the source of supply on the selection of weapon systems. Review the methodologies for procurement pricing negotiations, offset mechanisms and the establishment of priorities, and tendering and contracting methods. This topic should be addressed by an economist or an expert in international financial negotiations.

Long-term financial planning in defence budgeting

Discuss the process of long-term financial planning in defence budgeting. Examine the linkages between strategic and operational decisions and arms procurement budgeting necessary to achieve a given set of objectives. Is the arms procurement budget process integrated and mission-specific or is it programme-specific? Does the defence budget allocate funds separately for different services and agencies?

Methods of defence budgeting

Discuss different methodologies for defence budget planning. If budgeting practices are based on foreign models, examine the internal and external review processes and modifications that are introduced. Are the guiding principles for arms procurement based on monetary ceilings derived from national budgeting or are the equipment ceilings based on threat perceptions? As procurement budgeting requires long-term and multi-year allocations, how does parliamentary review of the annual national budget harmonize with long-term arms procurement commitments?

Cost assessment and price negotiating methods

Describe the elements of cost assessment and the composition of the price negotiating body in arms procurement from the state and private sectors, and foreign sources, including both direct purchases and cooperative projects. Examine the level and range of expertise available to the price negotiating bodies in carrying out sub-optimal planning.¹ Discuss the interaction between military and commercial costing and accounting practices.

Contracting procedures

Are contracting procedures standardized? If so, when and how do they operate? Describe contracting practices and alternatives to fixed-price contracts, cost-plus contracts or any other methods used. Are the contracting procedures and guidelines available to the public?

Offset policies

Analyse government policies in seeking offsets against arms procurement, if any. Discuss the offset policy's aims, strategies, priorities and characteristics, the coordinating agency involved and the methods used for implementing the offset policy. Examine the various methods of evaluation of products/services, the degree of compensation, the minimum size of agreements, and so on. Are offsets flexible, formalized, mandatory or written into government arms procurement regulations? Do offsets prioritize a technological approach (seeking access to specified technical capabilities), a market approach (primarily evaluating commercial prospects) or security considerations? Dis-

¹ Sub-optimization in the language of systems analysis implies breaking up decision making into component parts or sub-problems. Analysis and decision making are carried out in relation to different aspects of the problem in order to find optimum solutions. By analysing smaller sub-problems, greater attention can be paid to detail.

Discuss the participation of financial or trading organizations in facilitating offsets and the development of counter-trade policies.

Costing models

Discuss ways of balancing economic resource allocations and arms procurement budgets. Describe the costing models that incorporate data on technology costing and equipment costing, including manufacturing design costs. Assess recurring hardware costs, weapon system costs, procurement costs, programme costs, life-cycle costs, and so on.

Financial evaluation

Discuss the methodologies and guiding principles used for financial evaluation of major procurement projects by the ministries of finance and foreign affairs in relation to: (a) national creditworthiness; (b) assessment of international financial support in terms of export credit or direct funding; (c) evaluation of the impact of exchange rate movement and financial risk, and the value of offsets; and (d) the influence of international financial institutions—for example, the International Monetary Fund (IMF) and the World Bank—on defence budgeting.

Impediments to accountability in defence budgeting

Discuss the problems with and impediments to introducing accountability and transparency in defence budgeting. What are the acceptable thresholds for transparency in financial procedures that would be in keeping with the legitimate interests of military confidentiality?

Financial review

Examine the financial review process. Discuss the methodologies for assessing financial resource requirements and alternate resource levels through cost and operational effectiveness simulation of a given set of defence force alternatives.

Balancing arms procurement with national socio-economic imperatives

This topic concerns the difficulty in balancing arms procurement with national socio-economic imperatives. Identify strategies for harmonizing the broader objectives of national security with technology acquisition from domestic R&D or foreign sources, with a view to developing the national technology base. This topic should be addressed by an economist or a sociologist in the academic sphere or the national planning sector.

Interaction of the military and economic development sectors

Technology-intensive investments in the military sector could have useful applications in national economic development and vice versa. For example, benefits in the areas of communications and surveillance, advanced materials, marine technology, and signal processing and sensors could be derived. Examine the institutionalization of structures facilitating this process and the level of influence and interaction among policy makers and officials in the military and economic development sectors.

The industrial base and military technology

Analyse the assumption that, owing to escalating weapon system development costs and the accelerating pace of changes in military technologies, advanced weapon technology projects cannot be initiated by defence R&D alone. A number of studies have also indicated that military technologies increasingly appear to depend on advances in civil applications. Discuss the contention that a strong national industrial base is more conducive to developing military technology than vice versa.

Spin-off vs spin-on effects

Examine the assumption that technology transfer through licensed manufacture contributes to the national technology base and can have spin-off benefits for socio-economic development in the context of a case study and in comparison with other forms of technology transfer. Another case study could examine the relative spin-on effects of technology transferred from the civil to the military sector.

Effects of the military sector on the civil industrial sector

Examine the strategies for strengthening the civil industrial sector through the absorption of R&D, manufacturing and technical skills from the military sector. Discuss the components of civil–military integration strategies in terms of: (a) integration of R&D to foster dual-use technologies/processes critical to defence and techno-economic competitiveness; (b) integration of engineering, manufacturing and logistical support for cross-fertilization and efficient allocation of resources; (c) a shift towards flexible manufacturing and methods to increase inputs of commercially competitive technologies and components for military and civil products as well as production processes; and (d) balancing performance requirements with cost considerations.

Military auditing

Discuss alternative methodologies for military auditing in terms of the performance, operability and serviceability of the selected system.

Comparative review of arms procurement policies and practices

Examine the processes for reviewing arms procurement policies and for comparing decisions with practices. Discuss the relative merits of auditing the process as a whole and auditing specific procurement actions.

Performance auditing

Examine the methodologies for auditing costs, performance and serviceability against the initial objectives of arms procurement plans. Discuss the criteria for measuring efficient procurement and methods of testing and evaluating the criteria.

Arms procurement budget design

Discuss the arms procurement budget design in terms of its objectives. Is it integrated so as to indicate costs of specific military functions, such as air defence, surveillance,

logistics, and so on, or does it merely divide up allocations by conventional cost heads such as pay and allowances, equipment, and operations and maintenance?

Post-procurement comparative evaluation

Discuss the methodologies used if any evaluation of weapon systems and their procurement is carried out after the systems have been introduced into service.

Availability of data

An important factor in performance auditing is the quality and availability of data on various facets of security-related decisions. Analyse the availability and quality of reports and data from the primary sources that are available to the public.

Techno-industrial issues

Equipment modernization and a national arms industry

Examine the influence of equipment modernization, building a national arms industry, and arms export intentions and capabilities on national arms procurement policies and procedures. This should be done from the perspective of a defence production organization.

Building arms production capacities

The major global military technological trends that seem to be emerging include: (a) the enhanced performance of weapon systems; (b) an increase in development time and technological quality; (c) rising costs; and (d) improvements in overall quality and reliability. By contrast, economic trends indicate reductions in demand and increased commercial competitiveness. Such indicators would suggest that military–civil conversion or transnational cooperation are likely, while the need to maintain competitiveness has to be balanced against the competing priorities of military self-reliance. Discuss interpretations of national policies for: (a) technological self-reliance in arms production; and (b) achieving crisis independence in arms procurement.²

Prioritization of defence needs

Discuss defence technological priorities in view of the heavy demands for subsidies from national defence industries. Examine policy planning guidelines and methods for balancing the competing requirements of domestic technological enhancement through indigenous production and import.

Integrating civil and military production processes

Examine strategies for responding to the twin problems of escalating costs of defence R&D and pressures to reduce procurement budgets. For example, discuss: (a) the trends, capacities, methods and practicalities of integrating civil and military produc-

² E.g., the ability of a state to meet either all or specified elements of its weapon and military hardware requirements for an identified period of crisis or conflict.

tion processes; (b) concurrent engineering; (c) flexible manufacturing; (d) introduction of commercial practices in the defence sector; (e) budgets for the modification or development of equipment as an element of procurement budgets; and (f) domestic marketing (manufacturing advanced technology products for civil applications) and international marketing. What weight is given to such cost reduction criteria as: (a) modular design for reducing operations and maintenance expenditure; and (b) the development of interdisciplinary teams for R&D, manufacturing, marketing, and so on?

Implications of public and private ownership of defence companies

Examine the various criteria used for determining the extent of public/private sector control of defence production. Describe the structure of public/private ownership in defence companies engaged in the production of aerospace systems, ship systems, armament systems, electronics, and miscellaneous products and services. Discuss structural readjustment strategies for privatizing non-critical defence companies or expanding national or international cooperative initiatives such as joint ventures including: (a) R&D; (b) design and production; and (c) marketing collaboration.

Collaboration in technology acquisition

Discuss the implications of co-development, co-production, licensed production, sub-contract production and other forms of cooperation in relation to strategies for technology acquisition, building defence industrial capacities and reducing the economic burden of the defence industry.

Joint ventures

Joint ventures are considered to be among the more efficient methods for facilitating technology transfer, as well as skills and resource sharing in the development of complex systems. Discuss the relevant criteria, priorities and types of joint venture or cooperative project. Describe the decision-making process within joint ventures and analyse the motivations governing such collaboration, the problems and benefits envisaged and the methods for managing competing priorities among the collaborators. Discuss military and national technological objectives with respect to joint-venture strategies.

Measuring relative levels of self-sufficiency and import dependence

Analyse the relative shares of imported and indigenously produced components in major weapon systems as a proportion of total arms procurement. This may include consideration of the relative indicators of: (a) imported complete systems; (b) complete systems produced under licence and the ratio of imported to domestically produced components; and (c) systems produced on the basis of indigenous R&D.

Influence of the defence industry on arms procurement

Discuss the level, scope and nature of the influence of the defence industry on the arms procurement decision-making process. What input does the defence industry have in

shaping final decisions? Conversely, to what extent do the priorities of the military sector shape the defence industry?

Constraints on building a national defence industrial base

Discuss the types of constraint experienced in building a national defence industrial base. Major advanced technology projects are becoming increasingly complex and expensive. Bearing this in mind, examine the changes in industry–government relations in terms of control and oversight, forms of international cooperation and other initiatives to offset the effects of constraints on the development of a national defence industrial base.

Technology assessment

Assess the procedures for technology assessment (TA) and the selection of equipment. Assess the capacities for incorporating TA, systems analysis and costing methodologies into the selection of weapon systems. This topic should be examined by individuals trained in systems analysis and TA.

Systems analysis and technology assessment

Discuss the methodologies used for: (a) carrying out systems analysis and TA of weapon systems; and (b) forecasting long-term technological development.

Evaluations of options

Giving examples, discuss the methodologies employed for conducting various types of evaluation required for a typical procurement decision. These could include: (a) operational and technical maintenance assessments; (b) field trials; (c) assessment of commercial costs/offsets; and (d) analysis of financial outlays and contractual offers. Discuss the methods for setting credit rates and prices of services, training, the provision of spares and subsequent technology upgrades, and methods for developing cost escalation criteria and delivery schedules, including any penalties for delays.

Assessment of joint ventures

In the case of joint ventures involving higher-level technology transfer, specify the TA methods used. If possible, provide examples for a comprehensive assessment of joint ventures.

Limitations of the decision-making process

The key to successful analysis is a continuous cycle of formulating the problem, selecting objectives, designing alternatives, collecting data, building better models, determining levels of effectiveness or satisfaction, questioning assumptions and data, weighing cost against performance, re-examining objectives, opening new alternatives, and so on. Discuss any limitations in the decision-making process, such as bias, subjectivity, the influence of preconceived judgements, and so on.

Alternative methods of decision making

Examine various decision-making methods for developing a comprehensive analysis of the views of different experts or specializations. The committee method is one example. The objectives and criteria for measuring the efficacy of different methods should be clearly defined and a comparison of alternative courses of action should be made.

Building public capacities for policy analysis

Discuss the problems of developing competence in arms control and security issues in the society in general and professionalizing legislative oversight of arms procurement.

Trends in weapon systems development from an R&D perspective

New problems in arms development and procurement are being created by trends such as increases in performance and cost, an increasingly competitive market, decreasing development times, shrinking demand for weapons and decreasing military budgets. Weapon producers are resorting to transnational collaboration and other innovative approaches to meet these challenges. Discuss the implications of these changes for national defence R&D policies and the problems being faced by R&D organizations.

Implications of self-reliance for defence policy making

Examine the implications for defence policy making of a policy of technological self-reliance in relation to collaboration or procurement from foreign sources. Discuss the problems in developing cost- and risk-sharing methods, as well as technology linkages for the upgrading and replacement of equipment. Discuss the effects of levels of national competence and capacities for building components or complete major weapon systems ranging from semi-knocked down assembly to co-production.

Problems in developing defence R&D competitiveness

Discuss the problems in developing defence R&D competitiveness, for example: (a) the management of priorities between short-term project-specific research and long-term generic R&D; (b) protecting core competences; (c) greater reliance on continuous prototyping and design for produceability; and (d) developing human resources for specialized research.

Management of inter-organizational differences

Discuss how conflicting service and organizational philosophies are dealt with, particularly in the weapon conceptualization and project implementation phases. Examine possible options, for example: (a) the integration of scientists and engineers from the armed services into R&D projects and teams; (b) methods for keeping abreast of progress/changes relevant to service-specific technologies; and (c) the interface between weapon system developments and operational missions.

The push of technology development vs the pull of operational requirements

Discuss the relative influence of the push of technology development and the pull of operational requirements in the arms procurement process. Assess the influence of international marketing and the media on determining the specifications of equipment under development or discussion.

Defence R&D–civil research interaction

Discuss the exploitation of long-term strategic research for future military applications and the role of strategic civil research establishments. Examine the weapon development process with a view to identifying spin-off and spin-on linkages, providing examples. Discuss the capacities of and the level of concern shown by the government and the national legislative bodies in facilitating long-term strategic research.

Strategies for civil–military integration

Examine the assumption that a strategy for civil–military integration could include: (a) the integration of R&D to promote technologies for both national defence and industrial competitiveness; and (b) the integration of engineering, manufacturing and logistical support to promote cross-fertilization and increased reliance on commercial components of proven reliability to reduce lead times and costs. Discuss the methods for promoting synergy between defence laboratories, universities, industries and independent research associations. Analyse the level of educational skills of personnel engaged in defence R&D in the state sector in comparison to the private sector. Assess the problems of attracting and retaining qualified personnel in defence R&D laboratories.

Stages of the weapon system development process

A total weapon system development approach requires the integration of operational needs, systems development, and logistical integration into the overall force structure of land, sea and air operations. Discuss the various stages and phases of the weapon system development process and the roles of the interacting agencies and organizations. This could include an assessment of: (a) project identification and determination of needs; (b) concept exploration; (c) research and mathematical modelling; (d) exploratory development, preparation and evaluation of projects; (e) preparation and evaluation of draft design and technical projects; (f) development, testing, demonstration and validation of prototypes; (g) full-scale engineering development and decisions to transfer to series production or a prototyping-plus strategy;³ and (h) production, testing and deployment.

Productivity of defence R&D establishments

Discuss methods used for measuring and monitoring the industrial and human productivity of defence R&D establishments. Examine the effects of innovations in enhancing

³ E.g., developing a weapon system to the prototype stage, then successfully demonstrating and proof-testing it but not continuing to the production stage. However, improvements to the system's components may be undertaken.

productivity, including the delegation of decision-making authority to laboratory and project managers, and the development of a payment channel to the developer or to laboratories through a user service. Discuss methods of maintaining efficiencies in the user–developer relationship. Does the process include a periodical review of specific projects or of the entire defence R&D organization?

The private sector in the national defence industrial base

Examine the different concepts of and views concerning the composition of the defence industrial base. Analyse the level of national and international private-sector companies' participation in the arms procurement process, and their interaction and influence in decision-making processes in countries with private-sector involvement in military production. This topic should be addressed from the perspective of the private sector.

Defence industrial, technological and economic bases

Discuss the different interpretations of the defence industrial base, defence technological base and defence economic base. Discuss the methods for the measurement of techno-industrial compatibility and productivity in public and private enterprises in the defence industrial base.

Types of cooperative venture

Other than arms procurement-related cooperative projects, the private-sector defence industry in a number of countries is characterized by acquisitions, mergers and cooperative ventures with both domestic and foreign companies. Different business rationales offer an explanation of the need for new industrial ventures, ranging from lowering costs, risks and threats, and increasing capacities, markets, competitiveness, and efficiencies, to technology transfer. Discuss the types and objectives of cooperative ventures that private-sector military enterprises could have. Include an account of external influences on autonomy, problems in procurement plans and the legislative provisions available to the procurement agencies.

Problems of civil–military integration in defence production

Discuss the problems of civil–military integration in defence production. Are military and civil R&D mutually supportive of the development of tangible and intangible spin-offs and spin-ons? Examine the structural compatibility of the two sectors in terms of such factors as: (a) the application of dual-use manufacturing processes; (b) organizing combined research teams for specific projects; (c) organizing cooperative research associations in civil companies with specific military laboratories, projects or industries; and (d) developing cross-fertilization through a specialization-oriented network of military/government, industry and technical expertise.

Influence of national science and technology initiatives on military technology

Discuss the influence of national science and technology initiatives on military technology development. Analyse the effects of developments in military technology pol-

icies on national industrial capacities and productivity. Analyse structures facilitating these processes in terms of efficiencies, modes of control and public accessibility.

Conversion problems in incompatible industrial cultures

Strategies to promote the defence industry seek to encourage private partnerships to share the financial burden as well as facilitate spin-offs and spin-ons. This public–private linkage in the defence industry is hampered by technological differences in the public- and private-sector defence and civil industry as well as by their approaches to innovation. Defence companies in the state or state-supported sector are less exposed to risks, primarily owing to access to funds and a lack of domestic competition. In contrast, the private sector constantly needs to increase productivity and to adapt to market demands and commercial competition. Discuss the problems of conversion in the context of such incompatible industrial–technological paradigms and cultures.

Impediments to convertibility in the national manufacturing sector

Analyse the criteria for identifying core and critical competencies in the defence industrial base. Examine the impediments to the convertibility of the national manufacturing sector to defence industries in terms of: (a) the demand for surge capacities; (b) the need for sustained production at mobilization levels; and (c) the problems in converting to military-specific designs and specifications.

Problems in developing conversion strategies

Analyse the potential for privatization or conversion from military to civil production in terms of institutional structures, policy studies, the application of human resources, management methods and various techniques employed. Discuss the criteria, priorities and factors facilitating or impeding conversion initiatives.

Role of the private sector in arms procurement decision making

Discuss the role of the private sector in arms procurement decision making. How can the private sector contribute to the development of more advanced and efficient military production capacities? What are the impediments and potential problems that could result from such contributions?

Private-sector perceptions of accountability and transparency

Discuss whether the increased involvement of the private sector hinders or contributes to greater accountability and transparency in the arms procurement process.

Organizational behaviour and public-interest issues

Domestic considerations and elite motivations concerning equipment and sources

Discuss the influence of domestic considerations and elite motivations on the choice of equipment or sources of supply in arms procurement decision making. Examine the conflicting pressures within the military sector, the bureaucracy, inter-service relations,

R&D organizations and the defence industry in relation to the arms procurement process. Ideally, this topic should be addressed by a social scientist or a media expert.

Information flow and decision making

Examine the institutionalization of feedback and the horizontal flow of information in the arms procurement process. Discuss the formal and informal modes of providing information for optimal decision making through the stages of concept definition, applied research, exploratory development and production.

Information assessment

Examine the process of selection, evaluation and acceptance of new information or assessments. Analyse the information-processing behaviour and degree of group conformity displayed by actors in the arms procurement process. Examine the relative levels of institutionalization and the influence of personal relationships in information flow. Discuss attitudes to new policies, dissonant information and re-evaluation methods.

Defining and coordinating military needs

Is the procedure for defining military needs and requirements for arms procurement separate and specific to the different armed services or is it related to general military security roles? How does the process coordinate the requirements of multi-service applications such as logistics, command, control, communications and intelligence, and space-based communications? Does it concentrate on allocation of resources and procurement and management of weapon systems or is there an overall rationale for building techno-industrial or operational capacities? Discuss the contribution of the process of integrating broader techno-industrial capabilities and military requirements.

Political culture and arms procurement decisions

Analyse the structural characteristics of the prevailing political culture and its influence on civil–military relations in general and arms procurement decisions in particular. How is the divergence between perceptions of national interest and the traditional role of the military sector reconciled? Discuss responses to divergent pulls, pressures and the influence of competing interests, as well as the constraints of bureaucratic and factional politics on the arms procurement process. What kind of influence could a defence White Paper have on the politics of decision making? What other kinds of structures or mechanisms are employed to achieve policy coordination?

Availability of technical and multi-disciplinary skills

Analyse the levels of scientific and technical skills and multi-disciplinary expertise available within different agencies and departments of the arms procurement decision-making structure. Does such expertise facilitate the making of sub-optimal studies, decisions and the cross-fertilization of ideas?

Intra- and inter-organizational priorities

Discuss the problems of and methods for harmonizing intra- and inter-organizational priorities. Is the final decision influenced by or given more weight by a specific organization? Would a periodic review of the process reduce communication barriers, develop accountability and improve forecasting capacities?

Reconciling military priorities and broader public interests

Examine the process of harmonization between organizational interests, such as those of the military, and broader public interests and national policies. Discuss the concerns and influences that limit or further the objectives of public accountability in public decision making in general and arms procurement in particular.

Effects of secrecy-related regulations

An inadequate flow of information, organizational politics, bureaucratic inertia and tribalism are among the major factors contributing to dissonance in decision-making processes. While confidentiality is needed concerning technical specifications or plans, limitations on it are also desirable from the perspective of accountability. Discuss the effects and use of official regulations and legislation on public accountability.

Decision-making processes, good governance and accountability

Examine the institutionalization of decision-making processes based on the principles of good governance. Discuss the problems, apprehensions and barriers in building public awareness, public interest, transparency and accountability. This topic should be addressed by a senior politician or a constitutional expert.

Interests in public accountability and transparency

Examine the influence of various national interest groups which support or oppose public accountability and transparency.

Arms procurement expertise available to parliamentary committees

Examine the levels of expert advice and information available to parliamentary committees involved in monitoring arms procurement. To what extent do the members of the committees participate in debates in the legislature on defence policy making or arms procurement planning? Discuss the role and influence of legislative oversight in long-term arms procurement planning.

Linkages between overseas development aid and military expenditure

Examine the attitudes and responses within legislative and administrative bodies to the linkages being developed by international aid agencies between overseas development aid and an aid recipient's level of military expenditure. How is public concern about the effects of military expenditure or arms procurement on different levels of the economy articulated and how does it influence the decision-making process?

Objectives of national security: perceptions of the legislature

Discuss the perceptions of different segments of the legislature concerning the broader objectives of national security as distinct from military security and military capability objectives. The manner in which public-interest priorities and public policy making can be harmonized should be examined in the context of sensitive issues such as arms procurement.

Effects of confidentiality on arms procurement policies

Analyse the effects of confidentiality on arms procurement policies, on procedures and guidelines that could enhance the influence of arms dealers and on the extra-legal dimensions of arms procurement. Are the decisions constitutionally valid?

Building public competence in the national security arena

One of the handicaps in promoting public accountability and debate in arms procurement processes is a lack of adequate capacities to engage the decision makers in an objective professional debate combined with insufficient levels of public awareness. Discuss alternative methods of building capacities and competence in society at large concerning national security and arms control issues.

Public concerns relating to the arms procurement process

Assume that the public interest regarding arms procurement relates to such concerns as: (a) that arms procured are essential from a national security perspective; (b) that governments pay a fair price that is appropriate to national capacities and needs; (c) that arms procured meet the expectations of the users; (d) that there is accountability in the process and that it is free from waste, fraud or abuse; and (e) that there is a legal basis for the decisions and actions. Discuss whether these assumptions are correct and analyse the effects of legislative oversight of the arms procurement process.

Arms procurement and organizational behaviour at the apex level

Discuss the characteristics of arms procurement processes in terms of the organizational structures involved. Are they competitive and do they incorporate a diversity of perspectives, or are they exclusive and insular, indicating a cultural or political bias? This topic should ideally be addressed by a military or civilian expert in public administration or organizational behaviour.

Dominant organizational attitudes and norms

In order to harmonize security policies with public-interest priorities, the arms procurement process needs to be examined in terms of: (a) the constitutionality of decision-making practices; (b) the levels of technical and analytical skills available for advising decision makers; (c) the levels of information flow; and (d) public accountability and interaction among various organizations and specialists. Do the dominant organizational attitudes and norms lend themselves to an internal audit of the arms procurement process?

Evaluation of intra-organizational performance

Examine the assumption that, while rules and procedures are designed to regulate functioning on the basis of policy guidelines and to prevent waste, fraud and abuse, they can also block innovation and initiative by producing rigidity and delay. How is evaluation of intra-organizational performance carried out?

Influences that oppose or support transparency

Evaluate the interests and influences that oppose or support transparency in arms procurement decision making from an organizational behaviour perspective. Analyse the way these influences relate to legislative oversight, constitutional and legal provisions, the interests of the military, the bureaucracy and the military–scientific community, and the public interest.

Effects of centralization and non-delegation of authority

Examine the effects of society's dominant political cultures on the behaviour of different actors and agencies in the arms procurement process. Discuss the situation in terms of centralization and non-delegation of authority.

Impediments to change in large-scale national processes

The problems encountered within major national processes, such as the arms procurement process, are often not addressed. This is not because of a lack of innovative ideas and solutions, but rather because of impediments such as intransigence, resistance to change, bureaucratic inertia, extra-organizational factors, personal influences, systems of governance and the seemingly incompatible positions of different interest groups. Compare such impediments and barriers with those evident in the private sector or with practices in more transparent and accountable systems.

Influence of international marketing and the media

Examine the influence of marketing organizations and the international media on the determination of operational needs and of threat assessments on procurement decisions. To what extent are arms procurement requirements driven by long-term threat assessment or influenced by new information or organizational priorities?

Influence of management in arms procurement decision making

Why do certain organizations have a greater role and influence in arms procurement decision making than others? How have they achieved this influence? Provide examples of organizations expanding their influence in arms procurement decision making.

Sociology of national decision-making behaviour

This topic includes the attitudes, strengths and limitations in developing sub-optimal analyses in decision-making structures. It should be addressed by a senior sociologist or a management consultant.

Effects of sociological traits on decision-making behaviour

Discuss the effects of sociological traits, characteristics and culture-based codes on bureaucratic, military and political decision-making behaviour.

Effects of factional identities on decision-making politics

Examine the effects of small-group dynamics and factional identities on decision-making politics. Discuss the characteristics of the prevailing bargaining paradigm.

Cultural factors influencing elite behaviour

Discuss the cultural factors influencing the behaviour of the decision-making elite and the dominant psychological predisposition sustaining the inner circles of power. Consider the effects of transparency, public accountability and democratization or bureaucratization on such factors.

Management of dissent

Examine the effects of dissent and its management in the decision-making process.

Influence of different groups and interests

How is influence and power gained or lost in the decision-making process? Examine the levels of influence of different groups and interests.