

**REPORT OF THE
WORKING GROUP ON
CONSTRUCTION
FOR
THE 11TH FIVE YEAR PLAN
(2007-2012)**



Government of India

Planning Commission

New Dehi

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EXECUTIVE SUMMARY

In the context of development of the Chapter on Construction in the 11th Plan document, the Planning Commission constituted a Working Group vide their order No. 18/3/2005-Tpt dated 27th March 2006. Dr. Anwar-ul Hoda, Member Planning Commission was nominated as Chairman of the Working Group, which comprised of Senior representatives of various Ministries for Government of India, Public Sector Undertakings, Construction Companies, Industry Associations and Individual Experts from Construction Industry. The Working Group was convened by Mr. P R Swarup, Director General, Construction Industry Development Council, supported by several Senior Experts drawn from Construction, Legal, Technical & other sub-sectors.

The introduction of Chapter on Construction in the National Plan was done in the 10th Plan (2002-2007), and recognizing the importance of construction as a major economic entity, it was decided to amplify the deliberations during the 11th Plan as well. India is currently experiencing unprecedented economic growth. The government has put in place policies which are generating over **8 % growth** on average for the last 3 years. The plans are on anvil to achieve **9-10 % annual growth rate in the next 5 years**. This would be the basis for generating the resources needed for the massive investments to be made in development of Physical Infrastructure.

The 11th Plan envisages a consistent growth rate of 10% per annum in the final years, and would need infusion of substantial capital, estimated at over Rs. 14.0 lakh crores. The development of physical infrastructure, through such massive investments would need commensurate growth in delivery potentials of Construction Industry.

Impediments therefore need to be removed and necessary facilitation need to be taken. The objectives and the approach of this Working Group are given below:

I. OBJECTIVES

- a) Define construction as an important economic sector.
- b) Establish and articulate the linkage of construction with other sectors of economy & its influence thereon.
- c) Assessing the quantum of work to be executed by the Construction Industry and relating that to the existing capabilities and also the scope of expansion.
- d) Identifying the impediments/bottlenecks restricting the capacity building within the sector and setting examples of the initiatives being taken by all stake holders to remove these.
- e) Identifying core issues to be addressed to reduce/eliminate the time and cost over runs being experienced in project execution.
- f) Identifying the need to establish dedicated Institutions to facilitate the capacity building of the Construction Industry, which has the credit of encompassing the Governmental concerns, Industry Constituents, Financial Institutions, Manufacturing Sector, Research & Academic Institutions and also host of other service providers.
- g) Suggest modifications in, & introduction of, latest & more efficient work practices and the regulatory frame work influencing the functioning of Construction Industry including modification and development of Legal provisions in vogue. Formulate business friendly policy, develop insurance instruments and aggressive marketing of Construction Industry internationally.
- h) Identifying the Human Resource needs to fulfill the tasks in hand and to evolve an overall National policy for Human Resource Development (HRD). Stipulate wide-spread use of trained labour as a prequalification condition in all procurement process of construction work. Certain percentage of trained and tested workers must be employed which could be increased over time.
- i) Quality & Standardization and technology upgradation & cost reduction issues
- j) Issues related to Risk Mitigation, Disaster Management & Mitigation, procurement practices, and several others.

- k) Policy framework relating to asset management and maintenance.
- l) And other relevant issues

II APPROACH

It is note worthy to mention, that the present day Government having recognized the need to develop and improve the overall physical infrastructure, is actively taking appropriate measures to improve the functioning of Construction Industry. Growth and development of the physical infrastructure is directly related to the growth of the development of National Economy. Construction is inherent to infrastructure development, and the objectives defined above were intensively deliberated by the Working Group and many associated sub-groups. Keeping in view the continued thrust in several sub-sectors of the physical infrastructure such as, Transportation, Irrigation, Housing, Urban Utility, Civil Aviation, Agriculture, Power Generation, Water Conservation & Management and Power & Energy, the Working Group evolved major recommendations, which need to be instilled in the National Plan.

The approach of the Working Group was focused towards the capability building of Construction Industry, both in terms of quality and quantity to handle the substantial work load, that is confronting the Construction Industry. The major issues of challenge , therefore, were identified are:-

- 1) Initiating a nationwide Human Resource Development program for the Construction Industry at all levels.
- 2) Re-vamp the process of tendering and procurement. Arbitration dispensing system in vogue, and also to introduce electronic procurement system with special emphasis on PPP procurement models.
- 3) To improve and modify the regulatory systems & legal provision with a view to develop an exclusive legal provision to administer the construction business.

- 4) To develop mechanism to ease the ingress of Institutional finance and inter-alia evolution for systems for identification, profiling and mitigation of business risks such as grading of construction entities and also introduce quality certification such as ISO, BVQI systems in the overall procurement system for better customer satisfaction.
- 5) To look into the aspect of globalization (WTO & GATS) provisions influencing Construction Industry and to prepare a response for the same.
- 6) To look into the issues related to ingress of technology, and mechanization, etc.
- 7) To look into the issues related to alleviation of impact arising out of natural disasters
- 8) And several more

The report of the Working Group was developed, using several important sources for primary and secondary data, viz, CSO, NSS, Ministry of Statistics and Program Implementation, Trade and Industry Organizations, and Research Organizations, the expressions made by the National Leaders and information collected through deliberations of other Working Groups contributing to building of 11th National Plan.

III RECOMMENDATIONS

The development of recommendations took in cognizance the issues listed above, needing address and encompassed existing impediments/limitations and relevant mitigation measures, having recognized that, the Construction Industry has a great contribution potential to the overall National Economy, having displayed consistent growth trend of around 10% during last four years. These include the macro recommendations, which require policy intervention at Central and State Governments level, action by stakeholders, and certain implementation models at gross root level, which may be elicited as examples for detailing a blue print for action.

i) Review of present procedures of procurement of projects & services including dispute resolution mechanisms, and quality issues and evolve measures for improvement, particularly in view of the increasing privatization in infrastructure sector. The Working Group recommends following:-

a. The Contract Conditions being used by various Project Authorities in the Country, **whether in Public or Private Sector**, should be harmonized. The recommendations issued by the **Ministry of Statistics and Programme Implementation in this regard, must be implemented fully** by all Project Owners in the Country. This would require Government's intervention to convert guidelines of MOSPI into specific directions for all Public Agencies/ Undertakings/Organizations.

b. For the Public Private Partnership models, the Model Concession Agreement developed by the Planning Commission for the Road & Highway Sector, could be used as a base model and amplifications could be made to cater to other sub-sectors, as well.

c. Necessary provisions in the procurement system, be made to ensure that standard quality certification (third party) systems are adhered to.

Some system giving incentives for timely completion and good performance by concerned construction agencies be suitably introduced. A system may also be developed and promoted to facilitate small and medium construction companies to share services and available plants and machinery at equipment banks.

d. The emphasis must be laid on Institutional Arbitration system, instead of Ad-hoc system, as is being followed presently. The arbitration should be in line with Indian Arbitration and Conciliation Act 1996.

- e. To minimize “disputes” leading to time and cost overruns proper project planning process should be encouraged and DPRs may be completed before technical sanction.
 - f. Suitable institutional modifications be introduced for risk mitigations. New insurance products should be developed.
- ii) A National Plan for **training and certification of Construction personnel** at all levels should be developed and implemented.
- The plan should include initiating a system of ‘Graded Certification’ depending upon levels of proficiency achieved. To meet shortage of available trained manpower in certain urgently needed trades short terms courses may be introduced where ITI courses are of long duration.
- It is further recommended that some kind of Permanent Identification number be granted to the workers, and a nation wide scheme of granting e-cards be launched for effective availability of the benefits.**
- iii) Well defined and harmonized institutional financing systems be evolved to build the capacity of Construction Industry.
- iv) A comprehensive Draft **Construction Law** should be developed and **the Construction Law for India** be enacted through wider consultations.
- v) Present system of **asset management should be reviewed** at local/ state/ central government levels and strengthened. A policy frame work **ensuring mandatory provision for maintenance of assets supported by adequate budgetary allocations and trained manpower be set-up.**
- vi) A National strategy and policy framework focused particularly on **productivity enhancement** and **cost reduction** be developed to match with envisaged work load and delivery targets of various sectors and for sustainable development and growth of construction industry.

Induction of new technologies, construction systems and energy efficient materials (preferably based on waste recycling) should be adequately emphasized in the development of national strategy for enhancing productivity and efficiency and reducing cost of construction works. For

rural roads sector, there appears to be strong need for developing and introducing use of “marginal materials” to enhance cost effectiveness of works.

It is therefore proposed, that a National Construction Research & Development fund be created & an authority be constituted under the auspices of DSIR to administer this provision.

- vii) An appropriate **Management Information System** should be developed and implemented at National, Provincial and Local levels for construction industry. **An Institution be nominated as the repository of National Data Base for Construction Industry.**
- viii) Systems & Institutions should be developed for **expansion of network for project export and attracting more foreign investment**. Interactions with Indian Missions abroad , should be intensified, through evolution of an Institutional mechanism.
- ix) A mechanism for **registration of professional engineers** need to be established for which a **nodal agency need to be identified**. Intake in academic institutions be regulated to mitigate declining trend in the availability of civil enigneers
- x) **Taxation & Regulatory Systems should be revamped**. Sectoral classification and definition of Construction Industry should be established, as for taxation purposes construction “is treated as “Industry” as well as “Service” The Working Group recommends that construction be treated as Industry and the existing definitional anomalies, where for certain sub-sectors of construction sector, service taxes have been introduced, be removed.
- xi) **Institutional Arrangements be made to identify, prevent and mitigate the effects of Natural Disasters**. New programs should be taken as per guidelines and programs announced by National Disaster Management Authority. The Working Group recommends that following actions should be taken up on priority.

- a. To develop the Human Resources in Disaster Mitigation and disaster resistant construction technologies and
 - b. Retrofitting Clinics and Disaster Identification Centres be set up in all major settlements and districts falling in disaster prone regions
- xii) An Institutional mechanism need to be developed for continuous evaluation of various economic parameters such as Construction Cost Indices and impact of policies of other sectors having impact on cost of construction works.
- xiii) A National Plan need to be developed for upgrading the prowesses of Engineering Consultants and advisors, and should be implemented.
- xiv) Adherence of standards should be ensured through certain regulatory provisions.
- xv) A national plan to be evolved and implemented for entrepreneur development in Construction Industry for raising the capability levels.
- xvi) A conceptual plan to identify a nodal organization to implement and monitor above should be formalized and implemented upon.
- xvii) A national plan for insuring adherence to the Environment Protection Act (2006) be developed and Energy Efficiency issues be addressed in conformity to the Energy Conservation Act of 2001.



1. BACKGROUND

1.1 PREAMBLE

The growth of National Economy in a sustained manner is one of the foremost objectives of the National Planners. Last decade saw, a radical change in the overall outlook of the Planners, Administrators & Execution agencies, and a conscious shift from an inward looking approach, to that of an outward looking and all inclusive one. The focus shifted on development of Physical Infrastructure in the Nation and thus on Construction activities.

Development of 10th National Plan (2002-2007) was the sure recognition of the importance, having been accorded to construction, through introduction of a dedicated chapter on Construction and to articulate following:

- a) Need to define construction as an important economic sector.
- b) Establish and articulate the linkage of construction with other sectors of economy & its influence thereon.
- c) Identifying the impediments/bottlenecks restricting the capacity building within the sector and setting examples of the initiatives being taken by all stake holders to remove these.
- d) Identifying core issues to be addressed to reduce/eliminate the time and cost over runs being experienced in project execution.
- e) Identifying the need to establish dedicated Institutions to facilitate the capacity building of the Construction Industry, which has the credit of encompassing the Governmental concerns, Industry Constituents, Financial Institutions, Manufacturing Sector, Research & Academic Institutions and also host of other service providers.
- f) Suggest modifications in, & introduction of, latest & more efficient work practices and the regulatory frame work influencing the functioning of Construction Industry. Formulate business friendly policy, develop insurance instruments and aggressive marketing of Construction Industry internationally.

- g) Identifying the Human Resource needs to fulfill the tasks in hand and to evolve an overall National policy for Human Resource Development (HRD). Stipulate wide-spread use of trained labour as a prequalification condition in all procurement process of construction work. Certain percentage of trained and tested workers must be employed which could be increased over time.
- h) Quality & Standardization and technology upgradation & cost reduction issues
- i) Issues related to Risk Mitigation, Disaster Management & Mitigation, procurement practices, and several others.
- j) Policy framework relating to asset management and maintenance.

It was well established that the ambit of this activity, encompasses many other sub-sectors of economy/Infrastructure development. These are:-

- i) Construction of Industrial and Mining Infrastructure.
- ii) Construction of Highways, Roads, Ports, Railways, Airports, etc.
- iii) Construction of Power systems.
- iv) Construction of Irrigation and Agriculture systems.
- v) Construction of telecommunication systems.
- vi) Construction of hospitals, schools, townships, offices, houses and other buildings.
- vii) Construction of urban infrastructure including water supply, sewerage, drainage, etc.
- viii) Construction of rural infrastructure
- ix) Other construction activities.

It is also well established that the Construction sector contributes copiously to-

- i) Generation of Employment

- ii) Provide sustainenance to Manufacturing and Agriculture sector.
- iii) Creates substantial secondary impact for overall growth of the economy.

During the course of implementation of the 10th Plan, great emphasis has been laid on construction of physical infrastructure. Some of the areas receiving special attention are:-

- ☞ Transportation sector
- ☞ Irrigation sector
- ☞ Housing sector
- ☞ Urban Utility sector
- ☞ Civil Aviation

STRUCTURE OF CONSTRUCTION INDUSTRY

As the second largest economic activity, the influence of Industry spans across several sub-sectors of economy & the stature has multi-dimensional posture. The main characteristic feature of construction industry is a mix of organized and unorganized players in all sub sectors right from construction workers to Supervisors, Contractors and material manufactures / suppliers etc. To capture some of the salient characteristic features to enable better & deeper understanding, following matrix needs to be studied.

Matrix

1. Annual monitory Volume (2006) – Rs. 310,000 Crores
2. Average stratified employment quantum –

	Numbers (in 000s) in 2005	% age
Engineers	822	2.65
Technicians & Foreman etc.	573	1.85
Clerical	738	2.38
Skilled workers	3267	10.57
Unskilled workers	25600	82.45
Total	31000	100.00

Source Census, CIDC

3. Major upstream economic activities dependent on Construction Activities:

- Core Sector Industry (Cement, Steel, Coal, Energy etc.)
- Manufacturing (Industrial goods & products)
- Services (Engineering, personnel, HRD & Technology Transfer)

4. Downstream economic activities:

- Same as all above
- Social Infrastructure
- Welfare Infrastructure
- Agriculture
- Defence
- Transportation

5. Business Organization:

- Engaged in Direct construction
- Large Corporates
- Medium Size Companies
- Small Construction Firms (Unorganized)

Distribution of Contractors by Employment Size

2000	Enterprise	
	Number	% age
1-200 persons	26700	96.15
200-500 persons	850	3.06
500 > persons	220	0.79
Total	27770	100.00

6. Status of HRD:

- Engineering / Graduate Level - Organized
- Sub-Graduate Level - Organized
- Supervisory - Unorganized
- Workers/ Advisors - Unorganized

Specific initiatives are being taken by CIDC as explained in succeeding chapters.

7. Movement matrix of sub-sector in Construction Industry

Relative Impact on Service Providers in Various Sectors

S No	Sector	Trends	Assessed Impact	Sectoral Weight	Net effect (Weighted Average)
1	Building / Residential / Institutional	↔	~	8.56	0
2	Roads	↑	+15%	14.28	+2.142
3	Bridges	↑	+15%	8.56	+1.284
4	Dam / Irrigation facilities / Hydropower Plants	↔	~	11.43	0
5	Power Plants / Gas / Thermal	↓	-10%	11.43	-1.143
6	Railways	↔	~	7.61	0
7	Mineral Plants	↓	-10%	6.67	-0.667
8	Medium Industry	↓	-15%	13.39	-2.009
9	Transmission Lines	↔	~	6.66	0
10	Urban Infrastructure	↑	+7%	6.66	+0.466
11	Maintenance	↔	~	4.75	0

Net impact + 0.73% ↑

Legends ↑ = +ve, ↓ = -ve, ↔ = Static

Characteristic feature of labour in Construction Industry is high percentage of migrant workforce. The Inter-State Migrant Workmen (Regulation of Employment and Conditions of service) Act 1979 govern the migratory movements of labour. Key actions and required both at the destination as well as at the point of origin of migration to reduce vulnerability. Effective action requires the creation of a reliable information system for labour migration, as macro level data is often inadequate to capture the flow and pattern of migration. A State wise survey may fill in this gap.

8. Institutional Financing – Poor/ Very low

Details of initiatives and the outcome are explained in the succeeding chapters.

9. Safety – Indifferent approach in-spite of several regularity stipulations as

Explained in relevant chapters.

10. Quality Aspects – Indifferent approach Initiatives taken & remedies

suggested in relevant chapters.

11. Database – Indifferent status, as a start up a Nation-wide MIS scheme recommended.
12. Best Practices – Faster absorbing capacity displayed by Construction Industry.
Suggestions / Models detailed in relevant chapters.
13. R & D Initiatives – Minimal, suggestion/models detailed in relevant chapters.
14. Adherence to labour laws – Minimal, suggestion/ models detailed in relevant chapters.

As can be seen from the above, the largest segment of Industry remains unorganized in spite of several ongoing initiatives to instill good practices. This has a profound effect on the overall performance and quality of delivery of the end product, since, the performance of even those in “Organized Sector” largely depends on those in Unorganized Sector”. This is due to the fact that Construction Industry follows onward contract practices for execution of works.

The solution, therefore, has to come through tackling following key impediments.

- (a) Extensive Human Resource Development at all levels.
- (b) Adoption of good practices, both domestic and global.
- (c) Revitalizing / strengthening the regulatory and legal frame work.
- (d) Creation of Institutions empowered to insure adherence of the above.

The succeeding chapters deal in detail, such models and recommendations to uplift the over all delivery.

Substantial National resources are being spent on building the assets and in the 11th Plan the pace of investment is going to enhance considerably where over Rs. 14 lakh crore is expected to be spent in development of Physical Infrastructure. The economy during the 11th Plan has some

inherent strengths. Growth has been consistent at over 8% during past years. Savings are @ 29 % of GDP and the investment rate is close to 31 %. All this puts the economy on a stable pedestal and imparts inherent strength to take larger strides. It is envisaged that the deficits observed in agriculture sector would be bridged through contribution made by other sectors of economy and construction, indeed, shall play a key role. Looking at the present capability of delivery of Construction Industry, which is estimated at Rs. 3.10 lakh Crores per year, based on the consumption of Cement and other important constituents, the Industry would need to enhance the deliveries substantially to meet the additional investment target of over Rs. 14 lakh crores.

The key focus therefore, needs to be on building capabilities of the construction industry to deliver the desired results and to cope up with the envisaged work plans and deliver the infrastructure projects in time. Needless to mention that lack of this potential, would mean additional cost to the industry, adverse impact on economy, and environment, and substantial reduction in our competitive position, with respect to the International players. **The recommendations for implementation highlight the priority areas enabling the Construction Industry to achieve the desired growth rate during the 11th National Plan, through capacity building.**

It is worthwhile to mention, that on account of the above resolutions, and the joint initiatives taken by the Government, Construction Industry, and rest of the Stake Holders, reasonable work has been done on all the critical issues mentioned elsewhere in this Chapter which were also identified as an integral part of the development of 10th National Plan.

Few of the notable milestones achieved during the period 2002-2006 are:-

- ☞ Accordance of the industrial concern status under IDBI Act, to Construction Industry

- ☞ Implementation of national Human Resource Development (HRD) initiatives. in the non-formal sector, including the workers' level to the upper levels of engineering and management practices
- ☞ Setting up of the Arbitral Institutions, for resolutions of the business disputes in construction industry.
- ☞ Setting up of disaster identification and mitigation centres to act as the incubation places for development of a cadre of professionals, who are well trained to take necessary disaster prediction and mitigation initiatives.
- ☞ Development of Institutions and implementation plan for safety and quality related issues obtaining state-of-art global technology through strategic association between the constituents of industry, Governmental organizations and international expertise.
- ☞ Effective dissemination of information, regarding good work practices, and development of an action frame work for quality and safety audits, assessment and certification as well as training of man-power both for practice and research.
- ☞ Improvement in procurement practices for the public sector, and also development of regulatory manuals to ensure quick and effective procurement procedures.
- ☞ Setting up of models of public-private partnership initiation for stepping up the potentials and involvement of of construction industry encompassing Government, Industry, and other stake-holders in the building of physical infrastructure.
- ☞ To develop economic parameters for making an efficient assessment of variation of the price lines, keeping in view the global influences on vital services and manufactured goods being consumed by the Construction Industry.
- ☞ To develop interactive and strategic associations among National & Global players, and facilitating access to new technologies, standards,

and services, for efficient execution of the projects both within and outside the country. Also to utilize such associations to avail of the market share in overseas market.

- ☞ To facilitate development of consultancy and advisory services in the areas of project and construction management, procurement services, regulatory issues, & technology
- ☞ and several more

A sure manifestation of such initiative could be gauged from the fact that the time and cost over-run in execution of projects have dropped considerably from 167 % average to 64%. **(source: Ministry of Statistics and Program Implementation).**

Construction activities are considered as integral part of a country's industry, economy, employment and quality of life, which goes beyond, mere development of physical infrastructure development plans, therefore, the need to focus on this important issue and therefore ;these initiatives.

1.2 PAST STUDIES

Several studies have been carried out in past, and the references have been made in the report for the 10th National Plan. However, to recapitulate following is the sequence of incidences of various study groups who deliberated and contributed in past on the issues:

Phase I

- ☞ High level building projects team (BPT) set up in 1957 by Committee on plan projects.
- ☞ Technical Panel was set up in 1968 to formulate guidelines for achieving economy in construction costs
- ☞ Formation of a Construction Economics Division in Planning Commission

- ☞ Several other bodies like National Building Organization (NBO) Central Building Research Institute (CBRI), Building Materials and Technology Promotion Council (BMTPC) were formed.
- ☞ Planning Commission set up a working group on improvement of methodology and technology of construction
- ☞ Organized national conference on construction

Phase II

Formation of a Construction Industry Development Council, as the apex body in the year 1996, to promote all aspects of construction, formed jointly by the Planning Commission, and the Construction Industry together with several Union and State Level Ministries/Public Sector Undertakings/Financial Institutions, etc. who have substantial interest in construction activities.

It is noteworthy to mention that during Phase I the approach has been to establish the preeminent position of the construction industry, and to conceptualize development of an Institution through collective consensus.

Phase II i.e. post 1996 was the implementation phase where the Construction Industry Development Council (CIDC) started implementing several project proposals, which were mooted from time to time, as an outcome of the deliberations of various Study Groups/Project Teams and Working Groups defined above.

As we have noted during the 10th Plan a substantial ground work was executed which resulted in a substantial reduction of time and cost over-run in project execution, and also formation of several Institutions to build the capabilities of the industry.

In order to sustain the momentum, and to further escalate the same, it was envisaged to have an even more detailed dissertation leading to development of 11th National Plan, for which a Working Group on Construction has been

constituted by the Planning Commission to prepare a Report on Construction for inclusion in the plan document. The constitution of the Working Group, and the term of reference of working, are detailed in the **Anexure 1** to this report.

In order to develop these inputs a two prong strategy was followed, to obtain the widest participation in the working group, to enable the working group to cover a wide spectrum of issues. Apart from the main working group, which was kept fairly wide, and included known experts drawn from all the segments of the Construction Industry, representatives of Stake Holders, several important Ministries, PSUs, SPVs, Financial Institutions, many other Government Agencies, both at the Central and State Government level, and the industry constituents, were advised to constitute subject and theme specific sub-groups who could deliberate on the relevant topics, in consonance with the terms of reference, of the main working group, and provide the outcome of all their deliberations to the main working group for further deliberation, and eventual inclusion the report. A list ;of such sub-groups is enclosed as **Annexure** to this report.

As the second, but contiguous initiative, to intensify this initiative further, the working group proposed to conduct a series of theme specific workshops/seminars where the experts representing the theme specific were invited to provide their valuable contribution towards making of the report. A list of such workshops is enclosed as **Annexure** to this report.

1.3 STRUCTURE OF THE REPORT

As explained earlier reasonable amount of work has already begun on improving the functioning of the construction industry. The working group, therefore, has focused their attention on two aspects viz:

- ☞ Firstly to identify the actions required to strengthen the measures as have already been taken during the implementation of 10th Plan
- ☞ Secondly to extend and to evolve new propositions.

The structure could be divided in three broad portions. These are:-

Background and overview of Construction Industry

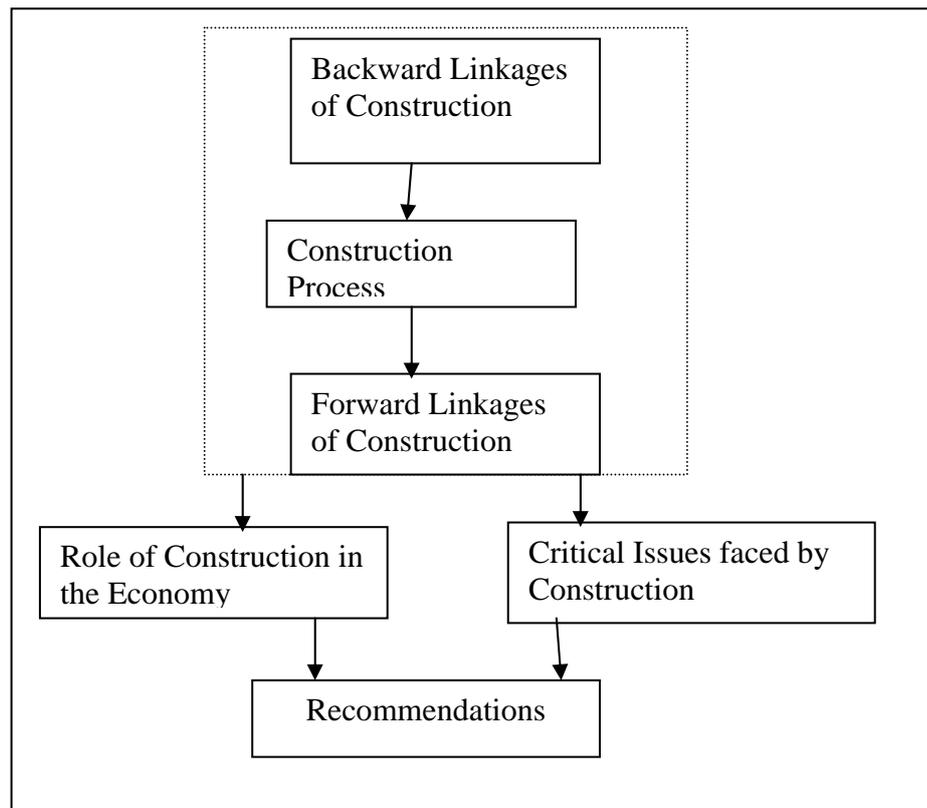
In this phase, data and information available on Construction Industry have been collected and collated. The macro-background of the Construction Industry has been evaluated, and upstream and downstream sectors having linkages with Construction Industry have been studied.

Issues facing the Construction Industry

This is the most crucial part of the report, where key variables /factors impacting Construction Industry have been identified and studied. This part also looks at other aspects and benchmarks to evaluate competitiveness/strength of Construction Industry in India. The criteria set for including/qualifying the sector as an industry, has been studied and compared with the characteristics of industry.

Recommendations/agenda setting

Based on the weaknesses and bottlenecks identified, recommendations for implementation have been suggested. This is schematically shown below:



1.4 THE REPORT OF THE WORKING GROUP

The approach adopted by the Working Group to prepare this report, therefore, was to identify the major issues affecting the functioning of Construction Industry, collect information, both from the primary as well as the secondary sources, and analyse the same to arrive at the suggestions leading to overall improvement. While doing so, a stock of the work, done in this direction in past was also given due cognizance and a holistic approach was adopted, to encompass the initiatives undertaken by various constituents of Construction Industry, may they be from the Governmental Sector, Private Sector, PSUs, Industry and Trade Associations or the NGOs.

Due cognizance was also given to the global work practices while drafting the proposed agenda for action. Functioning of the industry can not be made efficient, unless other supplementary and supporting entities also operate in total synergy. Such supporting segments such as advisory service providers, Financial Institutions, Insurance providers were also included in the ambit of this study.

The regulatory frame work, influences the functioning of any economic activity in the Nation, and therefore the existing systems were studied in depth, and inter-alia, the global agreements, resulting in impending modifications, therein, too were studied and due cognizance were given.

The working group and also the dedicated sub-groups, thus focused on all the salient features, defined in the terms of reference of the Working Group.

To solicit views of a large cross section of representatives, policy/decision makers and representatives from various walks of life, CIDC took initiative to organize several inter-sectoral, sub-sectoral and regional introductions on specific issues. Summary statement and recommendations of these events is placed at **Annexure - 2**.

2. CRITICALITY TO ECONOMY

Based on the past studies the importance and relevance of construction activities in the growth of over all economy, has been well established. As the second largest employer after agriculture, and an economic entity causing and generating large multiplier effect, value added employment potential, construction can add substantially to the growth and substance of the national economy.

Keeping in mind the overall projected annual economic growth of the economy and the premises articulated in general @ over 8 %, it is expected that the construction activities should contribute to almost 1/3rd of the average annual projected growth. **The national plan, therefore, must take in cognizance this expectation, and the potential of the sector and necessary measures should be taken, while implementing the projects which may fulfill this objective.**

2.1 PREMISE

At present there is no one opinion, in classifying construction under manufacturing or services. Therefore, necessary assumptions have been made while collecting and collating information on construction from different sources. **For the purpose of present analysis, construction has been considered as an industry.**

The analysis in the succeeding sections is based on various sources of information including the economic surveys, Central Statistical Organizations publications, data from Cement Manufacturers' Association of India (CMA), Centre for Monitoring Indian Economy, and the data provided by the Construction Industry Development Council, apart from other secondary sources such as announcements made by National leaders, several Project Authorities, trade journals, etc.

The major parameters of analysis are as follows:

- ☞ National Product aggregates
- ☞ Capital formation (Gross Capital Formation and Gross Fixed Capital Formation)
- ☞ Gross income and gross tax
- ☞ Share of construction in gross bank credit deployed
- ☞ Employment (organized sector)
- ☞ Project Exports
- ☞ Multiplier effect

At the end of each section, major findings have been summarized in the conclusion. International benchmarking has been done with selected countries, to compare the role of construction in other developed and developing economies.

2.2 OVER VIEW OF SECTORAL OPPORTUNITIES/PLANNED TASKS

The present size of Construction Industry in terms of annual monetary values is estimated at Rs. 310,000 crores (includes Public & Private Investments), with an employment status of 31 million man-years/year. As stated earlier, due to the conscious thrust of the Government to improve the state of physical infrastructure, the Construction Industry is experiencing a great surge in the quantum of the work load, and has grown at the rate of over 10 % annually during last five years. A table containing the cement consumption figures is given below to elucidate the growth pattern.

CEMENT DATA - INDIA

Year	Cement Dispatch	Cement Production	% Growth in Dispatch
2000-01	93.44	93.61	-
2001-02	102.37	102.40	9.5
2002-03	111.07	111.35	8.5
2003-04	117.23	117.50	5.5
2004-05	127.14	127.57	8.4

Source : CMA

Interestingly, this uplift has come on account of increased work load in following sub-sectors of operation:

- (ii) Housing and Appurtenant Construction
- (iii) Surface Transport (mainly highways)

Looking at the sectoral divide, an overall stock, now, needs to be taken. For the purpose of this analysis, following identified sub-sectors, are now being taken in account.

- (i) Housing, SEZs, Township development
- (ii) Surface Transportation Systems (Roads/Highways/Maritime Transport/Railways)
- (iii) Power Generation & distribution
- (iv) Aviation Structures
- (v) Core Sector/Mining
- (vi) Irrigation and Water Management
- (vii) Defense Construction
- (viii) Oil and Petrochemicals
- (ix) Utilities
- (x) Maintenance of Assets
- (xi) Rural Constructions

It is estimated that, during the course of 11th Plan, substantial work on sub-sectors at (iii), (iv), (v), (vi), (viii), (ix), (x) & (xi) would be executed.

In fact identifying only some of the major initiatives and estimating the envisaged investments therein, give us an idea of target work load which would need to be executed to meet the planned National Growth.

(Rs. Crores)

i)	Roads, Rail, Civil Aviation, Marine Transport, Power Generation, Water Supply & Irrigation etc.		14,50,000
ii)	Private investment in Roads	:	34,000
	Express way development		
iii)	(Modernisation / Upgrading of Highways)	:	220,000
iv)	Railways (Public)	:	180,000
v)	Railways (Private)	:	120,000
vi)	Civil Aviation	:	40,000
vii)	Ports (Private)	:	50,000
viii)	Freight Corridor		22,000
ix)	Power Generation	:	420,000
x)	JNNURM	:	60,000
xi)	Housing	:	150,000
xii)	Others	:	160,000

(Excerpts from the speech of Prime Minister of India)

This, however, is only partial list and does not account for other sectoral work specially from Private Sector (Industry and others)

Needless to mention, this work load, if to be executed during 11th Plan period, would need delivery potentials of Construction Industry to rise by 33 % at least.

A gross estimate of the requirements of resources is given below :

**ADDITIONAL REQUIREMENT OF RESOURCES FOR EXECUTION
OF PLANED INFRASTRUCTURE CONSTRUCTION**

a)	Total Investment	:	Rs.14,50,000 Crores
b)	Moderating Factor	:	62 % (weighted average of construction industry)
c)	Effective Additional Investment in Construction	:	Rs. 900,000 Crores
d)	Monetary Requirements	:	

	- For Construction Materials	:	Rs. 495,000 crores
	- For Construction Equipment	:	Rs. 180,000 crores
	- Manpower	:	Rs. 108,000 crores
e)	Detailed Requirements		
(i)	Materials (Major)		
	- Cement	:	381 Million tones
	- Steel	:	150 million tones
(ii)	Manpower		
	- Engineers	3.72 millon man years	
		:	
	- Technicians	4.32 millon man years	
		:	
	- Support Staff	3.65 millon man years	
	- Skilled Workers	23.35 millon man years	
	- Unskilled/ Semi skilled workers	56.96 millon man years	

These resources would be required over next 6 years.

It is, therefore essential, that necessary measures be taken to prepare the Industry to meet this challenge. Following clauses define the analysis for assessing the parameters leading to present day performance of the Industry, in the context of overall National Economic indices/parameters.

2.3 NATIONAL PRODUCT AGGREGATES

The growth patterns for assessment of the trends have been determined on the basis of following parameters.

- Volume trends
- Growth rate trends
- Trends in share of construction in national product

- Sectoral analysis
- Correlation and regression analysis

Correlation analysis between national product (NDP) and the sectors, at current and constant prices, brings out the important status of construction. At current prices, correlation between NDP and service sector was highest, followed by construction. But at constant prices, the picture was altered, service sector retained its high correlation with NDP, followed by manufacturing and then construction.

(Source : Ministry of Statistics & Programme Implementation Report)

2.4 GROSS CAPITAL FORMATION

At current prices, share of Gross Capital Formation (GCF) and Gross Fixed Capital Formation (GFCF) in Gross Domestic Product has been increasing. Though the share of capital formation in GDP increased, the share of construction showed a decline in Gross Capital Formation, Gross Fixed Capital Formation and in GDP, both at current prices and constant prices. Quarterly Estimate of GDP for Quarter 1 (April – June) 2006-07 – Statement at 1999-2000 prices and at Current Prices is enclosed as **Annexure 3**.

2.4.1 Share of public, private and household sectors in capital formation

Whereas until 1997 the share of public sector in gross fixed capital formation and construction has been declining continuously, the share of housing sector and private sector has been increasing. However, during the period 1997-2002 the same got stabilized and thereafter started showing a rising trend. This happened mainly because of substantial investments in the areas like transportation and rehabilitation of civic infrastructure, however, the housing sector continued showing a declining trend as far as the public – government investment is concerned where a larger involvement of private sector is increasing.

2.5 DEPLOYMENT OF GROSS BANK CREDIT IN CONSTRUCTION

In 1996, gross bank credit was RS. 2,31,860 crores, which increased to Rs. 2,58,991 crores in 1997, to Rs. 3,00,283 Crores in 1998, to Rs. 3,42,012 crores in 1999 and to Rs.4,00,818 in 2000. The share of industry in the gross bank credit remained nearly the same over the three-year period (1996-98), from 53.9% in 1996 it declined marginally to 53.6% in 1998, 52.35% in 1999, 49.93% in 2000. The share of construction in Gross Bank Credit, however, was 0.8% in 1996, 0.88% in 1998, 0.75% in 1999 and 0.68% in 2000. The share of construction in credit employed in total industry was merely 1.36% in 2000. During the period 2002-2006 there has been the record enhancement in the share of construction industry, which rose to 4.87 %. It is noteworthy to mention that the issue of lower credit limit was taken up by Reserve Bank of India with Indian Banks Association in the context of building the physical infrastructure, and several self reforms were recommended by the high powered working group constituted by the Indian Banks Association in the year 1998. The enhancement reflected above was an outcome of this initiative.

2.6 SHARE OF CONSTRUCTION IN GROSS INCOME AND GROSS TAX

The share of construction in gross income and gross tax also showed a sustained enhancement. The following table shows the yearly estimates to demonstrate the trends:

2.7 EMPLOYMENT

As per the industry estimates the employment figures have shown a steady rise and it is estimated that at present the construction industry employs 31.46 million personnel. Whereas these numbers are substantial, it is noteworthy to mention that there has been a substantial decline in the value added employment which is evident from following table.

Occupation	Numbers (in 000s) (1995)	%	Numbers (in 000s) (2005)	%
Engineers	687	4.71	822	2.65
Technicians & Foreman etc.	359	2.46	573	1.85
Clerical	646	4.40	738	2.38
Skilled Workers	2,241	15.34	3,267	10.57
Unskilled Workers	10,670	73.08	25,600	82.45
Total	14,600	100.00	31,000	100.00

Source { 1995 Census - NICMAR } - Contract Labour in the
{ 2005 Census - CIDC } - Construction Industry in India
- K.N. Vaid

Perusal of these figures show startling trends as summarized below:

- (i) There is a substantial drop in the percentage proportion of qualified Engineers employed at work sites, similarly at Sub-Engineering levels.
- (ii) The strength of skilled work persons has also been consistently and substantially going down and relative proportions of unskilled persons have gone up.
- (iii) There is indiscriminate hiring of unskilled persons by operators to fill the requirements.

The end result is slow progress of work, rampant time and cost overruns, low productivity & quality and eventually low value edition.

It is noteworthy to mention that, with several ambitious projects on anvil during 11th Plan, the Demand is going to grow with a consistent pace of at least 8 to 9 percent, thereby having an incremental growth of at least 25 lakhs persons per year to be added in the existing stock.

2.8 SHARE OF CONSTRUCTION IN ECONOMY

With the present asset Creation potential of the Construction Industry estimated at Rs. 310,000 Crores the share to the GDP works out 12 %, and in

terms of the employment generation construction provides employment to 14 % of employable citizens.

The manufactured goods (Construction materials and Equipment) account for approximately 8.6% of GDP included in the gross share defined above.

It is therefore established that construction, as an economic entity has a profound impact on the GDP and overall economy of the Nation.

2.9 MULTIPLIER EFFECT OF CONSTRUCTION

Based on the analysis of forward and backward linkages of construction, the multiplier effect for construction works out to be in the range of 1.8 to 2.0. The multiplier effect has been worked out by broadly classifying more than 30 inputs and upstream activities, both related to manufacturing sector as well as cottage industry, for construction. Employment generation potential in the respective types of upstream industry has been aggregated and compared with the direct employment generated by the Construction Industry.

2.10 CONCLUSION

- i) Construction activities play a significant role in sustaining the National Economy.
- ii) The planned achievements are substantial and need a quantum leap in delivery capabilities of Construction Industry.
- (iii) It is therefore quite apparent that meaningful steps would have to be taken to support both the infrastructure sector and the Construction Industry, for achieving the desired growth of economy. The key step would be to correct the internal imbalances, inherent in the sector, to make the Construction Industry competitive and enable it to match growth with other sectors of economy.

3. LINKAGES WITH THE ECONOMY

3.1 BACKGROUND

As has been analysed in the earlier section, in terms of magnitude, construction activity is second only to agriculture. Its multiplier effect on the economy is one of the highest. To study the linkage of Construction Industry with the economy, specific industry data (cement and steel) and inputs from CSO/NSS have been used and analysed.

3.2 BACKWARD LINKAGE

3.2.1 Employment

One of the major components used for studying effect of construction in the economy is employment. Employment, in the organized construction sector is about 1.2 million citizen years/ year, however, after including employment in the unorganized sector, it is estimated to be over 30 million. The employment elasticity of construction with respect to GDP and growth rate of employment in construction is also seen to be high. Construction has high backward linkages, especially in the rural areas where it is a major employment generator.

- (a) It absorbs rural /seasonal labour
- (b) It absorbs unskilled workers (in addition to semi-skilled and some skilled)
- (c) It permits large scale participation of women workers
- (d) It supplements the workers seasonal income from farming.

3.2.2 Construction Materials

The other major backward linkages of construction are with the building material manufacturing industry. Construction materials account for nearly two-third of average the construction costs. The major construction materials used in the Construction Industry are:

- ☞ Cement
- ☞ Steel
- ☞ Bricks / Tiles
- ☞ Sand / Aggregates
- ☞ Fixtures / Fittings
- ☞ Paints & Chemicals
- ☞ Construction Equipment
- ☞ Petrol / Other Petro-products
- ☞ Timber
- ☞ Mineral products
- ☞ Aluminum, glass, plastics.

Since most of the material are either manufactured locally, in cottage or small scale industry, database available for quantifying the exact nature of linkages with construction is not very accurate. On the other hand, linkages of products like paints and petro-products would again be difficult due to their stronger linkages with other sectors. **However, it can be safely assumed that cement has very strong linkages with construction, followed by steel. Almost 100% of cement production is consumed in construction and about 60 - 65% of steel production goes into construction.** Based on the industry analysis of cement and steel industry's linkage with construction and the inputs from CSO/NSS, backward linkages of construction have been studied.

3.2.2.1 Cement

Cement is one of the largest input into the Construction Industry. In 1989-90 the total consumption of cement was 45.41 million tonnes, which increased to nearly 83 million tonnes by 1997-98. For the fiscal year 2000-2001, the consumption has been 101 million tonnes. The compounded annual growth rate for cement during this period was 7.68%. For the period 2001-2006 the Annual average growth of consumption of cement has been 9 % with 132 million tones cement consumed in the year 2005-2006. **(Source : Cement Manufacturers Association Reports)**

3.2.2.2 Steel

Steel is the second largest commodity that is consumed in construction. In 1990-91 the total consumption of all types of steel was 144.6 lakh tonne, which increased to nearly 221.3 lakh tonnes by 1996-97. The compounded annual growth rate for steel during this period was 7.35%, which is very close to the growth rate of cement (7.68%) during the same period. The similar growth trends have been observed during the period 2002-2006.

3.2.3 Other components

According to the table on components of construction costs, construction materials constitute the bulk of the cost, followed by construction equipment. The combined component of service sector in terms enabling and administrative cost is also very high followed by labour and financing costs, as seen from the following table.

	Materials	Construction Equipmt.	Labour	Finance	Enabling Expenses	Admin. Expenses	Profits
Building	58-60	4-5	11-13	7-8	5.5-6.5	3.5-4.5	5-6
Roads	42-45	21-23	10-12	7-8	5.5-6.5	3.5-4.5	5-6
Bridges	46-48	16-18	11-13	7-8	5.5-6.5	3.5-4.5	5-6
Dams, etc	42-46	21-23	10-12	7-8	5.5-6.5	3.5-4.5	5-6
Power	41-43	21-24	10-12	7-8	5.5-6.5	3.5-4.5	5-6
Railway	51-53	6-8	16-18	7-8	5.5-6.5	3.5-4.5	5-6
Mineral Plant	41-44	20-22	12-14	7-8	5.5-6.5	3.5-4.5	5-6
Medium Industry	50-52	7-9	16-18	7-8	5.5-6.5	3.5-4.5	5-6
Transmission	49-51	5-7	19-21	7-8	5.5-6.5	3.5-4.5	5-6

Source : CIDC Survey

Variance: Min / Maximum

3.3 FORWARD LINKAGE

The importance of construction in infrastructure, housing and other asset building activities and consequently in its forward linkages is very high. Component of construction comprises nearly 60-80% of project cost of infrastructure projects like roads, housing etc. In projects like power plants, industrial plants, etc. the share, though lower, is critical.

CONSTRUCTION INTENSITY

	Construction Intensity (%)
Building	76
Roads	63
Bridges	65
Dams,etc.	75
Power	38
Railway	78
Mineral Plant	18
Medium Industry	20
Transmission	22
Urban Infrastructure	66
Maintenance	81
<i>* Source : CIDC Survey</i>	

The exact quantification of forward linkages of construction is again difficult as the effect is wide spread. But as the role and contribution of infrastructure in the economy is understood it is not difficult to comprehend construction's role in infrastructure building and economic development.

4. ISSUES

The major challenge facing Construction Industry is to raise, its capabilities of delivery, commensurate with the plan target . **The development of infrastructure would be unachievable and unsustainable, unless construction industry raises the delivery potentials for which impediments need to be removed and systemic changes are brought in.**

The preceding sections, captioned Criticality to Economy and Linkages with the Economy, have brought out the importance and at the same time a clear trend of Construction Industry's performance, compared to that of the organized sector, this needs upgradation substantially.

The following sections detail out some of the major problem areas and issues identified as a part of the report. The major findings have been summed up at the end of the section.

4.1 CONTRACT PROCEDURES

The present form of contract procedures and requirements need major modifications as they do not incorporate technological, labour and other major parameters. They also do not reflect the requirements related to infrastructure development.

☞ The present contract procedures for procurement of contractors are highly cumbersome and costly, both for the project owner and the contractors. For example, in many instances, the cost of advertising for a job itself is more than the actual value of the assignment.

The procurement process comprises of following steps

1. Detailing the project after establishing the feasibility, and after securing all sanctions including financial sanctions.

2. Preparing the prequalification / registration documentation and obtaining the bids and /or
3. Inviting the techno-commercial bids through public notifications.
4. Evaluating the bids and awarding the work

It is estimated that the departmental expenditure adds in above mentioned activities up to a whopping 16% of the cost. After adding supervising and monitoring expenses of about 6%, the total cost of procuring, supervising and monitoring comes to about 22% of the cost of asset created. – **Annexure - 4.**

Secondly, there is no standardized contract procedure and evaluation criteria. This has adversely affected the credibility of the whole system and has given rise to multiplicity and corruption. Further there are no restrictions on entry into this sector by unqualified players.

☞ **Thirdly, contract conditions are not equitable.** Structure of Performance guarantees, and other requirements, only increases the cost of operations without passing any substantial gains to the project and the industry. Even conditions like, damages to contractors due to delays by project owner, resource mobilization through advances and cost escalation are not effectively laid out, thereby causing disputes & time overruns in execution of projects.

☞ Moreover, the contract criteria of awarding works to the lowest cost bidder also hinders in the process of adoption of better technology, best practices and quality. This only results in cost cutting practices by contractors, preventing passing on the benefits to the workers.

In order to have a better system of award, the focus, now, must shift to “Effective Lowest Price” from the “Lowest Price” syndrome Grading of Construction Entities, may be adopted as an effective tool to determine the Effective Lowest Price. The practice is in vogue in Singapore, as adopted

by the Ministry of National Development, Government of Singapore, and may be suitably transformed and adopted for Indian situations

Determination of Lowest effective Price (As practiced in Singapore)

The base benchmark for assessment of the effective price is the grading / rating score of any agency. Normally 15 stages of grades / rates adopted to define the prowesses of an entity with Highest grade being allotted a moderation factor of 1.0.

For selection of an agency the project owner can decide the cut off grade (Normally not 4 stages lower than the highest sought grade) for each grade, a reverse premium is determined. Say for highest 1.0, second highest 0.98, third highest 0.96 and so on, thus granting an equalization premium of about 8% when compared between the highest and lowest acceptable grade.

To determine the effective lowest price is divided by the reverse premium

Example

Agency	Quoted Price	Grade	Reverse Premium	Lowest effective price
A ₁	100	H ₁	1.0	100
A ₂	99	H ₂	0.98	101
A ₃	98	H ₃	0.96	102
A ₄	97	H ₄	0.94	102

Using the premises of Effective lowest price Agency A₁ is declared lowest, whereas if the conventional method is adopted A₁ is the highest price bidder. This principle is applicable in case of CONQUAS Evaluation System, as detailed in Chapter 4.7.4.

The Standard Contract Document for Domestic Bidding as adopted by Govt. of India, Ministry of Statistics and Programme Implementation circulated as Guidelines for preparing proper contract documents has also partly adopted a similar practice. In these guidelines weightage has been provided as a condition “to qualify for award of the Contract” where a Minimum Grade under CIDC-ICRA grading, interalia, is one of the important conditions for Qualification. While evaluating and comparing various ‘Bids’ the Employer would take into account the minimum grade depending on the nature and size of project.

Technology capacity of Contractors should be made part of contract requirement for different categories of projects – based on their value and it should also be part of pre-qualification process. Efforts could be made to include contractors’ proposals as part of contract conditions. Such a practice should reduce disputes which often arise out of incomplete understanding of projects by bidding parties.

Availability of some minimum percentage of skilled and certified manpower with Contractors should be made part of contract requirement for different categories of projects based on value.

Incentive for better efficiency should be made part of the contract requirements.

A regulatory mechanism needs to be evolved so that contract procedures adopted in Government Construction project are followed by entities in the private sector also.

☞ The contract provisions also do not have focus on rewarding better performance of execution agencies. A system of incentives for timely completion and better performance needs to be integrated in procurement procedures by all public agencies.

- ☞ Last, but not the least, proper code of ethics, and adherence to good work and business practices, does not exist. Such situation leads to low value addition, apart from lower image of the Industry.

The Ministry of Programme Implementation, Govt. of India, has finalized and issued a set of Uniform Contract Conditions, and also a model bidding document for domestic contracts as a guideline. These need adoption by various Government departments/ organizations and PSUs. The private sector should also be advised to harmonize their procedures suitably with those being followed by the public sector. For public sector organizations and PSUs government should make necessary policy intervention to convert these guidelines into specific directions.

Similarly for Public Private Partnership/Concession Contracts the model agreement document prepared by the Planning Commission for Highway / Road Contracts could also be adopted as a base.

It is therefore; recommended that, through adoption of standardized Conditions of Contract the reduction in cost and time can be achieved. Following should also be adopted.

- 1) Instead of pre-qualifying the agencies time and again, departments desirous of engaging the contractors can resort to choosing contractors on the basis of their grading, followed by a periodical surveillance.
- 2) Resort to electronic tendering process, publishing tender notices online, online Contract Bidding documents and 'Reverse Bidding' to eliminate unfair competition.
- 3) The Bidding Process can be online, including tender opening, evaluation, submission of earnest money and award.

The suggestions made above can reduce time and costs in the procurement process and enhance the transparency. With latest IT Act in place and e-signatures legally valid, the suggestions are feasible.

4.1.2 Dispute Resolution

Construction Industry being the largest asset creator and second largest component of the economy having unique dynamics of business **it is crucial that disputes be resolved speedily to minimize the business losses and capital blocked due to delayed and Ad-hoc process of dispute resolution.**

Till the enactment of Arbitration and Conciliation Act 1996, the process of Arbitration was totally Ad-hoc. The 1996 Act has provided for Institutional Arbitration mode, and has no doubt taken some bold initiatives attempting to provide an effective framework for resolution of disputes without depending on the overburdened judicial system of the country. It has, to some extent, addressed the concerns arising out of globalization of business. However, the need has been widely felt to develop and set up in position the Institutional frameworks which can effectively tackle the hard-core problems of time and cost of the arbitration proceedings. Unfortunately in the absence of nationwide consensus the arbitration process continues to be predominantly Ad-hoc leading to a situation that as of 2001 (CIDC survey), the amount of capital blocked in construction sector disputes was over Rs. 54,000 crores. This is an ironic situation particularly due to the fact that a large number of projects are of national importance and country is keen to be a major player in the globalised economy and to have world class infrastructure.

Ad-hoc Arbitration

Since the Arbitration and Conciliation Act 1996 came into force, there is certainly an improvement in the number of disputes resolved. However, a number of grey areas remain which are being looked into by the Law Ministry. Experience for last one decade no doubt highlights the fact that the

mechanism is certainly an improvement over the earlier practices, but it has not been possible to mitigate problems in the critical areas. It has been noted that there is an increasing tendency to appeal on grounds of “misconduct” on the part of arbitrators particularly taking the view that they are not being approved by any responsible organization. This has added to the delays in the arbitration process which are increasingly resulting in time and cost over-runs of projects. Yet another grey area pertains to non-availability of clearly defined eligibility criteria and code of ethics with the appointing authority. Eligibility criteria for Arbitrators is not fully transparent and does not follow defined code of conduct.

One of the major reasons attributed to the poor effectiveness of the Ad-hoc Arbitration process is that at the time of signing the arbitration agreement, the owner insists on having arbitrators from among its own serving or retired officers or a panel with which it has some direct or indirect association. While this works in a large number of cases where the real intent of both sides is generally to reach an agreement, this also provides grounds for resorting to judicial remedies after the award is given.

As is seen from the foregoing that major shortcomings of Ad-hoc arbitration process include inter-alia, there is no provision of specific rules and partners have to sign an agreement regarding the rules to be followed, and there is no provision for a neutral body to administer and supervise Arbitration. Besides, there is no quality control of Arbitrator’s qualifications and expertise, no assistance is available in managing Arbitrator’s fees, lack of close supervision/monitoring of arbitrator’s progress, and any administrative support.

Institutional Arbitration

In view of the deficiencies of the Ad-hoc arbitration system, it has been a long felt need of the construction industry to introduce new measures so that disputes are resolved in a fair, speedy and cost efficient manner. In

accordance with the IAA 1996, there exists now, the provision of resolving disputes through Institutional Arbitration mode. The main objective for such an effort is to develop and place in position an Institutional Arbitration system. The main features of such a system are -

- a) appointment of arbitrators from the International and National or Regional panels,
- b) to give the time commitment with a view to conduct arbitrations in an expeditious and cost effective way
- c) ability to act for conducting an audit for possible conflict, appointing an institutional appointee to execute institutional code of ethics,
- d) having an hierarchy to include Nominations Committee, Confirmation Council, pre-determined Arbitrators, Fees Vs Lawyers Fees,
- e) Existence of the code of ethics for an Arbitrator focusing on impartiality, transparent communication, agreement on fees, confidentiality.

Thus following are some of the salient elements of Institutional arbitration;

- Arbitration under Institutional rules formulated by Institution and revised periodically based on user's feed back .
- Panel of accredited Arbitrators based on selection criteria to maintain quality and standards and code of ethics/conduct.
- Negotiable terms of appointment whenever there is a default appointment.
- Management of Arbitrator's fees
- Monitoring and supervision of progress of case
- Arrangement of logistics, facilities and services for hearing.

Thus main advantages of Institutional Arbitration over Ad-hoc Arbitration are,

- helps in controlling quality of Arbitrators,
- helps in managing arbitrators fees

- help in maintaining a close supervision and monitoring of arbitrator's progress
- helps in providing administrative support for the whole process.

Disputes arising out of project execution need speedy and effective settlement. With multiplicity of contract forms, varied dispute resolution mechanisms, lack of willingness of parties involved to honour the awards, and no effective implementation mechanism in practice, in most cases the disputes end up in courts of law and remain unresolved for long durations.

A corrective measure needs to be taken to insure the following:

- i) Laying down the eligibility criteria for nomination of arbitrators.
- ii) Laying down the work ethics for nominated arbitrators, and setting up an implementation mechanism.
- iii) Drawing up and adopting the arbitration and dispute resolution mechanism, in line with UNCITRAL provisions.
- iv) Notifying and embodying the approved mechanism as a part of Standard Contract Conditions.

It is, therefore, proposed to constitute a nodal Committee/ Council of Arbitrators, which may operationalize these recommendations. The contract guidelines approved by the MOSPI have made such provision through creation of such mechanism under the auspices of CIDC, the Apex body, which needs to be developed at an early date. As a sequel, Construction Industry Arbitration Association has now been incorporated which shall dispense the Industrial Arbitration which is currently being in practice.

4.1.3 Surveillance Procedures in Vouge and their Implication

Construction is an area which not only involves high cost in implementation of projects but depends on multi-disciplinary team of professionals, administrators, finance and accounts personnel, from owner's side (which in

most cases is Government) and contractors, suppliers, consultants etc. both from public and private sectors. Decision making, is a complicated process which is another area of critical importance in planning, design and execution of construction works.

Since cost implications of construction projects are generally huge and mostly pertain to spending of funds from public exchequer, Government through, their vigilance administration, has always been concerned with the issue of evolving and implementing guidelines for the procedures, methods, to be followed at different stages of planning, project formulation, tendering, decision making and implementation including acceptance of completed works etc., in order to ensure that at every stage, duties and functions are performed by concerned officials and subordinate functionaries in a manner which does not give rise to wrongful practices of favoritism and spending leading to corruption or wastage of government funds.

In spite of the good intentions, the process of conducting such surveillance, causes impediments in project execution.

This needs to be toned to instill confidence in executives implementing the projects. This can be done, through deputation of knowledgeable officers charged with the responsibility of Surveillance, and also through detailing and implementing a manual where the Code of Conduct is laid down. Such manual should be prepared taking in cognizance the views of project authorities and CVC inter-alia.

4.1.4 Quality Appraisal for Construction Material

Frequently the construction agencies in the country are approached by the manufacturers with building products/techniques and systems which are claimed to lead to economy in construction. The performance in use of these claims are required to be assessed in relation to the requirements of the building industry. In the absence of any authoritative assessment and

approval system, building products, components and techniques are accepted by the architects, engineers and builders with some reservations since they may involve calculated risks under conditions of use, in relation to performance and durability.

The necessity of evolving an Appraisal Scheme similar to 'Agreement system' as practised in the U.K. and other countries has long been felt for the building industry in India. The proposal for having such a scheme in India has been discussed and now being implemented for development and promotion of material/products/systems including new uses of traditional materials, under the joint initiatives of BMPTC, CIDC, BIS and other agencies. The scheme is known as '**Performance Appraisal Certificate Scheme**' (PACS).

It is interesting to observe that the National Standard Institutions in India, do not possess any regulatory Authority to insure compliance of implementation. This needs intervention and correction.

In view of the very wide spread of infrastructure development programmes covering both urban and rural areas particularly roads, highways and rural connectivity schemes, it is important that district level testing laboratories for testing and quality evaluation of materials are established to ensure use of quality materials in such works. In the absence of such facilities contractors/authorities may often have to send material samples for testing to far away laboratories which delay the execution of works.

4.1.5 Insurance

One of the major reasons, of the inadequate performance of Indian Construction Industry, in sustained asset creation and high value employment generation is lack of risk identification, quantification, and mitigation products and services.

Insurance Industry in India, has remained under state control for a long time, and enjoyed protection. With the opening up of insurance to private sector, as a part of globalization and liberalization process in India, the Insurance Industry is confronted with both challenges as well as the opportunities.

With per capita insurance premia in India estimated as 7 US\$ per annum, the Industry is slated to grow at a phenomenal pace, if it is compared with other countries e.g. Malaysia US\$219 per annum, U.S.A. US\$ 2400 per annum.

Such growth can come about with the development of new and innovative Insurance products and services. It is also important to understand that apart from mobilizing the much needed capital, which may be employed in Infrastructure development, being a long term fund, Insurance funds are an imminent necessity to provide the security network to cover risks. Well designed Insurance services, therefore would provide following.

- a Funds for Investment in Infrastructure Development Projects.
- b Identify, assess, and mitigate the risks, and therefore reduce the costs of building assets.
- c Provide social securities to the citizens.

Suggestions

As explained above, substantial ground needs to be covered in this area and the suggested phase wise plan of action could be as follows:

Phase – I

Development of Research Educational and Training Programmes in Actuarial Sciences.

Development of a veritable database to facilitate in the development of Insurance / Non Insurance products.

Development of service providers and the Insurance companies, who can offer relevant risk coverage innovative instruments.

Phase - II

Due to substantial size of Construction Industry the monetary implications of the business risks and often technology risks is also very high, under phase II of action plan, establishing an Insurance company, with a focus on construction related (Specially on non-life side) business to meet the exigent requirement could be considered.

4.2 CONSTRUCTION LAW

As per prevailing laws, an organization engaged in construction activity requires registration under five different legislations and is subject to inspection by officers appointed under twelve enacted laws having prosecution powers. Further, they are required to obtain licenses under three enactments. It is pertinent to note that all the applicable legislation requires periodic returns and dealing with the notices issued by different authorities. The details of various statutes only pertaining to labour to be followed are given below:

LIST OF LABOUR LAWS APPLICABLE TO THE CONSTRUCTION INDUSTRY IN INDIA

1.	Children (Pledging of Labour) Act, 1938
2.	Employment of Children Act, 1938
3.	Factories Act, 1948
4.	Mines Act, 1952
5.	Employment Exchange (Compulsory Notification of Vacancies) Act, 1959
6.	Industrial Employment (Standing Orders) Act, 1946
7.	Industrial Disputes Act, 1947
8.	Workmen's Compensation Act, 1923
9.	Indian Trade Unions Act, 1926

10.	Employer's Liability Act, 1938
11.	Employer's Sate Insurance Act, 1948
12.	Employees Provident Funds Act, 1952
13.	Maternity Benefits Acts, 1961
14.	Payment of Wages Act, 1936
15.	Motor Transport Workers, Act, 1951
16.	Contract Labour (Regulation and Abolition) Act, 1970
17.	Payment of Gratuity Act, 1972
18.	Apprentices Act, 1961
19.	Equal Remuneration Act, 1976
20.	Minimum Wages Act, 1948
21.	Payment of Bonus Act, 1965
22.	Weekly Holidays Act, 1942
23.	Collection of Statistics Act, 1953
24.	The Inter-State Migrant Labour (Regulation of Employment and Conditions of Service) Act, 1973
25.	The Building and Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996
26.	The Building and other Construction Workers Welfare Cess Act, 1996
27.	The Employees Provident Fund and Misc. Provisions (Amendment) Act, 1996.

Recognising the problems of long felt need for a single window type of arrangement and dealing with multiple laws, and authorities, by construction entities the Construction Industry Development Council (CIDC) has mooted the idea of formulating a unified law for the construction industry to enable formation of a one authority which can oversee compliance of various requirements by construction companies.

It is proposed that the construction law be divided ;into the following chapters;

1. **Preliminary**

Title, extent, commencement, definitions, provisions, and power to exempt during public emergency.

2. **National Construction Policy & Plan**

National policy, plan; inter-state, regional and inter-regional construction; provisions with respect to construction company; standards of performance, of registered companies and licensed contractors; standards; information with respect to levels of performance, market dominations; rate regulations; development of market.

3. **Central Construction Authority Constitution and Functions**

- Constitution, etc of Central Construction Authority,
- Members not to have certain interests
- Officers and staff of authority
- Functions and duties of authority
- Power to require statistics and returns
- Directions by Central Government to Authority
- Central Advisory Committee, (CAC)
- Objects of CAC

4. **Constitution, Powers and Functions of State Authority**

- Constitution of State Authority
- Qualifications for appointment of chairperson and members
- Constitution of selection committee to select members
- Functions of State Authority
- State Advisory Committee (SAC)
- Objects of SAC
- Terms of office and conditions of service of members
- Removals of members

- Vacancies, etc. not to invalidate authority
- Power of appropriate authority
- Proceedings before authority
- Powers of entry and seizure
- Delegation

5. Grants, Funds, Accounts, Audit and Report

- Grants and loans by Central Governemnt
- Establishment of fund by Central Government
- Accounts ;and Audit of Central Authority
- Annual report of Central Authority
- Grants and loans by state Government to state authority
- Establishment of fund by State Government
- Accounts and audit of state authority
- Annual report of state authority
- Budget of appropriate authority
- Directions by state Government

6 Dispute Resolution, Arbitration Arising out of Contract

- **Arbitration**

7 Other Provisions

- Responsibility of employers & Labour Laws
- Responsibility for payment of wages and compensation
- Notice of accidents ;and enquiries
- Appointment of Chief Construction Inspector and Construction Inspector
- Co-ordination Forum
- Exemption of Construction Equipment and Machinery from Attachment in Certain Cases
- Protection of action taken in good faith
- Recovery of Penalty payable under this act

- Service of notices, orders or documents
- Provisions of this act to be in addition to and not in derogation of other laws
- Powers of Central Government to make rules
- Powers of central authority to make regulations
- Rules and regulations to be laid before parliament
- Powers of state government to make rules
- Powers of state authority to make regulations
- Rules and regulations to be laid before state legislature
- Powers to remove difficulties
- Provisions of Act not to apply in certain cases.

8. **Authorities and Registration**

- Appointment of Registering Authorities and licensing officers
- Licensing of contractors
- Revocation, suspension and amendment of registration and licences
- Certificate of registration or grant of licenses

9. **Miscellaneous**

- Offences by companies
- Cognizance of offence ;under this act
- Members, officers, etc. of appropriate commission to be public servants.

4.3(a) **HUMAN RESOURCE AND ENTREPRENEURIAL DEVELOPMENT FRAME WORK**

One of the major impediments faced by the Construction Industry in raising the levels of productivity, adhering to the stipulated standards and meeting the quality, is acute shortage of skilled manpower at workers and supervisory levels and also lack of well experienced construction engineers.

A perceptible shift in the skill demography is amplified in article 2.6 Employment, which depicts the decline in the share of skilled work persons and a continuing shortage of other levels of manpower employed with the Construction Industry. To meet the demand of trained and certified workers there is an urgent need to introduce a system of 'Graded Certification' commensurate with proficiency levels. It may be necessary to develop some short-term courses for certain trades where ITIs have long duration courses. Identifying the main causes of the impediments coming in way of improving the availability of trained man-power, following could be stated.

a) Workers

- (i) Near absence of formal training and skill certification systems and institutions & over reliance on conventional sourcing of manpower.
- (ii) Non formation of an integrated National Plan & therefore a conscious initiative to develop the skilled work force, including those required for facilitating rising mechanization and value added skills needed for induction of modern technologies.

b) Engineers

- (i) A perceptible reduction of share of new trainees in Construction Engineering Streams (Civil, Electrical, & Mechanical Engineering) due to lack of interest of Institutions to raise intake levels. Due to lack of placement opportunities for civil engineers during recent past most of engineers institutions have reduced intake in related courses.
- (ii) Low level of earnings for professionals, due to very rigid and traditional Industry norms, arising out of the output with low value addition. There is a need, therefore, to regulate adequate

intake of civil engineers in engineering institutions to mitigate existing shortage.

- (iii) Better prospects offered to the graduates by other streams of business Ex. IT, Management, Banking etc.

It is therefore imperative that conscious efforts need to be made to arrest this phenomena and reverse it.

c) Contractors/Entrepreneurs

Some of the PSUs like NPCIL etc. during their consultative group meetings in connection with 11th plan, have conveyed lack of adequate number of contractors for their projects. In several cases specialized contractors with proficiency in specified nature projects are required. These PSUs have even recommended setting up a few contractors' training institutions. This would also help in repeated demand that entry into construction industry should be restricted to qualified people.

One of the important issue affecting development of construction industry is near absence of support systems to develop entrepreneurs, to instill strength through provision of support services.

It is noteworthy to mention that, as of now, Highway and Road Construction Sectors are facing acute shortage of contracting agencies, to take up the planned and sanctioned work packages.

Whereas the established contracting agencies are overloaded with the work, new agencies are not being created. The situation shall take grave proportion during the 11th plan period and therefore it is proposed that the overall HRD plan must include this aspect as well.

d) Entrepreneurs for the manufacturing sub-sector

Most of materials continue to be manufactured in informal sector support and due to lack of financial support and technical and managerial capabilities they find it difficult to induct modern technology in their enterprises. There is a need to institutionalize training programs for first generation entrepreneurs.

e) Asset management & Maintenance Professionals

Most local bodies and state governments find it difficult to efficiently manage and maintain their physical infrastructure and important building structures particularly due to lack of trained professionals. With the level of investment envisaged during 11th plan the state local governments need to prepare GPA/GIS maps for introduction and get their selected engineers trained in maintenance and structural rehabilitation works.

f) Quality & Safety Assessors and Regulators

Construction industry has been witnessing decline in quality ;and safety aspects during past one/two decades. While private sector has taken up issues of quality enhancement in their housing and commercial projects, more aggressively, the public sector has yet to adopt practices for strict adherence of quality in their works. With rising complexities of modern construction and large areas of the country, being prone to natural disasters, the issue of training of Construction Quality and Safety Assessors has been raised at various fora. CIDC has been interacting with several international organizations and has initiated training programs of quality assessors. It is, therefore, necessary that the integrated National Plan for Human Resource Development include specialized training programs for

quality and safety Assessors for enhancement of capabilities of the Indian Construction industry.

Specially in case of workers, a few measures have been taken by the State Government of Madhya Pradesh, Rajasthan, Bihar & Hariyana, in the context of training and certification of construction workers, in association with CIDC, through making available the physical infrastructure of the ITIs situated in their States, where training in self financing mode is being conducted by CIDC and skill certification by CIDC and IGNOU.

The Ministry of Labour and DG(ET), NCVT, have taken measures to launch skill certification initiatives through CIDC,; and some Industry Organizations are conducting their captive training programmes.

This, however, is inadequate to meet the ever growing demand of skilled work force. A National Strategy therefore needs to be devised, to train and certify the workers from this informal, but important sector. **Recently enacted, Construction Workers Welfare Act 1997, aims to garner resources, through a cess, however does not lay down specific norms for expenditure of the sums, thus collected.**

It is proposed that a portion of this fund could be utilized to meet these exigencies, through a nominated and authorized nodal agency.

Then, there is another issue of the Provident Fund for Construction Workers. Whereas, large sums of monies are being deposited with the PF Trust every year, use and withdrawal of these monies by the beneficiaries, is near absent. Proceeds of this deposit, lying unutilized which is estimated at about Rs. 25,000 crores, could ;be utilized for Institutional initiatives of skill upgradation.

It is proposed, therefore to create a dedicated fund for HRD in Construction Industry and a National Plan on HRD be developed.

g) Engineering Profession

The next major issue needing attention is, continuous skill upgradation and reversing the attrition of Engineers from the Construction Industry.

It is proposed that an Engineers Bill be enacted to look into issues of professional development of practicing engineers and Industry be encouraged through some tax incentives, which could be availed for HRD initiatives launched by them.

Engineering Council of India, the apex body, having representation of several Engineering Professional organization has made several proposals to the Government of India, in this context, which may be studied and acted upon.

Necessary modifications in regulatory frame work, and procurement systems, of course would be needed, where engagement of certain minimum percentage of trained, tested and certified manpower at all level, need to become an essential prequalification condition for award of the work.

4.3(b) CONSTRUCTION FINANCE

Due to lack of clear definition and status of construction as an Industry, and the absence of support systems, as defined in para 4.1, the Construction Industry is not able to easily access institutional sources of finance. Near absence of construction finance is one of the major factors responsible for Construction Industry's weak technical and professional status. Although, some positive changes have been instituted recently, much still needs to be done.

- ☞ Small contractors who lack financial base and access to any kind of institutional support execute over 90% of the total construction works. A vast majority of these contractors employ their own funds or borrow money from the gray market, borrowing at the rate of 30% p.a. or higher, leading to higher project costs and therefore higher user charges.
- ☞ Alongwith no institutional support in terms of finance, contractors also have to cope up with stringent and non-equitable performance conditions, which are provided in the form of indemnities and insurance. These are generally in the shape of bank guarantees and have high financial cost, as high as 8-9% of the value of the indemnities. This adds to the financing costs for the contractor, besides placing additional burden on him for fund mobilization.
- ☞ Moreover, existing financial institutions and banks need to adopt proper lending, and also the unified eligibility criteria norms for the borrowers from construction sector. Also, lack of clarity on behalf of FI's and banks coupled with poor perception of the industry also makes the task of arranging finance for construction difficult. Looking at the substantial volumes, it is incumbent, that conscious deliberations must take place to study such issues and suitable modifications/alterations are instituted.

Although, during past few years, subsequent to accordance of Industrial concern status to Construction Sector, IBA & CIDC, on behalf of Bankers and Construction Industry, has been able to recommend such norms, however the Banks and Financial Institutions have yet to formally adopt these for implementation.

- ☞ Construction companies and contractors have very unique and complex financing requirement. Adoption of manufacturing industry norms for computing working capital requirement and other financing requirement leads to high financing costs and very often delays and cumbersome process, which in turn leads to additional cost burden.

- ☞ Further, contractors suffer due to erratic payments by the owner client. The system of payments to the contractor itself is biased against the contractor.
- ☞ Though construction companies receive payment for initiating the work but in terms of cash-flow analysis, financial outgo on executing the work, precedes the stage of billing and payment (approx. only 10% comes as advance against an expenditure of about 30% in the first phase.)
- ☞ No special incentive/scheme exists for financing import of hi-tech construction equipment for infrastructure projects. Bank/Financial Institutions engaged in the field of housing, urban development etc., also do not have provisions to cover construction in their ambit.

Construction Industry is suffering from high taxation, operation and maintenance costs and high financial costs. Coupled with this, institutional and financial support is nearly non-existent. All these factors increase the business risk and in turn lead to increased cost of construction. All these factors often lead to cost cutting practices by contractors at the cost of technology upgradation, professionalism, quality and safety. Cost cutting also lowers the propensity of contractors to pass on the benefits that should rightfully accrue to the works.

It is therefore proposed that a National Banking Policy for construction Activities may be developed through a detailed study and be implemented.

4.4 ASSET MANAGEMENT & MAINTENANCE

Creation of physical assets is an obvious and important outcome of the efforts made by the country to build its physical infrastructure. Building of the Infrastructure is an essential and continuous activity, since, apart from

improving the quality of life for the citizens, it creates wealth, sustains the growth of development, nurtures softer side of life through creation of a feeling of general well being.

Ever since the Country embarked on the path of liberalizing the economy, construction of physical Infrastructure has been receiving emphasis in successive five year Plans. It is estimated that about Rs. 310,000 crores are being spent annually in constructing the Assets, may they be in Housing, Transport, Energy, Communication, irrigation and Agriculture sector. But, these assets are seldom maintained properly.

It is high time that the causes of this malady be established.

The lack of maintenance of assets is due to: -

- a.) Lack of social sensibilities defining ownership of Assets.
- b.) Absence of necessary framework, ensuring mandatory maintenance of Assets.
- c.) Lack of proper expenditure planning and also inadequate budgetary allocations for proper upkeep and maintenance.
- d.) Lack of right-scale maps/GIS data base indicating the location of assets.
- e.) Lack of trained professionals both at planning, administration levels as well as at the cutting edge level.

In order to maintain the publicly owned estates & properties, the system being followed in other countries is as follows.

- a) **Financial** - Levies of maintenance surcharge based on actual market price assessment, collectable from the occupying agencies.
- b) **Management** - Through specialized professional service providers on term contract basis.
- c) **Bye-laws** - The Civic Authorities stipulate, the provision, inspect, & penalize violators.

In certain cases, where float situations arise (Vacant occupancy), the developer / owner, creates a dedicated solatium fund.

4.5 LABOUR AND SAFETY ISSUES OF CONSTRUCTION WORKERS

4.5.1 LABOUR

Construction Industry is the second largest employer after agriculture, employing about 31 million persons. Agrarian background, migratory nature and a very high degree of transitory employment characterize the profile of employment and labour in Construction Industry.

Government itself considers construction as a major source of employment generation in rural areas, where agriculture and landless labourers are provided employment on a temporary basis in construction activities to compensate for unemployment during the non harvesting seasons, droughts, floods and other natural calamities.

Even after recognizing the employment generating potential and potential for supplementing employment in rural areas, government has not made enough efforts towards creating regulatory framework for the construction labour.

☞ At present there are only two categories of labourers, agriculture and industrial, which in most cases does not effectively meet the needs of construction labour.

- ☞ There are scores of labour laws as detailed in Clause 4.2 that are applicable to construction, but these are seldom implemented. Instead they give rise to multiplicity and corruption.
- ☞ Lack of framework and clarity has resulted in under reporting of labour employed for construction activity. According to some estimates, only 20% of actual workers are reported.
- ☞ At present, to hire labour, a contractor is required to obtain a labour license, for which he has to insure the workers under workmen compensation insurance policy. This policy requires the contractor to pay a premium for the policy based on the total value of the wages paid. Since large majority of the contractors have no access to institutional sources of finance and in view of the high business risks and costs, the labour benefits are easily dispensed with through underreporting and non-payment of worker dues.
- ☞ Dues to the highly unorganized nature of employment, the workers are also not given the statutory provident funds and other benefits, which should be available to them. In almost all the cases, the existing system of labour contract hurts the labour welfare component. It also hinders better technology adoption (as labour is cheap) and skill upgradation of the workers due to lack of training entities and any regulatory framework for employing certain percentage of trained labour. Low technology and low skill levels not only increase the inefficiencies of the construction sector but also lead to low value addition, productivity and quality.
- ☞ Whereas the benefit of P.F. contribution to the Construction Workers has been extended, in practical terms the workers are not able to use this.
- ☞ The similar situation exists,; in case of employing the proceeds of the Construction Workers Welfare Cess, now being collected by the State Governments, since enactment of CWWA 1996.

As regards the upper levels, it is also to be understood that majority of the educational programmes of engineers being offered, have no back up of continuing professional development. The second malady, with which the Industry has to live with, is the migration of qualified Civil Engineers to fields such as IT. As a result, the real numbers of engineers available to Construction Industry, are rather low and inadequate. Then, there are issues of Women Workforce which constitutes approximately 49 % of total labour strength and continues to render services without avenues of growth.

Women : As a substantial segment of the construction Industry work force, the Women Workers need special attention on following issues.

- (a) Vocational Training & skill upgradation
- (b) Provision of stipulated social benefits as per the relevant act.

On a comparative scale, Women Workers, seldom go beyond the skilled workpersons level and majority of these (95%) remain at Semi / Unskilled levels. Skill upgradation of Women Workers, thereby raising the earning potentials and delivering quality products need to be looked into both at Government and industry level.

Child Workers : It is hearting to note that the present day employers have refrained, consciously to recruit and employ Child Workers. Still there are stray cases in hinterland and it is advised to step up and enhance the vigilance levels for eradicating this menace.

Improvement of Working Condition - In the recent years, the Government has taken several laudable initiatives such as

- a) Mandatory provision for instituting PF Scheme among casual workers.
- b) Introducing Workers Welfare Cess

It is recommended that effective utilization of such funds be made for the workers in the areas

- a) Providing Social relief and benefits
- b) Human Resource Development
- c) Rehabilitation Programmes
- d) Literacy Programme

It is further recommended that some kind of Permanent Identification number be granted to the workers, and a nation wide scheme of granting e-cards be launched for effective availability of the benefits.

At present except for a few initiatives taken up by CIDC and some corporates, there is no institutional framework to impart training at workers-level.

- ☞ The Construction Industry affords very low returns for qualified professional, which is increasingly leading to decline in professional and trained manpower in the industry. This will in turn effect the overall capacity of Construction Industry in India in long run.
- ☞ There is no restriction on entry into this sector by unqualified players, which further results in low quality and productivity and very high degree of competition, which acts as a disincentive to the qualified professionals.
- ☞ Initiatives taken by National Highway Authority of India and the State Government of Madhya Pradesh to introduce a prequalification requirements regarding mandatory employment of 5% strength of workers, who are tested and certified, in this direction, is a welcome step which needs to be replicated else where.

It is therefore proposed that a National Personnel Policy for construction Industry be developed to cater to the above defined exigencies.

4.5.2 SAFETY ISSUES OF CONSTRUCTION WORKERS

It is estimated that nearly 31 million workers in the country are engaged in building and other construction works. Workers employed in Construction works are highly vulnerable segments of labour force particularly because of its unorganized nature. The workers in construction industry are characterized by inherent risk to the life and limbs. The Construction activities are also characterized by its casual nature, temporary relationships between employer and employee, uncertain working hours, lack of basic amenities, inadequacy of welfare facilities and casual approach of employers for the problems of workers. In the absence of adequate statutory provisions, the requisite information regarding the nature and number of accidents is also not generally available.

Although the provisions of certain Central Acts are applicable to the workers in construction industry, yet a need has been felt for a comprehensive Central Legislative for regulating their safety, health and welfare and other conditions of service. The State Governments and UT Administrations were consulted in the matter and majority of them had favoured such a legislation. Consequently the Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act was promulgated after being passed by both the Houses of Parliament and having received the assent of the President on 19th August 1996.

This, inter alia provides for nearly all matters relating to safety, health, welfare and service conditions of building and Construction Workers. The Act extends to the whole of India and applies to every establishment which employs or had employed on any day of the preceding twelve months, ten or more building workers in any building or other Construction Work.

Only four states in initial years, had set up welfare boards provided under the above Act. While 9 other states (including Uts) had set up Expert Committees to frame rules. However it is seen that in the absence of an administrative

mechanism provided under the Act resources could not be collected from Construction Contractors for implementation of schemes like immediate assistance to beneficiaries in case of accidents, pension at age of 60 yrs, premiums for group insurance and medical expenses etc.

The following table presents Safety Record of Indian Construction Industry:

Safety Record

	Accident frequency rate (accidents / million man-hours worked)
1998	0.08
1999	0.10
2000	0.10
2001	0.10
2002	0.09
2003	0.01
2004	0.01
2005	0.01
Target	Near Zero

Source India Country Report 2005-2006 : CIDC

As has been frequently noted that there are large number of rules and regulations for health, safety and welfare of construction workers but their compliance is loose. There is need to enhance vigilance on the work of safety Management Teams which many large Construction Companies normally setup. The manpower constituting these teams need to be adequately trained not only in simple compliance procedures, but in hazard and risk assessment in their specific projects with a view to pre-plan risk reduction against expected hazards. This aspect is increasingly gaining importance with fast rise in mechanization of Construction Works (where heavy machines are often used) and also types of high-rise buildings coming up in most urban areas.

Inspections of stipulated measures for safety of workers should be properly documented alongwith names of inspecting officials and dates so that

responsibility for negligence could be fixed. A system of demerit-points can be thought for action against those contractors who have poor safety records.

4.6 PRODUCTIVITY

Construction industry concerns with two aspects of productivity, firstly with over all volume of the output in terms of construction works; secondly the output per unit of consumption of resources such as raw materials, manpower and financial inputs. Building up capacity of the industry being one of the main areas of focus would need introduction of efficient technologies and modern management techniques to raise productivity of the construction industry. Enhancement of productivity will be require employing of trained workers, right type of professionals for execution of projects supplemented with project management consultants. The other aspect of productivity pertain to manufacturing sector of building materials and components where efficiency of resource utilization is to be upgraded by employing latest production technologies.

4.7 TECHNOLOGY , ENVIRONMENT, QUALITY, ENERGY AND STANDARDS

4.7.1 Technology

The present state of Construction Industry suffers from the poor state of technology. This aspect has been the one of the most debated topics in the Construction Industry. Various committees and experts have given many recommendations, but unfortunately technology in Construction Industry in India remains lagging behind in comparison to other countries and also to various sectors in the Indian economy itself. It is important that National Strategy and policy framework focused on productivity enhancement of construction industry lays emphasis and include facilitating measures for induction of new technology, materials and construction systems and materials based on waste recycling need to be increasingly promoted. In order to reduce cost of works in rural roads sector, it is important to develop and use “marginal materials” instead of traditional costly materials.

Inefficiencies, wastage and low value added arise at two fronts, technology of construction material manufacturing and technology of construction itself.

- ☞ Many of the construction materials required are manufactured in the unorganized sector and due to the widespread nature of these materials, which are highly localized, the task of effective monitoring and regulation also become difficult.
- ☞ Low technological level of Construction Industry leads to low value addition and low productivity alongwith poor or sub-standard quality coupled with time over runs. This in turn leads to continued high labour intensity levels and low mechanization.
- ☞ Demand for high technical and high value addition in the construction can only be driven by the owners of the project. Due to price sensitive owners there is no incentive for the contractor to adopt better technology of construction. Technology in most cases is owner driven.
- ☞ Research and development (R&D) in the construction should be seen as a continuing activity, as the scientific and technological advancements are needed to strengthen and raise the technological base of the construction industry. Recognizing Research and Development as a continuing activity Government should provide adequate financial support for R&D to the National institutions engaged in scientific research and provide incentives for private sector players to undertake in-house R&D.

Also, low technology in the industry as a whole also leads to higher social and environmental costs. There is need, therefore, to adopt the life-cycle-costing approach in selection of technology for specific works.

On a comparable scale, the investment in R&D in construction technologies in India as compared to technologically advanced countries is abysmal. Following matrix highlights our stature in this area vis-à-vis the advanced Nations.

Tier 1. U.S.A. / West European Nations / Australia	- 4-6% of investment in construction
Tier 2. Central European / S.E. Asian Countries	- 1.5-2% of investment in construction
Tier 3. Asian Countries (SAARC Region)	- 0.03-0.05% of investment in construction.

Source : (Asia Construct 2003 Report)

It is note worthy to mention that, much of the investment in case of tier 3 Nations is Government Sponsored, majority of which goes to equip & furnish Educational Institutions.

Industry seldom invests in R&D since no tangible returns are perceived to be availed and no incentives are offered.

It is therefore proposed, that a National Construction Research & Development fund be created and an authority be constituted under the auspices of DSIR to administer this provision.

4.7.2 Information Technology & It's Strategic Use

Management of information in today's construction projects is one of the biggest challenges that face project teams. The need of the hour is to leverage the use of information technology to manage and solve the same issues that builders have been concerned with for centuries:

- ☞ What are we building ?
- ☞ How much will it cost ?
- ☞ When will it be done ?

Moreover, the strategic use of IT in construction can help us to address one of the major focus areas of the 11th Plan - "Enhancement of Capital".

The use of IT as a strategic tool can be applied at a five level framework of

- (1) national construction industry,
- (2) professional institution,
- (3) construction enterprise,
- (4) construction project and
- (5) construction product.

Issues surrounding the use of electronic communications affect all five levels in different ways and it would seem that the strategic and technological coordination of all five levels is essential for the successful use of IT for a national industry.

Due to the fact that the construction activities in the Nation, are being handled by multifarious agencies, having no cross linkages for the flow of information, its storage, and the mining for **the sake of better planning, a National Data Base, using IT techniques, must be created.**

Presently, there is no credible and definite database, except for the information collected and culled out by few organizations such as CIDC, CSO/NSS, CPWD, BMTPC and some more. All such information must be analysed and stored for periodic upgradation with **a singular nominated Institution.** A data base development fund may also be created to meet operative expenses.

Some of the major technology application segments where IT can have a direct impact in the workings in the Construction industry are :

- ☞ IT strategies within organizations and groups, ranging from the level of the individual firm to a consortium of firms to national construction industries.
- ☞ Construction process and enterprise modeling including procurement practices.
- ☞ Reengineering of the construction process using IT as an enabling technology
- ☞ Methods of concurrent engineering
- ☞ IT-supported communication across or within disciplines and life cycle stages (hypermedia, Internet, videoconferencing etc.)
- ☞ Databases, translation methodologies, remote communication between programs, shared object libraries and other computing techniques for data exchange and sharing
- ☞ Technologies and standards for the digital representation of buildings (building product models)
- ☞ Standards for structuring and exchanging data in the construction process (building classification systems, EDI messages, CAD-layering, document management, representation of building regulations, component libraries)
- ☞ The use of IT-based techniques for problem solving in construction (expert systems and AI, case-based reasoning, simulation, neural networks, the genetic algorithm etc.)
- ☞ Computerization of building standards, codes and regulations.
- ☞ Distance learning of IT in construction engineering using IT itself.

The business processes that can be favorably impacted by IT in the operations of the construction industry, in the various stages of its operations are :

- ☞ Tendering, bidding, bid evaluation
- ☞ Grading of Construction Entities - contractor, project owner, project consultant, and the Project.
- ☞ Project execution logistics - supply chain, supervision, hiring of construction equipment, labour contracting

- ☞ Communication set-up between project site, Indian headquarters and JV partner
- ☞ Project management
- ☞ Financial accounting and reporting as required by Banks & FIs
- ☞ Collecting accurate and timely information for planning and future projections
- ☞ Making available and disseminating timely information
- ☞ Assist the Indian Construction sector to become internationally competitive

Moreover, today in India the legal infrastructure is in place to address the concerns about confidentiality and legal status of electronic communications.

The recent IT Act has provision for:

- ☞ electronic signature recognition
- ☞ encryption
- ☞ modification of other legislation to allow communication by electronic means

The Act may alleviate current concerns about electronic communications and thus lead to cost and time savings.

It is therefore proposed that a National Act covering these aspects for Construction Industry be enacted.

4.7.3 Environmental Issues

In pre-independence era India was predominantly an agrarian economy, with almost a stagnant national income. The country started the process of planning with the launching of 1st Five Year Plan in April 1951 aimed at initiating a process of development which would raise living standard and open out to the people new opportunities for a richer and more varied life. The country, over the past six decades, has traveled a long way indeed in its

drive towards economic growth, modernization and globalization of economy, and self reliance in various areas of economic activity.

However, having adopted the pattern of economic development that brought prosperity to the Western countries, India has also seen widespread environmental damage and degradation in the pursuit of the economic growth. The concern for preserving the environment against the onslaught of industrial expansion, intensification of agriculture, and the adoption of the resource-intensive lifestyle has not been given the attention it deserves, and the costs of environmental degradation have not been internalized in the development process. In a study made by two World Bank Stalkers sometime back shows that country is paying an enormous price for the onward march to higher economic growth, particularly in the post-liberalization period, and it has brought in its wake ecological devastation and numerous health problems.

To regulate and protect the environment a number of legislations, policies, and programmes have been formulated by the Government. Some of the important ones are; Air (prevention and Control of Pollution) Act 1981 and Environment (Protection) Act, 1986. Following these legislative steps were the policy statement on abatement of pollution in 1992 and Environment Action Programme in 1993. The Environment (Protection) Act sets out the parameters under which the Ministry of Environment and Forests operates to formulate environmental policy at the national level. This act is an umbrella legislation providing a single focus in the country for the protection of environment and seeks to plug the loopholes in the earlier legislation.

Guideline for Setting and Environmental Impact Assessment

From the point of view of the construction industry setting of projects is an important aspect. In setting the projects, care should be taken to minimize the possible adverse effects on the environment and quality of life. Several construction projects are many a times proposed to be located where sub-soil

water levels could be very low and acute shortage of water may adversely affect the long term performance of the project. Similarly some of the industries relating to manufacturing of building materials should not be located near the populated neighborhoods, because the emissions from such industries may badly affect the quality of life in the vicinity.

Environmental impact assessment (EIA) is recognized as an important tool for integrating the objectives of environmental management with the requirements of economic growth and social development. In reorganization of the role the EIA could play, investment decisions and selection of sites for projects in different sectors are approved or rejected by the Government on the basis of EIA. The 29 projects listed in Schedule I of the EIA notification can be broadly categorized (Min. of E & F. 1994) under the following sectors (many of which related to construction sector), industries, mining, thermal power plants, river valley projects, ports, harbours, and airports, communication, atomic energy, transport (rail, road and highways) and tourism (including hotels and beach resorts.)

As per notification published on 14th September 2006 in the Gazette of India, Extraordinary Part II and Section 3, Sub-section (ii), Ministry of Environment and Forests has directed that from the date of its publication the required construction of new projects or activities or the expansion or modernization of existing project or activities listed in the schedule **Anexure - 5** to this notification entailing capacity addition with change in process and or technology shall be undertaken only after the prior environmental clearance from the Central Government or as the case may be, by the State Level Environment Impact Assessment Authority duly constituted by the Central Government .

The detailed notification of 14th September 2006 provide the guidelines for approval by the Central Government and State Level Assessment Authorities (SEIAA) based on the Environmental Impact Assessment and categorization

of projects and activities including relating to construction requiring approvals by Government of India and SEIAA.

Most of the provisions related to EIA in vogue in the countries, who are the signatories of Kyoto Protocol, are governed by the protocol stipulation suiting the local exigencies. Protocol details are appended. In many countries where Environmental Laws have been enacted. All projects over a certain size are automatically required to conduct studies, provide estimates, and perform at their own expense, EIA for their projects before initiating activities on ground. The new law for example in Japan marks a watershed in the history of environmental conservation because it requires that the assessment procedures include mechanisms for ensuring that the views of local residents, inter alia, are reflected in the assessment. Like this many other counties have already enacted key environmental legislation keeping EIA a pre-condition before construction projects beyond stipulated size are approved.

Need for Integrating Engineering with Environmental Issues

In view of the rising environmental concerns, the ultimate challenge lies in linking the best understanding of environmental issues with global or national policy and action at local level. It is therefore necessary that concerned organizations facilitate the process of interaction between decision makers and industry representatives and professionals concerned with planning, design, and implementation of projects. From the point of view of the construction industry following areas are important for engineering attention:

- Management of water resources and amelioration of water pollution.
- The rapid growth of cities particularly with respect to the impact of natural disasters, air pollution and engineering infrastructure available in the fast growing cities.
- Efficient use of materials and energy

- Environmental management during implementation phase and post completion phase.
- Technology transfer, and identification and delivery to the concerned entities/enterprises.

In view of the above the need for stake holders of the construction industry is to play a much larger role in making responsible contribution to the formation of public policy about technology, human resource development, and creating awareness about sustainable development.

4.7.4 Quality

Quality in construction works is one of the biggest casualties for which there are number of reasons, such as lack of incentives for inducting new technology, lack of pre-qualification requirements for trained and certified workmen, lack of appreciation for life cycle costing approach, lack of R&D and multi-source taxation which causes opacity and adds to overall cost of procurement eventually leading to hinderence in adoption of new technologies. It is therefore important that to make Indian Construction Industry more competitive all issues relating to enhanced quality in construction products are given serious attention at all levels.

In recent years, some companies have been striving to elevate their technological capabilities by actively supporting training and certification levels for skilled workers, supervisors, managers and by sharing construction techniques (like Ready Mixed Concrete, pre-fab techniques) which use information technology.

At the national level CIDC has initiated a skilled upgradation programme through Training & Certification. This system comprises skill training and assessment for 47 types of Construction related trades and workers are assigned to a skill level based on their ability to pass through both written and hand-on evaluation. This programme is helping many medium-sized and

even large-sized and specialized construction companies who can not efficiently implement their own in-house scheme / training programme.

Yet another development, aimed at enhancing Quality in Construction Works, that is taking place is that Construction Companies are working to obtain ISO 9000 series certification and number of such companies has risen in recent years. Many large size general Contracting Companies in private sector and most in public sector have obtained the status and certification.

Lately Bureau of Indian Standards has started formulating performance standards for special jobs requiring high quality level. These Performance Standards will gradually supercede Prescriptive Standards. The Construction entities and procurement agencies are also gradually realizing the importance and the role that adherence to Performance Standards both in inviting tenders and implementation can contribute. Such initiatives will certainly help in enhancing quality of construction works. The benefit of shifting to performance based specifications has been already demonstrated by increasingly adopting use of Ready Mixed Concrete (RMC) in large number of Construction Projects. To ensure achieving Quality in building and Construction Works following two schemes followed in Singapore and United Kingdom deserves attention by Indian Construction Industry. As for the Agreement Certification System, the BMTPC (Min. of Urban Affairs & Poverty Alleviation) and CIDC are already engaged in the Performance Appraisal Certification Scheme (PACS) for evaluation of performance of Construction products and systems for past several years. However the details of both the schemes (Singapore and UK) are given below.

Singapore has introduced a scheme CONQUAS for enhancing quality aspects of building and housing which merits attention by Indian Construction Industry.

Construction Quality Assessment System (CONQUAS) as practiced in Singapore

The Construction Quality Assessment System or CONQUAS was developed by the Building and Construction Authority in co-operation with major public sector agencies and various leading industry professional bodies to measure workmanship quality in a completed building. Since the launch of CONQUAS in 1989, more than 1,500 public and private building projects have been assessed by BCA. The contract value of these projects exceeded S\$50billion.

As a de facto national quality yardstick for the industry, CONQUAS has been periodically fine-tuned to keep pace with changes in technology and quality demands of more sophisticated Singaporeans.

CONQUAS was designed to:

1. Have a standard quality assessment system to benchmark quality of construction projects.
2. Measure quality of constructed works against workmanship standards and specifications.
3. Improve the quality standards of the Singapore's construction industry.

The scheme covers three main aspects of the general building works:

1. Structural works – covers the structural integrity and helps to safeguard the interest of building occupants in relation to safety.
2. Architectural works – deals with the aesthetic of the building such as finishes and components. This is the part where the quality and standard of workmanship are most visible.
3. Mechanical & Electrical (M & E) works – concerns with the performance of selected mechanical and electrical services and installations to ensure the comfort of the building occupants.

CONQUAS only assesses workmanship of completed projects. It does not cover defects that appear after the period of handover or during the defect liability period. Such defects cannot be foreseen during construction. Therefore, CONQUAS does not assess on the possibility of future defects.

Developers are using CONQUAS increasingly to promote and market their property developments. For instance, it is common for developers to specify target CONQUAS Score in the tender contracts for contracts for contractors to achieve. Similarly, contractors that are capable of delivering a consistently high CONQUAS Score would be in demand and should command a higher premium.

Agre'ment Certificates by British Board of Agreement - Quality appraisal Scheme in U.K.

BBA's Agreement Certificate Scheme provide authoritative and independent information on performance of building products. The main focus of the Agre'ment process is the evaluation of the extent to which the product allow compliance with relevant Building Regulations and other statutory requirements to be achieved.

Regulatory requirements are however, only a part of the overall Agre'ment procedure: Specifies in particular look for further information on many performance characteries, especially those affecting durability. Tests are carried out, either by the BBA or approved external laboratories, to ensure that a product will meet certain predetermined levels of performance in particular area.

Many of the BBA test facilities are formally accredited by the United Kingdom Accreditation Service (UKAS). The accreditation underlines the BBA's commitment to the highest levels of accuracy in the test procedures and is yet another reason why products approved by BBA can be selected with confidence by specifiers and purchasers. BBA technical staff also visits sites where products under evaluation are being installed. This enables the BBA to

provide valuable information in conjunction with the manufacturer and installers on items like transportation, storage, fixing, maintenance and durability.

One important aspect of this scheme is that every Agreement Certificate gives a statement on product durability, either in years or as a factor of the anticipated life of a building in which product might be incorporated.

Under the scheme, the evaluation of the production facilities is carried out early in the assessment so that any areas of concern will be rectified at that point. The BBA expects a formal and documented quality system to be in operation of production facilities. Product manufacture is monitored throughout the life of an Agreement Certificate, usually twice a year and more intensively at the end of each 3 year period during the formal Review procedure (which varies from 3 to 5 yrs). It is this thoroughness and rigour of examination that has helped to give the BBA and its Agreement Certificates the high reputation it holds among all those involved in selection or acceptance of building products.

The BBA's Agreement Certification Scheme has been in operation for over 40 years and over 4000 Agreement Certificates have been issued. For emerging products and technologies, BBA also can carry out Prototype Product Assessment, though this is not titled as Agreement Certificate.

4.7.5 Standards

Bureau of Indian Standards, the Statutory and apex organization, insuring laying down of standards and their adherence, is not having any mandate for enforcement. Even the standards are recommendatory in nature, which prevents stake holders to strictly conform and follow. The issue of shifting from Prescriptive to Performance Standards need to be given high priority. Though BIS has already initiated the process in few areas. The Bureau should also ensure that all their standards (particularly relating to civil engineering)

are accessible on their Website. New standards in compliance with guidelines of Govt. of India on Energy Conservation and integrating environmental issues with construction techniques on the lines of new Environment Protection Act need to be developed or revised if already existing. This in due course should lead to formulation of standards on Green and Intelligent building design and construction.

It is proposed that the BIS be granted necessary authorities and powers to ensure serious adherence to Indian standards.

4.7.6 Energy Issues - Green Building Technologies

Recognizing the impact of rising energy demand and importance of environmental issues on the development activities, the Government of India, soon after the energy crisis of 70s had established separate Ministries at National level for non-conventional Energy Resources and Environment and Forests. These Ministries had following focus areas:

- development and promotion of alternative sources of energy for supporting sustainable development through policies and strategies for promoting concepts and technologies pertains to energy efficiency and conservation.
- environmental protection by promoting green technologies and improving carrying capacity of eco-system to support national development plans

Construction sector being one of the highest consumers of energy and natural resources was expected to address the issues at environment impact and energy efficiency.

In order to facilitate implementation policies and programmes in the area of Green Construction and other issues for growth and sustainable development of construction industry the Government of India, established CIDC an apex

organization under the patronage of the Planning Commission bringing all stakeholders on a common platform.

Another interdisciplinary organization Building Materials and Technology Promotion Council was set up in the Urban Development Ministry to address the issues of environment friendly and energy efficient building materials and technologies. With a view to promote green building materials, the Government of India in their successive budgets after 1993 has been providing excise duty concessions on the materials manufactured from recycling of agro-industrial wastes and by-products.

The Governments at Central and State level have set the Central Pollution Control Board and State Pollution Control Boards, to approve, monitor and regulate the projects from all sectors including construction sector for their impact of environment.

In 2001, Government of India brought out the Energy Conservation Act 2001 passed by both the houses of parliament and established a Bureau of Energy Efficiency (BEE) in pursuant to the Act to promote concepts and technologies for efficient use of energy and its conservation.

Thus from the foregoing it is seen that Government has taken several important initiatives during past two decades for development and promotion of Green Construction in order to achieve energy efficiency and increasingly greater use of eco-friendly construction technologies.

Green Construction and Materials

It is now being increasingly realized in the construction industry that sustainable development concepts, applied to the design, construction and operation of buildings, can enhance both the economic well-being and environmental health of communities. If sustainable design principles are incorporated into building projects, benefits can include resource and energy

efficiency, healthy buildings and materials, ecologically and socially sensitive land use, transportation efficiency, and strengthened local economics and communities. Under National Bankers Mission, for example, the Government is funding establishment of bamboo mat-making centres and giving training to local women workers in bamboo growing areas of North-eastern States of India. These Centres are expected to supply the bamboo mats for further processing at industrial unit for production of bamboo mat corrugated sheets for roofing of buildings. This is an example, where promotion of eco-friendly construction materials and technologies are strengthening the skill up-gradation and employment generation activities, ultimately leading to economic development of local communities. This is an example where public and private partnership has generated economic and environmental benefits of green building practices.

The CIDC is now taking an initiative in collaboration with few State Governments to facilitate development of technologies and building guidelines and promoting practice of green construction. The initiative is emanating from the fact that because of construction industry's significant impact on the national economy, even modest changes that promote resource efficiency in construction and operation of buildings can make major contributions to economic prosperity and environmental improvement.

CIDC is interacting with Organizations and agencies, from other countries which are promoting concepts and technologies relating to green building materials and construction systems. The aim of CIDC's co-operation with these agencies is to create awareness in the Indian Construction sector about the fact that it is now possible to put a cost of environmental impact of construction projects and place an economic value on environmental degradation and damage. For example CIDC's proposed collaborative effort, for example, with Building Construction Authority of Singapore is to evolve a green mark for Buildings Scheme on the pattern they have developed in Singapore. This Green Marking will provide a meaningful differentiation of buildings in real estate market. It will help in bench marking a scheme which

incorporates internationally recognized best practices in environmental design and performance. This can have positive effect on corporate image of developers, for leasing and improving resale value of buildings. Benefits of Green Mark Assessment include;

- Facilitate reduction in water and energy bills
- Reduce potential environmental impact
- Improve indoor environmental quality for a healthy and productive work place
- Provide clear directions for continual improvement.

In order to achieve above value of environmental impact, the scheme of Green Marking will assess five key areas of environment which are of global concern. These are also being used by Department of Environment for evaluating environmental impact assessment of large construction projects. These include energy efficiency, water efficiency, site development and building management, indoor environmental quality and environmental innovations.

In view of the above, it will be desirable that the construction industry develops typical green building guidelines for different geo-climatic regions and Energy Consumption Indices are developed for different types of building occupancies, site conditions, and climatic zone in which these projects are to be located.

Recognizing the mandatory criteria as indicated in the Energy Conservation Act (ECA) 2001 **Anexure - 6** and requirements laid down by Central and State Pollution Control Boards, the Construction Industry may be advised to work in unison with Bureau of Energy Efficiency set up under the ECA 2001 to develop Green Building Guidelines, based on,

- i) Energy efficiency and use of renewable energy
- ii) Direct and indirect environmental impact

- iii) Resource Conservation and recycling, minimisation of waste and water-harvesting
- iv) Indoor environmental quality
- v) Community and site related issues.

Governments at Central, State and Local levels should also encourage use of Green Construction materials and planning and design concepts. The Government should also consider giving fiscal incentives for use of building materials produced from recycling of wastes and by-products from agricultural, forestry and industrial operations.

4.8 PROJECT EXPORTS

Indian Construction Industry had been very active in the overseas market, especially the Gulf in the decades of seventies and eighties, when Indian companies ventured out to fill the demand for construction activities, fuelled by oil boom. Between 1975-80, Indian companies handled construction work worth nearly U.S \$ 5 billion. Out of this nearly U.S \$ 1.5 billion was repatriated back to India, mainly in the form of profits, wages and construction material exported abroad.

But this trend did not last, and by mid and late eighties the volume of contracts secured, fell down sharply. From U.S. \$443 million in 1986-87 the contracts came down to just US \$ 98 million in 1995-96. Though this was mostly due to the prevalent political situation in the Gulf region, even then it was a major drop for the industry. Performance displayed during subsequent years have been shown in terms of dollar prices (taking into account the Rupee) **Anexure - 7** of this report. The major reasons for this indifferent performance are stated by the Construction Industry, as follows-

- i) Lack of a uniform policy (business friendly) to boost the project exports.
- ii) Lack of supporting, financial and Insurance system to mitigate the business risks.

- iii) Lack of government support in aggressively marketing Indian Products & Services in Construction, in overseas market.
- iv) Excessively high tax structure, resulting in costly raw material .

It is imperative that in order to boost this sub-segment of the Industry, the nodal agency together with the Government, brings about much desired changes. As suggested by the Working Group there is a need for nodal agency to facilitate close interaction with commercial sections of Indian Missions abroad to boost project export.

In order to boost export of both services and goods from Indian Construction Sector it is important to evolve and set up an institutional mechanism for maintaining operational and effective linkages with Indian Missions. In selected countries with a high potential for project export the commercial sections of the missions may be strengthened by placing a Industry's representative to create awareness and provide strengthening of Indian Construction Industry and to facilitate industry constituents from India to participate in bidding process of selected projects and also explore possibilities of promoting joint ventures in India and abroad. This would attract greater FDI and new technologies in the domestic construction sector.

4.9 GLOBALIZATION (WTO/GATS)

Action needs to be taken to streamline the functioning of Construction and Engineering Sector to achieve larger global business share, based on the commitments made so far, and the manner in which, they need to be made in future, so as to protect and increase Indian Construction Industry's share of Global business to achieve following.

- i) A larger share of construction within India.
- ii) A large participation in construction in other countries.

Other aspects that need to be borne in mind are-

- a) Trade in materials and positioning of domestic manufacturing Industry vis-à-vis the import regulations.
- b) Intellectual property rights and the patenting systems in India, their reciprocal recognition and mutual acceptance for the patents filed by the domestic agencies.
- c) Designing the entry requirements of the service providers.
- d) Insurance and financing regulations and their reciprocal relationship of systems in vogue in other countries.
- e) Dispute resolution mechanism.
- f) Environmental laws.

Since the rules of the game are being written and rewritten to meet the exigencies, as they arise, enhanced role of an apex body such as CIDC, to continuously work on such issues is also paramount.

Another very important feature, which needs to be considered is the financial strength and patronage to be extended to the domestic operators.

As reported, the financial strength, both at the Corporate and also at the Institutional financing level, has to be revamped. It is a well known fact, that this is the most powerful lever used to swing the businesses world over, coupled with the regulatory framework.

Following initiatives need to be taken, for quality upgradation and capacity building of the operators.

<u>Issues</u>	<u>Initiatives</u>
A. Regulatory Framework	<ul style="list-style-type: none"> i) Development of a Construction Business act. ii) Development of an Engineering Council of India. i) Development of an Arbitration Council
B. Construction Financing, Business Practices, Capacity Building, & Risk	<ul style="list-style-type: none"> i) Development of a Construction Equipment Bank.

Mitigation

- ii) Grading of Construction Entities.
 - iii) Development of the Concept of Lender's Engineer / Lender's Auditor.
 - iv) Development of Insurance products.
 - v) Development of the lending norms and eligibility criteria for the borrowers.
- C. Human Resource Development, Construction Economics, Data base creation.
- i) Creation of a database and data mining.
 - ii) Development of Construction Cost Indices, and other economic parameters.
 - iii) Training and Certification of Construction Workmen.
One of the options that need to be considered is establishment of "Construction Industry Training Board/ Authority on the lines of a similar institution in other countries."
 - iv) Training & Certification of Construction Managers.
 - v) Establishment of a "Human Resource Development Fund" for construction industry. The fund may be operated by "Construction Industry Training Board/Authority".

4.1 0 TAXATION

The second major problem is that of very high incidence of direct and indirect taxes for construction and construction related activities, as compared to other sectors. High taxation is at both the ends, the input stage (construction material, equipment and land and services) and at the process stage (work contract tax) etc.

- ☞ Excise on cement and steel, most important inputs into construction activity are one of the highest in the country. Average taxation rate for

cement and steel works out between 45.6 to 61% and 35.40% respectively (the variations are due to different tax regimes in different states.)

- ☞ To meet stringent quality and productivity conditions and to adopt better technology, import of construction equipment becomes necessary (as domestic construction equipment manufacturing capacity is extremely poor.) Import attracts heavy custom duties further loading additional cost burden.
- ☞ There is also a need to consider reduction in excise duty on manufacturing of construction equipment required ;in construction works particularly those needed for roads sector.
- ☞ Interstate taxes, specially on the movement of materials and equipment.
- ☞ In addition to the excise and sales tax the other taxes that are levied are octroi and entry tax, further increases the cost of the project.
- ☞ Works contract tax including fabrication and civil construction is also to be paid on the process of construction, which is another 4-5%.
- ☞ Further, stamp duty on land acquisition and registration has to be paid that, again increases the cost of the project.
- ☞ Depreciation norms do not reflect the actual consumption of plant and machinery and hence, further indirectly increase the costs and hinder the construction activity and improving efficiencies. Earlier, the depreciation rate on equipment was 33%, which has now been reduced to 25%. An important aspect, which needs to be understood is the conditions of operation of the equipment . Unlike factory operations, construction equipment operates in more severe conditions, and without the benefit of controlled working conditions. Construction equipment thus

depreciates faster and, therefore this aspect needs to be considered while deciding depreciation rates.

- ☞ **With new enactment of imposition of Service Tax on Construction services yet another anomaly has been created, which needs transparency in application**
- ☞ Nearly 15% of the project cost of an infrastructure project goes towards indirect taxes and another 20-30% is the direct tax component on the inputs like material and equipment. This coupled with income and/corporate taxes adds significantly to the cost of the construction and hence the cost of projects.
- ☞ Moreover, along with high taxation rates for construction, there are no incentives that are available to Construction Industry in terms of tax benefits and other fiscal benefits. Even in terms of project exports, manufacturing sector gets 100% deduction from export business u/s 80HHC whereas construction gets only 50% deduction.
- ☞ Similar, no deductions/incentives are available to construction industries for executing works in backwards areas, though they contribute a lot towards backwards regions development. The same benefits are available to a manufacturing/other industry operating in a backward region.

It is noteworthy to mention that, in the context of Construction Activities, State has been and would be the biggest procurement agents. Even in the fully liberalized economics, (United States/Western Europe) State continues to enjoy this status.

Multi-source taxation, causes substantial opacity, adds to the overall cost of procurement, rendering construction activities to become uncompetitive, specially in the context of Globalization, and eventually reduces value addition, in terms of ingress and development of new technologies, research

& development, and reduces the overall earning potentials of the State, operators, and individual citizens. General frame work of custom, excise and other taxes and duties is given in **Anexure - 8**.

It is therefore proposed to revise the taxation norms applicable for the Construction Industry, giving due cognizance to the above, through development and implementation of -

- a) **A taxation manual for Construction Industry, where multi source taxation is eliminated.**
- b) **An implementation plan**

It is further proposed to conduct a detailed study to articulate the desired actions.

4.11 COMBATING NATURAL DISASTER

Natural disasters are natural, but for survival, societies need

- a) Warning and predictions.
- b) Taking preventive measures.
- c) Having manpower, trained to handle the repugnant situations.
- d) Regulations to prevent occurrences of man made disasters.

Although the Government has taken steps to enact National Disaster Management Act and set up a dedicated organization, the act needs intensification and synergy with Construction Industry.

Need for Action at the Professional Level

There is an increasing realization that the problem of natural disasters is grave because their frequency has recorded more than five fold increase in the last two decades. The economic losses are continuously rising (for example rise in total insured losses are about six times the world over).

With advancement in science and technology for predictions, warning and managing the impact of natural hazards it is now possible to shift our reliance from traditional crude methods of surveying and mapping of hazardous area to the use of modern powerful tools like digital cameras and devices that straight away delivery maps of very high resolution. The GPS provides a powerful tool to monitor even inaccessible locations all over the globe. There are also very reliable early warning systems based on actual measurements using reliable and powerful sensors.

There is a need to evolve a mechanism for sharing of information and knowledge amongst the decision makers in local bodies. The state/local governments should concern themselves to set up institutional mechanisms for investigations on safety of structures and enhancement of safety against natural hazards those may occur in their regions.

It is therefore proposed that an integrated plan of action be drawn, with a conscious thrust on creating following:

- a) Setting up Disaster Identification Centres, through out the Nation**
- b) Setting up Retrofitting Clinics, through out the Nation. The theme note indicating objectives and functions of the Retrofitting clinics is placed as Annexure - 9**
- c) Training Professionals to learn to construct, maintain, and rehabilitate structures to combat the impacts of Natural Disasters.**

4.12 ECONOMIC PARAMETERS

For an important economic activity such as construction, there is a need to research and evaluate various economic parameters on permanent basis.

CIDC is involved in evaluating the Construction Cost Indices, to evaluate the gross price fluctuations. Similar indices signifying various movements need to be assessed to give a pointer to the economists to monitor the health of economy.

It is proposed that a nodal centre for monitoring construction economy be established through necessary budgetary support.

4.13 CONSULTANCY AND ADVISORY SERVICES

The role of advisory and consultancy services in strengthening the stature of Construction Industry is vital. In specific term following are the functions discharged by them

- d) Pre feasibility, feasibility and project studies.
- e) Financial analysis and Risk assessment as Lender's Engineer, pre, during and post execution including IPR issues.
- f) Detailed engineering
- g) Project management and commissioning services
- h) Post Completion activities
- i) Dispute Resolution and adjudication.

Although the monetary volume of such activities annually, (with the present work load 2006 level) should be close to Rs. 35,000 crores, the value of services being rendered by the Indian Consultants is but only a small fraction. (In the range of Rs. 6000 crores).

This reflects a severe weakness in our overall system and needs substantial strengthening. Following reasons could be attributed.

- a) Indifferent stature of consultancy service providers (Fragmented, small firms)
- b) Absence of a unified National Policy on the growth and development of consultancy business.
- c) Lack of Institutional financing systems to enable consultancy service providers to invest in Human Resources.

It is noteworthy to mention that the average output of a Consultancy Organization in India, is estimated at US \$ 10,000/- per person, whereas his counterpart ;in other South-Eastern Asian Nations generates US \$ 22,500/- and those in developed countries, (United States and Western Europe) would generate US \$ 55,000/- p.a.

The lower productivity, results in being able to hire relatively low skilled manpower, thereby being able to execute the lower end of the work.

It is therefore proposed to work on the grey areas defined above and evolve a work plan accordingly.

4.14 UNIFIED OVERALL INSTITUTIONAL FRAMEWORK

At the end, there is no unified and well defined framework under which the Construction Industry is expected to function. There are no identified agencies that regulate and constantly monitor the functioning of the Construction Industry.

The present institutional framework is characterized by multiplicity of government departments that are responsible for a variety of functions in the construction sector, and at various levels. In fact, as stated earlier government is the largest project owner, investor and executor in this sector, requiring a mechanism for coordination between all these activities.

The structure of Construction Industry in India is highly skewed and characterized by small number of large construction companies, followed by very few medium level companies, and then followed by a very large number of small and petty contractors. It is ironic though, that the companies belonging to large segment in domestic context are also small when compared with those having International presence.

If the massive task of infrastructure building has to be carried out, concerted efforts have to be made by the government under an institutionalized framework to change the skewed structure of Construction Industry, infuse better technology, further construction labour welfare and increase productivity and capacity of Construction Industry in India. The Construction Industry Development Council (CIDC) has been set up to promote the development of this industry but it has no regulatory or monitoring role or powers.

SUMMARY

There are many major factors which restrain the Construction Industry and because of which the industry is caught in a vicious circle, the major issues are detailed above, which create impediments needing correction. The summary table given below, gives a bird's eye-view of the issues and resultants.

MAJOR ISSUES, ELEMENTS AND RESULTING PROBLEMS

ISSUES	ELEMENTS	RESULTS
Contract Procedures	No standardization	High costs
	Low credibility and transparency	
	Preference to lowest cost bidder at the cost of quality and timely completion	Low quality /low value addition/ time and cost overruns
	Highly biased against contractors	High costs
Quality	Lack of definition, non conformity to modern practices, lack of adherence	Poor quality of product
Dispute Resolution	Lack of definition and authority, delayed dispensation	High cost of procurement

ISSUES	ELEMENTS	RESULTS
Construction Law	Multiplicity of local provision lack of clarity	Disputes, poor project administration
Human Resource Development	i) Lack of a harmonized skill upgradation and certification. ii) Lack of a National Plan of Action for HRD. iii) Lack of incentives/or regulatory frame to impose certain percentage of trained and certified manpower by contractors.	Lack of available skilled workers affecting the quality of works.
Asset Management	Lack of policy	High cost
Productivity	Absence of bench mark and poor implementation	High cost
IT Application	Poor state of Technology, implementation	High cost
Project Export	Lack of synchronization among stake holders	Poor showing in global markets
Engineering	Lack of Regulations	Low productivity
Taxation	High incidence of direct and indirect taxes	High cost of operation
	Multi-tier tax regime	
	No tax benefits available vis-à-vis manufacturing sector	
	No tax incentives for construction inputs like material and equipment	
	No incentive for developing leasing industry for construction	
Natural Disasters	Lack of clear policy and synchronization among stake holders	Losses and high costs
Consultancy	Lack of clear policy and plan	Low business share and poor product
Labour	High casual, migratory and transitory component	Exploitation of labour./low benefits/low productivity.
	Low skill levels	
	Multiplicity of labour laws, all applicable but very few implemented.	Exploitation of labour/low benefits
	Massive under reporting of labour employed to evade statutory benefits to be paid to workers	Exploitation of labour/low benefits

ISSUES	ELEMENTS	RESULTS
Construction Finance	No lending norms/no institutional financial support (application of norms developed for manufacturing sector)	High cost of finance and operation
	Very low lending and high costs (Insurance, Bank guarantees, indemnities etc)	
	Low credibility	High cost of finance and operation
	High business risks	
Technology	Seen more as a source of employment generation than creation of assets	Slow induction rate of new technologies
	Adoption of better technology and practices due to present taxation structure.	
	Lack of mechanization due to the present taxation structure.	Low productivity/low value addition
	Adoption of new technology being low priority for project owners	
	Poor state of project management and consultancy	Time and cost overruns/high costs
Institutional Framework	No agency to plan, organize, regulate and monitor Construction Industry. CIDC does not have role or power for monitoring/ regulation	Not well developed

5 RECOMMENDATIONS

The development of recommendations took in cognizance the issues listed above, needing address and encompassed existing impediments/limitations and relevant mitigation measures, having recognized that, the Construction Industry has a great contribution potential to the overall National Economy, having displayed consistent growth trend of around 10% during last four years. These include the macro recommendations, which require policy intervention at Central and State Governments level, action by stakeholders, and certain implementation models at gross root level, which may be elicited as examples for detailing a blue print for action.

i) Review of present procedures of procurement of projects & services including dispute resolution mechanisms, and quality issues and evolve measures for improvement, particularly in view of the increasing privatization in infrastructure sector. The Working Group recommends following:-

- a) The Contract Conditions being used by various Project Authorities in the Country, **whether in Public or Private Sector**, should be harmonized. The recommendations issued by the **Ministry of Statistics and Programme Implementation in this regard, must be implemented fully** by all Project Owners in the Country. This would require Government's intervention to convert guidelines of MOSPI into specific directions for all Public Agencies/ Undertakings/Organizations.
- b) For the Public Private Partnership models, the Model Concession Agreement developed by the Planning Commission for the Road & Highway Sector, could be used as a base model and amplifications could be made to cater to other sub-sectors, as well.
- c) Necessary provisions in the procurement system, be made to ensure that standard quality certification (third party) systems are adhered to.

Some system giving incentives for timely completion and good performance by concerned construction agencies be suitably introduced. A system may also be developed and promoted to facilitate small and medium construction companies to share services and available plants and machinery at equipment banks.

- d) The emphasis must be laid on Institutional Arbitration system, instead of Ad-hoc system, as is being followed presently. The arbitration should be in line with Indian Arbitration and Conciliation Act 1996.

- e) To minimize “disputes” leading to time and cost overruns proper project planning process should be encouraged and DPRs may be completed before technical sanction.
 - f) Suitable institutional modifications be introduced for risk mitigations. New insurance products should be developed.
- ii) A National Plan for **training and certification of Construction personnel** at all levels should be developed and implemented. The plan should include initiating a system of ‘Graded Certification’ depending upon levels of proficiency achieved. To meet shortage of available trained manpower in certain urgently needed trades short terms courses may be introduced where ITI courses are of long duration.
- iii) Well defined and harmonized institutional financing systems be evolved to build the capacity of Construction Industry.
- iv) A comprehensive Draft **Construction Law** should be developed and **the Construction Law for India** be enacted through wider consultations.
- v) Present system of **asset management should be reviewed** at local/ state/ central government levels and strengthened. A policy frame work **ensuring mandatory provision for maintenance of assets supported by adequate budgetary allocations and trained manpower be set-up.**
- vi) A National strategy and policy framework focused particularly on **productivity enhancement** and **cost reduction** be developed to match with envisaged work load and delivery targets of various sectors and for sustainable development and growth of construction industry.

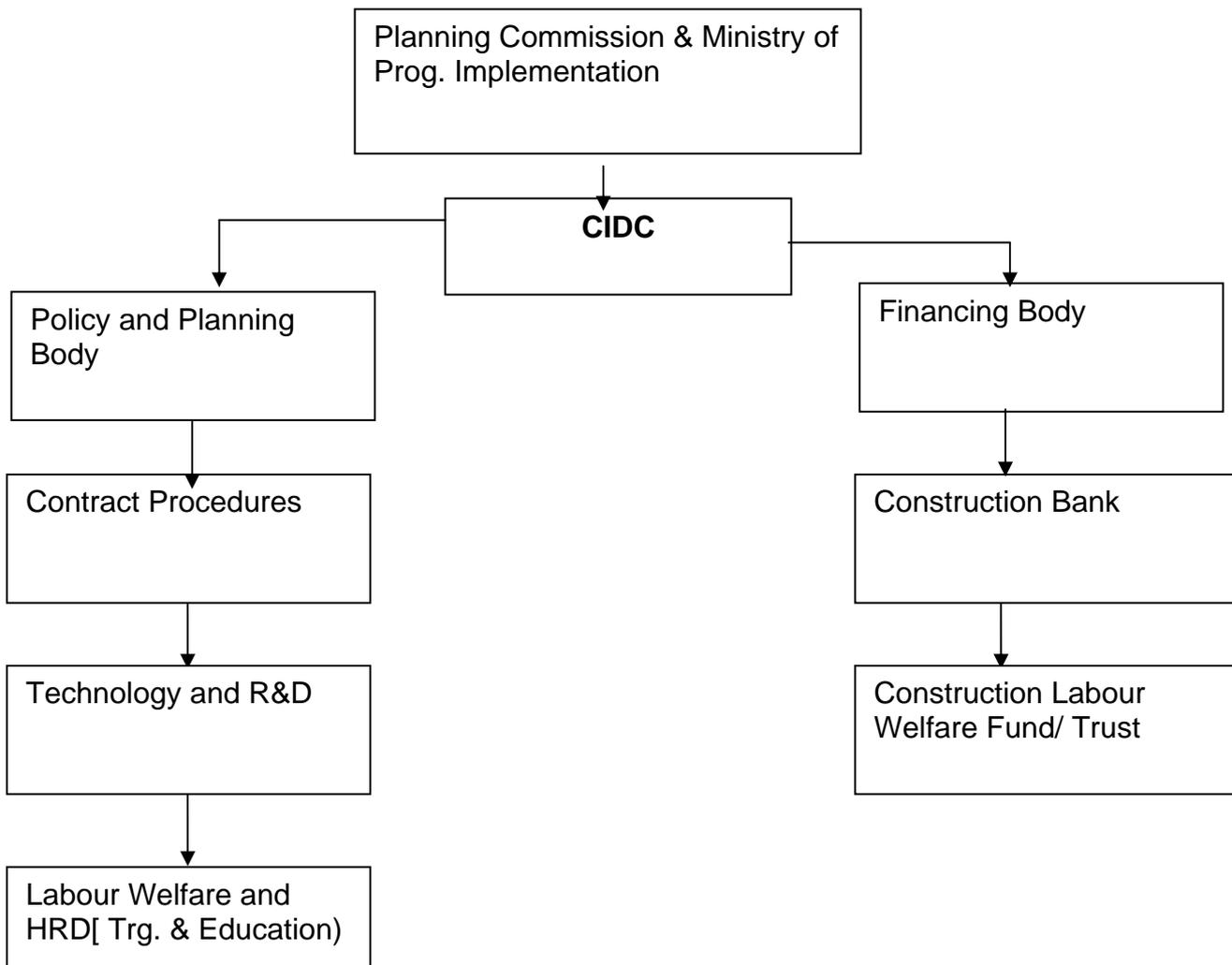
Induction of new technologies, construction systems and energy efficient materials (preferably based on waste recycling) should be adequately emphasized in the development of national strategy for enhancing productivity and efficiency and reducing cost of construction works. For rural roads sector, there appears to be strong need for developing and introducing use of “marginal materials” to enhance cost effectiveness of works.

- vii) An appropriate **Management Information System** should be developed and implemented at National, Provincial and Local levels for construction industry.
- viii) Systems & Institutions should be developed for **expansion of network for project export and attracting more foreign investment**. Interactions with Indian Missions abroad , should be intensified, through evolution of an Institutional mechanism.
- ix) A mechanism for **registration of professional engineers** need to be established for which a **nodal agency need to be identified**. Intake in academic institutions be regulated to mitigate declining trend in the availability of civil enigneers
- x) **Taxation & Regulatory Systems should be revamped**. Sectoral classification and definition of Construction Industry should be established, as for taxation purposes construction “is treated as “Industry” as well as “Service” The Working Group recommends that construction be treated as Industry and the existing definitional anomalies, where for certain sub-sectors of construction sector, service taxes have been introduced, be removed.
- xi) **Institutional Arrangements be made to identify, prevent and mitigate the effects of Natural Disasters**. New programs should be taken as per guidelines and programs announced by National Disaster Management Authority. The Working Group recommends that following actions should be taken up on priority.
 - a) To develop the Human Resources in Disaster Mitigation and disaster resistant construction technologies and
 - b) Retrofitting Clinics and Disaster Identification Centres be set up in all major settlements and districts falling in disaster prone regions
- xii) An Institutional mechanism need to be developed for continuous evaluation of various economic parameters such as Construction Cost

Indices and impact of policies of other sectors having impact on cost of construction works.

- xiii) A National Plan need to be developed for upgrading the prowesses of Engineering Consultants and advisors, and should be implemented.
- xiv) Adherence of standards should be ensured through certain regulatory provisions.
- xv) A national plan to be evolved and implemented for entrepreneur development in Construction Industry for raising the capability levels.
- xvi) A conceptual plan to identify a nodal organization to implement and monitor above should be formalized and implemented upon.
- xvii) A national plan for insuring adherence to the Environment Protection Act (2006) be developed and Energy Efficiency issues be addressed in conformity to the Energy Conservation Act of 2001.

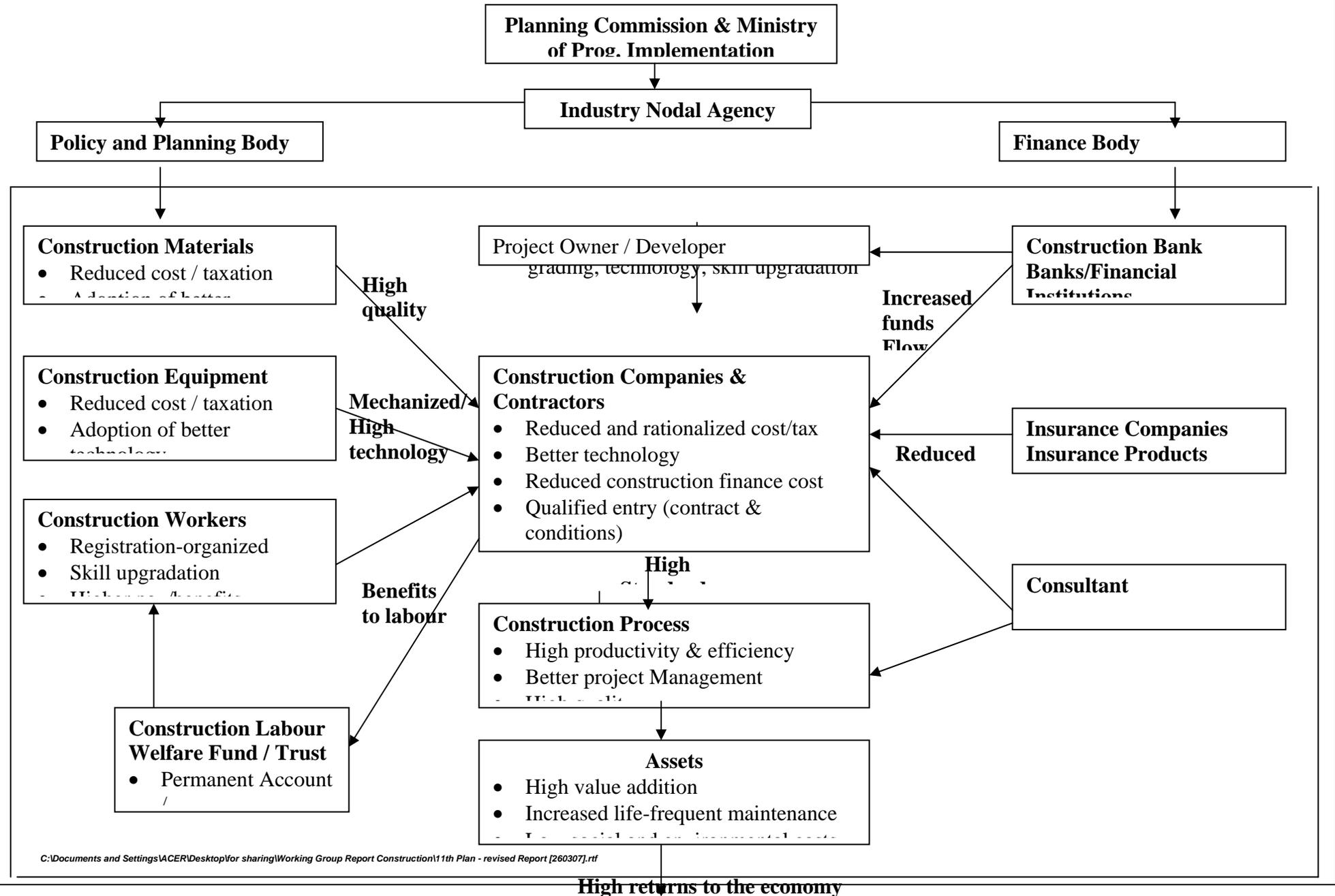
6. SCHEMATIC PLAN FOR IMPLEMENTATION MECHANISM



In formulating the role of the Industry nodal agency, special attention would need to be given to:

- ☞ Its role and function in Construction Industry
- ☞ Role of existing bodies regulating/ involved in construction, at state and central levels
- ☞ Interface with other government department and organizations
- ☞ Legal authority/ legal backing to the nodal agency.

7. THE PROPOSED SYSTEM



8. RECOMMENDATIONS, STAKEHOLDER AND RESPONSIBILITY CENTERS

ISSUES	RECOMMENDATIONS	STAKEHOLDER	ACTOR / RESPONSIBILITY
Procurement Procedures	Contract conditions to be used by Public/Private sector should be harmonized	Government/Project Owners/Developers/Construction Cos./Contractors /other players	Government, PSUs/ Private Construction Companies
	For Public/Private partnership models. Model concession agreement developed by the Planning Commission for road and highway sector be made as a base model for other sub-sectors also.	Government/Project Owners/Developers/Construction Cos./Contractors /other players	Government Planning Commission MOSPI
	Provision to ensure standard quality certification system be made in the procurement system	Government/Project Owners/Developers/Construction Cos./Contractors /other players	Government / Project Owners
	Emphasis should be laid on Institutional Arbitration system instead of Adhoc system being currently followed The arbitration should be in line with AC Act 1996.	Government/Construction Cos./Contractors/Others	Government
	Suitable institutional modifications to be introduced for risk mitigation and new insurance products should be developed to cover risks	Government/Construction Cos./Contractors/Others	Government / Insurance Sector
Training and Certification of Construction Personnel	An integrated National Plan for training and certification of Human Resources covering all levels of Workers, Supervisors, Professionals, Contractors, Entrepreneurs should be developed	Government/Construction Cos./Contractors/Project Owners/Construction Workers/ Professionals	Government, Industry Nodal Agency

ISSUES	RECOMMENDATIONS	STAKEHOLDER	ACTOR / RESPONSIBILITY
Construction Finance	Institutionalised system of grading of construction companies, Project Owners, Consultants and projects should be adopted.	Government/Project Owners/Developers/Construction Cos./Financial Institutions/Lenders	Credit Rating Agencies, Industry Nodal Agency, Govts.
	Formation of lending loans for construction industry by Banks, Financial Institutions, Construction Companies to be graded comprehensively for accessing Bank/Financial Institutions.	Project Owners/Developers/Construction Cos./Contractors/Financiers/Lenders	Banks / IBA, Industry Nodal Agency
	Establishment of construction bank	Project Owners/Developers/Construction Cos./Contractors/Financiers/Lenders	Government/RBI/ Bankers, Industry Nodal Agency
	Formulation of specific funding for the same to raise the requirement of construction industry.	Project Owners/Construction Cos./Developers/Financiers / Lenders	Bankers, Industry Nodal Agency
Construction Law	Single window type of arrangement to deal with multiple laws and authorities should be formulated.	Government/Other stake holders of the Construction Industry.	Government Ministry of Law Justice and Fompany Affairs
	Unified law for construction industry to enable function of one authority should be considered for overseeing various requirement of construction companies	Government (Regulatory Bodies)/Construction Cos. /Contractors/Project Authorities/Financiers/ Lenders	Government Ministry of Law Justice and Fompany Affairs

ISSUES	RECOMMENDATIONS	STAKEHOLDER	ACTOR / RESPONSIBILITY
Asset Maintenance	Policy frame work to ensure mandatory provisions for maintenance of assets supported by technology funding and trained manpower.	Central, Stae & Local Governments/ Owners/Stake Holders/Financial Institutions/Lenders	Governments, Central/State - UTs, Local Bodies
Management Information System	Frame work for financial provisional and local level Management Information System for construction industry should be developed and implemented/	Central, State and Local Governments/Financial Institutions /Owners/Community at large	Central/State UTs/Local Governments
Project Export and Foreign Investment	Systems and Institutions be developed for expansion of net work for project export and foreign investments.	Government/Construction Industry / Large Construction cos./ Workers	Government Ministry of Foreign Affairs Ministry of Industry and Commerce.
Registration of Professional Engineers	National nodal agency be identified / set up for registration of Engineers	Government/ Project Owners/ Professionals / Consultants/ Construction Industry at large.	Government
Taxation	Rationalise taxes on construction material, specifically cement and steel.	Cement & Steel Manufacturers Construction Comp./contractors Project owners / developers	Government
	Import duty exemption / reduction for construction equipment, on par with the power sector (to be treated as infrastructure sector)	Construction Comp./contractors Project owners / developers	Government
	Tax incentives for setting up high technology Construction equipment manufacturing plants	Industrialists Construction Comp./contractors Project owners / developers	Government

ISSUES	RECOMMENDATIONS	STAKEHOLDER	ACTOR / RESPONSIBILITY
	Application of same norms and benefits to construction as provided to manufacturing units, in terms of: Deduction in profits Backward area benefits Credit facilities Tax relief for employment generation Project exports	Construction Comp./contractors Project owners / developers	Government
	Tax benefits for construction equipment lease finance industry development	Construction Comp./contractors Project owners / developers	Government
	Tax relief for financing skill upgradation of workers	Construction Comp./contractors	Government
Natural Disasters	Various stake holders of construction industry should adhere these standards and codes for disaster resistant technologies	Government/Owners/ Regulatory Bodies/Bureau of Indian Standards/Builders/Developers / Contractors/ Financiers/ Lenders	Government MHA, National Disaster Mitigation & Management. Authority
	Guidelines issued/to be issued by Natural Disaster Management Authority to be adhered to in all construction projects.	Government/Owners/ Regulatory Bodies/Bureau of Indian Standards/Builders/Developers / Contractors/ Financiers/ Lenders	Government, Construction Companies in Public / Private Sectors
	Integrated plan of action be formulated for set up of disaster identification centres and retrofitting clinics in all disaster prone areas.	Government/Owners/ Regulatory Bodies/Bureau of Indian Standards/Builders/Developers / Contractors/ Financiers/ Lenders	Governments at State-UTs and Local levels

ISSUES	RECOMMENDATIONS	STAKEHOLDER	ACTOR / RESPONSIBILITY
	Training of professionals for design construction maintenance and rehabilitation of building and structures in the disaster prone regions	Government/Owners/ Regulatory Bodies/Bureau of Indian Standards/Builders/Developers / Contractors/ Financiers/ Lenders	Government Min. of HRD, Technical Universities & Institutions , Construction Cos.
Construction Cost Indices	An institutional mechanism be developed for continuous evaluation of various economic parameters and impact of operations of other sectors imparting cost of construction works.	Government/ All stake holders of Construcion Industry/ Building Material Manufacturers like steel and cement plans.	Government Industry Nodal Agency
Standards	Adherence to Indian Standards and wherever required international standards should be ensured through regulatory provisions	Government/Project Owners/ Professionals/ Associations/ Architects/Engineers/Builders/ Contractors.	Government BIS, State/ Local Govts. Project Owners
Entrepreneurial Development	A National plan be evolved and implemented for entrepreneurial development for raising the capability levels of the construction industry	Government / All stake Holders of Construction Sector	Government Industry Nodal Agency
Formation of a Nodal Organization	Action identifying a nodal organization to implement and monitor above recommendations should be formulized and implemented.	Government/ All stake holders of Construction Sector including sub-sectors of building materials.	Government
Environmental and Energy Issues	A National plan to ensure adherence to the stipulations of the Environment Protection Act (EPA) 2006 and Energy Conservation Aspects in conformity to the Energy Saving Act of 2001 be formulated , implemented and monitored by the nodal organization suggested above.	Government/Community / Environmentalists/ Energy Producers/ Material Manufacturers/Builders / Developers /Financiers	Government, Ministries of E&F, Power, NCES, CPCB and State PC Boards

Note :

For all activities Industry Nodal Agency should support Government for planning & implementation of actions