## **Chapter 6: Conclusions and Recommendations**

## 6.1 Conclusions

The objectives of this research were to;

- 1. Explore how host country requirements are identified and integrated to the decision making process in the selection of infrastructure projects.
- 2. Develop a methodology that can be useful for identification of host country requirements while cross checking for macro planning policies of Sri Lanka, towards integrated infrastructure project development.
- 3. Apply the developed methodology to highway sector in Sri Lanka.

From this research, the following conclusions can be arrived.

- 1. Literature review highlighted successful tools and approaches used by newly industrialized countries (NIC) to identify macro requirements in selecting projects for funding from sector development plans, demonstrated insights to various stages of sector development in host countries and corresponding suitable approaches that governments should adopt. These tools and successful approaches were taken as the guidance for developing methods to identify host country requirements, in general and to Sri Lanka in particular.
- 2. A project appraisal model, called the Host Country Index (HCI) useful in the identification of host country requirements in infrastructure projects, with an application to highway sector was developed. The developed model will cross check the macro planning requirements of host country against different sectors towards to integrated infrastructure development.
- 3. The HCI model is based on a probabilistic framework and developed a project ranking system with different project classifications. These defined project classifications and suggested limits for results of application of this model can be use as a tool of measuring the satisfaction of host country requirements in proposed infrastructure projects.

- 4. The HCI model can be used to gain more benefits by analysing the results of the model and comparing with benchmarks or another previous applications. The project classifications in HCI model will give clear advice to the project appraiser in comparing, improving and ranking projects at the concept stage.
- 5. The defined project classification and relevant limits for results of application of the model were used to reduce the risk in capital investment. The evaluation framework for HCI to assist investment decision for a country is adopted similar to that which is used by the insurance industry, in managing risk and uncertainty in a successful manner. By adopting high probabilities of satisfying country requirements as utilised in the HCI evaluation, the model reduced the risk in capital investment of a host country. The host country should not accept the risk of investment of scare capital unless real benefits gained from the project are significant. Hence the model will warn or protect against the risky investment on infrastructure projects from national point of view.
- 6. The developed model was validated from two on-going project proposals in highway sector in Sri Lanka. The comparisons between the two case studies as well as identification of less fulfilled sub-sectors in host country requirements were diagnosed by HCI model. The result of the two case studies from highway sector presents successful demonstrations of the competence of HCI model in project appraisal.

## 6.2 Recommendations

The major recommendations for this phenomenon can be stated as below;

- 1. Even though the proposed HCI in the highway sector is limited to 30 risky factors, the further improvements to each sector considerations can increase the assessment facts which should increase the reliability of this development.
- 2. For consistent evaluation of HCI, qualified professionals should be trained with clear and agreed conditions in assessment. Additionally, HCI manuals may assist to maintain the consistency in the evaluation.
- 3. The approach to risk management adopted in international insurance companies in their insurance coverage decisions, by maintaining a high probability of success (no claim probability of an insurance policy is over 99.95%.). The success has paid rich dividends and effective risk management of insurance industry is translated to appraisal of infrastructure projects by this development.
  - The HCI ranks a project as "acceptable" when the probability of success more than 88% similar to insurance industry. This will help to achieve the host country requirements while managing the investment risk at acceptable level. The probability of success of accepting Public sector investments should be benchmarked with commercially successful norms for development to show results.
- 4. The HCI value represents an absolute figure with respect to each project. When different projects are evaluated for, HCI index and relative figures will allow for comparison between different projects. Hence, updating benchmarks should be carried out by post assessment of HCI scores obtained from past projects. This continuous updating will further improve the standard of project evaluation by HCI index.
- 5. Developing countries face crucial decision in financing potential infrastructure projects with limited budget allocation for capital expenditure. Hence, this innovative method should be incorporated at project approval stage to see a wider angle, along with traditional appraisal methods. The incorporation of host country requirements should help in macro development of the economy.

## References

- AASHTO, A Policy on Geometric Design of Highways and Streets (1994), AASHTO, Washington D.C.
- 2. Abdul R.A.A. and Ofori G.(1996), Developing World Beating Contractors Through Procurement Policies: The Case of Malaysia, Construction Management and Economics, E&FN Spon, U.K.
- 3. Chen, J.J. (1996) The impact of public construction investment upon special economic zones the Chinese experience, Construction Management and Economics, E&FN Spon, U.K., Vol. 14, pp. 175-182.
- 4. Council on Environmental Quality (CEQ) (1974) The Fifth Annual Report of the Council on Environmental Quality. CEQ, United States.
- 5. EIG (2001a) Alternative Highway (Expressway) between Colombo and Kandy-Feasibility Study: Final Report, Euro Infra Group for Road Development Authority, Sri Lanka.
- 6. EIG (2001b) Alternative Highway (Expressway) between Colombo and Kandy: Environmental Impact Assessment Report, Euro Infra Group for Road Development Authority, Sri Lanka.
- 7. EIG (2001c) Alternative Highway (Expressway) between Colombo and Kandy: Pre-Feasibility Study Report, Euro Infra Group for Road Development Authority, Sri Lanka.
- 8. Ferdinando, D.N.G., Towards Integrated Infrastructure Development, Sri Lanka Engineering News, January, 2000, pp5-6.
- 9. Fischer, T.F. and Ranasinghe, M. (2001) Culture and foreign companies' of entry mode: the case of Singapore building and construction industry, Construction Management and Economics, E&FN Spon, U.K., Vol. 19, No. 4, pp. 343-353.

- 10. Heggie, I.G. (1995) Management and Financing Roads: An Agenda for Reform. The World Bank Technical Paper Number 275, The World Bank, Washington, D.C.
- 11. Highway Research Board (1985), Highway Capacity Manual, Highway Research Board, Washington D.C.
- 12. Merna, A. and Smith, N.J.(1999) Privately financed infrastructure in the 21<sup>st</sup> century, Proceedings of Institution of Civil Engineers, Civil Engineering, 132, Nov., 166-173.
- 13. NPD (1996 a) Format for Submission of project proposals for preliminary screening, Department of National Planning, The Secretariat, Colombo, Sri Lanka.
- 14. NPD (1996 b) Public Investment Programme 1996-2000, Department of National Planning, The Secretariat, Colombo, Sri Lanka.
- 15. O'Flaherty, C.A. (1974) Highways: vol.1, Highways and Traffic, Edward Arnold, London.

  University of Moretuwa, Sri Lanka.

  Electronic Theses & Dissertations
- 16. Ofori, G. (1993) Managing Construction Industry development. Singapore University press, Singapore.
- 17. Ofori, G. (1994 a) Construction Industry Development: role of technology transfer, Construction Management and Economics, E&FN Spon, U.K., Vol. 12,379-392.
- 18. Ofori, G. (1994 b) Formulating a long-term strategy for developing the construction industry of Singapore, Construction Management and Economics, E&FN Spon, U.K., Vol. 12, pp. 219-231.
- 19. Ofori, G. (1994 c) Practice of Construction Industry Development at the Crossroads, Habitat International, Vol. 18, No.2, pp 41-56.

- 20. Ofori, G. (1996) International Contractors and structural changes in host country Construction Industries; case of Singapore, Engineering Construction and Architectural Management, Vol. 3 / 4, pp 271-288.
- 21. Ranasinghe, M. (1998) Risk Management in the insurance industry: insights for the engineering construction industry, Construction Management and Economics, E&FN Spon, U.K., Vol. 16, No. 1, pp. 31-39.
- 22. TED (1999) Assessment of Public Investment in Transport Sector: Final Report. Transportation Engineering Division, University of Moratuwa for Department of National Planning, Colombo, Sri Lanka.
- 23. Thandika Mkandawire and. Soludo, C.C. (1999) Our Continent Our Future: African Perspectives on Structural Adjustment, Council for the Development of Social Science Research in Africa, Senegal.
- 24. WSA (1999) Southern Transport Corridor Project: Final Report, Wilber Smith Associates for Asian Development Bank, Philippines.

