Summarize 1

Strategic Design for an Integrated and sustainable Forest Supply Chain:- The assignment discussed about the FORAC consortium, how they work, the keyissues that are touching the forest products and the three challenges which are to be coped. FORAC was launched in 2002, at university level including expert team of students, researchers, professors, having two research programs such as NSERC on industrial chair and NSERC collaborative Research and Development. Ten different members' organizations were also in this program. Their mission was to train, to develop the professionals, to transfer knowledge, technology to industry and partners. They contribute to a sustainable forest value chain. They do evaluation and transformation of value creation network. The key aspects of the forest product logistics are the low cost energy, very long cycle time, divergent product flows, and to take in account that wood is a biological material. The first challenge was integrating energy production within the forest value chain. It includes the mathematical programming approach for integrated bio-refinery and forest products supply chain network design. There were also research questions to be answered keeping sustainability view in mind such as tradeoffs, optimal mix, selecting supply source, where the plants be built, which plant, what type of technology etc. Integrated approach designs for bio energy and forest products were developed. Biomass transformation process was analyzed with sustainability approach. Model development approach was applied for supply up to the customers. Its objective function was to maximize the net present value. A case study was also observed regarding the above discussed challenge and it concludes that MIP based strategic planning model was developed, pelletization seems to be the most profitable option, integrated supply chain design creates the

significant values, using the modeling approach various scenario analysis can be carried out using real data that could support critical strategic decisions. The second challenge was the collaborative forest planning and value chain design. It included the two software are silvilab and logilab. Silvilab was used as decision support system for forest management and logilab was used for optimizing value chain. Silvilab was a strategic planning tool used for forest management. It helped assessing the impact of forest planning models on industrial development. Silvilab becomes the forest supplier of the logilab whereas, Logilab integrates general mathematical models. The third challenge is the material handling. It includes a dynamic FRP model for improved coordination of sawmill and log yard operations. Motivations for this purpose are keeping in view the forest perspective, wood supply perspective. The problems are the often log yard management is neglected, rules of thumbs believed to be sufficient for inventory management and sufficient layout, and log yard management has attracted the research community to little amounts. The potential gains were observed by the increased coordination of log yard and mill operations. There was a suggestion for further studies that included sensitivity analysis of market conditions and lumber demands, logistic drivers including clearance cost and replenishing cost, and synchronization with upstream operations. So it was observed that FRP model was developed for divergent manufacturing process, this model is multi period and it demonstrate the benefits of integrated process, and it addresses tactical design issues. Hence, it was concluded that forest products industry can be economic factor in Canada. The collaborative operational planning needs more attention as it remains a challenge still today. The problems that were observed are real time

problems and large scale problems. The solutions for these problems must be negotiated in order to cope with these problems in real sense and FORAC with its dynamic environment and partnerships offers favorable opportunities to deal with these problems.