

**A REVIEW OF:**  
**ECONOMIC GAIN SPATIAL ANALYSIS - FISHERIES**

The following outlines the substantive issues and concerns that a review of the Fisheries Economic Gain Spatial Analysis report (Report) found. A first pass revealed a few, minor definitional errors in the discussion of community profiles, however they that have no impact on the results. A number of Output Requirements were either not given sufficient explanation or not completed as specified in the Terms of Reference. These are discussed in a separate section of the review.

More important, I found (to me) a lack of background information from which present and future activity could be judged. Further, while the mechanics of the projections are generally fine, there is little justification or rationale as to why a particular scenario is “most likely” and whether the area in question can sustain such development. Indeed, there is no real appreciation of what the scenario(s) will mean in terms of their demands on resources such as harbours, coastal waters, fish, etc. and the impact of this development on the environmental integrity of the region.

As requested, my efforts were concentrated on the actual Economic Gain projections and therefore I did not do more than a cursory review of the other sections of the Report. The following outlines in more detail the findings of my review.

**Economic Gain Projections**

The Economic Gain projections (for years 2004, 2009, 2014, 2019, and 2024) for each of 13 areas are provided as an appendix in an Excel spreadsheet. There are projections for seven “sectors”. These are: Ocean Ranching, Hanging Lakes, Aquaculture, Local Co-op, Selective Fishing, Other Wild Harvest (herring and halibut fishing), and Other Wild Harvest (sea ranching shellfish). Three scenarios are provided for each sector: Pessimistic, Optimistic, and Most Likely.

**Concerns Regarding Projections**

1. Estimates of employment (headcount) within the CIT region are input for each sector, area and scenario. There is no indication as to why any of the employment estimates are chosen; there is no linkage to output or assessments of labour productivity, nor is there any indication of the skill level of labour required. There does seem to be a relationship between the “Base Cases” workbook employment and the various sector workbooks, but it’s not explicit (see point 7 below).
2. The Report assumes that for every sector and for every year the level of employment outside the CIT region is 15% of the labour within the CIT region. Why 15%, and is it not more likely that a higher percentage will come from the outside in the earlier years than in the later years and that certain sectors would have greater need of skills from outside the CIT region?
3. The employment estimates are further converted to Full-Time Equivalent estimates. There is a link between the “Base Cases” workbook FTE employment and the various

sector workbooks, but it's not explicit (see point 7 below) and no rationale is given in the "Base Cases" workbook for the varying rates chosen for each sector.

4. The Report also records the total employment income, but there is no explicit link to employment, nor is there any reference to or discussion of the average wage rate that the employment income reflects. In the "Base Cases" workbook, average wage rates used in the analysis are input, but there is no rationale given for these rates. There are also some average wage rates that don't appear to come from the "Base Cases" workbook. In the case of Hanging Lakes, for example, the average FTE wage is \$26,400 in all areas except Landscape area 3 where the average wage is \$33,000. Why is area 3 different?

Other sectors have different average FTE wages, ranging from \$150,000 (??) for Herring and Halibut Fishing to \$12,000 (??) for Shellfish Aquaculture. An FTE wage of \$12,000 is under \$7 per hour, which, if I'm not mistaken, is under the minimum wage. Even with the more common average wage used in the analysis of \$25,000 works out to be around \$14 per hour. I'm not convinced that hourly wages that low (on average – there also would have to be management and foremen on the job) would prevail in fairly isolated areas.

5. Average wages also change occasionally between scenarios. For example, for Herring and Halibut Fishing, the "optimistic" average wage in area 2 is \$102,227 whereas the "likely" average wage is \$103,561. Other examples similar to this were found. No explanation for these differences is provided.
6. Not surprisingly, the number of jobs changes between scenarios. However, there is no explanation for what is causing these differences. Ordinarily, I would expect some relationship between employment in one scenario and employment in another. This is because one would expect an "optimistic" scenario would have more firms, not necessarily greater output (is there not an efficient size of firm in this analysis?). However, no relationship jumps out, either implicitly or explicitly. The "Base Cases" workbook only contains the "optimistic" employment estimates, with no discussion of the other two scenarios (see point 7 and beyond). Certainly much more explanation for how the employment estimates are determined is needed.
7. There is a workbook named "Base Cases", but it is not obvious how this workbook relates to the sector workbooks since the links are not explicit. Column "A" is titled "scenarios" but the numbering doesn't match the scenarios at all; rather it's related to the sectors (the main body of the Report has this same confusion: the "Economic Potential by Scenario" is really by sector). It appears that Columns "D" to "H" identify the employment characteristics (headcount employment, FTE employment and employment income) for a typical establishment or company, but the headings do not tell the reader this. It is only by going back to the main body of the Report that one can determine what these values are. However, in the main body of the Report ("Economic Potential by Scenario") there is virtually no discussion of the underlying reasons for selecting these values.
8. The "Base Cases" workbook then has a series of columns relating to each area (labelled "MA" for Management Area). For each of these "MA"s, the number of potential sites is

identified under the “optimistic” scenario for the year 2024, that is, the last year of the analysis, and then the sum of total jobs in the area is calculated based on the average establishment employment characteristics. Again, there are no headings that tell the reader that these data are for the “optimistic” scenario or for the year 2024, nor are there linkages that enable the reader to determine what is being calculated. This makes the spreadsheet very confusing at first glance. Also, there is no explanation or rationale given as to why these values were chosen for 2024 or what the path is from 2004 to 2024 to reach these final values. Finally, there is no explanation or rationale given for why this is the “optimistic” scenario and how it relates to the “pessimistic” and “most likely” scenarios.

9. The main body of the Report provides some cursory information on the rationale behind the employment projections, but very, very limited and not at all clear. For example, Area 1 Hanging Lakes (page 4?? – all page numbers of out of whack) suggests there are “several lakes with no recorded salmon presence” with limited access, but the “optimistic” scenario has an expectation of 120 jobs earning some \$2 million. Similarly, Local Co-operative is expected to generate 51 new jobs earning \$676,000. But would these be “new” jobs? My understanding of the fishing vessel licensing system is not great, but would it be possible for a new co-operative to form without reducing the number of independent vessels? Just a question.

### **Terms of Reference Requirements**

1. The Terms of Reference stipulate that the consultants should develop three separate scenarios: Optimistic (high market demand; ambitious marketing efforts); Intermediate (moderate market demand; average marketing effort); and Pessimistic (weak market demand; ineffective marketing effort). The Report does develop these three scenarios. However, there is very little explanation of how these scenarios were developed. Furthermore, the main body of the Report cites the “optimistic” results, whereas one would have thought that they should reference the “most likely” results.
2. The Terms of Reference ask for employment projections to be assessed on the basis of how many jobs would be within the CIT area and how many outside. While this breakdown is provided, the outside CIT results are simply 15% of the within CIT results, with no explanation of why 15% is chosen.
3. The Terms of Reference indicate that, in addition to projections of revenues and employment, the contractor is responsible to provide estimates of government revenues and enterprise profit. Neither of these measures is provided in the Report.

### **Other Concerns**

1. There seems to be an excessive emphasis on “visioning” at the expense of providing concrete rationale for future projections. Nor is there sufficient regard for the potential environmental concerns that some of their projections may engender. Indeed, the consultants’ interest in Ocean Ranching is perhaps a bit too obvious for a study that, at least by the Terms of Reference, ought to be technical in nature.

2. The Community Profiles are fairly complete, although given that the Terms of Reference did not ask for such an undertaking and that another report is providing similar and perhaps more complete information, including this section may have not been the best use of resources. In terms of the actual Community Profile data, I believe it important that the authors warn the reader that the Census and Economic Dependency data may well give an erroneous picture of the region.

In a nutshell, this is due to several reasons. First, the Census records only one industry employment category (and hence, income) for a worker, even though he/she may be working and earning income in several different industry sectors. Second, the Census data allocates all characteristics to a person's home location, even if he/she is working in another region. Therefore, if there are a lot of workers from outside the CIT, it is possible that there is more "employment" in the CIT than the Census suggests.

3. There is no discussion of the uncertainty underlying the employment estimates, other than the inclusion of three different scenarios.

## **RECOMMENDATIONS**

1. There needs to be a clearer, more comprehensive outline of: (a) the rationale for why the headcount employment, FTE employment and average wage for each establishment within a sector was chosen; (b) the underlying premises of each scenario (what does "optimistic" mean); (c) what is driving the employment for each sector for each of these three scenarios for each of the forecast years; and (d) the uncertainty related to the results.
2. Identifying the implications of the various scenarios beyond employment and employment income gains would be important. Specifically, examining the impacts of each scenario on resource needs and the environment would be useful.
3. The spreadsheet analysis, although technically correct, is VERY difficult to follow, since there are no formulae or links. In order to ensure that later readers easily understand the route by which all the results are determined, I would suggest that all formulae and links be made explicit.
4. Clearly the Report should try to meet all of the Output Requirements as laid out in the Terms of Reference. This would include generating estimates of provincial government revenues and "Profits to Enterprise". While estimating profits and economic rents specific to the Central Coast operations may be difficult, there are several studies that have examined aquaculture activities and, as well, there are some total coast-level data for some of the other sectors that could be applied to this exercise in order to provide at least a reasonable magnitude of these values.

Respectively submitted

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