

Comments and Responses on SOCCR/SAP 2.2 Draft 1 (May 2006)
CHAPTER 7

COMMENT FROM PEER REVIEWERS						AUTHOR'S RESPONSE						
Comment Number	Reviewer ID	Chapter	Page	Line	Comment Text	Acknowledged, but no further response or revisions are required	Revisions have been incorporated as suggested in the comment	Agree, but see "Notes on Response"	Agree, but elaboration is precluded by length limitations	Disagree; see "Notes on Response"	Beyond scope of report/chapter	Notes on Response
07-001	11	7	General		Some of what I expected is here. Unfortunately three elements are missing: 1) better discussion of the driving forces behind rising emissions 2) more on the nature of the controversy over how emissions can be reined in and 3) more on the fundamental weaknesses of the data, both in Mexico and Canada, as well as the US. More effort should be undertaken to make the data and descriptions compatible, as these are likely to be quoted widely without caveats.		X	X	X			Discussion of data accuracy has been added. I have also added more details on the inconsistencies that I am not able to resolve. Would like to say more about the topics listed but length limitations preclude it. I have added two sentences and an additional reference on the nature of the controversy about how emissions can be reined in.
07-002	11	7	General		The key parts on projections and mitigation options/potentials are only presented weakly – what is driving per capita travel and freight, what is driving fuel use/travel or fuel use/freight, and what changes would mitigate these.				X	X		I have discussed the key driving factors behind travel and freight activity, and the relation of these to carbon emissions. Length limits preclude the depth this reviewer would like to see.
07-003	11	7	General		For Mexico, I recognize that data and even analyses are not good, but it would be very useful to review some work (even in English, but Spanish language work is more thoroughly) to give a few on projections and mitigation options. This is because Mexico is not totally motorized, so mitigation means more avoidance rather than changes to patterns that have take hold in the US and Canada.			X				Additional data for Mexico have been incorporated into the chapter text where appropriate and where such data are available.
07-004	11	7	General		Are uncertainties or incompleteness in the evidence explicitly recognized? NO, this is a major weakness. The data from each country are fraught with uncertainties that at times are extremely misleading. This is not the fault of the author, but he should point these problems out explicitly, as others will quote these data as if they are whole. They are not. This is recognized in the last bullet of the "Key Findings" .		X			X		I have incorporated a discussion of uncertainties and a table showing Canada's rather detailed estimates. As such data go, the data for the U.S. and Canada are quite accurate, as the added text and tables show, although there are a few problem areas.
07-005	11	7	General		As above, series problems in the data from each country make the overall presentations of each country incompatible with each other And there is little analysis applied to Mexico, the country portending the largest growth, and therefore the largest deviation from trends.					X		There are some incompatibilities, but I think there are more consistencies. I have added a brief discussion of inconsistencies. Mexico may portend the greatest growth but: 1) according to the projections cited, the growth is similar to that of the U.S. and, 2) the U.S. emits an order of magnitude more C, and is projected to continue to do so even in 2050.
07-006	11	7	General		In general the huge differences in population and GDP of these countries make comparisons of absolute totals rather hopeless. It would be much more enlightening if comparisons were also offered on a per capita bases, and per unit of GDP correctly calculated using purchasing power parity of a similar base year for each country.					X		My discussion chiefly attributes differences among the countries to the size of their economies and of their populations. This, of course is what showing emissions per capita or per dollar of GDP would illustrate. Thus, I think I have covered this point. Additional graphs would be nice but space is limited.
07-007	11	7	General		The report is fair and balanced but lacking a few important elements. For example, "Options for Management" skips over the heart of why there is a controversy over how much GHG could be managed. The author himself has probably written more balanced analysis of this controversy than anyone else, something worth summarizing here.						X	My view is that there is controversy over what can be done as a consequence of deliberate obfuscation by certain automobile manufacturers, energy companies and others who perceive that it is in their interest to oppose the public's interest in dealing with climate change. Personally, I would be happy to name names in this report, but I doubt this is what the editors have in mind.

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07-008	11	7	General		Are any of the report's findings based on value judgments or the collective opinions of the authors? If so, is this acknowledged, and are scientifically defensible reasons given for reaching those judgments? NO, if anything the report is so devoid of "sides" it almost comes off as empty of real content.	X						Thanks?
07-009	11	7	7-1		In the fourth bullet, I would say 'biomass is a promising medium- and long-term option'. There is little evidence that <u>significant</u> amounts of biomass can reduce GHG emissions in the US or Canada in the near term.		X					
07-010	11	7	7-5		Acknowledge that Mexico simply has no acceptable data on vkm by type or mode, and only has data for limited modes for pass-km or tonne-km, period. However, it is possible to note that Mexican land travel p-km is dominated by urban and inter-city buses, with rail playing a minor amount.	X						
07-011	11	7	7-8	1	Surely the author meant EJ, as 4.3 PJ is a truly tiny amount, well less than .001% of likely emissions in 2025.					X		I wish that were the case. EIA estimates very little change in transport energy use for large carbon taxes.
07-012	11	7	7-14	Table 7-1	State explicitly how emissions from electricity production for power used by transport are counted.		X					Unfortunately the source documentation does not say. Since emissions must come from upstream, I have taken them out of the tables in this chapter.
07-013	11	7	7-15	Table 7-2	First, the US and Canada are probably the only countries in the world that (correctly) report natural gas use for pipelines as transport. Please check if this is the case for Mexico – it looks to me as if only natural gas vehicles are counted. Second, until the late 1990s at least, Stats Canada reported all bunker fuel used by Canadian owned ships, whether in international or domestic (coastal, river, lake) transport, as "domestic". Kindly check whether this rather huge error (about a factor of five) has been eliminated.			X				Environment Canada, in its greenhouse gas inventory now separates international bunker fuel use and resulting carbon emissions for both aircraft and waterborne transport from domestic use. Indeed, they do not report the international bunker fuel use in their inventory, but only the domestic.
07-014	11	7	7-17	Table 7-3	Canada and the US are able to allocate electric traction into rail and a small amount into road transport. Why not Mexico? It might be valuable to break each kind of transport into fuels, i.e., Road, rail, waterborne, and pipeline. Worse, when one examines the table casually, one notes the ratios of emission to fuel for any given row differ noticeable between Canada and the US. This seems to be a figment of the different definitions of "carbon emissions" and should be fixed. Bunkers are only listed for the US, and then only their CO2 emissions. These should be explored further to 1) obtain similar figures for the other countries (or as I suggested elsewhere, ascertain whether Canada (and for that matter) count bunkering of aircraft or ships correctly) and 2) make both international aircraft fueling and international shipping part of bunkers.			X				I think Mexico, since it is a non-Annex 1 country and therefore not required to compile a GHG inventory according to IPCC guidelines, has not put the effort into developing these data that the two Annex 1 countries have.

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07-015	11	7	7-17	Table 7-3	The comments on Table 7.3 are troubling. If the Canadian data include different GHG than the US data, why not calculate the CO2 emissions from Canada in a comparable way --- this involves roughly 15 calculations, as was apparently done for the Mexican emissions. Again, this kind of problem leads to someone else copying the table without the caveats...I strongly object to ignoring the carbon emissions of electricity.		X					Inconsistencies in the data from the three countries have been addressed by using greenhouse gas inventory data prepared in accordance with IPCC guidelines as the authoritative source and adjusting the definitions to be comparable, with the exception of Mexico's estimates, where this is not possible. A section discussing inconsistencies has also been added. Tables 7-2 and 7-3 now are used to illustrate relationships between energy use and greenhouse gas emissions.
07-016	11	7	7-21	Fig 7-3a	As late as the late 1990s, Canada omitted "own account" trucking tonne-km. Please check whether these are now counted, since their counting backwards would have entailed some serious work. Please note that the US does not tabulate road freight as other countries do, rather by vehicle ("class 1"), and that some kinds of road freight, namely intrastate, are not counted but only estimated by Eno foundation and others. Kindly also check what tonne-km are counted in the Mexican data.						X	The freight data used come from a joint website produced by the transportations statistical agencies of the three countries. The U.S. road freight data have been estimated by the BTS from the Commodity Flow Survey and a variety of other sources. The data do include intrastate truck freight. There are of course difficult areas, such as local delivery. Resolving these issues is, I think, beyond the scope of this chapter.
07-017	11	7	7-22	Fig 7-4a	Surely we could portray the US travel by mode for 2003 or at least 2002 for a report set to appear in 2006! The same should be true for Canada. Rather than relying on an old source (NATS)...A troubling aspect of these data is that they imply there is nearly as much passenger travel in light trucks as in cars. It should be noted that this estimate must be counting the use of commercial light trucks to/from work, which is acceptable as long as it is clearly marked. Otherwise, light trucks/SUVs in the US account for something like 40% of total travel.			X				Well, it would be nice if these data issues were simple. As it turns out, even for the U.S., certain items of passenger travel have not been updated since 2001. However, all the important components are up to date through 2003, and most to 2004. I think the thing to do is use 2003 for U.S. and Canada, and I have updated those figures.
07-018	11	7	7-23 and 7-24	Fig 7-5a and 7-5b	Figures 7-5 a and b are mislabeled. The first is Mexico, the 2 nd is the US. Figures 7-5x and 7.6x should be made as compatible as possible. Thus "international" in Figure 7-6b—where is that in Figure 7-5b? Why did we switch to EPA source, whose basic assumptions about energy use in transport may not agree with those used in earlier figures? Note these should also be shown per capita and per unit of GDP in US dollars converted at purchasing power parity.		X					
07-019	12	7	General		Transportation is an extremely complex topic, and the authors are to be commended for covering so much information in so little space. By necessity, the treatment of various issues has had to be compressed. But, by and large, I think that the chapter does a good job of presenting both the factual information and the complexity of the issues. I do have one significant concern and several smaller ones, as detailed in the following items.	X						

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07-020	12	7	7-3	9-14	The draft states: "In this chapter, upstream, or well-to-tank, carbon emissions are not included with transportation end-use, nor are end-of-life emissions produced in the disposal or recycling of materials used in transportation vehicles or infrastructure. These two categories of emissions typically comprise 20-30% of total life cycle emissions for transport vehicles [citation omitted]. In the future, it is likely that upstream carbon emissions will be of greater importance in determining the total emissions due to transportation activities." The final sentence of this quotation is certainly correct, but it understates the potential importance of upstream carbon emissions in determining transport-related carbon emissions. I believe that the report cannot claim to have provided an appropriate understanding of the likely evolution of transport-related emissions without incorporating a discussion of the "well-to-tank" emissions of various fuel types.				X			In spirit, I agree with this comment. If there were more space I would elaborate. However, the structure of the report and its conventions are such that emissions in other sectors that are producing inputs to the transportation sector are reported in the chapter dealing with that other sector. This point made by this comment is sufficiently important, however, that serious consideration should be given at a higher level in the report to dealing with such cross-cutting issues.
07-021	12	7	General		When I first read the paragraph quoted above, I thought that the "well-to-tank" portion of transport-related carbon emissions might be discussed in Chapter 6, "Energy Extraction and Conversion." However, when I looked at Chapter 6, this proved incorrect. I have yet to be able to find such a discussion anywhere in the report.	X						
07-022	12	7	General		Ironically, the discussion in the chapter is not consistent with the first of the two sentences quoted above. At several places throughout the chapter, the authors acknowledge the importance of looking at "full fuel cycle" emissions. For example, on page 7-6, lines 10-12, the draft states: "Carbon emissions by transport are determined by the levels of passenger and freight activity, the shares of transport modes, the energy intensity of passenger and freight movements, and the carbon intensity of transportation fuels." (emphasis added) In fact, a given change in any one of these four factors, <i>ceteris paribus</i> , produces the same change in carbon emissions from transport. Changes in the carbon intensity of transport fuels can magnify or offset changes in the energy intensity of passenger and freight movements. Understanding the conditions under which magnification and/or offset occurs is vital.			X				Again, this issue of activity in one sector causing emissions in another is important but I think needs a consistent treatment across the economy.

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07-023	12	7	General		There is no lack of information on "well-to-tank" emissions of transport fuels. In our WBCSD report, we took special pains to show both "well-to-tank" and "tank-to-wheels" carbon emissions for a wide range of transport vehicle types and fuel types. Our spreadsheet model was designed to permit us (and any other user, since we made it available on the web) to analyze these two components either separately or together. In the WBCSD report itself, we included charts showing the relative importance of each component. We also presented the results of analyses showing the relative impact on transport-related carbon emissions of various changes in vehicle technologies and fuels. The analyses we presented were for the entire world, but the model is set up to permit similar analyses for individual regions, including North America.			X				Same response. I cite reports containing analyses of the well-to-tank issue and note its importance.
07-024	12	7	General		I strongly urge that Chapter 7 be modified to incorporate "well-to-tank" emissions and to discuss in detail the tradeoffs between "well-to-tank" and "tank-to-wheels" emissions implied by a number of potential transport-related actions. Otherwise, the chapter will produce a distorted and incomplete view of transport-related carbon emissions.						X	I may be mistaken, but my understanding is that Ch. 7 is to deal with the carbon flows from transportation rather than flows in other sectors induced by transport activity or energy use. I in no way dispute the importance of the subject the reviewer has raised and the fact that it should be addressed somewhere in the report. I note its importance and give refs. but not data.
07-025	12	7	7-5 et seq		In the section titled "Trends and Drivers," the impression is created that the absence of fuel economy standards applied to freight trucks is responsible for the fact that emissions from freight have grown faster than emissions from passenger transport. Specifically, on line 34 of page 7-5 and lines 1-6 of page 7-6, growth in freight and passenger transport energy use for the US and Canada are compared. The assertion is made that "Fuel economy standards in both countries were effective in restraining the growth of passenger car and light-truck energy use." The statement is then made that freight energy use increased faster than passenger car energy use. From this, the reader may draw the implication that had fuel economy standards been applied to trucks, the rate of increase in freight energy use and emissions might have been considerably lower. I know of no information to support such an impression. In the		X					I think too much is being read into this. However, if this reviewer took it that way others will also. I have made changes to the wording to try to avoid this inference. However, the assertion that medium and light truck fuel consumption rates have declined significantly is not supported by U.S. data. FHWA data show the average energy intensity per vehicle mile for medium and heavy trucks was 5% lower in 2002 than in 1973.
07-025 (cont)					absence of fuel economy standards, fuel consumption per mile by medium and large trucks has declined significantly. And the energy efficiency of air transport has also improved significantly without standards.							
07-026	12	7	General		The factor driving the improvements in both freight and air transport is the value of reducing fuel consumption. Fuel costs are such a large percentage of the total operating cost of both modes that fuel economy is a very important feature. In contrast, fuel costs for light-duty vehicles are a relatively small share of total vehicle operating costs.	X						A reasonable assertion but as the reviewer points out there is little analysis to decide the issue one way or the other. Japan has recently instuted heavy truck fuel economy standards as a greenhouse gas mitigation policy because, they say, they challenge this assertion. More analysis is needed.

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07-027	12	7	General		The draft notes the sharp differences in the estimated cost of reducing fuel consumption in light-duty vehicles generated by "top down" and "bottom up" estimates. In my own experience, this difference results from contrasting assumptions employed in the two types of studies. The "top down" estimates are based on projections of historical trends of how consumers have responded to changes in vehicle and fuel prices. The "bottom up" estimates assume that the vast majority of the technological potential to reduce fuel consumption is actually devoted to doing so. However, as the annual EPA study of fuel consumption performance clearly shows, only a small fraction of the technological potential to reducing fuel consumption actually has been devoted to doing so. The vast majority has been used to improve acceleration and permit larger vehicles. Only when fuel prices "spiked" in the late 1970s did the actual improvement exceed the technological potential. This was possible because	X						When manufacturers were striving to meet fuel economy standards, technology was used to increase MPG. Once the standards had been met in 1982-85, the technology was used to hold MPG constant while increasing primarily horsepower but also weight, especially for light trucks. True, much of the weight reduction in passenger cars in the 1970s was due to a switch to front wheel drive and unibody vs. chassis on frame construction. I consider this to be "technological", although it is certainly also "weight reduction." Differences between top down and bottom up studies, especially for transportation, extend beyond technological potential, to include such things as land use planning, pricing incidence, and so on. The point is there are many reasons why top down and bottom up conclusions differ. Given space limitations, I did not go into the subject in depth.
07-027 (cont)					of the sharp shift in vehicle mix purchases – a shift that reduced the average weight of new passenger cars by approximately 1000 pounds with little or no change in technology. (Front-wheel drive cars came later.) The report needs to discuss this issue in a somewhat more balanced manner.							
07-028	12	7	General		The draft gives only slight attention to the growing importance of air transport as a source of transport-related GHG emissions. (In the case of air transport, emissions in addition to carbon dioxide are significant.) Our analysis showed that, even though the fuel consumption per passenger carried in air transport is improving relatively rapidly, the growth in air transport demand is so great that air transport will become an increasingly-significant source of transport-related GHG emissions in the future. (Its present significance is understated by the authors' decision to exclude aviation bunkers from their fuel use totals.) Emissions from air transport are certain to become a growing source of political and social concern in the decades ahead. The issue should at least receive a mention.					X		This may well turn out to be true, but it is not reflected in the EIA's forecasts of energy use by mode for the U.S., which accounts for the overwhelming majority of North American carbon emissions from transportation. The EIA projects the same share of transportation energy use for air in 2025 as today.
07-029	13	7	General		Chapter 7 presents a balanced and fair synthesis of the state of knowledge and its conclusions are supported by published evidence and analysis. At the same time, as is highlighted by the author, there is a need for improved data and comprehensive and systematic assessments of mitigation potentials by each country.	X						
07-030	13	7	General		The chapter describes hybrid vehicle, plug-in hybrid vehicle and fuel cell vehicle technology all as "highly" promising (p. 7-11, l. 6). In the Key Findings (p. 7-1, l. 26 and Executive Summary (ES-9, l. 21), hydrogen fuel cell technology is noted as an option for reducing transportation carbon emissions, but hybrid technology (grid and non-grid connected) is not noted. Hybrid technology should be highlighted in these places or the justification for highlighting hydrogen fuel cell technology above hybrid technology should be provided.			X				Wording has been changed somewhat.

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07-031	13	7	General		The Options for Management section (pp. 7-7 – 7-10) presents a balanced review of studies of the costs of CO ₂ mitigation from the transportation sector. Given the likelihood of high and possibly volatile oil prices, some additional discussion on how high oil prices may affect these cost estimates would be useful.				X			1. The response to high oil prices appears to be surprisingly small at present. This could be because changes take time. 2. It is not at all clear that oil prices will remain high for a decade or more. This is quite controversial.
07-032	13	7	7-9	24	Table reference 7-4 probably correctly refers to Table 7-5.		X					Thanks.
07-033	13	7	7-9	31	The numbered list is missing point (4).		X					Points incorrectly numbered. Thanks.
07-034	13	7	7-1	25	The term "carbon fuels" should be replaced with "carbon-based fuels."		X					
07-035	13	7	7-3	32	The text notes that "[t]his pattern of energy use has persisted for more than half a century" and refers readers to Figure 7-1. Figure 7-1 shows the regional breakdown of transportation energy use since 1990. Has there been a shift in the Figure numbering?	X						Thanks. The figure to which this sentence referred was deleted from an earlier draft to reduce the length of the chapter. The vestigial reference has been removed.