Expert and Government Review Comments on the IPCC WGIII AR5 Second Order Draft – Chapter 12

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
23631	12					In this and in many other tables including units (ie Average built-up area density is likely km2) and more descriptive captions would be very helpful	Not relevant anymore for revised chapter
23634	12					Is this table necessary?	Not relevant anymore for revised chapter
23635	12					It would be very helpful with this table to include the population distribution (% urban/% rural) for each area	Not relevant anymore for revised chapter
23641	12					the impact of decentralized systems do not appear to be considered here	Not relevant anymore for revised chapter
23638	12					D- I have no idea what D is, namely what a1-a4 refer to, in part A I don't understand what the legend means for A and B	Not relevant anymore in the revised chapter
23640	12					This table may be skewed because as you discuss earlier in the chapter, higher density cities are generally less developed and likely have less access to electricity	Not relevant anymore for revised chapter
34229	12					Figure 12.18: The title for this figure is misleading: “Impact of urban density and GDP (PPP) on network length...” The term “impact” is too strongly causal. The graphed relationships here likely reflect a correlation of high poverty and poor living conditions with dense cities. Density doesn’t cause these things, though GDP might partly explain them.	Not relevant anymore for revised chapter
34226	12					Table 12.9: I would start section 12.4 with this table and organize the section around it.	Not relevant anymore for revised chapter
34217	12					Figure 12.13: Is this only infrastructure (emissions from concrete), and not use of infrastructure (e.g., VMT, heating & cooling) affected by the spatial arrangement of infrastructure and human settlements? Communicating this distinction clearly would be an improvement.	Not relevant anymore for revised chapter

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33223	12					policy change; top-down or bottom-up. Historically the top-down approach prevailed because it aligned with a hierarchical organisation of governance since neolithic ages. This led to many compromises as lobby groups tried to retain established businesses despite the quest for change. The bottom-up approach, often occurring in parallel, was driven by spontaneous initiatives, which most governments viewed with suspicion. However, it was grass root movements that gave rise to green parties in the developed countries, and which now have a strong influence on political outcomes (i.e. the abandonment of nuclear power in Germany). I wonder if the urgency of climate change will allow approaches to run parallel, both supported by governments. This, however, will need citizens to be both informed and enthusiastic. Hence I find it important to leave the reductionist, materialist view on cities, as pursued in chapter 12, behind and take a wider approach. Rather than leaving input to the “experts” or specialists we need to be open to much broader input from people from different backgrounds and skillsets; together this could generate much richer and integrative information, ideas, and/or solutions. By including the metaphysical context of urban inhabitants, I expect both greater traction and the widest possible engagement amongst the people in order to fast-track response to climate change. The United Nations are the best possible driver of these efforts and this Fifth Assessment Report of the IPCC should initiate this bottom-up development. After the failed Copenhagen Conference, we can’t just return to a routine delivering reports, new pathways need to be found and pusued additionally. Chapter 12 is intrinsically about reducing GHG emission by urban planning. I haven’t found any reference about utilising urban design to protect cities from the consequences of climate change. The majority of both human settlements and infrastructure are located in coastal areas that are exposed to sea-level rise. “A 2°C warming limit, if interpreted either as a temperature-stabilization level, or as holding temperature below this level, would probably lead to many metres of SLR in the coming few centuries and would maintain rates of SLR higher than today for many centuries” (http://www.nature.com/nclimate/journal/vaop/ncurrent/full/nclimate1584.html#/f1), which would make all coastal metropolises and infrastructures disappear. In city terms 300 is a brief time-span; hence short-term measures, such as sea walls, won’t ensure the survival of coastal settlements. I’d suggest that a variety of soft engineered interventions need to be developed within coastal regions as well as strategies put into place for scheduled retreat of wide areas from the impact zones. Both scheduled retreat from endangered coastal land and the compaction of urban form in general with contribute to human resilience to climate change as a first response to sea-level rise to win time before a complete re-structuring of our civilisation can come to fruition. Bernd Gundermann Auckland, New Zealand, April 2013	Noted: not relevant
31625	12					Source is missing.	Not relevant anymore for revised chapter
31622	12					Source is missing.	Not relevant anymore for revised chapter
31626	12					Source is missing.	Not relevant anymore for revised chapter
31620	12					One "(" is too much.	Not relevant anymore for revised chapter
31623	12					Regarding all figures in chapter 12: Please check the description above figures for unity! Sometimes the authors write source with a big letter "S", sometimes it is "source".	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
20641	12					The city of Essen does not have 11 million inhabitants, but 573,000. It is the entire "Ruhr metropolitan area". This should be the correct name.	Not relevant anymore for revised chapter
19168	12					General comments. This chapter talks about urbanization and how urban areas make up over half the world's population. This trend will continue. To a certain extent it will assist in electricity supply, for it is much cheaper to connect urban households. Never-the-less, there will still be about 500 million households in rural areas. These need good communication systems to get products to market and to buy products from trading centers. Without such services, rural people will not be able to increase their income. Use of sustainable natural resources is key to poverty alleviation, especially in rural areas.	Not relevant anymore for revised chapter
20665	12					There is an inconsistent use of terminology around the concept of "land use" throughout the document. Rather than a fault of the authors, this is reflective of disciplinary boundaries that have evolved around the issues of consideration. The first few pages of this chapter (5-10) focus on "land use" as conceptualized from the field of geography. Simplifying grossly, the emphasis in such view is on conversions of land from agricultural or forested uses to urban uses. Within an urban use it is less important whether it is residential, commercial, or a street --it's an urban use. By contrast, the later pages of the chapter (on spatial planning) use the term "land use" from the field of City Planning. Again simplifying, the term refers to the type of use within the area (high density residential vs. strip mall retail). The two are used interchangeably in the text, and this is confusing to the reader. One way to reconcile the terms is to use "land coversion to urban uses" instead of the more generic "land uses". It is also important to say that Ian McHarg's approach to considering land use was more aligned with the a textured and rich way of considering changes to the landscape and within the landscape, than what both of these approaches suggest.	Noted
20669	12					Not all cites are in the references.	Not relevant anymore for revised chapter
20667	12					Definitely a candidate for cutting	Not relevant anymore for revised chapter
20673	12					Figure is hard to understand and adds little to the main point. Consider cutting.	Not relevant anymore for revised chapter
41092	12					table has no units of measurement. No description and interpretetaion of the table in the text. No standard deviations are given.	Not relevant anymore for revised chapter
41094	12					relevance unclear, no connection to text.	Not relevant anymore for revised chapter
34949	12					unit of built up area is missing	Addressed in revised text
34950	12					this should be turned into a figure as these numbers are hard to relate	Addressed in revised text
35048	12					Explore whether information in this table can be synthesized and ideally be presented as a figure.	Addressed in revised text
34954	12					Consider changing this into a figure (e.g. only 1 column wide)	Addressed in revised text
34962	12					Remove, as too detailed. It is sufficient to explain Scope 1-3 in the text. In general there is no space for such information in the chapter as other more important issues should be covered in the chapter.	Addressed in revised text
34974	12					Delete. This is not information policy makers are interested in. Doing an assessment of these studies, summarizing the GHG estimates of infrastructures across studies is what should be done in an assessment. Please try to do this.	Addressed in revised text
34988	12					This table can be turned into a figure. X-axis = % share of total CO2 emissions; Y-axis = list of different sectors, for each sector have bars for each region (colour code for region) and a marker or the like for the global average.	Addressed in revised text
34990	12					Convert into figure, see comment on Table 12.5	Addressed in revised text

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34999	12					Delete. The selection here is due to very random and I suppose very different definitions of urban areas, e.g. Essen is actually including a number of other cities next to it, which is to say the least an odd definition. Should be called "Ruhr area" instead of "Essen". Ordering by total emissions does not make sense as comparing apples and oranges resp. as it is a no-brainer that bigger cities emit more.	Addressed in revised text
35009	12					Delete. As no details are given about the different studies and scenarios this table is useless. Probably would be even with such details.	Addressed in revised text
35035	12					What are the reference, what are the sources, categories for emissions (spatial planning, systemic intervention) need to be added; there is great overlap for the spatial planning ones; positive effects of buildings on buildings is not an opportunity. Whole approach seems flawed, evaluation criteria not well founded and due to large gaps and lack of quantitative iformaiton in general not of great benefit. Needs to be moved to section 12.4.8	Addressed in revised text
34989	12					Proper reference needed! Update to 2010 needed.	Addressed in revised text
34991	12					"IPCC calculations": Rephrase. The entire report is "IPCC assessment". So either leave it our or describe method applied.	Addressed in revised text
35003	12					You missed to name "building" in your list	Addressed in revised text
35014	12					The figures in this chapter need sigificant improvement. E.g. 12.13.D should be done with range plots instead of bar plots. This would allow a denser presentation and better comparision. As difference between scenarios is not clear detailing their output is meaningless.	Addressed in revised text
35015	12					Also here merge bar plots to range plots resp. data points. Insert a referece (BAU)	Addressed in revised text
35046	12					Try to use the 11 categories established in Table 12.9. Another example for lack of structure in the chapter.	Addressed in revised text
34944	12					is an extension to smaller cities possible as these make the biggest volume	Addressed in revised text
35049	12					Is there any way how to assess how substantiated the pledges are? If not: Delete figure.	Addressed in revised text
34946	12					As we agreed to use 3 types of regional aggregation throughout the report (RCP5, RCP10, ECON5), please try to provide data in those terms.	Addressed in revised text
34947	12					add to caption that this is historic and projected (2025) data	Addressed in revised text
34965	12					Need too ensure that the EDGAR emissions data used in this figure is consistent with the historic emission database built up by the Data Task Group to ensure coherence throughout the report. This database will shortly be made available to LAs	Addressed in revised text
34967	12					Graphic/Content: A bracked should be introduced that details the total of local and transboundary shares. It would be desirable to have this for more than just two cities. If it is only available for these two, you either need to discuss whether this can be thought of to be indicative - if now this should not be presented as figure. Units in title have error ("million mt") and need further clarification what each number means.	Addressed in revised text
34969	12					Without providing the required background in the caption or the text this figure is not comprehensible. It is not clear what the arrows mean, what the shaded area defines. Please consider either to develop new figure or to explain concepts in the text only.	Addressed in revised text
34972	12					Delete. This is taking up far too much space, not even providing real data. Further, this is too basic to include in the chapter.	Addressed in revised text
34978	12					Please critically discuss in the author team how confident you can be to draw conclusions from this data given that the underlying assumption of this study is that globally western standards are met in 2050.	Addressed in revised text
34980	12					The y-axis unit for (B) is wrong as it is missing that it is per capita.	Addressed in revised text
34983	12					Update so that it goes to 2010, you might be able to make use of the AR5 Historic Emissions and Trends Database.	Addressed in revised text
28971	12					Great to include this chapter. However, informal settlements are completely missing. They offer special challenges as well as opportunities.	Addressed in revised text

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41080	12					The introduction starts with definitions and terminology before even saying what the focus of the chapter is, and how it is being addressed. Revise introduction and move definitions and terminology to a subsection of 12.2.	Addressed in revised text
23643	12					Peri-urban agriculture and urban agriculture are increasingly important in developing countries. This reduces waste, increases food security, is a potential end use for urban residuals and should be integrated into this discussion	Not relevant anymore for revised chapter
41089	12					1-3 are no trends. In addition all statements refer to urban areas. Given the uncertainties of urban population statistics the claim a majority of people live in urban areas is exaggerated (see chapter 18 GEA on uncertainties in the UN urban popluation statistics). Substantiated urbanization trends are: urban population will be larger than rural population in the coming decades, rural poulation will decline in absolute number after appr. 2020-2030, numbers of megacities increase, rank size distribution of cities remains constant. Issues such as regional distribution of urbanization trends, growing vs. declining human settlements and the relation between industrialization and urbanization are neglected.	Addressed in revised text
31616	12					Title of the Section should be adapted to the content. The text below describes the expansion of urban areas, not the trends in urban land use.	Not relevant anymore for revised chapter
34948	12					Consider providing numbers rather relative to the existing size of urban areas, providing absolute numbers, even when comparing them to some other numbers (such as Denmark - is this Denmark with or without Greenland?)	Addressed in revised text
41091	12					Reasons for observed patterns? E.g.transportation costs, national per capita land endowment, income?	Not relevant anymore for revised chapter
34951	12					2nd paragraph redundant with Section 12.3.2.4	Addressed in revised text
41093	12					What does urban development mean in this context? The section presents a description of the basic stocks and flows dynamic and some trends in the development of built environmental stocks. Again it is suggested that urbanization is a driver of GHG emssions, while it is more likely that industrialization is the driver. Broaden reference basis.	Not relevant anymore for revised chapter
34205	12					Section 12.3: See comments below. This section, focusing largely on allocating anthropogenic CO2 among different spatial units, goes on far too long and could cut to the chase more quickly. One way to do so would be to start with the material presented on page 22, lines 17-29; omit the over-long discussion of aggregate CO2 trends in urban/rural categories and across global regions; and make the connection clearer to policies.	Addressed in revised text
34206	12					Section 12.3.1: It is not clear why the assignment of anthropogenic CO2 emissions to human settlements (and within human settlements, to urban and rural) is important. This accounting exercise goes on for a while.	Addressed in revised text
23633	12					This section could be edited. The authors make their point that emissions in urban areas will vary by accounting method and that emissions are much greater for urban areas if one includes all necessary services to maintain those areas. Cutting out Fig 12.6 and shortening the text would be helpful	Addressed in revised text
34208	12					Section 12.3.2.1: Why is the accounting important? It does not speak to the policy-relevant aspects of urban form.	Addressed in revised text
34209	12					Section 12.3.2.2: Too much reliance on a few sources (but still not sure why all this accounting matters in the first place)	Addressed in revised text
34210	12					Section 12.3.2.3: The focus on the amount of infrastructure built (actually, a focus mostly on the amount of cement consumed) neglects the spatial arrangement of infrastructure. This might need to be clarified structurally in the chapter.	Addressed in revised text
34211	12					Section 12.3.3: The allocation to urban and rural areas should be shown on a per capita basis to emphasize how the transition from rural to urban is affecting the per person trends. The same comment applies in many places throughout section 12.3 (e.g., page 21, lines 10-18).	Noted: We donot see much issue about it but in the revised chapter must be more clearer
34982	12					Please go beyond citing number from figures in your assessment.	Addressed in revised text

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34984	12					I suggest to structure by comparing different perspectives.	Addressed in revised text
34998	12					The method of ranking applied here is not helpful as it is a no-brainer that emissions are high where there are big power plants and big industry. So these are the drivers for high emissions and not that there is a city next to the power plant!	Addressed in revised text
35001	12					Only citing numbers. Not an assessment.	Addressed in revised text
35004	12					This section is flawed in numerous ways. (1) It is my understanding that Müller 2013 is about to be constructed infrastructure and not as indicated in the title about existing one. (2) There are entire chapters discussing the issue of burden sharing. This should by no means done in this chapter and does not fit into this section anyway. (3) If Figure 12.12 is actually about "large amount of current emissions NOT related to materials" why are infrastructure stocks then a problem?	Addressed in revised text
35007	12					There is no explanation about the models/studies and their scenarios, the differences between models and scenarios. This is though deeply needed particularly given the huge ranges. This would clarify whether ranges are due to uncertainty or there are other determinable drivers that case these.	Addressed in revised text
35008	12					The whole section remains purely descriptive. The assessment is missing.	Addressed in revised text
35012	12					It is not clear to me what the difference is between e.g. the cement emissions discussed here and in the previous section based on Müller 2013. Linking this or pointing out how they complement each other is crucial.	Addressed in revised text
34216	12					Section 12.3.4.4: Another important section that should come sooner, by shortening the CO2 accounting subsections that precede it.	Not relevant anymore for revised chapter
23639	12					This is perhaps the most informative section in this chapter	Not relevant anymore for revised chapter
34219	12					Section 12.4: This section treats primarily the relationship of human settlements to vehicle travel, and under-treats other causes of anthropogenic emissions that might also be related to human settlements. Much of the literature is from the developed world, which may not be relevant to the focus of climate policy.	Addressed in revised text
34231	12					Section 12.4.10: Again the connections to settlement patterns, spatial infrastructure arrangements, or spatial policies are not clearly made.	Addressed in revised text
35042	12					It is a core author taks to reference other parts of the report, to reflect on what is discussed there and in this case to use what is done in Ch.10 as a basis and to work out the urban, etc. specifics here.	Addressed in revised text
35043	12					It is a core author taks to reference other parts of the report, to reflect on what is discussed there and in this case to use what is done in Ch.11 as a basis and to work out the urban, etc. specifics here.	Addressed in revised text
34221	12					section 12.4.2: This and subsequent sections rely on outdated literature in many cases, and do not attempt to provide a review of counter-claims by studies suggesting that relationships between the built environment and travel are small. * The claim that density is a major factor in reducing auto travel is counter to the Ewing-Cervero metastudy which concluded that density was a relatively weak predictor.	Addressed in revised text
35020	12					The content of the section has nothing to do what the title says.	Addressed in revised text

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34224	12					Section 12.4.4: The language here (as in some other places in section 12.4) is too strongly causal, inconsistent with a more nuanced discussion that has long been present in much of the BE-travel literature. Citations are spotty and inconsistent. The inclusion of “green areas” here is out of place. * The authors seem to be suggesting that the built environment influences how people travel, and do not acknowledge that how people travel may influence the development of the built environment, giving rise to much variation historically and spatially in the built environment irrespective of planning or land use policies. Policy prescriptions that are intended to change the built environment in order to subsequently reduce CO2 emissions from vehicle use may be ineffective if the built environment strongly reflects demand rather than strongly influencing it.	Not relevant anymore for revised chapter
35033	12					please add the role of car traffic on walkability incl. security/safety aspects	Addressed in revised text
30490	12					No mention is made of the integration between transit and walking/cycling. This is by no means obvious, as evidenced by the street design around many (railway) stations.	Noted
35034	12					Section too short, references missing	Addressed in revised text
34227	12					Section 12.4.8: This section is not well integrated and the term “systems integration” is not well defined or exemplified.	Noted: not relevant in revised text
35036	12					Heading text mismatch	Addressed in revised text
34230	12					Section 12.4.9: This section is quite short and does not lay out the basic data on variation in energy consumption with respect to spatial urban settlement patterns prior to making policy recommendations. More discussion of the spatial aspects of cogeneration and smart grids would be helpful.	Noted: the whole section is changed but implications of spatial urban settlement pattern are presented from the perpsective of infrastructure rather than technology in revised text. Issues like cogeneration and opporunity for decentralized energy generation and their potentials are referenced in 12.3.2.3.
35039	12					This section needs to be linked to Ch.7 and built upon it. (Core author task.)	Addressed in revised text
35040	12					This section is only acecdotal.	Addressed in revised text
34232	12					Section 12.5: While this section introduces a number of possible kinds of planning and policy intervention, it does not connect these interventions clearly to the spatial patterns discussed or implied in the previous sections, nor does it present evidence about the efficacy of such interventions in realizing some set of desired spatial patterns, or in reducing auto use or other forms of anthropogenic CO2 associated with urban form.	Addressed in revised text
35044	12					I suggest to focus more on mechanisms rather than list who did it.	Addressed in revised text
35081	12					Urban planning. The section lacks linkage to drivers (see above) and quantitative data.	Addressed in revised text
34233	12					Section 12.5.1: The “holistic approach” is not clearly explained with concrete examples.	Not relevant anymore for revised chapter
30492	12					In general, there has to be more awarenss in the document that spatial planning only influences a small portion of urban land uses in any year, and even a small portion over a periode of 10-20 years. This certainly hold true for the 'old world'. Throughout the document, it would be good to acknowledge this fundamental limitation of planning. Yes, planning can have a profound influence, but only if it is possible to shape a substantial size of the built-up area. This is only true in fast-growing regions and much less so in the cities of the northern hemisphere.	Taken into account: We have presented that mitigation opportunities for such planning are higher in new urbanizations that are going to happen in the revised text
34234	12					Section 12.5.2: There is no mention of market, technological, or social forces affecting spatial patterns, giving the incorrect impression that urban form is more or less the outcome of policies, planning and governance.	Addressed in revised text

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34235	12					Section 12.6: Section appears to be overly focused on the US governance and institutional context, with little discussion of how these concerns and issues vary throughout the world, particularly in developing countries.	Addressed in revised text
35082	12					Governance, institutions, and finance. There is a wide range of literature on policies that are not covered. This section should do an ex-post analysis and as a minimum outline best-practice examples and indicate which policies have (not) made significant contributions. Evaluation categories could be: efficiency, effectiveness, feasibility, costs [at least order of magnitude], etc. Policy categories could include: information campaigns, change of price, subsidies, voluntary actions. This section should regularly link to policy chapters and framing chapters where needed.	Addressed in revised text
35083	12					Financing. The chapter should look into the requirements for financing and institutions to provide it. It could pick up from what is (or should be) done in Ch.16 and elaborate on/cover issues specific to the chapter.	Addressed in revised text
35084	12					Sustainable Development. The section is not true to what sustainable development encompasses as it only covers UHIs and carbon sinks.	Addressed in revised text
35051	12					Determine where will be the core discussion on UHI in AR5 WG III, reference that, only add details not covered there. If central UHI discussion should be here, closely collaborate with and reference to WG II instead of referencing randomly to subset of studies assessed by WG II.	Addressed in revised text
23644	12					Green infrastructure such as stormwater bioretention systems, repurposing urban residuals for biogas production and soil amendments are all factors to consider here as well	Not relevant anymore for revised chapter

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41095	12					This section ignores even basic textbook knowledge about the dynamics of GPP, NPP, standing crop, species composition etc. (see e.g. Odum 1971). It also ignores the state of the art in assessing the carbon sequestration potential of the terrestrial plant biomass (see e.g. Roxburgh et al. 2006, but there are many more). The technical literature on assessing carbon sequestration potentials usually does not discuss the example of green spaces in cities, but the ecological and assessment principles are nonetheless the same and must be taken into account. Data are presented without a hint as to what they are supposed to measure (page 54, lines 14 to 33), temporal dynamics, which are decisive to assess if a specific measure results in a net reduction of CO2 emissions, as well as rates (annual fluxes) are completely ignored. At the same time trivial qualitative observations (trees store more carbon, the total amount of green areas varies between cities) are presented as if they were surprising (page 54 lines 25f, and 28f). The majority of the data quoted in this section refer to the average (aboveground) carbon stored in plants per unit of area in different cities. But this is not said, instead these data are presented sometimes as “carbon sequestered” sometimes as “carbon storage” (page 54 lines 14-40). The decisive distinction between the carbon stock and the annual fluxes becomes opaque. The carbon stock per area is not a reliable metric for the carbon sequestration or the mitigation potential. An assessment of the mitigation potential of urban green areas would require taking into account the range of potential increase (see IPCC definition of mitigation) in annual net C-fixation, taking into account a reference point (see below) and the temporal development (annual net C fixation can only take place until the carbon carrying capacity on that area is reached). Specifically in urban areas the obvious trade-off between density requiring mitigation options in the transport, energy and building sectors and the density decreasing effect of green areas need to be considered. Also trade-offs between green areas as sinks and green areas as source for renewable energy need to be considered. Consequences due to a changed albedo should at least be mentioned. All studies of the mitigation potential from land use and cover change deal with the difficult question of the appropriate reference point against which improvements should be measured. While there might be no agreement on the right reference point, the issue must at least be discussed. Finally, a quantitative comparison between cities’ GHG emissions (including a specification regarding production or consumption based accounting) and the net emissions saving potential from expanding inner city urban green spaces is essential to judge the relative importance of urban green spaces as mitigation strategy. I exemplarily went back to some of the quoted papers and found in all cases I examined that the authors simply repeated some arbitrarily selected statements from those papers, without providing context and without a critical assessment. I suggest that this section is either deleted or newly written from scratch. Odum, E.P. (1971). Fundamentals of ecology. W.B. Saunders company: Philadelphia	Not relevant anymore for revised chapter
35085	12					Land use & urban carbon sinks. The effect of carbon sinks in urban areas is negligible given that urban areas cover only about 2% of overall land area. Numbers in this section need to be put in context with Ch.11 numbers. This section should be cut/reduced, instead the focus should be on density.	Addressed in revised text
35086	12					Gaps. A more systematic discussion is needed here.	Addressed in revised text
41090	12					What is the relevance? Relative numbers are missing. Urban areas have a minor contribution (appr. 2%) to global land use and cover change. The directly land use related mitigation potential of urban areas is probably very small and is by the way nowhere specified in the remaining chapter.	Not relevant anymore for revised chapter

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35080	12					The Executive Summary needs to better carve out the main findings of the chapter. In order to ensure well substantiated uncertainty statements the chapter needs to ensure that it provides a traceable account in its sections.	Addressed in revised text
24252	12	0				Excellent use of settlement perspective to be able to take a cross sectoral approach to identify ways of optimizing the system rather than its individual components in the rapidly growing urban settlements	Noted
35354	12	0				Data of different year base has been used , how it has been equated	Not relevant anymore for revised chapter
34198	12	0				It would improve the introduction to start by defining variations/typologies of settlement patterns, infrastructure, and spatial planning. This chapter presumably carves out a topic area distinct from, e. g., the transportation and housing chapters, by talking about their spatial interrelationships. It would be very helpful to make this clear as well in the introduction.	Addressed in revised text
34199	12	0				I have the impression that the chapter consists of a selective presentation of evidence, not really engaging with any debates in the literature.	Addressed in revised text
34200	12	0				The chapter also could do a better job of relating the strong focus on the emissions related to providing physical urban infrastructure to the separate but related topic of how the spatial arrangement of the built environment might affect the GHGs associated with transport, energy use, municipal services, and perhaps other forms of CO2 production. (The material on availability of green space and its relationship to heat islands and carbon sequestration in section 12.8 should be moved together with the other material in section 12.3.)	Addressed in revised text
34203	12	0				As in the first order draft, this chapter continues to fail to explain clearly the importance of “urbanization” in the role of GHGs, notably, by not always distinguishing total and per capita energy consumption, and by not always distinguishing between economic growth and urbanization. For example, the chapter seems to imply that urbanization is causing higher per capita emissions in developed countries, when it would be more accurate to say that economic growth is causing urbanization, higher consumption of land, and higher consumption of energy.	Taken into account: section 12.2 in revised text has addressed urbanization in the contxt of multiple domensions. The income and economic aspects have been clearly stated as key driver for energy and emissions. The whole new section in drivers has been introduced in section 12.3. The per capita discussions are introduced in 12.2.
33467	12	0				The (almost exclusive) focus on urban settlements is surprising. They may be responsible for 60-80% of GHG emissions, but clearly a non-negligible proportion are related to non-urban settlements and infrastructure. As is pointed out, many infrastructures/services are provided to urban areas from much larger catchments so the design of these systems inevitably influences the urban GHG footprint. Having said that, I think authors coverage of the urban issues is highly commendable overall.	Not relevant anymore for revised chapter
33468	12	0				Throughout the chapter a number of figures are quoted for energy use, GHG emissions, CO2 emissions - direct and indirect - to urban areas. The reader would benefit from a clear statement of all these figures, what they mean/why they're different and what they cover/don't include within their calculation. Otherwise the reader gets lost in a number of incomparable values.	Taken into account: Section 12.2 has provided clear statements on this now (12.2.2.2 in particular)
33469	12	0				Another general comment is that I felt there was a disproportionate emphasis on the transport related issues of low carbon settlements. I am not as familiar with the breadth of literature the authors have clearly reviewed as part of this process - so this may just reflect that, but if this is the case I think it should be clearly stated.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
26375	12	0				I cannot know if this is a purposeful decision, but to me it seems rather odd that fairly many of the chapters are now based on one single source (and the source may even not be available). FOD brought together the existing studies and their findings and made conclusions based on that, but this SOD mostly lacks this kind of approach - especially surprisingly since FOD already largely included this state-of-art perspective.	Addressed in revised text
26357	12	0				This chapter is dominated by examples from the US followed by India with a few examples from Australia and Europe and fewer examples from developing countries. It is recommended to improve its coverage in terms of regional balance and provide more examples from other regions, especially from developing countries, urban areas of which are expected to absorb most of population growth, experience unprecedented levels of infrastructure development accompanied by significant energy and natural resource use and be responsible for most of GHG emission growth in the coming decades.	Addressed in revised text
20639	12	0				Reduce amount and length of tables to save space.	Addressed in revised text
41378	12	0				Clearly define urban and infrastructure early in chapter. In defining infrastructure, emphasize that the definition extends beyond roads, water, sewer, etc. The section on urban form is very transportation centric (page 27-41). Transportation and buildings are both contributors to emissions in urban areas. It is useful to depict the data along these dimensions, and describe the urban form section in this manner. Discuss how land use patterns affect residential energy consumption and how compact form and infill development minimizes the conversion of urban land from forest or natural uses to developed uses. Please avoid language that suggests a subjective judgment. Examples: p. 31, line 16. The word "smart" is subjective and is not defined.	Taken into accout: A more holistic and integrated perspective is provided in revised texts in section 12.4.
41379	12	0				This chapter would greatly benefit from a more consistent focus on developing countries, however. It suffered from a disconnect between the introduction that focused on massive urban growth in developing countries and an institutional analysis almost entirely based on examples from middle or upper income countries. The authors argument that "many developing countries, especially in Africa, planning institutions are weak or nonexistent" (pg. 48) needs to feature much more prominently throughout the chapter given the international readership of the IPCC report and the trends in urban growth. Informal settlements are a dominant form of urbanization and urban planning is often the exception rather than the norm. This is highlighted by the fact that over one billion people live in slums. The document would be improved with more examples from developing countries and a deeper exploration of the non-English literature in the field. Many examples could also be taken directly from the grey literature published by municipal authorities.	Addressed in revised text
41380	12	0				Throughout the chapter, consider replacing the term "urban sprawl" or "sprawl" with "dispersed development" or "low-density development."	Not relevant anymore for revised chapter
41381	12	0				It is a problem that "urban" has been defined such that all future population growth will occur in urban areas, because the term loses most of its meaning and it becomes difficult to distinguish "urban settlements" and "cities" from "human settlements" generally. It would be useful to categorize "urban" settlements in a way that would make discussion of data and trends more meaningful. At a minimum, please give definitions of "urban settlements" and cities.	Noted: The opening statement in intro starts with distinction between human settlement and urbanization and we have protrayed urbanization as a mega trend that is transforming human settlements into urban areas. We feel that current way of portryal in revised texts is reasonably clear.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41382	12	0				Whole Chapter. Much of this chapter ignores research and thinking on self-governance and on urban political economy. This chapter puts too much emphasis on municipal authorities and not enough on citizens as ultimate drivers of policies and behaviors. For example, page 38, line 39-41 seems to advocate for taking land use control from local jurisdictions. while this may make sense in some cases, you need more nuance here. Research suggests that policies people don't trust and support--and local and nested policies can do better on those dimensions--don't work well.	Noted: The chapter has been revised substantially from previous version. Authors have added new section on drivers many of which have dealt with behavoir and policies. There is emphasis on municipal authorities in this chapter but authors have flagged enough about the varying degrees of autonomy and authority of local government, lack of local institutional capacity among developing cities, the Importance of the coordinated policies within and across jurisdictional boundaries as well and multi-level governance concept. The mentioned text in pag 38, line 39-41 doesnot exist anymore in revised text.
41383	12	0				Throughout the chapter, projections of GHG emissions associated with urban areas assume static technology and nearly static demand. Insufficient attention is paid to the dynamics of technology. If projections of GHG emissions under alternative technology change scenarios are not available, then add a section at the end of the chapter for further work.	Taken into account: See sections 12.2, especially 12.2.3 in revised texts. The projection literature itself is limited in regards to technology.
41384	12	0				Throughout the chapter, the analysis of human settlements and mitigation focuses on CO2 emissions and provides very little information about non CO2 emissions and mitigation options. Please point this out in the Introduction, explain why there is lack of information presented on non CO2 emissions and mitigation, and describe how the results might change if all GHG emissions were to be accounted for.	Noted: Focus on CO2 is justified for urban context but we have been explicit that urban contribution to global GHG will be less if non-CO2 GHGs and CO2 from land use changes in considered; see 12.2.2.1 ("Contribution to total global GHG emissions may be more modest as the large majority of CO2 emissions from land-use change, N20 emissions as well as CH4 emissions take place outside urban territories")
41385	12	0				It seems that something should be said here about the need for enforcement of policies.	Not relevant anymore for revised chapter
41386	12	0				Sections 12.5.5, 12.5.6, 12.5.9, and 12.4.10 are all transportation related. Please consider combining them into one section.	Not relevant anymore for revised chapter
41387	12	0				The discussion on robustness and agreement is present in executive summary but lacking in the text.	Not relevant anymore for revised chapter
40721	12	0				This chapter focuses on urban settlements, but does not seem to have enough data. It might be useful to know there are some newest research, such as the following: C. S. Ho, Y. Matsuoka, J. Simson, and K. Gomi (2013). Low carbon urban development strategy in Malaysia - The Case of Iskandar Malaysia development corridor. Habitat International 37, 43-51. (DOI:10.1016/j.habitatint.2011.12.018).	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
28009	12	0				It seems that the terms GHG and CO2 are used inconsistently in this chapter, see for example p. 12-13. Please revise.	Taken into account: Efforts are made in revised text to use the proper term as much as possible.. But in some cases that distinction are not important too.
41079	12	0				In the following few detailed comments I intend to demonstrade on the example of the first papes of the report that the style of presentation needs to be improved. Similar concerns apply to the whole report.	Noted.
35010	12	0				General comment: Given that the draft commented on is the Second Order Draft and there is only one iteration left until the Final Draft, I chose to get to the point in my comments and be very explicit about what has to be done as a minimum to meet the standards required for IPCC reports.	Addressed in revised text
35052	12	0				Main General Comment (1): The chapter is in a very bad state. The chapter needs significant improvement in its approach of assessment making, coverage of literature, level of aggregation, establishing and consistent usage of terminology, consistency and the linkage within the chapter and across the entire report. The chapter lacks a storyline, ignores a number of crucial issues and does not answer the core questions that it should answer.	Addressed in revised text
35053	12	0				Main General Comment (2): Lack of proper assessment making. The chapter lacks an encompassing review in most sections and focuses instead on only one or a few references, often of the authors themselves. An assessment not only needs to do that but needs to on top of that draw conclusions from the review with respect to the questions it tries to answer.	Addressed in revised text
35054	12	0				Main General Comment (2.1): Typology / Regional differentiation. In order to differentiate between different situations, challenges and options due to regional, socio-economic and other factors, the assessment needs to be structured by relating to different types of human settlements (or urban areas).	Addressed in revised text
35055	12	0				Main General Comment (3): Lack of coverage of core issues (1): Rural areas. While there are surely more publications on urban areas there is also research on the role of rural areas. This is completely neglected.	Addressed in revised text
35056	12	0				Main General Comment (3): Lack of coverage of core issues (2): Driver data. An assessment of driver data is completely missing. This is though absolutely essential as an empirical basis for the rest of the entire chapter.	Addressed in revised text
35057	12	0				Main General Comment (3): Lack of coverage of core issues (3): Developing countries. Though of great relevance the specifics of developing countries is hardly covered. The box on LDCs is of poor quality. The chapter does not cover access to clear energy and water nor informal settlements.	Addressed in revised text
35058	12	0				Main General Comment (3): Lack of coverage of core issues (4): Urban economics. The chapter overestimates the role of planning and should rather try to broadly cover urban economics. I understand the difficulty to find appropriate contributors but encourage to presue this further.	Addressed in revised text
35059	12	0				Main General Comment (4): Failure to answer core questions & Lack of storyline (1): The chapter does not establish what its contribution to the overall report is.	Addressed in revised text
35060	12	0				Main General Comment (4): Failure to answer core questions & Lack of storyline (2): The chapter fails to frame itself as providing a comprehensive overview on the spatial dimension of climate change mitigation.	Addressed in revised text
35061	12	0				Main General Comment (4): Failure to answer core questions & Lack of storyline (3): The chapter fails to provide the degree to which it can contribute to mitigation.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
35062	12	0				Main General Comment (4): Failure to answer core questions & Lack of storyline (4): The chapter fails to indicate the mitigation specifics of urban areas, the degree to which urban areas (or other aspects) provide an important lever for policies and to what degree policies can (not) be implemented at that level of governance (i.e. comparing where emissions can be reduced more effectively and what level of governance controls policies affecting this most).	Addressed in revised text
35063	12	0				Main General Comment (5): Chapter and section structure (Main): Compared with the FOD the revised structure is still not working. i.e. there is no storyline emerging from the chapter. There are the following problems outlined in detailed comments.	Addressed in revised text
35064	12	0				Main General Comment (5): Chapter and section structure (1): Drivers. There is no section on drivers. Due to this the remaining chapter lacks an empiric basis. The chapter should build upon Ch.5.	Addressed in revised text
35065	12	0				Main General Comment (5): Chapter and section structure (2): Overall framing / multi-objective approach. Spatial planning section (Section 12.5) is only loosely linked to mitigation as the lack of previous sections outlining drivers (e.g. drivers of sprawl) inhibits this section to evaluate options with respect to drivers. Likewise other sections would profit if a more systematic approach would be followed. The chapter needs to reflect particularly in its section on sustainable development (12.8) but also throughout the rest of the chapter that mitigation can not be looked at by itself but that other objectives (e.g. energy access) need to be taken into account, too.	Addressed in revised text
35066	12	0				Main General Comment (5): Chapter and section structure (3): Section framing. Introductions to sections and conclusions drawn are missing. It is not made transparent what methodology and perspective is taken in the respective sections and why. Also the conclusions taken from the material presented are not presented clearly – at all.	Addressed in revised text f
35067	12	0				Main General Comment (6): Terminology. Core terminology is in parts not properly established in the chapter (e.g. working definitions for urban and city) and for the terminology that is established this is then not used in the rest of the chapter (e.g. different accounting tiers).	Addressed in revised text
35068	12	0				Main General Comment (6.1): Emission accounting. The GEA has thoroughly reviewed energy accounting methods and established definitions for territorial and consumption perspective. This should be made us of in the chapter.	Addressed in revised text
35069	12	0				Main General Comment (7): Inconsistencies and redundancies. There are inconsistencies and redundancies between sections. The impression is that authors between sections did not communicate and did not read each others contributions.	Addressed in revised text
35070	12	0				General Comment (1): Definition of human settlements. The definition should not be as broad as it is done in order to avoid that everything is included	Addressed in revised text
35071	12	0				General Comment (2): Urban/rural. The chapter needs to develop a conceptual idea how weighing between urban and rural is done and how the two aspects are linked.	Addressed in revised text
35072	12	0				General Comment (3): Figures/tables. The general quality of figures and tables is very low, e.g. regularly lacking units.	Addressed in revised text
35073	12	0				General Comment (4): FAQs. The FAQs should highlight interesting or central issues. This is not done	Addressed in revised text
35074	12	0				General Comment (5): Quantitative data. The chapter in many parts stays on the level of qualitative descriptions – also where good quantitative data exists.	Addressed in revised text
35075	12	0				General Comment (6): Urban density/scale. This issue is not covered in the needed complexity. It is not as simple as to argue that greater density and larger total population is better. Thresholds and trade-offs need to be assessed (opportunity for REN supply, design elements [shading, orientation], pollution, etc.).	Addressed in revised text
35076	12	0				General Comment (7): Scenarios. There is a wealth of urban scenario literature (e.g. by O'Neill) that is neglected. The chapter only cites three studies.	Addressed in revised text
35077	12	0				General Comment (8): Lack of broad literature review and assessment. Examples: Emissions - the EDGAR data analysis by Marcotullio et al. is only one analysis, there are many others.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
35078	12	0				General Comment (9): Further neglected issues (1): Shrinking cities. This issue, including the problem of too big infrastructure relative to demand is not covered, though it is an emerging problem in countries with decreasing population.	Addressed in revised text
35079	12	0				General Comment (10): Further neglected issues (2): Changing the urban energy system. The required changes to urban energy systems are not appropriately discussed. The importance of energy systems for mitigation needs to be assessed (with the outcome that significant mitigation can only be done when the energy system contributes). The discussion should include the implications of the perspective taken (territorial/consumption) on the levels of governance involved. GEA Ch.18 has done this comprehensively and needs to be referenced.	Addressed in revised text
35087	12	0				Main General Comment (7): Suggestions for structure and process (1): Mitigation options. The beginning of the chapter should introduce an overview of mitigation options that can then be referred to throughout the chapter.	Addressed in revised text
35088	12	0				Main General Comment (8): Suggestions for structure and process (2): Adjusted chapter structure. Section content could be organized as follows: [12.1] Short introduction, [12.2] Definitions and Drivers. Instead of focusing on accounting issues, [12.5] Spatial planning. How planning can contribute with respect to the drivers detailed in previous sections, [12.6] Focus on policies, e.g. land-taxation issues, [12.7] Could possible cover ex-post analyses.	Addressed in revised text
35102	12	0				General Issue: A topic missing from the chapter is rent value capture and its implications for mobilizing investments.	Addressed in revised text
35103	12	0				Main General Comment (9): The chapter has a bias on industrialized countries. There is no mention of Africa	Addressed in revised text
35104	12	0				Main General Comment (10): The chapter has a bias on industrialized countries. There is no mention of Africa. Difference in low income countries are not mentioned. Besides UHI no linkage to adaptation. Please link to appropriate WG II chapter.	Addressed in revised text
35105	12	0				Main General Comment (11): The chapter misses rural aspects entirely. This is not a chapter on urban areas only. Please e.g. use the material from UN HABITAT report 2011.	Addressed in revised text
19185	12	1				This chapter ignores the important respects in which humans influence the climate because of the obsession with emissions. Humans influencve the climate by interfering with convection and latent heat transfer. Buildings, shelter belts interfere with convective cooling and buildings, comcrete paving interfere with evaporation cooling. Both of these cause warming	Rejected: not relevant comment
19186	12	1				Why do you never suggest that there should be measurements of atmospheric concentrations of greenhouse gass over urban areas? Are you scared to contemplate the results?	Not relevant anymore for revised chapter
26425	12	10	1	10	7	This FAQ can be deleted in my perspective. It should be clear, that cross-cutting issues like human settlements and spatial planning for example allow to address climate change regulation more effective when they are explicitly discussed. This does not need explanation.	Not relevant anymore for revised chapter
41436	12	10	1	10	7	Consider elaborating the meaning of "optimizing the system." Land use patterns and the transportation network systematically affect demand for fuel for transportation and buildings.	Not relevant anymore for revised chapter
41442	12	10	11	10	11	Pg. 10, Line 11. There are missing parentheses after "(20%" and before "cement alone contributing >10%)." Please revise.	Not relevant anymore for revised chapter
28012	12	10	12			The CO2-numbers of the sectors do not correspond with other parts of the report. See also p. 21, line 7 of the same chapter.	Not relevant anymore for revised chapter
41444	12	10	14	10	15	Ok, but it seems that this chapter defines "settlement" broadly enough (p. 6, line 4-7), that most anthropogenic GHG emissions can be associated with human settlements (p. 10, lines 29-31). Please clarify the definition of settlement.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41443	12	10	14	10	26	Transboundary emission is an important concept in CO2 inventory accounting. This chapter illustrates well the concept and effects. However, the concept is not followed through in any presentation and discussions of subsequent sections; for example, in describing the urban carbon emissions in 12.3.3.3 and 12.3.4. Please explain the role of transboundary emissions in those sections.	Taken into account: See section 12.2.2 in revised chapter which provided discussions on indirect emissions in more structured way. However, given limited literature, providing futher discussions on transboundary emissions are not possible the way reviewer mentioned. 12.4.1 provides some perspectives.
26426	12	10	25	10	26	Your definition of transboundary makes me uncertains if the whole chapter 12 is "only" on urban areas? If so, please consider the chapter title "human settlements and spatial planning" - especially spatial planning is not only concerned with urban areas, but can also provide a sustainable use of rural areas to compensate or complete patterns and energy uses in urban areas.	Addressed in revised text
20666	12	10	27	11	2	Consider cutting as national accounts seem distracting from the focus on urban systems	Not relevant anymore for revised chapter
34961	12	10	29	10	30	This is tautologous as it is just about a perspective that is chosen. Futher, it is not US centric (or you have to give reasons why you present the US number and/or how representative it is) and wrong as it ignores AFOLU emissions.	Addressed in revised text
35364	12	10	30	10	31	for example … electricity : source	Not relevant anymore for revised chapter
41446	12	10	32	10	32	Pg. 10, Line 32. "7.8%" in text does not match the 7.6% shown in Table 12.3. Please explain or fix.	Not relevant anymore for revised chapter
41445	12	10	32	10	33	"For example, we know that freight contributes about 7.8% of GHG emissions in the US totally 32 and this sector may then be allocated to rural and urban areas in different ways." How do you identify urban v. rural? How do you make the energy allocation? Please elaborate.	Addressed in revised text
34204	12	10	6			The “systemic or holistic perspective” (p10, line 6) promised in the chapter is not well explained or exemplified.	Addressed in revised text
34960	12	10	6			should be "using systemic and holistic perspectives" in my view	Addressed in revised text
41426	12	10	8	10	8	Pg. 10, Line 8. This title seems to apply to only part of the Section. Much of this section covers GHG emissions related to human settlements generally, and parts of it specifically trends in rural emissions (12.3.3) and emissions related to global infrastructure 12.3.4.1 and 12.3.4.2. As Section 12.3 is the one most in need of restructuring, please consider breaking it into two Sections: 12.3 Human settlements and GHG emissions would include 12.3.1, 12.3.3, 12.3.4.1, 12.3.4.2, with the remaining text remaining in a Section focused on urban systems.	Not relevant anymore for revised chapter
23632	12	10	81			In the discussion of longevity of infrastructure there is little mention of the potential for decentralized services. Wastewater is one example. This has the potential to reduce emissions associated with infrastructure	Noted
33476	12	10	9	12	9	There is quite a lot of discussion on global emissions here - aside from some snappy summary data at the start of the chapter - I wonder if this is better left to the global emissions chapters and space here saved to focus on the urban issues more explicitly.	Taken into account: See section 12.2.2 in revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41440	12	10	9	10	33	The introductory text of Section 12.3.1 (Pg. 10, Lines 9-33) conveys that emissions can be allocated to different activities without allocating to urban or rural areas. That hardly seems necessary information to present. Things to emphasize in this introductory text are: (1) All anthropogenic GHG emissions by definition relate to human activities. (2) Humans live in settlements, so all emissions can ultimately be linked to settlements (i.e. Table 12.2). (3) Indeed, there are infinite possible ways to assign GHG emissions to activities, physical objects, and groups of individuals, but certain accountings may be preferred depending on one's ethical viewpoint and policy goals. In this vein, Davis et. al. (2011) focus on carbon accounting systems among nations. This Chapter is an important opportunity to present spatial scale as an orthogonal variable to all the recent research on GHG accounting and connect these literatures. Some of the other chapters are delving deeply into the nation-level literature (e.g., Chapter 5). Reference: Davis, S. J., G. P. Peters, and K. Caldeira (2011), The supply chain of CO2 emissions, Proceedings of the National Academy of Sciences, 108(45), 18554-18559. Please revise accordingly.	Noted: The noted paragraph no longer exists but we believe that the figure cited has great value for the chapter. The more concise text is presented in section 12.2.2 opening paragraph.
41441	12	10	9	10	33	(Pg. 10, Lines 9-33). After laying out the framework of possible accountings, the intro should get concrete, describing the original sources of GHG emissions, and slowly building up its key distinctions (things like "direct in-boundary emissions from a socio-metabolic systems perspective") using specific examples. In the case of that distinction, the reader would need to understand exactly what of the original sources of GHG emissions are included in "direct," where the boundary of "in-boundary" is, and what a "socio-metabolic systems perspective" entails. A consistent and well-defined terminology for emissions is critical before presenting more elaborate accounting frameworks such as those in Sections 12.3.2.2, 12.3.4.1 and 12.3.4.2. Please revise accordingly.	Taken into account: See section 12.2.2 in revised chapter
35363	12	10	10			should have reference to GDP / Per capita income	Addressed in revised text
41437	12	10	8	27	11	The section on GHG emissions would benefit from a comprehensive list or discussion of data sources for GHG emissions from urban areas.	Addressed in revised text
41438	12	10	8	27	11	Throughout section 12.3, the descriptions of emissions are overly precise without a mention of the study year -- the Marcotullio et al. findings relate to 2000, they do not relate to other years. Either add the years to the main text or tone down the precision of the main text. Same with tenses -- in some cases the writing uses present tense, suggesting current values, and in other cases the writing uses past tense. Please revise accordingly.	Not relevant: The emissions discussions referred in this comment is now placed in 12.2.2 in revised chapter. The whole text had gone under rewriting.
26361	12	10	9	17	13	Sub-sections 12.3.1 to 12.3.2.4 of Section 12.3 are dominated by expamples from the US and India. It is recommended to improve regional coverage and provide exapmles from other regions to enable comparison across regions.	Addressed in revised text
24878	12	10	25	10	26	"The portion of life cycle GHG emissions that occur outside the 25 boundary of the city where the infrastructure is used is termed “transboundary”. This sentence should be either 1) moved near the beginning of the paragraph, as transboundary emissions are discussed early on, OR 2) removed entirely, as transboundary emissions have been defined on page 5, line 27.	Addressed in revised text
20002	12	10	27	11	3	The discussion about national account is not suitable. Suggest it be moved to the section of 12.3.2.1 and be compared with city GHG accounting method.	Not relevant anymore for revised chapter
23438	12	10	27	11	3	The discussion about national account is not suitable. Suggest it be moved to the section of 12.3.2.1 and be compared with city GHG accounting method.	Not relevant anymore for revised chapter
41439	12	10	9	10	33	The discussion of transboundary emissions on page 10 and then "in boundary" v. "out of boundary" and "urban v. rural" discussion in section 12.3.1 is somewhat unclear. It is unclear whether the distinction is between urban v. rural areas or within and across. Section 12.3.2.1 repeats statements in section 12.3.1.1 about transboundary emissions	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33475	12	11	1	11	3	Table 12.3 takes up a lot of space to make the point in the preceeding paragraph - I am not convinced the (nearly 1 page in total) space is justified. Perhaps the table could be redrafted and shrunk. With regards the data it is not clear how international activities are considered (e.g. airline refers to cross-boundary, but also states that regional airport travel is considered - so does that mean international flights are not counted?). There is no mention of shipping emissions (international, or regional) - perhaps like the rail emissions they are not an issue, but should be mentioned for completeness.	Addressed in revised text
41448	12	11	1			What are remaining 1% of emissions in column 1? Please explain.	Not relevant anymore for revised chapter
41447	12	11	10	11	10	Contribution is a better word than responsibility in this sentence. Please revise.	Not relevant anymore for revised chapter
31181	12	11	13	11	15	socio-metabolic still not defined; as above, other options would convey message more clearly and powerfully (also pointing better to solutions)	Taken into account: See section 12.2.2 in revised chapter- very mildly touch upon only.
34207	12	11	16			Statements like “a systems perspective can help decision makers to anticipate secondary effects on greenhouse gas emissions” (p11, line 16) don’t seem to provide any information. What is a systems perspective and why does it matter, concretely?	Addressed in revised text
34963	12	11	16			Section "12.3.5" does not exist	Addressed in revised text
34964	12	11	16			"systems perspective": reference Ch.1 or the appropriate section in the framing chapters for the discussion/definitions on accounting methods.	Addressed in revised text
35365	12	11	25	11	26	the portion … transboundary : is a repeat , delete	Not relevant anymore for revised chapter
24253	12	11	9	11	12	very good recognition of the fact that direct emissions will not reveal the entire potential of cities to contribute to global emission cuts.	Not relevant anymore for revised chapter
20003	12	11	18	12	9	Why not find 12.3.1.2? Is it missed?	Not relevant anymore for revised chapter
35366	12	12	12			socio - metabolic linkages : concerning parameters required to be mention	Taken into account: See section 12.2.2 in revised chapter- very mildly touch upon only.
31619	12	12	12	12	15	Sentence is not comprehensible.	Not relevant anymore for revised chapter
34966	12	12	13			"cities": you need to define how you use the term "cities" and how this differs from "urban"	Addressed in revised text
41449	12	12	2			Figure 12.4 is referenced before Table 12.3 in the text and should be placed before table 12.3.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
32559	12	1255				The page numbers refer to the pages of the pdf document (and do not coincide with the page numbers as printed in the bottom right of the document. Life Cycle Assessment (LCA) is standardused by ISO with that name. Therefore, it should never be referred to as Life Cycle Analysis. Furthermore, once defined, it can be referred to simply as "LCA". Many important works of Brandão et al. (e.g. 2013) and Levasseur are missing, which are particular relevant to chapters 8 and 11. These are: -Brandão M, Levasseur A, Kirschbaum M, Cowie A, Weidema B, Jørgensen SV, Hauschild M, Chomkhamsri K, Pennington D (2013) Key issues and options in accounting for carbon sequestration and temporary storage in life cycle assessment and carbon footprinting. The International Journal of Life Cycle Assessment 18 (1) 230-240. DOI: 10.1007/s11367-012-0451-6. http://link.springer.com/article/10.1007%2Fs11367-012-0451-6 -Levasseur A, Lesage P, Margni M, Brandão M, Samson R (2012) Assessing temporary carbon sequestration and storage projects through land use, land-use change and forestry: comparison of dynamic life cycle assessment with ton-year approaches. Climatic Change. DOI: 10.1007/s10584-012-0473-x. http://www.springerlink.com/content/b3251u56v728m870/?MUD=MP13. -Levasseur A, Brandão M, Lesage P, Margni M, Pennington D, Clift R, Samson S (2012) Valuing temporary carbon storage. Nature Climate Change 2, 6–8. doi:10.1038/nclimate1335. http://www.nature.com/nclimate/journal/v2/n1/full/nclimate1335.html. -Brandão M, Mila i Canals L, Clift R (2011) Soil Organic Carbon changes in the cultivation of energy crops: implications for GHG balances and soil quality for use in LCA. Biomass & Bioenergy35 (6). 2323–2336. Special issue: Modelling Environmental, Economic and Social Aspects in the Assessment of Biofuels. http://www.sciencedirect.com/science/article/pii/S0961953409002402 -Brandão M, Clift R, Mila I Canals L, Basson L (2010) A Life-Cycle Approach to Characterising Environmental and Economic Impacts of Multifunctional Land-Use Systems: An Integrated Assessment in the UK. Sustainability 2(12): 3747-3776. Special issue: Life Cycle Sustainability Assessment. http://www.mdpi.com/2071-1050/2/12/3747/pdf -Mueller-Wenk R and Brandão M (2010) Climatic impact of land use in LCA - carbon transfers between vegetation/soil and air. The International Journal of Life Cycle Assessment 15(2) 172-182. http://www.springerlink.com/content/02628184t2q98051/fulltext.pdf -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. Springer. 125pp. -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. PhD thesis. Centre for Environmental Strategy (Division of Civil, Chemical and Environmental Engineering), Faculty of Engineering and Physical Sciences, University of Surrey, UK. 246 pp. Appendices 541 pp. -Mulligan D, Edwards R, Marelli L, Scarlat N, Brandão M, Monforti-Ferrario F (2010) The effects of increased demand for biofuel feedstocks on the world agricultural markets and areas. Luxembourg: Publications Office of the European Union. ISBN 978-92-79-16220-6. http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/16193/1/en24464_iluc%20workshop.pdf -Brandão M, Levasseur A (2011) Assessing temporary carbon storage in life cycle assessment and carbon footprinting: outcomes of an expert workshop. Joint Research Centre, European Commission, Ispra, Italy	Not relevant

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
32560	12	1258		1260		The page numbers refer to the pages of the pdf document (and do not coincide with the page numbers as printed in the bottom right of the document. Life Cycle Assessment (LCA) is standardused by ISO with that name. Therefore, it should never be referred to as Life Cycle Analysis. Furthermore, once defined, it can be referred to simply as "LCA". Many important works of Brandão et al. (e.g. 2013) and Levasseur are missing, which are particular relevant to chapters 8 and 11. These are: -Brandão M, Levasseur A, Kirschbaum M, Cowie A, Weidema B, Jørgensen SV, Hauschild M, Chomkhamsri K, Pennington D (2013) Key issues and options in accounting for carbon sequestration and temporary storage in life cycle assessment and carbon footprinting. The International Journal of Life Cycle Assessment 18 (1) 230-240. DOI: 10.1007/s11367-012-0451-6. http://link.springer.com/article/10.1007%2Fs11367-012-0451-6 -Levasseur A, Lesage P, Margni M, Brandão M, Samson R (2012) Assessing temporary carbon sequestration and storage projects through land use, land-use change and forestry: comparison of dynamic life cycle assessment with ton-year approaches. Climatic Change. DOI: 10.1007/s10584-012-0473-x. http://www.springerlink.com/content/b3251u56v728m870/?MUD=MP13. -Levasseur A, Brandão M, Lesage P, Margni M, Pennington D, Clift R, Samson S (2012) Valuing temporary carbon storage. Nature Climate Change 2, 6–8. doi:10.1038/nclimate1335. http://www.nature.com/nclimate/journal/v2/n1/full/nclimate1335.html. -Brandão M, Mila i Canals L, Clift R (2011) Soil Organic Carbon changes in the cultivation of energy crops: implications for GHG balances and soil quality for use in LCA. Biomass & Bioenergy35 (6). 2323–2336. Special issue: Modelling Environmental, Economic and Social Aspects in the Assessment of Biofuels. http://www.sciencedirect.com/science/article/pii/S0961953409002402 -Brandão M, Clift R, Mila I Canals L, Basson L (2010) A Life-Cycle Approach to Characterising Environmental and Economic Impacts of Multifunctional Land-Use Systems: An Integrated Assessment in the UK. Sustainability 2(12): 3747-3776. Special issue: Life Cycle Sustainability Assessment. http://www.mdpi.com/2071-1050/2/12/3747/pdf -Mueller-Wenk R and Brandão M (2010) Climatic impact of land use in LCA - carbon transfers between vegetation/soil and air. The International Journal of Life Cycle Assessment 15(2) 172-182. http://www.springerlink.com/content/02628184t2q98051/fulltext.pdf -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. Springer. 125pp. -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. PhD thesis. Centre for Environmental Strategy (Division of Civil, Chemical and Environmental Engineering), Faculty of Engineering and Physical Sciences, University of Surrey, UK. 246 pp. Appendices 541 pp. -Mulligan D, Edwards R, Marelli L, Scarlat N, Brandão M, Monforti-Ferrario F (2010) The effects of increased demand for biofuel feedstocks on the world agricultural markets and areas. Luxembourg: Publications Office of the European Union. ISBN 978-92-79-16220-6. http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/16193/1/en24464_iluc%20workshop.pdf -Brandão M, Levasseur A (2011) Assessing temporary carbon storage in life cycle assessment and carbon footprinting: outcomes of an expert workshop. Joint Research Centre, European Commission, Ispra, Italy	Not relevant
30476	12	13	10	13	11	Why it is written 'human activities in cities … STIMULATES … GHG …'. Human activities simply generate GHG. They do not push them up. Please replace the word 'stimulates' with 'generates'.	Not relevant anymore for revised chapter
20668	12	13	10		14	Grammar needs correction	Not relevant anymore for revised chapter
24254	12	13	15	13	17	Important conclusion	Addressed in revised text
33477	12	13	15	13	15	What is the evidence of consensus among the pracitioner community? I have definitely been to meetings recently where this is still a contested topic by practitioners and policy makers.	No more relevant in revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41450	12	13	15	13	22	Pg. 13, Lines 15-22 and Figure 12.5. Introducing terms of "scope" is confusing since these terms overlap with previously-used terms "direct" and "indirect." Please clarify the use of this terminology.	Noted: please see more structured discussions on this in section 12.2.2.2. Scope, itself, is a widely used term
34968	12	13	15			You can not phrase it like this in an IPCC assessment. A consensus requires an institution to determine this. Please use "Broad agreement" or the like instead.	Addressed in revised text
28999	12	13	18	13	22	A reference to the relevant WRI/WBCSD document would be appropriate here.	Noted
41451	12	13	20	13	22	p.13, lines 21-22 --- yes, but raises thorny issues of double-counting. Please explain how double-counting can be avoided.	Noted: we have reformulated these discussions in section 12.2.2.2
41452	12	13	20	13	22	This is an excellent point. C40s, ICLEI, and Global City Indicators Facility (www.cityindicators.org) have been supporting consistent GHG accounting through several programs. Please consider citing some of these applications.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
32561	12	1319				The page numbers refer to the pages of the pdf document (and do not coincide with the page numbers as printed in the bottom right of the document. Life Cycle Assessment (LCA) is standardused by ISO with that name. Therefore, it should never be referred to as Life Cycle Analysis. Furthermore, once defined, it can be referred to simply as "LCA". Many important works of Brandão et al. (e.g. 2013) and Levasseur are missing, which are particular relevant to chapters 8 and 11. These are: -Brandão M, Levasseur A, Kirschbaum M, Cowie A, Weidema B, Jørgensen SV, Hauschild M, Chomkhamsri K, Pennington D (2013) Key issues and options in accounting for carbon sequestration and temporary storage in life cycle assessment and carbon footprinting. The International Journal of Life Cycle Assessment 18 (1) 230-240. DOI: 10.1007/s11367-012-0451-6. http://link.springer.com/article/10.1007%2Fs11367-012-0451-6 -Levasseur A, Lesage P, Margni M, Brandão M, Samson R (2012) Assessing temporary carbon sequestration and storage projects through land use, land-use change and forestry: comparison of dynamic life cycle assessment with ton-year approaches. Climatic Change. DOI: 10.1007/s10584-012-0473-x. http://www.springerlink.com/content/b3251u56v728m870/?MUD=MP13. -Levasseur A, Brandão M, Lesage P, Margni M, Pennington D, Clift R, Samson S (2012) Valuing temporary carbon storage. Nature Climate Change 2, 6–8. doi:10.1038/nclimate1335. http://www.nature.com/nclimate/journal/v2/n1/full/nclimate1335.html. -Brandão M, Mila i Canals L, Clift R (2011) Soil Organic Carbon changes in the cultivation of energy crops: implications for GHG balances and soil quality for use in LCA. Biomass & Bioenergy35 (6). 2323–2336. Special issue: Modelling Environmental, Economic and Social Aspects in the Assessment of Biofuels. http://www.sciencedirect.com/science/article/pii/S0961953409002402 -Brandão M, Clift R, Mila I Canals L, Basson L (2010) A Life-Cycle Approach to Characterising Environmental and Economic Impacts of Multifunctional Land-Use Systems: An Integrated Assessment in the UK. Sustainability 2(12): 3747-3776. Special issue: Life Cycle Sustainability Assessment. http://www.mdpi.com/2071-1050/2/12/3747/pdf -Mueller-Wenk R and Brandão M (2010) Climatic impact of land use in LCA - carbon transfers between vegetation/soil and air. The International Journal of Life Cycle Assessment 15(2) 172-182. http://www.springerlink.com/content/02628184t2q98051/fulltext.pdf -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. Springer. 125pp. -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. PhD thesis. Centre for Environmental Strategy (Division of Civil, Chemical and Environmental Engineering), Faculty of Engineering and Physical Sciences, University of Surrey, UK. 246 pp. Appendices 541 pp. -Mulligan D, Edwards R, Marelli L, Scarlat N, Brandão M, Monforti-Ferrario F (2010) The effects of increased demand for biofuel feedstocks on the world agricultural markets and areas. Luxembourg: Publications Office of the European Union. ISBN 978-92-79-16220-6. http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/16193/1/en24464_iluc%20workshop.pdf -Brandão M, Levasseur A (2011) Assessing temporary carbon storage in life cycle assessment and carbon footprinting: outcomes of an expert workshop. Joint Research Centre, European Commission, Ispra, Italy	Not relevant

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
32562	12	1323				The page numbers refer to the pages of the pdf document (and do not coincide with the page numbers as printed in the bottom right of the document. Life Cycle Assessment (LCA) is standardused by ISO with that name. Therefore, it should never be referred to as Life Cycle Analysis. Furthermore, once defined, it can be referred to simply as "LCA". Many important works of Brandão et al. (e.g. 2013) and Levasseur are missing, which are particular relevant to chapters 8 and 11. These are: -Brandão M, Levasseur A, Kirschbaum M, Cowie A, Weidema B, Jørgensen SV, Hauschild M, Chomkhamsri K, Pennington D (2013) Key issues and options in accounting for carbon sequestration and temporary storage in life cycle assessment and carbon footprinting. The International Journal of Life Cycle Assessment 18 (1) 230-240. DOI: 10.1007/s11367-012-0451-6. http://link.springer.com/article/10.1007%2Fs11367-012-0451-6 -Levasseur A, Lesage P, Margni M, Brandão M, Samson R (2012) Assessing temporary carbon sequestration and storage projects through land use, land-use change and forestry: comparison of dynamic life cycle assessment with ton-year approaches. Climatic Change. DOI: 10.1007/s10584-012-0473-x. http://www.springerlink.com/content/b3251u56v728m870/?MUD=MP13. -Levasseur A, Brandão M, Lesage P, Margni M, Pennington D, Clift R, Samson S (2012) Valuing temporary carbon storage. Nature Climate Change 2, 6–8. doi:10.1038/nclimate1335. http://www.nature.com/nclimate/journal/v2/n1/full/nclimate1335.html. -Brandão M, Mila i Canals L, Clift R (2011) Soil Organic Carbon changes in the cultivation of energy crops: implications for GHG balances and soil quality for use in LCA. Biomass & Bioenergy35 (6). 2323–2336. Special issue: Modelling Environmental, Economic and Social Aspects in the Assessment of Biofuels. http://www.sciencedirect.com/science/article/pii/S0961953409002402 -Brandão M, Clift R, Mila I Canals L, Basson L (2010) A Life-Cycle Approach to Characterising Environmental and Economic Impacts of Multifunctional Land-Use Systems: An Integrated Assessment in the UK. Sustainability 2(12): 3747-3776. Special issue: Life Cycle Sustainability Assessment. http://www.mdpi.com/2071-1050/2/12/3747/pdf -Mueller-Wenk R and Brandão M (2010) Climatic impact of land use in LCA - carbon transfers between vegetation/soil and air. The International Journal of Life Cycle Assessment 15(2) 172-182. http://www.springerlink.com/content/02628184t2q98051/fulltext.pdf -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. Springer. 125pp. -Brandão M (2012) Food, Feed, Fuel, Timber or Carbon Sink? Towards Sustainable Land Use: a consequential life cycle approach. PhD thesis. Centre for Environmental Strategy (Division of Civil, Chemical and Environmental Engineering), Faculty of Engineering and Physical Sciences, University of Surrey, UK. 246 pp. Appendices 541 pp. -Mulligan D, Edwards R, Marelli L, Scarlat N, Brandão M, Monforti-Ferrario F (2010) The effects of increased demand for biofuel feedstocks on the world agricultural markets and areas. Luxembourg: Publications Office of the European Union. ISBN 978-92-79-16220-6. http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/16193/1/en24464_iluc%20workshop.pdf -Brandão M, Levasseur A (2011) Assessing temporary carbon storage in life cycle assessment and carbon footprinting: outcomes of an expert workshop. Joint Research Centre, European Commission, Ispra, Italy	Not relevant
41453	12	14	1			This figure is difficult to follow and it is not clear that it provides a representation of the text. Please consider deleting the figure.	Addressed in revised text
35367	12	14	20			consistent set of activities : giving set of short listed common activities would have made it more specific	Not relevant anymore for revised chapter
33478	12	14	30	14	31	This sentence doesn't make sense and needs to be rewritten. However, the authors may be interested in a plot by "Gastner and Newman (2006) Optimal design of spatial distribution networksPhys. Rev. E 74, 016117" which shows the relationship between infrastructure density and population density for the USA.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
26372	12	14	5	16	5	Chapter 12.3.2.2 has evidently entirely replaced FOD Chapter 12.4.2.2. SOD Chapter 12.3.2.2 cites little more than Ramaswami's unpublished paper. I would see that the previous 20 or so citations in FOD Chapter 12.4.2.2 added value to the report. It is difficult for me to see what are the justifications for leaving all those studies away from SOD version.	Noted, the chapter has gone substatial change
34970	12	14	8	14	9	Is the first paper a review? The second is not. In order to proof that these concepts are broadly used more references are needed.	Addressed in revised text
23441	12	14	21	14	21	There is no artificial truncation issue in IB, because it only include direction emission. It is a source-based method. Actually, the CIF have some serious artificial truncation issues, for that it needs to define the finite boundars for the calculation (mostly in process-based method) of CO2 emission of the key infrastructures.	Not releavant in revised chapter
23442	12	14	23	14	23	The CIF is a hybrid approach based on IB and CBF. This should be emphasized here. And the CIF wil incur double counting problem when aggregating emissions of several cities for the regional level.	Not relevant anymore for revised chapter
23439	12	14	5	15	24	The three approaches should better be discussed with three scopes (line 18,page 13) for consistence.	Addressed in revised text
20004	12	14	6	14	9	Seems that the following three GHG accounting methods are linked to the above Scope 1-3. Pls add the explanation of the relationship between them.	Addressed in revised text
23440	12	14	6	14	9	Seems that the following three GHG accounting methods are linked to the above Scope 1-3. Pls add the explanation of the relationship between them.	Addressed in revised text
35368	12	15	11			mirror ?	Not relevant anymore for revised chapter
35369	12	15	17		19 -20	based on activity data & doesnot effectively reflect human activities.. Both are complimenting each other .. Justify & relate	Not relevant anymore for revised chapter
41454	12	15	17	15	24	This paragraph could be productively developed to give more details of how these different accounting methods might support (or mirror) different ethical viewpoints (e.g., polluter pays, human equity) and policy goals (efficient and effective reduction in emissions with minimal carbon leakage). Please clarify and expand the discussion accordingly.	Noted: These discussions are much better presented in revised text in section 12.2.2.2
34971	12	15	17	15	24	This paragraph is overly complicated. I suggest something along these lines: "Ther are different measures of accounting, each with advantages and disadvantages, taking different perspectives. (1) End-uses (consumption) perspective: Account for the type of and number of goods/servies bought taking into account their embedded emissions. Allows direct comparison of different goods/servies. (2) Production / infrastructure perspective: Account for the production of a good/service and the infrastructure involved in this. Effects of changes in end-use behaviour can not be measured.	Addressed in revised text
35370	12	15	31			while being produced in only a few cities ?	Not relevant anymore for revised chapter
23443	12	15	6	15	8	Three approaches to GHG accounting for individual cities have not fully taken the interests of developing countries into consideration. For the three kinds of strategies for industrial city to control the emissions of carbon dioxide, concrete approaches should differentiate the developed and developing countries. For instance, the situation of “CIF enables analysis of cross-infrastructure substitutions, such as substituting airline travel in the transportation sector with more energy-efficient teleconferencing which lies in the buildings sector” may not occur in developing countries.	Noted: These discussions are much better presented in revised text in section 12.2.2.2
41455	12	16	2			Without an explanation of how the three city types were calculated, these graphs have limited utility. Please provide more explanation in the text.	Not relevant anymore for revised chapter
41456	12	16	8	16	8	Change "than 80 cities" to "than 80 large metropolitan areas."	Not relevant anymore for revised chapter
34973	12	16	8			"80 cities": Looking into the table there are actually 178. Does the 80 exclude overlaps? Please be transparent about this.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
20005	12	16	1	16	5	In this section, some discussion had better be delivered that three different city types could launch different climate action plan based on different accounting methods and different mitigation potentials and measures will be identified.	Not relevant anymore for revised chapter
23444	12	16	1	16	5	In this section, some discussion had better be delivered that three different city types could launch different climate action plan based on different accounting methods and different mitigation potentials and measures will be identified.	Not relevant anymore for revised chapter
34976	12	17	12			">10%" is different from "~10%" in line 3. Sort out this inconsistency.	Not relevant anymore for revised chapter
34977	12	17	12	17	13	"in one year" is irrelevant when speaking about percentages. This is a very basic mistake!	Addressed in revised text
34975	12	17	2	17	3	This data is already included in Figure 12.5 - it does not become clear what this is mentioned here again!	Addressed in revised text
26362	12	17	3	17	10	Section 12.3.2.3 and Section 12.3.2.4 cite the same example of a 10% share of GHG emissions in Delhi coming from cement use in construction in the city.	Not relevant anymore for revised chapter
33479	12	17	7	17	8	Table 12.4 - It is unclear why electricity can not be a trans-boundary infrastructure.	Not relevant anymore for revised chapter
24879	12	17	15	17	15	Please define or have a figure showing the "S-shaped curve".	Not relevant anymore for revised chapter
41457	12	18	14	18	16	The authors should make clear that CCE is a new concept. Please provide more information and explaination in the main text. CCE includes disposing the old infrastruture, and is it how much steel, aluminum and cement would be needed to built the replacement existing stock, correct? More elaborate and clear definition would be useful.	Not relevant anymore for revised chapter
34979	12	18	15			Please use a different acronym than CCE as this is already used for "Cost of Concerved Energy" in the costs and potentials sections of the sectoral chapters. Options would be "CCeq", "cCeq".	Addressed in revised text
35297	12	18	4	24	26	The accounting result in this paragraph is unreliable for three reasons: 1) Most key data, figures and tables used in this section come from two submitted yet not published papers (Müller et al., 2013 and Marcotullio et al, 2013), the full content of which is not accessible. As a result, detailed definitions, methodologies and data sources of these two papers are not verifiable. 2) EDGAR database, which is frequently referenced by this paragraph, only provides geo-referenced CO2 emission data, which cannot differentiate between emissions from urban and rural areas. 3) The result referenced in this section comes only from one study, ignoring many other important literatures (IEA, Cities, Towns & Renewable Energy, 2009; IEA, World Energy Outlook 2008; UN HABITAT, Global Report on Human Settlements 2011: Cities and Climate Change) that have systematically evaluated the energy consumption and CO2 emissions of cities in the world and hold a different result. For instance, in the section it is said that the GHG emissions from urban population accounts for 29.9-35.7% of global total emission from 1990 to 2008; however, according to a UN HABITAT report in 2011 (UN HABITAT, Global Report on Human Settlements 2011: Cities and Climate Change.), from perspective of production, GHG emissions from urban population account for 40 – 70% of global total emissions; and 60 -70% from perspective of consumption. It is suggested to add accounting results mentioned above to fully reflect the fact that the accounting results for GHG emissions from urban and rural areas vary dramatically from each other, which is the result of different definitions of rural/urban boundary and different accounting methodologies.	Taken into account: The revised chapter has presented these more systematically and comprehensively. See section 12.2.2 and 12.4.1

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41458	12	18	5			This is a critical figure which suggests that we are not even close to achieving 2 degree C targets given the developing countries are growing at a fast rate with tendencies to implement carbon/resource intensive economies and given the major population of the world is still in developing countries (e.g. china, india), having carbon intensive growth projects. Given the importance of this figure, the reference is not published yet, and still under submitted condition. The authors should consider citing additional literature. It is difficult to give prominence to results not yet published.	Not relevant anymore for revised chapter
41459	12	18	5			Putting 2 degree on this figure suggests future growth is relevant to this stock - that is not evident in this exercise. Relation between current stock and new building needs to made clear.	Not relevant anymore for revised chapter
28013	12	18	6	18	6	What does CCE stand for. It is not explained in the figure description.	Not relevant anymore for revised chapter
31621	12	19	12	19	12	What does the abbreviation "EDGAR" mean?	Not relevant anymore for revised chapter
20670	12	19	12	13		Sentence is a repeat from an earlier sentence in the introduction	Not relevant anymore for revised chapter
33481	12	19	13	19	15	This is an example of my earlier point: "human settlements account for… ", "Areas with urban poulations are responsible for …" seem to provide global CO2 emissions for very similar issues - but the figures are wildly different so needs to be explained clearly.	Noted, the chapter has gone substatial change, see 12.2.2.1 for more structured discussions
33482	12	19	26	19	26	"…for the 2000 attempted…" - something is missing	Not relevant anymore for revised chapter
41466	12	19	26	19	26	The authors should reword the sentence as it is a little confusing especially the word "attempted". Consider replacing "attempted" with "performed".	Not relevant anymore for revised chapter
34985	12	19	26			"Another study" - would be nice to know which one!	Addressed in revised text
34986	12	19	26			"for the 2000" - semantic error	Addressed in revised text
34987	12	19	26			"attempted" - does this mean they did not suceed?	Addressed in revised text
41467	12	19	28	19	29	The authors should define "low" and "high" estimate, how are they calculated?	Not relevant anymore for revised chapter
41461	12	19	3	19	6	Are you referring to anthropogenic energy-related CO2 emissions or all anthropogenic CO2 emissions? Figure 12.8 indicates energy-related emissions. Please clarify this sentence. If you are referring to all anthropogenic CO2 emissions, please explain the comparison to the results in Figure 12.8 for energy related CO2 emissions.	Not relevant anymore for revised chapter
41460	12	19	3	19	8	Statements need to better explained regarding the underlying calculus for this conclusion. Make clear what exercise is being done, and how this can be used. What are the implications for a policymaker of this exercise?	Not relevant anymore for revised chapter
34981	12	19	5	19	6	Which version of EDGAR did you use? Please take data from AR5 Historic Emissions and Trends Database. If data is not there in needed detail use EDGAR 4.2 going up to 2010, i.e. use the 2010 data for the most recent one.	Addressed in revised text
41462	12	19	6	19	7	Pg. 19, Lines 6-7. There appear to be an awful lot of assumptions packed into the CCE concept that are not discussed. For instance, what is meant by "current standard technologies" (Pg. 18, Line 16)? This must include specific assumptions about energy technologies and the carbon intensity of energy generation, and if by "current standard" Muller et al mean not improving, then CCE is almost certainly much overestimated. Not to say it is not a worthwhile calculation to present here, but some of the critical assumptions should be highlighted.	Not relevant anymore for revised chapter
33483	12	19	9	19	19	S12.3.3-12.3.3.1 feel like they have been lifted from a paper (e.g. P20, L14: "we assigned…") rather than an authoratitive review of the literature and research on the topic	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33480	12	19	9	23	15	There is a large emphasis on the EDGAR database. It would be useful to know which of the (previously defined) methods EDGAR uses to attribute GHG emissions. It provides some interesting results - but does not always appear to be aligned with urban boundaries: for example it cites London as having a population of 13million and GHG emissions of 93Mt whilst the Greater London Authority calculate they have a population of ~8million (from UK census records) and emissions of around 46Mt (not including aviation).	Not relevant anymore for revised chapter
26373	12	19	9	20	12	I think that it should be mentioned that the text has a production approach. The term such as "rural areas are responsible" could also refer to the emissions that are cuased to produce the goods and service to fullfil the needs of the residents of rural areas (f.e. Heinonen, Jukka; Junnila, Seppo (2011): Implications of urban structure on carbon consumption in metropolitan areas, Environmental Research Letters, 6, 014018; Lenzen, M.; Dey, C.; Foran, B. (2004): Energy requirements of Sydney households, Ecological Economics, 49, 375-399; Sovacool, B. K.; Brown, M. A. (2010): Twelve metropolitan carbon footprints: A preliminary comparative global assessment, Energy Policy, 38 (9), 4856-4869; Heinonen, Jukka; Jalas, Mikko; Juntunen, Jouni K.; Ala-Mantila, Sanna and Junnila, Seppo (2013): Situated lifestyles: I. How lifestyles change along with the level of urbanization and what the greenhouse gas implications are—a study of Finland, Environ. Res. Lett. 8, 025003).	Addressed in revised text
28014	12	19	9	22	29	In these paragraphs, the readability and understandability of the percentile figures on the shares of urban and rural emissions should be complemented by figures on the population living in urban and rural regions and the emissions per capita from the very beginning of the first paragraph. It might also improve the understandability of the text if additional pictures were given on the issue of per capita emissions and number of population.	Noted, the chapter has gone substatial change, see 12.2.2.1 for more structured discussions
24880	12	19	26	19	26	"Another study using EDGAR for the 2000 attempted a Scope 1 & 2 analysis". It is unclear what this means. Please re-write.	Not relevant anymore for revised chapter
41463	12	19	9			Make clear that most all of the analysis reported in 12.3.3 is for "in-boundary" urban emissions only, although Marcotullio et al. have attempted to account for transboundary energy-related emissions in their estimates and is why they have emissions ranges for cities.	Addressed in revised text
41464	12	19	9			Stop and somewhere explain what "urban" means for the 2 primary analyses used in this section. The Marcotullio et al. study uses the GRUMP urban extent definitions, which are roughly the equivalent of US metropolitan areas, and were defined for the year 2000 -- the urban boundaries certainly would be different for different years and would yield different results for emissions density, population density, etc. Please clarify in the text.	Addressed in revised text
41465	12	19	9	23	15	The analysis of CO2 is misleading in Section 12.3.3, especially as including CH4 can change the urban/rural split of GHG emissions at the global scale. A justification for looking at CO2 only would be appropriate somewhere.	Not relevant anymore for revised chapter
23445	12	19	9	20	12	How are the human settlement/urban/areas with urban populatons defined here? What is the calculation process? How much size of these area? The fundamental boundaris or criterias are unclear here.	Noted, the chapter has gone substatial change, cited figure and analyses is removed but Marcotullio new results are introduced. See 12.2.2.1
34212	12	20	1	20	8	p20, line 1-8: I don't understand why these emissions statistics are presented in aggregate form. How does urbanization correlate with per capita CO2 in the different regions?	Addressed in revised text
34213	12	20	14			p20, line 14: Who is "we" and how were the calculations carried out?	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41469	12	20	19	20	20	CO2 emissions from waste and ag is small however they contribute significantly to methane and N2O emissions. The importance of other GHG emissions should be pointed out in the report. The mitigation policies should not solely focus on the CO2 emissions, and integrated multi-pollutant approaches should be adopted to effectively mitigate the GHG emissions and stabilize warming.	Noted but info on other GHG from urban areas doesnot exists at global and regional conext. The section does not deny the fact mentioned.
41468	12	20	9	21	19	Can the Marcotullio et al. tables (12.5 and 12.6) containing data from 2000 be updated by the authors? They are outdated.	Addressed in revised text
26363	12	21	1			This figure shows that waste management in urban areas is responsible for less than 1% of global emissions, however in Executive Summary of this chapter it is stated that waste management is responsible for 82% of global CO2 emissions in urban areas. It is recommended to include an explanation of how the shares of GHG emisions are attributed to different sectors and quantified, assumptions used that explain these differences in relative shares of the same sectors in urban areas out of total global GHG emissions.	Not relevant anymore for revised chapter
41470	12	21	1			What is driving the energy production values in urban vs rural areas in Fig 12.10? Please explain the assumptions underlying these CO2 emissions levels.	Addressed in revised text
28015	12	21	13			It seems that GHG and CO2 is used in a mixed sense at some parts of the chapter.	Addressed in revised text
26364	12	21	18			This table also shows relative shares of GHG emissions from different sectors in urban areas. According to the data presented in this table, waste management is responsible for around 7% of global urban emissions, Figure 12.10 shows that waste management is responsible for less than 1% and Executive Summary states that waste management is responsible for the dominanant share of 82% of total global urban emissions. It is important to explain these differences in relative shares of different sectors out of global urban and rural emissions by providing details on assumptions and methods of how GHG emissions are attributed to different sectors. To enable comparison across regions and sectors in terms of their relative contribution to global or regional GHG emissions, improve consistency in presenting data as well as improve the usability of data and research results cited in this Chapter for policy- and decision-making or research, it is recommended to recalculate GHG emissions from different literature sources cited in this Chapter using one of the three approaches (1) Pureliy in-boundary source-based GHG acounting (IB), (2) Community-wide infrastructure GHG footprints (CIF) and (3) Consumtion-based footprint (CBF) described in Section 12.3.2.2. and present data on relative shares of GHG emissions of different sectors out of total GHG emissions in urban, rural areas or on a global level by using only one of the approaches across the sections of this Chapter (with original results presented in footnotes).	Not relevant anymore for revised chapter
26374	12	21	19	22	29	This chapter should cite the previous studies around the issue, which are plenty. FOD did cite many of them (Lenzen, Hertwich, Heinonen, Larsen, Sovacool etc.). It is not very convincing to present just the results of one single modelling, unknown to many as well.	Noted, the chapter has gone substatial change, see 12.2.2 for more structured discussions
41471	12	21	5	21	5	The authors should include year in the reference.	Addressed in revised text
41472	12	21	6	21	6	p.21, line 6 -- should reference table 12.5.	Not relevant anymore for revised chapter
41473	12	22	1	22	3	This statement seems to disagree with table 12.6 which indicaties that waste management in urbanzied regions is a relatively low share of emissions compared with transport and energy. Please clarify.	Not relevant anymore for revised chapter
34992	12	22	1	22	3	Go beyond just citing numbers. This is not an assessment.	Addressed in revised text
23636	12	22	10			I think that it is important to highlight the differences in relative emissions in urban areas between developed and undeveloped countries in light of what this suggests for increased levels of development and potential for emissions reduction- a sentence or two here would be helpful	Noted
41475	12	22	14			The units should be CO2-eq if it's from Marcotullio et al. (CO2, CH4, N20, SF6).	Addressed in revised text
34996	12	22	17	22	29	Only citing numbers. Not an assessment.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33484	12	22	18	22	18	Need a year for the Marcotullio paper	Addressed in revised text
41476	12	22	24	22	24	delete "," before "."	Not relevant anymore for revised chapter
34997	12	22	31	22	32	"[did not] made the list": This is due to the method applied. So either you should ignore this or you should discuss the limits of the method. Just stating "did not make it" is not sufficient.	Addressed in revised text
20640	12	22	33	22	33	The city of Essen does not have 11 million inhabitants, but 573,000. It is the entire "Ruhr metropolitan area". This should be the correct name.	Not relevant anymore for revised chapter
41477	12	22	37	22	37	Please use most recent UN statistics for cities. Surprised that Chinese cities are not included in this list, for example. Define how "cities" are used in this context.	Taken into accout in relevant places and also in 12.2.2.1 for information related to China
34214	12	22	38	22	39	p22, line 38-39: Interesting and important material here. What share of the total population of the planet is included in these 15 cities? What form of accounting is being used here (CIF or CBF) and which is more appropriate and policy relevant given that large cities produce for other urban places across the globe? What relevant policies could influence per capita consumption in these large cities as they become more affluent over time?	Not relevant anymore for revised chapter
41478	12	22	38	22	38	"…and others" if possible include the full list or refer to the full list.	Not relevant anymore for revised chapter
41474	12	22	4	22	13	This whole paragraph needs to be rewritten as it is very confusing, and some points are contradicting each other. E.g. the EDGAR database states that 49% of power plants are in urban areas, but then in the end of the parargraph, it mentions virtually all the power plant emissions are from populated areas, then mentions on 23% of all power plant emissions are attributed to urban areas.??? First of all it is a fact that most power plants will be located near the populated areas as there are economic drivers to site them close to the demand centers. This will be the case for the near future, and especially for the fossil fuel based power plants. however, with increase in renewables, where the power is generated do not necessarily need to be close to demand centers, and adoption of storage and high voltage transmission lines would increase penetration of renewables. Please revise this paragraph to remove contradictions and make more clear.	Not relevant anymore for revised chapter
34995	12	22	4	22	13	I question the relevance of this paragraph. In my view it is sufficient to know that urban needs energy inflow.	Addressed in revised text
34993	12	22	5			Giving the absolute numbers from the EDGAR DB here is not the level to operate at as it is meaningless and irrelevant for readers and misuse of valuable space.	Addressed in revised text
34994	12	22	8	22	11	Here, like elsewhere, you should use the CIF terminology introduced earlier by yourself.	Addressed in revised text
24881	12	22	5	22	6	"In the EDGAR database, 5,116 (49%) of 10,351 cells having power plants in 2007 were classified as urban" is unclear- for instance, a 'cell' would have varying meanings for different readers. Please re-write or remove to avoid mention of technical database back-end.	Addressed in revised text
35295	12	23				As Taiwan is not a sovereign state, the expression “Taipei, TWN” shall be revised to “Taipei, CHN”.	Not relevant anymore for revised chapter
40723	12	23				Table 12.7 is dates back too far and should be complemented with another table. And after line 12, the following sentence should be added: “Tokyo’s density is higher than other metropolis; and therefore, energy use per capita is lower.” It is suggested that the additional table be created from http://measuringurban.oecd.org/#story=0, which gives for Tokyo (2005), a population of 34 million and CO2 emission per capita of 7.57 metric tons per person. More updated data is available at http://www.oecd-ilibrary.org/urban-rural-and-regional-development/data/oecd-regional-statistics/metropolitan-regions_data-00531-en?isPartOf=/content/datacollection/region-data-en.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
40722	12	23				Tokyo, JP population (76 million) is inadequate. Although the note says ”Tokyo includes megalopolis that extends from Nagoya to Tokyo,” even a sum of the population of these areas will not reach 76 million, which is 3/4 of Japanese population. The figure is also inconsistent with the Chapter 12 page 6, line 15: Tokyo have populations of over 20 million[?].	Not relevant anymore for revised chapter
34215	12	23	1	23	12	p23, lines 1-12: Per capita emissions are discussed here, but again the accounting is unclear despite a very long section discussing accounting issues in detail, and policy relevance is not addressed. What is the point of discussing largest per capita emitters given that the information is not really valid for cities in which energy intensive industries (often producing products for the rest of the world) happen to be located?	Not relevant anymore for revised chapter
26365	12	23	1	23	4	This paragraph lists the largest per capita emitting cities and refers to Table 12.7, however these cities are not listed in this table, which in turn lists other cities. It is recommended to update the table to include the cities referred toin the text in order to enable comparison with the megapolices listed in the table.	Not relevant anymore for revised chapter
41479	12	23	1	23	4	Urban areas listed in text are not shown in referenced table 12.7 and are, in fact, very obscure and probably small places; eg Farmington and Fairmont US. Please give a citation where readers can find the information associated with these high per capita GHG emittting cities.	Not relevant anymore for revised chapter
35000	12	23	10	23	11	15 areas account for 2.6%: This information is completely irrelevant. The sample of 15 is random, for the 2.6% you do not indicate what accounting method is used. If you want to make a statement about the (un-)eveness of emission distribution across global urban areas you need to take a more systematic approach.	Addressed in revised text
20671	12	23	11		12	The last sentence is incorrect. It is not only due to low populations that they stand out. It was low population AND high relative GHG emissions. If it is only low population (like many other small cities) they may not show up as high per capita emissions.	Addressed in revised text
33485	12	23	13	23	13	London is the city's name. This table refers to the "London Metropolitan Area" - which includes large areas N, S, E and W of the London administrative boundary. I assume that this is similar for the other cities. It may be worth renaming to avoid confusion and/or including data (e.g. population) on the core administrative boundary.	Not relevant anymore for revised chapter
41480	12	23	13			It's not clear what the scale of analysis is in this table. It includes shocking population data on Tokyo (76 million) that is based on a large mega-region definition that spans from Tokyo to Nagoya. The population data is also outdated. Baltimore should read 9 million if it's inclusive of DC and based on the 2010 Census. It also would make sense to hyphenate some of the names, such as Tokyo-Nagoya or San Jose-San Francisco.	Not relevant anymore for revised chapter
41481	12	23	13			The results in Table 12.7 are over ten years old (year 2000). It would be very helpful to revise this table with more up-to-date numbers because there have been many big changes since 2000.	Addressed in revised text
41482	12	23	17	23	17	Please define "direct" and "indirect" emissions	Addressed in revised text
41483	12	23	18	23	18	Pg. 23, Line 18. Should be "associated with"	Not relevant anymore for revised chapter
41484	12	23	18	23	27	p.23, 1st para of 12.3.4.1 -- Please reference figure 12.12 in this paragraph. It is difficult to go back and forth between the text and the figure. What is the 198 value in the graphic, and why is it not described (I don't think) in the main text? Also, what do the dotted lines represent? Please clarify.	Addressed in revised text
35002	12	23	19			A linkage between David 2010and Müller 2013 needs to be made as they discuss the same / very similar matters. When discussing the same topic at different places of the chapter please follow the following principles: (1) Ensure that you avoid reduncancy. (2) Have one main place to discuss a matter and link to this from other places. At other places built upon what was discussed at the main one and only include further specifics needed. (3) Ensure to use the same reference base. Following step 1 will do this.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41485	12	23	25	23	26	Pg. 23, Lines 25-26. Move "being" as follows: "CO2 (cement and steel industries being the major contributor)"	Not relevant anymore for revised chapter
35371	12	23	8	23	10	to account … urban populations : ambigous	Not relevant anymore for revised chapter
24882	12	23	4	23	4	Please remove the reference to Rockhampton (Australia). The reference provided is not published and the data cannot be reviewed nor verified.	Addressed in revised text
24883	12	23	22	23	22	"...a context in which the primary threat are devices and infrastructure that do not yet exist". What does this mean? Please re-write or remove.	Taken into account: removed
23447	12	24		37		Without supporting materials, this statement that “There is consensus" is not scientific. For a reasonable and logical argument, relevant references are needed. For instance, Bowen, Alex et al., (2009) did some research in this field. [3] Bowen, Alex et al.(2009). An outline of the case for a ‘green’ stimulus. Open Access publications from London School of Economics and Political Science from London School of Economics and Political Science	Not relevant anymore for revised chapter
41486	12	24	1	24	1	Suggest replacing "totalizing 71% of total" with "with these 4 regions totaling 71% of"	Not relevant anymore for revised chapter
41488	12	24	12	24	18	Please remind the reader of the definition of CCE. Please explain the growth in CCE referred to in this sentence. Does the current figure of 122 Gt CO2 represent the bridging of the current development/infrastructure gap in the future. So what is changing? Is this simply due to population growth?	Not relevant anymore for revised chapter
35372	12	24	13			represent .. Large urban areas : replace by urban agglomerations / regions	Not relevant anymore for revised chapter
41489	12	24	14	24	16	Remove the word "will" in each line.	Not relevant anymore for revised chapter
35005	12	24	14	24	18	Please insert another two "if"s and a "then" in this sentence to make structure clearer.	Addressed in revised text
41490	12	24	18	24	18	What does "primary production" include? Please provide more explanation.	Not relevant anymore for revised chapter
41491	12	24	24	24	25	The "materials" mentioned in the text, are they the primary products?	Not relevant anymore for revised chapter
33486	12	24	28	24	28	Important to be clear about what metric is being used to define urban expansion. There are a number of other models that project population changes, but these projections are obviously more sophisticated and take in land use etc.	Not relevant anymore for revised chapter
35006	12	24	34			"due to cement": Looking at Figure 12.8 it is actually steel that matters most. Needs explanation why this is not included.	Addressed in revised text
41487	12	24	8			This is an important figure however, there did not appear to be any text explaning the point/relevance of the dashed lines. Only the shaded areas are explained in the text. Please expand the explanation of the figure.	Not relevant anymore for revised chapter
24884	12	24	3	24	6	"There is consensus on the need to overcome high-carbon infrastructure lock-in and thus, to seek a successful commissioning of a new generation of devices and integrated infrastructure that can provide low carbon energy and services, but even more, that can shape low carbon settlements of the future." Please provide references for the consensus mentioned.	Not relevant anymore for revised chapter
20006	12	24	11	24	26	The title of Indirect emissions from existing infrastructure is not consistent with the content."	Not relevant anymore for revised chapter
23446	12	24	11	24	26	The title of Indirect emissions from existing infrastructure is not consistent with the content."	Not relevant anymore for revised chapter
24885	12	24	24	24	26	The phrase "Western type infrastructures" could have varying meaning for different readers. Suggest it should be further defined	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
31183	12	25	1	25	10	a bit awkward in this paragraph, especially in assessment of different studies' views. Perhaps synthesize more?	Not relevant anymore for revised chapter
41492	12	25	12			It might be good show the baseline numbers as well, i.e. what is the current urban area total in each continent? Then from there reader can see the % increase, and magnitude of the increase.	Not relevant anymore for revised chapter
20672	12	25	14			Grammar needs correction; "per cement"?	Not relevant anymore for revised chapter
35011	12	25	15	25	16	"are small compared to": does it mean it is not relevant or are there drivers behind this that are worthwhile to understand as they could be important levers?	Addressed in revised text
35013	12	25	23	25	24	cement efficiency gains: Müller 2013 says that there are only low efficiency gains to be expected for cement. This needs to be taken into account here. The chapter needs a clear separation between trends and drivers (e.g. urban growth), options (e.g. spatiality, cement efficiency) and policies.	Addressed in revised text
31182	12	25	24	25	24	use "effect" rather than "affect"	Not relevant anymore for revised chapter
41493	12	25	25	27	3	Please discuss the assumed levels of density and fertility in the scenarios discussed in this section.	Not relevant anymore for revised chapter
28016	12	25	27	25	31	In these lines, the readability and understandability of these very important issues might be further improved, if Figure 12.14 was mentioned already in the very first sentence. In the second sentence it might even be impressive to interchange the order of the cases mentioned and split the sentence in two. Proposal: "High or medium density urbanization will result in considerable lower greenhouse gas emissions than in future low density urbanization. This will even hold, if future high density urbanization is combined with high fertility and population growth in comparison to low density urbanization in combination with low fertility and population growth."	Not relevant anymore for revised chapter
23637	12	25	29			When fertility is first mentioned here it is not clear that this refers to the rate of population growth	Not relevant anymore for revised chapter
41494	12	25	29	25	31	More description of the sentence is warranted, and add explanation and citation.	Not relevant anymore for revised chapter
41496	12	26	10	26	11	the conclusion from this section is basically, if all move to cities or more urban areas, the carbon footprint would be low. Did anybody conduct an extreme scenario such that all the populations are moving to more urban and sustainbable areas and quantified the actual impacts? Of course, there will be implications on how these could be implemented given the restrictions and barriers in the governmental institutions. Also, the chapter need to point out and emphasize more how can we improve on existing conditions. For example majority of the US is still finding living in a suburban area as norm and still many new construction and city/town development is favoring that. what would be alternative or drivers for them to change? Please elaborate on such issues.	Not relevant anymore for revised chapter
41495	12	26	4			figure 12.13 -- in the notes, I think the ref for (C) should be Seto et al. (2012).	Not relevant anymore for revised chapter
24255	12	27	12	42	14	Very informative and valuable analyses of role of spatial form. Easy and interesting to read as is too, but potentially the information could be organized under a reduced number of headings.	Not relevant anymore for revised chapter
35016	12	27	13			This is not adequate for an assessment. Reflection is needed on the existance of different definitions. The choice for working definitions used in the chapter need to be justified. No such positivistic statements.	Addressed in revised text
41498	12	27	14	27	14	Is the "47" in the citation to Lynch 1981 meant to be there?	Not relevant anymore for revised chapter
34218	12	27	6	27	11	p27 line 6-11: I would remove this callout as I don’t think it provides important information.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41497	12	27	7	37	29	The biggest substantive problem with section 12.4 relates to the several conflicting points about density and emissions (such as p.29 lines 21-23 vs. p.32 lines 1-3 vs. p.33 lines 18-21-- more exist). High density settlement in high-wealth areas often carries high embodied energy and construction related emissions, even if carrying lower per capita transport or electricity emissions. It's hard to say what the net effect of increased density (i.e., intensification) will be on emissions, as it depends critically on the local context and implementation of other features relating to land use patterns and infrastructure. Large differences also exist between high-wealth and low-wealth areas. Please modify the discussion accordingly.	Not relevant anymore for revised chapter
24256	12	28				Good that the summary of characteristics of low vs high carbon settlements includes diets	Not relevant anymore for revised chapter
41499	12	28	1	28	14	This section is really about the relationship between urban form and GHG emissions. Change the title to "The relationship between urban form and green house gas emissions." It would be useful to first clarify the relationship, then report the literature that provides evidence supporting which characteristics are important.	Not relevant anymore for revised chapter
33488	12	28	10	28	10	It should be made clear that these are the travel emissions contribution towards low carbon targets. However, I would be inclined to rephrase as "indicating that human settlements could reduce the carbon emissions associated with road transport by attaining..." as the use of targets is a bit of a distraction.	Not relevant anymore for revised chapter
33489	12	28	12	28	12	Is there a missing word in point 5?	Not relevant anymore for revised chapter
30477	12	28	12	28	12	The text suggests that 'high connectivity' could help 'meet low carbon targets'. This characteristic can be interpreted wrongly, to suggest that any type of well-connected transport infrastructure can help meet GHG targets. This certainly does not hold for a well-connected highway system. The connectivity characteristic is primarily of importance at the local scale, as evidenced in Fig.12.15. Please replace 'high connectivity' with 'high connectivity at the lowest spatial scale'.	Not relevant anymore for revised chapter
30478	12	28	12	28	13	The text suggests that 'destination accessibility terms of job accessibility by auto' could help 'meet low carbon targets'. This is obviously not true. High car accessibility only increases car use, which under current technologies will increase energy use, ceteris paribus. So I suggest to replace 'destination accessibility terms of job accessibility by auto, by transit and by distance to downtown, often referred to as regional accessibility' by 'destination accessibility, or regional accessibility, by low carbon transport systems' which leaves open future developments towards highly energy efficient cars or personal rapid transport systems. The importance of having short home-to-work trips by car is already captured by the first characteristic 'high population and employment densities that are co-located' and not reason to include accessibility by auto here. See also Table 12.9, where is is suggested that accessibility will have impact on mode share.	Noted: The relevant sections in the chapter has gone through rewriting and more balanced now.
35019	12	28	12			Concerning (5) unclear whether low/high	Addressed in revised text
23448	12	28	14	28	14	Empiricial evidence from other large Asian city also confirms that higher densities, mixed land uses, higher accessibility to public transportation, and better jobs-housing balance are the spatial characteristics of low carbon neighborhoods (Qin & Han, 2013). Full citation: Qin, B. and S.S. Han (2013). Planning Parameters and Household Carbon Emission: Evidence from high- and low-carbon neighborhoods in Beijing. Habitat International 37: 52-60.	Not relevant anymore for revised chapter
41502	12	28	15			There's a typo in the figure: "integrated waste management" not "managment"	Not relevant anymore for revised chapter
41503	12	28	15			Please cite the source of the Figure.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
26376	12	28	17	29	12	I think the chapter should at least mention that the emissions from transportation and housing energy are not the only sources of emissions. The chapter includes a mention that the wage levels are higher in more dense cities. Thus the consumption activity tends to be higher as well. Heinonen et al (2013) (detailed citation above) discuss how the reduced living space in more dense areas is also a trade-off between own or possessed living space and all kinds of commercial service spaces around one. As the overall result the reductions in driving mileage and transport related GHGs and in housing energy and GHGs may not be enough to cover the increased emissions from other consumption - even from overall space use. How urbanization affects the consumption patterns and emissions is difficult to say, but the (relatively many) linkages between higher (consumption-based) emissions and dense urban living should be somehow noted. For example, even on a same level of monetary consumption, the residents of a city iwth airport seem more likely to fly than those living further away form an airport (the same applies to a variety of services, but fying is one with significant impact potential and should be tied to assessments of transport related emissions) (Heinonen, Jukka; Junnila, Seppo (2011): Case study on the carbon consumption of two metropolitan cities, International Journal of Life Cycle Assessment, 16, 569-579). I don't really know the two cited studies but I know that Denmark and Finland cannot be directly compared without taking the climates into account. From GHG perspective it is very important also how CHP production is treated since in Finland there is a lot of CHP production, but largely using fossile fuels.	Noted: but the chapter has gone through massive changes in this version from earlier and we suppose is much balanced
41506	12	28	18	28	23	Increased urban density in isolation will not be able to contain rising urban GHG emissions. A mixture of high residential and employment density could result in shorter commuter journeys and a reduction in private vehicle use only if it is supported by an efficient public transport system and appropriate fiscal and regulatory instruments (gasoline, vehicle, congestion taxes etc). Without sufficient fiscal and regulatory mechanisms in place, there is no reason for ballooning middle class in developing countries' cities to not own private vehicle, especially when they can own one for as low as $2500 (basic models of Tata Nano and Bajaj RE60 in India cost around $2500). The discussion in this section needs to mention fiscal and regulatory planning instruments in conjunction with urban planning.	Addressed in revised text
33487	12	28	2	28	4	These first two sentences seem to be slightly inconsistent: "evidence that urban form… important in shaping levels of GHG emissions" and then "urban form is responsible directly for a large proportion of energy" - although not quite contradictory, they need to be tidied up.	Not relevant anymore for revised chapter
33491	12	28	20	28	21	Some evidence/explanation of why higher densities encourage modal switch would be relevant. I guess a combination of access, but also for public transport creating an economically sustainable market must be a factor.	Not relevant anymore for revised chapter
41507	12	28	24	29	8	Key purported benefits of density also include high public transportation accessibility, a high degree of street connectivity, shorter intra-urban travel distances, less automobile dependency, and more efficient infrastructure. See Neuman's "The Compact City Fallacy" in JPER (http://jpe.sagepub.com/content/25/1/11.abstract) and OECD (2012), Compact City Policies. A Comparative Assessment. Please revise accordingly.	Not relevant anymore for revised chapter
35017	12	28	3			Meaning of "these relationships are not absolute" unclear.	Addressed in revised text
35018	12	28	3			"responsible": Please change vocalulary used	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
20674	12	28	7		14	The meta-analysis of Ewing and Cervero is largely (or almost exclusively) focused on American, Canadian, and Western European cities, with American cities being the vast majority. There is emerging literature from South America (Chile and Colombia mostly) and Asia (China, Japan, India mostly) on the built environment and travel behavior. There are fewer studies, so a meta-analysis would not be possible. But acknowledging the US-centric nature of the evidence is important. This should also be linked to the gaps in the last page of the report.	Noted: In relevant placed North Americal Centric nature of result is presented such as last para of section 2.4.2.4. The write-up is more balanced in this version of chapter.
33490	12	28	8	28	14	Overally, this list of features of low carbon settlements is very interesting. However, I am concerned that the section heading implies it is general statement about low carbon settlements when the summary is based upon road transport only. If this is not to be renamed as a transport section, then the authors should include other (sometimes not spatial) characteristics of low carbon settlements. These might include certain material types, design policies etc. Local/decentralised systems for infrastructure such as energy and food is usually associated with low carbon design. Integrated transport is specifically referred to, but integrated infrastructure systems more generally may be a feature of this. The authors may be interested in "Hall, J.W., Henriques, J.J., Hickford, A.J. and Nicholls, R.J. (2012) A Fast Track Analysis of strategies for infrastructure provision in Great Britain: Technical report. Environmental Change Institute, Oxford." as one example of a large scale strategic analysis.	Addressed in revised text
41501	12	28	8	28	13	Is the primary impact of urban form on CO2 through transportation? Consider providing more emphasis on the impacts of urban form on energy, waste, water, and food.	Rejected. As there are no or only very scarce studies quantifying the link between urban form and waste/water/food the focus on this sections is on energy use with a focus on transport.
34220	12	28	9	28	10	p28 line 9-10: The Ewing-Cervero metastudy does not provide evidence that “attaining and sustaining” various urban spatial characteristics will achieve global low carbon targets. It is much more modest than that. It reports the average elasticities of studies relating built environment characteristics to VMT. In many cases these are quite small. It should also be noted that attaining and sustaining those characteristics may be a very daunting challenge. * The Ewing-Cervero metastudy is comprised largely of studies carried out in the US, and it is possible the results are not as relevant to the developing world.	Noted: The text has gone though massive changed and is more accurate now. See 12.4
41500	12	28	1	28	16	Section 12.4.1 outlines 6 features of urban form that affect carbon emissions. Consider numbering the following sections 12.4.1.1, 12.4.1.2, etc. For example, 12.4.2 should be renumbered as subheading 12.4.1.1.	Not relevant anymore for revised chapter
30486	12	28				The section does not mention parking. With increasing density, the costs of supplying parking goes up, which makes car use less attractive. Please add and refer to the work of Shoup (2005) The high costs of free parking.	Not relevant anymore for revised chapter
41504	12	28	17	29	32	Density section needs an introduction that discusses the various ways density affects energy use, including transportation and residential energy consumption. Figure 12.17 on page 30 is a good example of this. Please modify the text accordingly.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41505	12	28	17	29	32	Given the fact that vehicle ownership, now, is within the reach of even lower middle class in developing countries cities, the increase in emissions could be much higher than the one projected by BAU scenarios. BAU scenarios do not take into consideration social and cultural changes that are actually happening in many cities in developing countries. In India, for example, because of the social status attached to vehicle ownership, households have started owning more than one private vehicle. In future, they may be in a position to afford a vehicle for each and every member of the household. If that were to happen, GHG emissions would be much higher than projected under BAU scenario. This issue is not reflected in the report. It is worth at least mentioning it.	Not relevant anymore for revised chapter
41508	12	29	1	29	3	The NRC 2009 reference is not included in the reference list	Not relevant anymore for revised chapter
26366	12	29	14	29	19	This paragraph introduces the term "built density" and describes its correlation with demographic density. Earlier in ths chapter the term "built-up area density" was used. It is recommended to explain in a footnote the meaning of the term and whether it can or cannot be used interchangebly with the term "built-up area density" or whether there is a relation between built density and built-up area density. If these terms aim to describe the same parameter, it is recommended to use only one term to describe this parameter for the sake of clarity and consistency.	Not relevant anymore for revised chapter
26367	12	29	14	29	28	The paragraph describes the correlation between demographic density and built density. The last sentence of the paragraph states that "Experience across cities shows that floor area ratio (FAR), the ratio of floor area over the land area, is an effective policy tool to increase urban density". It is recommended to provide more details on how floor area ratio can be used as a policy tool and provide references to relevant literature sources.	Not relevant anymore for revised chapter
41511	12	29	14	29	28	This is a little confusing/counter-intuitive; which of the three layouts are the least energy-intensive and how do they interact with density? Please clarify.	Not relevant anymore for revised chapter
35023	12	29	20			"cost of construction per m2" - please link to Ch.9 (which is a great source!) on this rather than referencing a subset of the studies assessed by Ch.9 directly.	Addressed in revised text
20675	12	29	23,27			Please explain what passive solar volume ration is	Not relevant anymore for revised chapter
41512	12	29	26	29	26	Define "high passive volume ratio"	Not relevant anymore for revised chapter
34223	12	29	27	29	28	page 29 line 27-28: Sentence beginning “Experience across cities shows...” Please cite literature on this point. Shoup (2005) argues in The high cost of free parking that FAR has little effect on density in many US urban areas where off-street parking requirements are the determining factor in limiting maximum density. The same could be true in other places.	Not relevant anymore for revised chapter
30480	12	29	27	29	28	Please rephrase the sentence 'Experience across cities shows that floor area ratio (FAR), the ratio of floor area over the land area, is an effective policy tool to increase urban density.' How can an indicator be an effective policy tool? It depends how it is used!	Not relevant anymore for revised chapter
35024	12	29	27	29	28	Reference missing!	Addressed in revised text
20676	12	29	28			FAR is just an indicator, like VMT or population per unit area. So saying that FAR is an effective tool does not make much sense. Perhaps high FAR? Or increased FARs?	Not relevant anymore for revised chapter
33492	12	29	3	29	3	NRC (2009) does not seem to be listed as a reference	Not relevant anymore for revised chapter
23449	12	29	3	29	3	Add one sentence here after citing NRC's work: "A study of residential carbon emissions in 74 Chinese cities shows that carbon emission per urban household from residential transportation decreases with urban population density (Zheng et. al. 2011)". Full citation: Zheng S., R. Wang, E. Glaeser, and M. Kahn (2011). The Greenness of China: Household Carbon Emissions and Urban Development. Journal of Economic Geography 11, 761-792.	Noted: The NRC citation is removed and texts have gone massive changes

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41513	12	29	34	29	35	Calling public transportation systems in North America "limited" is subjective and inserts a judgment. It is also too sweeping to call all public transportation systems in North America "poorly patronized." Please provide a more recent reference (compared to 1999), as public transit systems and use have grown significantly since then. If the intent is to note the difference between European systems and North American and Australian systems, then it should be clear that North American and Australian systems are relatively less patronized, as a percentage of population or whatever the measure is. Please clarify the text accordingly.	Not relevant anymore for revised chapter
31184	12	29	40	29	40	a bit unclear with wording. Is it supposed to be as is, or is it supposed to be "Here is…"? If the former, I suggest deleting "here" and starting with "The essential…"	Not relevant anymore for revised chapter
30481	12	29	43	29	43	The term 'automobile dominance' is used as a characteristic of urban sprawl. I would erase this term. Automobile dominance is a, partly avoidable, consequence of the spatial characteristics of sprawl. Hence, I would not define as a characteristics of urban sprawl. This is especially important, as sprawl is a fact in many cities around the world, but there remains the need to reduce GHG emissions.	Not relevant anymore for revised chapter t
35021	12	29	5			In my view wrong usage of "leapfrog" - please check	Addressed in revised text
41509	12	29	6	29	8	This sentence on the co-benefits of density seems somewhat abstract and limited. The discussion of "more efficient use of infrastructures and energy" should be a separate section. Density affects energy use in ways that extend beyond transportation. Please modify accordingly.	Not relevant anymore for revised chapter
41510	12	29	6	29	8	References from 1976 and 1980 seem badly outdated. Please provide more up-to-date references. Two sources for another measure of economic cobenefits of density are: Abel, Jaison et al. "Productivity and the Density of Human Capital" Journal of Regional Science 2011. Found that doubling of density increases economic productivity by 2 to 4 percent. Ciccone, Antonio and Robert Hall. "Productivity and the Density of Economic Activity." The American Economic Review. 86(1):54-57. 1996. Found that doubling employment density increases average labor productivity by about 6 percent. Note that these figures were revised in OECD (2012), Compact City Policies: A Comparative Assessment. See: http://www.oecd-ilibrary.org/urban-rural-and-regional-development/compac… Please modify the text accordingly. What is the difference between demographic density and built density? Please clarify.	Not relevant anymore for revised chapter
34222	12	29	9	29	13	p29, line 9-13: This paragraph on electricity production is out of place, but it is potentially important, because it is one of the few places in section 12.4 where there is an implication of a relationship between urban form and heating/cooling requirements or other forms of electricity consumption such as electricity used for municipal lighting and services, and electrical transmission. There is relatively little discussion of literature relating urban form to other types of CO2 production than vehicle use.	Not relevant anymore for revised chapter
33493	12	29	9	29	13	I assume Figure 12.4 should actually be referring to Figure 12.17?	Not relevant anymore for revised chapter
33494	12	29	9	29	13	The curve plotted Fig 12.17 does not look like a good fit to the data making the statement on P29 seem unnecessarily strong. There are doutbless a range of factors that influence this relationship. The two examples cited seem a little convenient - for example if Norway and Ireland had been picked - they have almost identical population density but almost 5-fold differences in per capita electricity use. The authors should try and identify other key factors (building regs, climate, gas or other energy source usage etc.) as much as possible and try and unpick these empirical observations using other evidence.	Not relevant anymore for revised chapter
30479	12	29	9	29	13	I do not know the reference to which this paragraph refers, but it seems too simple to conclude that density is related to energy use by simple comparing overall figures for two countries. Please delete the paragraph or explain the possible causal relation.	Not relevant anymore for revised chapter
35022	12	29	9			Figure 12.4 is not about this at all.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
24886	12	29	36	29	36	Changes and improvements in Australia's public transport networks mean that Kenworthy and Laube's 1999 statement is no longer accurate. Suggest Remove the reference to Australia as this statement.	Not relevant anymore for revised chapter
30482	12	30				The graph largely shows that there is NO relation between density and electricity consumption, as most countries with a density below 1000 inh/km2 have a widely varying energy use. I suggest to delete the graph and adjust the text accordingly.	Not relevant anymore for revised chapter
41514	12	30	1	30	2	While there might not be a universal definition or metric, scholars have measured urban sprawl across several dimensions and it may be useful to provide those various measures in this section. For example, Ewing developed a useful sprawl index in work for Smart Growth America or NRDC circa 2002.	Not relevant anymore for revised chapter
35026	12	30	10			Does this imply that there is no agreement about the effect of policies. If so this needs to be spelled out and discussed given policies on this discussed in the chapter.	Addressed in revised text
20677	12	30	12		13	The sentence beginning with "A study…" repeats what was said in page 28 lines 7-14.	Not relevant anymore for revised chapter
30483	12	30	14	31	15	Please erase the sentence 'High population densities and compact urban design are required to support mass transit alternatives to the automobile'. The book of Paul Mees (2010) Transport for suburbia convincingly shows that high density is not necessary for high quality PT. Please replace it with the following sentence: 'High population densities and compact urban design support mass transit alternatives to the automobile, but well-designed transit systems can also efficiently serve lower density development.'	Taken into account: no longer exists in the revised text
41518	12	30	16	30	23	The authors need to define mixed use before discussing the literature.	Addressed in revised text
41519	12	30	17	30	18	The "consensus" and "necessary condition" wording is too strong. This statement reduces mixed use without defining it. The rate and types of land uses in "mixed use" affects whether it encourages walking and non motorized travel. Please revise accordingly.	Not relevant anymore for revised chapter
35027	12	30	17			You can not claim that there is a consensus and then only cite one study or you need to make explicit that this is a review. I could not check as reference is missing in bibliography.	Addressed in revised text
41515	12	30	2	30	15	This sentence on "the key variable between these forms" seems out of place. The section is about compact urban form while this discussion centers on public transportation, VMT and density alone. Please clarify the sentence.	Not relevant anymore for revised chapter
33496	12	30	20	30	23	The authors need to be clear about what is included in a 'mixed land use' and what is not. There is plenty of evidence that suggests housing people next to busy roads in (mixed or non mixed areas) or heavy industry has negative impacts. I assume this is not what they mean, so a clarification is all that is required.	Not relevant anymore for revised chapter
34225	12	30	23			p 30, line 23: “There is no evidence of negative externalities of mixed use” -- Unnecessary statement, and quite incorrect. The existence of nuisance laws is precisely in order to deal with negative externalities (e.g., noise ordinances prohibiting loud music from nightclubs in residential neighborhoods after 10 pm at night), classic examples defining the term “externality” are in fact precisely about mixed land uses (e.g., the washing in a residential backyard receiving soot from a nearby industrial plant), and the invention of zoning in the US was ostensibly in order to reduce nuisances relating to mixed uses.	Taken into account: no longer exists in the revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
20678	12	30	23			Stating that there is no evidence regarding the negative externalities of mixed uses is incorrect. The vast majority of US-based planning is built on the premise that mixing of certain uses is undesirable due to the negative externalities that exist. There is plenty of evidence suggesting why concrete plants, for example, should not be located next to schools. Their externalities are important. The sentence may be referring to the more current literature on mixing of specific land uses that support pedestrian and bicycle activity. In this case, yes, the literature has identified some important externality: localized air quality problems. Robert Cervero and others have written on this (more on the topic below). Furthermore, here is another gap: which uses to mix? We think retail and residential, office and residential go together. But there are important differences in the type of retail (strip mall vs. infill city). LArge big box retailers have been able to accommodate both.	Taken into account: no longer exists in the revised text
41520	12	30	23	30	23	Please remove this statement. There is much evidence going back at least a century from public health and economics that residential proximity to pollution-intensive activities (i.e., disamenities) such as industry, transport, and waste management carries substantial public health and property value externalities. This pollution exposure is precisely why the wealthy fled cities when they could, and why planners first advocated single-use zoning and separation of residential from other uses (throughout the US at least).	Not relevant anymore for revised chapter
23450	12	30	23	30	23	Delete the sentence "there is no evidence of ……". Shown in the danwei land use pattern in Chinese cities, too much mixed land uses (e.g. danwei) are against the rule of land market mechanism, as different types of land users have different ability to pay the land rent and thus may not be easily "mixed". If in need, please refer to Qin & Han, 2013. Full Citation: Qin, B. and S.S. Han (2013). Emerging Polycentricity in Beijing: Evidence from Housing Price Variations, 2001-05. Urban Studies, DOI: 10.1177/0042098012471979.	Not relevant anymore for revised chapter
35025	12	30	3	30	4	For VMT please reference Ch.8 rather than only one study.	Addressed in revised text
33495	12	30	4	30	6	The curve plotted on Figure 12.17 can not possibly be a best fit of the data and is therefore a bit misleading (perhaps contributing to some of the rather strong assertions identified on P29). It certainly needs to be explained in the legend/label.	Not relevant anymore for revised chapter
41516	12	30	5			This graph was updated with new data in OECD (2012), Compact City Policies. A Comparative Assessment. See Figure 2.1 (page 58). Please update the figure accordingly.	Not relevant anymore for revised chapter
41517	12	30	5			As several factors (GDP, energy infrastructure, technology and cost) infuence electricity consumption per capita to a much greater degree than urban density, this graph may be misleading. Please point out this caveat in the text.	Not relevant anymore for revised chapter
26427	12	30	16	31	33	This section could be shortened by shortening the explanations of different types of mixed use. Many of their characteristics repeat and could be mentioned once in the beginning.	Not relevant anymore for revised chapter
31624	12	31	1	31	9	To add: Green areas within cities also serve as cool-air areas countering the heat-island effects of sealed city areas.	Not relevant anymore for revised chapter
20679	12	31	1		3	Green spaces are important more for the physical activity benefits they confer. It is not clear whether these are from walking and bicycling to the green spaces, in the green spaces, or due to other activities (eg other sports) that happen within the spaces. In fact, in the US green spaces have emerged as one of the few consistent land uses (together with retail) that is associated with higher physical activity. See: Cohen, D. A., Ashwood, J. S., Scott, M. M., Overton, A., Evenson, K. R., Staten, L. K., . . . Catellier, D. (2006). Public parks and physical activity among adolescent girls. Pediatrics, 118(5), e1381-1389. and Cohen, D., Sehgal, A., Williamson, S., Golinelli, D., McKenzie, T. L., Capone-Newton, P., & Lurie, N. (2008). Impact of a new bicycle path on physical activity. Prev Med, 46(1), 80-81.	Noted: The texts are rewritten on green space in section 12.5.2.2. in more stuctured way

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41522	12	31	1	31	15	"City Scale Mixed Use" This isn't a discussion of mixed use, but of Euclidean zoning at the municipal/county level, which is really a constraint to realizing mixed use. Perhaps this paragraph contains important information about the relationship between urban form and GHG emissions, but it seems that the information about zoning and local authority should go into a different section and the potential constraint should be mentioned in the mixed use section.	Not relevant anymore for revised chapter
41521	12	31	1	31	9	Green areas are important and this relates to the carbon sink discussion later, but the "mixed use" section doesn't seem like the best place for this paragraph. It would be better suited in its own section.	Not relevant anymore for revised chapter
31185	12	31	10	31	11	too many ":" in one sentence; phrasing needs attention	Not relevant anymore for revised chapter
35373	12	31	14			complexly inter-related : refer studies	Not relevant anymore for revised chapter
41524	12	31	16	31	16	What is a "smart" mix?	Not relevant anymore for revised chapter
41525	12	31	19	31	20	Pg. 31, Line 20. Even more important than urban density to what? GHG emissions? Needs clarification.	Not relevant anymore for revised chapter
35031	12	31	27			"visually interesting": Is this a proper criteria? Needs explanation.	Addressed in revised text
41526	12	31	28	31	29	The idea of co-benefits from block-scale mixed use is unclear. Are the impacts on energy consumption simply linked to density or does it relate to the type of use? Need further explanation. What do you mean by recycling "energy flows?" Please clarify.	Not relevant anymore for revised chapter
41527	12	31	28	31	31	Another co-benefit of block-level mixed use is the opportunity for shared parking, reducing parking footprint and reducing tendency to drive between nearby land use activities. Please modify accordingly.	Noted
35028	12	31	3			"limited": Please assess absolute numbers and check with other biomass sources. You will come to the conclusion that it is so limited that it can be irgnored. Take the consequence to take it out of the chapter. Otherwise definitely references are needed ("assessment report")	Addressed in revised text
35032	12	31	32			"diversity of loads": Reference to Ch.7,9,10 and possibly SRREN Ch.8	Addressed in revised text
41528	12	31	35	31	45	Another effect is to make auto trips more direct, reducing vehicle miles traveled. Please modify accordingly.	Not relevant anymore for revised chapter
30484	12	31	47			Please replace 'Accessibility is a function of travel time, and distance between destination and origin' with 'Accessibility is a function of travel time and the spatial dispersion of origins and destinations'.	Not relevant anymore for revised chapter
41523	12	31	6	31	6	Typo "Heat island effect"?	Not relevant anymore for revised chapter
35029	12	31	6			"heat island": reference to Ch.9, the tbd central point discussing it in WG III and to WG II report needed.	Addressed in revised text
35030	12	31	8			"approriate scale": If the three paragraphs below are detailing such scales please be more explicit about this as otherwise it is not understood.	Addressed in revised text
24887	12	31	1	31	15	Please provide references for the claims in these two paragraphs.	Not relevant anymore for revised chapter
24888	12	31	35	31	45	Please provide references for the claims in this paragraph.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
30485	12	31				This section misses the point. The point is that accessibility by low carbon modes should be comparable to accessibility provided by high-carbon systems (i.e., the car given current technologies). Only if PT systems can provide a comparable level of service, a real modal shift towards PT may be expected. This section also needs to be expanded to underscore the importance of equity in the transportation domain. That is, reductions of GHG emissions of the transport sector are desirable, but should not come at the expense of the accessibility provided to the lower income groups. Hence, the text in this section should show that reducing GHG emissions and providing equitable accessibility can go together, if high acessibility is primarily provided through high quality, affordable, public transport. See my papers: Benenson, I., K. Martens, et al. (2010). "Measuring the Gap Between Car and Transit Accessibility: Estimating Access Using a High-Resolution Transit Network Geographic Information System." Transportation Research Record: Journal of the Transportation Research Board(2144): 28-35; and Benenson, I., K. Martens, et al. (2011). "Public transport versus private car: GIS-based estimation of accessibility applied to the Tel Aviv metropolitan area." The Annals of Regional Science 47(3): 499-515.	Noted: see section 12.4.2.4 in revised text.. Improved
24889	12	31	47	32	3	Please provide references for the claims in this paragraph.	Not relevant anymore for revised chapter
26596	12	32				ADD: co ben risks density : diversity of services social tensions land uses : leisure, coolness, social links connectivity: less pollution/noise, social opposition regional accssbiliyt: ibid transit: ibid ibid buildings : decrease of energy precarity rebound effect comfort, food: local prod leads to local activity	Not relevant anymore for revised chapter
41529	12	32	4	32	7	A single sentence is not sufficient for the concept of integrating multiple transportation modes. Fuel-efficient carriers are not necessarily related to "integrating multiple transport modes," so it is unclear why they are mentioned here or how they relate. It is not explained why providing multimodal infrastructure and deploying fuel-efficient carriers is a "win-win scenario." Please consult with the authors of Chapter 8 to revise this section and explain how these measures reduce GHG emissions, help adaptation, and help local sustainable development measures.	Not relevant anymore for revised chapter
41530	12	32	8			Please define FA in table 12.9.	Not relevant anymore for revised chapter
41531	12	32	8			Please define "negative savings?" Make the systematic interventions (#7-11) more pronounced in formatting.	Not relevant anymore for revised chapter
41532	12	32	8			Please explain the meaning of all the different colors of the table's cells.	Not relevant anymore for revised chapter
41533	12	32	8			It is not clear how "transport mode" (column 1) can be a "positive savings." What is being saved? Please explain.	Not relevant anymore for revised chapter
41534	12	32	8			From the literature, regional accessibility has a favorable effect at least as great as development density. Please revise accordingly. The point about network length and material stocks is important and warrants further discussion.	Addressed in revised text
24890	12	32	14	33	33	Suggest this section has marginal relevance and could be shortened if the chapter length is being shortened	Not relevant anymore for revised chapter
35037	12	33	17	33	21	Chpater 9 needs to be referenced here!	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
35038	12	33	24			"fairly similar": Figure 12.18B shows to opposite! Why only reference to Figure B and not others?	Addressed in revised text
26368	12	33	28	33	30	The thought that denser urban areas provide incentives for modal shift in transport in the form of public transport or cycling, which reduces vehicle ownership and related emissions has been repeated many times across the chapter. Although it is a very important message, in light of the fact that the lengh of this chapter is 3 pages over the target, it is recommended to reduce a number of repetitions of the same message in this chapter.	Addressed in revised text
41535	12	33	30	33	33	Seems to point to a need to discuss green buildings, in general. Please cross reference with the chapter on buildings.	Not relevant anymore for revised chapter
41536	12	33	31	33	32	It is not clear what "There is a significant gap in design principles" means. Which design principles? What is the gap? Why are design principles (as opposed to practices) relevant in this situation? Please explain.	Not relevant anymore for revised chapter
34228	12	33	8			p 33, line 8: This equation and the subsequent explanation of it appear to ignore variance in the flows of energy used to provide services, focusing on embodied emissions intensity of materials and the amount of materials per unit of services. Embodied emissions are important but spatial arrangements can affect things other than the material stock used for roads and buildings. For example, as embodied energy increases per square foot of building construction for multiple story buildings, there may be benefits in terms of other factors ignored in the equation including land consumption, lower heating and cooling requirements, and of course the potential for lower VMT which has been the topic of section 12.4 up to this point.	Addressed in revised text
24891	12	33	1	33	1	Please define the word "hinterlands".	Not relevant anymore for revised chapter
24892	12	33	28	33	29	The statement made is not accurately reflecting the relationship. Suggested rewording: "Furthermore, denser urban areas tend to encourage a shift from cars to public transport, walking and cycling with less distance to travel to access goods, services and employment."	Not relevant anymore for revised chapter
24257	12	34				Table and text referring incoherently to B as waste water networks and C as road networks	Not relevant anymore for revised chapter
33497	12	34	1	34	5	Work - for example by "Filion (2008) J. Infrastructure Systems, Vol 337") has shown that the network design of water systems is one of the most important factors in determining water distribution use.	Not relevant anymore for revised chapter
41537	12	34	1			Figure 12.18. The authors should at least make a nod in the text somewhere in this chapter to the fact that affluence or income plays an intervening role between density and emissions. Muller et al 2013, who produced this graphic, discussed the issues and could be cited. Other relevant sources to cite would be from the urban transitions literature, such as McGranahan and Marcotullio, or from urban sociology, such as Jorgenson and colleagues. This point then links up with the very important concern about affordability mentioned in 12.5.8. The only real discussion of affluence comes at the very end of the chapter in box 12.1 -- with the prescient point on p.48 lines 4-5 that most of the strategies discussed here will only work in areas with higher wealth and more institutional capacity. It is hard to translate planning and design prescriptions developed for the US or Europe to Africa or Asia. The authors should NOT remove box 12.1.	Addressed in revised text
23451	12	34	1	34	2	Table 12.18 cannot successfully express the idea that urban density and GDP (PPP) have an effect on network length and vehicle ownership, for the lateral axis in the four sub-table can only reflect the urban density. So the statement can be replaced by Impact of urban density on network length and vehicle ownership: (A)…" In addition, for a more standardized expression, "urban density (Cap per km2)" should be replaced by "urban density (Cap per km2)".	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41542	12	34	11	34	19	In addition to waste heat and co-generation opportunities, additional energy efficiency opportunities exist through district heating. This is discussed in section 7.6.2 and could be referenced here. Biofuels, waste, and renewables comprise 7.4% of district heat generation according to section 7.6.2.	Noted, the chapter has gone substatial change- the chapter provides more integrated picture than sectoral discussions.. not much relavant
41543	12	34	12	34	12	"Hara et al. (Hara et al., 2001)" should be "Hara et al. (2001)"	Not relevant anymore for revised chapter
26369	12	34	16	34	19	The sentence states that "despite many opportunites and scattered small-scale case studies, the share of energy that renewable sources can provide in large and dense cities is poorly understood and depends largely on the climatic and geographic conditions as well as the settlement structure". To improve the description of opportunites for deployment of renewable energy sources in urban areas, it is recommended to consult Global Energy Assessment 2012, Chapter 18 Urban Energy Systems as well as publications by International Energy Agency such as Cities, Towns and Renewable Energy, Yes in My Front Yard. IEA 2009.	Not relevant anymore for revised chapter
41544	12	34	20	34	21	"Utility peak" should be changed to "peak demand" or "peak electricity demand" in order to conform with standard terminology.	Not relevant anymore for revised chapter
35041	12	34	20			"smart grid": Do not used this term, see SRREN. Contact the glossary group in case there are questions.	Addressed in revised text
33498	12	34	23	34	23	This paragraph seems to end quite abruptly. I was left thinking: so what does this mean in the context of climate change and GHG…?	Not relevant anymore for revised chapter
41545	12	34	26	34	27	The sentence starting with "per capita waste generation…." is misleading as most of the developed countries including US have almost stabilized their generation rate, and eventually there was a slight decrease in the rates (EPA, 2010. waste characterization report, the report can be found at http://www.epa.gov/osw/nonhaz/municipal/msw99.htm Please revise accordingly.	Not relevant anymore for revised chapter
26428	12	34	6	34	23	I am aware that this chapter is on mitigation, not on adaptation. However it is important that the emergency of decentralized energy production and the subsequent increased need for smart grids may increase the vulnerability of energy infrastructure towards natural hazards - which are likely to appear more often as a result of climate change. Their implementation needs therefore a serious estimation of future climate risks (storms, floods, heat periods) due to climate change.	Not relevant anymore for revised chapter
26377	12	34	6	35	29	As the focus of the report is on GHGs it seems unjustified that energy is concerned very briefly and waste with much more detail. The weight of waste in any society-level GHG mitigation possibilities is negligible compared to energy.	Not relevant anymore for revised chapter
41539	12	34	7	34	8	The comma in this sentence appears to be misplaced (or there is an extra "and"). It would make most sense to me for the sentence to read "Municipal energy utilities can use efficient local electricity and heat co-generating plants and renewable energy sources such as solar and wind." [comma removed and generating changed to co-generating]	Not relevant anymore for revised chapter
41540	12	34	7	34	8	Wind and solar are not the only renewable energy sources used by municipal energy utilities. Biomass and geothermal resources are also used and should be listed.	Not relevant anymore for revised chapter
41541	12	34	8	34	8	The authors should consider using "connecting" instead of "interlinking"	Not relevant anymore for revised chapter
41538	12	34	6	34	23	In discussing energy, please discuss relationship between urban form and residential energy consumption. (Higher density, lower consumption?)	Noted: The whole presentation of density related discussions have been restructured in 12.4.2 in revised chapter
24893	12	34	7	34	8	"Municipal energy utilities can use efficient local electricity, and heat generating plants and renewable energy sources such as solar and wind". This opening sentence is confusing and unhelpful, please re-write.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41546	12	35	14	35	15	The sentence starting with "waste to energy reduces…." is misleading, because WTE plants due to mixed biomass and fossil based character of the waste stream will always generate some CO2 emissions. If the facility is located in an area where power plants supplying the base load are renewables (hydro, wind, solar) or nuclear, then actually the WTE will increase the CO2 emissions. The more details on life cycle based GHG comparison of WTE, landfills and power plants are presented in Kaplan et. al (2009). (Kaplan, P. O., J. DeCarolis, et al. (2009). "Is It Better To Burn or Bury Waste for Clean Electricity Generation?" Environmental Science & Technology 43(6): 1711-1717.) Please revise the text accordingly.	Noted, the chapter has gone substatial change- the chapter provides more integrated picture than sectoral discussions.. not much relavant
41547	12	35	14	35	15	Please mention potential air pollution issues associated with WTE.	Rejected: The comments is not clear, may be referencing of comment is not correct
29000	12	35	27	35	27	Compost is generally NOT a substitute for fertilizer. Its N-P-K values are too low. Rather it is a soil amendment with other sorts of agronomic benefits.	Not relevant anymore for revised chapter
33499	12	35	31	35	46	Two references that would be useful to include here: an oustanding review of GHG emissions associated with the water sector "Rothausen, S.G.S.A. and Conway, D. (2011) Greenhouse-gas emissions from energy use in the water sector. Nature Climate Change 1, 210–219 doi:10.1038/nclimate1147" and "Barnett, J. and O'Neill, S.J. (2010) Maladaptation. Global Environmental Change, 20, 211–213" and "Walsh, C.L. et al. (2011), A systems approach to assessment of climate change mitigation and adaptation at the scale of whole cities, Proc. ICE: Urban Design and Planning, Special issue on Urban Development and Sustainability, 164(DP2): 75-84 (doi: 10.1680/udap.2011.164.2.75)" - also see the Filion paper mentioned previously.	Noted: but a more structured discussions are done in 12.5.1.3 of revised chapter
31112	12	35	37	35	39	While expressing that "agricultural land occupied 4889 Mha, an increase of 7%" is informative, it would be easier to visualize what this means by also adding a number indicating what proportion of the global land mass was occupied by agriculture.	Not relevant anymore for revised chapter
41548	12	35	40	35	46	1). The list of major energy consumption in urban water, wastewater and stormwater management is incomplete. In most urban centers of either developing or developed, energy consumption in decentralized treatment is far less than those in centralized systems; the latter is dominant in the world at this time, and most decentralized wastewater systems in developing countries are natural anaerobic digesters. Please revise the text accordingly. 2). There are numerous publications on energy consumption per unit water / wastewater treatment. It would be helpful to update the single energy consumption rate in the text. Please revise the text accordingly. Please explain the accounting of water usage. This seems to relate back to discussion of transboundary "emissions": water in rural areas serves urban areas through agriculture. Distribution: The mitigation options for water loss need revision: 1) water loss from leakage is not necessarily greater in developing countries. It has been shown that the water loss rate is more related to pipe age, materials, soil corrosively, surface loading, and construction practices. Some old US systems have the uncounted revenue water as high as 50%; 2) water loss cannot be mitigated water loss rate, but only reduced it through pressure management in a distribution network; 3) it seems the mitigation is all about water loss, which is only one component of energy usage reduction in water distribution.	Noted, the chapter has gone substatial change- the chapter provides more integrated picture than sectoral discussions.. not much relavant
23642	12	35	41			Here again- how does the potential for decentralized systems impact this? See for example Dodane et al Environ. Sci. Technol. 2012, 46, 3705−3711- comment applied to Table 12.10	Not relevant anymore for revised chapter
23452	12	35	47	35	47	Does this statement accord with the facts (especially the reality of developing countries)? This statement is reasonable for irrigation agriculture. However, for developing countries in which extensive irrigation agriculture is less developed, or adequate rainfall region, water consumption in cities is more than that in rural areas. So "Water usage in cities is typically lower than irrigated agricultural use" is more rigorous.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
23771	12	35	6	35		this section is very incomplete, and should become much more central. reference should be made to urban and regional energy autonomy - the move to and reality of 'communities as power plants'. the examples abound, as documented in Droege, P. 2006. Renewable City. Wiley. Droege, P. 2008. Urban Energy Transition. Elsevier. Droege, P. 2010/2012. 100% Renewable. Routledge.	Not relevant anymore for revised chapter
24894	12	35	9	35	18	The inclusion of the term "urban mining" should be considered further. It is not directly relevant to the section, and has potential to become a media buzzword or fixation, to the detriment of the report. If used, it should be clearly defined.	Not relevant anymore for revised chapter
24895	12	35	38	35	39	"Based on the evidence from Australia, California, and Canada, the energy intensity of the complete urban water cycle is in the range of 40-80 kWh/m3". Please clarify whether this conclusion (and the following conclusions) is relevant or valid for non-developed countries, or for developed countries with different urban use patterns (e.g. the EU). Furthermore, the same reference is used later (p. 37, line 2) describing Spanish water usage, indicating that the data is not restricted, as indicated, to Australia, California and Canada.	Not relevant anymore for revised chapter
41549	12	36	1			Wastewater reuse: This list of mitigation options needs a revision. Add citations.	Not relevant anymore for revised chapter
41550	12	36	1			In regards to mitigating energy intensity via water infrastructure, this table focuses solely on improved efficiency of equipment, leakage, manageing demand, etc. Taking advantage of efficiencies may marginally reduce energy consumption of 10-20%, but in order to significantly change energy demand by water infrastructure a paradigm change needs to take place to integrate water infrastructure into the land use and transportation network planning. This can be done via intergration of stormwater and wastewater treatment, reuse, and recycling within a more decentralized approach with drinking water where smaller volumes of water are transported shorter distances, with smaller pipes, treatment works in smaller, denser, interconnected service zones in established urban environments. Under new built scenarios, water infrastructure must be planned in conjunction with transportation and land use in order to foster the optimal spatial network and density. Please discuss in text and Table 12.10.	Not relevant anymore for revised chapter
41551	12	36	1			Under mitigation options for wastewater collection, decentralized treatment and recycling is listed as a method for reducing wastewater. However, according to the text on the previous page (pg 35 lines 40-46), the energy estimates are higher when decentralized wastewater treatment is included. There is a tradeoff between reducing wastewater volume and increasing energy that should be noted. "Where appropriate" in the table is insufficient in describing this tradeoff. Please revise accordingly.	Not relevant anymore for revised chapter
41552	12	37	14	37	16	The two clauses of the sentence beginning "While" are not logically related at least not as implied by the word "while." Please revise accordingly.	Not relevant anymore for revised chapter
31186	12	37	19	37	19	metabolism used again, and this time it's confusing for literal versus metaphoric use: are you actually talking about metabolism of food ingested by individuals, or are you talking about the amount of food throughput consumed by a city's population? If the latter, then use these terms (and others) that actually talk about the volume of food required by the city's population (and agricultural prodcution necessary to deliver that food, i.e. direct and indirect resource usage...)	Not relevant anymore for revised chapter
31187	12	37	28	37	28	see above, (and metabolism still not defined… but better not to use; it's jargon for those outside the circle of its usage, and won't as strongly convey what the issue is)	Not relevant anymore for revised chapter
24896	12	37	3	37	4	The reference "... in Perth, Australia, water is transported from a distance of 116 km requiring energy intensity of 0.21 kWh/m3" could be misleading. This section of the document refers to the transport of surface water, which usually means water from rivers or dams, whereas the quote is taken from research that refers to the transport of water from a desalination plant (Plappally and Lienhard, 2012). For this reason, recommend that the text be modified to clarify that the water is supplied from a desalination plant. Alternatively, the specific reference to energy use in Perth could be removed.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
26429	12	37	30	38	29	Integrated planning and growth management do not only recognize mitigation issues, but also often include adaptation strategies. Although this chapter is on mitigation: the the multi-perspective approach including climate change mitigation AND adaptation is a major characteristic of integrated spatial planning (for example with the creation multi-purpusoe space or with a more flexible infrastructure planning)! Early adaptation also contributes to mitigation because it reduces higher adaptation costs in the future and therefore reduces future resources needs.	Not relevant anymore for revised chapter
24258	12	37	7	37	29	The role of diet choice of urban residents merits further discussion. Or if discussed elsewhere in the report you may want to refer to that section	Not relevant anymore for revised chapter
29903	12	37	8			This discussion about emissions from agriculture should be consistent with Chapter 11. This section should not quote Pelletier and Tyedmers (2010) but rather should quote findings of Chapter 11.	Not relevant anymore for revised chapter
41062	12	37		42		I made this comment already in the FOD, but it was not considered. That is regrettable because it ignores to point to a mature, established scientific way to support efforts to move towards carbon-free cities.	Not relevant anymore for revised chapter
41063	12	37		42		In this section 10 implementation tools are listed, But there is no information on how much theses policies contribute to GHG mitigation. Moreover, with one exception, development fees, the most important policies, fiscal measures, such as property taxes or subsidies or loans, e.g. for retrofitting of buildings, or fuel taxes or cordon charges, are not addressed here but separately in Section 12.6.	Addressed in revised text
41064	12	37		42		This is disappointing as there exists a great volume of research assessing the likely impacts of urban planning policies, including fiscal measures, in different metropolitan areas in developed and developing countries with the help of integrated urban land-use, transport and environment models. Worldwide overviews of current models are Wegener (2004) and Hunt et al. (2005). The results of EU-funded modelling studies on European cities are Lautso et al. (2004), Fiorello et al. (2006) and Marshall and Banister (2007).	Taken into account: The whole new policy section is developed and placed under section 12.5.2 in the revised chapter
41065	12	37		42		By simulating a large number of scenarios, forecasting models can be used for backcasting, i.e. for telling decision makers what types of policies are required to achieve predefined targets (Hickman and Banister, 2007). Another major advantage of these modelling studies is that they predict the positive and negative synergies between different policies. One example is that land use planning measures aiming at higher-density mixed-use urban land use are much more effective in reducing car traffic when they are supported by fiscal policies making car traffic more expensive and accompanying improvements in public transport.	Noted
41066	12	37		42		References:	Noted: text no longer exists
41067	12	37		42		Hickman, R. and D. Banister (2007). Looking over the horizon: transport and reduced CO2 emissions in the UK by 2030. Transport Policy, 14, 377-387.	Noted: text no longer exists
41068	12	37		42		Hunt, J.D., E.J. Miller and D.S. Kriger (2005). Current operational urban land-use transport modeling frameworks. Transport Reviews, Vol. 25, No. 3, May, 2005, pp. 329-376.	Noted: text no longer exists
41069	12	37		42		Fiorello D., G. Huismans, E. López, C. Marques, T. Steenberghen, M. Wegener, G. Zografos (2006). Transport strategies under the scarcity of energy supply. STEPs Final Report, edited by A. Monzon and A. Nuijten. The Hague: Buck Consultants International. Available at: http://www.steps-eu.com/reports.htm.	Noted: text no longer exists
41070	12	37		42		Lautso K., K. Spiekermann, M. Wegener, I. Sheppard, P. Steadman, A. Martino, R. Domingo and S. Gayda (2004). PROPOLIS: Planning and research of policies for land use and transport for increasing urban sustainability. PROPOLIS Final Report. Helsinki: LT Consultants. Available at: http://www.ltcon.fi/propolis/.	Noted: text no longer exists
41071	12	37		42		Marshall, S. and D. Banister, (Eds.): Land Use and Transport. European Research towards Integrated Policies. London: Elsevier,	Noted: text no longer exists

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41072	12	37		42		Wegener, M. (2004): Oveview of land-use transport models. In: Hensher, D.A., Button, K.J. (Hg.): Transport Geography and Spatial Systems. Handbook 5 of Handbook in Transport. Kidlington, UK: Pergamon/Elsevier Science, 127-146. Available at: http://www.spiekermann-wegener.de/pub/pdf/MW_Handbook_in_Transport.pdf.	Noted: text no longer exists
41553	12	37	30	42	4	This section correctly calls for a holistic approach to guide the development and investment in infrastructure, but fails to include water infrastructure as a key component of this. The placement of water networks can precede urban development and create the opportunity for urban sprawl and should be planned in conjunction with transportation and future land use master plans. More dense, decentralized urban water networks can result in reduce land, energy, and material flows and stocks for building roads, etc. This integration needs to be evaluated in retrofit and new build situations. Please address this issue and consider the following references: Sun, Y., S.T.Y. Tong, M. Fang, and Y.J. Yang, (2013). Exploring the effects of population growth on future land use change in the Las Vegas Wash Watershed: An integrated approach of geospatial modeling and analytics. Environment, Development and Sustainability, DOI 10.1007/s10668-013-9447-z. Chang, N.-B., C. Qi, and Y.J. Yang, (2012). Optimal expansion of a drinking water infrastructure system with respect to carbon footprint, cost-effectiveness and water demand. J Environmental Management, 110:194-206. Wang, X., A. Burguess, and Y.J. Yang, (2012). A scenario-based water conservation planning support system (SB-WCPSS). Stochastic Environmental Research and Risk Assessment, DOI 10.1007/s00477-012-0528-3. Tong, S.T.Y, Sun, Y. and Y.J Yang, (2012). Generating a future land use change scenario with a modified population-coupled Markov Cellular Automata Model. Journal of Environmental Informatics, 19(2): 108-119. Tong, S.T.Y., Y. Sun, T. Ranatunga, J. He, Y. J. Yang, (2011). Predicting plausible impacts of sets of climate and land use change scenarios on water resources. Applied Geography, 32:477-489 Tong, S.T., A.J. Liu, and J.A. Goodrich, (2009) Assessing the Water Quality Impacts of Future Land use Changes in an Urbanizing Watershed, Civil Engineering and Environmental Systems, 26(1): 3-18 The introduction to spatial planning (section 12.5.1) is somewhat disappointing as spatial planning is described only from a physical design perspective. However, spatial planning is an integrated physical design, technical, and participatory process. Please consider describing an integrative and comprehensive perspective of spatial planning to involve engaging multiple stakeholder groups and building consensus needed to ensure that spatial plans are effective, implemented, and influential. Following is a potential reading that discusses the rationale for integrating physical design, technical analysis and public participation: Berke, Philip, David Godschalk, Edward Kaiser with Daniel Rodriguez. 2006. Urban Land Use Planning, 5th edition. Chicago: University of Illinois Press, chapters 1, 2 and 3. There is an imbalance of attention focused on the role of transportation in spatial planning under Section 12.5. Sections 12.5.5, 12.5.6, and 12.5.10 should be consolidated into one section. Also, there is no discussion about the role of green infrastructure in climate mitigation. Green spaces connect urban land uses via ped/bike movement, they may offer carbon sequestration, they also produce other co-benefits (e.g., promote active living, protect riparian vegetation to filter urban storm runoff, etc). Following is a citation that covers some of these issues: Younger, Margalit, Heather R. Morrow-Almeida, Stephen M. Vindigni, and Andrew L. Dannenberg. 2008. "The Built Environment, Climate Change, and Health Opportunities for Co-Benefits," American Journal of Preventative Medicine 35 (5): 517-536. Please revise accordingly.	Noted: In the revised chapter water is mentioned in several places but perhps not in a way sugegsted by the revieweer.
41554	12	37	30	42	4	More emphasis should be given to other types of infrastructure that have an important influence on urban growth and climate mitigation, notably water availability and new technologies in distributed energy systems. For example, some additional discussion of studies by A. Ramasswami (cited in ch. 12) could be used here. Please revise accordingly.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33501	12	38	1	38	16	Some interesting work relating spatial planning with health and food: "Townshend, T. and A.A. Lake, Obesogenic urban form: Theory, policy and practice. Health & Place, 2009. 15(4): p. 909-916. http://www.ncbi.nlm.nih.gov/pubmed/19201641"; "Lake, A. and T. Townshend, Obesogenic environments: exploring the built and food environments. The Journal of the Royal Society for the Promotion of Health, 2006. 126(6): p. 262-267. http://www.ncbi.nlm.nih.gov/pubmed/17152319"	Not relevant anymore for revised chapter
35045	12	38	12			"new technologies": Which?	Addressed in revised text
41557	12	38	15	38	16	Is this because infrastructure has not expanded at as high a rate as population growth or because of a lack of location-efficient land use planning or because of excess transport infrastructure supply causing "induced travel"? Please explain.	Not relevant anymore for revised chapter
30491	12	38	2			Why 'other factors'? Please erase 'other'.	Not relevant anymore for revised chapter
41558	12	38	28	38	29	"Here we outline eight common and effective options currently utilized in many cities and regions." Please identify these options and number the following sections 12.5.2.1 to 12.5.2.8. Additionally, please provide a consistent organizational structure within each section. Discuss the problem, the policy approach, evidence for effectiveness, and examples of implementation.	Not relevant anymore for revised chapter
20680	12	38	31		43	Several issues of importance here. First, the literature cited is mostly from developed cities. This should be acknowledged. Second, there are important differences across countries. Some cities in China have green belts (ecological growth limits), adopted locally. By contrast, in Colombia the Constitution mandates local jursidctions to plan for areas of growth and areas of preservation. This resulted in de facto urban growth boundaries in every city with more than 250 000 residents. Brazilian cities have a mixed approach, with some using growth boundaries (without regional coordination) and others not. Third, the effectiveness of growth boundaries is mixed. There is ample evidence suggesting the land prices go up unless strong planning action is taken to mitigate this. Furthermore, they frequently exacerbate the very same problem they are trying to mitigate: leapfrog development. Unaffordable land leads to long commuting distances. I would say that this instrument is promising, but that the implementation experience has suggested that the details of how it is implemented and the presence of supporting policies are key to its success.	Addressed in revised text
20681	12	38	31		43	Several issues of importance here. First, the literature cited is mostly from developed cities.	Not relevant anymore for revised chapter
41562	12	38	36	38	36	p. 38, line 36. The word "progressive" is subjective. Please find an alternative word.	Not relevant anymore for revised chapter
41560	12	38	39	38	42	This is not completely true. Many states in the U.S. (Oregon, Maryland, Delaware, Florida, Washington, New Jersey, etc.) have state level growth management programs. Several European countries (Denmark, Ireland, Holland, England, France) have national spatial planning programs which vary across country, but look similar to state level growth management. In the U.S. Cities like Portland, Minneapolis St. Paul, Denver, and others have strong regional growth management programs. Please revise accordingly.	Not relevant anymore for revised chapter
41561	12	38	41	38	43	Consider replacing language such as "limiting" or "containing" dispersed development with "discouraging."	Not relevant anymore for revised chapter
26593	12	38	43			ADD : France’s new Territorial Climate and Energy Plans are mandatory for communities over 50 000 people, from 2012. All other territorial planning documents (mobility, land use, urban planning, mobility, construction, as well as air quality norms and green areas and surfaces…) have to conform to the Climate and Energy Plan’s objectives. This gives considerable influence to cities on issues and practices linked to building codes – including energy efficiency targets, and construction, urbanism, vegetation, mobility, energy sources, typed and distribution, heating and cooling.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33500	12	38	5	38	5	Typo in "infrastructure"	Not relevant anymore for revised chapter
31188	12	38	5	38	5	sdfainfrastructure?	Not relevant anymore for revised chapter
41555	12	38	5	38	5	typo on infrastructure	Editorial
41556	12	38	9	38	11	The term "to some degree" is vague and could be more specific. There are studies (at least for the U.S.) about the effects that more compact land development has on the amount of land needed to accommodate a given amount of development and the amount of infrastructure needed. For example, Burchell et al, TCRP Report 74: Costs of Sprawl 2000, estimated that a "controlled growth" scenario could reduce land conversion by approximately 25% from 2000 to 2025. Over the same time period, the controlled growth scenario could reduce water and sewer infrastructure costs by more than $12 billion nationally and could reduce road costs by almost $110 billion. Please revise accordingly.	Not relevant anymore for revised chapter
23453	12	38				More empirical evidence can be found in different countries on the impacts of urban form/urban spatial planning on travel-related energy use and GHG emissions. A few more empirican studies can be found in: Kennedy, C., Steinberger, J., Gasson, B., Hansen, Y., Hillman, T., Havranek, M., et. al., Greenhouse Gas Emissions from Global Cities. Environmental Science and Technology, 2009, 43 (19): 7279-7302. Valle D, & Niemeier D. CO2 emissions: Are land-use changes enough for California to reduce VMT? Specification of a two-part model with instrumental variables. Transportation Research B, 2011, 45(1): 150~161. Grazi F, Bergh J, & Ommeren J. An empirical analysis of urban form, transport, and global warming. The Energy Journal, 2008, 29(4): 97~122. Brownstone D. Key Relationships between the Built Environment and VMT. In: Transportation Research Board and the Division on Engineering and Physical Sciences Special Report 298, Driving and the built environment: the effects of compact development on motorized travel, energy use, and C02 emissions, 2008.	Not relevant anymore for revised chapter
23454	12	38				Some discussion on the dimensions of urban form that contributes to curbing travel demands and reducing GHG emissions is necessary. For instance, Cervero & Kockelman (1997) proposed a 3D framework - density, diversity, and design (see, Cervero, R. & Kockelman, K. Travel Demand and the 3Ds: Density, Diversity, and Design. Transportation Research D, 1997, 2, 199-219). EWING, R. & CERVERO, R. 2010. Travel and the Built Environment. Journal of the American Planning Association, 76, 265-294.	Not relevant anymore for revised chapter
41559	12	38	31	38	43	12.5.3 Growth management: Note that growth management instruments are also designed to limit conversion of land from rural to urban use. Growth management also affects infrastructure provision.	Not relevant anymore for revised chapter
41563	12	39	1			In the row labeled "regional accessibility," it's not clear what development fees have to do with regional accessibility. Also, is there some definition of how many years long, middle, and short time scales are? Please clarify.	Not relevant anymore for revised chapter
41567	12	39	14	39	16	Note that the idea of megaregions has been studied and discussed in the literature, but has not been formally adopted by regional (or megareigonal) governmental institutions. As such "strategic efforts" does not seem like the most appropriate wording. Please revise accordingly.	Not relevant anymore for revised chapter
41568	12	39	14	39	21	Suggest a mention of scenario planning used to compare and align alternative land use/ transport strategies with pre-selected concensus regional objectives. Scenario planning has produced effective low emission regional planning in, for example: Portland LUTRAC, Envision Utah, Sacramento Regional Blueprint and (under California law SB 375) regional Sustainable Communities Strategies for each Metropolitan Planning Organization. Please revise accordingly.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
26594	12	39	15			ADD Debizet "COBRA 2012 RICS International Research Conference, Las Vegas : United States (2012)" has found that cities have different motivations for adopting a strong voluntary stance on building codes and refurbishing: an urban project became an illustration of a global energy-climate local policy - City of Grenoble, France- ; as part of a larger sustainable development program complementary to major urban projects (City of Echirolles, France) and a wish to acquire new skills and responsibilities as part of growing areas of public policy (Grenoble's Metropolitan authority).	Not relevant anymore for revised chapter
33502	12	39	21	39	27	The emphasis here again seems to be on just regional mobility - what about other infrastructures - ICT is an obvious one, but in China for example they have recently opened a large scale water transfer project.	Not relevant anymore for revised chapter
30493	12	39	4			The text reads 'Regional planning is indispensable in the establishment of long-term spatial visions that discourage the patchy expansion of cities'. The sentence can be misinterpreted as stating that planning is indispensable to discourage urban expansion. This is by no means certain.	Not relevant anymore for revised chapter
41564	12	39	5	39	5	Please use discontiguous or disjunct instead of patchy. Patchy is often a term in landscape ecology to describe habitat.	Not relevant anymore for revised chapter
41565	12	39	5	39	9	It is not clear what "edgeless office location patterns" means, nor how widespread they are or how much land area they affect (compared, for example, to far-flung, low-density residential development). It is also not clear to what time period "the past decade" refers from the time the earlier source was published (2003), the time the later source was published (2009), or the time the IPCC report will be published. Further, the statement on edgeless cities and explanation of the causes reduces the trends in suburbanization to governmental control and freeway patterns. Please clarify the term "edgeless office location pattern" and consider describing suburbanization in urban economic terms, by discussing the importance of rising income and declining transportation costs and housing costs.	Not relevant anymore for revised chapter
41566	12	39	9	39	9	Has "polycentric" development been explicitly adopted? Does this refer to the intent or result? Is polycentrism the result of market forces and declining transportation and housing costs, caused by government investment of infrastructure? Please discuss whether plycentric development is a policy or an emergent property.	Not relevant anymore for revised chapter
41391	12	4	13	4	14	While there is no consensus, there are estimates for required annual infrastructure financing for water, sanitation, electricity, transportation and telecommunications. This includes $776 billion for Asia and Pacific (Bhattacharya, 2010), $90 billion for Africa (World Bank, 2005), and $93 billion for Africa (AfDB: Africa, 2010). * Note Asia data covers 2010-2020; LAC estimates were for 2005 to 2015 and Africa data to 2020.	Not relevant anymore for revised chapter
41394	12	4	13	4	14	Pg. 4, Line 13. "stocks" is a term that may not be familiar to many readers and is not necessary here to convey the point. "Material stocks" is confusing because it leaves even the folks familiar with stocks wondering what materials, exactly, are being discussed. In Line 14, the phrase "infrastructure stock" is used, and it is not clear if this term is equivalent to stocks or material stocks or if there is a distinction being made. It is very important that the authors clarify these terms.	Not relevant anymore for revised chapter
41393	12	4	13	4	29	The second paragraph (beginning Pg. 4, Line 13) focuses on emissions "embodied" in the built environment, and the third paragraph (beginning Pg. 4, Line 19) on "direct" emissions that occur in human settlements. However, the reader has to understand this structure for herself and also what the key terms introduced mean. Some general thesis sentences would be invaluable: "The built environment of human settlements represents GHG emissions related to the acquisition and manufacture of materials such as cement and metals, as well as emissions during construction of buildings and infrastructure." And perhaps, "In addition to emissions embodied in the built environment of human settlements, ongoing energy generation, industrial processes and agriculture in and in support of human settlements directly emit GHGs to the atmosphere."	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41392	12	4	13	4	35	Statements about GHG emissions in the Executive Summary need to be referenced to relevant sections in body text and cross references to other chapters and datasources. It would be helpful to provide a comprehensive review of data sources or publications on urban carbon inventory. Issues such as inventory methods (See Section 12.3.2.2), data sources and references can help readers appreciate the statement in the summary. For example, how is this CO2 emission different from others such as the EIA emission data base and others, and how much difference attributes to the different inventory methods used? The relevant section may need to be longer.	Not relevant anymore for revised chapter
28010	12	4	13	4	18	In this paragraph, after the first sentence an additional sentence should be inserted explaining why there is no consensus about the material stock which is required. A possible reason mentioned could be that first there is a broad range of possible population growth predicted and that secondly the infrastructure stock required strongly depends on future settlement structures of the growing cities in developing countries which depend strongly on the establishment of land use planning and government structures which cannot be predicted.	Not relevant anymore for revised chapter
34940	12	4	13	4	18	Detail: Add here info on expected emissions from future constructions (Müller, 2013) referenced in the chapter.	Addressed in revised text
32193	12	4	15	4	16	107-137 GT CO2, there is an error (emissions in 2009 was 51 GT CO2 eq)	Noted: but this os not direct emissions.. It is embodied emissions in infrastructure, see 12.4.1 in revised texts.
41395	12	4	15	4	15	Pg. 4, Line 15. The term "embodied" should be introduced with at least a clause of explanation. For instance, "emissions occurring during the manufacture of building materials and construction of infrastructure, and thus embodied in the buildings." This would do readers a great service since the term is used throughout the chapter without ever clearly being defined.	Not relevant anymore for revised chapter
34939	12	4	15	4	16	Detail: "with between ... non-Annex I countries." not releavant for ES -> delete	Addressed in revised text
41397	12	4	19	4	19	Pg. 4, Line 19. The term "direct" emissions (and elsewhere its partner, "indirect") are also used throughout the text without being clearly defined. Again, a few extra words could solve the problem: "Direct emissions from the combustion of fossil fuels in human settlements." If something beyond fossil fuel combustion is intended (e.g., industrial processes and ag), then that needs to be stated here.	Addressed in revised text
41396	12	4	19	4	29	p.4, 3rd paragraph -- why does this part analyze CO2 emissions only? Adding other gases makes much difference to the GHG accounting, especially CH4. Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41398	12	4	19	4	29	The paragraph beginning Pg. 4, Line 19 is a list of numbers and percentages with too little text to guide the reader as to what the point of these numbers is. Also, sometimes percentages are presented alone with no information about what the percentages represent. Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41399	12	4	19	4	29	It would be useful to state the relative proportions of urban vs rural populations and to express the percentages of emissions in each area type and each year on a per capita basis	Not relevant anymore for revised chapter
41400	12	4	19	4	29	Please also express the emission percentages on a per capita basis. Also please compare emissions per capita to GDP or gross regional product to place the wealthy-city factor into context.	Noted: The text is substantially modified in revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
28011	12	4	19	4	29	This paragraph is incomprehensible. For example, if urban areas are responsible for 29.9-35.7% of global CO2-emissions and rural areas for 43.2 to 45.5%, what is responsible for the remaining emissions? I suggest giving some explanations on what is urban area and rural area and how can their emissions be subdivided in direct, indirect emissions and emissions from different sectors. In addition, it might be quite instructive to relate the figures on future growth of GHG-Emissions to the prediction of additional population in urban and rural areas and the estimations of per capita emissions. This might improve the readability and understandability of this paragraph and its implications. The same applies to the elaboration in the Chapters 12.3.3, 12.3.3.1 and 12.3.3.2 on pages 19 - 22 (Figures 12.9 - Figures 12.11).	Not relevant anymore for revised chapter
34941	12	4	19	4	35	This is far to detailed for an ES.	Addressed in revised text
41403	12	4	20	4	20	Pg. 4, Line 20 (and applicable throughout). Please replace the word "responsible" when it is intended is mean "related to" or "account for". Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41401	12	4	20	4	21	p.4, lines 20-21 -- insert word "directly".	Not relevant anymore for revised chapter
41402	12	4	20	4	23	Pg. 4, Line 20. Later in the chapter, different defining characteristics of "urban" settlements are addressed, but there is no indication here of what is meant by urban. Please provide definitions of urban and rural. Also, it is confusing that the percentages of rural and urban given here do not sum to 100%. Please explain.	Not relevant anymore for revised chapter
32194	12	4	21	4	24	Gt : of CO2 eq ?	Not relevant anymore for revised chapter
34942	12	4	22	4	24	The two sentences contradict each other.	Addressed in revised text
26358	12	4	25	4	28	It is stated that "urban areas are responsible for the dominant share of carbon dioxide emissions from waste management (82%) and the combination of materials production and manufacturing (85%), while rural areas have the dominant shares of CO2 emissions fro use-phase activities (51) and energy production (65%)". Since the percentages of the dominant shares of carbon emissions for both urban and rural areas add up to more than 100% each, it is recomended to either double-check the correctness of cited numbers, or explain accounting methods that resulted in attributing the same emissions to more than one emission sources, which resulted in total emissions attributed to urban and rural areas equal to more than 100% each, or improve the overall presentation and provide explanation how this data should be interpreted.	Not relevant anymore for revised chapter
41388	12	4	3	4	3	Pg. 4, Line 3. "Built-up" may mean different things to different readers. Please re-word this sentence to clarify what is meant here (e.g., "declining densities of buildings").	Not relevant anymore for revised chapter
26359	12	4	30	4	35	The paragraph states that there are large variations in urban emissions across countries and regions, however, exapmles of only two regions, Africa and North America, are provided. It is recommended to improve the regional coverage of Executive Summary and include expamples of levels of urban emissions in other regions.	Not relevant anymore for revised chapter
41404	12	4	34	4	34	Pg. 4, Line 34. Is North America not developed? I'd expect the upper end of this range to match the 73% in Pg. 4, Line 32. Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41405	12	4	36	4	47	p.4, last paragraph -- While many low carbon cities are high density, compact, and mixed use, some low carbon cities are also low income with extensive urban slums and poor air quality. The authors should address more carefully throughout the chapter how income or affluence affects the relationships between urban form and emissions, and especially their planning and policy prescriptions relating to urban form.	Noted: we believe this is given due care in revised texts

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41406	12	4	36	5	9	The summary rightly and appropriately points to the urban form as one large potential in CO2 reduction. It appears biased to this emphasis in the summary section where no other individual urban infrastructure processes are mentioned for CO2 mitigation potential. However, Section 12.5 and Figure 12.19 suggest that mitigation strategies for waste, water, and food systems have potential for CO2 reduction. The summary should reflect this full range of mitigation options.	Noted: The text are veru much revised from previous version is well balanced
34202	12	4	38	4	38	Related to the above point, while it is true that low carbon settlements are characterized by high density, compactness, mixed uses, and so on, it is not necessarily the case (and there are plenty of arguments to this effect in literature not cited) that “urban form is responsible directly for a large proportion of consumed energy” (p4 line 38). It has long been argued that urban form reflects demand for energy consumption, space, etc etc rather than causing higher use of autos or of energy. Many of the studies cited are careful to control for things like demographics and residential self-selection, but much of this chapter presents observed relationships between e,g, density and energy consumption as though they were causal. This doesn’t reflect the literature.	Not relevant anymore for revised chapter
31173	12	4	40	4	40	no explanation for the use of the word "metabolism" here. It's a confounded metaphor and best not used. Since the concern is about the amount and rate of material and energy flows-- throughput and consumption-- it would get the message across much better if these phrases and words were used instead. It would be clearer to the reader that the issue is about resource usage, rather than allowing the mis-used word of metabolism to obscure the issue.	Not relevant anymore for revised chapter
29009	12	4	40	4	40	Metabolism should be defined in the glossary. For metabolism I suggest, this term, borrowed from physiology and applied to the study of resources flows in the economy refers to the whole integrated collection of physical processes that convert raw materials and energy, plus labour, into finished products and wastes..." (from Ayres, R. U. and U. E. Simonis. 1994. Industrial metabolism : restructuring for sustainable development. Tokyo ; New York: United Nations University Press.)	Not relevant anymore for revised chapter
34943	12	4	40			"metabolism" is in my understanding not an approach of mitigation but a means of analysis	Addressed in revised text
34201	12	4	43	4	46	I disagree with the claim that there is robust evidence that growth management, transit investments, transit-oriented development, integrated transportation planning, and land value capture can achieve the spatial characteristics such as high population and employment density and mixed land uses that are said to be characteristic of low carbon settlement patterns (p4 line 43-46). Very little evidence is presented in the chapter. In my view it actually isn’t clear that policies such as these are particularly influential.	Noted: There has been drammatic changes in the chapter on this issue and it is more balanced now
20663	12	4	45			The evidence of the use of land value capture to achieve certain urban characteristics (such as density, compact urban form, high connectivity) is far from robust. Land value capture is a financing mechanism (well described later in the document) but that is not necessarily directly associated with particular urban forms.	Noted: The text is substantially modified in revised chapter.. Land vale capture is presented as financial mechanism in revised chapter clearly
41407	12	4	46	4	46	Pg. 4, Line 46. There either is consensus or there isn't. There can't be a little consensus. Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41408	12	4	46	4	47	Pg. 4, Lines 46-47. The construction of this sentence is awkward. The use of both "optimal" and "could effectively" seem to be in conflict. Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41389	12	4	6	4	6	Pg. 4, Line 6. "Paralleled" implies some direct correlation in the trends that I am not sure is intended. Maybe instead of "paralleled with," substitute "related to". Authors should clarify text accordingly.	Not relevant anymore for revised chapter
41390	12	4	7	4	7	Pg. 4, Line 7. Please elaborate briefly on what is meant by "traditional to modern." Biomass to fossil fuel? Low-tech to high-tech? Coal is traditional in the UK and modern in Angola. Authors should clarify text.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41569	12	40	2	40	2	Please change the language from "are used" to "can be used". Please remove the word "costly." It is adding an unnecessary, negative dimension to this concept. Cost is not mentioned in the discussions of other strategies, and this word unfairly skews the perception of rail projects.	Not relevant anymore for revised chapter
41571	12	40	23	40	36	Consider mentioning US Federal Transit Administration policies linking transit funding to "transit supportive land use" or TOD. It is not necessary to bring up "automobile-dependent suburban markets around suburban and exurban highway interchanges," which implicitly denigrates this development paradigm without offering specific reasons why it performs worse than TOD. It is also unclear how TOD is "against" these development patterns. Consider deleting that clause and ending the sentence at "network."	Noted
41572	12	40	34	40	36	The last sentence is this paragraph is vague and confusingly worded, and it is unclear what value it adds to explaining the concept or benefits of TOD. Please either clarify the ideas or delete the sentence.	Not relevant anymore for revised chapter
20683	12	40	37		45	Consider removing the reference to value capture here, and simply talk about entrepreneurial land development approaches based on PPPs or on joint development. The value capture piece is better represented under land value capture/governance (12.6.4)	Not relevant anymore for revised chapter
41573	12	40	37	40	45	This section would benefit from referencing the Brazilian experience in value capture, which has also been used aggressively in Sao Paulo. See "Box 3.5. Selling Building Rights in Sao Paulo" in OECD (2011), OECD Territorial Reviews: The Gauteng City-Region, South Africa. Please revise accordingly.	Not relevant anymore for revised chapter
30488	12	40	38	40	39	The text suggests that the success factor of the railway corporations in Japan lies in the fact that they are privately owned. But this is certainly not the only or even most important reason. The reason for their succes lies in the fact that they own large tracts of land along the rail corridors that they serve. This makes it possible for them to 'generate' their own demand, by building land uses directly adjacent to railway station. This is partly discussed later on in the document. In any case, here it is implied that privatization is key. Please change the text to avoid this suggestion. Note that transit agencies in the US typically hardly hold any land that could be developed.	Noted: land value capture has been refocussed in 12.6.2 and little bit in 12.5.2.3.
41570	12	40	4	40	7	Also, it is not clear whether this sentence means that rail projects are used to create sustainable urban development across an entire region. Among the examples given are New York-Washington DC and Los Angeles-San Francisco. There is no coordination of development across these entire regions, not even along the Amtrak lines. Individual jurisdictions in these regions might use rail as a way to encourage development, but this wording implies that all jurisdictions in the region that encompasses New York to Washington collaborated to use rail to encourage sustainable development, and that is not the case. Please clarify.	Not relevant anymore for revised chapter
41575	12	40	43	40	43	The word "passive" connotes a value judgment. Please revise.	Not relevant anymore for revised chapter
41574	12	40	47	40	49	Note that urban regeneration projects are not limited to "global cities" and "newly industrialized economies." Several U.S. Cities in the "Rustbelt" of the Northeast, Mid-Atlantic, and Upper Midwest with declining populations also utilize "urban regeneration policy." This is also characteristic of small towns with declining city centers. Please revise accordingly.	Not relevant anymore for revised chapter
30487	12	40				The text is too much focused on transit technologies (high speed rail, BRT), rather than emphasizing the need to build transit systems, irrespective of technology, that serve as many point-to-point trips as possible. See again the book of Paul Mees (2010). Also, the text fails to mention the equity impacts of different transit technologies. High speed rail requires huge investments, but only serves a well-off minority of the population. It is therefore a highly inequitable strategy to reduce GHG emissions of the transport sector. Investments in urban mass transit systems may well be as effective and serve a much larger section of the population.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
26370	12	40	1			This section is devoted to public transit investments. Chapter 8: Transport also provides information on costs of varios public transit systems and lists relevant literature sources (see e.g., Table 8.6.1). It is recommended to provide information on public transit investments in one chapter (e.g. Chapter 8: Transport) and refer to it in another chapter.	Not relevant anymore for revised chapter
24897	12	40	18		21	Suggest include Brisbane (Australia) in the list. Brisbane has a very large BRT system. Suggested citation: Vincent, B (2011) Energy and environment impacts of bus rapid transit in APEC economies, Breakthrough Technologies Institute, Washington DC, http://esci-ksp.org/wp/wp-content/uploads/2012/05/Energy-and-Environmental-Impacts-of-BRT-in-APEC-Economies.pdf	Not relevant anymore for revised chapter
23455	12	40	46	41	17	Current description is not clearly related to climate change mitigation, urban regeneration allows retrofitting existing urban space while allowing urban development without outward expansion into the greenfield. This section is suggested to focus on "retrofitting existing urban space" (i.e. infill/brownfield development) as a complement measure to growth management (i.e. urban growth boundary) that curbs outward urban sprawl. OECD's recent report on compact cities has more discussion. See, OECD. 2012. Compact City Policies: A Comparative Assessment. 13 June 2012.	Not relevant anymore for revised chapter
20682	12	41	17		27	In concur with the comment that affordable housing is one of the major challenges of a compact city. Consider including here briefly some of the tools that can be used to encourage more well-located affordable housing: density bonuses, inclusionary zoning (used in Curitiba, Bogota, New York City), community land trusts, etc.	Not relevant anymore for revised chapter
41577	12	41	18	41	18	"to ensure the physical proximity and accessibility" of what? Affordable homes? People of various income levels? Workers? Please clarify.	Not relevant anymore for revised chapter
23457	12	41	27	41	27	Add a study after citing Cervero's papers. "A study based on five Chinese cities (Beijing, Shanghai, Guangzhou, Wuhan and Chongqing) shows that the spatial mismatch between job market and housing market opportunities reduces the spatial efficiency and households' welfare in those cities. An increased supply of land for high-density low-income housing projects in more central urban localities can help to reduce this spatial mismatch (Zheng et al., 2006)." Full citation: Zheng S., Y. Fu, and H. Liu (2006). Housing-Choice Hindrances and Urban Spatial Structure: Evidence from Matched Location and Location-Preference Data in Chinese Cities. Journal of Urban Economics, 60, 535-557.	Not relevant anymore for revised chapter
41578	12	41	29	41	29	what is the definition of integrated transportation planning?	Not relevant anymore for revised chapter
41579	12	41	29	41	40	Could refer to recent Institute of Transportation Engineers recommended practice on "Planning Urban Roadway Systems" which promotes integrated or "layered" networks providing connectivity and circulation options for all modes of travel.	Not relevant anymore for revised chapter
41580	12	41	41	42	4	It is not clear how many cities have elevated highways that they can deconstruct, how much land area or population this type of action would affect, or what the climate-related benefit is of doing so. It seems like a relatively narrowly applicable strategy. Please make clear the connection of this strategy to climate change effects.	Not relevant anymore for revised chapter
41581	12	41	42	41	43	The phrase "The deconstruction of elevated highways and reduction of roadway lanes is an effective approach for urban place-making" is not necessarily accurate. Place-making is not only about road widths; there are many other elements, and it is misleading to suggest that it is all about roads. Consider replacing "urban place-making" with "making roads more accessible to all users."	Not relevant anymore for revised chapter
41582	12	41	46	41	46	Remove "and"	Not relevant anymore for revised chapter
28975	12	41	41	42	4	This section notes the positive movement towards deconstruction of elevated highway and roadway reductions. However, it could give the impression that this has completely replaced elevated highway construction while such construction continues throughout India and other areas of rapidly developing Asia, as well as in megacities such as Mexico City, to name just a few examples.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
23456	12	41	16	41	27	This section reminds the reader of the risk of displacing low-income households to the urban fringe by urban regeneration and affordable housing construction. But how is it linked to climate change mitigation? From a broader spatial planning framework, this is a problem of urban spatial mismatch, or rather, the problem of monofunctional land use planning that has created separation of residence and employment, thus driving up travel demand. The spatial strategy of mixed land use and urban development pattern emphasizing on proximity and diversity should be included as part of urban spatial planning strategy for climate change mitigation. A report by Ewing, et al (2008) provides more discussion on the issue. See, Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., & Chen, D. Growing Cooler: The Evidence on Urban Development and Climate Change[M]. Urban Land Institute, Washington, DC. 2008.	Not relevant anymore for revised chapter
41576	12	41	17	41	27	Section 12.5.8 This section is important, but the existing text only discusses the problem of affordable housing and does not suggest policy options for addressing the issue. Please revise accordingly.	Not relevant anymore for revised chapter
24898	12	41	22	41	23	"This spatial mismatch is not only in North American city-regions but also in Chinese city-regions". Why is it assumed to only occur in North American city regions? Please provide references for examples in North American city regions.	Not relevant anymore for revised chapter
28974	12	41	22	47	23	"This spatial mismatch is not only in North American city-regions but also in Chinese city-regions." understates the problem. This is global, not just North America and China. It is a large issue, linked to the issue noted above of informal settlements in many areas. For example, this is a large problem in India, especially when slum relocation moves settlements to distant areas cut off from employment possibilities as well as social and transport networks. See Soloman Benjamin, "Governance, economic settings and poverty in Bangalore," in Environment and Urbanization, Vol. 12, #1, pp. 35-56 (2000) for the case of Bangalore. More broadly, globally, see Urban Livelihoods: A People-centred Approach to Reducing Poverty, edited by Carol Rakodi with Tony Lloyd-Jones, London: Earthscan Publications, 2002.	Not relevant anymore for revised chapter
41585	12	42	39	42	40	Consider replacing " required to move human settlements towards" with "that can help human settlements move towards"	Not relevant anymore for revised chapter
33503	12	42	43	42	43	Again - surely land use and infrastructure planning - not just transportation	Not relevant anymore for revised chapter
22160	12	42	43	42	43	Surely this should be "land use and infrastructure planning"?	Not relevant anymore for revised chapter
41583	12	42	6	42	13	This answer to FAQ 12.3 is not sufficient. Please include other alternatives and also potential savings associated with these types of practices, representative of the options included in this chapter. Otherwise, remove the FAQ.	Not relevant anymore for revised chapter
41584	12	42	14	47	19	Please provide a few concrete examples of where and how improving governance helped with GHG mitigation or adaptation.	Not relevant anymore for revised chapter
41586	12	43	1	43	2	"Modes of governance that realize municipal competency in terms of low carbon design standards" What does this mean? Please clarify and give a citation.	Not relevant anymore for revised chapter
41589	12	43	31	43	39	Sustainable Community Strategy planning in California under SB 375 is a good example of State-guided and State-incentivized coordinated regional and local planning.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41587	12	43	4	43	14	There exists an enormous potential for GHG mitigation in cities. With urban planning and regulatory power, cities are in a better position to mitigate climate change. However, that does not necessary mean there is a willingness on their part to capitalize on these mitigation opportunities. Especially in developing countries, climate change mitigation is not the priority, because cities face a number of competing priorities, including local economic growth, development, and service delivery. Given the resource constraints, they are more interested in allocating their scarce resources toward pressing local issues. Meaningful reduction in GHG emissions, hence, will have to come in part as an outgrowth of efforts driven by economic, development, service delivery, and local environmental concerns, etc. Please discuss the barriers and opportunities of mitigating GHGs in cities in developing countries.	Addressed in revised text
41588	12	43	4	43	14	This paragraph would be strengthened by discussion of actual tools and cases used to confront these challenges. See: Table 6. Frameworks and Institutional Models of Multilevel Governance on Climate Change at http://www.oecd.org/env/cc/44242293.pdf.	Not relevant anymore for revised chapter
41591	12	44	11	44	23	Funding is an extremely important issues for cities and this topic deserves more than a paragraph. For a strong overview, I'd recommend "Chapter 9. Financial Instruments and Funding New Expenditure Needs" in OECD (2010) Cities and Climate Change or "How can we increase green infrastructure investment in cities?" in Mobilizing Investments for Urban Sustainability, Job Creation and. Resilient Growth (http://www.oecd.org/gov/regional-policy/49826482.pdf).	Addressed in revised text
41592	12	44	20	44	20	Define horizontal and vertical forms of multi-level governance.	Not relevant anymore for revised chapter
41593	12	44	24	44	24	"Frequently, the prescription given for overcoming such institutional barriers…" What barriers are you referring back to? Please clarify.	Not relevant anymore for revised chapter
30189	12	44	25	44	26	(In short, 'horizontal' forms of multi-level governance through networks and partnerships have been critical in producing urban climate change policy)If possible is better to introduce best practices about it ,there are some very interesting conclusions by ICLEI International .If not ,a bibliography about network experiences will be suitable.	Not relevant anymore for revised chapter
41594	12	44	36	44	46	Often, urban policies in developing countries are weak and fragmented. There are separate polices for various air pollutant reduction even though the activities and sources of many of these pollutants are essentially the same. This has resulted in weak enforcement and co-ordination failures of air pollution control policy. Please discuss possibilities of achieving synergies between local air pollution and GHG emissions reduction objectives. Helping cities in developing countries identify potential overlaps between energy, air quality, and climate goals and synergies between actions to reach those goals may help achieve the exiting urban GHG mitigation potential.	Addressed in revised text
41595	12	44	36	44	46	The existing urban GHG mitigation potential can be achieved through greater policy integration and coherence. The first step is to define the objectives of the policy intervention. Depending on the objectives, for example air pollution or congestion reduction, various combinations of policy tools need to be evaluated against a range of criteria such as economic efficiency, distributional effects, administrative feasibility, and institutional capacity and bundled together. Whether or not cities in developing countries will be able to contain or bring about large scale reduction in GHG emissions will largely depend upon their ability to maximize synergies between the suggested policy tools. Please discuss the opportunities for cities in developing countries.	Addressed in revised text
41590	12	44	4	44	6	Please check your definition of "institutional factors." The concept of "institutional factors" is more general than a applicaton to climate change. See Ostrom, North, and others on what institutions are, and what their features are Please revise accordingly.	Not relevant anymore for revised chapter
35047	12	44	4	44	10	Reference framing chapters here for concepts	Addressed in revised text
31113	12	44	43	44	43	Delete the duplicate of "2009)."	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41596	12	44	43	44	46	The sentence starting with "other studies.." is a very important point and should be included in Executive Summary	Addressed in revised text
41597	12	45	30	45	32	Consider including a reference to the "growth machine" literature by Logan and Molotch.	Rejected: Not relevant
33504	12	45	34	45	34	I am not sure how this figure has been calculated. TfL's own monitoring suggests it is 16% (although they had previously estimated 20%, so perhaps this is where). Although note that many of the originally positive effects are being eroded by demand growth. See: "http://www.tfl.gov.uk/assets/downloads/FourthAnnualReportFinal.pdf" or for the most recent report: "http://www.tfl.gov.uk/assets/downloads/sixth-annual-impacts-monitoring-report-2008-07.pdf" however, this one looks at the effects of the extension zone so requires careful reading.	Not relevant anymore for revised chapter
24899	12	45	2	45	13	Please provide references for the claims in this paragraph.	Not relevant anymore for revised chapter
20684	12	46	22		32	Consider referring to Bogota's betterment levy, succesfully applied since mid 20th century, and responsible for some major (auto) infrastructure improvements. Bogota and Pereira have had mixed success with value capture of changes in land development regulations. See: Gakenheimer, Rodriguez, and Vergel, 2011. Planning for BRT-Oriented Development: Lessons and Prospects from Brazil and Colombia, Clean Air Institute Policy Paper 2, Washington D.C. See also Barco, C. and Smolka, M. 2000. Challenges in implementing Colombia's Participacion en Plusvalies, Land Lines, 12, 2. and Acosta, P. Also, Paulo Sandroni has written on Sao Paulo's value capture approach using tradeable development rights. Very innovative. See https://www.lincolninst.edu/pubs/2064_A-New-Financial-Instrument-of-Value-Capture-in-S%C3%A3o-Paulo	Noted
41598	12	46	41	46	41	delete the () for the reference	Not relevant anymore for revised chapter
30494	12	47	16	47	19	The sentence is not clear.	Not relevant anymore for revised chapter
28972	12	47	21	48	12	This section on challenges in LDCs is related to the issue of informal settlements, but is broader. The mitigation challenges in developing country cities challenges and opportunities receive insufficient attention given their importance for global climate challenges.	Addressed in revised text
35298	12	47	28	52	31	The statement from line 31 to 32 on page 47 is not accurate. It is suggested to add a paragraph in 12.7 as follows, which also should be included in Table 12.12: China has promulgated many national low-carbon policies and plans, and has initiated two batches of low-carbon pilot cities, including Tianjin, Chongqing, Shenzhen, etc. In addition, many cities in China have launched their own low-carbon development planning. (NDRC, China's Policies and Actions for Addressing Climate Change 2009-2012; Su et al. 2012, Lynn Price et al. 2013)	Not relevant anymore for revised chapter
29964	12	47	28	48	12	Contrary to other text boxes on LDC's, this text box seems to discuss Developing Countries, instead of Least Developing Countries. This might be due to a lack of data/studies for LDC's, but that should be mentioned.	Not relevant anymore for revised chapter
24900	12	47	21	47	37	Please define 'LDCs' in this Chapter.	Addressed in revised text
23458	12	47	21	48	12	Some cities mentioned in Box 12.1 are not from LDC but other developing countries. It should be corrected.	Addressed in revised text
41600	12	48	32	48	34	This is outdated. 1060 mayors from the 50 states, the District of Columbia and Puerto Rico, representing a total population of over 88,962,982 citizens, have signed the Agreement (http://www.usmayors.org/climateprotection/list.asp). Please revise accordingly.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
20642	12	48	37	48	37	China is also very proactive in climate change mitigation on the city level. In 2010, the National Development and Reform Commission lauched a pilot programme for the development of Low Carbon regions in five provinces (Guangdong, Liaoning, Hubei, Shaanxi and Yunnan) and eight cities (Tianjin, Chongqing, Shenzhen, Xiamen, Hangzhou, Nanchang, Guiyang and Baoding) to develop a Low Carbon Ecomomy and to pilot various other "green lifestyle" policies (Oberheitmann and Ruan, Forthcoming). In addition to this sub-national programme, other cities such as Wuxi City in Jiangsu Province are developing their own Low Carbin City concepts. For 2020, Wuxi even goes beyond the national target as it plans to reduce the CO2-intensity of GDP by 50% against 2005 (national target: 40-45%) (Oberheitmann, 2012). Cite as Oberheitmann, A. and Ruan X. (Forthcoming): Low carbon city planning in China. In: Frauke Urban and Johan Nordensvard (Eds.): Low Carbon Development: Key Issues. Text book for Earthscan's Key Issues Series. Oberheitmann, A. (2012). Development of a Low Carbon Economy in Wuxi City. American Journal of Climate Change. Scientific Research Publishing. 1, pp. 64-103. DOI 10.4236/ajcc.2012.12007.	Noted
41599	12	48	4	48	5	The statement asserts that governance capacity matters, but the section is not written in a way consistent with empowering self-governance and policy entrepreneurship by citizens. Strengthening governance should be a higher priority.	Taken into account: But a note that chapter mentions "there may be a "governance paradox", whereby the largest opportunities for reducing or avoiding GHG emissions might be in urban areas where governance, institutional, technical, and financial capacities to address them are weakest".
20007	12	48	24	48	24	Add some interpretation about what refers to municipalities in the "North" and cities in the "Global South" .	Not relevant anymore for revised chapter
33505	12	49	1	50	3	I did not find this table informative. It could be presented more efficiently in another way (e.g. Summary statistics?). As these plans and activities are quite dynamic this may be preferable as this document will have a long visibility and a very specific table like this may open it up for criticism if, say, Helsinki starts to operate electric vehicles etc. I think the authors should consider the key message they are trying to convey - is it that lots of people are developing plans (if so, the table is probably not necessary)? or that those plans are varied (in which case bar chart summary of measures may suffice)? or that they vary by continent (so bar chart by continent perhaps)? - or is it crucial to know that Cape Town and J'Burg have different plans? Having said all that I will send through a paper that will be published soon in climatic change looking at a comparative study of 30 UK urban areas (see Heidrich et al.TBP.pdf) and may be of interest in this context. Another comparing 200 EU cities is also in the pipeline, but we are still awaiting the results of a second review.	Not relevant anymore for revised chapter
41601	12	49	1			Please check against the designation of climate change actions in water for several US and China cities (Denver, San Francisco, Seattle, Beijing, and so on). The designation may need careful review according to their plans. Section 12.7.4 What about U.S. States? Please consider reviewing Wheeler (2008) who writes about climate action plans for U.S. States.	Not relevant anymore for revised chapter
41602	12	49	1			Pittsburgh is misspelled. It would be useful to add population to this table and sort by population. Why are these cities included? The sizes and geographic location are widely distributed, but the distribution does not seem systematic. Why are Evanston, Belmont, Piedmont and Berkeley included? What does the asterisk mean? Please revise Table 12.12 accordingly.	Not relevant anymore for revised chapter
35374	12	49	10			reconfiguring governance system : how the system could be strengthen	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41081	12	5	11	5	23	In contrast to the claim made in this paragraph the 1976 UN definition of human settlements is much broader than the 2013 definition, at least in the versions given here. The 2013 definition focuses on spatial characteristics of the physical built environment which is more or less what the chapter is trying to address. However the text leaves it open which defintion of human settlements is applied in the rest of the chapter.	Not relevant anymore for revised chapter
41409	12	5	13	5	18	Pg. 5, Line 13-18. What exactly is meant by "fabric?" The fabric sentence is really awkward. "Material" and "physical" are being used interchangeably, but it's not clear. There are too many "elements" and "components" to understand what is going on. Please re-write these sentences to be more clear; for example, "Human settlements and their economies depend upon physical elements of shelter, infrastructure (e.g., the complex networks designed to transport people and goods or transmit energy and information), and services (to support the communities' functions as a social body, such as education, health, culture, welfare, recreation and nutrition)."	Not relevant anymore for revised chapter
26420	12	5	15	5	18	Your definition of infrastructure is unclear. Maybe it is more clear if you refer to "technical infrastructure" that maintains societal functions. Then you can distinguish this from "social infrastructure", which you refer to as "services". For these, the term social infrastructure seems more appropriate. Finally, infrastructure in all cases is a combination of technical and social elements and can hardly be understood with a purely technical perspective (see Atzl, A. and S. Keller 2013: A systemic approach for the analysis of infrastructure-specific social vulnerability. In Cutter, S. and C. Corendea: From Social Vulnerability to Resilience: Measuring Progress toward Disaster Risk Reduction. UNU-SOURCE 17/2013. Bonn: United Nations University Institute for Environment and Human Security. pp. 27-43. pp. 31ff: http://www.ehs.unu.edu/file/get/11051.pdf)	Not relevant anymore for revised chapter
31174	12	5	23	5	23	metabolism- same as above. Better to describe teleconnections here.	Not relevant anymore for revised chapter
26421	12	5	24	5	27	Cou can define infrastructure in that way, but then you should use the term "technical infrastructure" to distinguish it from other, social infrastructure.	Not relevant anymore for revised chapter
33470	12	5	24	5	26	Infrastructure usually also includes those processes and assets that provide security (e.g. flood defences, protection against terrorism). It is not clear whether "mobility/connectivity" includes ICT as an infrastructure - many people would interpret "mobility/connectivity" (and certainly what I inferred from the text here) in the context of transport so it may be worth clarifying this as a seperate infrastructure	Not relevant anymore for revised chapter
41082	12	5	24	5	26	Ramaswami 2013 is a quite recent reference for the definition of such a traditional and widly used term as infrastructure. This gives the impression of a strategic self quotation (not the only one in this chapter). Try to find a more original and authoritative source. I also miss in the definition of infrastructure the decisive aspect of infrastructure as a shared material structure delivering services essential to society as a whole.	Not relevant anymore for revised chapter
41410	12	5	28	5	28	Pg. 5, Line 28. "Infrastructure services" doesn't seem appropriate to describe "electricity, transport fuels, and freight transport." Electricity is not itself a service, but it supports services such as lighting and refrigeration. Similarly, transport fuels are not services, they are means to obtain the service of transportation. Please revise accordingly.	Not relevant anymore for revised chapter
41084	12	5	34			not sure if a justification for the whole chapter is needed here, but as the chapter is now, I do not see that the focus of the chapter is on a functional unit instead of a sectoral approach. to the contrary, the largely sectoral approach is quite obvious already in the sub-captions.	Not relevant anymore for revised chapter
41085	12	5	36	5	43	These statements about the contribution of urban areas to final energy use, income and urban population do not justiy the almost complete omission of rural areas	Not relevant anymore for revised chapter
35355	12	5	37	5	39	urban form .. Activities : should be more specific if referring transport or any other issue	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41411	12	5	41	5	41	Pg. 5, Line 41. The conjunction "while" implies that one is growing at the expense of the other, which may or may not be true in different cases. "And" would work just as well without the risk of the reader getting wrong ideas. Authors should clarify text accordingly.	Not relevant anymore for revised chapter
35356	12	5	43	5	46	furthermore … characteristics: specific mathematical support for shortlisting of these aspects and rejections of others	Not relevant anymore for revised chapter
41086	12	5	43	5	46	The statement suggests that urbanization is a main driver of GHG emission while good evidence exists that industrialization and high income are the important drivers (see e.g. Satterthwaite 2008 and 2009). On the relation between urban and national income see also GEA, chapter 18.	Not relevant anymore for revised chapter
41087	12	5	47	5	48	Give numbers and references or skip	Not relevant anymore for revised chapter
41083	12	5	5	29		move to the section where accounting methods are discussed	Not relevant anymore for revised chapter
35296	12	5	10			This section lacks understanding of the “urban-rural dual structure” in developing countries and discussions on the difference between developed and developing countries in terms of development stage, urban and rural emission per capita and priority mitigation measures. It is suggested to make three revisions as follows: 1) On page 9, line 14 to 17, the reason why urban emission per capital is above the national average level presented here is incorrect. It is suggested to add the following sentence in the end: “The major cause of this phenomenon is the urban-rural dual structure that exists in many developing countries. Namely, the income of urban population is much higher than that of rural population, while the living standard of rural population is much lower than that of urban population. In addition, most energy intensive sectors are located in the urban area. (ShobhakarDhakal (2009). Urban energy use and carbon emissions from cities in China and policy implications, Energy Policy 37: 11, 2009, 4208–4219) 2) On page 22, line 29, a paragraph should be added as follows: “According to many estimates, rural CO2 emissions per capita are higher than urban emissions in developed countries. However, in developing countries, urban CO2 emissions per capita are usually higher than rural level, while urban CO2 emissions per capita in developing countries are usually much lower than that in developed countries (UN HABITAT,2011; also see 12.3, 14.2). For instance, a study, using the same calculation method, indicates that even in the Chinese city with the highest per household emission, a Chinese household only emits one-fifth of the carbon produced by an average household in America’s greenest city.(Zheng S., R. Wang, E. Glaeser, and M. Kahn (2011). The Greenness of China: Household Carbon Emissions and Urban Development. Journal of Economic Geography 11, 761-792. Glaeser, E., Kahn, M (2010). The Greenness of Cities: Carbon Dioxide Emissions and Urban Development. Journal of Urban Economics 67, 404–418.)” 3) On page 47, line 28 in Box 12.1, a sentence should be added as follows: “Due to their different development stages, developed and developing countries are faced with different challenges, thus need to adopt different mitigation strategies for climate change. Developed countries should transform their high carbon infrastructure and promote the use of advanced low-carbon technologies. For developing countries, in order to achieve poverty eradication and human development, large scales of infrastructure construction are of vital importance, while efforts should be made towards the construction of low-carbon infrastructure so as to avoid falling into the same high-carbon pathway experienced by developed countries again.”	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
23434	12	5	36	6	7	The "human settlements","urban areas" , "urban settlements"are using interchangely in the following text. There are subtantial differences between these conceptions, although the autores stated that the urban settlements were focused in the chapter. The figure 12.1 is also confusing, is it for urban settlements or human settlements? The comparison and distinction of these three conceptions needs to be elaborated in the part.	Not relevant anymore for revised chapter
24901	12	50	8	50	15	Please provide references for the claims in this paragraph.	Not relevant anymore for revised chapter
41603	12	51	31	51	43	Please note that California SB 375 set regional GHG targets and timetables for all populated areas of the state.	Not relevant anymore for revised chapter
24902	12	51	15	51	15	"...and Mexico City has implemented a target of reducing GHG by 12% below 1990 levels by 2012". Reports state that Mexico City has now achieved this target. If so, this should be updated. Citation: C40 Cities Climate Leadership Program (2012). Mexico City meets, exceeds Climate Action Program goals. C40 Blog, 11 September 2012 (http://c40.org/c40blog/mexico-city-meets-exceeds-climate-action-program-goals)	Noted
20008	12	51	26	51	29	many cities in China have launched their low-carbon development planning. Some literatures such as (Su et al. 2012, Lynn Price et al. 2013, shown below) should be refered.	Noted
23459	12	51	26	51	29	Many cities in China have launched their low-carbon development planning. Some literatures such as (Su et al. 2012, Lynn Price et al. 2013) should be refered.	Noted
20009	12	51	31	51	34	Institutional arrangements are essential to climate action implementation due to the invovlement of diversified stakeholders (including different government departments). Pls complement such discussion.	The importance of institutional arragement is recogized, see "For cities to achieve their potential in climate policy design and implementation, institutional arrangements, governance mechanisms and financial resources have to be aligned with the goals of reducing urban GHG emissions" in executive summary itself.
23460	12	51	31	51	34	Institutional arrangements are essential to climate action implementation due to the invovlement of diversified stakeholders (including different government departments). Pls complement such discussion.	The importance of institutional arragement is recogized, see "For cities to achieve their potential in climate policy design and implementation, institutional arrangements, governance mechanisms and financial resources have to be aligned with the goals of reducing urban GHG emissions" in executive summary itself.
41604	12	52	3			Figure 12.20 -- reductions by when, from what levels? As these amounts are each from different studies, they are very hard to compare across different starting and ending dates, and different starting emissions levels. Please provide more information in the description of the Figure so that readers can better compare GHG emissions targets for global cities.	Not relevant anymore for revised chapter
25999	12	52				Brazil is implementing nearly a million water actions in vilages and farms through social and appropriate technologies. Refer to book "Water and Climate Change" by M.N. Silva et al, 2012, published by Fundacao Banco do Brasil. Available at: http://www.fbb.org.br/lumis/portal/file/fileDownload.jsp?fileId=8AE389DB3557870101355E200E67070B	Not relevant in revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
20010	12	52	10	52	17	Pls add some examples such as eco-driving, green travel campaigns.	Not relevant anymore for revised chapter
20011	12	52	31	52	31	NGOs such as WWF (the promoter of Onehour Turnoff Light Intiative) also play important roles. Suggest one more paragragh be added to describe such examples.	Not relevant anymore for revised chapter
23461	12	52	31	52	31	NGOs such as WWF (the promoter of One hour Turnoff Light Intiative) also play important roles. Suggest one more paragragh be added to describe such examples.	Not relevant anymore for revised chapter
28973	12	52	9	52	31	The manner in which the examples are given here makes it appear that these are isolated cases. This may be a style issue, where adding "For example, in Delhi, … and Likewise, organized …"	Not relevant anymore for revised chapter
33507	12	53	1	55	38	There are many more potential tradeoffs and synergies than are described here. Although it is interesting to explore two in a bit of depth, I would recommend this section be augmented to at least acknowledge the wider work - for example, there has been work highlighting that congestion charging increases social inequality. Table 1 in "Dawson, R. J. (2011) Potential pitfalls on the transition to more sustainable cities … and how they might be avoided, Carbon Management, 2(2):175-188 (doi:10.4155/cmt.11.8)." provides a useful summary of some tradeoffs that I think will be of relevance here. Also of interest will be work by: "Hall JW et al. (2009) Engineering Cities: How can cities grow whilst reducing emissions and vulnerability?. The Tyndall Centre for Climate Change Research, 2009 (http://www.ncl.ac.uk/ceser/researchprogramme/reports/Tyndall.pdf.pdf)" ; "Viguie V. and Hallegatte S. (2012) Trade-offs and synergies in urban climate policies, Nature Climate Change, 2:334-337." For a paper that suggests energy use not greatly altered by urban planning: "Marcial H. Echenique, Anthony J. Hargreaves, Gordon Mitchell, Anil Namdeo, Journal of the American Planning Association, Vol. 78, Iss. 2, 2012"	Addressed in revised text
22161	12	53	1	55	38	There are many more potential tradeoffs and synergies than are described here. These two are perhaps the most obvious - but for example, there has been work highlighting that congestion charging increases social inequality.	Addressed in revised text
34386	12	53	12			Please replace 'co-benefits' with 'synergies', since the text is about the relation of different objectives.	Not relevant anymore for revised chapter
20685	12	53	2		10	A major ommission of the tradeoffs has to do with the greater exposure to pollutans that results from compact development. In a nutshell, compact development REDUCES overall emissions, but in the case of pollutants that result in poor air quality, concentrating individuals along key corridors where emissions occur is likely to increase personal level exposure. There is considerable literature on this topic emerging.	Not relevant anymore for revised chapter
41605	12	53	2	53	10	Other co-benefits include reduced land consumption, water consumption, criteria pollutants, transport infrastructure cost, municipal and household fiscal impacts. Please consider discussing these potential co-benefits of GHG mitigation strategies in cities.	Addressed in revised text
33506	12	53	34	53	41	Worth looking at "McCarthy (2010) Climate change in cities due to global warming and urban effects, Geophysical Research Letters. 37(9)." for some global analysis showing how extreme heat events due to urbanisation and increased energy consumption are simulated to be as large as the impact of doubled CO2 in some regions, "McCarthy et al (2000) Simulating climate change in UK cities using a regional climate model, HadRM3, Int. J. Climatology, 32(12): 1875-1888" provides a more detailed analysis of similar issues in the UK.	Noted
41606	12	53	34	53	35	This sentence needs some clarification that it is reports a rough estimate. The relationship of electricity use and temperature is by no means this clear in all cities and all temperatures.	Not relevant anymore for revised chapter
41607	12	53	34	53	41	Please discuss the public health co-benefits associated with climate change mitigation in cities. Younger, Margalit, Heather R. Morrow-Almeida, Stephen M. Vindigni, and Andrew L. Dannenberg. 2008. "The Built Environment, Climate Change, and Health Opportunities for Co-Benefits," American Journal of Preventative Medicine 35 (5): 517-536.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
28017	12	53	48	54	3	This observation in these sentences could be contradicted by the fact that medium or high urban density can be combined with a lot of green spaces as shows figure 12.16 in this report. The real problem consists in the fact that often the free spaces between and in the backyards of buildings are not used for urban greening but for parking lots. So high urban density in combination with low motorization might be quite compatible with urban greens.	Addressed in revised text
34385	12	53	6			Please delete 'or may have adverse spillover effects' since it is redundant with the preceding parts of the sentence and inconsistent with the terms defined in the glossary.	Not relevant anymore for revised chapter
35050	12	53	8			"the sections": Please provide concrete references.	Addressed in revised text
23462	12	53	1	55	38	The co-benefits of measures on high density development and mixed use: Haughton and Hunter (1994) posit that high population density is fundamental to urban vitality and creativity, and Williams (1999) also points out that “high-density urban living is seen as a prerequisite for vitality, vibrancy, cultural activities, and social interaction” (p.55). Sherlock (1991) expresses the same idea: “Take away the high concentration of people and activities, together with the diversity and vitality which go with them, and there is no longer any point living in a city” (p.12). Jacobs (1961) argued in “The Death and Life of Great American Cities” that a fine-grain mixing of diverse uses creates vibrant and successful neighborhoods. According to Jacobs, a balanced mix of working, service, and living activities provides a lively, stimulating, and secure public realm. Besides these social benefits, the concentration and diversity of activities can make people have less need to travel and less reliance on the car, and have more opportunities to use public transport, with the aim of fostering economic, social and environmental benefits (Marsh and Coupland, 1996).	Addressed in revised text
24501	12	53	12			our result indicated that the waste heat from the air conditioners has caused a temperature rise of 1°–2°C or more on weekdays in the Tokyo office areas. (Ohashi, Y., Genchi, Y., Kondo, H., Kikegawa, Y., Yoshikado, H., and Hirano, Y. (2007). Influence of air-conditioning waste heat on air temperature in Tokyo during summer: numerical experiments using an urban canopy model coupled with a building energy model. Journal of Applied Meteorology and climatology,46(1), 66-81. (DOI:10.1175/JAM2441.1))	Noted, but no need to quote this specific paper in revised chapter
24499	12	53	12	53	19	Please add the following publication to introduce the related actions in Japan and Germany. Ichinose, T., F. Matsumoto, K. Kataoka : (2008) Counteracting Urban Heat Islands in Japan, pp. 365-380; In Droege P. Eds.: Urban Energy Transition -From Fossil Fuels to Renewable Power-, Elsevier Policy for UHI mitigation in Japan In 2001, the Japanese government established the Ministries’ League (ML) on UHI to promote discussion on the wide-scale mitigation of the urban thermal environment. In 2004, the Fundamental Policy of the Japanese Government on UHI was published. Such action was a world first. These movements of the Japanese government have given much awareness of the local government for UHI issues. Climate analysis for urban planning in Germany In Germany, especially in the field of urban planning, many planners take advantage of climatologists’ results (Bründl 1988; Horbert et al. 1984). Methods for climatological observations and numerical simulations of the thermal environment are well established in urban planning. To realize such a plan, relevant procedures are standardized as VDI (1997). They triggered these moves in Japan. VDI3787 Blatt 1: Climate and Air Pollution Maps for Cities and Regions (1997)	Noted, the UHI issues has been refocussed.. no need to quote these specific papers in revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
24502	12	53	20			Countermeasures to UHI might contribute to mitigation of global warming by reducing life cycle energy consumption. on the other hand, Large scale introduction of some kind of countermeasure to UHI might actually result in an increase in the annual energy consumption for air conditioning if the energy consumption for heating exceeds the energy consumption for cooling. Thus, we point out that the life cycle energy consumption and the net CO2 emissions for countermeasures to UHI should be considered. (Ihara T., Genchi Y. (2008), Evaluation of Environmental Improvements by Urban Heat Islands Countermeasures Based on Life Cycle Thinking. J. LCA Jpn., 4(1), 34-43)	Noted
29558	12	53	26	53	26	Insert this sentence at line 26, after "….2010). Rossi et al., 2010 established the effect of a High albedo surfaces for offsetting CO2 also in terms of surface position, orientation, inclination and photometric performances. Reducing UHI…" - Additional reference full citation: F. Rossi, A. Nicolini, "Analysis of Global Warming Mitigation by White Reflecting Surfaces", Proceedings of a meeting held 6-10 June 2010, Vail, Colorado, USA	Not relevant anymore for revised chapter
24500	12	53	34			We proposed a cooling system using a ground source heat pump (GSHP) as a countermeasure for the heat island effect in summer. GSHP sequesters the heat underground that would have been released into the ambient air around buildings in the urban canopy. Moreover, heat released underground in summer could be stored for the winter heat demand. Thus, we expect that year-round energy consumption for climate control in the urban canopy would be reduced by the GSHP system. (Ihara, T., Kikegawa, Y., Asahi, K., Genchi, Y., and Kondo, H. (2008). Changes in year-round air temperature and annual energy consumption in office building areas by urban heat-island countermeasures and energy-saving measures. Applied Energy, 85(1), 12-25. (DOI: 10.1016/j.apenergy.2007.06.012))	Noted, the UHI issues has been refocussed.. no need to quote this specific paper in revised chapter
33508	12	54	14	54	28	I don't know much about this area, but some work by "Renforth, P. (2012) The potential of enhanced weathering in the UK. International Journal of Greenhouse Gas Control. 10 1-15." considers the potential maximum sequestration from the dissolution of silicate minerals on the land surface in the UKand potential costs and challenges. Other work looks at soil/biochar potential: "Renforth, et al (2011) 'Designing a carbon capture function into urban soils', Proceedings of the Institution of Civil Engineers - Urban Design and Planning, 164, (2), 121–128." and "Washbourne, C-L.et al (2012) Investigating carbonate formation in urban soils as a method for atmospheric carbon capture and storage. Science of the total environment. 431, 166-175.	Not relevant anymore for revised chapter
29001	12	54	14	54	40	Unfortunately, there are some countervailing disadvantages to urban vegetation in parks insofar as parks stimulate car travel and commercial services. See Oliver-Sola, J., M. Nunez, X. Gabarrell, M. Boada, and J. Rieradevall. 2007. Service sector metabolism: Accounting for energy impacts of the Montjuic urban park in Barcelona. Journal of Industrial Ecology 11(2): 83-98. DOI: 10.1162/jie.2007.1193. This study showed that "The forest surface area required to absorb the CO2-equivalent emissions produced by the life cycle of the energy consumed at Montjuïc Park [Barcelona] represents 12.2 times the Park's surface area."	Not relevant anymore for revised chapter
25895	12	54	19	54	29	carbon market surely fosters technology transfer to developing countries. Poor nations, however, are unable to produce emission creidt for carbon market and to enjoy technology transfer. Some statement for those countries may be necessary.	Addressed in revised text
24903	12	54	5	55	38	Suggest this section has marginal relevance and could be shortened if the chapter length is being shortened	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33509	12	55	34	55	35	What evidence exists that green space is ignored? London has an open (predominantly green) space strategy "http://www.london.gov.uk/thelondonplan/maps-diagrams/map-3d-03.jsp", there is also a tree strategy: "http://www.london.gov.uk/priorities/planning/publications/preparing-borough-tree-and-woodland-strategies-spg". Many other UK local authorities (c.f. Sheffield plan can be downloaded at https://www.sheffield.gov.uk/out--about/parks-woodlands--countryside/green-and-open-space-strategy.html) have similar plans so if the UK is the only country it is probably still "rare", but I think it is important to make this clear.	Not relevant anymore for revised chapter
41609	12	55	34	55	35	This is an over-generalization. Many states and local governments in the USA operate open space programs, and an increasing number are paying attention to urban forests and carbon sequestration. While there is a tension between infill development and urban parks on vacant urban land, many state and local governments have level of service standards mandating the amount of open space per person. Please revise accordingly.	Addressed in revised text
28018	12	55	34	55	38	The observation in this paragraph that urban planners don't pay enough attention to greens misses the real point. Often there are a lot of open spaces inside town but they are used as parking lots as a consequence of motorization. Motorization (as well as greenhouse gas emissions by transport) is enhanced by low urban density.	Addressed in revised text
41608	12	55	4	55	5	Calculating the environmental benefit of golf courses and urban lawns needs to be tempered given its heavy use of water and fertilizers. Please revise accordingly.	Not relevant anymore for revised chapter
41611	12	55	45	55	48	It might be worth noting that the lack of consensus in accounting methods may be related to the underlying lack of data (the type and quality of available data is likely to dictate the sorts of accountings that can be performed) and the lack of research on the policy advantages of different accountings at sub-national scales.	Addressed in revised text
24259	12	55	47	55	48	You may want to mention the first version of a global protocol for community scale GHG emissions: http://carbonn.org/fileadmin/user_upload/carbonn/Standards/GPC_PilotVersion_1.0_May2012_20120514.pdf	Not relevant anymore for revised chapter
20686	12	55				Other gaps in knowledge include: a) the degree to which the tradeoffs between compact development and "aggressive" spatial planning and other outcomes cancel out each other or whether there is a considerable net benefit (or cost). B) The relative effectiveness of various spatial planning tools with respect to GHG emissions needs to be examined futher. C) Other comments made above.	Noted
41610	12	55	39	56	26	For this complex topic, consider expanding the knowledge gap section to discuss the types of challenges facing academics, governments, and practitioners. At this time, there are inadequate tools and incomplete theories for predicting / projecting future urban planning factor. But to plan for future is a fundamental functionality of spatial and integrated planning in urban emission mitigation and adaptation. Similarly, new transportation and water planning techniques are inadequate at this time to provide accurate project-level simulation of the infrastructure effects on CO2 mitigation actions. Let alone the engineering economics and traditional engineering practice that may further hinder the planning and adoption of an urban climate action for CO2 reductions. Authors should clarify text accordingly.	Noted: text removed

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41612	12	56	1	56	10	The third recommendation on pg. 56 (lines 1-10) is appropriate but needs to take a broader perspective. It focuses on plan implementation as indicated by the statement, "to evaluate the efficacy of climate action plans and their effectiveness" (line 2). There is also a great need to evaluate the quality of the plans. Researchers and practitioners need guidance on distinguishing a good plan from a poor plan in the context of climate change. A basic set of principles of plan quality should be developed to guide the practice of climate action plan making and to allow researchers to compare plans across cities. There is a considerable emerging literature that addresses this need for spatial plans, hazard mitigation plans, and various types of environmental plans (over 40 published papers). Following is a paper that may be worthwhile to examine is a recent meta-analysis of the empirical results of plan quality studies: Berke, Philip, and David Godschalk. 2009. "Searching for the Good Plan: A Meta-Analysis of Plan Quality Studies," Journal of Planning Literature 23 (3): 227-240. Several studies (e.g. Wheeler 2008 cited in ch. 12) have begun to outline what the principles might be for climate change. The Wheeler paper, among others, could offer a basis to extend the literature on plan quality to account for climate action plan quality. Please revise this recommendation accordingly.	Addressed in revised text
26595	12	56	10			ADD: and between local territories.	Not relevant anymore for revised chapter
41615	12	56	11	56	20	We are at a point now that sole mitigation efforts would be insufficienct. The efforts should be focused on mix of mitigation and adaptation strategies. Extreme events will occur, unfortunately, more frequently, and these events most likely impact major populated areas. As these communities rebuilt, the policy makers and planners should be ready to tackle and find an opportunity to change and move towards sustainable rebuilding of communities. In addition, holistic mix of adaptation and mitigation efforts would eventually lower the costs. Please discuss these issues.	Noted
33511	12	56	15	56	15	I disagree with this statement - there is plenty of scientific basis for identifying the right mix of policy responses. The difficultly is that no one size fits all so drawing generic, but meaningful, guidance is not easy.	We stand by this statement, more effective and coordinated efforts are necessary
33510	12	56	2	56	2	I think it is worth noting here that the evaluating climate action plans is one thing, but many actions are very positive for the climate, but emerge from entirely different departments or driven by other factors - so just focussing on climate plans only paints part of the picture.	Noted
41616	12	56	21	56	26	The fifth recommendation on pg. 56 (lines 21-26) offers a good start on the need for urban areas to address the uncertainties associated with climate change. In fact, the way cities and regions should go about planning demands that plans no longer simply focus on a single future with fixed policies. The new generation of urban plans and regional plans dealing with climate change should integrate analyses that that includes predictions of multiple futures and the associated impact of each potential future; this would entail scenario development and assessment. Climate action plans should also be based on the development of flexible policies that can be adaptable across scenarios and address more distant time horizons (e.g. greater than 50-years) compared to conventional spatial planning. The following two papers have recently been published begin to address this need (although they focus on climate adaptation, there are multiple parallels with climate mitigation plans): Berke, Philip and Ward Lyles. 2013. Public Risks and the Challenges to Climate Adaptation: A Proposed Framework for Planning in the Age of Uncertainty. Cityscape: Journal of Policy Development and Research 15(1): 189-216. Quay, Ray. 2010. "Anticipatory Governance: A Tool for Climate Change Adaptation," Journal of the American Planning Association 76 (4): 496-511. Please revise this fifth recommendation accordingly.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41617	12	56	21	56	26	A big source of uncertainty is how technology and consumer demand will change over the next 50 years. More work is needed on the dynamics of technology and consumer demand to create appropriate scenarios in addition to the baseline scenario of static technology and demand. We need projections of GHG emissions under alternative technology change scenarios. Please discuss this need.	Noted , but this is not necessarily 'urban' issue as per say..
41618	12	56	21	56	26	Please provide citations for this passage.	Addressed in revised text
41613	12	56	4	56	5	This is an important finding and raises the question of what can be done to improve future planning/negotiating/governing processes, to get better outcomes? Please discuss this question and tie this into 12.5.2.	Not relevant anymore for revised chapter
41614	12	56	4	56	5	Previous sentence says there is no systematic accounting to evaluate the efficacy of city climate plans. It's therefore very hard to say there is no significant impact. Furthermore, the authors should consider work undertaken by the Clinton Global Initiative, the C-40 and ICLEI in making their assessment.	Addressed in revised text
31614	12	6		6		Source is missing.	Not relevant anymore for revised chapter
41088	12	6				figure and text don't match. The figure is not described. Presenting infrastructure as element of cities, towns, municipalities etc, contradicts the statement about the importance of the transboundary nature of infrastructure (comment 5), in addition the figure contradicts line 7 same page, where a non-agricultural economomic basis of human settlements is claimed to be a distinguishing characteristic of urban settlements not human settlements in general as suggested in this figure.	Not relevant anymore for revised chapter
41414	12	6	10	6	10	Pg. 6, Line 10. We are confused by the heading of this Section. This heading seems more appropriate for Section 12.3. Section 12.2 does not emphasize emissions, but assesses trends in human settlements, and should be re-titled accordingly. Note that megacities are expected to grow faster than previously predicted, and by 2025, the number of megacities will have grown from 23 to 37, and will be home to 13.6% of the world's population, and increase over the 9.9% that call them home today (UN World Urbanization Prospects, 2011 Revision). Please revise accordingly.	Not relevant anymore for revised chapter
33471	12	6	11	9	9	ICT, and its potential role in (i) changing the way we interact with the built environment (through smart infrastructure systems that have potential to manage transport systems and hence their GHG emissions for example) and (ii) opportunities for home working, has not been mentioned. Other infrastructures and changes to how they are delivered may also be usefully considered as a sub-section here.	Not relevant anymore for revised chapter
31175	12	6	12	6	12	extraneous that	Not relevant anymore for revised chapter
31615	12	6	12	6	18	Source is missing. What are the data bases for the numbers?	Not relevant anymore for revised chapter
35357	12	6	2			more authorities like development authorities , corporations etc	Not relevant anymore for revised chapter
41412	12	6	3	6	7	Pg. 6, Lines 3-7. It seems necessary to quantify what concentration the chapter deems "a concentration." This definition seems problematic when it does not specify the concentration and includes "legal authority over a geographical region." There are examples (e.g., Jacksonville, Florida) where city governments administer large and relatively unsettled areas. Given the noted trends in urbanization and declining densities of urban areas, it is important that the chapter reviews what literature exists that compares emissions according to specific characteristics (area, density, economic development) and not just a standard definition of "urban" or population size. Please revise accordingly.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41413	12	6	4	6	7	In defining "urban," what is the role of density and spatial area? Does "governance over a geographic region" address spatial area or geographic boundary? In defining "administrative" characteristics of urban areas, is "formal authority" a necessary condition? What about unincorporated municipalities or private special districts? Please elaborate.	Not relevant anymore for revised chapter
30474	12	6	7	6	7	I do not think that 'having some legal authority or governance over a geographic region' is a requirement to call a settlement urban. Please erase the criterion.	Noted: The text is substantially modified in revised chapter, comments is no longer relevant
35358	12	6	8		9	there are … slow : evaluation parameters and mechanism	Not relevant anymore for revised chapter
33472	12	6	8	6	8	I did not feel Figure 12.1 was informative, nor is the categorisation it defines used properly within the rest of the chapter - given the authors are seeking text to remove, I would consider this.	Not relevant anymore for revised chapter
35359	12	7			7	component of dynamics should be considered rather than using only static aspects	Not relevant anymore for revised chapter
26592	12	7				Figure 12.3. NECESSARY?	Not relevant anymore for revised chapter
33473	12	7	1	7	7	Fig 12.2, Fig 12.3 don't add much to each other. If the authors feel it is important to include information on city size, and continental spread then perhaps the bars in Fig 12.2 could be apportioned and schaded by continent. Hopefully that will free up some other space.	Not relevant anymore for revised chapter
41415	12	7	1			It is confusing to start with the largest size cities at the left, moving toward the smaller cities to the right. Typically charts begin with the smaller numbers on the left and get larger going toward the right. Please revise accordingly.	Not relevant anymore for revised chapter
35361	12	7	12	8	5	what is inferred from this information . Text here can be squeezed and information given by commas	Not relevant anymore for revised chapter
41418	12	7	13	7	15	Pg. 7, Lines 13 and 15. Comparisons with Jamaica, Denmark and South Africa aren't terribly helpful to those of us not from those places. It might be somewhat more accessible to compare these areas to the areas of other well-known cities: e.g., how many NYC's or London's would fit in Tokyo-Yokohama? Also of interest in making the case for low-density development is to quantify the area that such well-known cities would occupy if they had the same density as newer, less dense development. Please revise accordingly. reword: (11,850 persons/km2 in 2000)	Not relevant anymore for revised chapter
41419	12	7	13	7	16	This massive urbanization has also created massive bi- and tri-national metropolitan regions such as San Diego-Tijuana and the Lome-Cotonou-Lagos Corridor. See "Table 4.1. Examples of Cross-border Regions" in Donovan, M. (2011), "Barriers and Breakthrough Strategies for Cross-border Cooperation," in Richardson (ed.), Reshaping Regional Geography. Please revise to include these references.	Not relevant anymore for revised chapter
31177	12	7	21	7	22	wording makes sentences hard to follow; could be reordered a bit to allow sentence to flow.	Not relevant anymore for revised chapter
26422	12	7	3	7	3	"in Asia and Asia" is a mistake. No matter what other continent you wanted to mention. Given that growth rates between Africa and Latin America are similar, all the three (Asia, Africa, Latin American) sould be mentioned.	Not relevant anymore for revised chapter
31176	12	7	3	7	3	"Asia and Asia" - presumably the author intended one of these to be Africa?	Not relevant anymore for revised chapter
20664	12	7	3			Should the second Asia be Africa or South America and the Caribbean?	Not relevant anymore for revised chapter
41416	12	7	3	7	3	on p.7, line 3, Please correct the typo: the authors mean Africa and Asia.	Not relevant anymore for revised chapter
34945	12	7	3			the 2nd "Asia" should be "Africa"	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41417	12	7	6			It is confusing that this graph flips the years and population size from Figure 12.2. In 12.2, the bars represent the years. In 12.3, the bars represent the city size. It would be easier to understand if Figures 12.2 and 12.3 both represented the years in the same way. Please revise accordingly.	Not relevant anymore for revised chapter
26423	12	7	9	7	9	Where and when have cities historically been spatially compact? If you look at Northern America and Australia, you find highly non-compact cities with low densities. In Germany, suburbanisation has led to decreasing density of cities since about 50 years. Only in the last decades, spatial planning attempts to re-densify cities in Germany. However, if you write about historically compact cities, please specificy where and when. Otherwise, delete the sentence.	Not relevant anymore for revised chapter
35360	12	7	9			no information regarding type of settlement	Addressed in revised text
24876	12	7	12	7	16	Is comparing urban extent to country sizes useful or relevant? It may provide context and human connection, but they are not directly comparable, and can be irrelevant for people who do not know the geography of the countries mentioned. Consider removing.	Not relevant anymore for revised chapter
41619	12	70	29	70	29	The second author on the Marcotullio et al. reference (p.70, line 29) is missing and should be Sarzynski, A.	Addressed in revised text
26129	12	8				The figure is too small and contains too much material to be understandable. Consider splitting it into two separate figures.	Not relevant anymore for revised chapter
23435	12	8		8		List items in the table need more complete statement, otherwise it may cause ambiguity. In the “Region” column, to illustrate “Average Built-up Area Density” and “Average Built-up Area per Person Region” character of several representative regions, the authors list “Other Developed Counties” which may cause ambiguity. Because “Other Developed Counties” can refer to countries in Europe or South & Central Asia, it can also refer to USA and other developed countries outside Europe and Asia. The description for “Average Built-up Area Density” and “Average Built-up Area per Person” of different regions can be seen in Lincoln Institute of Land Policy Working Paper "The Persistent Decline in Urban Densities: Global and Historical Evidence of 'Sprawl'" (Shlomo Angel et al, 2010)	Not relevant anymore for revised chapter
26360	12	8	1			Table could be improved by providing a footnote that gives a definition of built-up area density, whether it is mean a number of persons per unit of area (e.g, 1000 persons/m2) or a ratio of built-up to green area expressed in percentage. Providing units in which data is expressed in the table will also improve clarity.	Not relevant anymore for revised chapter
41425	12	8	1			8-- The data on built-up densities in Table 12.1 probably include large variation across cities and sampling can influence the results. Please briefly describe attributes of the sample (mid-sized or large cities? high-wealth or a range of wealth?) in the text. It would be useful to convey marginal density as a summary measure of population growth v. urbanized area growth.	Noted: Good point but could not be reflected here
33474	12	8	15	8	28	One driver that is not really touched upon here is infrastructure interdependency. We are living in a world that is becoming more closely interconnected and this will have profound impact on the resilience as potential for cascading failure changes (most relevant to adaptation issues), efficiency (most relevant to mitigation issues) as a result of smarter systems.	Noted: Infra interdependence in mitigation context is quite obvious and have been reflected in many sections be it housing-transport, density and cogeneration or transport and land use and other domains. See newly introduced driver section 12.3 and also 12.4 and 12.5
41424	12	8	15	8	22	Recommend rewriting (i) as follows: "the long implementation period of built environment structures (e.g., buildings and transport) delay the onset of emissions reduction" Recommend adding (iv): "coordinating the placement and design of buildings and transport through scenario planning and pre-testing of impacts can produce location efficiency benefits that reduce emissions associated with vehicle miles traveled."	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
31178	12	8	21	8	21	delete "often"	Addressed in revised text
41421	12	8	8	8	10	It looks like even in Asia urban sprawl is going on. If this is the case, it should be stated explicitly including possible implications.	Not relevant anymore for revised chapter
35362	12	8	9			urban areas .. Population : can be deleted	Addressed in revised text
41420	12	8	4	8	13	Section 12.2.4, Pg. 8, Line 4. It is not clear to what extent the urban expansion is due to the spreading of existing cities or new cities being built with lower densities. Please revise accordingly.	Not relevant anymore for revised chapter
28976	12	8	15	9	7	"Towards Low Carbon, Competitive Cities", published by CTS-EMBARQ Mexico (Mexico City) in 2010 presents analysis of several affordable housing developments in different cities in Mexico, calculating impacts of buildings, travel patterns, and land use, showing impacts of long-lived infrastructure of one specific segment of new settlements being built. Sadly, the analysis shows a continued bias toward car-centric and high emissions lifestyles shaped by the built environment.	Noted but the text is revised drammatically in revised chapter
24877	12	8	19	8	22	The inclusion of the term "urban mining" should be considered further. It is not directly relevant to the section. If used, it should be clearly defined.	Not relevant anymore for revised chapter
30489	12	9				The table should also include the lifespan of buildings, to show that these have just as long a lifespan as infrastructure. This is important, as it implies that we have to consider large parts of the existing cities as given in designing our GHG reduction emission, certainly in the Western and former communist countries. That is, we can show that sprawl is undesireable, but it has already happened in the past and we have to find solutions in that context (see again, Mees 2010). Second, the focus on lifespan ignores the fact that infrastructure can be used differently over time, which is of key importance for a transition towards sustainability. Especially road space could be used for other modes than the automobile. This is acknowleged in Section 12.5.10, but no link is made to the fact that this has a implications for the way in which the lifespan of especially roads should be viewed.	Not relevant anymore for revised chapter
23436	12	9		9		Table 12.2 cannot effectively support the report idea for "The long lifetime of built environment structures limit the speed at which emissions in the use phase (e.g., buildings and transport) can be reduced (Table 12.2)". Table12.2 only lists the roads, drinking water and other building facilities which are made up with different raw materials have the different lifespan in this view, however, cannot effectively support the argument of “the long lifetime limit the speed of emissions” in the report . To better support the argument, more detailed information for the relationship of building materials and carbon emissions can be get from Technical options and strategies for decarbonizing UK housing (Robert Lowe, 2017). Robert Lowe (2007).Technical options and strategies for decarbonizing UK housing, Building Research & Information, 35:4, 412-425	Not relevant anymore for revised chapter
26371	12	9	10	10	7	In my opinion the outsourcing of goods production and thus the GHG emissions as well is a phenomenon that definitely should be addressed in this chapter (12.2.6). Now the message is that the emissions in urban areas are decreasing as the level of affluence increases. However, there are plenty of evidence that this is primarily due to outsourcing of emissions, that is, relocating of the heavy industries outside of the urban areas or a coutry. For example Heinonen (Heinonen et al. (2013): Situated lifestyles: I. How lifestyles change along with the level of urbanization and what are the greenhouse gas implications, a study of Finland, Environ. Res. Lett. 8, 025003), Wagner (Wagner G. (2010): Energy content of world trade, Energy Policy, 38, 97710–7721) and Scultz (Schulz, N. B. (2010): Delving into the carbon footprints of Singapore— comparing direct and indirect greenhouse gas emissions of a small and open economic system, Energy Policy, 38, 4848–4855) discuss this.	Taken into account: The indirect emission issues are very well presented in the revised text in section 12.2.2.2 from a number of different viewpoints.
31617	12	9	11	9	13	Source is missing.	Addressed in revised text
41428	12	9	11	9	11	Pg. 9, Line 11. Subject-verb disagreement and misspelled verb: "While nearly all future population growth occurring" Please correct.	Not relevant anymore for revised chapter
41429	12	9	11	9	11	There appears to be a verb missing in the introductory clause. Text should read, "while nearly all future population growth occurring in urban areas IS in non-OECD countries."	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41423	12	9	11	9	17	9-- relating to 12.2.6 1st para, it's worth recognizing somewhere that heavy industry (i.e., high polluting) activities have largely been run out of developed nation cities into developing nations (both urban and rural), so the urban / rural split in developed nations is a result of past decisions at least as much as current behavior. The text does routinely hint at path-dependency, but this is one point that is worth making more strongly. Please revise accordingly.	Not relevant anymore for revised chapter
41430	12	9	12	9	17	Can you give reference to the statement of general trend of higher per capita energy use in urban areas? Does it depend on the definition of energy use and population density? The latter is generally large in certain developing countries (e.g., India, and eastern Asian), where in country side peasants and farmers tend to use substantial energy (biomass) for living and agricultural productions. Please revise accordingly.	Noted: 12.2.1 in revised text retains this but literature is for commercial energy
34955	12	9	14			Reference missing at end of sentence	Addressed in revised text
34956	12	9	15			Reference missing at end of sentence	Addressed in revised text
41431	12	9	18	9	38	In an effort to condense chapters, the authors could condense these 3 paragraphs into 1 or 2.	Addressed in revised text
31179	12	9	22	9	22	are "in press" articles viable for AR5?	Not relevant anymore for revised chapter
26424	12	9	23	9	25	The example from India with switches from biomass to kerosene to LPG to electricity is not a good example for rising incomes making electricity use cleaner. From a CO2 emissions perspective, biomass may be cleaner than gas, kerosene and most electricity sources.	Not relevant anymore for revised chapter
41432	12	9	23	9	24	Though urbanization and rising incomes result in changes in the types of fuel, rising income also increases the total consumption of energy. This should be noted.	Addressed in revised text
23437	12	9	23	9	31	To illustrate the fact, cases from more developing countries and/or regions need to be included. In addition to Africa and Asia India, as the largest and fastest developing country, China's regional development is not balanced. Urbanization process is companied by energy transformation from fuel to electric power, which can illustrate the problem. Many cities in China is at different development stages, such as Guizhou, Lhasa, Chengdu in the Western China. Fuel use and CO2 emissions in these cities is at different stages. These examples can better illustrate the key factors which affect fuel switching.	Noted: but not relevant in revised text any more
41433	12	9	24	9	24	Pg. 9, Line 24. Please change "the switch is" to "the switches are"	Not relevant anymore for revised chapter
34957	12	9	24			Reference to Ch.9 needed	Addressed in revised text
31180	12	9	29	9	29	"lacking"… or reword sentence	Addressed in revised text
41434	12	9	29	9	29	Pg. 9, Line 29. Subject-verb disagreement: "with significant portions of the population lack". Please change "lack" to "lacking"	Not relevant anymore for revised chapter
30475	12	9	3	9	4	The text reads 'Vehicle ownership tends to flatten in industrialized countries although no saturation level can be observed yet'. I think there is now substantial evidence that young generations behave differently and have different attitudes towards the car. See Millard-Ball, A. and L. Schipper (2010). "Are We Reaching Peak Travel? Trends in Passenger Transport in Eight Industrialized Countries." Transport Reviews.	Noted: Not releavant anymore for revised chapter
41422	12	9	3	9	4	Recommend clarifying statement: "Vehicle ownership tends to flatten in 3 industrialized countries although no saturation level can be observed yet" Some evidence suggests that ownership rates increase as countries become industrialized, and the trend is "S" shaped.	Not relevant anymore for revised chapter
34952	12	9	3	9	4	"vehicle ownership": a reference to Ch.8 is needed on this; in general, when discussing transport matters try to avoid citing studies directly but first try to link the section in Ch.8 discussing this (if it exists). If the Ch.8 discussion is not as specific as you require reference Ch.8 first and then add the details	Addressed in revised text
31618	12	9	30	9	31	Source is missing.	Addressed in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
41435	12	9	30	9	31	"For example, 81.6 million people in Indonesia—one third of the country—are without electricity. In India, 25% of the population do not have access to electricity." Please include references for these statements.	Not relevant anymore for revised chapter
34958	12	9	34			Check with Ch.9 about numbers for household emissions in India in 2030	Addressed in revised text
34959	12	9	35	9	38	Check for numbers on this in Ch.9 and link to it - if not available contact Ch.9	Addressed in revised text
34953	12	9	4	9	5	"floor area": a reference to Ch.9 is needed on this; in general, when discussing transport matters try to avoid citing studies directly but first try to link the section in Ch.9 discussing this (if it exists). If the Ch.8 discussion is not as specific as you require reference Ch.9 first and then add the details	Addressed in revised text
41427	12	9	8			As there aren't any universally agreed standards on road, water, and sewage codes, I'm concerned that this table will have limited applicability and be contested. Lifespan is obviously affected by a large number of conditions including use, geography, and weather. A caveat is needed.	Not relevant anymore for revised chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
33222	12	all				This is the first time that an IPCC Assessment Report focuses on entire human settlements instead of their separate components. This is an important step towards a more integrative approach, which is, in my view, most appropriate in light of the complexity of climate change. It should be noted that the methodology demonstrated in chapter 12 is not yet at this level. It seems to be stuck in a positivist paradigm as it seeks evidence of the failure of sprawled suburbanised settlements of the western New World. I consider this a waste of time and effort. Instead of starting with individual cities that have failed and working to mitigate their failures, we should start with models of excellent urban design (e.g. Barcelona, Vienna, Paris), deducing principles of excellent design that may serve to guide the future of city planning. The continental European city is the only existing urban typology that worked under a low pre-industrial level of energy-supply and became subsequentially successfully adapted to the progressive developments of economy, transportation, and lifestyle of the present (12.4.3). Other pre-industrial/colonial models of urban life have been abandoned under the overruling influence of western models of both economy and culture. Hence I'd suggest to begin urban re-development with the latest successful regional typologies that used to work on a lower energy-level than current ones. The latest communication technologies indicate that business can work in smaller premises and with flexible, mobile, cloud-connected devises, which will have significant influence on urban form and density. If the developing economies would enter a pathway to compact (post-American) cities and invest in proper internet connectivity rather than in roading, a synergy between urban form, economic performance and lower GHG emissions could be achieved; it demands, however, new role-models and the acknowledgement of ancient wisdom. Another weakness of chapter 12 is that it reduces "the city" to materialist, quantifiable issues, such as those listed under 12.4, and their contribution to greenhouse gas emissions. My opinion is that a truly holistic approach acknowledges "the city" as having an identity shaped by culture over time; urban decision-making processes are intrinsically embedded in regional, cultural thought-patterns, governed by historical and spiritual habits. It's only in the last few decades that we have made cities subject to purely technocratic top-down policies. This may align with mainstream political thinking, but it circumvents the fact that cities are cultural manifestations of their citizens, their beliefs, ambitions, and dreams, which can unfold the necessary power to change behaviour to more sustainable modes quickly. Paragraph 12.4 misses to name culture as an important driver of urban form; specifically culture distributed through mass media. The worldwide familiarity with the US lifestyle via TV programmes and movies should not be underestimated (the cross-promotion of Disney's TV productions and property development as per Ron Grover, The Disney Touch, 1991). Likewise the Internet is dominated by American values and their spatial expression. As it's impossible to bring US standards to the world, the evocation of those aspirations is counter-productive for resolving the issues addressed by chapter 12 The central goal for the IPCC is the reduction of GHG emissions. This paper will not analyse whether this single goal is adequate in the context of complex global and regional ecosystems that science is only beginning to explore, but it is still a huge enough task on its own. There are two ways to achieve	Addressed in revised text
23772	12	general				missing at the outset and throughout the chapter is the causal link between the evolution of global fossil fuel use and urban growth (Droege, P. 2006. Renewable City. Wiley). there should also be a much clearer statement on the need to understand that fossile fuel combustion and land/water cover changes are primary causes, urban energy use proximate forces. the 'city as renewable power station' is entirely missed here. see http://www.worldfuturecouncil.org/fileadmin/user_upload/PDF/100__renewable_energy_for_citys-for_web.pdf	Taken into accout: driver of GHG emissions has been added in the revised text as a separate section.