Expert Review Comments on the IPCC WGIII AR5 First Order Draft – Chapter 12

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17302	12					Urban issues/local governments:	Noted: This area is rewritten in report
2511	12					Important and useful table - but where have the 12 drivers come from? There is also much more than can be added to it to make it more comprehensive - it mixes up supply (e.g. infrastructure and energy mix) and demand (e.g. transport) - and it does not really focus on carbon reduction	Accepted: The table is revised as 12.9 in SOD
2521	12					This is very helpful - there could be more discussion of it through talking about such issues as the energy mix, shorter trips, use of public transport, walk and cycle, through using waste for energy, through carbon sinks, through insulation and design standards, and thorugh buildings design and materials etc.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
2534	12					This is very helpful and could perhaps be used to structure this Section	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
2539	12					This table is again helpful and could be made more central to the Chapter's main messages	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
5532	12					General comments- well written, clear chapter. It would help to provide more discussion on urban areas with existing infrastructure and urban areas without infrastructure. It would also be good to mention standards for energy efficient construction including the LEED certification program	Noted: Added discussion of importance of infrastructure. LEED is more appropriate in buildings chapter.
5522	12					This reviewer would suggest that there are more opportunities for mitigation in columns 5 and 6 in this table than the authors have identified. For Agriculture and Forestry- urban agriculture is a rapidly growing phenomena, with agriculture in a farm belt outside of urban areas(peri- urban agriculture) in developing countries also seen as a way to utilize an available labor force, reduce waste associated with food spoilage, and provide an economical land application site for urban generated organic residuals. For residuals management- use of reclaimed water or grey water offers potential benefits not included in the table, energy from controlled anaerobic digestion at centralized wastewater treatment plants for organics diverted from landfills are other benefits not currently listed	Noted: but the table has its own limits on how much it can represent only very important ones are shown. However, we will review this table in next round.
5530	12					Waste and water infrastructure row- mitigation measures should include landfill diversion, energy recovery in dedicated digesters, composting or direct land application of organics, green infrastructure for stormwater diversion, grey water systems- also consider the full implications of organics diversion with energy recover, land application with use within the urban landscape- nutrient credits, potential soil carbon credits and reduced energy costs for water treatment and landfilling	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
5529	12					The Chicago table includes quantity of CO2 associated with each practice- this is very helpful. Including this information for the other two cities would be helpful. It would also be helpful to provide population of each city in the table captions	Noted: We presume reviewer is mentioning Table 12.6. The table is deleted in rewriting of this section.
11041	12					Against 'Subdivision regulations', the Potential relevance statement is 'Amount of open space required by subdivisions could be important for retaining green carbon sinks in suburbanizing areas'. However, this quantum of green carbon sinks is so negligible in most cities as to render the goal of retaining green sinks virtually meaningless. Against Limitations of Tool… it is suggested that the following words be added: 'However, size of green carbon sink likely very small.'	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.

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16659	12					Table 12.1. This table is problematic because most of the “mitigation opportunities” are spatial features of urban form or structure, with no necessary connection to policy. It would be much better to have that column filled with policies. But that would also require a better treatment and understanding of existing policies and practices in different parts of the world, as noted above.	Noted: but the table has its own limits on how much it can represent only very important ones are shown. However, we will review this table in next round.
16663	12					Table 12.2: This is a very US-centric list of planning tools.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18381	12					It would be desirable to add the following works of bibliography in the chapter listed: Cap 12. -Olcina, J., 2010: Spatial planning processes, territorial planning law and flood risk in the region of Valencia (Spain), in Risks Challenging. Publics, scientists and governments. [Menoni, S. ed.] Taylor and Francis Group, 191-204. -Olcina, J., Hernández, M., Rico, A.M., Martínez, E., 2010: Increased risk of flooding on the coast of Alicante (Region of Valencia, Spain), Natural Hazards, 10, nº 11, 2229-2234. -Olcina, J., 2008: Droughts and their economic and territorial effects on the Iberian peninsula, Environmental Economics [Burny, Ph.; Petrescu, D. C. (editors)], Les Presses Agronomiques de Gembloux, ASBL, 173-192. -Sauri, D. Serra, A. Olcina, J., Vera, J.F., 2011: Climate change and Europe's regions: Key findings. Case study Spanish Mediterranean coast. ESPON Climate. Climate Change and Territorial Effects on Regions and Local Economies / Stefan Greiving (Coordinator) / ESPON (European Observation Network for Territorial Development and Cohesion), 30-39. -Rico, A.M., Olcina, J. and Sauri,D. 2009: Tourist land use patterns and water demand: Evidence from the Western Mediterranean, Land Use Policy, 26, nº 2, 493-501. ANNEX I-GLOSARY -Olcina, J., 2007: Research into climate risk in Spain: challenges for the future, in Spanish Climatology. Past, present and future [Cuadrat, J.M. and Martín Vide, J. (coords.)], Prensas Universitarias de Zaragoza, 421-449.	Noted but less relevant
18382	12					There is a limited treatment of increased exposure and vulnerability to climate hazards occurred in some areas of the western Mediterranean, in relation to the massive increase in residential building and infrastructure. This has provoked increasing risk territories. For example in areas of the Spanish Mediterranean coast is more likely in 2012 than it had in the late 1989 and 1990. And this has been caused by a massive occupation of land dedicated to housing and infrastructure (soil sealing). An analysis of this can be seen in Olcina (2010) and Olcina, Hernandez, Rico and Martinez (2010).	Rejected: WGII will cover that
18383	12					There are details to be made in the treatment of the concept of risk from the geographical point of view. The natural –climate- risk must be understood as an expression of territorial actions carried out by humans in the territory who have not taken into account the natural functioning of the environment where they occur. So if the man does not respect the dynamics of the physical land, infrastructure, economic activities, housing to develop man are deemed to be vulnerable to the development of a climatic event of extraordinary range (Olcina, 2007).	Rejected: Out of scope

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2552	12					Table is too generic, implying that the references are generic too. Says everything and nothing at the same time. More accurate references should be provided after each statement.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
2551	12					This figure has been extensively reproduced. Are there empirical evidences to support it, e.g. air pollution studies? These should be quoted, otherwise the chapter looks like an average textbook	Taken into account: Figure removed in section rewriting
17187	12					Similarly, a number of studies have found that employees at suburban workplaces tend to commute by car much more frequently than employees at inner-city workplaces. Cities where lower proportions of car commuters and higher shares of employees traveling by public transit, bicycle or by foot have been found at inner-city than at suburban jobsites include the San Fransisco Bay area (Cervero & Landis, 1992); London and other large British cities (Dasgupta, 1994); the Dutch Randstadt area (Schwanen et al., 2001); Atlanta and Boston (Yang, 2005); and Paris (Aguilera et al., 2009), Oslo (Næss & Sandberg, 1996), Trondheim (Strømmen, 2001) and Copenhagen (Hartoft-Nielsen, 2001b; Næss, 2007). Several studies also show that job decentralization from inner to outer parts of cities and metropolitan areas usually does not contribute to reducing average commuting distances (Næss & Sandberg, 1996; Hartoft-Nielsen, 2001b; Næss, 2007; Strømmen, 2001; Cervero & Landis, 1992; Yang, 2005; Aguilera et al., 2009). Admittedly, according to some studies employment decentralization has reduced commuting times (Gordon et al., 1991; Cervero & Landis, 1992; Giuliano & Small, 1993). This has, however, mostly to do with the generally higher shares of fast modes of travel and higher driving speeds in the suburbs than in the inner city.	Accepted: We recognize that location aspect is important .. we have address location aspects from urban form, spatial planning and land value capture viewpoints here. Given there are separate chapters in WGIII on buildings and transportation, we have limited our discussions here.
17188	12					It is an serious shortcoming of the existing text that the influence of the location of dwellings and workplaces relative to the city center is not mentioned. This must be corrected.	Accepted: Some discussions on location aspects are added in 12.6.4. Discussed connectivity and accessibility in 12.5
3655	12					What does the line express specifically?	Noted: The fitted curve, that shows relationship of x and y axis parameters
15459	12					The following work may be referred to: Bulkeley, H. and Betsill, M., 2003, Cities and Climate Change: Urban Sustainability and Global Environmental Governance. London, UK: Routledge. The influential work of Roger Keil on Networked Disease may also be incorporated in this chapter. Census reports in countries with large urban populations in India and other parts of Asia, show that small towns are growing rapidly and contribute both to emissions, as well as to other forms of pollution, with scarcely any thought for mitigation strategies. A small section on metropolitan cities vis a vis rapid urban growth in hitherto rural hinterlands may be useful. The smaller towns pose many new challenges which are not captured by a 'metrocentric' understanding of urbanization and human settlements.	Noted: the publication is referred.12.2 discussed cities by population size
15505	12					(Whole Chapter) Almost everything is covered. May be reinforcing link with on going global initiative could be interesting (such as the Green economy, Sustainable cities numerous on-going initiatives, Resource efficient cities). The lock in effect (as well as for the buildings sector) needs also to be underlined. Failure to reduce Cities footprint would consume time and money for predictable poor results. The point now is to transform constraints into opportunities.	Accepted: The related aspect has been discussed in several sections in the revised report.
18852	12					Detail in what regard the figures would be different (see last sentence).	Accepted: Text is rewritten. We will look at it further in next round to make sure that we provide a balanced picture. This FAQ no gas changed to FAQ 12.2

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18824	12					Clarify where the categories in this table are coming from. Has this come out of your synthesis or are these categories suggested in Blanco (2011)?	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18825	12					Row "Urban Growth Boundaries": Please have a look for further examples, as this is just one from one US state. The Flächennutzungspläne (land development plans) in Germany are another example being practices since decades.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18826	12					If also the last 2 columns are based on the publications cited in column 2 then make this clear by e.g. having the references in an extra column at the very end (or to save space have footnotes in such a column and the references below the table).	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18841	12					Make this more concise, e.g. by having a bulleted list of the type of plans and have city names and references just as running text in brackets within the respective bullet points. Delete the names of the plans as they can be found via the references and do not add any relevant information.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18842	12					Synthesize with other information in the chapter.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18843	12					Synthesize with other information in the chapter.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18844	12					Synthesize with other information in the chapter.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18845	12					Also this table, though covering more information, should be synthesized with other information in the chapter.	Noted: The table in deleted in rewriting of this section and therefore the comment is no more relevant.
18796	12					If possible mark the (estimated) share of urban for each of the sectors. Make clear that the right is enlargement of the indursty slice on the left (if I am not mistaken). See examples for that in IPCC SRREN Chapter 1 Figure 1.10. (As the graphic designer can do this in the end, for now it is sufficient for you to just somehow indicate the relationship.)	Noted: The figure is deleted.
18809	12					Does data exists to produce another FIGURE that compares ranges of construction emissions (e.g. of buildings or transport infrastructure) with operataions' emissions?	Noted: The figure is deleted. The section is rewritten
18838	12					The figure should be removed as it is giving absolute numbers for the mitigation potential of a random number of cities and no information can be drawn from it. The 36% discussed in the text are meaningful. Maybe giving percentages in the figure could be a solution.	Taken into account: Removed

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18849	12					The figure is unclear. The arrows in the lower part I do not understand and they should be labelled. The top part should be explained and the border conditions should be specified (the figure is btw not referenced in the text), e.g. that this while hte green path is about aggregated effects the red part is about marginal effects. Though there should be more figures in this chapter I suggest to delete this one and rather explain what you want to convey in the text as the figure seems to be too reductionist (at least as it is now).	Taken into account: Figure removed in section rewriting
18801	12					Given the logic "small country" -> "can produce less"/"more secialized" -> "imports more" the figures confirm the common sense. Are they relevant for anything that you want to say here? If this should stay, please also have the figure with linear scale as this will improve accessibility to a wider audience.	Accepted. Removed figure.
17286	12		14		16	here it's better specify what kind of difficulties you find ,as for example life cycle analysis applications	Taken into account: The text is deleted in the revision.
17287	12		41		42	it's occur some citations of accreditated studies and assessments already done.	Taken into account: The text is deleted in the revision.
5995	12					There is no common framework or concept visible for the whole chapter. Definitions and terms are used in a variety of different meanings, often definitions are missing. There is few reference to theoretical frameworks in this chapter, and those reference that are made are inconsistent. Overall, this leads to a missing logical structure of the whole chapter.	Taken into account: The chapter has been reframed and re-written as SOD as much as possible. Changing chapter sections completely is not an easy process given it is approved by IPCC plenary too.
5996	12					Many statements are far too general although urban trends differ highly between different world regions and types of urbanity. There is no structure for a reasonable analysis of these differences that would allow an actual comparison and assessment of climate change mitigation strategies and opportunities. Why didn't you classify a number of different classical types of urban areas or trends? Overall, this leads to an unequal distribution of examples which obviously is mainly dependet on the authors' personal or professional context. This is insufficient for a global report on climate change.	Accepted: The chapter has been reframed and rewritten.
6027	12					Regarding chapter whole 12: There is no common framework or concept visible for the whole chapter. Definitions and terms are used in a variety of different meanings, often definitions are missing. There is few reference to theoretical frameworks in this chapter, and those reference that are made are inconsistent. Overall, this leads to a missing logical structure of the whole chapter.	Accepted: The chapter has been reframed and rewritten.
6028	12					Regarding chapter whole 12: There is no common framework or concept visible for the whole chapter. Definitions and terms are used in a variety of different meanings, often definitions are missing. There is few reference to theoretical frameworks in this chapter, and those reference that are made are inconsistent. Overall, this leads to a missing logical structure of the whole chapter.	Accepted: The chapter has been reframed and rewritten.
5974	12					You do not mention urban governance and institutions! You do not show the linkages between the three aspects of the section title. Delete this and refer to chapter 12.6!	Taken into account: This whole section is rewritten

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5178	12					The Section fails to inform that there exists a resolution by the IPCC to establish a general International Standard for Determining Greenhouse Gas Emissions for Cities (IPCC, 2010) Reference: IPCC – Intergovernmental Panel on Climate Change (2010). International Standard for Determining Greenhouse Gas Emissions for Cities. Version 2.1, June 2010. Available at: http://www.unep.org/urban_environment/PDFs/InternationalStd-GHG.pdf.	Accepted: We have rewritten chapter and we are not sure about its need to mention.. But we will consider again this is next round.
16651	12					Section needs references	Accepted: But who section is rewritten and this comment is no more relevant
5723	12					The Chapter authors are to be commended for their recognition of the literature on the advantages of polycentricity over monocentricity of urban form. Note the suggestion by Peter Gordon in “Thinking About Economic Growth: Cities, Networks, Creativity and Supply Chains for Ideas” (2012 – Annals of Regional Science) that “dispersal” has proceeded beyond “polycentricity” and still seems likely to be associated with gains in productivity. William Wheaton (2002) “Commuting, Ricardian Rent, and Housing Price Appreciation in Cities with Dispersed Employment and Mixed Land Use” finds a trend to steady flattening of urban land rent curves as land use becomes increasingly mixed. One of the advantages of this is, that “price” represents a less and less frequently encountered barrier to households locating closer to any particular job or urban amenity. This is in contrast to the very severe price rationing and locational “pricing out” effect in heavily-planned cities.	Accepted: The who chapter is rewrittent and the density argument have been made more balanced.
18792	12					The tele-working part is not relevant for this argumentation and should be moved.	Noted: the text to which comment was made was deleted in subsequent rewriting and no more relevant
5724	12					The Chapter authors are to be commended for this observation. Neutral networks also have the advantage that the direction of travel in which roads are utilized during each distinct travel demand period, is less distinctly “one way”. This also reduces the likelihood of congestion. A significant element of the "iron law of urban dispersion" is that when the increased traffic burden consequent on increased demand (whether “planned” or natural) results in once free-flowing roads becoming "stop-start", the congestion delay that results is exponential, not linear. In fact, the number of cars transiting the road network over the crucial time periods is reduced even as the numbers of vehicles attempting to travel has increased. And “spill-back” slows the rate of travel over more and more of the network. Once a given node of the urban area is effectively accessible by fewer vehicles at the crucial times of day (ironically because more vehicles are trying to get there) the incentive for urban activity to relocate elsewhere also increases exponentially. “Mode shift” does not compensate for this because traffic is “induced” just as effectively by mode shift as by capacity expansion (Anthony Downs’ law of triple convergence). In a neutral network with dispersed patterns of travel, any road capacity expansion is far more effective because the percentage increase in capacity is greater when adding a lane to a single existing one, or to an existing pair or trio, than in the fruitless adding of a lane or two to a radial highway that already has 8, 10, or more lanes. It is radial highway planning that has “failed”, not “automobility” per se. □	The text to which comment was made was deleted in subsequent rewriting and no more relevant. Connectivity and accessibility are discussed in 12.4. Detailed discussion of transportation planning is appropriate for the transport chapter.

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18793	12					Not one reference.	Accepted: the text to which comment was made was deleted in subsequent rewriting and no more relevant but this has been addressed in in section 12.4.5 in SOD
18795	12					Not one reference.	Noted: the text to which comment was made was deleted in subsequent rewriting and no more relevant
16653	12					This section is too brief. See previous comment about land use and built environment policies in different parts of the world. “Transit-oriented development” is a US-centric idea.	Noted: the text to which comment was made was deleted in subsequent rewriting and no more relevant
2514	12					This section was the hardest to understand as it is so fragmented and repetitive - this could be cut extensively - the focus on carbon is missing	Taken into account: Noted: The whole section is rewritten.
16654	12					First paragraph (like other meta-commentary on the chapter) could be omitted.	Taken into account: Done in 12.3 in SOD
5179	12					In Section 12.4.3 there are 12 sectoral mitigation opportunities listed and presented in Table 12,1, The meaning of the intensity of colours is not explained.	Taken into account: Explanation of the color code will be added in table which now sit in 12.4.8
18954	12					Section 12.4 should focus on system aspects and should not cover what is already contained in other sections or all mitigation options are listed in this section for the first time and referenced from other sections. This will also allow other sections (and possibly chapters) to incorporate numbers with a systems perspective. For section 12.4.1 it would be good to give estimates, possibly develop rough scenarios (or back of the envelope calculations) giving estimates for total emissions of the to-be-constructed building stock. This has the potential to be one of the key messages of the chapter. In case space is an issue then we suggest shortening the conceptual part of this section.	Accepted: These issues are serously taken into acount while rewriting and reframing of chapter in SOD. The revised chapter had addressed these comments.
16655	12					Describe the different kinds of infrastructure. The language about the systemic view and about socio-metabolic systems (p 15 line 44 to p 6 line 11) is not concrete or specific and could be omitted.	Taken into account: the text to which comment was made was deleted in subsequent rewriting and no more relevant. We have expanded disucssions on infrastructure substantially in revised chapter in 12.3 and 12.4
3654	12					What is the consequence of these linkages for climate change mitigation and adaptation policies and measures? Please elaborate or present a link to a subsequent chapter.	Accepted: the text to which comment was made was deleted in subsequent rewriting but we have improved these linkages aspects in entire chapter.
11320	12					Worth noting here that for the moment, there is no agreement on what an 'urban system' is. Ie. there are many definitions, models, and descriptions all of which are context specific (topical in other words) but nothing robust enough to generate consensus on a multi-topical definition.	Noted: The text to which comment was made was deleted in subsequent rewriting and no more relevant

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16657	12					The authors are peddling a term called “urban metabolism” and make several statements about the sort of research that is better or worse to do. This takes up space. Better to omit all mention of this and simply cite and explain the results of the best studies, and cite and describe the problems with other studies.	Noted: The text to which comment was made was deleted in subsequent rewriting and no more relevant. However, The restructured chapter drastically shortens meta-comments.
16660	12					12.4.3.1 – repetition of material appearing here with material appearing in an earlier section. Consolidate. (Earlier in the chapter, should distinguish the various pathways of GHG production and how they relate to settlement patterns, built environment policies, etc (e.g., VMT, home energy consumption, embodied GHGs in goods).	Noted: The text to which comment was made was deleted in subsequent rewriting and no more relevant.
18814	12					Make Ch.11 aware that you are having this section as there might be overlaps	Accepted
18818	12					Link to Ch.10	Accepted: Cross referenced, see SOD 12.4.10
18820	12					Link to Ch.11 Section 11.3.2 and - I suggest - only cover aspects particular to urban here	Accepted: Coss referencing with other chapters will be in next round looking at their SOD
16661	12					12.4.3.2 et seq. – More repetition, as above.	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18570	12					2. Improve reviewing aspect: There are whole paragraphs that contain bold claims without a single reference (e.g. 12.4.3.7. 2nd and 3rd paragraph).	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18804	12					Link to Ch.9 and reduce length	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18806	12					add link to emissions of concrete over their lifetime (Luisa Cabeza of Ch.9 has sth. on that - will probably be in SOD Ch.9 - so you can link that)	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18807	12					Link to Ch.8, clarify which chapter goes into detail and which references and keeps it short	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18811	12					Link to Ch.7, possible reduce content	Taken into account in revised texts in 12.4.9
2520	12					This is much better presented than 12.4	Noted

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5180	12					In Table 12.2 Section 15 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. 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). 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. Therefore the sentence “A reduction in motorized transport can be achieved without limiting mobility and accessibility” (p. 30) does not reflect reality. References: 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. 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. 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. 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/. Marshall, S. and D. Banister, (Eds.): Land Use and Transport. European Research towards Integrated Policies. London: Elsevier, Wegener, M. (2004): Oveview of land-use transport models. In: Hensher, D.A., Button, K.J. (Hg.): Transpor	Noted: But generally such literature linking whole urban area GHG is very limited, these literatures are mostly on land-use and transportation.
18821	12					Link to Chapters 8, 9, 11	Accepted: Since we rewrote chapter, we will do such cross-referencing in next round after we see SOD of other chapters where ever applicable.
18940	12					Section 12.5 stays too much on the conceptual level. More reference are needed and results, best quantified.	Taken into account: The whole section is re-written and is far refined.

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16662	12					12.5.1. There are in this section more strong claims about the efficacy of “integrated spatial planning.” Selling this concept is a distraction from the chapter and could be omitted or at least drastically shortened. The concept of integrated planning is as old as the hills, and the main concern is to give specific examples of policies that hold promise, not to wax poetic about the virtues of integration. The specific studies that ARE cited here are repetitive of main points made earlier and those articles should be integrated into those sections. The section comes across as advocating rather than a subjective account.	Accepted: The section is rewritten but will be further looked to make it balanced.
2522	12					This Section on Governance is important - it can again be shortened - with a stronger ending that leads into Section 12.7 - that much of the action is taking place at the city and city regional levels	Taken into account: Rewritten, very much shortened, and streamlined
16664	12					Sections 12.6 and 12.7 – I don’t know whether these sections assist in what I understand to be the main purpose of the chapter.	Noted: Both sections 12.6 and 12.7 are reframed and rewritten
18829	12					This first paragraphs of this section are not specific to Ch.12 and should be covered in 15.2.4 and referenced from here. The lower part of this section should become "12.6.1.1 NGOs" and the current 12.6.1.1 should become 12.6.1.2	Taken into account: As suggested, the first two paragraphs of this section have been deleted. The next paragraph has been moved to a new section 12.6.1.1 "NGOs", and the subsequent section has been renumbered 12.6.1.2
16343	12					An example of a civil society approach to implementing sustainable development paths based on limit to resources and equity is "one planet living" One Planet Communities (Desai, 2009) http://www.amazon.co.uk/One-Planet-Communities-Sustainable-Living/dp/0470715464/ref=ntt_at_ep_dpi_1 http://www.bioregional.com/oneplanetliving/what-is-one-planet-living/	Noted: This is a nice example but does not seem really "civil society" driven, rather more driven by architects and planners, and perhaps belongs more appropriately in section 12.6.3.1
18830	12					In my view the informal sector should not be discssed here but in other sections of the report (e.g. informal sector in waste in Ch.10)	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.It would not be fair to discuss civil society organizations in 12.6.1 and completely omit discussion of the often influential informal sector associations such as the worker's associations mentioned here
18831	12					Link to Ch.15	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18832	12					First paragraph is too much US focussed; in general I would expect that there is more literature that could be synthesized here.	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
18833	12					Rather than focussing on institutions and reduction plans (with no information whether these will be met) the focus should be on what the institutions have achieved and what actions/policies can be derived from that.	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18836	12					This section has overlaps with the first paragraph of 12.7.1	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
5527	12					One thing that is critical here for developing countries is appropriate infrastructure development. Here my knowledge base centers on waste management and options for decentralized versus centralized systems merit discussion	Noted: This section is rewritten completely.
2533	12					This Section again needs to be rethought as it seems to be rather bits and pieces with no common themes - the linkages with the previous sections is missing - there is no reflection and it is again very much based on the experience in selected developed cities - Tokyo, London, LA and Chicago - needs some balancing of examples	Accepted: The section is rewritten.
3656	12					Eventually reduce the number of examples to save space.	Noted: The section is rewritten

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5181	12					In Section 12.7 urban climate change mitigation plans are discussed. The section presents an impressive number of climate action plans with ambitious GHG reduction targets all over the world and a great variety of approaches and strategies and their linkage with adaptation, other sectoral benefits and tradeoffs. However, in no case the actual experience with these plans and strategies in terms of actually achieved GHG reductions is presented. This is again disappointing because despite the lack of a generally accepted measure of urban GHG emissions, there exists a substantial literature on recent trends in GHG emissions of cities (Economist Intelligence Unit, 2009; European Environment Agency, 2006, p. 30; Kamal-Chaoui and Robert, 2009, p. 45; Brown et al., 2008). In developed countries the overall trend is that cities in general have been able to reduce the GHG emissions, but few of them enough to achieve their reduction targets. In North America many cities have continued to increase their GHG emissions (Brown et al. 2008, p.20). Without massive subsidies, retrofitting of buildings is sluggish, and more energy-efficient cars lead to the rebound effect of buying larger cars. The conclusion is that increased efforts will be necessary if the targets are to be achieved (GVA Grimley Ltd., 2011). In emerging or developing countries the rapid increase of middle-class and higher-income households who want to adopt the lifestyles of developed countries leads to fast growth in motorisation, construction and related GHG emissions. The worldwide prospects to achieve the GHG reduction targets of cities are therefore rather poor. This realistic view should be reflected in the Assessment Report. References Brown M., F. Southworth, and A. Sarzynski (2008). Shrinking the Carbon Footprint of Metropolitan America. Brookings Institution, Washington DC. Available at: http://www.brookings.edu/research/reports/2008/05/carbon-footprint-sarzynski. Economist Intelligence Unit (2009). European Green City Index. London: Siemens AG. Available at: http://www.siemens.com/entry/cc/features/urbanization_development/all/en/pdf/ report_en.pdf. European Environment Agency (2006). Urban Sprawl in Europe: The Ignored Challenge. Copenhagen: EEA. Available at: http://www.eea.europa.eu/publications/eea_report_2006_ 10. GVA Grimley Ltd. (2011). Emission Impossible: Can Cities Deliver on their Carbon Reduction Targets? London: GVA. Available at: http://www.gva.co.uk/WorkArea/DownloadAsset.aspx? id=4294970300. Kamal-Chaoui, L. and A. Robert (eds.) (2009). Competitive Cities and Climate Change, OECD Regional Development Working Papers N° 2. Paris: OECD publishing. Available at: http://www.oecd.org/gov/regionaldevelopment/44232251.pdf.	Taken into account: 12.7.4 in SOD has addressed implentation issues and the plan implemnetation has been slow. The section 12.7 has been completely rewritten and is more balanced.
18941	12					This section is far too detailed and lacks any synthesis. It also does not link to previous sections and does not show how the different aspects detailed in the previous sections are (best) combined. One first step forward would be to have a matrix that details mitigation options (or components of a mitigation strategy) on one axis and example projects on the other axis, ideally supplemented by numbers of reductions achieved. Alternatively, different options could be listed including summarized experiences. – In general, the focus of the chapter should be detailing experiences rather than project descriptions.	Taken into account: The section is completely rewritten.
18950	12					Section 12.7 needs to reference previous sections.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18835	12					The first paragraph overlaps with Section 12.6.4	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
2549	12					Needs better geographical balance	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant. In rewritten text, 12.7.1 is much balanced.
18949	12					The difference between Sections 12.7.2 and 12.7.3 does not become clear from the content. 12.7.2 should be structured so that it synthesizes previous experiences in such a manner that information concerning the respective contribution to mitigation can be presented.	Noted: The section to which comment was made was rewritten in subsequent rewriting and reframing and no more relevant.
2550	12					Fuel decarbonization not cited here (biofuels for transport, solar systems etc)	Noted: The section to which comment was made was rewritten in subsequent rewriting and reframing and no more relevant. See table 12.12 in SOD which address renewable energy and biofuels
18004	12					The use of the term trade-off (to describe adverse side-effects) is inconsistent with the agreements made in Wellington (p.35) whereby the term 'trade-off' might convey the impression "that a balancing of positive and negative side-effects of mitigation measures is being carried out... Such decision-making aspects" should be left to the policy chapters. Please liaise with the other chapters during the cross-cutting meeting to ensure consistent usage of the relevant terms across chapters. Since the term also shows up in the first-level heading, a potential change to achieve consistency across chapters needs to be discussed with the TSU.	Noted: Needs to be looked into once again in the next round in view of current SOD text here
18848	12					Link to Ch.4	Accepted: All cross referencing with other chapters will be in next round looking at SOD texts
18851	12					Link to Ch.9 and WG II - initiate a process to decide where the main location of WG III AR5 will be to discuss UHI.	Accepted: All cross referencing with other chapters will be in next round looking at SOD texts
15753	12					Knowledge gaps should be identified and detailed out further as it would lead to better understanding of the current status of efforts taken for climate change. This could be done based on variety of geographic regions.	Taken into account: The text is rewritten
3350	12					crossreference to 8.4.2.2; note: 8.4.2.2 is likely to be further shortened and will crossreference to 12.2.3.1.	Noted: The text to which comment was made was deleted in subsequent rewriting and reframing and no more relevant.
3351	12					Can examples be given for this? How relevant of a phenomenon is this? What are the implications in terms of GHG emissions?	Noted: The comments is not clear but texts in this subsection are deleted and reframed. The comments if no more relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
3352	12					policnentricity, economic activity, mixed use and telecommuting are all put into a singe paragraph. This is highly confusing. These are distinct features.	Noted: This seems to be comment on section 12.3.2.3.. The text is deleted and the comment is not relevant.
3353	12					TOD --> see also 8.10	Noted: The text is deleted and comment not valid.. But TOD is discussed in more refined way at 12.5.6 in SOD
3355	12					This section has considerable overlap with 12.2.3.1. Possibility for a merger.	noted: must be 12.3.2.1 .. Not 12.2.3.1.. But both sections are rewritten.. And comment is not relevant.
3356	12					Delete, refer to 12.3, or the other way around	Taken into account:The chapter is reframed and rewritten and such redundencies are taken care
3358	12					Some redundancy with previous sections. Can be shortenend.	Taken into account: The texts are rewritten in prevoius sections.
17285	12		4		5	Urban areas generate more than 90% of global economy: I think it's useful specify more how it's possible to confirm that important issue,what are the references and indicators,because it's not convincing enough	Taken into account: The text is deleted in the revision.
17303	12	0				The topics of (urban) human settlements, cities and local/regional governments in Chapters 12 and 15.8 need a clearer overall structure. It would be useful to make a clear distinction between human settlements and urban agglomerations on one side, regarding their physical characteristics, and local governments on the other side, regarding their political characteristics and their role within a multi-level setting.	Taken into account: The chapter is reframed and these distinctions (humand settlemtn and urban area) are clearer now. The role of multilevel governance is already in the text but, in revised chapter-framing and the subsequent write up, this has come out more pronouncely. The rural areas are also given consideration in the SOD.
17305	12	0				The experiences of local governments and their networks as provided in chapter 12.6.2 and 12.7. nearly completely fails to capture the experiences of local governments in Europe, and networks such as theh Climate Alliance (www.climatealliance.eu) who started to commit to mitigation targets and actions already in 1990.	Taken into account: the section this comment refers to got deleted in the rewrite of the chapter for the SOD - the comment is no longer applicable. Hoever, the essence of European experience is implicitly reflected in 12.7.1, 12.6.1 and 12.6.2
17325	12	0				With a view to cities, there is a study on the gender dimension of local climate policy: Alber, Gotelind: "Gender, Cities and Climate Change", Thematic report prepared for the Global Report on Human Settlements 2011, available at http://www.unhabitat.org/downloads/docs/GRHS2011/GRHS2011ThematicStudyGender.pdf	Noted: but less relevant
16643	12	0				I appreciate the authors' efforts and recognize the challenge of writing a far-reaching chapter. My comments are critical but intended to be helpful.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16644	12	0				There is language throughout the chapter making somewhat imprecise claims about the causality of urban form and settlements upon energy use. Phrases like "the impact of urbanization" do not acknowledge the fact that increasing productivity and urbanization are inextricable and that urbanization by itself is likely more mitgative of climate change than causing of it, when controlling for economic growth. Economic growth is the more properly understood cause of GHGs. The fact that urban areas contribute a large and growing share of GHGs does not mean that they are a cause of GHGs. I would like to see a much more clearly organized set of concepts and to have those laid out from the beginning. List the relevant different aspects of urbanization and of urban settlement patterns (e.g., compactness of urban form, how the pace of urbanization affects GHGs, water-energy-carbon linkages). Then discuss the possible mitigation policies that can affect urban settlement patterns and infrastructure (e.g., urban containment policies, parking policies, transportation investment plans, organization and regulation of water and energy infrastructure). List and describe the accounting issues, but do so briefly and secondary to this main purpose (e.g., LCA, units of analysis, production versus consumption side allocation). It is difficult to understand the purpose of many of the sections of the report, such as page 9, section 12.2.3.1, “rate, scale, and location”. The chapter seems like a loosely organized set of comments than a focused treatment of aspects of urbanization that affect GHGs differentially depending on selected explained characteristics. It also seems like an academic literature review discussing methods and pointing out uncertainty, which is not the primary purpose of this chapter—that purpose is to summarize the state of knowledge. I stopped making detailed comments on page 25, but note a great deal of repetition of key concepts from section to section that could be collected in one place; a lack of a clear organization; the need to cite the basic evidence up front rather than burying it from section to section; and the need to be careful about making strong claims about how settlement patterns and infrastructure “cause” GHGs.	Noted: The chapter has gone through massive change from FOD, its is reframed and rewritten and we hope that it is clearer now.
18023	12	0				The terms compact, sprawl, unplanned, settlements are not clearly defined. They can have different meaning in different countries. For example, a settlement that is considered low density in Europe would be considered as compact in the USA. Some quantification would be useful such as a density ranges and settlement sizes to have a global definition of compactness and settlement types.	Taken into account: The use of the terms have been paid attention and streamlined as much as possible in restructured SOD
18024	12	0				A lot of the analysis is based on general and selective comparisons such as one country has higher densities and lower GHG emissions than another, therefore higher density causes lower GHG emissions etc. However, there are many other reasons for differences between the energy use and efficiency of countries such as climate, cultural, building standards, and fuel costs relative to incomes. Broad comparisons between cities are not sufficient to show causation.	Accepted: The chapter is reframred and rewritten, we have paid attentions to these issues as much as we could. See 12.4.2 in SOD and revised texts of 12.4
18025	12	0				The text tends to focus on the density and compactness of cities even though it acknowledges that a large proportion of the urban population live in towns and smaller settlements and broader an more balanced consideration of settlement types would be helpful.	Accepted: We hope revised text is more balanced.
18026	12	0				The text is generally written from the perspective of promoting compaction. For example 'compact or compactness' is mentioned 26 times usually in a favourable light. Alternatives to compaction are described as 'unplanned' or 'sprawl' usually in an unfavourable context. It would be useful to have some unbiased assessment of the potential for planned towns and settlements. As people become wealthier many will want more space and a greener living environment rather than live in large dense cities.	Noted: We have tried to be balanced in revised texts of the chapter.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18027	12	0				Words such as 'strong' or 'significant' are often used without quantification	Noted
18033	12	0				My general conclusion from the chapter is that spatial planning is a very slow way of impacting on climate mitigation in developed countries but it is very important in developing countries where the rate of urbanisation is much higher. In developed countries the infrastructure investment, vehicle and building technologies and demand management measures can have a bigger impact than spatial planning. The appropriate mix of investment, technologies and demand management is likely to vary according to settlement size and densities. The primarily role of planners is to create successful communities with a good quality of life. The mix of measures to mitigate climate change should be chosen to be appropriate to the planning of these communities rather than vice versa.	Noted: We believe that the tone in the revised chapter is that the opportunities are different in different type of settlements including existing and new settlemnts
15747	12	0				The chapter addresses to the complexities of emission measurements in terms of scale. It analyses various asects of settlement planning and management concerning carbon emission. There is lot of repetition in sections concerning urban form, compact city, transport, mitigation possibilities, etc. Some concepts like compact city, mixed use pattern should be discussed differently in the context of developed and developing cities. Cities in developing countries have different DNA. Cities in developing countries have much higher densities and extremely poor infrastructural base than their counterpart in the developed countries. Application of compact city concept requires good infrastructural support. The chapter 12 needs to address to this differenciation and propose the mitigation policies accordingly. Sustainable neighbourhood is considered to be the unit of low carbon city concept but the chapter 12 does not discuss the concept. Chapter 12 has lot of repetition. The removal of repetition can help reduce the length of chapter 12. Urban context in the developing countries requires urgent attention. The chapter 12 gives more emphasis to cities in developed world.	Noted: We have rewritten entire text with these issues into consideration. We hope we are more balanced and have cut many redundencies in revised text.
13242	12	0				Montgomery 2008 is quoted to put emphasize on the complexity of international comparison (varying boundaries for cities), which is right and useful to say. However it is not used later on : from the next sentence on, this remark has no effect on the discourse. We suggest to suppress that reference or to give clear examples on how this can affect the subsequent discussion.	Noted: the section this comment refers to got deleted in the rewrite of the chapter for the SOD - the comment is no longer applicable.
18656	12	0				A general description and reasoning about urbanisation	Noted
18657	12	0				Very little/nothing on infrastructures (and what role different approaches could play)	Accepted: In SOD discussion on infrastructure is scaled up.see 12.4
18658	12	0				“Strong political leadership is key”, true but what is the implication? Very little on how different parts can/will/must interact	Noted: the section this comment refers to got deleted in the rewrite of the chapter for the SOD - the comment is no longer applicable.
11319	12	0				The chapter emphasizes issues but should provide more solutions. It is suggested to move up the point that there are neither agreed common methodologies for urban GHG emissions, nor an agreed framework for estimating emissions for cities, from section 12.2.3.2 to the beginning of the chapter; this basic point sets the stage for the rest of the chapter. Also notably, the linkage between adaptation and mitigation is not made anywhere in this chapter. There is only one use of this concept, in relation to a case study in Dhaka. A bit of an oversight considering adaptation is a tool often used to integrate mitigation programming.	Noted: the section this comment refers to got deleted in the rewrite of the chapter for the SOD - the comment is no longer applicable. However, there are adptation links mentioned in many places, please see 12.8 section.
10400	12	0				The number of the tables and figures in this chapter should be reordered.	Taken into account: Re-ordered
18565	12	0				Having been in the writing team of the GEA urbanization chapter I am very well aware how difficult it is to come up with a literature based assessment for the mitigation potential of human settlements given the scattered and partly incommensurable evidence. Nonetheless there is a lot of room for improvement here. I have three main comments with some specifications each.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18566	12	0				1. The structure of the chapter is an enigma. Cut subheadings to one third (it does not make sense to have subheadings followed by texts of just one sentence or one paragraph).	Accepted: The chapter is reframed and rewritten.While many subheadings are yet there, they are better presented.
18567	12	0				1. The structure of the chapter is an enigma. Delete redundancies within the chapter. Many topics appear more than once and seemingly unconnected. This is very confusing to read. Examples are: climate change mitigation, urban form, buildings, density, governance and institutions.	Accepted: The chaper is reframed and rewriten. Streamlining, connectedness and redundecncies are paid attention.
18568	12	0				1. The structure of the chapter is an enigma. Develop a clear and comprehensible structure and make sure this is reflected in the subheadings.	Accepted: The chaper is reframed and rewriten.
18569	12	0				2. Improve reviewing aspect: Redefine the scope of the chapter vis a vis the other chapters (especially chapters 8, 9, 14, 15, and 16) in WGIII. As it is now the claims expressed in the very first sentence of the introduction are continuously frustrated throughout the chapter. Also rural settlements are almost entirely neglected, so the title “human settlements” seems unjustified.	Accepted: The chaper is reframed and rewriten. Rural issues are also covered- See executive summary, 12.2.1, 12.3.1, 12.3.3 and others.
18571	12	0				2. Improve reviewing aspect: Other references seem arbitrarily chosen, while important references are missing. Cross-checking with recent reviews and with assessment reports such as e.g. the Global Energy Assessment or the 2011 WBGU flagship report might help finding the relevant references.	Accepted: Reference is more balanced now
18572	12	0				2. Improve reviewing aspect: There are whole paragraphs that contain bold claims without a single reference (e.g. 12.4.3.7. 2nd and 3rd paragraph).	Noted: The section this comment refers to got deleted in the rewrite of the chapter for the SOD - the comment is no longer applicable.
18573	12	0				3. Include an assessment: Provide a quantitative assessment (a synopsis including a hierarchy), of mitigation potentials of human settlements in terms of (at least) technical potentials and costs. What would really make a difference and how much would it cost? Ideally feasibility of implementation is also included.	Accepted
18574	12	0				3. Include an assessment: To this end it might be useful or even necessary to distinguish different types of settlements or world regions.	Accepted
18575	12	0				3. Include an assessment: Ideally also synergies and possible trade-offs between mitigation and adaptation are addressed (possibly in cooperation with WGII).	Noted
18460	12	0				This draft is professional, interesting, and sometimes illuminating. The main issue is that, on reading through the draft, it often appears that the focus is on summarizing in considerable detail what is known about urban dynamics, well beyond clear connections with climate change mitigation. The best way to shorten the chapter for this IPCC assessment and add to its focus would probably be to review the text paragraph by paragraph, identifying sections where the connection with mitigation is either unclear or does not require so much information about how cities work – as contrasted with implications for GHG emissions and mitigation. But I would suggest to the authors that they save this draft as a starting point for another publication that is aimed at an urban management audience as well as a climate change response audience. Some of the material that won’t make it into this WG III chapter because of space limitations is too good to waste – and might even be expanded somewhat in a subsequent book or monograph.	Noted: The SOD is reframed and rewritten.
4215	12	0				These comments relative to infrastructure are provided here with recognition of their pertinence to chapters 7, 8, 9, and 10 which treat subsets of infrastructure.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
4216	12	0				Infrastructure (buildings, communications, energy, industrial facilities, transportation, waste, water and associated natural features) consists of constructed facilities that shelter and support most human activities. Infrastructure has a vital role in reduction of greenhouse gas emissions, which is the subject of WG III, and in measures to help society adapt economically, environmentally and socially to climate change, which is the subject of the contribution of WGII. The authors of AR5 will be challenged to treat infrastructure appropriately in both contributions without undue redundancy.	Taken into account: Infrastructure related discussions are scaled up substantially in SOD, please see 12.3.2, 12.3.4, 12.4 and others
4217	12	0				Infrastructure systems affect human settlements for millennia (consider the ancient Roman road alignments still in service) and infrastructure elements typically have service lives of 50 to 100 years. This has benefits for mitigation of climate change, because of the enduring utility of the embodied energies, but challenges from:	Taken into account: Infrastructure related discussions are scaled up substantially in SOD, please see 12.3.2, 12.3.4, 12.4 and others
4218	12	0				1. The “lock in” effect of infrastructure systems constraining human settlements because of the economic, environmental and social costs of changing existing infrastructure.	Taken into account: Infrastructure related discussions are scaled up substantially in SOD, please see 12.3.2, 12.3.4, 12.4 and others
4219	12	0				2. The high costs of changing existing infrastructure systems to adapt to more extreme environments (resulting from climate change effects) that would render them dysfunctional or damaged, and/or the potentially higher costs to society of not adapting the infrastructure systems.	Rejected: Not directly relevant
4220	12	0				Alex Gordon, while president of the Royal Institute of British Architects in 1972, addressed these issues by saying that buildings should exhibit: low cost, loose fit, and low energy (http://www.guardian.co.uk/news/1999/jul/29/guardianobituaries3). These qualities pertain to infrastructure systems in general. Infrastructure should be economically viable, adaptable to conditions that were not or could not be anticipated when they were designed and constructed, and produce small green house gas emissions in construction and use.	Noted: Added discussion of embodied emissions in infrastructure.
4221	12	0				The chapter and report give substantial and appropriate attention to the knowledge bases in physical and social sciences and even states (e.g. 7.5.3) that they are adequate for mitigation of climate change through reduction of greenhouse gas emissions. However, the path from knowledge to successful implementation of greenhouse gas mitigating infrastructure must be addressed and made feasible.	Noted: Added discusssion on policies and implementation issues

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
4222	12	0				The path is: knowledge > standards > regulations & practices > enforcement, approvals & implementation > infrastructure systems. In democracies, all stakeholders have authoritative voices in: • the development of standards (a systems integration process in which the direct and indirect effects of new knowledge are considered) (see www.standards.gov for a description of U.S. processes), • the adoption of the standards in the regulations of local, state, and national governments and in international treaties, • the approvals of infrastructure projects and urban developments subject to the authorities having jurisdiction and the preferences of the publics served and affected. Stakeholders include: • owners, public or private • financers and insurers • regulators • users (such as residents and customers) • neighbors (affected but not directly served) • building professionals, contractors and labor • materials and equipment suppliers • environmental organizations	Noted: added discussion of policies and stakeholders
4223	12	0				Development of standards, which implement knowledge for mitigation, requires the informed consent of the stakeholders. Studies and educational efforts defining the economic, environmental and social impacts are required. These require time and resources to conduct the needed impact studies.	Noted
4224	12	0				Approvals of infrastructure projects and urban developments, which support mitigation of climate change, require the informed consent of stakeholders. These also require studies and educational efforts defining the economic, environmental and social impacts.	Noted
4225	12	0				In the United States and other democracies, focused attention to improving the efficiency of the regulatory processes is required to reduce the time (often a decade or more) for approvals of urban developments or infrastructure that will reduce greenhouse gas emissions. According to Moving Forward: In-Depth Findings and Recommendations from the Consultative Council (2011), National Institute of Building Sciences, p11 http://nibs.org/client/assets/files/nibs/2011_MovingForward.pdf	Noted
4226	12	0				Federal, state and local governments have established a variety of regulations to promote public health, safety and welfare and to protect the environment. Most of these are consistent in intent with sustainability, but many are prescriptive in nature and unsupportive of sustainability in specific situations. Many different regulatory agencies, each with its own procedures, have jurisdiction over different aspects of building and infrastructure projects.	Noted: The impottance of multilevel governance is described in 12.6.1
4227	12	0				Regulatory streamlining is a process, involving project proponents and all cognizant regulatory jurisdictions and stakeholders, to give simultaneous and coordinated attention to meeting the intents (performance requirements) of all regulatory requirements. Long, expensive delays often are imposed on building and infrastructure projects before approvals can be obtained from all regulators. Innovations for sustainability can exacerbate such delays. Modern information technologies, such as BIM, permit efficient sharing of pertinent information and can facilitate streamlining.	Noted
4228	12	0				Additional information on regulatory streamlining is available from www.natlpartnerstreamline.org/ . U.S. Executive Order 13274 of September 18, 2002, Environmental Stewardship and Transportation Infrastructure Project Reviews provides federal authority for streamlining.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18827	12	0				The linkage between planning tools (Table 12.2) and policies (e.g. Table 12.7) needs to be made, i.e. there should be e.g. a table that details which policies support which planning tools.	Nored: The tables refered got deleted in the rewrite of the chapter for the SOD - the comment is no longer applicable. However, we have drastically changed both planning discussions in 12.5 and mitigation plans in 12.7.
18933	12	0				General Comment: The TSU is concerned about your chapter's current state and thinks that significant improvements are needed. The TSU is thus submitting a range of comments that may guide the author team in their work on the chapter, the core comments are labelled "Main Comment".	Noted
18934	12	0				Main Comment 1: The chapter fails to answer core questions. Further, what has been done so far does not provide a structure to easily do so in the future. At their ZOD feedback the Co-Chairs asked you to answer the following questions: (a) What are current global emissions from urban areas and infrastructure? (b) What emissions are to be expected given current trends? What is the expected extend of the future mitigation challenge? (c) What robust mitigation strategies exist, which are robust – including quantitative information or at least indicators on the order of magnitude? (d) Make emission path dependencies of (to be) built infrastructure more explicit This has not been done so far. Following up on these questions, we suggest to also cover the following aspects: (I) Quantification of trends and drivers (II) Extraction of potential data from Chapters 8 and 9 (III) GHG emissions or energy demand [reduction] estimates for different urbanization scenarios.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before. a,b) Estimated current and projected emissions for human settlements and infrastructure. C) summarized mitigation strategies for cities. D) we have limitation on treating all aspects of path dependencies, given available literature. I) Quantified trends and drivers. II) Section 12.4 extracts data from other chapters as much as posisble. III) Presented scenarios in sction 12.4
18935	12	0				Main Comment 2: The chapter has many redundancies and lacks inter-linkage. In our view this is in part due to the structure of the chapter. Removing redundancies and referencing other sections will improve the flow and coherence of the chapter.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18936	12	0				Main Comment 3: One of our main points of critique from the Co-Chairs on the ZOD was the lack of (quantitative) data. This has in the view of the TSU not sufficiently improved with the FOD. The chapter lacks data, quantitative synthesis of studies and mostly gives single values instead of ranges. Improving this will also allow you to increase the currently very low number of quantitative figures.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18937	12	0				Main Comment 4: There needs to be far more synthesis, qualitative and quantitative, in the chapter. See detailed comments to Sections 12.5, 12.6.2.1/.2, 12.6.3.1/.2, 12.6.4.1/.2/.3/.4, 12.7 and 12.8	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18938	12	0				Main Comment 5: The chapter has not started to fulfil its role as integrative chapter in the report. There are no linkages to Chapters 8 and 9 which also deal with infrastructure and urban areas. Also links to other chapters are missing.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18939	12	0				Main Comment 6: Consumption based accounting is well introduced in the chapter – its consistent usage throughout the chapter still has to be implemented.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18942	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: Ensure that SRREN outcome is taken into account.	Noted: Not explicitly used anything from SREEN, we can look into it further and see how knoledge from SREEN could be useful
18943	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: The carbon footprint of cities needs to be covered in the chapter.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before. Carbon footprint of human settlemetns and of cities is covered.
18944	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: The difference between “urban area” and “city” needs to be defined and consistently applied.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before. Discussed widespread inconsistency among definitions.
18945	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: UN Habitat has worked on relating emissions to different types of structures, it would be good to take this in the chapter into account.	Noted: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18946	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: As urban areas contribute to most emissions this surely needs to be the focus of mitigation efforts and chapter coverage. But rural areas should not be ignored and effects of decentralized (i.e. also rural) availability of energy through renewables and its effects should be covered in the chapter.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before. Rural is discussed explicitly but effect of decnetralized energy posisbilities needs further consideration.
18947	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: The plan to focus more on scenarios, emissions, taxonomy, etc. has not been put into practice.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18948	12	0				The TSU has the impression that thefollowing ZOD Co-Chair critiquhas not yet been taken into account: o Figures or sketches of figures were not used as planned to guide the process.	Taken into account: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18951	12	0				The definition of urban boundaries should be in one place and then only referenced from everywhere else (see e.g. 12.2.3.1, 12.2.3.2).	Accepted: The reframing and rewriting of the chapter have addressed these issues as much as possible and the chapter is in far better shape then before.
18952	12	0				The same mitigation options and co-benefits/tradeoffs are discussed throughout the chapter in different context (e.g. spatial planning causing better air quality leading to better health [12.5.1]). Through a central table (e.g. building upon Table 12.1) and a central place where all options are listed (similar to Section 12.4.3) redundancies could be reduced and coherency improved.	Taken into account: The reframing and rewriting of the chapter have addressed these issues, all cobenefit discussion are in 12.8. Reduced redundancies
18953	12	0				There should also be only one section discussing UHI, everywhere else there should only be brief references to this section. There need to be linkages from this section to the corresponding WG II chapter(s).	Taken into account: The reframing and rewriting of the chapter have addressed these issues, all UHI discussion are at 12.8. The linkages to WGII are yet not made.
18955	12	0				The chapter contains a lot of irrelevant information. E.g. Section 12.7 lists many activities without detailing their effects.	Taken into ccount: The section is rewritten.
18956	12	0				The task of the chapter is to synthesize. Tables 12.4, 12.5 and 12.6 are not the level on which the chapter can be written. There is a need to condense and synthesize such information in order to make appropriate use of the given space and to be meaningful for the recipients.	Taken into account: The sections are rewritten
18957	12	0				The framing of the chapter needs to be improved. It does not become clear why the urbanization is so relevant and why approaching mitigation from this perspective is so crucial.	Taken into account: The chapter is reframes and rewritten and this point is more clearer now.
18958	12	0				The chapter has a focus on the limitations of the urban perspective. As other perspectives avoiding the problems of the urban perspective are also taken in the report, this chapter should instead focus on highlighting the opportunities of taking this perspective, such as the range of influence and the pioneer role.	Accepted: Discussed experiences and opportunities in 12.7
18959	12	0				There is no explicit section on policies and it does not become clear how policies relate to the mitigation options and perspectives covered throughout the chapter	Accepted: 12.5 discusses policies and systems integration
18960	12	0				The chapter team must become very clear about what the added value of this chapter compared to the Global Energy Assessment (GEA) Chapter 18 is going to be. The GEA has to be referenced, too.	Accepted: Referenced GEA in 12.3 and 12.1
18961	12	0				Please take the following Worldbank reports on Infrastructure & Urbanization in Developing Countries to be found at http://www.infrastructureafrica.org into account.	Accepted
3662	12	0	0			Reduce amount and length of tables to save space.	Taken into account: The SOD is now within the page limits
7607	12	1		94		There is a limited treatment of increased exposure and vulnerability to climate hazards occurred in some areas of the western Mediterranean, in relation to the massive increase in residential building and infrastructure. This has provoked increasing risk territories. For example in areas of the Spanish Mediterranean coast is more likely in 2012 than it had in the late 1989 and 1990. And this has been caused by a massive occupation of land dedicated to housing and infrastructure (soil sealing). An analysis of this can be seen in Olcina (2010) and Olcina, Hernandez, Rico and Martinez (2010).	Rejected: Not directly relevant

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5177	12	1				Chapter 12 is a useful extension of Chapter 7 (Energy), Chapter 8 (Transport) and Chapter 9 (Buildings) by treating energy, transport and buildings in the urban context in a holistic and integrated way. The present draft is an impressive collection of drivers and interdependencies of urban systems, GHG mitigation potentials strategies and their benefits, tradeoffs and spillovers and barriers to implementation. However, the chapter contains too many statements of the kind (all taken form the Executive Summary): - “A combination of compact urban form, integrated urban structure, high residential and employment density, and mixed land uses, provides a coherent urban model that can lower energy use and carbon emissions.” - “As a system, urban areas and human settlements can increase the efficiency of the built environment, infrastructure and energy use beyond what is possible within individual sectors.” - “Spatial planning can influence resource use and emissions through spatial development plans, land use, buildings, and the coordination of infrastructure, services and land use.” But at the end of the chapter the reader has no clear view of what has been achieved so far and what needs to be done.	The chapter is reframed and rewritten.
2368	12	1	5			Re. how the chapter might be shortened. While section 12.7 is interesting, and should be published somewhere, much of it is based on sourcing of municipal government documents rather than scientific literature, and so perhaps could be cut (in particular the material on p. 45-47; and 50-56). Other potential cuts are given below.	Taken into account: The section is completely rewritten.
16646	12	10				Discussions of the definition of “urban,” and discussions of what share of GHGs are in urban areas, as at top and middle of page 10, are a distraction from what the essential purpose of the chapter, which is to understand how policy-directed variation in human settlement patterns and practices could affect GHGs. This material could be omitted. Some of the material appearing in the section at bottom page 10 could be re-oriented to the above purpose.	Taken into account: This whole section is rewriten and reframed.
2487	12	10	1			difference	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.
5716	12	10	19	10	20	The reference, Bottcher et al (2012) is not included in the list of references at the end of the chapter.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here.
3346	12	10	21	10	29	The argument can be made more concisely.The meaning of the last sentence of this paragraph is unclear.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
2489	12	10	27			lower not lesser	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here.
5720	12	10	30	10	49	The most serious omission among the factors considered to affect CO2 emissions in urban areas, in all the established literature and hence missed by the IPCC Chapter Authors, is the cross-city disparities in the relationship between incomes and housing costs. The “median multiple” is a good proxy here. Cities with higher median multiples also have lower “discretionary incomes” after housing costs. Therefore there is highly likely to be a correlation between policies of strict urban growth containment and reduced CO2 emissions, but the mechanism is not necessarily efficiency gains, in urban form or anything else, but a reduction in household discretionary spending of all kinds. There are equity effects to be considered here. Gibbons, Overman and Resende in “Real Earnings Disparities in Britain” (2011) find that the greatest increases in “proportion of income spent on housing” as urban land prices inflate, is both in the lowest income groups and in the very highest income groups. This is because the highest income groups are paying increasing amounts of money to continue to “buy their way out” of the rationing system – their tennis courts, multiple garages, large gardens, swimming pools, multiple houses, and so on, are costing them quite a lot more, especially if at “premium” locations in the “city”. Meanwhile, the land thus consumed without regard to the intention of the “rationing” process, requires “compensation” via the land market mechanism; lower income earners making do with less and less space, at ever-more inefficient and undesirable locations, for which they still have to pay more and more. Every “attribute” of housing is rationed by price, and the price-rationing of “space” spills over into necessary rationing of quality and location and condition and amenities. I take it that the IPCC chapter authors do not regard it as controversial that urban growth boundaries always result in urban land price inflation. However, what is little understood as yet is that there is no example in the world where “density” has successfully ameliorated the effect on housing affordability. All the “affordable” cities in the annual “Demographia” Reports have minimal urban fringe growth constraint whether regulatory or geographic, and have much lower prices per LARGE lot in new developments than the unaffordable cities have per VERY SMALL lot.	Noted: This is important issue. In the reframed and rewritten chapter, existing text to which comments are made are deleted. But we have included discussions on land value capture issues as new sub section (12.6.4) and discussed housing related issues in 12.3.4 too. We have added small subsection on affordable housing as 12.4.8.
2488	12	10	4			these figures from IEA should be updated to 2010 - they are available	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.. But IEA had not update that data..
18782	12	10	4	10	20	consider converting to figure	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant. But this issue is dealth in SOD at 12.3.3 with new estimations.
2490	12	10	42		47	too much on comparisons when the metric, the time are not known or made clear - needs to set up common factors and focus on CO2 - there is a need to use the best available data - also important statements are made with no evidence	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here. However, we have added lots fo discussion on these in SOD's 12.3 now.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18783	12	10	42	10	43	consider converting to figure	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here.
12453	12	10	49	10	49	The word "developed" is used twice and the sentence do not give a clear meaning.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here.
14704	12	10	7	10	9	I do not understand this sentence ?	Taken into account: This whole section is rewriten and reframed. The text in question is deleted and comment no longer relevant here.
17306	12	11		11		Urban GHG inventories are dealt with in several chapters. I would recommend to deal with this issue, in particular with the various methodological approaches and their rationales, in one chapter more comprehensively. Moreover, it should be mentioned that there is no abolutely "true" method, and there are substantial problems with data and quantification (e.g. for individual transport, non-grid energy carriers etc.). Therefore it makes sense to chose a methodology depending on the purpose. If the purpose is primarily monitoring of mitigation achievements, a terriorial approach doesn't make sense for small units, as "imports" of, e.g. electricity play a major role (the boundary effects of trans-border trade of energy , trans-border transport etc. are relatively large for smaller units).	Accepted: but the whole section is rewriten and reframed. The comments are no longer directly relevant. The issues raised in this comments are addressed in 12.3.2 in SOD in detail.
16647	12	11				Continuing on page 11, this is another list of what factors might influence emissions but it comes across as an unorganized list with little attempt by the authors to organize the literature, beyond saying “there is little agreement.” The paragraph on page 11 from lines 19 to 36 is relevant and helpful, but again needs integration and is secondary to a summary of what is known and not known.	Accepted: but the whole section is rewriten and reframed. The comments are no longer directly relevant. The issues raised in this comments are addressed in 12.3 and 12.3.2 in SOD in detail.
17178	12	11	13	11	17	The arguments in the two sentences could seem to be contradictory in some way, since the consumption-based emissions from car travel are likely to be lower in the compact, vertical cities than in the low-rise expansive ones. The paragraph should therefore be made clearer and more nuanced.	Taken into account: This whole section is rewriten and reframed. The comments are no longer directly relevant.
12454	12	11	14	11	18	The content of this paragraph is hart to capture, please consider rephrasing to make it more understandable.	Taken into account: This whole section is rewriten and reframed. The comments are no longer directly relevant.
5980	12	11	41	12	4	Source for this approach?	Accepted: but the whole section is rewriten and reframed. The comments are no longer directly relevant.
17575	12	11	43	11	43	What is "hard urban space"?	Accepted: but the whole section is rewriten and reframed. The comments are no longer directly relevant.
18784	12	11	45			unclear whether this refers to physical dimensions or abstract	Accepted: but the whole section is rewriten and reframed. The comments are no longer directly relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15749	12	11		21		Section 12.3 which discusses urban structure, form and infrastructure and section 12.4.3 which discusses urban sectors mitigation potentials for direct and indirect emissions has lot of overlap. Some points are repeated again and again.	Taken into account: This whole section is rewriten and reframed. Overlaps are reduced.
6008	12	11	41	12	4	Source/ References for the several definitions and the conclusion are missing.	Taken into account: This whole section is rewriten and reframed.
3347	12	11				A good section. But is there a way GHG emissions of cities could be structured such to be useful for later chapters? Would it be reasonable, for example, to look for emissions embedded in infrastructures, infrastructure use emissions, manufacturing and consumption emissions?	Noted: This whole section is rewriten and reframed. However these questions are addressed in subsequent sections in details in SOD, especially 12.3 and 12.4.
11152	12	1103				NIMBYism - see previous comment	Noted> Table 12.5 is deleted in revised chapter
16650	12	12				Page 12 at top: To say that form and structure “determine” energy use and emissions is an overstatement. Empirical studies have struggled to clearly demonstrate causal relationships between urban form and emissions, and those that have been done do not show there are particularly strong relationships. A metastudy of US empirical studies relating urban form to vehicle miles traveled, for example, found so few reliable studies by category of urban form or structure that confidence intervals for estimates could not be constructed; and the elasticities were small, all at less than 0.10 (Ewing and Cervero 2010). In general, the chapter cites just one or two studies on a particular claim, does not discuss their merits, and tends to over-generalize. This same section should also lay out the ways in which settlement patterns, urban form and structure, etc are thought to influence GHGs. None of this appears here and it is critical.	Noted
8562	12	12				SIMPLY INCORRECT, NEEDS TO BE DELETED OR CLARIFIED "The key variable between these forms is travel patterns. A primary indicator of greenhouse gas emissions is vehicle miles travelled (VMT) and commonly, greenhouse gas emissions are related to VMT (Newman and Kenworthy, 1989)." COMMENT: Same issue as Comment #16. The relationship between GHG and VKT is indirect. The fundamental relationship is between fuel consumption and GHG. Where there is more congestion or slower traffic speeds (at urban speeds), there can be much less than a 1:1 relationship between VKT and GHG. At a minimum, this needs to be stated. In the absence of such a caveat, this reference should be deleted. □	Taken into account: The whole section is rewriten and reframed and these text are deleted.
2491	12	12	10		12	where is the evidence?	Taken into account: The whole section is rewriten and reframed and these text are deleted.
5982	12	12	11	12	12	This is not an appropriate example for the increased freedom of choice due to greater affluence. The emergence of individual motor car traffic in Europe and the US is not only a result of increased wealth; more important is the construction of large street infrastructures; the offer created the demand here! Cp. your own chapter 12, page 14, line 25!	Taken into account: The whole section is rewriten and reframed and these text are deleted.
2492	12	12	19			informs the private sector	Taken into account: The whole section is rewriten and reframed and these text are deleted.
2493	12	12	25			There is strong and direct correlation - how strong?	Taken into account: The whole section is rewriten and reframed and these text are deleted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18785	12	12	33			leapfrogging too general here, need to specify what is over-jumped	Taken into account: The whole section is rewriten and reframed and these text are deleted.
2494	12	12	37			VMT is only one key variable - also relates to type of vehicle, efficiency, occupancy	Taken into account: The whole section is rewriten and reframed and these text are deleted.
17179	12	12	40	12	45	Causality between urban spatial characteristics cannot be established through statistical analyses, but has been demonstrated through qualitative studies combined with theoretical analyses explaining the plausibility of such causal relationships. In order to substantiate that residential location is a (contributory) cause of differences in travel behavior between people living in different urban spatial contexts, we must show the basic mechanisms by which the location of dwellings influences travel behavior. Examples showing the rationales on which people base their frequency of participation in out-of-home activities, the location of these activities, the modes of travel used to reach these locations, and the routes followed make up important elements in this endeavor. Research investigating such causal mechanisms between residential location and travel behavior has in particular been carried out by North European researchers, including cases in Scandinavia but also in China. See Næss (2005, 2006, 2009, 2012 a and b).	Taken into account: The whole section is rewriten and reframed and these text are deleted.
18786	12	12	42			explain what causality in two directions; from everything following there only seems to be the causality from structure to traffic.	Noted
5981	12	12	8	12	9	Where do you take this simplistic relationship from? One could also argue "the greater the affluence, the higher are private investments" or "the greater the affluence, the more post-materialism"; you do not mention any source for this!	Taken into account: The whole section is rewriten and reframed and these text are deleted.
5983	12	12	5	12	23	This paragraph includes little precise or new information; it can be removed and its arguments can be integrated in chapter 12.3.2!	Noted: The whole section is rewriten and reframed and these text are deleted. The comments are no longer directly relevant.
6009	12	12	5	12	23	Why are these four drivers the important ones? Explanation for "Human behaviour" is not correct in a common sense. Source and references are missing. From a social scientific point, this section is much too short to give a comprehensive overview on drivers of urban structure and form. In addition, a precise definition of the difference between "urban structure" and "urban form" would be necessary.	Noted: The whole section is rewriten and reframed and these text are deleted. The comments are no longer directly relevant.
18030	12	12	8	12	12	I think the report should not imply that people having cars and single family homes and freedom of choice is somehow a bad thing. The car has been very beneficial in improving the lives of ordinary people. Its quite natural that people want to live in a single family home. I think that what this section is aiming to say is that the car has made it easier for people that work in urban areas to live in single family housing. Spatial planning and infrastructure needs to provide places that have successful communities where people want to live with a good quality of life.	Noted: The whole section is rewriten and reframed and these text are deleted. The comments are no longer directly relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17186	12	12	24	15	13	section 12.3.2 in general: There is a lack of mentioning of the influence on travel behavior and its related CO2 emissions from the location of dwellings as well as (office) workplaces relative to the main metropolitan city center. A host of empirical studies have shown distance to the city center, together with the overall population density within the urbanized are of the city and the metropolitan areas, to be the urban spatial characteristics exerting the strongest influences on transportation energy use and GHG emissions. Strong tendencies among suburbanites to travel longer overall distances and carry out a higher proportion of their travel by car than their inner-city counterparts, among whom walking and biking make up a higher share of the distance traveled) have been found in a large number of cities in different corners of the world, including Paris (Mogridge 1985, Fouchier 1998), London (Mogridge, ibid.), New York and Melbourne (Newman and Kenworthy 1989), San Francisco (Schipper et al., 1994), Austin, Texas (Zhou & Kockelman, 2008), Athens (Milakis, Vlastos and Barbopoulos, 2008), Santiago de Chile (Zegras, 2010), Copenhagen (Næss, 2005, 2006, 2009b and 2011), Oslo (Næss et al., 1995), a number of other Nordic cities (Næss, 2012) and Hangzhou (Næss, 2010).	Noted: The whole section is rewriten and reframed and these text are deleted. The comments are no longer directly relevant. But the land value capture and housing related issues are added in SOD. We have done limited discussion on transport (given there is another chapter on transport in WGIII) here. 12.4 in SOD has addressed accessibility, density, land use, connectivity, transport modes, and characteristics of the low carbon settlements. We look forward to improve these aspects further in next round.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17189	12	12	24	15	13	In section 12.3.2 there is generally a lack of mentioning of the influence on travel behavior and its related CO2 emissions from the location of dwellings as well as (office) workplaces relative to the main metropolitan city center. A host of empirical studies have shown distance to the city center, together with the overall population density within the urbanized are of the city and the metropolitan areas, to be the urban spatial characteristics exerting the strongest influences on transportation energy use and GHG emissions. Strong tendencies among suburbanites to travel longer overall distances and carry out a higher proportion of their travel by car than their inner-city counterparts, among whom walking and biking make up a higher share of the distance traveled) have been found in a large number of cities in different corners of the world, including Paris (Mogridge 1985, Fouchier 1998), London (Mogridge, ibid.), New York and Melbourne (Newman and Kenworthy 1989), San Francisco (Schipper et al., 1994), Austin, Texas (Zhou & Kockelman, 2008), Athens (Milakis, Vlastos and Barbopoulos, 2008), Santiago de Chile (Zegras, 2010), Copenhagen (Næss, 2005, 2006, 2009b and 2011), Oslo (Næss et al., 1995), a number of other Nordic cities (Næss, 2012) and Hangzhou (Næss, 2010). Similarly, a number of studies have found that employees at suburban workplaces tend to commute by car much more frequently than employees at inner-city workplaces. Cities where lower proportions of car commuters and higher shares of employees traveling by public transit, bicycle or by foot have been found at inner-city than at suburban jobsites include the San Fransisco Bay area (Cervero & Landis, 1992); London and other large British cities (Dasgupta, 1994); the Dutch Randstadt area (Schwanen et al., 2001); Atlanta and Boston (Yang, 2005); and Paris (Aguilera et al., 2009), Oslo (Næss & Sandberg, 1996), Trondheim (Strømmen, 2001) and Copenhagen (Hartoft-Nielsen, 2001b; Næss, 2007). Several studies also show that job decentralization from inner to outer parts of cities and metropolitan areas usually does not contribute to reducing average commuting distances (Næss & Sandberg, 1996; Hartoft-Nielsen, 2001b; Næss, 2007; Strømmen, 2001; Cervero & Landis, 1992; Yang, 2005; Aguilera et al., 2009). Admittedly, according to some studies employment decentralization has reduced commuting times (Gordon et al., 1991; Cervero & Landis, 1992; Giuliano & Small, 1993). This has, however, mostly to do with the generally higher shares of fast modes of travel and higher driving speeds in the suburbs than in the inner city. It is an serious shortcoming of the existing text that the influence of the location of dwellings and workplaces relative to the city center is not mentioned. This must be corrected.	Noted: The whole section is rewriten and reframed and these text are deleted. The comments are no longer directly relevant. But the land value capture and housing related issues are added in SOD. We have done limited discussion on transport (given there is another chapter on transport in WGIII) here. 12.4 in SOD has addressed accessibility, density, land use, connectivity, transport modes, and characteristics of the low carbon settlements. We look forward to improve these aspects further in next round.
10403	12	12	30			The title of this sector is not appropriate.	Taken into account: The whole section is rewriten and reframed and these text are deleted. The comments are no longer directly relevant.
17114	12	12	37			IPCC 2006 Guidelines refers VKT instead of VMT.	Noted
8563	12	13				UNSUPPORTED STATEMENT "An additional consequence of more expansive urban forms is that utility service runs are considerably longer than in more compact forms, thereby significantly increasing direct and embodied energy use and thus greenhouse gas emissions." COMMENT: Embodied energy from high rise and more dense housing tends to be greater than for less dense housing, according to some sources. This comment should be deleted.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
8564	12	13				RESEARCH REACHING ALTERNATIVE CONCLUSION NOT CITED "There is a tendency in cities for more intensive activities, such as those activities requiring public support, to gravitate towards more continuous routes carrying public transportation, thus forming activity corridors – bands of higher density, more mixed uses (Curtis, C. and Tiwari, R., 2008). This form reduces vehicular generated greenhouse gas emissions by increasing the use of public transportation." COMMENT: Research in Melbourne, where this concept has been in operation in some years indicate no material increase in public transportation ridership along such corridors. See Monash University research at: McCloskly, D., Birrell, R., & Yip, R. (2009), "Making Public Transport Work in Melbourne," People and Place, September. Section 12.3.2.2 (Tendancies toward Linearity) should be expanded to cite the dissenting literature or be deleted.	Noted
17180	12	13	1	13	14	There is a general neglect in this paragraph of the influence of densification versus sprawl on the use of non-motorized travel modes. Research in Scandinavian cities has shown that inner-city residents use such modes to a higher extent than suburbanites do, and combined with the generally shorter daily traveling distances of inner-city residents, this leads to considerably higher non-motorized share of total daily traveling distance among residents living close to the city center. In cities like Copenhagen, the share of travel carried out by bike is particularly high among inner-city residents. See Næss (2005 and 2006). Similar patterns were also found in Hangzhou, China (Næss, 2010).	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.
12456	12	13	12	13	14	Could it be clearified what is included in "utility services"? In addition to grids for electricity, street lightning, gas, water and sewage, telecommunications, also public transportation sytems and roads get longer in less compact urban developments with consequences for emissions from both construction and maintenance. Please consider to include this fact.	Taken into account: The whole section is rewriten and reframed. The same text is reproduced in 12.3.3 and used "utility lines". See 12.18 figure in SOD
14705	12	13	14	13	14	On this point, you may cite Bertaud, A. 2002. The spatial organization of cities: Deliberate outcome or unforeseen consequence? World Development Report 2003 Background Paper.	Noted, will be seen in next round
18788	12	13	15			would be good to mention in what regard this is contested	Noted
17181	12	13	25	13	25	Norway should be added here, since this is the country where the perhaps strongest shift from urban sprawl to urban densification has taken place. In particular, this shift has been pronounced in Oslo Metropolitan Area. The population density within the continuous urban area of Greater Oslo (pop.: 0.93 mill.) increased by as much as 27% over the period 1985-2011. In spite of some development of dwellings and workplaces on previously undeveloped land in the outer part of the metropolitan area, the number of inhabitants per hectare of urbanized land within the region as a whole (including 1.2 million urban inhabitants in 2011) grew by 7.5 % over the years 2000-2011. See Næss et al., 2011a and b (and also Næss, 2012 with the latest updated figures, presented in a conference paper from the AESOP conference in Ankara this summer).	Noted
18789	12	13	25			"Many ..." - is this possibly even "Most ..." or "All but 2 OECD and many others ..."	Noted : see 12.4.3 in SOD

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5721	12	13	32	13	37	"Many of the poorest households, who can least afford high transportation costs, can only obtain access to land on the periphery: the system contributes to a self-perpetuating cycle of poverty." But it was commonly understood 120 years ago, (Peter Hall, "Cities of Tomorrow: An Intellectual History of Urban Planning") that as economies developed and incomes rose, urban land rents rose just as fast, meaning that the rentier class captured most of the gain. Land holdings going back centuries do not have to be particularly large in "rural" terms, to constitute a monopoly holding in what becomes a growing city. The necessity at one time that people walk everywhere, limited the scope for the amount of living space per person, and also rendered it impossible for "conversion" of land from rural to urban uses without the extraction of monopoly rents by the owners of the necessarily limited "supply" of land for conversion. Furthermore, new migrants into the urban economy, with minimal income prospects at least initially, cannot hope to "house" themselves in competition with incumbent residents with already increased income levels. Hence either "informal" housing, multi-family shared housing, or horrifically over-crowded "market" solutions such as the infamous "Dumb-bells" tenements. It was well understood 100 years ago, by proto-urban-planners, social reformers, economists, and politicians, that there was a desperate need to increase "supply" of land in the urban economy so as to ameliorate not just the crisis of public health, but the crisis of social inequality, immobility, and unrest. Marxist solutions had considerable appeal that would only grow unless the "monopoly rent" issue was ameliorated. Hence, while the process of rail-based urban expansion was itself driven by rent-seeking, it had explicit approval from many of those who carried "social" concerns due to the effect that the increase of land supply must have on ameliorating "monopoly rent". The more competition between "developers" involved in urban expansion, the greater the amelioration of the "monopoly rent" effect. The noted proto-urban-planner Ebenezer Howard initially supported the "nationalisation" of land but was persuaded by colleagues who were well versed in classical land economics, that rural land was so cheap compared to urban land that the ability to convert it to urban use with minimised uplift in value, was a better solution. Hence Howard's lifelong advocacy of "Garden cities" with a balance between housing and employment and other activities. Unfortunately, for whatever reason, all such proposals tended to end up as "dormitory suburbs" with the residents travelling in to the existing city daily. The rent-seeking influence of the established city property owing interests is probably grossly under-estimated at all times in historical accounts of the modern city, right up to the present day. The classical land economics urban rent curve slopes up to a city centre. "Dispersion" flattens this land rent curve. William Wheaton (2002) "Commuting, Ricardian Rent, and Housing Price Appreciation in Cities with Dispersed Employment and Mixed Land Use". The ability to convert rural land to urban with minimal "planning gain" results in minimal "discontinuity" in the land rent curve at the urban fringe, which tends to keep the price of land lower throughout the urban area. Cheshire and Mills note in their Introduction to "The Handbook of Regional and Urban Economics" Volume 3 (1999): "…….If we compare communities in the US and UK that are as comparable as possible except for the constraints their systems of land use regulation place on the supply of land, we observe that the price of retail land is up to 100,000 times higher in the most constrained community……" It is noticeable that "housing affordability" analyses such as the Annual Demographia Reports, tend to find quite strong "sorting" characteristics, whereby there is one significant set of cities with median multiples of around '	Noted: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.
18790	12	13	32	13	37	A solution that could be possibly be mentioned here are policies facilitation the construction of affordable living spaces (e.g. cooperative/gov't owned rental)	Taken into account: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.
5519	12	13	38		44	Bioretention systems for stormwater capture also offer some mitagation potential in addition to other services	Taken into account: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now. See 12.8.1 in SOD

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17182	12	13	38	13	39	Regarding urban heat island and tradeoff with compact urban development. This is probably dependent on the type of natural surroundings in which a city is located. Some American studies (e.g. Stone & Rodgers, 2001) have concluded that suburban low-density development increases the urban heat island, compared to higher-density development, since the heat-absorbing surfaces cover a larger total area in low-density urban districts.	Taken into account: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now. See 12.8.1 in SOD
18791	12	13	38	13	44	Have only on UHI section, reference WG II from there and have only brief reference from here.	taken into account: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now. See 12.8.1 in SOD
14706	12	13	39	13	39	On this point, you may cite Hamin, Elisabeth M., et Nicole Gurran. 2009. « Urban form and climate change: Balancing adaptation and mitigation in the U.S. and Australia ». Habitat International 33 (3) (juillet): 238-245. doi:10.1016/j.habitatint.2008.10.005.	Noted
2495	12	13	4		5	Explain - cannot exist without minimum levels of support - ref (1994) is very dated	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.
3349	12	13	43			what is meant by "path"?	Taken into account: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.
2497	12	13	45			unclear about the point being made here - missing element is the corridor development in cities and the linkages between cities - clusters (many examples in China) and the development of satellite cities (Seoul and Shanghai)	Taken into account: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5722	12	13	45	14	2	Anthony Downs (2007) “A Growth Strategy for the Greater Vancouver Region”: ".....The cost of land poses a key dilemma for urban planners everywhere who want to concentrate jobs together so they can be best served by public transit. Such concentration raises the costs of land near centers; in fact, it would confer a monopoly advantage on landowners who owned such land and could exploit firms trying to locate there. Now firms want to locate elsewhere to cut their land costs. Planned concentration of jobs in a few centers is not consistent with private ownership and control of land. Some type of collective control over that land would be necessary to prevent monopolistic exploitation of land values. In theory, this could be done with high land taxes in such areas and special zoning rules. But adopting those devices is politically difficult in a free enterprise economy..... ".....A similar but less intensive dilemma concerns land near transit stops, where it would be most efficient to concentrate high-density housing and jobs. That also creates ownership monopolies over such land unless it is specially controlled or taxed. Yet focusing development near transit stops is a key to using more transit....." The famous example provided by Curitiba, Brazil, did initially involve large amounts of compulsorily acquired land for “transit oriented development”, although most advocates analyses of Curitiba's wonderfully successful system are silent on this point, which is actually a crucial one. See Jonas Rabinovich, "Curitiba: Towards Sustainable Development" (1992), which at least mentions this reality although without identifying its importance. Curitiba’s planners also had the wisdom to go with buses and busways rather than rail based systems. Buses can pick up passengers anywhere before entering the high-speed busway, which has telling advantages over rail based systems that require “transfers” from other modes. Bus based systems can also be adapted to follow later urban development wherever it proves popular, rather than imposing self-defeating distortions in land market prices with fixed rail routes and strictly “planned” integration of transit and development. Curitiba has had considerable problems under the free market since the original project was completed, with lower income people being "priced out" of the transit-served locations, and further development at these locations being stalled by high land prices.	Noted
17183	12	13	45	14	2	I do not think the tendency toward linearity can be described as a general trend. In the Scandinavian cities where densification has been a strongly pursued strategy during recent decades, densification has typically more taken place at nodes, often on areas becoming vacant due to industries having moved to lower-cost countries, or due to prior relocation of harbor activities. (See, for example, Næss et al., 2011b).	Noted: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.
16652	12	13	48	14	2	This claim may seem intuitive but the empirical evidence isn't provided here	Noted: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.
12455	12	13	7	13	8	The figure "70 people per km" should be clearified.	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
3348	12	13	7	13	8	probably: "people per square kilometer"	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.
18787	12	13	7			"70 people" - put this number in context	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.
2496	12	13	8			not kilometre but hectare	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.
18032	12	13	21	13	24	The US National Research Council (2009) report found that "doubling density would only reduce VKT by 5% to 12%, and perhaps by 25% if coupled with higher employment concentrations, significant public transport improvements, mixed uses and other supportive demand management measures." Note however that these measures to achieve more than the 5% to 12% range are very dependent on having a strong local economy and investment in local improvements to public transport and streets and it would be difficult to achieve these conditions more generally in the more residential urban areas. Also a higher densities will increase congestion and crowding and lower vehicle fuel efficiency. Therefore density is a relatively weak lever for reducing vehicle emissions. I think this needs to be made clearer in the text and relates to my comments above that the chapter needs to have more quantification of the evidence and analysis of causation and feasibility of achieving climate mitigation through infrastructure and spatial planning	Noted:
18031	12	13	7	13	8	I think the units "70 people per kilometre" are incorrect - should this be 70 people per hectare?	Taken into account: The whole section is rewriten and reframed and these text are deleted.
6010	12	13				Title of the Section should be adapted to the content. Explanation of the term "linearity" does not explicit exist in the text.	Taken into account: The whole section is rewriten and reframed as section 12.4 and these text are deleted in SOD. The comment is not relevant here now.
5520	12	14	20			In addition to fine scale- green space included in urban design has been seen as promoting walking- see Center for Neighborhood Technologies- http://www.cnt.org/repository/gi-values-guide.pdf . Other publications by this group would also be pertinent	Noted
2499	12	14	23		29	unclear what is meant by 'more neutral'	Noted: The whole section is rewriten and reframed and these text are deleted in SOD.
2500	12	14	31		32	some figures needed here on proportions of household energy in housing and transport - if they account for over a half - where does the rest go? Differences between cities and those in the global north and south	Noted: The whole section is rewriten and reframed and these text are deleted in SOD.
2371	12	14	35			Operatonal energy use of buildings also depends on the function of the building and user behaviour.	Noted: The whole section is rewriten and reframed and these text are deleted in SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5725	12	14	36	14	41	The Chapter authors are to be commended for noting the relative inefficiency of high rise buildings. One of the problems we have in criticising a particular type of dwelling, is in identifying the scope for improvement that is related to each type of dwelling rather than trying to encourage a change in the type of dwelling that people choose. Patrick Troy (Australian National University) in "The Perils of Urban Consolidation" (1996) points out the considerable scope for "sustainability" represented by low density living, which in many features has potential that higher density living does not. "Pricing" of the variables that we want to affect, such as water consumption, energy consumption, waste and so on, would be sufficiently effective and would avoid the very serious "unintended consequences" of many popular proscriptive urban planning tools. There is more scope at lower densities, for the use of active and passive solar power, fresh air and sunshine for ventilation and clothes drying, on site power generation, the burning of biomass for heating and cooking, rainwater collection, on-site waste disposal and recycling, on-site food production, and the use of trees for shade. The fact that suburbanites do not yet habitually maximise the sustainability advantages represented by the densities at which they live, is because the incentives to do so are absent. Since Troy's book was published, geothermal heat pumps have been developed, which are an energy-saving "no-brainer" for which the scope is vastly reduced by higher urban densities. □	Noted: But do we have suffieicnt published literature to support argument? Will be looked again in next round
11033	12	14	39			The text states: 'Semi-detached and three storey buildings have been shown to be significantly more efficient in terms of operational energy, than single storey, free-standing units, while high rise buildings are the most inefficient, largely because of the use of the elevator (Myors et al., 2005).' This is misleading, as it ignores the benefits of high rise for reducing overall energy use, including in household travel. [Glaeser, E. (2009). Green Cities, Brown Suburbs. City Journal, 19(1) http://www.city-journal.org/2009/19_1_green-cities.html] This whole paragraph should acknowledge how critical transport is. A minimal recasting could add the following sentence after 'Myors et al. (2005)': 'However, this operational energy requirement may be outweighed by other energy implications of buildings, such as those arising from location – for example, high rise buildings reduce needs for transport.'	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
6011	12	14	4	14	5	Source is missing.	Noted: The whole section is rewriten and reframed and these text are deleted in SOD. The comment is not relevant here now.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17184	12	14	4	14	12	What is written here about polycentricity is not sufficiently nuanced. It is necessary to specify the geographical scale at which polycentric settlement structures are favorable to reducing transport GHG emissions. Studies in the Nordic countries suggest that while at an intra-metropolitan scale a centralized pattern of development will require the least amount of energy for transportation (see, e.g. Næss et al., 1995; Næss, 2011; Næss & Sandberg, 1996; Hartoft-Nielsen, 2001a), decentralized concentration may be the most energy-efficient settlement pattern at a wider regional scale (Næss, 1993). According to Brotchie (1984), a decentralized settlement structure will be the most energy efficient and least transport-requiring one if the level of physical mobility in the society is low. In such a situation, the distance decay will be high, with rationales of distance minimizing distance outweighing those of choosing the best facility. In a highly -mobile society, however, the deterrent of distance will be low, with rationales of choosing the best facility generally dominating over distance minimizing distance (within some threshold of acceptable travel time). If a peripheral settlement is to function in a self-contained way in a high-mobility society, it must be located outside the catchment area of competing centers. Thus, Banister (1992) found that traveling distances were shortest and the proportion of walking highest in the most urbanized of six investigated parishes in the generally densely populated Southern England, while the most rural parish was distinguished by long trips and a high proportion of car driving. If residential development in peripheral rural areas and villages in a high-mobility society is to be compatible with modest average amounts of travel, the distances to the closest cities (and in particular, major metropolitan centers) must therefore most likely be quite long, and longer the stronger is the attraction of the main center (Breheny, 1992).	Noted: The whole section is rewriten and reframed and these text are deleted in SOD. These issues are given careful look in rewritten 12.4
14709	12	14	43	15	4	Is this paragraph really useful ? It is somehow contradicted by the following paragraph. (I do not really understand why is it useful to say that something is true when the scale of observation is local if you write just after that is it actually false when looking at the big picture ?)	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD. Carbon sink discussion are in 12.8.2
17185	12	14	45	15	4	An exclusively intra-city focus is completely irrelevant when discussing the carbon sink function of green space, since CO2 emissions are a global and not a local problem. The points made on page 15, lines 5-7 are thus the relevant important ones which should be brought to the front. There are many good reasons for saving intra-urban green areas, but carbon sequestering is hardly one among them (unless the protection of intra-urban green space takes place without any outward urban expansion whatsoever – this would require either that the construction of new buildings came to a halt, or that existing buildings inside the city were replaced with taller ones).	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD. Carbon sink discussion are in 12.8.2
2498	12	14	5			decentralised or distributed?	Noted: The whole section is rewriten and reframed and these text are deleted in SOD.
14707	12	14	22			Is there any citation supporting this claim ?	Taken into account: In SOD, these issues are rewritten as 12.4.5 with a reference.
14710	12	14	42			I wonder if this section is really useful: the carbon sink created by urban spaces has only a marginal effect on the global concentration of GHG in the atmosphere (its impacts are really negligible when compared to any mitigation policy, as it acts on the stock of GHG in the atmosphere, not on the flux, i.e. on emissions; this very fact is actually written in section 12.4.3.6 !). I somehow feel including such a section may be confusing for the reader.	Taken into account: Deleted from here and moved to discussions in 12.8.2

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5726	12	15	1	15	13	The Chapter Authors are to be commended for their observation that lower density urban development actually co exists to some extent, with local biospheres, whereas it is higher urban density that is more destructive. But the authors make the mistake of assuming that lower density urban areas are associated with higher amounts of private green space and lower amounts of public green space: "…..In the case of more dispersed forms, small pockets of public green space and large amounts of private green space remain……" Actually, the inflated price of urban land consequent on regulations creates major pressures on the public owners of green space, to sell it for development, especially if a decreased urban footprint is a stated policy objective. Limiting the policy-induced "reduction in urban footprint" to PRIVATE space, has the effect that literally halving the private living space per person only reduces the total urban footprint by something like 15% to 25%. In fact the doubling of population on the 30% to 40% of an urban area that actually typically IS "housing", places pressure on the "public" land that is part of the remaining 60% to 70%. Schools, parks, hospitals and public buildings; and space for infrastructure and rights-of-way. If road space is not expanded, the congestion will more than negate the already minimal gain in shorter travel distances. Peter Gordon, in "Thinking About Economic Growth: Cities, Networks, Creativity and Supply Chains for Ideas" (2012 – Annals of Regional Science), reiterates a claim he has been making for years, that urban economies find their own balance between agglomeration economies, and associated dis-economies of congestion, land prices, and transport costs. The danger with "forced" agglomerations as opposed to agglomerations that form naturally, is that the dis-economies end up outweighing the economies. But a line of research associated with the effects of the UK's Planning system, suggests that the UK's strict planning and inflated urban land prices actually "price out" potential participants in agglomeration economies. The McKinsey Institute (1998) "Driving Productivity and Growth in the UK Economy" specifically state that they doubt that anything like Silicon Valley could occur anywhere in the UK. Alan W. Evans (Spatial Economics Research Centre, University of Reading) expands on this research in his 2004 book, "Economics and Land Use Planning". The result is serious losses of efficiency from agglomeration economies foregone, accompanied by "dispersion" driven not by natural economic balancing mechanisms but by a "pricing out" effect on households and businesses, and worst-case congestion. Social inequities and stresses result from inflated housing costs without any commensurate gain in urban efficiency; in so far as emissions might be reduced, it is the deprivation of households discretionary income that is responsible, usually accompanied by reduced rates of child-bearing household formation. The affordability of housing associated with minimal restraint on horizontal urban growth, is also inevitably associated not just with greater consumption of private land per person, but with less cost pressures on developers and public agencies to turn the maximum possible amount of space into "earning" property. The prices of real estate per se tend to confuse us regarding the cost of the "raw" land. City A and City B might have new 3-bedroom homes coming to market with a 100% price difference between them; which is entirely typical if one is growth-constrained and the other is not. But in addition to this, the home in the affordable city will have a quarte	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
6012	12	15	10	15	11	Sense of the sentence is not correct. Stockholm is a city IN Sweden. The comma suggests that Sweden is a city.	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD. A more structured discussion on sinks is in 12.8.2.
12458	12	15	14	15	28	Could some references be given to these important paragraphs?	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD. A more structured discussion on sinks is in 12.8.2.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
2502	12	15	15		28	important - to note the decisions made today about the location of development of all sorts influences the energy and CO2 emissions in the future - much better to have efficiency now than try to retrofit it	Accepted
11034	12	15	15			The text's statement 'There is great potential for mitigation through the manipulation of urban structure and form' could be replaced by: 'There is significant longer-run potential for mitigation through changes to urban structure and form (e.g. Ewing et al., 2007; Chapman, 2008).' [Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., & Chen, D. (2007). Growing Cooler. The Evidence on Urban Development and Climate Change. Washington, D.C.: Urban Land Institute http://www.smartgrowthamerica.org/documents/growingcoolerCH1.pdf ; Chapman, R. (2008). Transitioning to low-carbon urban form and transport in New Zealand. Political Science 60(June), 89-98 http://pnz.sagepub.com/content/60/1/89.full.pdf.]	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD. A more structured discussion on sinks is in 12.8.2.
3354	12	15	30	16	15	Is a good introduction into a system perspective. But of interest is mainly the bottomline, what it means for GHG emissions, coming thereafter. Hence, this page could possibly deleted. Starting with p.16 l.16 is feasible.	Taken into account: The new chapter outline drastically shortens meta-comments and omits most of the text mentioned here. Figure 12.1, however, is necessary to explain total emissions from human settlements and provide a framework for accounting used in this.
5984	12	15	38	16	8	A systemic approach should not only refer to physical flows. You should mention the fact that in contrast to the physical system, governance and planning structures, institutions and regulations remain sector-specific today; therefrom emerge challenges of (horizontal) coordination between these sectors	Noted: This section is reframed and rewritten and these text are deleted in the process. Thus the comment is no longer relevant.
14708	12	15	4	15	4	Is there any citation supporting this claim? I heard that private green spaces had often a marginal positive effect in keeping nature's biophysical processes intact. But I confess I am not a specialist of this question.	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
17576	12	15	45	15	45	"Goods" is not equivalent to resources, products or emissions. Just delete "of goods" and this sentence will work fine.	Noted: This section is reframed and rewritten and these text are deleted in the process. Thus the comment is no longer relevant.
5521	12	15	46	16	1	High density populations can allow for more innovative and energy neutral waste management as well- for example co-digestion of food wastes and wastewater for energy recovery, separate collection and anaerobic digestion followed by composting of food and yard debris- this also allows for less frequent pick up and reduced volume of conventional wastes- see Bolzonella et al., 2006, Booker et al, Struvite formation in wastewater treatment plants: opportunities for nutrient recovery, Case study in San Fransisco- www.epa.gov/region9/waste/features/foodtoenergy/wastewater.html	Noted: This section is reframed and rewritten and these text are deleted in the process. Thus the comment is no longer relevant.
18794	12	15	5	15	7	Reference missing.	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
2501	12	15	7			evidence?	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
2372	12	15	7			"ecosystems" rather than "biospheres"	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12457	12	15	8	15	13	The paragraph describes the cobenefits of urban green space e.g the access to recreational space and esthetical experiences. This might reduce the need for motorised vehicle transportation to more far away options with GHG mitigation effects in addition to the carbon sink effect. Please consider to reflect this, provided that there is sufficient litterature.	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD. A more structured discussion on sinks is in 12.8.2.
17288	12	15	8		13	it will be important to make in the future economic assesments of this cobenefits	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
5727	12	15				The view presented here, that urban form can be shaped by regulations, fails to take into account the costs imposed on society via distorted real estate markets. There is a very real danger that the "success" of policies will be interpreted as having occurred via "more efficient urban form" rather than via the mechanism of reduced household discretionary income. It is likely that spending on everything in the household budget, not just spending on travel and energy, is reduced by the inflated housing costs that always result under schemes of regulatory rationing of urban land supply and the creation of quasi-monopoly rent for the owners of land favoured by the "plans".	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
6013	12	15	14	15	28	The authors regard potentials for mitigation in fast growing, slow growing and stagnant cities. What will happen to shrinking cities?	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
5728	12	15				The authors are to be commended for discussing the “systemic” nature of cities and the global economy of which they are a part. It is also important that urban planners take account of the widely disparate path dependent evolution of different cities, so that policies that have succeeded in one particular type of city are not mistakenly applied to other types of city. For example, expecting Detroit to turn into NYC without “Wall Street” being located there, just by imposing mandates on the kind of urban form Detroit is to have, would be the height of stupidity. Yet volumes of advocacy work regarding urban planning today are making assertions this absurd. The term “Manhattanise” or “Manhattanisation” will be found via Google, to be one in common use by politicians and advocates of “sustainable” urban form.	Noted: The whole section is rewriten and reframed and these texts are deleted in SOD.
5985	12	16		16		There is no explanation of this figure. What are numbers 1-6? Why are lines of differing size? What is others in Built Environment? The human settlement sectors are incomplete, urban governance is missing completely. What is the statement of this figure?	Taken into account: The figure is redrawn and relevant information are added in SOD
6014	12	16				What are the circles with numbers 1-6 standing for? Why do these several arrows vary in their width? Furthermore, the figure 12.1 is not explained in the text. What is others in Built Environment? This figure is much too complex and incomplete.	Taken into account: The figure is redrawn and relevant information are added in SOD
17577	12	16				What do the circled numbers in the figure represent?	Taken into account: The figure is redrawn and relevant information are added in SOD
12845	12	16				In the European Nitrogen Assessment also a chapter was devoted to urban landscapes, titled 'Nitrogen flows and fate in urban landscapes' . IPCC figure 12.1 has the same layout as ENA's figure 12.6. I propose to pay some attention in IPCC chapter 12 to non-GHG's as they use the same methodology and encounter the same problems. Maybe it can be done by producing a new Box, or insert some additional text. I have attached the ENA chapter with interesting material from the city of Paris.	Taken into account: The figure is redrawn and relevant information are added in SOD. But Including a box referring to nigrogen in Paris would be out of scope for this chapter.
16656	12	16	13	16	22	This is introductory material that should come in the first few paragraphs of the chapter introduction.	Noted: This section is reframed and rewritten and these text are deleted in the process. Thus the comment is no longer relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
6015	12	16	16	16	22	Source is missing for the percental values.	Accepted: The source is Allwood et al 2010. But this text is removed in revision of the section.
17289	12	16	5		8	this issue is very important to develop ,for example there is the bilan carbone of ADEME agency that treats CO2 emissions measures with metabolism analysis.	Noted: This section is reframed and rewritten and these text are deleted in the process. Thus the comment is no longer relevant. Bilan Carbon is quoted in Table in section 12.2.2.3 in SOD
11035	12	17				suggest delete, and save space	Taken into account: The figure is deleted in rewriting of the section.
6016	12	17				Is it possible to classify the "other" (44%) industrial carbon emission into sub-categories?!	Noted: The figure is deleted in rewriting of the section.
18659	12	17				(Interesting figure on page 17 on global energy and process related CO2 emissions by sector for year 2006. Steel stands for 25% of industrial emissions! Source: Allwood et al, 2010)	Noted: The figure is deleted in rewriting of the section.
3171	12	17	1			doesn't figure 12.2 belong in the industry chapter? It doesn't really seem to be about human settlements centrally. Similarly, the central point of figure 12.1 is hard to understand. The main text says that the figure makes the point that human settlements are "metabolic systems" but the figure just makes a much simpler point (with no units) that material flows are interconnected. Perhaps useful with TSU help to work up one big iconic figure that really nails down how much and where settlements do this metabolic function.	Taken into account: The figure is deleted in rewriting of the section.
17578	12	17	11	17	11	While term "urban mining" is unfortunately used inconsistently, the appropriate usage refers to recovering materials from in-use stocks (either actively used stocks or dormant stocks). That is, it does not refer to recycling of discards (i.e., products and materials already leaving in-use stocks). See Klinglmair, M. and J. Fellner. 2010. Urban mining in times of raw material shortage: Exemplified by copper management in Austria during World War I. Journal of Industrial Ecology 14(4): 666-679.	Accepted: Will be taken care in the next round after SOD.
12459	12	17	13	17	21	Chinas proportional high share, about half of the global production of steel and cement is here linked to the rapid urbanisation phase in China. However, to put things in perspectiv, it should be mentioned in the text that a significant part of Chinas production of steel and cement is exported, and hence, is not only linked to the rapid utbanisation in CHina.	Noted: While section is rewritten, this text is still in 12.1.5 of SOD. This will be checked in the next round.
2503	12	17	28		29	note - evidence in several countries - EU, USA (not Japan) of peak car use	Noted: While section is rewritten, this text is still in 12.1.5 of SOD. This will be checked in the next round.
18797	12	18	18	18	23	Give number estimates	Taken into account: Second sentence of this para has been retained in 12.2.2.4. Some related numders are offered in 12.3.2.4 in SOD
12460	12	18	19	18	19	Please, clearified whether the figure 1,527,000 km2 is additional or the total urban area in 2030?	Taken into account: this is additional. But the text is removed in rewriting on the section.
2505	12	18	24			several refs missing - Muller et al, Bulkeley et al 2012, Strohbach and Hass, 2012, Chaparro and Tarrodos, 2009 etc.…	Noted
2506	12	18	29		30	Question about whether the 2C is a 2050 target - it has been downgraded and not agreed	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18798	12	18	41			Reference Chapters 3 and 4	Noted
18799	12	18	45			"can not be activated" instead of "underestimated"	Noted but the text is deleted in rewriting of the section.
2507	12	18	50			What is urban mining - explain	Noted: Will be addressed in next round
2504	12	18	7			rail not rails	Editorial
2509	12	19		21		Generally the section on metabolism is good - maybe make more of the need for consistency and the use of IO/LCA	Noted: but the section has gone through massive restructuring and rewriting.
2510	12	19		21		also need to link the main points together - at present left as individual points - there are strong interrelationships	Noted: but the section has gone through massive restructuring and rewriting.
2508	12	19	12		15	This sentence is repeated on p23	Taken into account: The text now is at section 12.3.8.
18800	12	19	14			Are there LCAs for this? What would be "ideal"?	Noted: The text is in 12.3.8 is SOD. No LCA information provided.
12461	12	19	21	19	22	Please consider to link this to what is said in paragraph 12.3.2.4, if appropriate.	Noted
2373	12	19	6			This would be an appropriate place for the Kennedy, Pincetl ..(2011) reference, incorrectly used on p. 27	Noted
18155	12	19	39	19	42	The sentence "material recovery and recycling from waste offers maximum benefit with regard to GHG savings" is not valid as a general statement. It may be true in specific cases, but there are many examples where transport and emissions from the recycling process override the savings from the recycling process. Using recycled materials instead of virgin materials does not imply less emissions as a general rule.	Noted: The comments belong to page 27, not page 19. But the text is deleted in rewriting of the section.
16658	12	20				Page 20 lines 5-10 and figure 12.3 – I don't see the relevance. Omit.	Noted: The figure which refers that has been taken off in revising of this section and the comment is no longer relevant.
2374	12	20	1	20	14	The material here on international trade might be cut	Noted, but the text has gone massive transformation already.
10404	12	20	11			The figure cannot prove that the decreasing relationship is linearity.R^2 is too small. The the decreasing relationship maybe nonlimear .	Noted: The figure which refers that has been taken off in revising of this section and the comment is no longer relevant.
18802	12	20	20			"income main driver of consumer emissions" - check linkage to other chapters also covering this	Noted: Chapter cross linkages will be done in the chapter after SOD.
17579	12	20	30	20	30	Why "however"? What is the contrast that is being indicated here?	Noted
10207	12	20	35	21	2	What about consumption of goods and services?	Noted: The chapter has gone through massive change from FOD.
11036	12	20	8			The text reads: 'This evidence therefore indicates that the smaller the territorial boundary of a spatial entity, the more important the role of that entity might be in the global system of production and consumption.' However, a better statement would be: 'This evidence indicates that the smaller the territorial boundary of a spatial entity, the more important the role of that entity in terms of the global exchange of emissions responsibility.'	Noted: The figure which refers that has been taken off in revising of this section and the comment is no longer relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15750	12	20	14	21		Application of compact city and mixed use should be evaluated in the context of environmental externalities which is missing in the discussions. Table 12.X should read as Table 12.1	Noted: but the section has gone through massive restructuring and rewriting. Compact city and mixed use rlated discussion have been consolidated in 12.4 in SOD. We will furtther pay attentions to the exvironemtnal externality in next round.
17115	12	20	6			The International Local Government GHG Emissions Analysis Protocol (IEAP) is the first effort that provides a detailed explanation of government and community GHG emissions. LGOP is the first national (US) supplement of IEAP and it focuses only government emissions.GPC, developed by ICLEI, C40 and WRi in 2012 presents a more updated vision for community emissions.	Noted, but the text has gone massive transformation and this comment is not relevant.In Gaps of knowledge, we have mentioned that different accounting protocols yield significantly different results, making cross-city comparisons of emissions or climate action plans difficult.
2513	12	21		94		the list of mitigation opportunities is not complete - this needs to be addressed	Noted: The table is revised to make a better sense . The table will be relooked in next round.
7312	12	21	14	22	4	It's not clear what this table is trying to accomplish for an "average" city [as stated in the caption]. Currently, no numbers are given (and it's unclear whether the authors plan to add numbers in subsequent drafts), so only qualitative "items" are listed. Also, what is meant by "average" city--average GDP/cap? average population? Given the diversity of the world's cities, is this meaningful? Would recommend deleting this table in its present form...IF deleted, pls ignore next 2 comments which also pertain to this table.	Rejected: The table is revised to make a better sense . The table will be relooked in next round.
7313	12	21	14	22	4	"waste" is missing "co-benefits" of waste management, including protection of human health & the environment, renewable energy benefits	Noted: The table is revised to make a better sense . The table will be relooked in next round.
7314	12	21	14	22	4	"waste" is also missing "drivers", including waste minimization/recycling, public health [= major driver for waste management, as well as a "co-benefit"]	Noted: The table is revised to make a better sense . The table will be relooked in next round.
13243	12	22				(mitigation opportunities) : polycentric structure and transport mode relationship is not documented (paragraph 12.4.3.3 is poor).	Noted: The table will be further carefully checked in next round
17580	12	22				The abbreviations used in this table should be defined in table notes. "Inside" and "outside" should be explained as these are not standard terminology.	Noted: The table will be further carefully checked in next round
5876	12	22				Column 5 / agric./forestry: low carbon buildings will most probably have a higher share of wood instead of steel, aluminum or concrete, so striving for low-C buildings rises demand for wood. Also: the colour coding is not explained. See, for example, Sathre, R. & J. O'Connor (2010). A Synthesis of Research on Wood Products & Greenhouse Gas Impacts. Vancouver, B.C., FPInnovations. TR - 19R, 123 p. and the literature cited therein for examples for carbon-low constructions.	Noted: The table will be further carefully checked in next round
11318	12	22				The use of bicycles should be treated as a separate " zero carbon urban transport". It is important to distinguish the use of bicycles, that use no fossil fuels, from other modes of transport that are fuel efficient. This is also to encourage use of bicycle both in urban and peri-urban centres.	Noted: The table will be further carefully checked in next round

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12462	12	22	1			Changing food consumption as a mitigation of GHGs will not only effect the emissions from animals and manure, but also N2O-emissions from agricultural soils and carbon emissions from land use and land use change as the production of animal products occupies extensive land areas. This is stated clearly in WGIII chapter 11. Therefor it is suggested to add the words "emissions from land use and land use change"	Noted: The table is revised to make a better sense . The table will be relooked in next round.
17190	12	22	13	22	13	See my comment on the urban heat island above (cf. page 13, lines 38-39).	Noted
5523	12	22	20			Energy for heating is also signficantly reduced in high density developments- for multiple family dwellings	Noted: But the figure is only about electricity.
12463	12	22	20	23	10	Differences in electricity consumption between countries can not only be explained by urban density. The rate between electricity prices and other energy carriers will also be of importance. Norway has electricity prices, much lower than all other european countries whilst prices for oil and gas are at least at he same level as the rest of Europe. Because of this, electricity is used extensively for heating and industrial purposes which results in a very high per capita consumption of electricity. Similar differences could also be the case in other countries. This should be reflected in the text. Total energy use instead of only from electricity could be more correct.	Accepted: This will be incorporated in the next round
17191	12	22	20	23	4	The graph and the text is rather misleading as there is no mentioning of the fact that in some of the countries (especially Norway) nearly all electricity is produced from hydroelectrical power plants, thus resulting in no CO2 emissions. This electricity has traditionally been delivered at a low cost for the consumers, and in Norwegian cities electricity accounts for most space heating as well as other stationary energy use in dwellings as well as commercial buildings. Also, a considerable part of industrial energy use has been from electricity. Also in Sweden and Finland electricity makes up a high proportion of the energy used for the above-mentioned purposes, although not as high shares as in Norway. Moreover, I doubt very much that the figures on urban densities are reliable. According to the graph, Norwegian cities are on average some six time denser than Turkish cities, which is obviously not the case in reality. I suspect that the authors of the graph have calculated densities within administrative borders instead of within the urbanized land. However, any effect of urban density on the need for electricity has nothing to do with whether or not a city municipality includes a lot of nonurban (rural) land within its administrative borders. The text and the graph from page 22, line 20 to page 23, line 4 is thus highly misleading and should be deleted.	Noted: The figure will be given due check and supporting texts will be done carefully in the next round.
2375	12	22	5		19	There's some repeat here of earlier material	Taken into account: The sections are rewritten
17581	12	22	8		8	What is NMT?	Taken into account: Non motorized transport
14711	12	22	4	26	16	This whole section seems redundant with section 12.3.2	Taken into account: The section has been rewritten and this redundency is taken care.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5729	12	22				The claim that increased urban density involves greater efficiency of energy use in transport, is a controversial one. Newman and Kenworthy's influential work has been critiqued by several authors. For example, see Michael Breheny (1995) "The Compact City and Transport Energy Consumption"; Ray Brindle (1994) "Lies, Damned Lies and Automobile Dependence"; Ray Brindle (1996) "Transport and Urban Form: The Not-So-Vital Link"; Alan W. Evans (1998) "Dr Pangloss Finds His Profession: Sustainability, Transport and Land Use Planning in Britain"; Alan W. Evans (2012) "Planning, Density, Fuel Use and Emissions: a Survey"; Michael Breheny and Ian Gordon (1997) "Densities in the Sustainable City"; Ian Gordon (1997) "Densities, Urban Form and Travel Behaviour"; Ian Gordon (2008) "Density and the Built Environment"; Michael Wegener (1998) "Sustainable urban spatial structures: do we need to rebuild our cities?"; Marcial H. Echenique et al, (2012) "Growing Cities Sustainably: Does Urban Form Really Matter?"; Steve Melia et al (2011) "The Paradox of Intensification"; and Paul Mees (2010) "Density and Transport Mode Choice in Australian, Canadian and US Cities". The reduction in urban footprint from increasing the density of housing, is not proportional to the increase in housing density, because typically more than 50% of an urban area is not housing. However road congestion increases in an exponential relationship with housing density. This is because roads on which traffic once flowed freely at crucial times of the day, become "stop-start" and end up carrying FEWER vehicles at those times of day than when housing density was lower. "Spill-back" of traffic occurs onto previously uncongested parts of the network. "Mode shift" is never sufficient to compensate for this effect. Even including Manhattan's level of density in data sets, finds no reversal of the trend to addition of numbers of vehicles in the given road space, as additional population is added. The rate at which vehicles are added merely reduces slightly for each increase in the population in the given space. The data on trip times (as opposed to distances) and local air pollution, do not favour higher densities. Toronto Board of Trade Paper: Barcelona 48.4 minutes (ROUND TRIP) Dallas 53.0 Milan 53.4 Seattle 55.5 Boston 55.8 Los Angeles 56.1 San Francisco 57.4 Chicago 61.4 Berlin 63.2 Halifax 65.0 Sydney 66.0 Madrid 66.1 Calgary 67.0	Noted: This section has been restructured and rewritten. All density related discussions have been moved to 12.4 in SOD in 12.4.1 to 12.4.7. We will further look into these issues carefully in the next round.
18034	12	22	11	22	11	Newman and Kenworthy 1996 showed a correlation between density and fuel consumption and inferred that lower density cities cause higher fuel consumption. However, an alternative explanation is that for those cities that have cheap travel relative to income, people tend to travel further in order to have more living space, as property prices are lower outside central areas. Thus, lower real transport cost is the cause of lower density rather than higher density being the cause of lower fuel consumption.	Noted: This text is deleted in restructuring and rewriting of this section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18035	12	22	12	22	12	Mitchell et al (2011) This paper was based on case studies which found that the effects of alternative spatial planning policies in the UK such as a more compact or more dispersed pattern would have a relatively small impacts on energy consumption compared to the policy trend over a 30 year period. A more recent paper describes the overall findings of this research:- Echenique Hargreaves Mitchell and Namdeo 2012 Growing Cities Sustainably; Does Urban Form Really Matter? Journal of the American Planning Association Spring 2012, Vol. 78, No. 2 pp. 121-137 .	Noted: The text to which this reference belongs to is deleted in restructuring and rewriting of this section.
2376	12	23				The fit in this plot is poor; and the data shown perhaps suggests that cold climate or latitude is the main factor behind electricity use.	Noted: The figure will be given due check and supporting texts will be done carefully in the next round.
13244	12	23				poor regression : we suggest to suppress that figure.	Noted: The figure will be given due check and supporting texts will be done carefully in the next round.
17582	12	23	13	23	13	What is "total settlement forms"?	Taken into account: The phrase doesnot appear in the revised chapter
10405	12	23	4			The sample points in the figure are not distributed symmertrical along the line .So the result is not convinced.	Noted: The figure will be given due check and supporting texts will be done carefully in the next round.
18803	12	23	7	23	10	Already mentioned above, try do reduce reduncancy: Consider shortening here and focussing on ref. to 12.3	Noted: The texts has gone massive change in rewriting of the section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5730	12	23				Anthony Downs (2007) “A Growth Strategy for the Greater Vancouver Region”: ".....The cost of land poses a key dilemma for urban planners everywhere who want to concentrate jobs together so they can be best served by public transit. Such concentration raises the costs of land near centers; in fact, it would confer a monopoly advantage on landowners who owned such land and could exploit firms trying to locate there. Now firms want to locate elsewhere to cut their land costs. Planned concentration of jobs in a few centers is not consistent with private ownership and control of land. Some type of collective control over that land would be necessary to prevent monopolistic exploitation of land values. In theory, this could be done with high land taxes in such areas and special zoning rules. But adopting those devices is politically difficult in a free enterprise economy..... ".....A similar but less intensive dilemma concerns land near transit stops, where it would be most efficient to concentrate high-density housing and jobs. That also creates ownership monopolies over such land unless it is specially controlled or taxed. Yet focusing development near transit stops is a key to using more transit....." The famous example provided by Curitiba, Brazil, did initially involve large amounts of compulsorily acquired land for “transit oriented development”, although most advocates analyses of Curitiba's wonderfully successful system are silent on this point, which is actually a crucial one. See Jonas Rabinovich, "Curitiba: Towards Sustainable Development" (1992), which at least mentions this reality although without identifying its importance. Curitiba’s planners also had the wisdom to go with buses and busways rather than rail based systems. Buses can pick up passengers anywhere before entering the high-speed busway, which has telling advantages over rail based systems that require “transfers” from other modes. Bus based systems can also be adapted to follow later urban development wherever it proves popular, rather than imposing self-defeating distortions in land market prices with fixed rail routes and strictly “planned” integration of transit and development. Curitiba has had considerable problems under the free market since the original project was completed, with lower income people being "priced out" of the transit-served locations, and further development at these locations being stalled by high land prices.	Noted: The section has been re-written.
6018	12	24	1	24	11	Sub-Sub-Chapters could be summarized. Maybe it would be more structured if the authors refer to polycentric structure, finger grain systems and land use mix in section 12.3 and give there a brief overview. --> text would be shortened --> sub-sub-chapters do not appear that short and empty	Taken into account: The whole section is restructured and rewritten.
2377	12	24	1	24	11	Could cut given the overlap with 12.3	Taken into account: The whole section is restructured and rewritten.
17192	12	24	1	24	4	See my above comments on polycentricity related to the text on page 14, lines 4-12. Why are, by the way, the same issues as in section 12.3 repeated here on page 24?	Taken into account: The whole section is restructured and rewritten.
6017	12	24	2	24	2	Source is missing. This section is not correct. High density does not lead to higher emissions. Higher emission depends on the type of density etc.	Taken into account: The whole section is restructured and rewritten.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
2378	12	24	36			These embodied energy percentages seem untypically high (although it depends on climate). Embodied energy in building materials is typically of the order 20 kWh/m2/yr, but can be as high as 100 kWh/m2/yr in some cases, see Sartori and Hestnes (2007) Energy use in the life cycle of conventional and low-energy buildings: A review article Energy and Buildings 39, 249–257.	Noted: These texts are deleted in restructuring and rewriting of the section.
18805	12	24	36	24	37	60%/67% - have figure /table on this?	Noted: These texts are deleted in restructuring and rewriting of the section.
5986	12	24		24		This is wrong. You already state this in chapter 12.3.2.3 with reference to a source from 1995. It is wrong, that high density leads to higher emissions. As you say in other chapters, it depends on the type of density etc.	Taken into account: This is deleted in the rewriting of the chapter.
12585	12	24				Urban greenscapes has many co-benefits other than attractiveness and limited C-sequestration. It has health (both mental & physical) benefits, support bio-diversity (thus alignining with goals of CBD), promote social interaction (increase Happiness Index), raise property values, reduces health costs, induce passive cooling, conserve rain water, regulate urban air temperatures and so on.... risks involved are unscientific urban plantation (location, species, spacings), poor planning/design/implementation and inadequate maintenace and management bu urban/civic bodies.	Taken into account: This is moved to 12.8 section of the chapter to be elaborated in the context of co-benefit and other contexts.
5524	12	24				As per comments on table, this discussion is appreciated. Water use including reclaimed water, grey water and stormwater systems should be included in this section	Noted: This is moved to 12.8 section of the chapter to be elaborated in the context of co-benefit and other contexts.
11714	12	24	28	25	221	This section should be coordinated with chapter 9. Percentage of GHG emissions in building sector (line 29-30) is different from chapter 9. Detailed explanation on the effect of building orientation, compactness, and configuration (line 39-41) doesn't appear in chapter 9. The role of building design and urban design should be distinguished and it should be emphasized both roles are important.	Noted: We have deleted this section in restructing and rewriting. We are not discussing buildings any more here but only in the context of integrated urban system.
17584	12	25	16	25	20	This sentence is very long. Delete "due to the high energy use related to the replacement of the building stock compared to the energy use of renovation measures"	Noted: These texts are deleted in restructuring and rewriting of the section.
17193	12	25	22	26	16	It seems a bit confusing to place the text of section 12.4.3.8 in a separate part of the chapter from the texts dealing with the impacts of urban structure/form on travel behavior. Moreover, I miss a discussion of the traffic-generating effect of expanding the road capacity in congested urban areas. See Litman, 2011; Noland & Lem, 2002; SACTRA, 1994; Mogridge, 1997; Næss et al., 2001.	Noted: The whole section is restructured and rewritten.
11037	12	25	23			The use of the term ‘boundary conditions’ in ‘Transport generates assorted boundary conditions for social organization…’ is unnecessary jargon and should be put more simply.	Taken into account: Removed such word in revised text.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17585	12	25	24	25	25	The logic of this claim is unclear. Why does the DISTINCTIVENESS of the amounts of infrastructure for urban transport mean that urban transport must consume VARIED amounts of material and energy?	Rejected. Different types of transport infrastructures demand different ammount of materials per passenger/km. In that sense, public transportation is more efficient in terms of material and energy demand per passenger/km. However among each transport mode, considerable variations may take place. BUT the text to which comment was made deleted in restructuring and rewriting of the sections.
2515	12	25	28		30	These are US figures - there is huge variability, even in the US - this needs to be brought out - the land take in Dallas versus that in New York. But in many emerging cities the amount of land for streets is about half that in other cities - and the street is used for so many different activities.	Taken into account: The text is deleted in restructuring and rewriting
17583	12	25	3	25	4	This sentence is garbled.	Noted: These texts are deleted in restructuring and rewriting of the section.
2379	12	25	41			Presumably the units here are GJ/year. I think the term "most Chinese cities" might be clarified, or is it China on average? Transport energy use in China's largest cities is much higher than 2 GJ/year. For example, in 2005, Beijing was 18.2 GJ/year; Shanghai 15.0 GJ/year. (Source: Sugar, L., C.A. Kennedy, E. Leman, 2012. Greenhouse Gas Emissions from Chinese Cities, Journal of Industrial Ecology, DOI: 10.1111/j.1530-9290.2012.00481.x)	Taken into account: The text is deleted in restructuring and rewriting
18808	12	25	41	25	42	If more data can be acquired, please consider having a FIGURE with examples from a multitude of countries indicating the range of energy consumption (similar to Fig.12.4). Ideally have this not only for transport but also other types of energy consumption of urban areas.	Rejected: Data not available
2516	12	25	42		46	These units are inconsistent and totally meaningless - consistent metrics should be used throughout	Noted
12464	12	25	43	25	46	The units used, ton/capita/yr of material- energy input, gas-output are difficult to understand. Also the ton of solid residues and 160+2ton/capita/yr of material stock be explained or clarified	Noted
18810	12	25	45			"160+2" unclear	Noted: The text is deleted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5731	12	25	47	26	2	Urban planning has unintended consequences because of the way urban land markets operate. It is far more effective and far less costly to use taxes and fees on the resources and the infrastructure for which less consumption is desired. For example, see CHESHIRE, Paul, and SHEPPARD, Stephen: "The Welfare Economics of Land Use Planning" (2001) CHESHIRE, Paul, and SHEPPARD, Stephen: The introduction of price signals into land use planning decision-making : a proposal (2005) CHESHIRE, Paul, and VERMEULEN, Wouter: "Land markets and their regulation: the welfare economics of planning" (2009) CHESHIRE, Paul: "Urban land markets and policy failures". (2009) CHESHIRE, Paul (2009): "Urban Containment, Housing Affordability and Price Stability: Irreconcilable Goals" ANAS and Rhee (2006) “Curbing excess sprawl with congestion tolls and urban boundaries” Anas and Rhee (2006) “When are urban growth boundaries not a second-best to congestion tolls?” The distinguished urban economist Edwin S. Mills, in “Truly Smart Smart Growth” (1999) comments that “……governments’ job is to get the prices right…..” not to impose blunt instrument policy restrictions on how and where people are to live.	Noted
17308	12	26		26		This chapter, and the chapter on land use planning / spatial planning, ignore the important options local government have to plan for the siting of renewable energy installations and plants. Even with national regulation incentivizing renewables, such as feed-in tariffs, it must be ensured that there are sites available for the installations. In many countries, local governments are in charge of this.	Noted
17586	12	26	15	26	16	Awkward sentence structure	Editorial
7498	12	26	17	26	18	“Municipal energy utilities can use efficient local electricity and heat generating plants and renewable energy sources such as solar and wind”. Biomass and municipal waste can also be used to generate electricity and supply district heating and hot water.	Accepted
18812	12	26	27	26	28	Link to Ch.9 (using rooftops for renewables)	Noted
15463	12	26	33	26	39	Additionally, the concept of the Smart Grid is being supplanted by the Networked Energy Web, which is natural progression in the field of ICT. They define it as the convergence of energy efficiency, smart grid, and distributed power generation. In some circles, this network also includes waste management, resource circulation, agriculture, and other material flows. See: http://www.americanprogress.org/wp-content/uploads/2012/08/0709_CleanEnergyWeb2.pdf	Taken into account: The text is deleted in restructuring and rewriting
18813	12	26	37	26	38	Link to Ch.8 (electric vehicles as storage system)	Taken into account: The text is deleted in restructuring and rewriting
18815	12	26	42	26	43	Link to Ch.10 (sewage treatment) as Ch.10 covers waste	Taken into account: Cross referenced

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5525	12	26	43	27	5	It is important in this discussion to differentiate between centralized water treatment infrasctructure and decentralized systems. In areas where centralized systems have not been constructed it is doubtful that centralized systems based on a model of using water as a conveyance for wastes makes sense. See Gaulke et al., 2012- and this does not even consider water availability	Accepted: see 12.4.11 of SOD. An elaborate discussions is not possible due to space constraints.
12465	12	26	45	26	46	It seems a little unclear how the "oil burned" is related to Water management. Is it used for the operation of diese engines for pumping and treatment of water/sewage? And does this translate into 3,4 million barrels in m3, tons, GWh or emissions of GHGs and related to the population served and/or the overall GHGs from Mexico City? Please claify.	Taken into account: It is oil burned in conveying water through tankers. The section has been revised and this part of the text has been deleted.
12466	12	26	47	26	48	The sentence" Australian Water Industries GHG-emissions have been related up to 76 % to imported electricity use" needs some improvement to be understandable.	Accepted: The text has been revised
17587	12	26	47	26	48	Awkward wording: "have been related up to"	Accepted
2340	12	26				Water management- Not only urban water supply causes to GHG emission. Countries like Mongolia depend on mining industries. Massive groundwater abstraction is reported because of mining industries. While they do not have comprehensive surveillance system and governance mechanism, mining industry water usages leads to air pollution as well as water pollution (Acidification of water, salinasation, Murcury). Furthermore, land and water bodies are polluted because of gold mining in Mongolia.	Relected: Out of scope of this chapter
2517	12	27				the comments on water, energy and carbon - and the linkages are really important	Noted
18816	12	27	10	27	15	Concerning "water security" link to Section 12.5	Noted
18817	12	27	10	27	15	Link to Ch.7 (they should [don't know if they actually do] somewhere discuss tension water-energy in detail)	Accepted, the text has been revised
2380	12	27	18			Doesn't the energy intensity of water from tankers vary depending on how far the tanker travels etc., Reference?	Accepted, the section has been revised
17588	12	27	21	27	21	Should "abstractions" be "extractions"?	editorial
2381	12	27	35			I don't follow this sentence, and think it may be an incorrect reference (I don't recall us making this point in that paper)	Accepted: The text has been revised
18819	12	27	38			Should read "Figure 12.5" instead of "Figure 1"	Accepted: The figure has been removed.
17589	12	27	39	27	40	Some discussion of the impact of waste prevention on GHG emissions should be included. U.S. Environmental Protection Agency and Office of Solid Waste and Emergency Response. 2009. Opportunities to Reduce Greenhouse Gas Emissions through Materials and Land Management Practices: U.S. Environmental Protection Agency.	Accepted: Cross reference Ch 10
17590	12	27	40	27	41	This statement about the quantity of GHG savings in the US should have a supporting reference.	Accepted: Reference given
18541	12	27				Much of the text and data in this section may be more aptly placed in the excursus section on Waste in Chapter 10 - indeed much of the same text already appears there. Please liaise with Ch 10 CLAs on this point.	Accepted. Ch 10 referenced.
17307	12	28		28		Consumption is not specific to urban settlements. Regarding the overall strcuture of the report, I would recommend to treat this as a separate chapter, and, under "human settlements" or "urban issues" deal only with issues specific to urban agglomerations, such as urban planning etc.	Rejected: We have retained food discussions but but rewritten.
17591	12	28				There is a word missing in item A in the legend -- "long distance transport SHOULD be avoided" The caption should indicate the date and region depicted in the figure.	Noted: The figure is deleted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7315	12	28	10			This figure, as presented, is misleading. A broader survey of the waste literature gives very wide ranges for the emissions from various waste management strategies that is not adequately captured in this figure using only numbers from selective literature and, importantly, without the specific assumptions contained in that literature. Most of the literature cited is from various life-cycle analysis (LCA) studies which assume a variety of data inputs and conditions. Moreover, literature which directly measured emissions from various waste management processes is generally missing from this list. I would recommend consulting the AR4.WGIII report.Chapter 10.Waste as a starting point.	Accepted; The figure is deleted
12467	12	28	10			The figure shows that composting has a higher GHG saving potential per tonne of wet waste than anaerobic digestion. This seems to be in contradiction to the common perception that anaerobic digestion is better due its production of biogas which can be used to substitute fossil energy. The value of the nutrients in the restproducts should be more or less the same for both treatments. Please consider to ivestigate this further.	Taken into account: Figure deleted
2518	12	28	14		27	same is true of the food consumption - perhaps extend these two and come back to them at the end	taken into account; This part is rewritten.
17592	12	28	28	28	28	The use of "metabolism" in this sense, while well known in industrial ecology and in some social science communities is not well known elsewhere. It should be explained and also added to the glossary.	Accepted
5526	12	29	12		17	The previous chapter on forestry and agriculture has good information on emissions associated with different types of diets, showing signfiicantly reduced emissions with limited meat intake, particularly with elimination of meat from ruminants. In addition to the emissions associated with meat, dairy and chickens- it would be helpful to inclue an estimate on the potential contribution that urban and peri urban agriculture could make- here poultry and a range of fruit and vegetables could be produced in significant quantities and this would present a different picture	Noted: but such info is scarce at urban context, see 12.4.12 in SOD
12468	12	29	18	29	27	Please consider to make this text and numbers consistant with WGIII chapter 11 p.28 line13 to p.30 line 3 and WGII chapter 19 p.16. which treat these issues more extensively. The effect of diet changes on GHG emissions, land use and food security is empasized clearly in those paragraphs.	Accepted: The text are removed in rewriting
17594	12	29	20	29	27	This is an extraordinarily long sentence!	Accepted
11038	12	29	23			Similar baffling use of wording ‘boundary conditions’ – needs translation.	Accepted: Whole text deleted in rewriting
2519	12	29	27			increased	Editorial

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5732	12	29	28	31	17	Urban planning has unintended consequences because of the way urban land markets operate. It is far more effective and far less costly to use taxes and fees on the resources and the infrastructure for which less consumption is desired. For example, see CHESHIRE, Paul, and SHEPPARD, Stephen: "The Welfare Economics of Land Use Planning" (2001) CHESHIRE, Paul, and SHEPPARD, Stephen: The introduction of price signals into land use planning decision-making : a proposal (2005) CHESHIRE, Paul, and VERMEULEN, Wouter: "Land markets and their regulation: the welfare economics of planning" (2009) CHESHIRE, Paul: "Urban land markets and policy failures". (2009) CHESHIRE, Paul (2009): "Urban Containment, Housing Affordability and Price Stability: Irreconcilable Goals" ANAS and Rhee (2006) “Curbing excess sprawl with congestion tolls and urban boundaries” Anas and Rhee (2006) “When are urban growth boundaries not a second-best to congestion tolls?” The distinguished urban economist Edwin S. Mills, in “Truly Smart Smart Growth” (1999) comments that “……governments’ job is to get the prices right…..” not to impose blunt instrument policy restrictions on how and where people are to live.	Accepted: A new subsection on land value capture has been added as 12.6.4 in SOD.
13245	12	29	42	29	43	no explicit mention of transport : is it already included in land-use ? Should be clarified	Noted: Perhaps not need for clarifying
12469	12	29	47	30	1	Please consider to clearify to which climate target the figure of a 100-340 Gtc equivalents from land based mitigation should contribute. Is it an atmospheric 450 ppm CO2-eq concentration stabilisation or a certain limitation in temperature increase or……? Further, please explain what assumptions are behind such a wide interval. The expression "land based mitigation" should be clearified; is it identical with the "integrated spatial planning" mentioned before?	Noted: Will be relooked in the next round
3357	12	29	47	30	1	The reference refers to agriculture and forestry and not spatial planning. The sentence should be removed as it is misleading.	Noted: Will be relooked in the next round
14712	12	29	47	29	47	On this point, you may cite Viguié, Vincent, et Stéphane Hallegatte. 2012. « Trade-offs and Synergies in Urban Climate Policies ». Nature Climate Change 2 (5) (mars 4): 334-337. doi:10.1038/nclimate1434.	Noted
18822	12	29	48			Bring "100 to 340 Gtc equivalents" into context, i.e. compare to other numbers and/or detail what scenario is referred to here, as "15-40%" is in the context of some scenario.	Noted: Will be relooked in the next round
17593	12	29	9	29	9	I don't understand what "inorganic residues …conforms the major remaining outflows" means. Should "conforms" be "constitutes"?	Accepted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15506	12	29				Urban systems: activities, resources, and performance –Add a full sub-chapter on performance and metrics. Suggest adding also a full sub-chapter on tools to support strategies. Without being exhaustive quote initiative like French Bilan Carbone method (with dedicated modules on Services or Buildings for local authorities). Quote also example like Territorial Energy and Climate Plans (TECP). Quote also initiative working on a "resource" based approaches (such as the UNEP GI-REC). In a shorter way underline that on-going initiatives are already working to rank cities performance.	Rejected: But we have reframed and restructured the entire chapter.
11039	12	30	1			Rose et al. needs proper referencing: at present, it is simply 'Rose S.K., H. Ahammad, B. Eickhout, B. Fisher, A. Kurosawa, S. Rao, K. Riahi, and D.P. van Vuuren (2012). Landbased mitigation in climate stabilization.pdf.'	Accepted: This problem will be rectified in the next round
11040	12	30	16			'A low-carbon future can be achieved by spatial planning to promote new technologies to create new urban form (Crawford and French, 2008a).' needs explaining or deleting.	Taken into account: The text has been deleted in SOD while rewriting
6019	12	30	23	30	28	What land tools are meant? What are land tools for example? Source for the statement is missing.	Taken into account: The text has been deleted in SOD while rewriting
17596	12	30	23	30	28	This paragraph needs copyediting.	Taken into account: The text has been deleted in SOD while rewriting
11311	12	30	42	31	17	As is, this subsection on 'implementation instruments' focuses nearly exclusively on regulatory approaches, with scant discussion of programmatic approaches. The set of implementation instruments associated with brownfields redevelopment as an approach to densification should be cited here. See, for example, UN-Habitat. 2012. 'Urban patterns for a green economy: leveraging density'. Page 51 and 76-80. (Document available for download at www.unhabitat.org, under 'publications'.)	Taken into account: The table has been deleted and text has got written of the who section.
12470	12	30	48	30	48	Please change "table 1" to "table 12.2"	Taken into account: The table has been deleted
18823	12	30	48			"Table 12.2" instead of "Table 1"	Taken into account: The table has been deleted
17595	12	30	6	30	6	What is binomial relation density?	Taken into account: The text has been deleted in SOD while rewriting
2341	12	30		59		Some points in the Urban climate change mitigation: experiences and opportunities and under the 12.5.2 Urban strategies for mitigation can be merged by avoiding repetition.	Taken into account: The texts are rewritten in this section and this has been addressed.
3657	12	31	17	31	38	Pages with lot of space not used can be filled.	Noted
11310	12	31	8	31	13	To this list of 'more flexible approaches' to land use regulations should be added mixed-use zoning.	Taken into account: The text has been deleted in SOD while rewriting
13246	12	32				Appert (2005) can be quoted with the discussion on Green Belt policies (London Green Belt case study) : Appert, M. (2005). L'art du grand écart: maîtriser la mobilité dans la région métropolitaine de Londres. Mappemonde, 78(2), 1–18.	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
17194	12	32		32		In the table under 'Mixed Use Zones', the text says: 'Mixed use areas, especially dense areas, are likely to shorten auto trips and encourage pedestrian and bicycle trips'. This is dubious if it refers to mixed use in suburban neighborhoods, especially if the mix involves some sort of 'jobs-housing balance' in a suburban local district.. Most auto trips from suburban neighborhoods go to destinations outside the neighborhood, and the reduced auto use for local employees at workplaces interspersed in a suburban residential neighborhood will often be far outweighed by increased auto usage among the non-local employees. See Næss, 2011 for a discussion.	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
2382	12	33				The term Greenbelt is also used outside the UK, e.g., in Canada	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
17597	12	33				What are TND and TOD?	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
17195	12	33		33		Regarding the text in the table under 'greenbelt' and 'urban growth boundaries': The effect of these measures in encouraging densification instead of urban sprawl, and the resulting contribution to reducing traveling distances, auto usage and energy use for transport, should be mentioned. For evidence about the effect of greenbelts/growth boundaries on urban population density, see Næss et al (2011b) concerning Oslo. Portland, Oregon provides another example. For evidence about the effect of overall urban density on travel behavior and energy use, see Newman & Kenworthy (1989, 1999), Næss et al. (1996) and Lefevbre (2010).	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
11312	12	33				Suggest to add a new row on 'brownfields redevelopment', as distinct from land-readjustment. See, for example, UN-Habitat. 2012. 'Urban patterns for a green economy: leveraging density'. Page 51 and 76-80. (Document available for download at www.unhabitat.org, under 'publications'.)	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
11313	12	33				In the row entitled 'design-oriented codes', please spell out and briefly define TND and TOD, and briefly define Transect Zoning, SmartCode and Urban Village.	Noted: The table referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
3658	12	35	1	35	38	Pages with lot of space not used can be filled.	Noted
17304	12	36		41		and chapter 15.8.: Moreover, I would recommend to use the way of structuring according to modes of governance as suggested in Alber and Kern (2008) (which is cited several times, but not correctly). These governance modes can be applied both for national in relation to local governments, and local governments in relation to citizens and the local commercial sector.	Noted: The whole section is restructured and rewritten.
17598	12	36	14	36	15	Why is the DISSIMILARITY of land markets a reason why the real estate sector may be a good platform?	Noted: The text referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
5987	12	36	2	36	5	In many countries, national governments support climate change mitigation through spatial planning (cp. Your own chapter 12.7). In Germany, for example, with KlimaMORO, the federal government has supported a nationwide model program for climate change mitigation through spatial planning. This programme is now the base for a number of follow-up programmes, for example KLIMOPASS in the state of Baden-Württemberg. The idea that governments are sceptical about spatial planning contribution to mitigation is therefore too generalized and not valid for large parts of the world.	Noted: The text referred has not claimed that gov is sceptical about it.
6020	12	36	2	36	5	National governments support in many countries climate change mitigation and adaptation strategies through spatial planning (see your own chapter 12.7 and your given examples). E.g. in Germany, the government supported a nationwide model program dealing with mitigation and adaptation strategies, called KlimaMORO. Many national follow-up programs are based on KlimaMoro, for example the KLIMOPASS project in the state Baden-Wuerttemberg.	Noted: The texts has gone massive change in rewriting of the section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11043	12	36	23			The text states: 'Market-based land policies aiming at compact urbanization are likely to be effective tools in emission mitigation.' This is one-sided. Suggested text: 'Both market-based and strong regulatory land policies aiming at compact urbanization are likely to be important tools in emission mitigation.'	Noted: The text referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
18828	12	36	23	36	24	This claim should be substantiated by a reference.	Noted: The text referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
11042	12	36	9			The text states; 'Local mitigation strategies generally are instructed by the regional or national policies, which again are directed by international agreements (i.e. UNFCCC, Kyoto protocol) for reducing GHG emissions.' This may be true in some countries, but in others quite the reverse holds, e.g. in the USA and New Zealand, where national policies tend to be weaker than local policies. Suggested replacement text: 'Local mitigation strategies may be instructed by regional or national policies, in turn directed by international agreements (i.e. UNFCCC, Kyoto protocol) for reducing GHG emissions. However, in some countries, local strategies may have critical demonstration effects where national policies are weak.'	Noted: The text referred has been deleted in SOD while rewriting. The setion has been reframed and rewritten.
15751	12	36				Most of the urbanisation is taking place in the developing countries. Local agencies play an important role in implementation of urban planning policies. Most of the cities in developing countries are associated with weak data base and governance deficit.	Noted
16354	12	37	10	37	10	The reference Robinson et al 2006 is missing	Noted: The reference referred has been deleted in SOD while rewriting.
17599	12	37	19	37	26	The discussion of citizen participation sounds like conventional wisdom. It is my impression that the research literature in environmental psychology and sociology reports more complicated (and less optimistic) results. See Dietz, T. and P. C. Stern. 2002. New Tools for Environmental Protection: Education, Information, and Voluntary Measures. Washington, DC: National Academy Press.	Noted: To be looked more carefully in the next round but see 12.6.5 in SOD
5988	12	37	20	37	21	Public awareness is certainly an additional advantage for the implementation of mitigation measures. However, environmental sociology has shown that awareness for environmental issues becomes relevant for the behaviour of people only when other incentives, particularly economic incentives, trigger these. Solely awareness is not sufficient to acheive behavioural change. Cf. the low-cost-theory by Diekmann/ Preisendörfer 1998: Umweltbewusstsein und Umweltverhalten in Low- und High-Cost-Situationen: Eine empirische Überprüfung der Low-Cost-Hypothese. In: Zeitschrift für Soziologie 27: 438-453)	Noted
17600	12	37		38		Be careful in the use of the term "states." In the European Union, "states" generally refers to member states, i.e., national governments. In many other countries, the relevant term is provinces.	Taken into account: Checked
3359	12	38	29			the full reference is "F. Creutzig, A. Thomas, D. M. Kammen, E. Deakin (2012) Transport Demand Management in Beijing, China: Progress and Challenges In Low Carbon Transport in Asia: Capturing Climate and Development Co-benefits, edited by E. Zusman, A. Srinivasan, and S. Dhakal (Earthscan, London, 2012) ISBN 9781844079148." Currently, the co-authors are not mentioned.	Noted: The reference has been deleted in SOD while rewriting of text.
15467	12	38	31	38	43	Specifically, for the Asian context, CITYNET was created by UNESCAP, UNDP, and UN-HABITAT to create a network among cities in the Asia-Pacific . Today, it is comprised of 126 members see ref: http://www.citynet-ap.org/about/who-we-are/organisational-structure/	Noted: The comment is no more relevant in revised text
17602	12	38	33	38	33	Is the United States Mayors Climate Protection Agreement an NGO or an agreement?	Noted: The comment is no more relevant in revised text
17603	12	38	38	38	38	"regroups"??	Noted: The comment is no more relevant in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17601	12	38	5	38	7	Note that New Jersey has withdrawn from the consortium. The sentence should be updated. (Other states may also have withdrawn too.)	Noted: Comments not relevant in revised text
11314	12	38	8	38	29	For a discussion of the different governance modalities mentioned here as applied to multi-level climate governance, with case studies in 3 countries, see Kehew, Robert et al. 2013. "Formulating and implemetning climate change laws and policies in the Philippines, Mexico (Chiapas), and South Africa: A local government perspective". Local Environment: The International Journal of Justice and Sustainability". Forthcoming. (An earlier version of this paper appears as Kehew, Robert et al. 2012. "Urban climate governance in the Philippines, Mexico and South Africa: National- and State-Level Laws and Policies", in Otto-Zimmermann, Konrad, ed. 2012. Resilient Cities 2: Cities and Adaptation to Climate Change: Proceedings of the Global Forum 2011. Dordrecht: Springer, 305-316.)	Noted
17107	12	38	33	38	33	While US Climate Protection Agreement was intrumental on the way to COP15 in Copenhagen in 2009, there has not been major progress since then. In fact, Local Government Climate ROadmap started as a global collaboration of all global city networks in 2007 andis the hube for global climate advocacy of local governments. www.iclei.org/climate-roadmap and the Global Cities Covenant on Climate - the Mexico City Pact, adopted in 2010 and and been signed by more than 250 cities is a much more innovative, new, systematic, global and strategic initiative. www.mexicocitypact.org	Noted: The reference referred has been deleted in SOD while rewriting.
17108	12	38	33	38	34	ICLEI was established in 1990 (since you give date for all organizations). ICLEI not only serve fr strategies but develop tooll, leads dtrafting of protocols, implements capacity building programmes and leads global advocacy. ICLEi is also the focal point for local governments and local authoritieis constituency to the UNFCCC and the only LG that has an observer status at the IPCC.	Noted: but not very contexual comments
17109	12	38	34	28	35	World Mayors Council on Climate Change (world at the beginning is missing in the text) was established in 2005, not in 2009. It is a network of mayors, not cities. A more correct explanations is: Alliance of committed local government leaders concerned about the impacts of climate change on local communities and global ecosystems, economy and society advocating for enhanced engagement of local governments as governmental stakeholders in multilateral efforts addressing climate change and related issues of global sustainability.	Noted: The relevant text has been deleted in SOD while rewriting.
17309	12	39		41		There are more options availabale how national governments can stimulate and support local mitigation action than financing, See Alber and Kern (2008) for the other options.	Accepted: See table in 12.6.3 in SOD we have not cited this reference though yet
5989	12	39	17	39	20	There is no reason to advertise here for specific companies! Delete the examples!	Accepted
5990	12	39	24	39	34	From IPCC I expect a critical approach towards economic networks as the WBCSD, the WEF etc. Climate change may be an issue there, but too often it does not go beyond talks about mitigation; an assessment on these networks' actual contribution would be more appropriate!	Accepted: The section has been rewritten and there is no longer WBCSD and WEF reerences.
17604	12	39	41	39	41	Expenditures on what?	Noted: This text is now in 12.6.3. The clarification will be made in the next round.
17111	12	39	10	39	10	It is worthwhile to mention carbonn Cities Climate Registry as the response of local governments to measurable, reportable, verifiable climate action, which contains climate information of more tha 170 cities that control community GHG emissions of more than 1.2 GtCO2e as of Julxy 2012. 2012 Annual Report contains important tables, graphs, conclusions based on the information provided by 51 cities as of November 2011. It can be improrant to use this information as an input to the report. I recommend to include this report in the References list as well. Www.citiesclimateregistry.org	Rejected: The comment is not relevant in revised text
17113	12	39	10	39	10	There is no mention about the global climate advocacy of local governmets. This is mainly led by Local Government Climate Roadmap. Recognition of local governments as "governmental stakeholder" in pata 7 of Cancun Decisions is one of the key outcomes .	Noted but we have made consolidated discussion on multilevel governance in 12.6.1

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17110	12	39	4	39	5	Global Protocol is not a tool, it aims to guide all softwares in a consistent manner. This Protocol provides requirements and guidance for cities on preparing and publicly reporting a GHG emission inventory. The primary goal is to provide a standardized step-by-step approach to help cities quantify their GHG emissions in order to manage and reduce their GHG impacts. Reference is not provided in the References list as well.	Noted: The comment is no more relevant in revised text
2383	12	39				Not scientific literature - could be cut	Accepted: The section structure and texts are revised and rewritten
2384	12	39				Not scientific literature - could be cut	Accepted: The section structure and texts are revised and rewritten, see 12.6.3 in SOD
3360	12	40	24	40	26	One sentence on land value capture is a little short, given that is the most important instrument for highly successful public transit schemes in Tokyo or Singapure, and having huge potential for China/India. Rob Cervero could be cited here.	Accepted: We have a new sub section on value capture in SOD now
2385	12	40	30	40	21	The text here is more about emissions targets than financing; it could be cut	Accepted: The section has been restructures and rewritten
10028	12	40	32	40	33	"Heat pump" should be included into options for which EU funding can be applied, as described in (Silvia et al, 2011, page3 etc). <Reference> [1]Silvia Rezessy, Polo Betroldi (2010). Financing Energy Efficiency: Forging the link between financing and project implementation. Available at: http://ec.europa.eu/energy/efficiency/doc/financing_energy_efficiency.pdf	Accepted: The section has been restructured and rewritten, not longer relevant
17605	12	40	42	40	42	Portland Maine or Portland Oregon?	Accepted: The section has been restructured and rewritten, not longer relevant
10406	12	40	6			Compared to 12.6.4.2 and 12.6.4.3,title 12.6.4.1 seems not to be the same level with the other two.	Accepted: The section has been restructures and rewritten
17136	12	41	16			DELETE: modal shift to public transport REVISE TO: well harmonized multi-modal transport.	Accepted: The section has been restructured and rewritten, not longer relevant
11315	12	41	22	42	13	For a survey of some 14 climate finance sources from a perspective of accessibility by cities, see CDIA. 2012. "International financing options for city climate change interventions", especially page 10. This analysis concluded that, from a city perspective, access was 'difficult' for 12 of these 14 sources, and 'moderately difficult' for the remaining 2 sources surveyed.	Noted: will be given consoderation in the next round
11787	12	41	3	41	6	Delete. This description has no relation with finace.	Accepted: The section has been restructured and rewritten, not longer relevant
15507	12	41	31	41	40	Develop constraints and opportunities with the on-going schemes but explain how can/will Urban-CDM and Urban NAMAs can play a great role in mitigation (many recent reports on these issues such as the Urban NAMA's UNEP report in June 2012).	Noted: The section has been re-written.
2523	12	41	34		36	Need the latest figures on CDM - there has been an increase in the number of transport projects and others	Rejected: The comment is not relevant in revised text

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
13700	12	41	38	41	38	Add after "…OECD 2010": "Some of the methodological obstacles to energy efficiency projects in the building sector are discussed by Michaelowa et al. (2009). Sippel and Michaelowa (2012) show why municipalities have not been able to participating in the CDM in a significant way". Reference Michaelowa, A.; Hayashi, D.; Marr, M. (2009): Challenges for energy efficiency improvement under the CDM—the case of energy-efficient lighting, in: Energy Efficiency, 2, 4, p. 353-367; Sippel. M.; Michaelowa, A. (2012): Do global greenhouse gas emissions markets promote low-carbon cities in developing countries? Lessons learnt from the Clean Development Mechanism, in: Local Environment, forthcoming	Rejected: The comment is not relevant in revised text
18834	12	42	25			Consider adding here that consumer emissions are often not accounted for (see Section 12.4)	Rejected: The comment is not relevant in revised text
5991	12	42	31	42	32	What is meant by "strong political leadership"? This term is confusing and not based on any framework that could explain what exactly is meant here!	Accepted: The phrase is deleted in the text while rewriting
2524	12	42	31			Leadership issues are important - mentioned later, but introduce here - also education, information and involvement so that outcomes of actions are closer to expectations	Noted: the phrase is deleted in the text while rewriting
5528	12	42	31		34	Look at Seattle, WA and San Francisco, CA for waste management innovations	Noted: But the comment is not relevant in revised text anymore
10029	12	42	37	42	39	This part should be deleted completely. Tokyo cap & trade program is currently under the special measure for the Great East Japan Earthquake, which allows CO2 emission increase caused by home generation, which means the program is not implemented under normal condition. Therefore, Tokyo cap & trade program is not considered as a good example of cap & trade policy.	Noted: The comment is not relevant in revised text anymore. The related text is deleted.
2386	12	43	2			Perhaps too political here; straying from science - could be cut	Accepted: Taken care in revised text
6022	12	43		59		The authors describe this section as an assessment of urban climate change mitigation experience and their effectiveness in reducing GHG emission. They summarize the various urban mitigation action plans and describe the different types of mitigations srategies very well. Regarding my opinion of an assessment, there is a final sub-chapter missing. In this sub-chapter, you can conclude the issues of the different strategies and their reliablility in mitigation of CO2. Furthermore, an outlook can state junctions (efforts to address GHG emissions) in climate change mitigation, that could be important in the future regading the diverse stratgy plan and that have to be considered in the authors' view. The brief assessment paragraph could create a smoother transition to section 12.8.	Noted: The section has been completely rewritten. Isssues of reliability has been addressed in the revised text with the statement that the achievibility of target remains uncertain.
5992	12	43		94		Why don't you give information about the actual progress in GHG reduction that was achieved by the programs you mention?	Accepted: see 12.7.4 in the revised text
2544	12	44	15	44	15	"feasibility of plans, rhetoric versus the ability to implement" is highly subjective and uncertain	Accepted: phrase and related text has not appreared in the in the revised text
18837	12	44	19	44	31	Consider turning this paragraph into a figure.	Noted
2545	12	44	27	44	31	Needs referencing	Noted: The text of entre section has been rewritten
2525	12	44	37			Hamburg	Editorial
2526	12	44	44		46	Need to be bolder here - 36% is not enough - in developed cities we should be looking at 80% reductions in CO2	Rejected: not relevant for the text
2543	12	44	5	44	11	Needs referencing	Noted: But the section has been changed completely
2542	12	44	7	44	7	"Non-obligatory commitments" is not a clear term. If enacted by law they are mandatory.	Noted: 12.7.1 in revised text has used this term. We will explore further in next round.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17112	12	44	19	44	32	In 2009, ICLEI and City of Copenhagen released Copenhagen World Catalogoue of Local Climate Commitments which captured moer than 3000 commitments of local governments worlwide. This was followed by carbonn Cities Climate Registry which as of July 2012 captures more than 700 actions, 300 commitments and 250 GHg inventories of more than 170 cities.	Noted: Useful info but text and section is re-done and these detail info is no longer there in the revised text
17606	12	45				Figure is difficult to read in black & white.	Noted: Figure deleted
2546	12	45				Mitigation graph should present also baselines where available	Noted: Figure deleted
2529	12	45	11		16	Where are the largest cities - from India, China and SE Asia and S America?	Noted: Since related figure is deleted in SOD, this figure caption is no longer relevant
2528	12	45	17			Note that this figure is only about 5% of the total urban population	Noted: Since related figure is deleted in SOD, this figure caption is no longer relevant
17608	12	45	17	45	17	Population in what year?	Noted: Since related figure is deleted in SOD, this figure caption is no longer relevant
11788	12	45	18			With regard to No.80, this sentence is not needed.	Accepted: Removed
2547	12	45	18	46	21	This part could show more e.g. a taxonomy table of actions pledged or conducted by cities, showing what a mayor can do in practice	Noted: The entire section is restructured and rewritten, we have not been able to do texonomy table but see revised text at 12.7 in SOD
2527	12	45	2			This is a key point that needs expansion and to be in conclusions - there is very little monitoring of outcomes - this is central to any target achievement, namely that progress must be monitored and actions strengthened if targets are not met	Accepted: In Executive summary, we have reflected this in SOD
2530	12	45	25		26	Question as why Delhi should have a reduction target - there has to be growth of CO2 emissions in the developing cities - but less than trend following - it is the developed cities that must make the major contributions this central point is not made - otherwise the Chapter is taking a very developed country perspective	Noted: its is not implied here who should cut how much. The meaning here is that clear target is needed to check the goal, progress and achievement....
10407	12	45	4			The figure plotted is based on the investigation which there are only 12 Asian cities,among them ,11 are Japansese, one in Thailand.This kind of investigation cannot be representive.	Accepted: Removed
17607	12	45	9	45	9	What website?	Noted: Since related figure is deleted in SOD, this figure caption is no longer relevant
2531	12	46	10		15	Unclear - the meaning of this section	Noted
17310	12	46	15	46	15	Wall fall profits accounted only for some 50% of the GHG emissions reductions in eastern Germany, as substantiated e.g. in Joachim Schleich, Wolfgang Eichhammer, Ulla Boede, Frank Gagelmann, Eberhard Jochem, Barbara Schlomann & Hans-Joachim Ziesing: "Greenhouse gas reductions in Germany—lucky strike or hard work?" Climate Policy Volume 1, Issue 3, 2001. pages 363-380. They say "a diverse set of policies also had a significant effect on the reduction of greenhouse gases" which, for some major cities such as Dresden, amounted to some 50% already in the nineties.	Noted: will be looked into in the next round
3659	12	46	22	46	38	Pages with lot of space not used can be filled.	Editorial
18839	12	47				Box 12.1 is too detailed. Cap-and-Trade should not be explained here but referenced from the policy chapter where it is introduced.	Noted: The box is deleted in line with restructuring and rewriting of the section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11789	12	47	2	47	45	Refering to only Tokyo city's climate actions in the box isn't appropriate under discussing the policy including treatment of the new energy mix and climate change policy in Japan. Box 12.1 should be deleted all.	Noted: The box is deleted in line with the restructuring and rewriting of the section.
17609	12	47	45	47	45	What is "eco-driving"?	Noted: The text is deleted in line with restructuring and rewriting of the section.
10030	12	47				This part should be deleted completely. Tokyo cap & trade program is currently under the special measure for the Great East Japan Earthquake, which allows CO2 emission increase caused by home generation, which means the program is not implemented under normal condition. Therefore, Tokyo cap & trade program is not considered as a good example of cap & trade policy.	Noted: The box is deleted in line with restructuring and rewriting of the section.
2548	12	48				Needs better geographical balance	Noted: The table is deleted in line with restructuring and rewriting of the section.
2532	12	48	12		13	Not sure that any city has taken an aggressive agenda - some like Freiburg have followed a consistent pathway over a period of time - political, business and local support.	Noted: The text is deleted in line with restructuring and rewriting of the section.
18840	12	48	3			Should read "Table 12.3" instead of "Table 12.7.1"	Editorial
17618	12	49		58		This section needs substantial revision and editing. The sentence structure and grammar needs correction. The content appears to have been taken verbatim from reports prepared by other entities -- probably the cities themselves. And, most important, the content is primarily composed of earnest and or promotional statements of intent, rather than dispassionate description and analysis. The section could also use subheadings.	Accepted: The section has been restructured and rewritten
10408	12	49	2			The content of this section is too much,which should be shorten.And this meets the need of the excutive summary.Table12.7 is enough.	Accepted: The section has been restructured and rewritten
15508	12	49	2			Mitigation strategies of urban climate change plans - Territorial Energy and Climate Plans can be included in this sub-chapter	Noted: The section has been restructured and rewritten
19006	12	5	41	5	42	The text says, 'While spatial planning can influence energy use and emissions, there are limited quantitative assessments of the emissions savings through spatial planning strategies'. Due to the very different urban contexts (city size, geographical setting, affluence level, dominant culture, social cohesion/segregation etc.), it should not at all be an aim to develop general figures for savings potentials. Rather, examples form different cities could be mentioned, leaving it up to the users of the information to assess whether the context of the example is sufficiently similar to the planning context at hand. (See Næss, 2004 and Næss & Strand, 2012 for more elaborate discussion.)	Noted. This comment actually refers to Ch.12.
3332	12	5		57		Many sentences start with "there are" or similar constructions. Such constructions can often be deleted by finding an appropriate verb, shortening sentences and clarifying content.	Noted
3336	12	5		6		The Executive Summary could be shortened by 1 paragraph, reducing its lenght to 1 page. There are a few statements that containt redundant messages.	Accepted: It is rewritten. However, text is crossing 1 page and it will be shortened after SOD.
3331	12	5		72		The FOD is well written and contains many valuable parts. I see options for shortening as follows: Reduce some redundancy between 12.3 and 12.4 (see below for details); reduce table overviews, e.g. delete the L.A. and Chicago examples (both US!). A valuable contribution would be to design a table that specifies the differences of human settlements across different world regions, and accordingly the different solution strategies in spatial plannning.	Noted: The entire chapter is reframed, rewritten and streamlined.
3335	12	5	11	5	14	Is the first part of the statement still true when GHG emissions from aviation are allocated to urban inhabitants? 12.4.2.2. indicates that inclusion of consumption-based emissions leads to a reversal of the statement. So perhaps, the statement should relate to "direct emissions", to avoid possible misunderstandings.	Noted: The text is deleted in subsequent revision.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
18772	12	5	11			"When normalized by ..." to be deleted, as "per capita" is enough.	Noted: The text is deleted in subsequent revision.
2369	12	5	14			While I agree that there is a need for a standardized methodology for city-level accounting, some recognition of recent efforts such as the global protocol (as per p.39, line 5) might be made	Noted: The text is deleted in subsequent revision.
3333	12	5	2	5	3	A bold statement. Is there evidence that in some quantitative way, urbanization is more importantn in structuring human settlements than say income or demographics?	Noted: The text is deleted in subsequent revision.
2261	12	5	2	69	33	There is no evidence that emissions of greenhouse gases hav any harmful effect on the climate. .This information is thus not a cause for concern so the whole Chapter is unnecessary. It is also surprising that while the supposed, unproven theory relies on changes in the atmospheric concentioin of greenhouse gases. you seem here to be exclusively concerned with emissions. which are not necessarily related to concentrations	rejected
5997	12	5	2	5	3	Statement is far too general and e.g. for German/ European cities it is not correct. The recent decades in European human settlement are characterised by suburbanization trends and only for the last decade re-urbanization tendencies can be observed (see figure in Champion, T. (2001). Urbanization, suburbanization, counterurbanization and reubranization, In Hadnbook of Urban Studies Ed, R. Paddison (Sage, London), p.147).	Noted: The text is deleted in subsequent revision.
17172	12	5	20	5	20	'Intra-urban centralization of specialized jobs' should be added	Noted: The text is deleted in subsequent revision. A bit refined statement exist in SOD executive summary in later paragraph.
18773	12	5	24			"lock-in": in line 39 "difficulty to change" talks about the same - bring this together	Noted: The text is deleted in subsequent revision.
5998	12	5	34	5	34	To add: Not only coordination of infrastructure can influence resource use and emission. Furthermore, the degree of interconnectedness of infrastructure systems affects them.	Taken into account: The text is deleted in subsequent revision. However, importantce of connectivity is mentioed in SOD executive summary.
3334	12	5	4	5	5	"global economy" = GNP?/GDP? Number of transactions?	Noted: The text is deleted in subsequent revision.
17174	12	5	44	5	45	The text says, 'Governance of mitigation in settlements benefits from a polycentric and multilevel governance approach'. I do not agree. In many metropolitan areas, competitions between municipalities leads to a more sprawling and car-based development than what could be obtained through a legally binding regional planning regime. See, for example, Næss et al., 2011 a and b.	Rejected: We have not used polycenrtic word in revised version but we stand-by that multi-level governance and institutional arrangements are required to move human settlements towards the principles of low carbon development given the way urban areas are governed. This is clear in existing literature.
18774	12	5	44			There are also examples for the opposite with local governance being hindered by national laws or by things they want to do being beyond their jurisdiction.	Noted: The tone of our statement is different in revised text. We meant that, given the way urban areas are goverened now, multi-level governance is necessary to effectively govern carbon.
18771	12	5	5			"global economic goods and services" instead of "global exonomy"	Noted: The text is deleted in subsequent revision.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17611	12	50				What is CCHP?	Noted: The table is deleted in line with restructuring and rewriting of the section.
17631	12	50		51		This table duplicates the text and is summarized to some extent in table 12.7. Table 12.4 can be deleted to meet length requirements of the chapter.	Noted: The table is deleted in line with restructuring and rewriting of the section.
17610	12	50	13	50	14	Incomplete sentence.	Noted: The section has been restructured and rewritten
17612	12	51				"Seeking to address landlord/tenant issues" is not a "challenge".	Noted: The table is deleted in line with restructuring and rewriting of the section.
17615	12	51		53		Parallel phrasing should be used through columns.	Noted: The table is deleted in line with restructuring and rewriting of the section.
17632	12	51		53		This table duplicates the text and is summarized to some extent in table 12.7. Table 12.5 can be deleted to meet length requirements of the chapter.	Noted: The table is deleted in line with restructuring and rewriting of the section.
17614	12	51	10	51	11	Sentence syntax needs fixing.	Editorial
17613	12	51	2	51	2	Verb missing	Editorial
17616	12	51	2	51	4	This sort of exhortation does not fit in an IPCC chapter	Noted: The section has been restructured and rewritten
17633	12	53		54		This table duplicates the text and is summarized to some extent in table 12.7. Table 12.6 can be deleted to meet length requirements of the chapter.	Noted: The table is deleted in line with restructuring and rewriting of the section.
17617	12	54	11	54	11	What is BMA?	Accepted: deleted
11316	12	54	2	55	7	It would seem appropriate to consolidate this paragraph on the use of financing instruments by local governments with material presented in the earlier sub-section 12.6.4, on 'financing urban mitigation'. Additionally, for the two funds citied (in Bangkok and Toronto), it would seem appropriate to briefly mention the sources from which these funds were capitalized.	Noted: The chapter and sections are restructured and rewritten.
2535	12	55				Tokyo - this repeats Box 12.1	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17619	12	55	33	55	34	How will the plan ensure this?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17620	12	55	38	55	38	What document?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
10031	12	55	8	55	15	This part should be deleted completely. Tokyo cap & trade program is currently under the special measure for the Great East Japan Earthquake, which allows CO2 emission increase caused by home generation, which means the program is not implemented under normal condition. Therefore, Tokyo cap & trade program is not considered as a good example of cap & trade policy.	Noted: The reference to Tokyo's Cap and Trade got deleted in reframing and rewriting of the entire section

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17623	12	56	25	56	35	Is Darfur a city?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17621	12	56	4	56	4	"This will be done by reducing energy use in buildings…" How?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
6021	12	56	8	56	8	First time the authors mention Victoria-Gasteiz, add the country in which this city lies. Is it Spain?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17622	12	56	8	56	8	Indicate in what country Vitoria-Gasteiz is located.	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17624	12	58	9	58	10	What does this mean??	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17625	12	59	1	59	12	Definition of terms (e.g., resource decoupling) should not occur at the very end of the chapter.	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
18846	12	59	13	59	17	Consider moving the issues of "payment for ecosystem services" to other policies.	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17627	12	59	18	59	18	Evidence of what?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
17628	12	59	28	59	28	Why does payment for ecosystem services have a potential for green jobs? Many prominent approaches to payment for ecosystems have little in the way of a labor component, e.g., purchasing development rights from a land owner.	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
11317	12	59	3	59	5	For another emerging economy, sub-national example of an attempt at 'decoupling resource utilization and economic growth', see discussion of the 'developmental green economy strategy for Gauteng, South Africa', in UN-Habitat. 2012. "Urban patterns for a green economy: clustering for competitiveness", pages 38-42. (Available for download at www.unhabitat.org, under 'publications'.)	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
14713	12	59	37	59	37	On this point, you may cite Viguié, Vincent, et Stéphane Hallegatte. 2012. « Trade-offs and Synergies in Urban Climate Policies ». Nature Climate Change 2 (5) (mars 4): 334-337. doi:10.1038/nclimate1434.	Noted: Will be considered in the next round
18847	12	59	42			Reference section on UHI.	Noted: The entire section is reframed and rewritten.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17626	12	59	9	59	12	This is a truism and thus not interesting.	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
9184	12	6	1	6	4	Good summary - I agree	Noted
5993	12	60		60		There neither a reference or explanation of this figure in the text, nor is the figure understandable.	Noted: The figure to which this comment belongs got deleted in reframing and rewriting of the entire section.
2536	12	60				Density conundrum - explain this - complexity in urban decision making is not addressed as most decisions have trade offs embedded in them - the example given here is not such a good one as it would be possible to devise strategies that both meet mitigation and adaptation needs	Noted: The sentence to which this comment belongs got deleted in reframing and rewriting of the entire section.
10208	12	60				not referred to in the text e.g. p 60, l 7	Noted: The figure to which this comment belongs got deleted in reframing and rewriting of the entire section.
6024	12	60	18	60	21	Figure 12.7: This figure is not understandable. Context to the text above?	Noted: The figure to which this comment belongs got deleted in reframing and rewriting of the entire section.
6023	12	60	2	60	3	Source is missing.	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
10410	12	60	20			The figure 's meaning is not clear which bring troubles for readers to read.More literature explain should be added	Noted: The figure to which this comment belongs got deleted in reframing and rewriting of the entire section.
17196	12	60	22	61	13	On pages 60-61 about synergies and conflicts between mitigation and adaptation measures in urban planning, the following should be mentioned: A very effective way of combining the adaptation strategy of local rainwater management and the mitigation strategy of densification could be to significantly reduce the asphalted traffic areas and use the land thus released partly as building sites and partly to establish vegetation, canals and basins. In addition to reducing the need for outward urban expansion and the associated likelihood of increased car driving, such a strategy would induce people to change from car to public and non-motorized modes of travel (see, e.g., Cairns et al., 2002).	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.
14714	12	60	24	60	24	On this point, you may cite Hamin, Elisabeth M., et Nicole Gurran. 2009. « Urban form and climate change: Balancing adaptation and mitigation in the U.S. and Australia ». Habitat International 33 (3) (juillet): 238-245. doi:10.1016/j.habitatint.2008.10.005.	Noted: The section has been revised
10409	12	60	9	60	14	There are reference for middle-income cities and wealthy cities,but no reference for poor cities,does the author forget to mention the reference or just subjectively make the opinion?	Noted: The sentences to which this comment belongs got deleted in reframing and rewriting of the entire section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
4268	12	60				There is no discussion of health co-benefits including from reduced air pollution, increased active travel and improved mental health from improved urban design	Taken into account: Some aspects of air pollution related health effect has been cited in the context of UHI and trees. We have not looked into sectoral issue (such as transport and buildings) in this chapter. We will see this issue further in net round and we will make either changes or simply cross-reference.
3660	12	61	13	61	38	Pages with lot of space not used can be filled.	Editorial
2537	12	61	2		4	Repetition	Noted: The section has been revised
18850	12	61	4			You probably want to reference a different Table than "Table 1" here, probably "Table 12.8"	Accepted. Indeed 12.8 is the correct reference.
14715	12	61	6	61	6	You could add that mainstreaming climate policies in other urban policies may help minimize these trade-offs: cf. Viguié, Vincent, et Stéphane Hallegatte. 2012. « Trade-offs and Synergies in Urban Climate Policies ». Nature Climate Change 2 (5) (mars 4): 334-337. doi:10.1038/nclimate1434.	Accepted: Will be taken care in the next round after SOD.
2538	12	61	7		13	Too negative	Noted: The sentences to which this comment belong got deleted in reframing and rewriting of the entire section.
6025	12	62		65		The table extends to more than one page. It would be easier to read, if you could add the head line of the six columns to each page. Then, there is no need to page back.	Noted: The table got deleted in the rewriting of this section
17197	12	62				Regarding the characterization of the promotion of urban agriculture in the right hand column of the second row: Why is this considered a win-win situation? I think this claim is rather unfounded. What is actually the advantage of having agriculture inside the city instead or just outside the urbanized area? If urban agriculture takes place inside the city, new buildings must be constructed elsewhere, resulting in encroachments on exurban farmland or natural areas. Moreover, such outward urban expansion will increase traveling distances and automobile dependence, cf. my earlier comments on this. (For a discussion, see, for example, Næss, 2006, chapter 12.6.)	Noted: the table is deleted in rewriting of this section.
5225	12	62	1			The suggestion that promotion of tourism, would be a probable co-benefit in urban mitigating emissions is very much in conflict with almost all that is said in chapter 10 about the inevitable strong growth of tourism's emissions and its current unsustainable development path. Please remove this example or replace with e.g. 'leisure activities'. Most larger urban areas tend to promote long haul inbound tourism, which has a carbon footprint up to an order of magnitude larger than average tourism trips per trip or tourist-night.	Noted: The table got deleted in the rewriting of this section
3361	12	65				The following reference could be added, bolstering the case for very high co-benefits in commuting time, air pollution and noise reduction for urban transport measures: "F. Creutzig, D. He (2009) Climate change mitigation and co-benefits of feasible transport demand policies in Beijing Transportation Research D 14: 120-131"	Noted: The table got deleted in the rewriting of this section
3661	12	65	1	65	38	Pages with lot of space not used can be filled.	Editorial
10209	12	66	15	66	17	Could UHI lead to reduced neef for heating buildings wintertime at higher latitudes/ in cold regions? Related: reflecting roofs or absorbing roofs at higher latidudes? The first reduces UHI and radiative forcing (summertime) while the second may reduce the need for heating (wintertime)	Noted: It will be addressed in next round, after SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12471	12	66	23	66	25	The figure 44 Gt CO2-ekv is of significant size, the same magnitude as the annual global emissions of GHGs. There are newer publications indicating significant uncertainty and conflicting views. The same researcher indicated in a newer publication an interval of 25-150 Gt of CO2 (Akbari et al March 2012) while there are also questions about the effect of white roofs and other urban serfaces (Jacobson, Mark Z., John E. Ten Hoeve, 2012). Please consider to check also there references.	Noted: It will be addressed in next round, after SOD.
14716	12	66	26	66	26	You could add that uncertainty around this figure is great.	Noted: Any reference suggestions?
15752	12	66				Urban heat island phenomenon is linked to variation in urban form, densities, land cover types. The current studies done by Oke and Stewart (2010, 2011) which is very crucial to better understanding of UHI and mitigation approaches. But these studies does not find any mention in the chapter. UHI is also llinked to the climate type as well.	Noted: but the section is rewritten. However, if this reference look at urban form etc directly with mitigation, we will consider in final version.
17198	12	66	1	67	20	The text seems to take for granted that the urban heat island is always a problem for health and a contributor to high energy use for cooling. But for cities in cool climates, the urban heat island may reduce the need for space heating in winter, while the need for cooling during summer will be very low regardless of the urban heat island. This should perhaps be mentioned. Moreover, the fact that some studies have found low-density urban development to aggravate the urban heat island (e.g. Stone & Rogers, 2001) should be mentioned. In the case of Tokyo: is it the density or the fact that the city is very large with many million inhabitants that causes its high heat island effect? Would the heat island effect have been lower if all the millions of Tokyo had been distributed over a sprawling and low-density urban structure?	Noted: It will be addressed in next round, after SOD.
6941	12	66	34	66	35	Rewrite first part of this statement to reflect that temperature changes are an expression of a changing climate, they are not CAUSED by climate change.	Noted: The section is rewritten
2540	12	67	38		44	This is duplicates on p68 (1-8) and different figures used	Noted but no seemingly contradictory.
17629	12	67	5	67	5	How is heat discharged to the ground and how does this relate to urban heat island impacts? This is not obvious to the nonspecialist.	Noted: The sentence to which this comment belongs got deleted in reframing and rewriting of the entire section.
6942	12	67	11	67	17	Section on UHI: Please coordinate and ensure consistency with WGI, Chapter 2 and others. Strongly suggest to refer to WGI AR5 Chapter 2 (and 12/14?) here whenever appropriate. Parts of this section stray into the WGI area of expertise and thus might overlap with the assessment provided by WGI AR5. This should be avoided to not generate duplication and/or inconsistencies.	Noted: This section is rewritten and will harmonized with other WG.
17199	12	67	21	69	7	See my comments on the discussion of this issue on page 14. Narrowing the scope to the intra-city scale is irrelevant when discussing the carbon sink function of green space, since CO2 emissions are a global and not a local problem.	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
14717	12	67	21			This section seems redundant with section 12.4.3.6. This section is also strange, because the first paragraphs seem to contradict the paragraph beginning line 30 page 68.	Section 12.4.3.6 does not exist now. There is growing research that demonstrates the importance of urban green spaces as carbon sinks. There is no real conflict between the paragraph on page 68 and the first para of the section on page 67. The paragraph starting line 30 on page 68 merely highlights the need to take into account the carbon costs incurred in establishing and maintaining urban green spaces, concluding that green roofs and urban forests may therefore only compensate for the C expenditure incurred during planting, installation and establishment a few years after establishment, i.e. there may be an initial carbon cost in the first few years (depending on location and type of planting/intensivity of management) but this slowly converts to a net C gain through sequestration after a few years.
5531	12	68	30		34	See above comment- use of grey water for irrigation, use of residuals based soil amendments or soils for soil and fertility and these concerns are largely accounted for- reuse of tree prunnings as a soil amendment would limit C loses as well	Noted: will be further looked into in the next round after SOD
12472	12	69	11	69	11	UNEP, World Bank and UN Habitat has recognized a pilot protocol for community scale greenhouse gas emissions, developed by C40, ICLEI, WRI and partners May 2012. Please consider to include this reference.	Accepted: There are some initiative to standardize inventory of cities which we will reference and illuciadates in the next round after SOD.
2541	12	69	27		33	This is the first time that spatial and urban planning have been included in IPCC - it is important that this Chapter has some very clear messages that are positive and demonstrate the heterogeneity between cities - the co-benefits argument is important, as is the difference in interpretation of CO2 reduction between cities, the importance of leadership and participatory processes, good examples of practice, the need for mandatory and voluntary agreements, the lack of monitoring and data, the scale of change required, the lack of progress in reducing CO2, the links between energy consumption and CO2, the time scale necessary for changing the urban environment and many other issues. The authors should look at the OECD (2012) Report on Compact Cities - http://www.oecd-ilibrary.org/urban-rural-and-regional-development/compact-city-policies_9789264167865-en	Noted

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17630	12	69	3	69	7	A discussion of landfills as carbon sinks should be included here. See, for example, Barlaz, M. A. 2006. Forest products decomposition in municipal solid waste landfills. Waste Management 26(4): 321-333. and Micales, J. A. and K. E. Skog. 1997. The decomposition of forest products in landfills. International Biodeterioration & Biodegradation 39(2–3): 145-158.	Noted
6026	12	69				There are many more "gaps in knowledge". What is about "a general definition of urban areas"? The authors themselves used several different definitions in this chapter without refering to each other and any source. What is about the policy-science-interface? ... the practical implementation of mitigation/ adaptation strategies? ... the gap between what sience is working on and the need for decision-making. ... Maybe, it would be more usefull, if each sub-section ends with its own conclusion. In this sub-section you could mention specific gaps in knowledge and give an outlook e.g. what to be in-depth researched.	Noted
5994	12	69	8	69	11	Is this a joke? This is not a paragraph. Either discuss the major points of chapter 12 or delete this chapter!	Taken into account: this section is now rewritten
2479	12	7				First part not well written - difficult to read - lack of structure - littered with errors - needs more cohesion	Taken into account: The section is rewritten and streamlined.
2512	12	7		94		throughout the Chapter it is unclear as to whether the focus is on energy or carbon or something else - nothing is really said about energy mix and the importance of clean energy - the authors need to address this in the introduction	Taken into account: The section is rewritten and streamlined. Scope and focus clarified.
16649	12	7	1	8	50	Page 7 to 8: This section starts the chapter off on the wrong foot and could be elimimated. “Urbanization” should be distinguished from population and economic growth. I am really not sure it makes sense to discuss urbanization at all; it might instead be better to say the chapter focused on policies in the urban context because it is in that context that government services and regulations play an important role, and because most population will be concentrated there. I don’t see the need to go on for pages about the share of GHGs in urban areas, and I find it misleading to imply that urban areas cause” GHGs. The chapter should start by introducing hypotheses about how variations in urban structure and settlement patterns might affect GHGs, and discuss the difficulties in research establishing causal relationships. Page 7, line 1. Modify sentence to read “This chapter assesses the mitigation potential of POLICIES TO INFLUENCE THE FORM AND STRUCTURE OF human settlements” (insertion in caps).	Noted: The chapter and this section has gone through reframing and rewriting, but not in a way suggested in this comment.
12451	12	7	11	7	19	Please consider to include some figures/examples of per capita emissions for cities/urban areas with different densities, transportation demands and solutions for transportation, with emissions allocated to the areas they are produced. This would be useful to illustrate the potential effect of different choices for development.	Noted: The text in this section has been rewritten.
3339	12	7	14	7	16	probably meant "in developed countries".	Noted: The text is deleted in rewriting of the section.
17574	12	7	14	7	14	What does it mean to normalize data by "total urban population"? Doesn't that become per capita analysis? If so, why are both "total urban population" and "per capita" listed here?	Noted: The text is deleted in rewriting of the section. The comment is no more relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12452	12	7	15	7	16	The sentence indicates that the per capita urban emissions are only a fraction of the national averages. This seems less consistant with the information in line 10 "if emissions are allocated to the places where they are produced urban areas are producing 60-80 % of global emissions" and line 46 " in 2009 over half of the worlds population is urban". Please consider to rephrase.	Noted: The text is deleted in rewriting of the section. The comment is no more relevant.
2370	12	7	15			Only in developed countries are per capita emissions lower than for countries (as per exec. summary). Perhaps change the term "a fraction" as it may imply "much smaller" which is not the case.	Noted: The text is deleted in rewriting of the section. The comment is no more relevant.
18775	12	7	15	7	16	Not in developing countries!	Noted: The text is deleted in rewriting of the section. The comment is no more relevant.
6000	12	7	18	7	18	The authors often write about infrastructure. It would be helpful to explain what they have meant by infrastructure (e.g. to give a common definition for the section) and above all which infrastructures (energy, water, transportation, communication ...) are particularly affecting the GHG.	Taken into account: First line of the second pragraph of revised intro section mentions the meaning/scope of infrastructure. In this chapter, infrastructures are broadly defined as those services and built-up structures that provide water, energy, food, shelter (construction materials), mobility/connectivity, sanitation, waste management and public amenities (Ramaswami, 2013)
5968	12	7	2	7	4	The distinction between mitigation and adaptation is not appropriate any more. Especially in cities, both is necessary and can hardly be distinguished from each other.	Taken into account: Ch 12 is about mitigation and we have some consideration to adaptation in Section 12.8 though UHI discussions. We will benefit from cross referencing and coordination with chapters on rural and urban in WGII. We will see such opportunity in the next round.
5969	12	7	20	7	22	Besides the spatial form, the institutional framing and political setting and incentives of urban settlements are immediately connected and have both a major effect on transportation and travel behaviour.	Taken into account: The section is rewritten and streamlined.
3340	12	7	23			one "that" too much	Editorial
18776	12	7	24			also in line 27 "aerosols" - this is redundant in my view	Taken into accounted: the text is deleted
11032	12	7	25			The text states: 'The urban built environment is a significant forcing function on the weather-climate system because it is a heat source, a poor storage system for water, an impediment to atmospheric motion, and a source of aerosols'. Only aerosol emissions, among these, is likely to affect the climate system significantly, but GHG emissions certainly do. Suggest reword: 'The urban built environment is a significant forcing function on the weather-climate system because it is a heat, GHG and aerosol source, a poor storage system for water, and an impediment to atmospheric motion.'	Taken into account: The section is rewritten and streamlined. The text is deleted and comment no longer relevant.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5715	12	7	25	7	27	Low density urban areas, as in the case of the suburbs of many U.S. cities, will tend to not have the characteristics attributed here to “the urban built environment”, i.e. “…….a significant forcing function on the weather-climate system because it is a heat source, a poor storage system for water, an impediment to atmospheric motion, and a source of aerosols…..”. There seems to be a lack of established literature making the case for the many potential gains that are of necessity associated with low density living rather than high density living. The foregoing points are among these. Patrick Troy (Australian National University) is the author of works on this subject, condensed into his 1996 book "The Perils of Urban Consolidation".12	Taken into account: The section is rewritten and streamlined. The text is deleted and comment no longer relevant.
18777	12	7	37			"create" sounds planned - there are also many non-planned, right?	Taken into account: The section is rewritten and streamlined and this text is deleted and the comment is no longer relevant.
3341	12	7	45			"urban to rural" --> "rural to urban"	Taken into account: The section is rewritten and streamlined and this text is deleted and the comment is no longer relevant.
17175	12	7	45	7	45	Typing error - ‘urban to rural migration’ should be changed to ‘rural to urban migration’.	Taken into account: The section is rewritten and streamlined and this text is deleted and the comment is no longer relevant.
3337	12	7	6	7	6	delete "continue" (does not make sense either logically nor grammatically)	Editorial
3338	12	7	7			"of" missing	Editorial
5999	12	7	7	7	7	Source for statement "90% of the global economy" must be added.	Taken into account: Source added in the revised text
18028	12	7	11	7	12	The statement "a few wealthy cities contributing to a majority of the emissions is not backed up with evidence. Does this mean the consumption of the people in a "few wealthy cities" produces more consumption based emissions of the rest of the world population? Its a very vague statement because the terms "few" and "wealthy" are not defined	Noted: The text is deleted on subsequent revision of section.
18029	12	7	16	7	16	"Per capita GHG emissions are a fraction of national averages." GHG emissions per capita in cities are generally less than the national average but using the words "a fraction of" gives readers the impression that they are very small compared to the national average. This statement should be revised and state the percentage range of how much less than the national average.	Noted: The text is deleted on subsequent revision of section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17200	12	70	1	94	22	The literature referred to in my comments is listed below and might, to the extent you find it relevant, be included in the reference list of the report. Aguiléra, A.; Wenglenski, S. & Proulhac, L. (2009): “Employment suburbanisation, reverse commuting and travel behaviour by residents of the central city in the Paris metropolitan area.” Transportation Research A, Vol. 43, pp. 685-691. Banister, D. (1992): Energy use, transport and settlement patterns. In M. Breheny, ed., Sustainable Development and Urban Form, pp. 160–181. London: Pion Limited. Breheny, M. (1995): The compact city and transport energy consumption. Transactions of the Institute of British Geographers, Vol. 20, pp. 81–101. Brotchie, J. F. (1984): Technological change and urban form. Environment and Planning A, Vol. 16, pp. 583–596. Cairns, C.; Atkins, S. & Goodwin, P. (2002): “Disappearing Traffic? The Story So Far.” Proceedings of the Institution of Civil Engineers; Municipal Engineer, Vo. 151, Issue 1, March 2002, pp. 13-22 Cervero, R. & Landis, J. (1992): “Suburbanization of jobs and the journey to work: A submarket analysis of commuting in the San Francisco bay area.” Journal of Advanced Transportation, Vol. 26, pp. 275–297. Dasgupta, M. (1994): Urban travel demand and policy impacts. Paper presented at the course “Byens miljø- og trafikkpolitikk” at Norwegian Institute of Technology, Trondheim, January 10-12, 1994. Fouchier, V. (1998): ”Urban density and mobility in Ile-de France Region.” In Ministerio de Fomento: Proceedings of the Eighth Conference on Urban and Regional Research, Madrid, 8-11 June 1998, pp. 285-300. Madrid: UN/ECE-HPB and Ministerio de Fomento. Giuliano, G. & Small, K. A. (1993): “Is the journey to work explained by urban structure?” Urban Studies, Vol. 30, pp. 1485-1500. Gordon, P., Richardson H. W. &Jun, M.-J. (1991): “The commuting paradox: evidence from the top twenty.” Journal of the American Planning Association, Vol. 57, pp. 416-420. Hartoft-Nielsen, P. (2001a): Boliglokalisering og transportadfærd. (Residential location and travel behaviour.) Hørsholm: Danish Forest and Landscape Research Institute. Hartoft-Nielsen, P. (2001b): Arbejdspladslokalisering og transportadfærd. (Workplace location and travel behavior.) Hørsholm: Forskningscenteret for skov og landskab. Lefévre, B. (2010): “Urban transport energy consumption: determinants and strategies for its reduction. An analysis of the literature.” Sapiens, Vol. 2, pp. 1-17. Litman, T. (2011): Generated Traffic and Induced Travel. Implications for Transport Planning. Victoria Transport Policy Institute, Victoria. Milakis, D.; Vlastos, T. & Barbopoplos, N. (2008): “Relationships between Urban Form and Travel Behaviour in Athens, Greece. A Comparison with Western European and North American Results.” European Journal of Transport Infrastructure Research, Vol. 8, pp. 201-215. Mogridge, M. H. J. (1985): ”Transport, Land Use and Energy Interaction.” Urban Studies, Vol. 22, pp. 481-492. Mogridge, M. J. H. (1997): The self-defeating nature of urban road capacity policy. A review of theories, disputes and available evidence. In Transport Policy, Vol. 4, pp. 5-23. Næss, P. (1993): “Transportation Energy in Swedish Towns and Regions.” Scandinavian Housing & Planning Research, Vol. 10, pp. 187-206	Noted
6001	12	8	1	8	6	Source for the numbers in the last sentences of this paragraph is missing. Although, I assume it is the same as in the statement of line 46 page 7.	Taken into account: UN data, source added
10401	12	8	1	8	6	It seems that the author forget to add the corresponding reference.	Taken into account: UN data, source added
18764	12	8	1	8	6	Reference missing, i.e. no reference at all. "urban areas are projected to absorb the entire world’s population growth while the rural population is expected to start declining in about a decade" is also in (United Nations, 2010a), which is sited in the sentence before. Did not confirm about the rest mentioned in that paragraph.	Taken into account: UN data, source added

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
6002	12	8	12	8	12	There is a more recent publication with data online available at http://esa.un.org/unpd/wup/index.htm (see United Nations Population Division, 2011).	Taken into account: Latest date used in revised texts about population.
2480	12	8	18			Needs some comment on ageing - and differences between cites - old and young	Note: The text is deleted in rewriting of section. Comment is no more relevent
7497	12	8	2	8	6	“By 2050, urban population is projected to increase by 84 percent to 6.3 billion, from 3.4 billion in 2009, with growth concentrating in Asia (+ 1.7 billion), Africa (+ 0.8 billion) and Latin America and the Caribbean (+ 0.2 billion). Despite high level of uncertainty of these projections it is clear that the urban areas will become increasingly central in the climate debate”. Increased urbanization will probably lead to increased slums. Slum dwellers may be dependent on biomass fuels for cooking and heating. Therefore it is important to have initiatives for improved biomas stoves and better ventilation and improved kitchen practices etc.	Rejected: Not significant comment
5970	12	8	21	8	21	The reclassification is an important hint. However, you do not mention anywhere, that the growth of small and middle-size cities is the most important driver of urbanization, particularly in developing countries. This is important because in these cities, capacities for controlled growth and therefore for climate change mitigation are often missing (cp. on this point also your remarks on fast growing cities in chapter 12, page 15, line 21).	Taken into account: The text is deleted in rewriting of section. Comment is no more relevent but we have not discounted the important role of small and mid-size cities in the chapter in any way.
2481	12	8	25			In the developing...	Comment not clear
2482	12	8	25			How can urban become an economic driver?	Taken into account: The text of this section is rearranged and deleted in the rewriting of section. Comment is no more relevent
5971	12	8	26	8	27	Instead of "expansion" write "change" or "development of the world's economy": Expansion is a term referring to an overcome growth-paradigm.	Taken into account: The text of this section is rearranged and deleted in the rewriting of section. Comment is no more relevent
5972	12	8	29	8	32	This sounds like multi-national cooperations make decisions that are independent from urban growth. This is wrong, it is a bi-directional relationship between investment decisions and urban development. Also, Sassen ignores in her theoretic framework on "World Cities" that many small and middle-size cities are increasingly becomming important!	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent
3342	12	8	34			How can an adjective be used as a subject?	Editorial
18778	12	8	34			"... private investment." suggest to add types of settlements and their structure	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent
5973	12	8	36	8	16	Old source!	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
5717	12	8	38	8	43	"Global" Real Estate investment tends to be strongest in "Central Business Districts", where the Real Estate market can have a dynamic of its own, especially if the city concerned is a "Global city" (regarding which Saskia Sassen's work is familiar) or a "Superstar City" (Gyourko, Mayer and Sinai 2006). Price volatility and hence potential for capital gains can be higher, but cyclical downside losses are also higher. Nicholas and Scherbina (2012) "Real Estate Prices During the Roaring Twenties and the Great Depression" analyse the unique magnitude of the Manhattan Real Estate market in particular. Economic rent seeking surrounding "urban planning" and "public" investments tends to be high, often claiming "sustainability" as the policy basis. Gordon and Richardson (1997) "Are Compact Cities a Desirable Planning Goal"? The dispersed city discussed by Gordon and Richardson (op. cit.) presents very much lower opportunity for capital gain and rent-seeking, especially if its land prices are kept low and stable by the absence of constraints on the conversion of non-urban land beyond the fringe, to urban. Los Angeles is an example of a city that is "dispersed" but has very high and volatile urban land prices. The next point made in the IPCC Draft is a good one, regarding specialised buildings and infrastructure for particular industries, and this would be tend to be less associated with the above kind of speculation and rent seeking in the local urban economy. However, the location of high-profile growth industries per se is frequently surrounded by political sweeteners and "gaming". □	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent
5975	12	8	46	8	49	This single-household trend may be correct for some cities where international capital and technology companies are present, but this is not a general trend for all urban areas. Especially workers in the second (industry) and third sector (low qualification services), often live in shared flats on very little space.	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent
5718	12	8	46	8	49	"…….international capital is changing urban form through the influx of an international workforce who often prefer single family housing……" This preference is frequently something about which there is limited choice in their countries of origin. But the reverse is also true, at least temporarily until the immigrants involved become financially established. The very much higher density "housing" that is associated with "Global" cities is frequently occupied to a disproportionate extent by recent immigrants who are accustomed to higher densities or worse living conditions, while the citizens of the already-developed nations have a preference against high density "housing" that results in them being under-represented in the "Global" city. It has been noted by many commentators that large numbers of long-term unemployed in the UK will not move to London in search of work, while there are no lack of immigrants from outside the country altogether who are locating in London and taking up the opportunities of employment. The role of housing preference is probably strong, especially considering the steep marginal incentives involved in the difference between being employed in London and paying one's own way for "housing", or being on welfare elsewhere and provided relatively superior "public" housing.	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent
4229	12	8	25	8	36	This section briefly acknowledges the importance of the private sector and market-based economy in the health and growth of cities. Considering the importance of the topic to the sustainability of human settlements, it deserves deeper attention and guidance to the audience of AR5 on how to encourage economic success for cities.	Taken into account: The section is rewritten and streamlined and this text is deleted and the comment is no longer relevant.
6003	12	8				It is unclear, how urban governance and institutions are connected to international capital. This section contains an explanation about changes in urban shapes caused by globalization, resources and international capital. Urban governance and institutions and their linkage to the three changes is not mentioned. I would recommend renaming the title of this section.	Taken into account: The section is rewritten and streamlined and this text is deleted and the comment is no longer relevant.
16645	12	9				The chapter is not well-organized as to the nature of the evidence connecting urbanization to GHGs. Studies are cited but there is no critical discussion of this literature (e.g., page 9 at bottom citing O'Neill).	Noted: This whole chapter and sections are rewriten and reframed in SOD

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16648	12	9	1	9	49	I am not sure what value this section provides to the rest of the chapter and perhaps it could be cut	Taken into account: This whole section is rewriten and reframed. Comment is no more relevent
2483	12	9	11			increasingly	Rejected: Although text is deleted in rewriting, such phemenon is evident in published literature.. But it is on average.. Particular regions could be different.
17176	12	9	11	9	11	The text says: 'urban areas are increasing less compact'. 'on average' should be inserted between 'are' and 'increasingly' (and the latter word should be spelled this way). In some countries (e.g. Norway and Sweden), cities are actually becoming more compact, both in terms of buildings but also in terms of jobs and population. See Næss et al., 2011 a and b.	Noted: To be done in next round
2484	12	9	14		17	No mention throughout of the rivers and estauries - and the potential problems of sea surges and flooding of rivers - many of the great cities are port cities - susceptibility to flooding - large literature on this	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
18780	12	9	18			"turn of the" this might be misunderstood, write "to the 20th century"	Taken into account; The word has not appreared in SOD
5977	12	9	23	9	25	Vague listing of possible factors, not all of them "increase the quality of life". This is a non-scientific assessment, what is meant by "increase the quality of life"? The source is from 1988, this is a quarter century! Paradigms and trends have changed since then towards an integration of ecology and economy!	Taken into account; The word has not appreared in SOD
6005	12	9	24	9	24	Which "other" are meant in the list of the results of GHG emission? Delete "others" and close the list with "and education".	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
3343	12	9	25			Relationships between GHG emissions and QoL are complex, intertemporal, etc. Better to leave this topic to e.g. chapter 3, and delete this half sentence.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
18781	12	9	25			detail what approach (consumption, production) is taken - or is it so general that the approach is not relevant?	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
5719	12	9	29	9	33	The chapter authors are to be commended for their recognition of these realities. Sir Peter Hall, Prof Patrick Troy Dr Ray Brindle and others have criticised the misguided "physical determinism" that drives much urban planning "education" and policy.	Noted
5976	12	9	3	9	6	Who defines it that way? Source?	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
6004	12	9	3	9	6	Source for the definition of mega cities and the numbers in this paragraph is missing.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
6006	12	9	35	9	36	This sentence is far too general. Maybe the authors could mention a few factors that determine the speed, scale and location of urbanisation. The reference of this sentence regarding the whole section is missing. Furthermore, the readers ask themself about which factors are the experts speaking.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
5978	12	9	36	9	36	Too vague, no source!	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
18779	12	9	4			Give als percentage for megacities as done for other city types below	Taken into account: This whole section is rewriten and reframed. In the new version, they are presented.
2485	12	9	41			relationships	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevent
3344	12	9	41	9	43	How is the carbon content of biomass accounted for in these studies? Which countries did this study include?	Taken into account: This whole section is rewriten and reframed. The text in question is deleted. Comment is no more relevant here . This is a global study of over 80 countries.
17177	12	9	41	9	48	The distinctions between urban structure, urban form and urban infrastructure are in no way commonly agreed on and seem to be to be a bit strange. But I understand the necessity of clarifying what is meant here in this chapter. It should, however, be mentioned that there are no generally agreed definitions of these terms and that they are used by different authors to encompass different aspects of the built environment.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.
5979	12	9	44	9	44	This is not true in cases where urbanisation takes place in the form of densification and decreased mobility distances! Cp. Your own chapter 12, page 13, lines 21-24	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.
3345	12	9	44	9	47	This sounds important but it is difficult to understand what is actually meant. Can it be rephrased and clarified?	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.
6007	12	9	44	9	44	This statement is not correct. See your own chapter 12, page 13, l.21-24.	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.
2486	12	9	45		48	unclear	Taken into account: This whole section is rewriten and reframed. The text in question is deleted.
15748	12	9				There is no accepted universal definition of urban area. It keeps varying with different countries. The medium and small towns are also increasing in developing countries. They do not find any mention in the chapter.	Taken into account: Intro section have mentioned that there is no concensus in definition.
10402	12	9	34			The title of this sector is not appropriate.	Taken into account: The text of this section is deleted in the rewriting of section. Comment is no more relevent