

World Green Building Council
Fox Court, 14 Gray's Inn Road,
London, WC1X 8HN
Attn: Stephen Richardson

Wörgl, 31. December 2022

Concerning: CRREM answers to the WGBC ESG Working Group consultation feedback

Dear Cristina, dear members of the ESG Working Group,

thank you for taking the time to review the updated pathways and provide valuable feedback and critical thoughts! With reference to the document "Feedback on the proposed amendments to the CRREM global pathways", including the list of questions and comments contained therein, which were submitted to me on 22 November 2022, I send you the following observations and explanations (green text in italics).

General preliminary remarks:

- The statements/comments to the update of the CRREM decarbonisation pathways have been taken from the documents available to us ("WorldGBC-ESG-WG_CRREM-PublicConsultation_November2022.pdf") in order to facilitate the comprehensibility of my reply.*
- For reasons of clarity, the questions are answered in the order in which they were submitted.*

Statement WGBC:

Intro: We are aware of recent feedback from our member councils and their industry members about CRREM, the tool, the approach to date, and the lack of consultation with the sector.

1. **Governance:** Given CRREM's importance and mission, your governance and consultation model does not reflect best global practice. Decarbonisation pathways that will affect the global real estate sector cannot be developed largely in isolation from markets outside of the European Union. More specifically, it is lacking critical real estate expertise and global representation.

2. **Transparency:** Openness and sharing of methodologies, assumptions, purpose and intended outcomes with stakeholders and the industry is critical to the successful development and adoption of CRREM's pathways. CRREM needs to disclose and be more explicit about its ultimate purpose, interpretation, intended consequences, methodology, assumptions and limitations.

3. **Market Relevance:** CRREM needs to perform in-depth reviews and sensitivity analyses of its results to ensure the outcomes are relevant and appropriate to different market and country circumstances.

4. **Stranding Risk:** CRREM needs to better explain its concept of "stranding risk". Our community feedback emphasises that CRREM's current approach is simplistic, inconsistent with other metrics, and potentially miscommunicated. This reflects the lack of consideration for relevant local, regional, and national policies, investment strategies, building attributes, climatic variation, and other factors

not considered in CRREM pathways. Consequently, CRREM results show assets being at risk of stranding when they shouldn't and vice versa. It is worth noting that these differences are not rooted in individual parameters; rather, conceptually different approaches to understanding and communicating stranding risk.

Answer Prof. Dr. Bienert/CRREM initiative:

Regarding the above listed points:

Intro: On our governance councils we have besides a representative from the WGBC also many representatives from other GBCs (Dutch, UK, German, Australian, Singapore), therefore around 10 % of the overall representatives in the industry committee are from green building councils. Although we do not judge this ratio as underrepresentation, we welcome more participants from that group and were always open regarding any suggestions made. Besides input via those channels, we were/are always open to any further input via crrem@iioe.at. We are not aware of any feed-back from stakeholders that was not resulting in an open discussion. Our formal consultation processes on special aspects (like the last one with PCAF and GRESB on the draft for the carbon accounting document) are always the same and follow general industry practice.

- 1. **Governance:** CRREM had a Global Scientific & Industry Committee (GSIC) meeting on the 5th of August where the time was taken to update the members of the upcoming changes to the methodology and recent milestones reached. The members provided feedback on the upcoming public consultation for the updated pathways and additionally also reviewed the revised Governance structure and were asked to give feed-back on the attached Governance structure document. Feedback for example from the Green Building Council of Australia (GBCA) was provided, which was also directly integrated as far as possible. In addition to that a written reply to the GBCA was provided. Even though the WGBC was formally invited on that date to give feed-back regarding the draft of the revised "CRREM Governance model" we never received any input from you. Again, we are open to any feed-back on the current governance structure that has (including the WGBC) been anonymously approved by the GSIC on the 05.08.2022. CRREM has expanded at an extremely fast pace outside the EU, and hence is no longer EU focused which is also reflected in our committees. For example, over 70 % of the members of our Scientific Advisory Committee are coming from non-EU countries. The CRREM Industry Committee is also no longer EU focused, since over 50 % of the representatives are from other global destinations. We do not believe that our 70 committee members, our local data partners in the respective regions and our staff are lagging "real estate expertise". Further, CRREM is currently in the process of establishing working groups for e.g., the USA. We welcome any other suggestion for further strengthening our efforts in the future in this respect.*
- 2. **Transparency:** The initiative has received positive feedback from the market regarding the content, structure and readability of the downscaling methodology document. Over 75 % of the participants taking part in the public consultation stated that the methodology document was either good or very good. The team of course also shares any further information on request and has always been open to any one-on-one call to answer any pending questions on the methodology, sources applied etc. The methodology document has a special section on all sources /input parameters used for each step of the calculation and country specific details. Also, the impact of changes triggered by updated underlying data points was addressed in detail. The document now has over 80 pages compared to 28 pages of the first version.*

3. **Market relevance:** *The CRREM team has undertaken extensive internal quality checks and ensured close collaboration with local data partners in the different regions to gather robust input data. Further, prior to the release for public consultation, the pathways and calculations have been reviewed and checked by numerous groups. Examples are:*
- *Dr. Hirsch was appointed head of the Scientific Advisory Committee. Dr. Hirsch reviewed the calculations and performed checks on the downscaling and budget sum/alignment.*
 - *The SBTi have performed an extensive and in-depth review via a separate working group. Here e.g., the SDA approach was challenged in order to ensure applicability to the Real Estate sector (June – August 2022).*
 - *Further, already prior to the public consultation market feedback was collected on various topics to further understand the sector and to ensure applicability. Feedback was for example gathered on the opinion regarding the emission factors (specifically to include or exclude T&D losses).*
 - *Meetings with the CRREM GSIC were held to pre-inform (05.08.2022) and to inform on the changes made to the methodology (27.09.2022). GSIC members serve as independent expert reviewers of the CRREM project - challenging results and outcomes to ensure market acceptance and credibility - as well as contributing to the dissemination of project findings and outcomes.*
 - *The CRREM consortium held regular Jour Fixes in order to ensure alignment, address and integrate all market feedback.*
 - *The intention of a global public consultation is of course also to gather further (local) market feed-back on the drafts – which we received and processed thereafter.*
 - *Note that our initiative is indeed global to solve the need of a harmonized approach for the global real estate market - where more than 50 % of the institutional investment-flows are already now cross-country. We intent to ensure global harmonization and comparability as well as a joint/holistic approach/methodology.*
4. **Stranding definition:** *CRREM has uploaded a separate document clarifying the definition of “stranded assets” and “stranding risk” to the CRREM homepage. The definition/content of this has not changed since the CRREM no.1 report from 2019. This definition will also be clearly stated in the revised methodology document and CRREM reference guide. The definition was never misunderstood or questioned before and is in line with general definition of “stranding” in other sectors.*

Statement WGBC:

We are concerned about this commentary as it speaks to the ability of CRREM in including important stakeholder groups and insights in the development of decarbonization tool. We believe that the approach you have taken to date will hinder the conversation on decarbonization and potentially cause confusion amongst real estate asset owners and managers, those whom we all agree need to take urgent action to decarbonise.

Answer Prof. Dr. Bienert/CRREM initiative:

The fast growth rate of direct users (exceeding 1 trillion dollar AuM already from only 500 bio at the beginning of 2021, plus 100%) and also further indirect users via other tools/benchmarking initiatives integrating our resources proofs clearly the opposite. Likewise, our governance, industry and scientific committees were expanded from 38 to now over 60 participants, plus 65 % in order

to account for this massive growth and market uptake. We see that this transparent, clear and global approach is indeed triggering a lot of real action in the industry in contrast to market fragmentation that might be resulting from conflicting net-zero-targets in different countries. We would welcome that the WGBC teams up with us more closely to ensure more clarity and avoid misinterpretation and confusion.

Statement WGBC:

It is our genuine concern that if these issues are not carefully and robustly addressed, this will impact the building sector's use and understanding of decarbonisation pathways such as yours. This will also have a negative effect on leading tools for decarbonisation that have been developed and adopted by industry in countries across the globe, including, but not limited to CaGBC's Zero Carbon Building™, DGBC's ParisProof, DGNB Klimapositiv, Australia's Green Star, LEED Zero, Singapore's Green Mark or the forthcoming UK Net Zero Carbon Building Standard.

Answer Prof. Dr. Bienert/CRREM initiative:

Our perception is that global markets have already decided and embraced CRREM as the leading target for decarbonization. Major tools and benchmarking initiatives and IT solutions such as MSCI, Deepki, Measurable, GRESB and many more, are all using CRREM targets for decarbonization/transition risk analysis. We encourage local or national initiatives to collaborate with us. Harmonization and globally aligned approaches are key to avoid confusion in the market.

During the update of the pathways the CRREM team had numerous meetings with national GBCs in order to a) ensure data transparency, b) align on the underlying data c) ensure data accuracy and validity. The CRREM team has validated and confirmed data used and compared the derived pathway with national GBCs. Both the UKGBC and Dutch GBC confirmed alignment on the new pathways.

Statement WGBC:

It is important for CRREM to understand and work with the multiple market transformation strategies already in place worldwide. Decarbonisation pathways and roadmaps, and the definition of stranding risk is market specific and depends on national climate change policy, industry investment and support. There is no science-based approach that will work without considering how all of these will work together to achieve our goals.

Answer Prof. Dr. Bienert/CRREM initiative:

Transition risk as part of the broader term climate risk is a global unique challenge. Regional pathways are impacted by regional data but terms and challenges are holistic and global.

Statement WGBC:

We would like to work with you over the coming year to help CRREM to evolve and address these concerns that our members are raising. We also want to actively partner with you to create opportunities for the finance sector and the real estate sector to discuss how existing tools and standards can work with and complement each other to deliver on market transformation.

Answer Prof. Dr. Bienert/CRREM initiative:

We welcome any kind of further and/or more in-depth collaboration with the WGBC.

Statement WGBC:

We also want to thank you for the time you took on November 3rd to speak with our ESG working group. Call participants noted your willingness to hear their feedback. Several of them also endorsed your willingness to work with them once they reached out. Please find attached their detailed feedback to your presentation and publicly available consultation materials.

Answer Prof. Dr. Bienert/CRREM initiative:

We had after that call some more individual follow ups with the participants, could exchange & align more data points and invited some colleagues to participate in our GSIC/committees. We thank you once again for the opportunity and would welcome further exchange in this regard.

Statement WGBC:

We look forward to your response to this letter. Julie Emmrich, who leads our Sustainable Finance Taskforce, will be in touch to arrange a follow up discussion about next steps.

Answer Prof. Dr. Bienert/CRREM initiative:

We of course welcome any further discussions and will also be happy to set up a call, in order to align the next steps. Happy to get in touch with Julie Emmrich in set up a meeting to discuss next steps and further alignments.

Statement WGBC:

Thank you for the opportunity to provide feedback to your consultation on the proposed changes to the CRREM pathways for buildings. We, the ESG Working Group of the WorldGBC Sustainable Finance Taskforce, would like to congratulate you on CRREM's continued use by the finance and investment community. CRREM is building on work done to date by all of us to generate further interest in decarbonising the built environment. We look forward to continuing to support your efforts to ensure CRREM is a robust and globally applicable, and complementary tool for the decarbonisation of the built environment.

The feedback is based on the presentation given at the ESG Working Group call on 03 November, publicly available materials posted on your website, and feedback received from the members of each GBC.

In summary:

- We welcome the updated v2 pathways. They represent an improvement and additional opportunity for collaboration.
- We would like to work with CRREM on providing data or assisting with analysis, briefings, or similar.

- We see great opportunity for the CRREM curves to be used to provide valuable metrics for governments and large-scale investors to see how the entire sector is performing.

Answer Prof. Dr. Bienert/CRREM initiative:

Thank you again for taking the time to review the updated pathways and provide valuable feedback and critical thoughts! We have added our answers below, and of course are very happy to take on board your points and also as you stated above, collaborate further (e.g., providing data and insights for the industry, conducting further CRREM webinars to increase transparency etc.!).

Statement WGBC:

- CRREM needs to provide more transparency. Each assumption in the model compounds to show a result in the pathways - the wrong assumptions will hinder progress and drive investment elsewhere. Assumptions should be documented and published, by country, on the CRREM website.
- More sensitivity analysis is needed to understand the impacts of CRREM on the built environment. The curves should be improved further, and sensitivity analysis on the results at a local level should be done.
- More education is needed for users and partners of CRREM. Multiple GBCs report misuse of CRREM by investors, or misinterpretations of what the curve represents in reporting mechanisms such as with GRESB. In the medium to long term, this represents a significant reputational risk for the CRREM initiative.
- Increased collaboration is needed. Interpretation of local data sets from one country to another could result in the wrong curves. GBCs worldwide are willing to help, and WorldGBC would be happy to facilitate.
- Governance for CRREM needs to consider a diverse set of views and perspectives which would contribute to better and more balanced outcomes. The exclusion of WorldGBC and GBCs around the world from this consultation is a concern. More importantly, it diminishes the quality of the discussion and the results. Collaboration is key in achieving our common goal.

Answer Prof. Dr. Bienert/CRREM initiative:

Please see points stated above. We of course welcome the opportunity to further align!

Assumptions: Are displayed in the methodology document in great detail. We welcome any concrete notes/aspects what is from your perspective still missing.

Sensitivity: We aim for the most robust input data.

Education: As you are probably aware we do many webinars and on monthly basis regular training (basics and advanced) which are free of charge. We agree more needs to be done to ensure the market understands transition risks properly and takes the right steps. We suggest to think about joint structured training programs together with the WGBC and the national GBCs.

Collaboration: We teamed up with the leading initiatives, industry bodies etc. in this respect already but are always open to start new partnerships in order to harmonize.

Governance: see above.

Statement WGBC:

Whilst the update to CRREM is timely, we believe that more should be undertaken to align building typologies (their definitions), review the data and assumptions, ensure grid emissions projections

are based on regional scenarios, and sensitivity analysis be done on the results. Without this information, it can be easy for CRREM to be misinterpreted and conflict with recommendations and work already happening on the ground.

Answer Prof. Dr. Bienert/CRREM initiative:

Regarding your first point on the building typologies – CRREM has a list of typologies in the reference guide aligned with GRESB. CRREM will constantly add to the existing clarity and will also further expand the reference guide in this respect. CRREM has performed sensitivity analysis internally as well as externally via e.g. the SAC or The SBTi technical team. The data has been challenged, reviewed and confirmed by multiple stakeholder groups already. Following, the successful training sessions and collaborations CRREM plans to continue to educate the market on the correct use of the pathways. On request, the CRREM team also holds one-on-one workshops for individual companies to ensure the correct application. / See above regarding the collaboration to date with GBCs and our willingness to collaborate further with the WGBC in the future.

Statement WGBC:

The value of CRREM in worldwide discussions on decarbonisation

The global standardisation of decarbonisation in the built environment has the potential to attract money for net zero carbon buildings and unlock policies to move sectors that fall outside the traditional sustainable finance pathways.

WorldGBC's approach to drive transformation through our Global Commitment for Net Zero Carbon Buildings was the first to enable the conversation at scale - CRREM has certainly brought the investor community to consider the carbon risk of buildings, and has helped in this conversation.

CRREM's new partnership with SBTi is welcome, but concerning. CRREM was designed to be a carbon-risk tool. It should not be used as a target setting framework. While the two are similar, they have different purposes, metrics, and approaches. We encourage CRREM to discuss with SBTi its purpose, and encourage it to form additional partnerships with credible, verifiable, rating systems worldwide that are driving net zero buildings. This approach would provide an opportunity for CRREM and the entities that manage these systems, to create a shared view of how the multiple tools benchmarks, and regional approaches can work together.

Answer Prof. Dr. Bienert/CRREM initiative:

CRREM has in contrast to your statement always been a tool AND of course a target setting framework for whole-building GHG and energy intensities on a global scale (see e.g. also IPF report, graph p. 5 "Pathways to Net Zero Carbon Emissions in International Real Estate Investment" (Jan 2022)). The partnership with The SBTi is strengthening both initiatives and we managed to merge the only two initiatives that offer/provide global pathways for decarbonization. This is supporting global harmonization of approaches. The leading global industry bodies and initiatives in this respect have aligned and support this approach (PCAF, GRESB, NZAOA, IIGCC, UNEP FI etc. etc.).

Statement WGBC:

CRREM's approach to setting pathways over time is also welcome. GBCA, UKGBC, DGBC and SGBC (in collaboration with the government agency BCA) have all published pathways or roadmaps that aim to drive decarbonisation in their countries. We encourage you to work with those and other

countries to review pathways and assumptions to ensure that roadmaps and pathways correlate. These roadmaps and pathways were developed considering local conditions - which are critical to identify where to drive investment in our built environment forward. We are encouraged by those conversations that have already taken place, and would welcome the opportunity to continue them forward.

Answer Prof. Dr. Bienert/CRREM initiative:

We welcome the work and exchange and alignment with local initiatives like the DGBC and the UKGBC.

Statement WGBC:

Like GBCs worldwide, CRREM's focus on both carbon and energy is welcome. The revised energy pathways acknowledge that the first version was potentially unclear, and in some cases perhaps provided, inadvertently, the wrong information to its users. However, the revised approach does not yet provide valuable or usable information at an asset level. More technical feasibility analysis is needed, and perhaps assumptions and information significantly reviewed.

Answer Prof. Dr. Bienert/CRREM initiative:

The public consultation phase gave market participants the opportunity to review the data and assumptions. We received overall (see main document of the survey outcome) great feed-back on our approach. Regarding individual data points we received helpful insights that enabled us to make the results even more robust.

Statement WGBC:

Concerns with CRREM as it currently stands

The following are opportunities for improvement for the CRREM curves and the CRREM tool, that we believe will result in better outcomes:

- **CRREM's top-down approach is not fully transparent.** We believe that more should be undertaken to align building typologies (their definitions), consumption data (measured and or proxied), and grid emissions projections based on regional scenarios (or range of scenarios including aligned to Nationally Determined Contributions - NDCs). We welcome the links to the data sources, and the write up of the methodology, however, the documentation of this as well as the transparency of the factors and associated projections complete with the accessible calculations (or models) should be made readily available. The curves should also include a confidence range. While the entirety of the built environment should be under a particular curve, individual buildings may not be able to, depending on the original spread of buildings in the data set.

Answer Prof. Dr. Bienert/CRREM initiative:

We note that the transparency reached in this version has been well received by the market. Still we are open to any concrete request or suggestion for more transparency but that would need to be more specific. // Our pathways are not NDC-specific but 1,5 (or 2) degree Paris-aligned since national regulation and NDCs might be lagging behind. // We are aligned with the IEA data which

comes along with a certain probability. // Sure, some properties might – within a portfolio – still perform above the pathways. They might still be held for other strategic reasons (since transition risk exposure is of course just one aspect that should be factored in SAA and other company decisions).

Statement WGBC:

CRREM is not aligned with regional needs or policy benchmarks. As CRREM is a risk tool, aimed to drive an understanding of the impacts of local regulation on the potential for a portfolio to decarbonise, this lack of alignment may give an incorrect view on what is needed.

Answer Prof. Dr. Bienert/CRREM initiative:

CRREM pathways /trajectories are not tied to any national laws/legislations and only focus on the Paris-targets / not exceeding 1.5°C warming. National-level legislation's/ predictions are relevant for the energy-mix and EF and the respective development over time. // We do notice that some national regulation related to the real estate sector is coming in recent years close to the 2 or even 1,5 degree targets we propose. With ALL nations delivering on their Paris-commitment AND allocating the fair share of regulatory pressure to the property sector, we would expect that eventually national regulation will be 1,5 degree aligned – in that case no further global or national targets for our sector would be needed anymore. This is sadly not the case (yet).

Statement WGBC:

Local weather and grid conditions are currently not well represented. While we are heartened by the recent updates to Australian data, based on your work with GBCA, we also believe that updates are needed elsewhere.

Answer Prof. Dr. Bienert/CRREM initiative:

Indeed, we have received further feedback and requests to create further sub-regional pathways (so addressing regional needs in big countries). CRREM is of course constantly working on further granularity on regions and property-types. As next steps, CRREM will put further focus on the USA as well as China for example.

Statement WGBC:

Embodied carbon is a significant proportion of our built environment's emissions but not reflected in CRREM. While embodied carbon is a difficult topic to address due to lack of data, CRREM has the potential to drive significant retrofits in the built environment. This means that for new developments, and existing buildings refurbishments, CRREM should include the value and impact of embodied carbon.

Answer Prof. Dr. Bienert/CRREM initiative:

The CRREM tool had already from the beginning a functionality to benchmark the embodied carbon of the energetic retrofit against operational savings resulting from that investment. CRREM has no intention to set embodied carbon targets for new construction, since we are focusing on decarbonizing the use phase of properties. Further initiatives are completely placing a focus on

embodied carbon of new construction (e.g. our partner Ramboll is producing a set of benchmarks in this respect for/with The SBTi – we suggest WGBC is engaging in that process).

Statement WGBC:

Building typology is similarly not currently fit for purpose in all geographies. CRREM's use of typologies is welcome, but it would do well to increase the transparency of what each means, and increase the variety. CRREM should also be aware that assets are classified with different definitions across countries. Industrial in some countries may include manufacturing, in others it only refers to logistics. These nuances may not be apparent in the data review that CRREM has done. This links back to the first point - being able to open up the calculations and assumptions would allow us to identify how these have been derived nationally.

Answer Prof. Dr. Bienert/CRREM initiative:

We welcome further global alignment in this respect. Currently the typologies are aligned with GRESB and therefore reflect global consideration. National data review took into consideration different national perceptions of building typologies and especially views on square-meter definitions.

Statement WGBC:

Universal understanding of Past Versions - CRREM V1 has been used by property investors, financiers and property companies to demonstrate a positive 1.5°C alignment, however, this has been through the comparison of their electrical energy consumption, converted to carbon dioxide (CO₂) emissions to compare with the CRREM V1 CO₂e reference pathways - giving the misunderstanding of high performing property portfolios. Whilst this is not the direct fault of CRREM, the inclusion of F-gases and onsite combustion needs to be made even more explicit. The CO₂ pathways will help with this, however, the point remains that making this highly visible is critical.

Answer Prof. Dr. Bienert/CRREM initiative:

Indeed, CRREM is the only initiative also addressing the need to not only focus on CO₂-only but also other GHG's emitted by our sector (leading to global warming). Since also heat pumps are to some extent adding to the F-gase emitted we see also going forward a clear need to address this issue within our industry.

Statement WGBC:

Concerns with the changes to CRREM in the v2 pathways

- CRREM's updated pathways are welcome but more analysis is needed prior to their release. The revision of the energy pathways to be about energy demand is welcome. At an initial glance, this helps move CRREM into a more useful tool.

However,

- There is now a potential discrepancy between the carbon dioxide emissions (CO₂) and energy (kWh) curves. Where projecting using IEA international power decarbonisation pathway gives an intensity (kgCO₂/m²) lower than the CRREM CO₂ reference curves. Transparency on grid projections assumptions and calculations are needed, for example is CRREM using NGFS REMIND, IEA Net Zero, or bespoke analysis?

Answer Prof. Dr. Bienert/CRREM initiative:

To derive the global pathway the IEA NZE was applied for alignment and displayed in a transparent way (of course also other models/data input could have been used but IEA is from our perception currently dominating). The Carbon Pathways on country levels just have an influence from the global pathway. For the county level EUI pathways country specific sources were used, taking into account the forecast of the development of the emission factors within the sector and the grid.

Statement WGBC:

CRREM has also detailed a renewable energy demand limit. This is a number that is calculable today for a building. In certain countries, the limit specified by CRREM is not feasible based on technology progressions, particularly as on-site solar does not provide any energy benefit. This number would be determined by the assumptions related to the energy share, and should be transparently peer reviewed. WorldGBC members would be happy to assist.

Answer Prof. Dr. Bienert/CRREM initiative:

We of course welcome your further review! Even though we think that on average the targets are achievable it is important to understand the CRREM is not stating what is feasible but what is needed for 1,5 or 2 degree alignment.

Statement WGBC:

CRREM also fails to take into account normalisation for hours used and occupancy. If CRREM is to be used at an asset level, it should understand the impacts of both driving energy demand and carbon emissions. A denser building may use more energy, but might be overall better than two buildings hosting the same amount of people.

Answer Prof. Dr. Bienert/CRREM initiative:

The CRREM pathways refer to the normal/ average operating hours of the specific asset-class in the given country. Of course, the users should ensure to normalize data in advance of the analysis to enable a like-for-like comparison, which is of course possible with CRREM. The occupancy aspect is even a basic input parameter in our tool from the beginning and explained in great detail in our reference guide. We will include further explanation and details on normalization regarding the operating hours to our reference guide. Thanks for this aspect which is also already part of our GRESB/PCAF/CRREM recommendation on Carbon accounting which will be published soon.

Statement WGBC:

CRREM's easy to understand curves is both its greatest strength and weakness. GBC's worldwide have learned the value of understanding how distinct emissions scopes are decarbonising. ◦ Due to the lock-in effect of fossil fuels, it is important for investors and real estate to move to decarbonise scope 1 fuel sources as quickly as possible. For example, in some countries, the CRREM carbon curves would lead an asset to extend the lifetime of cogeneration or gas-fired heating systems as that would assist in ensuring the CRREM curves are met, especially

as the transport and distribution of such fossil fuels would typically not be accounted for in the emissions analysis.

Answer Prof. Dr. Bienert/CRREM initiative:

We strongly support the exit of fossil fuel combustion on site. // Indeed, gas might have a lower EF compared to electricity today in some regions (as grid decarbonization has not yet progressed enough). Therefore, it is a strategic decision as to when the gas heating should be best replaced by possibly electricity. Bear in mind that if that new heating system is a heat pump the relationship of electricity to renewables is here 1:4, therefore the real estate sector will only need 1/5 of the kwh procured from gas before (which will wipe out the challenge you stated).

Statement WGBC:

As most scope 2 emissions come from the grid, understanding the predicted grid decarbonisation factors in the CRREM projections becomes critical for driving change. For example, in countries with a rapid expected rate of grid decarbonisation, CRREM might show an asset requiring a deep retrofit from a carbon perspective. A rapid decarbonising grid however would require that asset to be electrified.

Answer Prof. Dr. Bienert/CRREM initiative:

We always urge user to account for both the energy and carbon pathways and the results on asset level. This will enable to derive the correct strategic implications: energetic retrofit or /and changing the technical appliances to electricity-only.

Statement WGBC:

CRREM would also do well to acknowledge the value of market-based mechanism in showing that an entity or an asset if being run responsibly. Ultimately, the inclusion of an energy curve driven by renewable energy generation means that an indicator exists in CRREM to identify location based benchmarks. CRREM should also be aware that in most cases, the Energy benchmarks will drive decarbonisation of the buildings. It should do sensitivity analysis to ensure both curves are aligned.

Answer Prof. Dr. Bienert/CRREM initiative:

We recommend to do the transition-risk analysis on a location-based data level. Of course, market participants can also use market-based views and we support the procurement of green-energy.

Statement WGBC:

Issues with Governance and review

As noted in this document, we are encouraged by CRREM's willingness to work with GBCs once approached by them. Australia, UK, and Netherlands all took efforts to reach out and work with you to provide you with data and feedback. But, CRREM needs to do more to reach out to other countries' property sectors.

Answer Prof. Dr. Bienert/CRREM initiative:

The WGBC and some national GBCs have been invited to participate in CRREM initiative already in 2018 and accepted that invitation. The initiative is working with numerous data partners globally (outside of the GBCs), such as CSR Design in Japan, Energy Star in the USA, University of Alicante for Spain, OCBC for Hong Kong and Singapore, Swedish Prop. Fed for the Nordics, GRESB, Deloitte & SwissLife for Switzerland and many more. Further, CRREM is also establishing a working group and separate project to further increase the granularity in the USA. CRREM is making sure to have as many data partners globally and of course also performs plausibility checks internally with own research in order to ensure the best data quality.

Of course, the CRREM initiative would be delighted to work with further local GBCs. We propose to set up a working group, further seminars to engage with more countries.

Statement WGBC:

There are a number of items that CRREM should consider to improve its collaboration and feedback practices.

- The first version of the curves were not presenting information appropriately, in particular the energy curve. That pathway should not have been released in its first form, as the energy pathways were easy to misinterpret. That feedback was something easy to see should CRREM have approached WorldGBC or even some building experts.

Answer Prof. Dr. Bienert/CRREM initiative:

The first energy pathways were not incorrect but based on the net-energy-concept. We now switched to a consumption-based view, since this concept is easier to understand for most market participants. We are happy to have colleagues from the WGBC and local GBCs already since 2018 (see protocol 20.12.2018 first CRREM committee meeting) as representatives of those organizations on our committees and therefore being an active and important part of our initiative. We are not aware of any feed-back/input provided that was not processed. The former EIC (incl. the WGBC and local GBC) has released/approved the first CRREM pathways.

Statement WGBC:

- The feedback processes for CRREM are rushed, and are not allowing enough time for individuals or entities to provide appropriate feedback. There doesn't seem to be an appropriate mechanism for CRREM to review the feedback prior to the final release, and discuss with the multiple entities that took effort to communicate with CRREM what the outcomes from that feedback may be.

Answer Prof. Dr. Bienert/CRREM initiative:

The consultation period was in line with industry standards and we allowed all respondent's that wanted to hand in documentation another two weeks after the end).

Statement WGBC:

It is unclear what response CRREM will provide to all the feedback, and whether a transparent response will be provided to all items raised by all entities submitting this. It is common practice for industry standards to do this, and we encourage CRREM to follow suit.

Answer Prof. Dr. Bienert/CRREM initiative:

The team will ensure that all individual feedback received gets a concrete response. The CRREM team has been arranging one-on-one calls with stakeholders in order to answer any open questions. After the release of the pathways, CRREM will also provide each data provider or user the opportunity for a one-on-one call. CRREM will also publish a consolidated document which will summarize all feedback received and of course also announce any final changes made to the methodology document or the pathways.

Statement WGBC:

CRREM is reliant on country level information to work, but is not able to identify country level responses or issues. Additional participation, or a review of governance, or a partnership with an entity such as WorldGBC would allow it to receive updated information regularly, understand the impacts of decisions made by the Steering Group, and have a clear sounding board for any upcoming changes to the methodology or curves.

Answer Prof. Dr. Bienert/CRREM initiative:

We more than welcome the opportunity to establish a joint working group!

Statement WGBC:

WorldGBC and its members have ample experience running multistakeholder, multi-issue, international governance groups. We would be happy to discuss how to evolve CRREM's governance to drive better outcomes in the built environment.

Recommendations for further action by WGBC:

- CRREM should take immediate action to ensure it can maintain the trust of the investor and real estate communities. It should:
- Call for a refresh of its governance to make it more inclusive and bring in additional real estate and property expertise. It should also consider bringing persons with experience managing buildings at the asset level so that it can understand the implications of assumptions and recommendations.
- Communicate with all its partners and data users to make sure they are not using CRREM incorrectly, by showing assets as stranded when they are not, and to make sure the language used around CRREM is appropriately identified as an enabler of discussion.

Answer Prof. Dr. Bienert/CRREM initiative:

CRREM is continuing to grow exponentially, and of course more focus will be placed on the governance and the structure. In the upcoming year, the initiative will allocate a representative for CRREM in the USA and Asia-Pacific. Further, a focus will also be placed on the regional spread of the CRREM GSIC.

The CRREM team will of course continue the dissemination and collaboration with global players to educate the market and ensure that the pathways and tool is used correctly. This year CRREM hosted multiple training sessions to ensure the correct use of the tool (each session basic & advanced had over 200 attendees). Collaborations with e.g., EPRA have been established in order to further educate the market and many more!

Statement WGBC:

Longer term, CRREM should,

- Actively engage with the WorldGBC and national GBCs when developing pathways especially at the national / local level.

Answer Prof. Dr. Bienert/CRREM initiative:

Happy to intensify the exchange with the national as well as the WorldGBC. CRREM would highly appreciate the input of further national GBCs!

Statement WGBC:

- Review the feedback provided in the above and make proposals for improvement.
- Make transparent all assumptions and data entries behind the calculations of the different pathways available for in-depth review.

Answer Prof. Dr. Bienert/CRREM initiative:

Please see below.

Statement WGBC:

Future Collaboration:

The ESG Working Group sees great opportunity for the CRREM curves to be used to provide valuable metrics for governments to see how their entire built environment is performing. The average and aggregated method of calculating the CRREM curves would be perfect for this, and a great aid with policy formulation that can happen in conjunction with the national GBCs. WorldGBC would welcome the opportunity to work with CRREM on a research project understanding the risk profile of each country's-built environment for policy makers and investors / as well as financial institutions.

Answer Prof. Dr. Bienert/CRREM initiative:

We look forward to further collaboration! We of course always welcome the opportunity for further research projects and are happy to arrange a call anytime! The CRREM team is also willing to set

up further webinars or working groups to further deepen understanding, increase transparency or improve on the outreach as well as the granularity of the pathways.

CRREM's proposals of improvement

- *Working groups/ Roundtables with the WGBC: For CRREM the individual GBCs have already provided the initiative with valuable underlying data for the calculation of the pathways. CRREM would like to take this opportunity to engage with all the GBCs in order for them to provide valuable contribution to the scientific and technical integrity of the outputs and provide critical review of new updates.*
- *Joint webinars / education with the WGBC: We would welcome this going forward.*
- *Methodology document: Further explanations and clarifications in the methodology document will be added, such as the already existing definition of stranding risk (this has also been made clearer on our homepage).*
- *CRREM downscaling pathways: CRREM has received some feedback from the market regarding the starting intensities and after review has aligned to the new national sources as suggested. This applies to Japan residential, Hong Kong and Singapore.*

dear Cristina, dear members of the ESG Working Group - we again thank you for your feed-back and look forward to a data and content-driven partnership. CRREM has accomplished to evolve as a huge success story which led to the backing of largest asset owner and investors globally, as well as many well-known industry initiatives and organizations like UNEP FI, NZAOA, IIGCC, The SBTi, EPRA, INREV and many more. We would be honored if we could likewise strengthen our partnership with the WGBC going forward.

Best rgds



Prof. Dr. Sven Bienert, MRICS, REV