

Content review of the cross cutting fields

Reports: [Cross-cuttingFields.pdf](#)

Content review for Accelerators

- Can you distinguish better between research accelerators and application accelerators (medical....)
 - ★ The chapter already distinguishes between these type accelerators, but I will make sure that the applications of each of these types of accelerators is clear in the chapter. (Time line: I can implement this in the second week of January)
- To correct: Survey did not only include students but also professors and researchers. Specifically for Ghana Conference LOCs and lecturers were there.
 - ★ This will be implemented next week.
- There is no African Consortium for accelerators:
 - Launching a Pan-African consortium body to cover the field, same way as is done in Quantum. Should organize meetings or workshops to launch this new entity.
 - We should take action. Need a lobby group to action that. (Working group 14 of IUPAP)
 - Should be made as a recommendation
- Recommendations should be made at the end
- Is ERL realistic for the next future? What is the time scale?
 - ★ A full-scale ERL in Africa is **possible**, but it is a long-term goal. Realistically, with coordinated planning, funding, and training, the timeline would be **15-20 years (like the AfLS)**. The first phase would focus on building local expertise and infrastructure through smaller accelerator projects, then moving toward a full ERL design and construction in the following decade.
 - ★ ERL is physics of accelerators

Content Review for Computing

- Need a PanAfrican Consortium for Computing under a general African umbrella organisation.
 - We should add it as a recommendation, same way it is requested for many of the other fields where a pan african collaboration would have an immense boost effect.
 - Create a data or compute centre at the African level. Could be given as a recommendation for a panafrican data centre.

- Africa thinking of giving 84GW (I don't remember what this is all about. If someone knows???)
- Most of the graphs are related to sub saharian HPC. If one could have a more general picture of the whole Africa, it would be very useful.
- Graphs and pictures: it is important to add much more illustrations and graphs to reflect the situation of the computing in Africa.
 - Find more illustrations about data centres, computing facilities, computing usage.
 - Transforms some quantitative numbers into graphs or pictures: here I got from Sanae the AI link put below that very easily transform figures into colorful graphs that can be more easily apprehended.
- Some other chapters of the report have presented the needs for the kind of facility of HPC centres. Will have to make a reference to these other chapters.

Useful AI link: <https://app.napkin.ai/>

Content review for Quantum chapter

General Comments on the quantum strategy chapter:

- **Should we add economic metrics?** something that we can learn from the european strategy is the use of economics and economic metrics to persuade governments and policy makers (this can work for the other chapters too)
 - Need research into jobs physics or quantum fields create
 - Contribution to GDP/ import/export stats
 - Start-up creation in the field and the amount of jobs it creates

Budget estimates: make some estimates to give an idea on the budget. Validation could be given by consortia already working in the field.

Some think that it is beyond the scope of this report being made mainly by physicists and with the timescale of the first quarter of 2026.

Ouissal: asking for timescale for having this budget estimates

- **Should we add a photonics chapter?** We should given the promising nature of this technology and we must highlight its state in Africa and the research ongoing

Could be added as a subsection. Someone from South Africa could help.

- **More figures and tables should be added to the chapter:** this can be linked to the economics point.

This is already tackled.

- Maybe there should be more highlight into how we can **bridge the gap between academia and industry**:
 - What could that look like in the context of Africa
 - Ongoing initiatives in the continent: incubator programs, examples of university spinoffs

- There was a mention of a survey that shows how many quantum startups are there in Africa. Somebody mentioned that there are 8 quantum companies, no references or sources were provided.
- Might wanna check with the AQC on this specific point
- Calling for financiers as well to get involved, make it clear how accessible it is to commercialize.

Ouissal to be connected with Thomas Conrad

- An essential point is more **contact with policy makers**
 - To make sure our document is clear and concise and drives action
 - To bridge any gaps: maybe we need more actionable action items or budget estimates
 - Could we be contacted with people who work on this sort of thing to get mentorship into how we can best communicate our ideas?
- It was mentioned that the expectation was more of **a chapter on quantum in general** (this means not only including quantum computing but also quantum physics, quantum foundations, etc). Others expressed that it would be better to **simply stick with quantum computing** and make sure the product is great than have an average product that is broader. It was recommended that the authors should decide what can realistically be done before the official release in 2026.

Should be mostly on Quantum Computing

Proposing to have the 4 applications on Quantum: Communication, metrology, sensing, computing. Very possible to do.

Given the nature of the comments, we need to decide on a **deadline** where we aim to address as much as we can, and then we should leave anything else to future iterations. I am willing to keep working on this project. Could we maybe decide on this deadline at the Friday meeting?

I already contacted the photonics people, and I am waiting for their input.

Action Items for Friday's meeting:

- Preparing a timeline: we need to make our minds on whether to include just quantum computing or whether to include other things as well.
- We need some details on the startups: I need to ask him about where to find the lead on that.
- We need to add more figures: histograms can be much better.

Content review for Instrumentation and Detectors

- Maybe there is some synergy with light sources? Do you envisage Africa promoting more and more local infrastructures like XRays or other? Possible overlap so please do some synergy between detectors and light sources. Better to do common work.
- Ulrich: answers that it is part of summarising the recommendations.
- About the proposed [instrumentation school](#): isn't it better to integrate it with other existing activities? The problem is to make it concrete with a budget.

Adding an annex to the chapter to give an estimate. ICTP is a good example.

Examples of these kind of schools: in Rwanda for example. The idea is having a school but with instrumentation to have hands on.

- Fernando: for the budget do you know how much would be needed to have microscopes , optical pumping spin resonance..... to bridge the gap between education and new techniques.
- budget for ICEPA?

Content review for Energy

- PV? Please explicit all the acronyms
- Thermal energy: Several African countries have thermal energy sources as part of their electricity energy (page3)
- Question about green energy: (Robinson?)
- Nuclear reactors: all are for research except in Egypt: a new one is being built in Egypt. VVER-1200 of 4800MW. The system is capable of water desalination all together: Very interesting to be put in . References and figures will be given.
- What about Biogas and biomaterials used throughout Africa. Research is going on for residuals...
- Blockout; like in Spain. What to do to avoid energy blockout?. Blockout in Spain was due to smart grid and keeping the balance between energy storage and energy utilisation. Grid reliability is essential. How can we contribute?
- Energy storage: need an efficient storage for example like for solar energy.
- Biogaz, nuclear power and clean Hydrogen ?
- Energy grid and storage
- What can physicists contribute?
- There is a lot of repetition. The chapter could be compressed.
- A lot of vague statements, not quantitative and no references.

Text is very short on nuclear energy. **Simon can find someone that can write 1 or 2 pages** on this on a short time scale.

Kenya and Ghana

Content review for Earth Science/Earth Sciences?

- Panafrican agreement?
- Plan to put a section on remote sensing? Answer: good suggestion.What is the plan and timescale? Next week
- Links to be made to other chapters? Work will be done next week to do so
- Comments about things getting outdated: will be done.

Summary of Recommendations of tuesday session from Ulrich

- Correct "Distributed computing platforms".
- Everyone has made education important. Could we make it more precise: teaching labs, courses for graduate ...
- IAEA: INT0104 project has funding used to collect all material that goes to a very big server. You can have papers for politicians, lectures for students, etc...
- lot of people in Africa do not see research as a possible career. No publishing in lot of universities. We have to draw for governments the benefits of education and research
- Answer to Fernando: president of Nasac that spoke on how to draw synergies such that the work done in ASFAP can be seen. NASAC is part ofBe prepared to pass it to the physics education chapter.