# BECDC - South-Africa

**Location:** Cape Town

**Partner and supervisor:** Belhar Early Childhood Development Centre (BECDC), Christiaan Harzenberg (BECDC), Fareed Ismail (CPUT)

**More information:** <https://beleafaquaponics.com/>

**Description:** Due to the recent drought in Cape Town, there is a need for alternative agricultural farming methods compared to regular soil farming. Aquaponics is a system in which water is circulated between a fish tank and a grow bed with plants. The waste of the fish provides building blocks of the nutrients required for the plants to grow. Water can be recycled, due to the continuous circulation of the system. The symbiotic relationship between the fish and the plants creates an ecosystem in which only the feeding of the fish requires human intervention, ideally speaking.

Since 2011, an Aquaponics system is installed at the Belhar Early Childhood Development Centre (BECDC). This Centre takes care of approximately one hundred children from around the neighbourhood and runs six Aquaponics set-ups (March, 2019). One set-up consists of a fish tank and three grow beds, providing 3m2 of growing area. A similar aquaponics system is installed at the University (CPUT) for research purposes (optimal temperature, optimal use of solar panels, several experiments). Students can divide the work between research at the University and supporting activities for entrepreneurship and marketing at a childhood center.

Former student groups have arranged quite some funding to put the system at the Childhood Center in place, and the challenge is both to keep it working, but also to sell the produce. In the longer run the experiment should lead to an independent enterprise, that comprises a full-time job at the Childhood Center.

Another challenge might be to explore whether other childhood centers could use a similar system, both for educational purposes and for producing vegetables and creating an independent enterprise and source of income.

However, the question should also be posed, whether aquaponics is not too complex and difficult for the childhood center as a general solution. Hydroponics is less complicated and could at least be complementary.

Yet another challenge is the question whether the enterprise should really be self-sufficient and self-serving in the future. This question is evoked by the fact that the owner of the Childhood Center so now and then gives the vegetables away to poor families. That is good as an act of charity, but questions the financial sustainability of the enterprise. Since also the childhood center itself is running for a large part on charity, should not the business as well become a charitable project, at least in part? That also could be explored, not only for this Childhood Center, but also for other childhood centers, as a general policy.

Yet another challenge is the viability of aquaponics in South Africa in general. A scientific article shows that 40 companies are experimenting with aquaponics. No clear data are available about the productivity.

**Assignment:** The challenge in this assignment is to prove the viability of the business case for an aquaponics system, used for both educational and entrepreneurial purposes and maintained by the Early Childhood Centre.
At the moment the Aquaponics system runs beautifully, but still the production is lower than anticipated, due to Coronavirus and colder water conditions (wintertime in Southern Africa). Sales are stagnating, because all crop harvested went to the local Corona food relief program and waste went to the earthworm farm and compost bins as usual.
The production of duckweed is a huge success. The output will double when minor fixes are completed.
The temperature remains a challenge. Additional water heating capacity is required.
Also soilless seed planting exploration is underway to allow children to plant seeds directly in 250ml plastic juice bottles that's directly transferred to grow beds for germination. 5 lt bottles will be placed on 250ml bottles to control humidity and pests.