

The ELIDZ SCIENCE & TECHNOLOGY PARK is piloting an **OPEN INNOVATION PROJECT**

# Connect + Solve



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## ON-GOING RE-USE, RECYCLING OR ERADICATION OF A FOOD-TYPE BY-PRODUCT

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Challenge ID: **CAS\_C00005**  
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**Challenge Owner:**

Anonymous

**Business Opportunity:**

Installation and/or operation of a full lifecycle solution to eradicate a food-type by-product.

**Solution Maturity:**

Solutions must preferably have completed the R&D stage, be ready-for-market, or commercialised and available for immediate utilisation; however concept stage solutions and solutions currently in R&D stage shall also be considered.

**Delivery Times:**

Phase 1: Technical evaluation of potential solution/s (1-2 months)  
Phase 2: Feasibility study and deployment of solution (2-6 months)  
Phase 3: Evaluation (1-2 months)  
Phase 4: Solution acquisition/integration and rollout

**Reward:**

Opportunities for procurement, outright rights purchase, joint venture or licensing agreement and support for piloting and further development where proposed solutions have passed proof of concept.

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### CHALLENGE STATEMENT

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The Challenge Owner seeks a full lifecycle solution to eradicate a food-type by-product that is an inherent aspect of its on-going production processes. This will avoid the risk of possible human contamination, misuse or other similar activities that may impact negatively on the social and environmental objectives of the Challenge Owner.

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### BACKGROUND

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A multinational producer and distributor of confectionary products (the Challenge Owner) with production plants in Southern Africa is seeking to significantly diminish the potential adverse social and environmental impacts of a food-type by-product generated during on-going production.

These impacts arise both from the existence of the by-product itself, along with secondary impacts arising from efforts to manage and reduce the excess product. These may include efforts to reduce the amount of by-product as well as collecting, sorting, storing, transporting and disposing of by-product.

The by-product is a combination of individual ingredients (pre-production or during production) and a post-production blend of ingredients such as sugar, dairy components, cocoa butter, fat and emulsifiers. It builds up throughout daily production due to a number of production related activities, such as from product rejects (following quality control), material leftover (from cleaning of production equipment and machines), formulation excess and spillages, and other typical daily production activities.

The Challenge Owner has exhausted ways to extract additional value from the by-product material as it cannot be further utilised or integrated into production processes, existing product lines or similar ancillary business or production activities. Furthermore there are continual initiatives to minimise the underlying causes of by-product build-up such as optimising production equipment and machine setup, improving product formulation and planning, and revising general policies and procedures to pursue the absolute minimum generation of by-product.

As a result of such efforts, the Challenge Owner has reduced the monthly minimum volume of by-product to five (5) tonnes, which may from month-to-month move above this minimum level depending on plant production volumes.

### **Generic description of by-product:**

The by-product is a category of high-caloric foodstuff and given the above examples of by-product causes, may contain trace elements of non-food elements such as machine oil and lubricants (resulting from scraping the by-product from production equipment and machines for purposes of post-production cleaning), product wrapping, and packaging material (resulting from rejecting packaged goods).

### **By-product specific attributes:**

- A confectionary type food product classified as such in accordance with European regulations;
- Is not classified as hazardous waste;
- Is not intended for human consumption;
- Has limited shelf life from containing spoilable ingredients such as fats and dairy;
- Is high in fat content, resulting in the following general energy attributes:
  - Digestible and metabolisable range of approximately 3,900 and 4,800 kcal/kg;
  - Crude protein value of 4.01 (if not mixed with other ingredients with higher protein contents);
  - Digestibility coefficient of  $P > 0.05$ ;
- Is sometimes used as an ingredient in animal feed; and
- May be contaminated with minor trace elements of packaging material such as plastic liners, plastic bags, cardboard trays, foil paper, cello or shrink wrap, plastic forms or trays, cardboard boxes, etc.

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### **KEY ATTRIBUTES OF DESIRABLE SOLUTION**

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- Be ethically responsible and thereby minimise any negative social and environmental impact.
- Be cost neutral so as to not increase the existing costs incurred in management and disposal of the by-product.
- Demonstrate a very clear full life-cycle roadmap with continuous and complete traceability which is auditable.
- Does not result in any additional negative by-products or ethical implications.
- Completely avoid landfill and/or similar disposal activities.
- Eliminate the possibility for misuse.
- Allow for the recuperation of value.
- Does not add any additional complexities to the current production and associated management policies and processes of the Challenge Owner.
- Offers potential social upliftment such as enabling community energy self-sufficiency, etc.
- Be compliant to local environmental, occupational safety and health legislation.

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## POSSIBLE APPROACHES

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Finding additional uses for the by-product that meet minimum needs and key specifications outlined above such as:

- Non-human/animal consumable purposes or uses;
- Recycling of by-product;
- Incineration with energy recovery;
- Using non-recyclable by-product material as energy source on site or as fuel source for energy type activities such as biomass plants;
- Chemical or non-chemical treatment of by-product to purify, breakdown or separate by-product to form value-adding new by-products;
- Use as an ingredient for compost production.

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## PHASES

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Phase 1: Technical evaluation of potential solution/s (1-2 months)

Phase 2: Feasibility and deployment of solution (2-6 months)

Phase 3: Evaluation (1-2 months)

Phase 4: Solution acquisition/integration and rollout

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## EVALUATION CRITERIA

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The following criteria will be used to evaluate submissions:

- The scientific, technical merit and the ability of the proposed solution to meet the stated specifications.
- The relative cost-effectiveness of the proposed solution;
- The relative ease of use of the proposed solution;
- The viability of IP arrangements without creating technology or system lock-in;
- The ability of the respondent to work successfully in a team with the Challenge owner's staff;
- The capability and experience of the respondent and associated track record;
- 2-3 years to commercialise;
- Compliance to environmental, occupational safety and health legislation.

To respond to this Challenge, please complete the response template online at

[www.connectandsolve.co.za](http://www.connectandsolve.co.za)

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