Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs FDEA
Commission for Technology and Innovation CTI
Innovation Promotion Agency

CTI funding application	**CTI P No: *CTI***	**REF: *CTI***	**CO-REF: *CTI***

Project Title (1 - 2 lines for publication purposes)

CarboRock project of carbon negative industry for quantitative carbon compensation:
Development of microPBR technology for strain specific micro-algae culture.

Main research partner (contact for all written communication; i.e. decision)

Surname	First name	Title/gender
Hofstetter	Valère	Male

Full name of institution	Short form	Postal address					
Association de recherche pour le recyclage du CO2	ArrCO2	Street:	Route de la gare 50				
		Postal code:	2017	Town:	Boudry	Country	Switzerland
Homepage /E-mail :hofstetter.v@gmail.com		Tel. (office):	032/ 842 66 36	Fax:			

Main implementation partner

Surname	First name	Title/gender

Full name of institution	Short form	Postal address					
		Street:					
		Postal code:		Town:		Country	
Homepage /E-mail:		Tel. (office):		Fax:			

Note: all persons signing on behalf of project partners must have power of signature!

Please select only one discipline

Life Sciences	**Enabling Sciences**	**Micro and Nano Technologies**	**Engineering Sciences**
☐ Biochemistry / Pharmacology	☐ Business management and finance	☐ Microelectronics	☐ Production technologies
☐ Biotechnology	☐ Public management / Tourism / Urban planning	☐ Electronic engineering	☐ Materials research
☐ Medicine	☐ Design / Arts / Architecture	☐ Optoelectronics / Photonics	☐ Machines, mechanical engineering
☐ Food technology / Nutrition	☐ Macroeconomics / Social sciences / Public health	☐ Sensors and actuators	☐ Electrical engineering
☐ Agronomy	☐ Information and communication technologies (ICT)	☐ Miniaturised systems engineering	☐ Civil engineering
	☐ Integrated production / Logistics	☐ Microsystems technology	☐ Chemical engineering
		☐ Nanotechnologies	☐ Environmental technologies / Ecology
		☐ Nanomaterials	

☐ **CTI start-up** (Phase:) (Coach) ☐ has read application
☐ **CTI R&D Consortia:**
☐ **Continuation of Innovation Cheque/ No**
☐ **Continuation of SNSF Project:** ☐ National Research Programme
☐ Nat. Centre of Competence in Research
☐ Other SNSF Project Support

☐ **New project** ☐ Continuation of CTI Project No.

Project start: ______ Duration: 0 Months

Requested grant funding	CHF	0
Contribution from implementation partner	CHF	0
Total project cost	CHF	0

International project
☐ EUREKA
☐ Other …

Send to: info@kti.admin.ch

Subject of project/Short description (480 characters for publication purposes)
Development of a new generation of photo bioreactor (PBR) designed for the industrialisation of strain specific micro-algae culture: Micro-algae culture is fast becoming a hot research subject for the development of alternative source of raw material for different industries. One of the main obstacles for the industrialisation of micro-algae culture is their prohibitive cost of production. One of the objectives of the CarboRock project is the development of high productivity PBR with low cost of production per ton of dry micro-algae biomass. Several innovations are proposed for the design of a new generation of PBR with both an increased productivity and a lower cost of exploitation.

Project manager

Surname		First name				Title/gender	
Full name of institution	Short form	Postal address					
		Street:					
		Postal code:		Town:		Country	
Homepage /E-mail:		Tel. (office):		Fax:			

Additional Research-/ and Implementation partners

Research partner

Surname		First name				Title/gender	
Full name of institution	Short form	Postal address					
		Street:					
		Postal code:		Town:		Country	
Homepage /E-mail:		Tel. (office):		Fax:			

Implementation partner

Surname		First name				Title/gender	
Full name of institution	Short form	Postal address					
		Street:					
		Postal code:		Town:		Country	
Homepage /E-mail:		Tel. (office):		Fax:			

(Please use a separate sheet if there are additional Research and Implementation partners)

1. What are the commercial goals and the deliverables of the proposed project (quantitative and measurable)? Have market and competitors studies been performed (enclose business plan if appropriate; see Note "Commercial goals")[1]

They are many micro-algae culture projects around the world based on existing and well-established technologies. The commercial goal is to develop a microPBR (MicroPhotobBioReactor) with drastically increased productivity per scare meter of land and of solar irradiation compared to any existing facility. These types of existing facilities include pounds, race pound, covered pound and green house with different type of tubular or sheets systems. Up to now only the simplest technology used has wastewater treatment in certain location has proven itself economical viable through methane production. Unfortunately, this approach is difficult to adapt and to use to produce standard high quality biomass of selected micro-algae. Furthermore, the simplest technologies uses a lot of land and is very far from using the very high yield of photosynthesis possible with micro-algae.
This new generation of micro-PBR can be called micro because it should be able to replace very large growing facility and their biomass treatment annexed facilities. A microPBR should thus be able to easily implement it-self into existing industrial ecosystem.

The first deliverable is a laboratory pilot plant for in field data acquisition, testing every innovation proposed in this new generation of PBR, measuring the productivity, cost reduction of biomass production, estimation of operating costs and the cost of production of an industrial system.

The second deliverable, which is probably the biggest investment in time and financial resource, includes a numerical model. This model should simulate different scales of the microPBR, from the size of the limestone shell in the support culture to the size of the industrial site. It should be able to simulate the scaling up of such a design, with particular strain in a given industrial ecosystem with several variables particular to a given industrial ecosystem, including specific solar irradiation, volume flow, land constraint and resistance to extreme events such as high wind, floods and earthquakes. This numerical model shall thus not only prepare the construction of a first industrial pilot plant but also allow exporting a client adaptable technology.

2. What are the scientific and technological objectives and deliverables of this project?

The scientific objective is to produce a microPBR which focuses on the rational use of solar energy and culture space:

The three main technological features of such a microPBR are a system for whole light processing, a system for dynamic high densities fix culture of photosynthetic organism and a large volume V-shaped bottom PBR with integrated biomass conditioning machineries based on radiant heat.

Whole light processing system:
The sunlight is a fantastic source of energy, however even if micro-algae are already using solar energy much more efficiently than plant in natural environment, they remain well below what is possible to obtain in laboratory system. Furthermore, the fraction of light, which is possible to use for photosynthesis purposes remains low compared to the entire spectrum. A better and more controlled use of the solar energy available is technically feasible.
The first part of the whole light processing system shall include modern low cost solar reflector base on inflatable Mylar reflector that should allow affordable scaling up of reflector system. Design of solar concentrator already exist with a concentration factor of up to 10'000, which is the equivalent of bringing the light covering an hectare of land into one square meter. These designs should be up dated and adapted for the specific use in microPBR.
The second part of a whole light processing system should include devices for the dosage and the quality improvement of the captured light. Those devices could include the use of diaphragm and light filters. This technological feature should avoid harmful light irradiance level and photons at damaging energy level. UV light (which is increasing around the world) represent at least 4% of the total solar energy and can be converted it into usable light for an increased level of photosynthesis. This conversion of UV light into photon at energy level adapted to photosynthesis is routinely used for fluorescent lighting system and the technology could be adapted for the micro-PBR system of light conversion. This second part of the whole light processing system shall also manage the intense heat generated by the concentration of the 57% of infrared in the light spectrum. The transfer of this excessive heat will be necessary and could be achieved using radiant heat transfer technology. The concentration and the transfer of this heat would make it possible to use it where it is most needed. In fact, the algae culture main disadvantage compare to plant biomass is the energy required to separate the biomass from water and its following drying. The excessive heat concentrated could then be used on site for

[1] These details should be entered by the Implementation partner.

biomass drying and for temperature control of the microPBR.

The third part of the whole light processing system:
Last part of the light system shall be composed of light distribution items such as optic fibres with prepared surface that allow for a regular diffusion of photons at the appropriate light density. For instance, the light intensity around the SATOM site is on average around 2600 micromole / m^2 of photon at photosynthetic level. The micro-algae can resist such intensity but can grow in laboratory with as little as 30 micromole / m^2 and robust growth can be achieved with less than 100 micromole / m^2. This means that one square meter of sun light has enough photon to illuminate 26 squares meter at 100 micromole / m^2. Experiments in outdoors pound have shown that the first 6 cm of a culture is enough to absorb almost all of the light. In microPBR, the light shall be absorbed around the light distribution items by a very high density of fixed photosynthetic microorganism. All the light should be absorbed on a pack of temporarily supported culture. This system could be described as a compact system dripping photon at the right intensity, the right energy level at the right place.

System for dynamic high densities supported culture of photosynthetic organism:
The innovation proposed is to reproduce the improved biomass density obtain with microbial fixed culture but with single cell photosynthetic organism. To achieve such an objective two main problems had to be solved. The first problem solved is the light diffusion that is blocked with high density of biomass. This is why the support culture could be either caved in the light-transmitting item or generated by addition of porous layers on the light-transmitting item. The second problem attached to such a technology is the expulsion of the produced biomass from the support culture. The innovation of dynamic high densities supported culture of photosynthetic organism is to use the support culture for multiple purposes in one. First it allows a high density of biomass that would otherwise sediment. It transfers the light in an optimal manner. It allows optimising the mass flow for molecular exchange by moving a high density of biomass trough a culture medium, instead of moving high volume of culture medium. Finally the combination of the architecture of support culture with its movement within the culture should generate a current inside the support for the expulsion of the biomass produced. The choice of the algae strain that have limestone surface will allow the flow of cells within the culture support with an architecture tuned to be strain specific. In fact, the selected strain can have very different and specific limestone surface geometry that will allow a strain calibrated support culture.

Large volume funnel shaped PBR and integrated biomass treatment machineries:
Standard culture systems do not allow a high volume of culture per square meter (20-30 litters of culture) for pound and race pound and around 60 litters for green house facilities. The design of microPBR will allow multiplying volume of culture per square meter by a factor of several thousand. In nature, the type of algae selected can withstand pressure of a 30 meters water column. The use of vertical high-density culture volume will allow profiting from the gravity to harvest the biomass. The pressure of the water column and the funnel shaped bottom of the microPBR should allow a low energy harvesting of an already somewhat concentrated biomass for dewatering and drying. The dewatering and drying machineries shall be directly integrated with the microPBR to allow heat transfer from the light processing system and transfer of residual heat to acclimatize the micro-algae culture.

3. What is the innovation content of the proposed project with regard to a) the current state of the partners' own research and development, b) the current state of national and international state of the art and c) the market and competitors? Have searches/surveys been performed (details of sources etc.)?

A key feature and innovation of a microPBR is its complete integration with biomass treatment machineries. This integration is the result of the specific light capture system chosen and of the synergetic possibilities than such integration offers. It will result in the leanest management possible for the treatment of biomass, which will come out of the microPBR as different bulk products ready to sell.

The drying of biomass is one of the most crucial points in the process because of its massive energy requirement and occurs twice in the process once for the preparation of the organic fertilizer for the micro-algae and once for the algae biomass itself. The particular design of the microPBR will lead to specific drying techniques for which expertise already exist. Indeed, Prof. Michel Jean-Bernard of the Heig-VD is already working on the drying of biomass for combustion. The innovation with regards to the partners' own research and development is the use of a combination of limestone and dried organic fertilizer at different concentration for the production of CarboRock soil amendment products (CarboBlack; CarboWhite; CarboGrey) for professional. The innovation with regards to the partners' own research and development is also the drying of biomass for nutritional purposes, which requires particularly well-controlled process. It also concerns the use of radiant heat technology for biomass drying.

3.1. has preliminary work already been undertaken? If so: give a short summary.? [2]

Invention of a carbon negative industrial ecosystem.

Literature review of algae culture and laboratory culture of different carbonate producing micro-algae strains.

Invention of the microPBR concept and technical solution propositions specific for the use of limestone producing micro-algae in a carbon negative industry.

Data analysis and preliminary projection of culture growth in microPBR in an existing industrial site, SATOM.

Drawing and 3 D model of laboratory piloted plan using optic fibbers.

Photomontage for an artistical view of a complete microPBR system in different industrial site.

3.2. what human and material resources are available to the project partners? (e.g. available research staff, equipment, etc.)

To be discussed!

4. Position of this project within your R&D activities

In order to determine the level of grant funding that we can provide, we ask that you please disclose your current R&D funding situation below.

The status of current funding is that funding is non-existance and entirely self-finance but with moral and subsistence support from friends and family.

4.1. Have any of the topics for this project been developed within the framework of another sponsored project and/or using other sources of funding? ☐ **No** ☐ **Yes, please specify:**

Topic	Funding agency	From to (years only)
		,
		,
		,

[2] Important relevant publications should be enclosed with the application.

4.2. **Will you or have you already submitted this or a similar application to another funding agency?**
☐ **Yes** ☐ **No**

If so, please specify:

In a nutshell, the selection of strains and their complete characterizations including their specific nutritional values, their optimal growth conditions and their selection with regards to their industrial potential is a complete project in itself. Furthermore, these selections will be made under unique conditions of a recomposed medium made mainly of industrial waste. The use of industrial wastes has a great ecological value in itself. Indeed, the use of these wastes allows a discharge of the environment from several heavy metals and also eliminates nitrate pollution. This project of industrial medium composition from industrial waste and selection of strains is a project that will be presented to the OFEN in the very near future for evaluation and potential supports.

Even though, the selection of strains with industrial potential is a project in itself, the growth conditions, the medium chemical properties regarding pH, salinity, abrasion and corrosions, the strains growth rates and their geometries will be essential experimental data for the development of a useful and fully compatible microPBR in industrial world.

4.4. Do you currently receive financial support for this R&D sector?
☐ **No** ☐ **Yes, please specify:**

Topic	Funding Agency	From to (Years only)
		,
		,
		,

5. Research and project plan

5.1. Planned, well defined problem solving strategy.

Tehmatique	Activitées	Resultas attendues
WP1: Mise en oeuvre et optimisation du PBR		
	Installation du réactier	
WP 2 : conditionnment des flux entrants, valorisation des eaux résiduaire d'une SIM et une STEP (Ca, NH3, P…)		
	Insatllation du système échange de ions	
	Tests divers avec eaux res. De la SATOM	
WP3 : Characterisation des souches		
WP4 : Extraction		
WP5 : Valorsiation de a fraction restant		

First step is a simple laboratory prototype of microPBR:

It shall be composed of a simple low concentrating factor light capturing system, simple optic fibbers transmissions with simple or no light filters. The optic fibbers shall have no specific inside architecture. The light-emitting fibbers shall be replacing the agitation system in a standard modified laboratory incubator. This incubator should be a continuous culture system with an upstream reservoir with dissolved salts, a CO2 dissolution unit, fertilizer, micronutrient and a downstream biomass accumulator. It shall also be composed of a downstream oxygen extraction and storage unit. This incubator shall be very well insulated from thermal radiations. It shall also be equipped with all the physical measuring capacities (T°, micro-mole of photons, cells and shells density, overall viscosity and agitation speed) necessary to calculate industrial operating cost and growth rate from natural sun light irradiance with adapted photon dosage. The measurement unit shall also control critical chemical concentration such as proton, inorganic carbon, calcium and nitrate. The measurement unit controlling physical and chemical properties shall have an automatic data logging system for further exploitations of biological data. This standard incubator shall be coupled with a sedimentation unit adapted to measure sedimenting properties of strains and allow downstream biomass accumulation for extraction. The clear water from the sedimenting unit shall follow up with water treatment units to treat exopolymers. This research prototype should be the first step toward planning of large-scale system and strain selection confirmation in microPBR prototype. It will be possible to up grade this basic microPBR prototype with new features develop separately such as heliostat, diaphragms, light filter and new light transmitting items with specific surface architecture.

Biomass dewatering and drying:

This first prototype of microPBR (10L) shall produce enough biomass and shells for further analysis of costs in the industrial process.

The biomass drying and dewatering are aspects included in both projects of strain selections and mircoPBR design. Standard laboratory scale dewatering and drying units shall be available for biomass testing and specific energy consumption measurements. The measurements made will be the base for an integrated biomass treatment design for industrial microPBR.

3D models:

Simple 3D model shall be made for the solar concentrator and microPBR scaled for volume flow needs and on the specific topology of the SATOM site. It should include a simulation of solar irradiance specific to the region that allows for calculation of moles of photosynthetic photons effectively transferred and heat transfer needs. Those calculations will participate in the dimensioning of both the microPBR itself and its integrated biomass treatment machineries based on radiant heat technology.

Filters:

Theoretical work shall be performed on the filter for improved photosynthetic capacity of highly concentrated solar ray. It shall pave the way to the fabrication of filters prototype adapted to the laboratory scale microPBR prototype for strain specific testing.

Heat exchanger:

State of the art review on heat exchanger technology and radiant heat oven should be performed to integrate both the specific requirements for the delicate drying of nutritional value biomass with the constraints inherent to solar energy.

5.2. Project plan with timetable, work packages as well as clearly defined and scheduled milestones (what can be verified, seen, measured etc. at what point in time?) **and planned allocation of resources** (definition of milestones and results to be achieved, bar chart to be included).

To be worked on with partners.

5.3. Project management and structure

To be structured

5.4. Do you feel that the project results may give rise to a patent? ☐ Yes ☐ No

5.5. Have all project partners reached a written agreement concerning patent rights as well as ownership and use of intellectual property resulting from the proposed CTI project?

☐ Yes ☐ No

If so, please give a brief outline or a copy of the agreement:

Note: if a project partner submits an agreement on intellectual property rights or if CTI requires such an agreement, then said agreement must be signed and delivered to CTI before a grant funding contract may be issued.

5.6. Recapitulation of the project plan:

Please indicate the allocation of research tasks among the various partners

Description of R&D activities based on the project plan (work packages)	Research partner	%[3] Share	Implementation partner	%[3] Share	Outsourced to third party	%[3] Share
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00		0.00
		0.00		0.00	-	0.00
		0.00		0.00		0.00
	Total in %	0.00		0.00		0.00

[3] Expenditure of time as percentage of total

6. Financial Plan

Note: CTI funding criteria only allows for payment of wages to researchers who work for non-profit organisations. Equipment and consumables may only be purchased with CTI funds in exceptional cases (please state the reasons why the purchases are necessary). All contribution amounts must be indicated exclusive of VAT.

Breakdown of total project costs into the following three categories:

6.1. Equipment costs (items of enduring value),
6.2. Other costs (consumables, miscellaneous expenses) and
6.3. Wage costs.

The individual costs should be itemised separately, by

a) Costs to be covered by federal funds

b) Costs incurred by implementation partners either in the form of cash contributions [4] or other contributions according to Art. 10y and 10q of the Ordinance of 10 June 1985 pursuant to the Federal Research and Innovation Funding Act (V-FIFG, SR 420.11).

6.1.a Equipment costs (after deduction of all discounts)

Item (incl. model and supplier)	Location during/after project	Federal/CTI share of costs in CHF	Cash contributions by implementation partner(s)[4] in CHF	Other contributions by implementation partner(s) in CHF	Total in CHF
WP1		0	0	0	0
PBR (	ZH	0	0	0	0
		0	0	0	0
		0	0	0	0
WP2		0	0	0	0
Nanofiltration	FH	0	0	0	8000
		0	0	0	0
		0	0	0	0
		0	0	0	0
		0	0	0	0
Total		0	0	0	0

6.1.b Which equipment (items of enduring value) purchased using federal funds may be reused after the project is completed? By whom (e.g. higher education institution or company) **and for what purpose** (VO Art. 18)?

To be reviewed with partners

6.2. Other costs (consumables, miscellaneous expenses)

Use of funds	Federal/CTI share of costs in CHF	Cash contributions[4] by implementation partner(s) in CHF	Other contributions by implementation partner(s) in CHF	Total in CHF
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
	0	0	0	0
Total	0	0	0	0

[4] Cash contributions to cover project costs incurred by research partner **(VAT not included).**

6.3. Wage costs (net wage + employer/employee social insurance contributions = total wage costs per employee)
Wage levels: see V-FIFG, Annex “Assessment of CTI funding for projects”

Project team members

							CTI share of costs	Implement. partner share of costs
Surname			First name					
Year of birth			Nationality					
Acad. level			since					
Qualification			since					
Role in project			Ph.D. student		yes ☐ no ☐			
Hourly rate in CHF			Wage class					
Employer			Place of work					
Wages covered by	1st year		2nd year		3rd year			
Federal/CTI funding	CHF 0		CHF 0		CHF 0		CHF 0	
Implement. partner	CHF 0		CHF 0		CHF 0			CHF 0
Subtotal	CHF 0		CHF 0		CHF 0			
Time on project (hours)		h		h		h		
Surname			First name					
Year of birth			Nationality					
Acad. level			since					
Qualification			since					
Role in project			Ph.D. student		yes ☐ no ☐			
Hourly rate in CHF			Wage class					
Employer			Place of work					
Wages covered by	1st year		2nd year		3rd year			
Federal/CTI funding	CHF 0		CHF 0		CHF 0		CHF 0	
Implement. partner	CHF 0		CHF 0		CHF 0			CHF 0
Subtotal	CHF 0		CHF 0		CHF 0			
Time on project (hours)		h		h		h		
Surname			First name					
Year of birth			Nationality					
Acad. level			since					
Qualification			since					
Role in project			Ph.D. student		yes ☐ no ☐			
Hourly rate in CHF			Wage class					
Employer			Place of work					
Wages covered by	1st year		2nd year		3rd year			
Federal/CTI funding	CHF 0		CHF 0		CHF 0		CHF 0	
Implement. partner	CHF 0		CHF 0		CHF 0			CHF 0
Subtotal	CHF 0		CHF 0		CHF 0			
Time on project (hours)		h		h		h		
					Total or amount carried over		CHF 0	CHF 0

(Please use an additional sheet if more than 3 project team members)

6.4. Information on total costs to be incurred by implementation partner(s)

	Equipment costs (6.1.)	Other costs (6.2.)	Wage costs (6.3.)	Total individual contributions
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Company:				
Cash contributions	CHF 0	CHF 0	CHF 0	CHF 0
Other contributions	CHF 0	CHF 0	CHF 0	CHF 0
Contributions per heading	CHF 0	CHF 0	CHF 0	CHF 0

Comments:
Preliminary work

6.5. Recapitulation of financial plan

6.5.1. Where do particular project costs arise?

Project costs to be incurred by research partners, incl. cash contributions: UAS, cantonal universities, engineering schools, etc.				
Institute	Equipment costs (6.1.) in CHF	Other costs (6.2.) in CHF	Wage costs (6.3.) in CHF	Total costs
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
Total by column	CHF 0	CHF 0	CHF 0	CHF 0

Project costs to be incurred by implementation partners, excl. cash contributions: companies, private Institutes, etc.				
Company/institution	Equipment costs (6.1.) in CHF	Other costs (6.2) in CHF	Wage costs (6.3.) in CHF	Total costs
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
	0	0	0	CHF 0
Total by column	CHF 0	CHF 0	CHF 0	CHF 0

6.5.2. **Financial plan** (overview)

		Total costs to be incurred by implementation partners		
Credit columns	Federal/CTI funding	Cash contributions	Other contributions by implementation partner(s)	Total costs
Equipment costs (6.1)	CHF 0	CHF 0	CHF 0	CHF 0
Other costs (6.2)	CHF 0	CHF 0	CHF 0	CHF 0
Wage costs (6.3.)	CHF 0	CHF 0	CHF 0	CHF 0
Total	CHF 0	CHF 0	CHF 0	CHF 0

6.5.3 **Annual instalments** (for projects lasting more than one year)

Instalments	Federal/CTI funding	Total costs to be incurred by implementation partners	Subtotal
1st year of project	CHF 0	CHF 0	CHF 0
2nd year of project	CHF 0	CHF 0	CHF 0
3rd year of project	CHF 0	CHF 0	CHF 0
Total	CHF 0	CHF 0	CHF 0

7. Implementation (approval, secrecy, standard contract)

The applicants (i.e. project partners) hereby acknowledge that they fully understand and accept Art. 6 para. 1 letter f and 16a para. 1 of the Federal Act on the Promotion of Research and Innovation of 7 October 1983 (FIFG; SR 420.1) in relation to the corresponding provisions of the Federal Subsidies Act (SuG, SR 616.1); as well as Art. 10y of the Ordinance on the Research and Innovation Promotion Act of 10 June 1985 (V-FIFG; SR 420.11).

Partial secrecy of the contents of the project must be expressly requested and justified by the applicants. If full secrecy is required, hence precluding consultation with experts, then the CTI may reserve the right to not review the application. The applicants also agree that if federal funding is granted, project execution procedures between the Federal Administration and applicants shall be subject to the provisions the enclosed standard contract. Any changes to the provisions contained therein must be agreed to in writing.

Comments:

Place and date
,

Signature of main research partner
Alternative: automatic consent.
Instead of signing, please mail this application to info@kti.admin.ch

Place and date
,

Signature of authorized main implementation partner
Alternative: automatic consent.
Instead of signing, please mail this application to info@kti.admin.ch

Documents attached:
-

Please submit the application via e-mail only to info@kti.admin.ch

Proposal 110316.doc