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Self-evaluation report 2018-2022

Sion and Lausanne, May 2022

CIRM self-evaluation report

2018-2022

1. Background

The Interdisciplinary Centre for Mountain Research ([CIRM](#)) is one of the five strategic interdisciplinary research centres (CIR) at UNIL. It was approved by the UNIL Rectorate on 29 March 2018 and inaugurated on 2 November 2018 for a period of 4 years. The end of the mandate has been set for 31 December 2022. This self-evaluation report establishes an overall assessment of the CIRM's activity during these four years. It follows the recommendations of the practical guide for the evaluation of CIR established by the UNIL Rectorate.

In order to produce this self-evaluation report, we adopted a participatory approach in several stages. During the General Assembly - which brings together all CIRM members and partners - on 6 December 2021, a series of workshops were held to gather their opinions on the assessment of CIRM's activities, and then a synthesis was done by the CIRM team, which met on 15 December 2021 and conducted a SWOT analysis. This SWOT analysis was discussed and completed by the CIRM Board on 26 January 2022. The CIRM Director then drafted the self-assessment report, with the support of the CIRM team for the collection of factual data. This report was discussed by the CIRM Board on 29 March 2022, and then submitted to CIRM members and partners for feedback during April (including the collection of testimonies; **Appendix 1**), before the final version, translated into English, was produced.

2. History, missions and objectives of CIRM

The CIRM was created at the initiative of the Faculty of Geosciences and Environment ([FGSE](#)). In the preparatory documents, dated November 2016, it was specified that what was then called the *University Mountain Observatory (UMO)* project was part of a double institutional context: the development of the faculty project RechAlp, focused on the Vaud Alps and which mandate was coming to an end, and the willingness to strengthen UNIL's presence in the Sion site, until then focused mainly on tourism studies, by adding a second research pole, focused on mountains. The report announced three main objectives: (i) the coordination of mountain research within UNIL; (ii) the strengthening of disciplinary and interdisciplinary research on mountains; (iii) the development of research oriented to the needs of mountain territories (transdisciplinary research), notably through citizen science actions.

After preparatory work within the FGSE, Dean René Véron submitted on 19 December 2017 a proposal to the UNIL Rectorate for the creation of a *Research Centre for Sustainable Development of Alpine Regions*, with six objectives to be prioritised: (i) transdisciplinarity; (ii) interdisciplinary scientific research; (iii) coordination of "flagship" projects in the field of sustainable development of mountain regions; (iv) collection, editing and dissemination of open access data; (v) communication of scientific and applied research activities; (vi) scientific services. It mentioned two privileged research areas: the Vaud Alps, in the continuation of RechAlp, and the Valais Alps, which made it possible to cover medium and high mountain territories, without forgetting the lowland regions in the Alps (Chablais). At the same time, the FGSE included in its academic planning the creation of a new position of professor in geography of mountain resources, to be attached to the Institute of Geography and Sustainability (IGD) and to the Sion site, a request to which the UNIL gave an agreement in principle on 1st March 2018. The appointment procedure took place during the academic year 2018-2019 and Prof. Laine Chanteloup took up her position on 1st October 2019.

The spring of 2018 was dedicated to a start-up phase, with the hiring of a project manager (Gabriela Werren) to gather information from potential members and to specify the missions and organisation of the centre. A report (**Appendix 2**) was published and used as a roadmap for the establishment of the CIRM.

3. Portrait of the CIRM

3.1 Structures

From the outset, the CIRM was intended to be a flexible, inter-faculty structure open to the mountain areas of Western Switzerland. It is composed of members from five UNIL faculties (Fig. 1) and is administratively attached to the Faculty of Geosciences and Environment (FGSE). The relations between faculties are the subject of an *agreement* (**Appendix 3**) and a *regulation* (**Appendix 4**), which are currently being discussed with the faculties concerned. The structure and missions of the CIRM were described in an article published in 2020 in the journal *Mountain Research and Development* (Reynard et al., 2020; **Appendix 5**). This article emphasised the role of CIRM's structure in operationalising inter- and transdisciplinarity at university and territorial levels.

To support its dual inter- and transdisciplinary character, the CIRM has two main components: members and partners. The *members* are researchers (professors, lecturers, research fellows, post-docs, doctoral students) affiliated to the University of Lausanne and working in one of the five faculties. The number of members has followed an upward curve, from 43 in 2018 to 96 in April 2022 (Fig. 1).

The *partners* (Fig. 1; **appendix 6**) are research or scientific dissemination institutions active on issues related to mountain regions. In May 2022, CIRM has 20 regional and national partners (research centres, museums, parks, associations and foundations) and 4 international partners: [Global Mountain Biodiversity Assessment](#) (G MBA), [International Mountain Society](#) (IMS), [Mountain Research Initiative](#) (MRI), and [Labex ITEM](#). The choice of partners is based on two criteria: research and/or dissemination activities in the field of mountains.

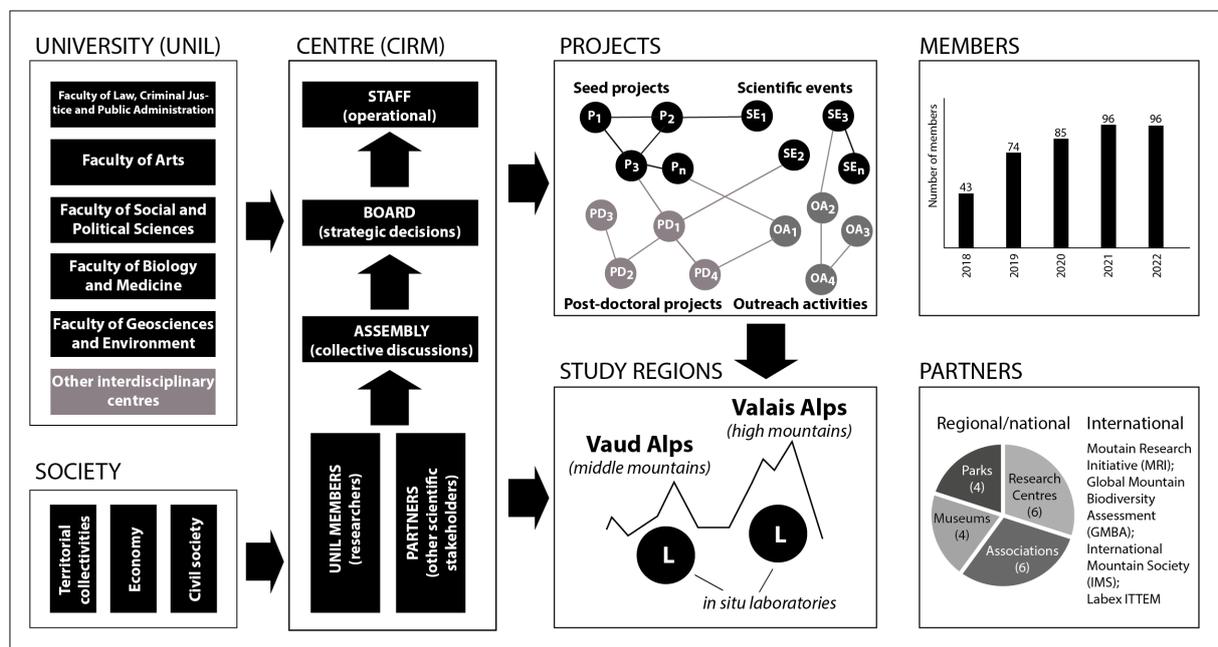


Fig. 1 CIRM organisation, members and partners.

CIRM has three formal structures: the assembly, the board and the team (Fig. 1). The *assembly* includes all CIRM members and partners and meets once a year. It has a discussion and communication function, but no deliberative function. During the analysed period, the assembly met four times: on 2 November 2018 in Sion (inauguration of the CIRM), on 14 November 2019 in Lausanne (presentation of three international interdisciplinary projects), on 19 November 2020 (online workshop "What do

you expect from the CIRM?") and on 6 December 2021 in Lausanne and online (workshop to assess four years of work).

The *Board (Appendix 7)* is the deliberative body of the CIRM. It is chaired by the Dean of the FGSE (or his representative) and is composed of one representative per faculty and four members of the society (two per canton of Vaud and Valais). Representatives of the Competence Centre in Sustainability and the Interdisciplinary Centre for Sport Research have an advisory vote. Members of the CIRM team are permanent guests, without voting rights. Between July 2018 and May 2022, the Council met 9 times.

The *team* (Tab. 1) consists of the Director, the Secretariat and several collaborators. The Director (**Emmanuel Reynard**) was appointed in 2018 by the Rectorate of UNIL for a period of two years; he was reappointed in 2020 for additional two years, until the end of 2022. He benefits from a 28-hour annual leave of absence from his courses. The secretariat is provided by **Christelle Monnet** for 20% of her activity rate (10% from the CIRM budget and 10% made available by the IGD). A coordinator (**Iago Otero**) was hired in November 2018 with an 80% project officer status and the mission to develop CIRM. From October 2020, due to the development of the ValPar.CH research project, his contract as project officer was reduced to 50% and he supplemented his activity with 40% externally funded research. In March 2022, the FGSE increased his rate by 10% for him to take on the role of lead author of the *Transformative Change Assessment* report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Currently (May 2022), Iago Otero's duties are divided into 50% project manager for the coordination of CIRM and the ValPar.CH project, financed by the UNIL Rectorate, 40% research financed by external funds and 10% for the IPBES report. In January 2019, **Mélanie Clivaz** was hired as a project officer at 20%, responsible for communication tasks (website, newsletter) and dissemination. Her rate was increased to 40% in November 2019, to cope with the increased communication needs, and to 60% in October 2020, to take over some of the tasks previously carried out by Iago Otero. In September 2021, we hired a student assistant (Candice Dubath) at 40% for one year to reinforce the organisation of events and to assist a course on landscape launched by the CIRM and the Centre for Historical Cultural Sciences (SHC) of the Faculty of Arts.

Function	From November 2018	From November 2019	From November 2020
Director (E. Reynard)	1 hour/year of course release	1 hour/year of course release	1 hour/year of course release
Secretary (C. Monnet)	20%	20%	20%
Coordinator (project manager) (I. Otero)	80%	80%	50%*
Project Manager (M. Clivaz)	20%	40%	60%*

Table 1 Members of the CIRM team (* These percentages are financed by the UNIL Rectorate. Iago Otero and Mélanie Clivaz currently have contracts of up to 100%, with additional project funding).

We also wanted to develop a training activity by hiring interns, who support the work of the team and are integrated into CIRM projects. Five interns have joined the CIRM team for a few months (**Appendix 8**) and a sixth person will be hired for 4 months, from September to December 2022. Interns have also been hired for *seed funding* projects (see Fig. 1 and 3.2 *Budget and support instruments*).

We consider the structures to be efficient, flexible and able to meet the challenges of CIRM.

3.2 Budget and support instruments

The CIRM has been able to benefit from an annual budget of CHF 500,000 made available by the UNIL Rectorate for 4 years (Tab. 2). In some years, this budget was supplemented by the FGSE. From 2020 onwards, the budget was supplemented by external funds, following the award of projects.

Tab. 2 Funds (in CHF) available to CIRM (2018-2022). In 2020 and 2021, the lower use of funds made available by the UNIL Rectorate is due to the Covid-19 pandemic.

	2018	2019	2020	2021	2022*	Total
Rectorate UNIL	36 421	500 000	500 000	500 000	463 579	2 000 000
FGSE		80 000	190 000	55 600		325 600
Total UNIL funds	36 421	580 000	690 000	555 600	463 570	2 325 600
Actual use (2018-21)	36 421	539 803	651 966	510 711		
External funds**			14 927	163 600	345 988	519 515

* Projection; ** Research projects (ValPar.CH from 2020; Multifunctional dams from 2021; Forests of Graubünden 2020-2021; Haut Val de Bagnes, 2021; +4°C, 2022)

Funding from the UNIL Rectorate and the FGSE was allocated in part to the administration of the CIRM (salaries of team members, teaching release for the director, and interns; costs of the CIRM team), amounting to 25-33% of the total funds granted by UNIL, depending on the year, with the remainder allocated to research and dissemination activities. These funds were granted to CIRM members via several research support instruments, generally in the form of calls for projects:

The **postdoctoral research programme** (Fig. 1) was the subject of three calls for applications: in 2019 8 applications were received for two 2-year fellowships; in 2020 5 applications were received for a 2-year fellowship; in 2021 9 applications were received for a 1-year fellowship. In total, 6 postdoctoral researchers were hired (**Appendix 9**). These post-doctoral fellowships have enabled disciplinary advances, particularly in the fields of natural hazards, environmental history, geomorphology and hydrology. We have also been able to strengthen interdisciplinary work, in particular thanks to an innovative project, carried out by the postdoctoral fellows, on the impact of the 1876 Swiss forestry law on hydrology and mountain forests.

The **seed funding programme** (Fig. 1) aims to support the start-up of interdisciplinary projects. It was the subject of one internal call per year and funding amounted to CHF 15,000 to 30,000 per project. Fifteen projects were funded over the four years and several projects led to successive projects or dissemination actions (**Appendix 10**). Each project team was required to participate in 2 to 3 interdisciplinary workshops. In the first year of the seed funding programme, these workshops resulted in a joint paper on interdisciplinarity and serendipity (Otero et al., 2020) (**Appendix 11**).

The **programme of support to scientific events** (Fig. 1; Tab. 3; **Appendix 12**) allows us to support scientific events (colloquia, workshops, seminars, conference cycles) organised by CIRM members. CIRM has its own cycle of interdisciplinary seminars (*Regards sur la montagne*) aiming at fostering interdisciplinary dialogue between members. CIRM also organises ad hoc conferences and its own scientific symposia.

The **dissemination programmes** (Fig. 1; Tab. 3; **Appendix 12**) include activities organised by CIRM to disseminate knowledge to the population of mountain regions. These are one-off events (e.g. events from *Mountain and Society* series), but also larger-scale actions over longer periods: *The Landscape Month in the Val d'Hérens* (2020); *the commemoration events on 1946 earthquakes* (2021); and the participatory science project *Val d'Hérens 1950/2050* (2021-2022).

The **training activities** (Tab. 3; **Appendix 12**) are aimed at CIRM members, the UNIL academic community and the general public. Two courses were organised: *Practising inter- and transdisciplinarity* (26 August 2021, with the Valais Association of Human Science Professionals, AVPSH) and *Landscape through the lens of disciplines* (bachelor's semester course, with the Centre for Historical Cultural Sciences (SHC)).

Tab. 3 Scientific, dissemination and training activities of CIRM (2018-2022).

	2018	2019	2020	2021	2022*
Conferences and cycle <i>Mountain and Society</i>	4	12	8	12	6
Seminars (including <i>Regards sur la montagne</i>)		13	12	12	14
Seminars organised by members		5	3	6	4
Colloquia organised by the CIRM		1	1	3	2
Dissemination programme		2	3	2	2
Training activities				2	1
Invitations of researchers				1	2

* Projection

4. Activities

Some of the activities have been described in section 3.2 *Budget and support instruments*. See also the three activity reports (**Appendices 13, 14, 15**). Here we summarise the main activities of the CIRM, describing how inter- and transdisciplinarity are operationalised.

4.1 Position and research strategy

The Board has deliberately opened up CIRM's activities to a broad spectrum of disciplines. In its launch report (2018; **Appendix 2**), 9 research themes were defined (climate and sustainability; change and transitions; natural hazards and risks; mountain society; natural resources; ecosystem services; innovation; terroirs and labels; tourism and health). This non-directive approach allowed everyone to be part of the CIRM. In June 2020, the Board adopted a strategic roadmap for the period 2020-2022, specifying CIRM's positioning in the academic landscape:

CIRM positions itself as a catalyst for: (i) innovations for sustainability, especially non-technological ones; (ii) fruitful transdisciplinary collaborations in the institutional ecosystem related to sustainability (i.e. all stakeholder groups concerned with sustainability). A good social and institutional embedding allows it to enable the continuum between basic scientific knowledge, applied research, concrete problem solving and decision making by non-academic actors in the medium term, to contribute to sustainability in the long term. The focus is on transformation (of behaviour, social practices, ecosystems, etc.).

This roadmap allowed the CIRM Board to adopt five **priority projects**:

- [ValPar.CH](#) - *Values of ecological infrastructure in Switzerland (2020-2024)*. CIRM is a member of the project management; several researchers attached to CIRM and two UNIL institutes (Institute of Earth Surface Dynamics (IDYST), Institute of Geography and Sustainability (IGD)) are involved in the research. The project is funded by the Federal Office for the Environment (FOEN). The UNIL Rectorate has granted additional funding for the analysis of the interdisciplinary processes in the project.
- [BlueMount](#) - *Integrated Observatory of Mountain Environments*. Originally funded as a seed funding project, the project is now an integral part of CIRM, in collaboration with the Alpine Centre for Phytogeography (CAP) and the Global Mountain Biodiversity Assessment (GMBA). The steering committee is chaired by Iago Otero and a postdoc researcher has been hired in 2021-2022 (one year) to finalise the conceptual model. The study area is the Entremont (Valais). The research team is currently exploring funding options for the next phase (from 2023).
- [Val d'Hérens 1950/2050](#) - *Lives, images and practices of a changing territory*. This project was launched in collaboration with the UNIL Service Culture Médiation scientifique (SCMS) for a two-year pilot phase (2021-2022). It is a collaborative and participatory science project, integrating 9 research projects, citizen science activities and dissemination actions, in collaboration with *La Grange* cultural centre (UNIL). The project is centred on the Hérens valley and a 3-year consolidation phase is planned following the pilot phase.
- [Landscape Platform](#). This project is carried out in collaboration with the Centre for Historical Cultural Sciences (SHC) of the Faculty of Arts. It aims to connect research and teaching activities on landscape at

UNIL. In autumn 2021, a new bachelor's course, *Landscape through the lens of disciplines*, was launched and in autumn 2022, a colloquium on landscape and mountain infrastructures will be held.

- *Multifunctionality of Alpine reservoirs (2021-2025)*. This project, financed by the company Alpiq and conducted jointly by the Swiss Graduate School of Public Administration (IDHEAP) and by the Institute of Geography and Sustainability (IGD), aims to better define the potential of the multi-use of mountain dams in the context of hydroelectric concession relicensing. A post-doctoral researcher and a doctoral student have been hired.

After a development phase focused on Switzerland in 2018-2020, with the implementation of partnerships with 20 regional and national institutions (**Appendix 6**), for the period 2020-2022 the focus has been on developing **international synergies**. Since 2019, CIRM co-organises with Mountain Research Initiative (MRI) a “mountain” session within the yearly [Swiss Geoscience Meeting](#) (SGM). In 2020-2021, two CIRM teams were awarded a project within the framework of the [Alliance Campus Rhodanien](#): one focused on the sustainability of recreational activities in the Espace Mont-Blanc, in partnership with the universities of Grenoble Alpes, Savoie Mont Blanc and Lyon (resp. L. Chanteloup), and the other on the territorial issues of the commons, in partnership with the universities of Grenoble Alpes and Savoie Mont Blanc (resp. E. Reynard). Since 2020, CIRM has been a member of the International Mountain Society, which publishes the journal *Mountain Research and Development*. In 2021, a partnership was established with the laboratory of excellence *Innovations et transitions territoriales en montagne* (Labex ITTEM) with which the *International workshop on inter- and transdisciplinary research institutions on mountains. How to make the difference for sustainability?* was organised on 21-22 October 2021. A short synthesis was published in the *Journal of Alpine Research* (Balzarini et al., 2022; **Appendix 16**) and a follow-up session (*Mapping transdisciplinary practices in mountain regions*) is organised at the International Mountain Conference (IMC) in September 2022 in Innsbruck. This collaboration with Labex ITTEM has also resulted in the [HutObsTour](#) project on huts as observatories of mountain transitions (Lead Agency ANR/FNS funding) (UNIL PI: C. Clivaz, L. Chanteloup). With the support of the UNIL Rectorate and the FGSE, CIRM will host, together with the University of Bern, the Global Mountain Biodiversity Assessment (GMBA), starting in 2022, for a period of four years. In 2021, CIRM has launched a programme of visiting researchers: Ludovic Ravanel (CNRS and University Savoie Mont Blanc, 5 months in 2021); Bogdan Mihai (University of Bucharest, one week in 2022) and Binod Dawadi (Tribhuvan University, Kathmandu, one month in 2022) were able to benefit from this support. The aim of these research visits is to strengthen CIRM's international visibility.

4.2 Inter- and transdisciplinarity

The six **postdoctoral research projects** (**Appendix 9**) concerned several relatively distant disciplinary fields (geomorphology, environmental history, ecology, natural risks, anthropology). In order to encourage interdisciplinarity, 10% of the researchers' workload was dedicated to CIRM's interdisciplinary activities as per contract. The first team of 4 post-docs (who arrived in 2019) proposed a joint interdisciplinary project on the effects of the 1876 Swiss forestry law on mountain hydrology in the framework of the seed funding programme of 2020. Several postdocs also participated in the writing of a joint article on interdisciplinarity and serendipity (Otero et al., 2020). For the two postdocs who arrived at CIRM after 2020, interdisciplinarity was favoured by their insertion in CIRM interdisciplinary projects: Val d'Hérens 1950/2050 and HutObsTour for Jacques Mourey; BlueMount for Héléne Cristofari.

The **seed funding programme** (**Appendix 10**) has an explicit interdisciplinary component. The 15 research projects funded all allowed for the development of synergies between disciplines, some of which were relatively distant from one another (e.g. literature and geomorphology, in the writing of the book *Lignes de crêtes*). In the last two calls (2021 and 2022), projects combining the humanities and natural sciences, and those involving the study areas (transdisciplinarity) and international projects were favoured. In 2022, two relatively close projects were called to merge into one, in order to strengthen their interdisciplinary character.

Several of CIRM's activities have been specifically aimed at promoting **interdisciplinarity**. In the *Regards sur la montagne* seminar series, the speaker is invited to present his or her research in such a way that it is accessible to a non-specialist audience. Since 2019, CIRM has been collaborating with the Humanities Research Seminars of the Valais Association of Human Science Professionals (AVPSH), which aim to strengthen interdisciplinarity in the humanities and social sciences. In 2021, the CIRM team has set up a one-day continuing education course on interdisciplinarity. As a result of the first phase of CIRM's work, Otero et al (2020) published the article *Designing inter- and transdisciplinary research on mountains: What place for the unexpected?* in the journal *Mountain Research and Development*. Currently, I. Otero is conducting a similar analysis on interdisciplinary processes within the ValPar.CH project. The *Mountain and Society* events aim to develop transdisciplinary dissemination activities in relation to the two study areas. The same applies to thematic actions, such as *the Landscape Month in the Val d'Hérens*, the actions on the *1946 earthquakes* or the *Val d'Hérens 1950-2050* participatory science project. Thanks to this intense activity in the territories, we are able to forge links with the public authorities and the population and thus strengthen transdisciplinary work.

Finally, CIRM was involved in the preparation and submission to the Swiss National Science Foundation (SNF) of the *Integrated Earth Observation for Switzerland* (IEOS) project (PI: Stéphanie Grand, FGSE-IDYST). The IEOS project provides for the instrumentation of two catchment areas (Thur, Dranses) for the integrated and long-term monitoring of the environment (atmospheric processes, morphodynamics and sediment transfers, soils, surface and groundwater, ecology). In the Dranses basin, this project is being developed in synergy with the BlueMount socio-ecological monitoring project, led by CIRM, which focuses on the interface with societal processes, based on the development of a laboratory on water demands (LABEAU seed project) and monitoring of irrigation (ODILE project, Flore-Alpes Botanical Garden), co-financed by CIRM and the BlueArk Entremont innovation cluster. Thus, UNIL is developing an intense monitoring activity, both environmental (IEOS) and socio-ecological (CIRM).

5. Indicators of achievement

In this section, we propose a series of quantitative and qualitative indicators. The quantitative indicators give orders of magnitude and do not always seem relevant to us. Other indicators (e.g. number of members, conferences and seminars) have already been presented in the previous sections.

5.1 Quantitative indicators

- **Number of publications:** This indicator does not give good results (only 50 publications reported in Serval, the repository of UNIL) because most CIRM members do not systematically indicate their affiliation with CIRM in their publications or interventions in congresses. The drafting of guidelines for indicating affiliation has not improved the situation. This is detrimental to CIRM's visibility.
- **Number of congresses** organised and scientific sessions in congresses: 7 (**Appendix 12**). CIRM organised 4 national congresses/sessions and 2 international workshops/sessions, which can be considered a good result for a young centre. In addition, 14 colloquia were organised by the members, with support of CIRM.
- **Number of invited presentations:** 12 (**Appendix 12**). During the first year, we were invited several times to present CIRM and its objectives. Subsequently, we were invited for thematic interventions, linked to the interdisciplinary status of CIRM.
- **Number and financial volume of external funds:** CIRM has obtained two large research projects: ValPar.CH (2020-2024; FOEN funding, CHF 661,760 for UNIL, of which CHF 164,300 for CIRM) and Multifunctionality of Alpine dams (2021-2025; Alpiq funding, CHF 392,145). Several smaller projects were also obtained, including the +4°C project on landscapes modified by global warming, in collaboration with WSL and the Flore-Alpes Botanical Garden (CHF 75,000 in 2022) (see Tab. 2). A seed funding project led to the Lead Agency HutObsTour project (Prof. C. Clivaz and L. Chanteloup; budget of CHF 406,415 for UNIL and EUR 289,477 for Université Grenoble Alpes). A project on Mountain Commons (lead: Prof. L. Kebir) resulting

from a seed funding project is currently being evaluated by the SNF. Even if these projects do not yet reach the sums invested by the Rectorate, we can consider that obtaining external funds (CHF 520,000 for 2020-2022 (cf. Tab. 2) and more than CHF 1 million for the period 2020-2025) is a good result, even more so for interdisciplinary projects, which are sometimes difficult to be funded. Several projects are currently being set up (new mountain commons, SNF; BlueMount; LABEAU; Synergia project on mid-altitude and health), with funding negotiations underway.

- **Number of conferences, seminars and dissemination and training activities (Appendix 12):** CIRM (co-) organised 42 conferences, 16 *Regards sur la montagne* seminars, 35 humanities research workshops or other seminars, 9 dissemination activities and 3 training activities. It should be noted that the number of events organised did not decrease during the two years of the Covid-19 pandemic, and a large part of the conferences and seminars could be organised online.
- **Number of media appearances:** CIRM appeared in the media: 11 times in 2018; 28 times in 2019; 9 times in 2020; 46 times in 2021, reflecting an increase in CIRM's awareness. In the first three months of 2022, CIRM members have already intervened 7 times in the media. It indicates the high societal interest of CIRM.

5.1 Qualitative indicators

- **Contribution to mountain research at the Swiss and international level:** CIRM has positioned itself at the forefront of transformative research and sustainability in the mountains (cf. Otero et al. (2020) and the ValPar.CH, BlueMount or Val d'Hérens 1950/2050 projects). It has launched an annual research grant on mountains in collaboration with the Culture Service of Canton Valais. The CIRM is included in national (e.g. Swiss Geoscience Meeting "mountain" sessions, [FoLAP](#) Plenum) and international networks (member of the International Mountain Society; International Mountain Conference (IMC) in 2019 and organisation of several sessions in 2022). It took the initiative to organise an international workshop on interdisciplinary mountain research that brought together about 20 institutions in Sion in 2021. This last event had a particular impact. It was the first time that so many research centres on sustainability in mountains were brought together for a workshop focusing on transformative research. A follow-up session has been accepted as a plenary session at the IMC in Innsbruck in September 2022. Our aim is to develop an Alpine network of interdisciplinary mountain research centres.
- **Contribution to the resolution of mountain territorial issues:** Activities in the territories have contributed to the dissemination of knowledge on sustainability and climate change in the mountains, an essential basis for transformative actions. The CIRM is now well known in the Vaud and Valais Alps, and spontaneously requested for actions and research (e.g. research mandate on the reconciliation of tourism and nature protection in the Haut Val de Bagnes). It will be necessary to continue the effort of communicating research results to the stakeholders, in particular the public authorities, via the oriented research projects (e.g. LABEAU, +4°C, BlueMount).
- **Contribution to the strengthening of interdisciplinarity within UNIL:** Together with the Competence Centre in Sustainability, we have been proactive in bringing together the different strategic interdisciplinary centres of UNIL (CIR). Three meetings were held in 2020 and 2021 to discuss the challenges facing the various centres. We have developed a reflection on the place of interdisciplinarity in the academic evaluation of UNIL researchers. In October 2020, I. Otero participated with the former vice-rector F. Bussy in the UNICA [Effectively Fund inter- and Transdisciplinary Research](#) workshop. CIRM also organised a training day on inter- and transdisciplinarity (August 2021) and various interdisciplinary events for society. In this respect, it is worth mentioning the *Val d'Hérens 1950/2050* project, an innovative participatory and collaborative science project developed with the Service Culture et Médiation scientifique (SCMS) of UNIL. On another level, the setting up of the *Landscape Platform*, with the Centre for Historical Cultural Sciences (SHC), is a structuring action to strengthen interdisciplinarity within UNIL.
- **Contribution to the reinforcement of interdisciplinarity among its members:** CIRM has organised several events to disseminate knowledge on interdisciplinarity among its members, notably in the framework of general assemblies and during a specific training organised in 2021.

6. Overall balance sheet - SWOT analysis

In this section we assess the structure of CIRM and its activities in terms of strengths, weaknesses, opportunities and threats (SWOT). The analysis is summarised here and tabulated in **Appendix 17**.

Strengths

Interdisciplinarity is a central component of CIRM, which not only studies it but also operationalises it, in particular through the networking of researchers from a very broad spectrum of disciplines (see [members' specialities](#)). The CIRM is also very open to the diversity of themes and approaches brought by its members, while giving a certain strategic direction (priority projects were defined from 2020 onwards). The funding programmes for members, such as the seed funding programme and support for the organisation of events, are essential levers for researchers who wish to develop inter- or transdisciplinary research. In them they find a flexible, recurrent and transparent means of support. In the areas in which it operates, CIRM is recognised by local stakeholders, which enables it to position itself as a link between research and the reality of mountain areas. The CIRM has set up a rich and varied programme to disseminate knowledge to mountain populations. During the uncertain period linked to Covid-19, CIRM had to modify its programme on several occasions to adapt to the restrictions while continuing its activity, which demonstrates the structure's capacity for flexibility and adaptation. The numerous initiatives carried out by the CIRM are very diverse, which gives members, partners and stakeholders in the territories a wide range of possibilities to concretely develop interdisciplinary projects.

Weaknesses

For some members, the structure and missions of CIRM are not sufficiently clear, particularly in identifying what are the responsibilities of the research institutes to which the members are attached and what are the responsibilities of CIRM. Although CIRM brings together researchers from five faculties, some disciplines and faculties are under-represented, e.g. law, psychology, economics or medicine). Outside the University, the CIRM lacks visibility compared to other university institutions located in the same areas, for example the EPFL (Alpôle) in Valais. The fact that the CIRM is a non-permanent structure makes it difficult, if not impossible, to think in the long term. As human resources are also non-permanent, the contracts of the CIRM team members are fixed-term, which makes the working conditions less than optimal.

Opportunities

There are many opportunities for CIRM in terms of positioning, intervention in the study areas and as an interface structure between science and policy. Thus, in pursuing its role as a catalyst, CIRM can position itself in the future as a provider of research results for mountain territories and as an incubator of projects and databases in the action areas. It will also be able to develop mutual knowledge between members and partners, and between partners themselves. The aim is also to develop joint study areas and joint data collection with *in situ* laboratories, mainly in the framework of the BlueMount project and around areas where UNIL has a long experience of interdisciplinary research (Vallon de Nant, Val d'Hérens, Entremont). CIRM's international anchorage, via collaborations with the GMBA and the Labex ITTEM for example, opens numerous opportunities for collaboration, such as the HutObsTour project, which is already underway. The development of online communication tools, which was accelerated during the Covid-19 pandemic, is a real opportunity for CIRM and its networking. Finally, the CIRM, which is well established on the UNIL site in Sion, will be

able to continue to develop synergies with nearby initiatives in the mountains ([CLIMACT](#), [Alpole](#) in particular) and the initiatives of the Higher Education Department of the Canton of Valais for the development of a Campus-Valais (strengthening of UNIL in Valais and possible relocation of UNIL Sion site next to the Sion city centre; synergies with other higher education institutions, including Alpole).

Threats

The CIRM team works mainly at the Sion site of the University of Lausanne, which is sometimes considered remote by some researchers working on the Dorigny campus, thus discouraging participation in CIRM activities taking place physically at the Sion site. In addition to this physical distance, the CIRM is not a real physical centre; it is above all a network and not an institute. Several other initiatives on mountains, notably CLIMACT (UNIL-EPFL) or Alpole (EPFL), are very close to CIRM's activities; all this could lead to a blurring of CIRM's identity and originality, which is truly oriented towards interdisciplinarity and integrated studies of socio-ecological systems. At the same time, these risks are also opportunities to transform CIRM into a true mountain research centre in the heart of the Alps; for this, a physical centre on the Sion site would be essential.

7. Development plan

In view of the place that the CIRM has come to fill in terms of interdisciplinary research on mountains and its innovative character, it seems fundamental to us to ensure its continuity by renewing it for at least a four-year period. To this end, we propose two scenarios: a **stabilisation scenario** which consists of consolidating the work carried out to date, and a **development scenario** which aims to give the CIRM a real international scope ([appendix 18](#)).

Stabilisation scenario

In this scenario, we assume a constant budget from the UNIL management (500 kCHF/year), with additional faculty contributions to be defined. The objective will be to maintain CIRM's strengths, seize opportunities and improve weaknesses, in particular by further clarifying CIRM's positioning in relation to other structures and initiatives.

Firstly, it is a question of clarifying **CIRM's identity** and strengthening its **position** as a centre of expertise on mountain issues, at the interface between natural sciences, humanities, social sciences and health sciences, and as a link between disciplinary research and the stakeholders in mountain territories. In this way, we want to perpetuate and strengthen CIRM's role as a catalyst at the interface between research and society, particularly policy-making.

In terms of research topics, we propose to focus CIRM's activities on **five priority themes**:

- **Adaptation of mountain territories to climate change.** The research will focus on adaptation, which will make it possible to synergise the actions of CIRM and those of the Centre for Climate Impact and Action (CLIMACT, UNIL-EPFL), which focuses more on the processes of combating climate change. We plan to develop this axis in collaboration with CLIMACT, with the "Margins, Environment, Landscape" research group of IGD, at the Sion site, with the climate plans of the cantons of Vaud and Valais (e.g. with certain CIRM partners such as the Foundation for Sustainable Development of Mountain Regions ([FDDM](#)) or the Research Centre on Alpine Environment ([CREALP](#)) and more generally with the municipalities of the study regions. The *Val d'Hérens 1950/2050* and *BlueMount* projects will be two structuring projects for this research axis. For these two projects, we foresee a consolidation phase of 3 years (-> 2025).
- **Biodiversity and landscape.** This axis will focus on the one hand on interdisciplinary analyses of biodiversity and its evolution, as well as the perception of nature's values, and on the other hand on interdisciplinary research on landscapes, their perception by different groups of actors and the services provided by landscapes to society. The priority projects *ValPar.CH* (-> 2024) and

BlueMount (-> 2025) will be structuring for the “biodiversity” axis, while the “landscape” axis will be developed within the Landscape Platform, in collaboration with the Centre for Historical Cultural Sciences (SHC) of the Faculty of Arts and with the Research group “Margins, Environment, Landscape” (MEP) of the IGD. The integration of the Global Mountain Biodiversity Assessment (GMBA) at UNIL will also contribute greatly to the development of the “biodiversity” axis.

- **Water and energy.** This axis will be based on the results obtained so far in the seed LABEAU project and various actions carried out in the Entremont, with strong collaborations with three CIRM partners - the Alpine Centre for Phytogeography ([CAP](#)), the Regional Centre for the Study of Alpine Populations ([CREPA](#)) and the [Museum of Bagnes](#) - and with the [BlueArk Entremont](#) innovation cluster, with which CIRM has already developed several fruitful collaborations (research projects, scientific events). The structuring projects for this axis will be *BlueMount* (-> 2025) and *Multifunctional dams* (-> 2025).
- **Health in the mountains.** This axis will focus on the effect of altitude on human health. Strong collaborations will be developed with the UNIL's [Interdisciplinary Centre for Sports Research](#) and with the [Spark Valais](#) innovation centre, which will occupy the HES-SO Valais/Wallis Health Campus in Sion by 2024. The aim is thus to develop synergies both within UNIL and on the Valais campus (Spark Valais). Contacts are underway, but for this axis, a priority project will have to be developed, as for the other axes, which could be the spin-off of the seed project of Prof. G. Millet on the effects of moderate altitude on health, for which a Sinergia project (SNF) is being written.
- **Economy and tourism.** For this axis, we plan to reinforce the synergies - already strongly developed - with the research group "Cultures and natures of tourism" (IGD), on the UNIL site in Sion. The structuring projects for this axis are *HutObsTour* (-> 2025), *Val d'Hérens 1950/2050* and a third structuring project could be the *Commount* project on new mountain commons, currently under evaluation by the SNF. The two network strengthening projects in the framework of the Alliance Campus Rhodanien programme (2021-2022), on sustainable recreational activities and on the commons, will also enable to strengthen international collaborations in the field. Finally, the initiative to create a *Valais Tourism Lab*, in collaboration with the HES-SO Valais-Wallis, could be used to develop this research area.

From a methodological point of view, three approaches will be favoured:

- **Transformative research towards sustainability.** We want to favour approaches that aim, in the long run, at the transformation of mountain territories and societies towards more sustainability. This involves both conceptual work on transformative research and its implementation (as studied by I. Otero, within the framework of ValPar.CH) and applied research in mountain territories, as we are doing for example in the *Val d'Hérens 1950/2050* and *BlueMount* projects, or through our involvement in [ALTER](#) - *Altitude Laboratory - Transition Experiments* (Val d'Anniviers, 2022). We want to develop this approach in collaboration with international partners, e.g. Labex ITTEM.
- **Socio-ecological systems.** In most of the research areas, we will favour an approach at the interface between nature and society. In particular, we will develop tools for the analysis and long-term monitoring of socio-ecological systems. The *BlueMount* project will be a structuring factor, in particular through the ongoing development of a conceptual model of observation, and we will develop an approach that is complementary to the IEOS project, which focuses primarily on natural systems.
- **Inter- and transdisciplinarity.** This approach was already central during the present period. We want to continue with the same approach, around structuring projects such as *Val d'Hérens 1950/2050*. We also want to continue our role as facilitator of interdisciplinarity.

Concerning **CIRM's organisation**, we do not foresee any major changes. As the support instruments (seed funding, assistance in organising events) have proved their worth and have enabled a real operationalisation of interdisciplinarity, we plan to maintain them as they are. The same applies to the

two instruments for the promotion of inter- (*Regards sur la montagne*) and transdisciplinarity (*Montagne et Société*). In terms of territorial anchoring, in addition to the Valais and Vaud Alps, we would like to develop the CIRM in the **Vaud Jura** mountains. This will allow us to cover all the mountain regions of the canton of Vaud on the one hand, and on the other hand to cover the mountain realities of all types of mountains in Switzerland, from the medium mountains (Jura, Prealps) to the high mountains (Valais). We plan to develop partnerships with new regional actors, such as the Parc Jura vaudois, with whom we have already undertaken a joint action (internship work on water management in mountain pastures).

In continuation of the actions carried out over the last four years, we want to strengthen the **international dimension of CIRM**. This will involve continuing the partnerships with MRI, GMBA, IMS and Labex ITTEM. We also want to capitalise on the results of the inter-institutional workshop organised in October 2021 in Sion (during the International Mountain Conference in Innsbruck in 2022), facilitate the integration of GMBA into UNIL and continue our activity in the editorial boards of [Mountain Research and Development](#) and [Journal of Alpine Research](#).

Following the search for external funding (ValPar.CH, Multifunctional Dams, HutObsTour, +4°C projects), we want to continue to develop research with **external funding** and to strengthen the international dimension via existing funding bodies (Lead Agency, Interreg, especially Alpine Space and ALCOTRA). In the framework of the BlueMount project and the Landscape Platform, we would like to play a role as a **mountain data centre**, which will require the hiring of a technician specialised in database management. We also want to continue (with the other interdisciplinary centres) the work of reinforcing the internal recognition (UNIL) of **inter- and transdisciplinary competences**, and to position the CIRM in the development efforts of UNIL in the Valais by reinforcing the synergies with Alpole. It is also a question of ensuring the sustainability of the centre and stabilising the team members. Finally, over the next four years, we would like to strengthen the **teaching** programme - already initiated on the theme of landscape from 2021 and in the "Territories and mountain environments" orientation of the Master of Geography in 2022 - in collaboration with the faculties.

Development scenario

The aim of this scenario is to create a genuine interdisciplinary and international research centre on mountains, with a physical base in Sion. In addition to the objectives described in the stabilisation scenario, the aim is to create a core group of professors (and their teams) who will develop the CIRM project. On the one hand, it would be a matter of reflecting, with the faculties, on the possibilities of allocating part of the current resources of professors and researchers to CIRM, in order to carry out the five priority thematic axes, and on the other hand, to strengthen this core by **hiring three professors and their respective teams**. The profiles of the three professorships should be discussed with the faculties concerned and the UNIL Rectorate. This ambitious scenario, with a budget of CHF 2 million per year, would give CIRM a critical mass that would allow us to really develop our research programme, going beyond the catalytic and coordinating role CIRM has played until now. It would put CIRM on the map of cutting-edge research on sustainability in mountains.

The human resources required for both scenarios are detailed in **Appendix 18**.

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For the CIRM, Prof. Emmanuel Reynard, Director



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