

IDA REVIEW 2014-2015

This review of the Pic du Midi International Dark Sky Reserve meets the monitoring requirements of the International Dark Sky Association in order to evaluate the actions and activities demanded by the IDSR.

The main requirement of the IDSR label is the setting up of the Lightscape Management Plan, referred to in the Pic du Midi IDSR as “Programme CIEL ETOILE”. The aim of this programme is to establish the protection and enhancement of the celestial nocturnal landscape by putting into place a plan to improve artificial lighting. This plan is divided into four different parts: raising awareness, regulations, lighting conversion, and a follow-up of the results.

In order to reinforce this programme, the Pic du Midi IDSR has developed two new strategic approaches. One approach is territorial marketing, which will create and maintain the image of the IDSR on a local scale. The second is developing the enhancement of astro-tourism, understood as tourism development which will create new experiences allowing visitors to discover the night sky and the stars.

In order to ensure the application and operation of the IDSR, the people of the Reserve have organised a governance structure managed by regulations and guided by a set of strategic objectives. This governance is co-managed by the Syndicat Mixte du Pic du Midi (Pic du Midi Joint Association) and the kSyndicat d’Energie des Hautes-Pyrénées (Hautes-Pyrenees Energy Federation. These two entities are accompanied by a managing committee which brings together the main parties involved in the project. The new structure is based on partnership agreements and led by a project manager, a position created especially for this purpose.

Finally, it would appear necessary to explain the particularity of the Pic du Midi IDSR activity during the years 2014 and 2015. The Reserve had been initially set up and developed thanks to a scientific collaboration between the University of Pau and the Syndicat Mixte du Pic du Midi from November 2011 to November 2014. The aim of this collaboration was to create a doctoral thesis on the protection of the night sky; and to accompany the association PIRENE, initiator of the IDSR project, in its steps towards obtaining the label. Given the investment required to implement this project, the doctorate was required to ensure the direct funding of the project. The label was awarded on 19 December 2013 and following this, the work writing the thesis started up again. The years 2014 and 2015 have since been characterised by a period of high research activity and development which consequently limited the media presence surrounding the IDSR project. But as we are going to see, although temporarily less noticeable, the IDSR has not been any less active.

The review intends to certify the IDSR activity through collecting and summarising the main documents, actions and elements of information created between 2014 and 2015.

REVIEW OF PIC DU MIDI IDSR ACTIVITIES PLAN

- 1. General information about the Pic du Midi IDSR**
- 2. Governance of the Pic du Midi IDSR**
- 3. Actions and activités from the CIEL ETOILÉ programme:**
 - **lighting conversion**
 - **PLVG lighting diagnostic**
 - **lighting forum**
- 4. Activities within the Pic du Midi IDSR area:**
 - **activities and events in the Pays de Lourdes and the Gaves Valleys.**
 - **events in the Pays des Nestes**
- 5. Research and development on the IDSR and on the protection of the night sky:**
 - **RENOIR Group research**
 - **doctoral thesis “Emergence and application of the protection of the night sky”**
- 6. Upcoming priority actions:**
 - **territorial marketing (signs and poster campaign for the Pic du Midi IDSR)**
 - **public relations: website, Lighting Guide publication, creation of an IDSR film, distribution of documents**
 - **R&D lighting, lighting diagnostic spread across the IDSR, lighting conversion**
 - **development of an astro-tourist offer [astro-tourism opportunities] across the Pic du Midi IDSR area.**
 - **institutionalisation of the Pic du Midi IDSR: recognition and regulation by the French State.**

1. General information about the Pic du Midi IDSR

Since the beginning of the 1990s, the increase in artificial light emissions, which until then had only been a problem for astronomers, has become a problem shared by all developed societies. The cause of this is an increased awareness, thanks to scientific and associative networks, of all the impacts induced by excessive and uncontrolled use of lighting: the degradation of nocturnal wildlife habitat, a lack of access to the night sky, energy waste, to name just a few. According to ADEME, lighting represents between 40% and 60% of the average electricity bill for a town and mobilises the equivalent of two thirds of a nuclear power plant.

One of the solutions invented to fight against this phenomenon, called light pollution, is the creation of protected night sky areas. These initiatives have been encouraged and enhanced by the International Dark Sky Reserve Label proposed by the IDA (International Dark Sky Association). This type of protected area functions like a regional national park. An IDSR is a regional project which aims to boost local development based on the protection of nocturnal landscapes. The first requirement for this night sky development is the creation of an ambitious lighting upgrade programme within the perimeter of the reserve.

The 19 December 2013, the Pic du Midi is thus labelled an IDSR, the first initiative of this sort in the whole of France. In total, 251 towns and villages make up the domain of this project which is co-managed by the Pic du Midi and the SDE 65. The programme to improve lighting which was developed and set up within the IDSR, has produced exemplary results from every site where work has been undertaken : 85% reduction of light emitted upward or into natural areas, 50% reduction in energy consumption, elimination of pollution related to over-illumination, and so on. This programme targets the 40 000 light points within the IDSR, of which almost 10 000 have already been improved.

Thanks to the Pic du Midi IDSR, the Hautes-Pyrénées Department now has an original and unspoiled resource that it can rely on to develop a wide range of activities such as astro-tourism, R&D on lighting, protecting the nocturnal environment, etc.

The Pic du Midi IDSR is now embarking on the ambitious project of receiving a UNESCO label for the Pic du Midi. The very particular aspect of this project is to integrate the Pic du Midi into the heritage series of mountain observatories. International development has been put in place to ensure the continued funding of this new and different approach to valuing astronomic heritage.

The area of the Pic du Midi IDSRi (3000 km²)



The Core Zone (612 km²), framing the night sky:

- perimeter based on natural protected spaces and already existing classified sites.
- no permanent lighting and an exceptional quality of night sky
- perimeter takes into account the spaces targeted by article R. 583-4 from decree n°2011-831 of Grenelle Environment Law II, relative to the limitation of light pollution

The Buffer Zone, land living with the stars:

- populated and lit area, urban and rural contexts
- three local communities involved (251 towns and villages) in order to relay the Reserve's actions and develop local dynamics
- 40 000 light points of public lighting concerned by the CIEL ETOILE programme

The 5 missions of the Pic du Midi IDSR

2. Governance of the Pic du Midi IDSR

2.1 The Pic du Midi IDSR strategic approaches

The 6 strategic approaches linked to the Pic du Midi IDSR

Research and development on the IDSR activities:

- positioning the IDSR as an exceptional area of experimentation and innovation thanks to its constituent activities (lighting, tourism, metrology, nocturnal environment, animation).

Application, development and improvement of the CIEL ETOILE Programme (programme to improve the lighting within the Pic du Midi IDSR):

- raising awareness, technical events linked to lighting
- improvement of lighting
- public relations
- follow-up of the programme to improve lighting

Metrology of light pollution and preserving the nocturnal environment:

-monitoring the improvement of sky quality and the nocturnal environment.
-improving knowledge of the nocturnal environment and modes of intervention and protection (dark frames, etc.).

Development and structuring of touristic opportunities linked to the Pic du Midi IDSR:

-encouraging and structuring touristic initiatives throughout the IDSR
-developing a place for the Hautes-Pyrenees on a touristic opportunity linked to the IDSR (tools for public relations, identification of different upcoming offers, etc.).

Animation, raising awareness, public relations:

-developing a programme of IDSR events for residents and the greater public (events, approaches that people can get involved in, etc).
-continuing the awareness programmes in order to develop a general culture and knowledge surrounding the IDSR and to promote participation.
-developing and implementing a Pic du Midi IDSR brand; conveying and increasing the value of Pic du Midi IDSR activities and initiatives

Monitoring and reviewing the Pic du Midi IDSR activity:

-creating a Pic du Midi IDSR observatory in order to audit the advances and results of different operations.
-reporting on the Pic du Midi IDSR activity on multiple scales and levels: with the Department, the Region, the IDA, and with the State (in order to testify the importance and potential of IDSR activities, and to legitimise and strengthen its positioning and resources.)

The strategic approaches linked to the institutionalisation of the Pic du Midi IDSR and the IDSR concept


From local to national:

- creating, managing and reinforcing a network of important people (political, technical, scientific) developed for the governance of the Pic du Midi IDSR.
- making the Pic du Midi IDSR a trial site for Grenelle Environment Act II and initiating a process of status recognition by the State.
- participating in, or even initiating, the establishment and recognition of specific regulations on lighting taking into account the particularities of the IDSR (in keeping with the Grenelle Approach).

On an international level:

- creating and developing an international IDSR network throughout the world.
- initiating and/or taking part in the reinforcing of the IDSR concept in order to resize the IDA label and prepare a status recognised by the IUCN (International Union for Conservation of Nature)
- engaging work with IUCN in order to define and create the IDSR protected area status

2.2 The operation and managing bodies of the governance structure

The managing bodies of the Pic du Midi IDSR	
<p>The Pic du Midi Management Group</p> 	<p>The management group is responsible for and referent of the Pic du Midi IDSR concept, label and brand, which it must implement and institutionalise.</p>
	<p>The management group operates the strategic approach “<i>Institutionalisation of the Pic du Midi IDSR</i>”.</p>
	<p>The management group co-ensures the political support and funding of the Pic du Midi IDSR.</p>
	<p>Co-managing of the Scientific and Technical Committee in order to guarantee the pic du Midi IDSR tasks.</p>
	<p>Priority management of themed Cell Committees:</p> <ul style="list-style-type: none"> - collectivités engagées (IDSR Commissions). -tourism -events -public relations
	<p>Co-managing themed Cell Committees:</p> <ul style="list-style-type: none"> -lighting -PL metrology and environment -scientific and technical network
	<p>Co-managing of the Management Committee in order to plan and validate short and long term goals, tasks and actions done by the Pic du Midi IDSR</p> <ul style="list-style-type: none"> -responsibility of the MANCO secretary.
	<p>Co-managing the Pic du Midi IDSR Observatory (annual themed audits by an external service provider).</p>
<p>Researching partners and financing in order to support proper functioning, development of new programmes, and to encourage innovation.</p>	

The SDE 65

(Syndicat Départemental d'Electricité des Hautes-Pyrénées)
(Hautes Pyrénées Departmental Electricity Federation)



The SDE 65 operates the strategic approach “*Application, development and improvement of the CIEL ETOILE Programme*”.

The SDE 65 co-ensures the political support and funding of the Pic du Midi IDSR

Co-managing of the Scientific and Technical Committee in order to guarantee the pic du Midi IDSR tasks.

Co-managing of the themed Cell Committees:

- lighting
- PL metrology and environment
- scientific and technical network

-responsibility of the Scientific and Technical Committee secretary.

Co-managing of the Management Committee in order to plan and validate short and long term goals, tasks and actions done by the Pic du Midi IDSR

Co-managing the Pic du Midi IDSR Observatory (annual themed audits by an external service provider).

Researching partners and financing in order to ensure and galvanise the application of the CIEL ETOILE programme.

The **Management Committee** of the Pic du Midi IDSR

The decision-making authority which plans and validates short and long term goals, tasks and actions done by the Pic du Midi IDSR

The **Scientific and Technical Committee** of the Pic du Midi IDSR

The operational body which concretely responds to the Pic du Midi IDSR strategic approaches via different themed Cells. These Cells are made up of scientific, technical and political people and different entities which are all involved with the Pic du Midi IDSR partners

The investment of these people in the Cell Committee should enable them both to meet the aims of the IDSR, and those of the entities they represent.

The Committee and its different themed Cells, are co-ordinated and managed by the Pic du Midi Management Group and the SDE 65.

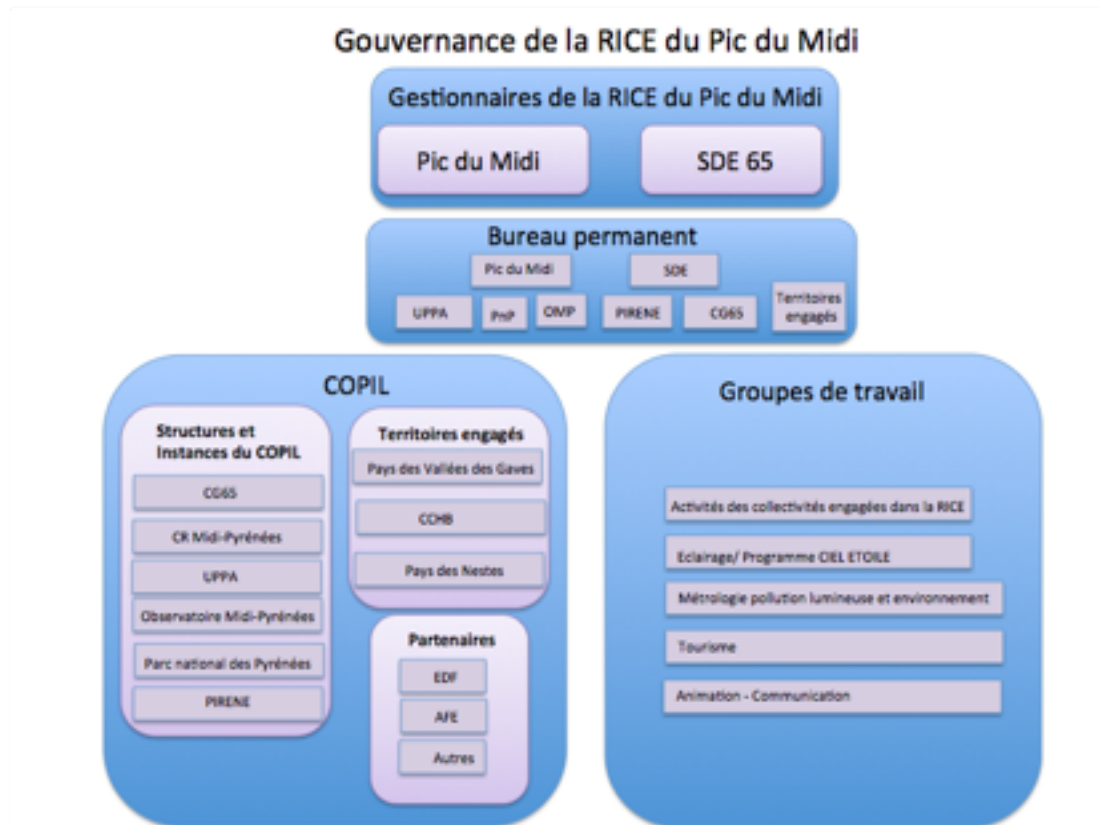
The Pic du Midi IDSR **Observatory**

The observatory will meet the strategic approach “Monitoring and reviewing the Pic du Midi IDSR”. It will thus inspect the advances and results of different tasks.

This inspection may be done by an external service provider, supervised by the Pic du Midi Management Group and the SDE 65.

It will allow for an annual report, on the Pic du Midi IDSR activity on several levels and scales: with the Department, the Region, the IDA, and the State (in order to testify to the importance and potential of the IDSR activities, and to legitimise and strengthen its positioning and resources.)

2.3 Diagram of the Pic du Midi IDSR governance structure

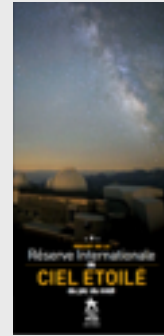
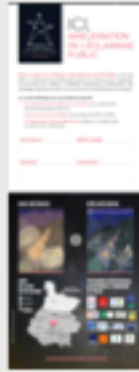


See appendix: file on governance structure

3. Actions and activities from the CIEL ETOILÉ Programme

Application of the CIEL ETOILE Programme
improving public lighting, raising awareness and enhancement of the programme

Development and transmission of tools for raising awareness and enhancement



From left to right : the CIEL ETOILE practical lighting guide flyer; the enhancement sign and explanation of the **works undertaken** to improve lighting; the Pic du Midi IDSR project flyer..

Creation and transmission of the Pic du Midi IDSR Lighting Guide: engaging the relevant bodies and local authorities in respect of the Guide.



Lighting conversion to be in compliance with the Lighting Guide



Lighting conversion in the village of Aulon.

Results of the lighting conversions within the Pic du Midi IDSR

- **elimination of 80 to 85 % of lighting flow** issued outside the lit surface
- **reduction of 35% to 45% of electricity consumption** linked to public lighting
- **improvement of the quality of life:** decrease in intrusive lighting, over-illumination and glare

**Construction work on the conversion of public lighting
throughout the Pic du Midi IDSR area between 2012 and 2015**

2012

Number of towns/villages where lighting improved : 15
Cost of operations : 294 484. 00 €
Number of light points which improved : 168

2013

Number of towns/villages where lighting improved : 17
Cost of operations : 282 739. 00 €
Number of light points which improved : 367

2014

Number of towns/villages where lighting improved : 27
Cost of operations : 942 99. 00 €
Number of light points which improved : 790

2015

Number of towns/villages where lighting improved : 75
Cost of operations : 1 228 000. 00 €
Number of light points which improved : 1112

TOTAL

Number of towns/villages where lighting improved : 134
Total cost operations : 2 748 215. 00 €
Number of light points which improved : 2437

2016 (upcoming)

Number of towns/villages where lighting will be improved : 80
Cost of operations : 1 080 000. 00 €
Number of light points which will be improved : 950

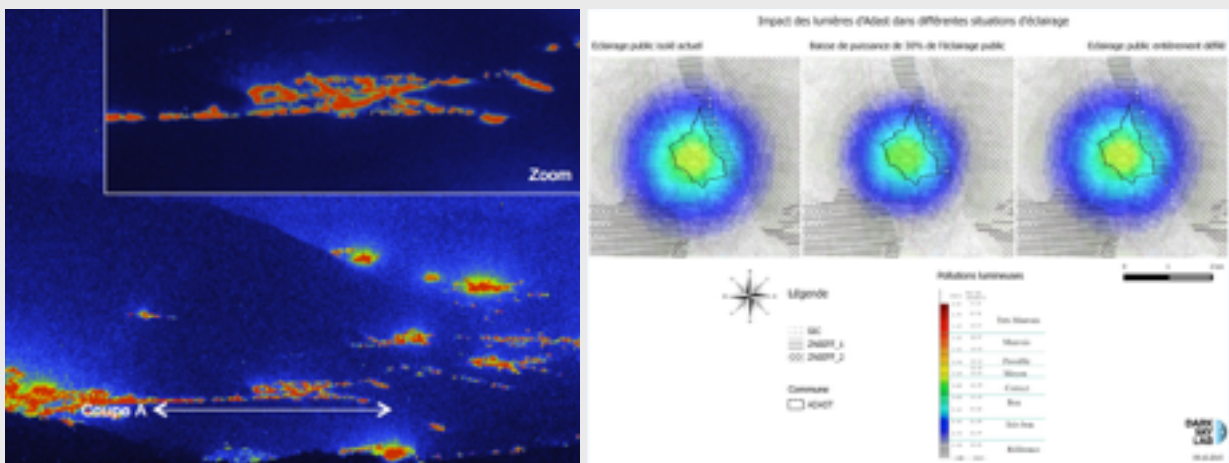
Monitoring and diagnostics of improving the lighting within the Pic du Midi IDSR

Between 2014 and 2015, the first environmental diagnostic of lighting on a collective scale of the 87 towns and villages in the Pic du Midi IDSR was carried out.

Each town and village in the community received a precise study of its lighting and its use in order to draw up a model of its lighting footprint and a set of recommendations intended to orient upcoming projects to improve lighting.

Three different tools and methods have been specially created by the Dark Sky Lab study office in order to provide the IDSR with efficient means of visualising the light pollution and its factors: the photographic monitoring of light halos, the modelling and map-making of light footprints, and finally the Lighting Identity Diagram.

This study produced 87 communal files, 87 synthetic posters to be put up in the town and village halls, a general file available to the greater public. A project to extend this study to incorporate the whole IDSR is in process.



Illustrations of the diagnostics, done by the Dark Sky Lab study offices

- See appendix : - Dark Sky Lab Study general file
- communal file for the village of Cheust
 - synthetic poster for the village of Cheust

Forum on public lighting 9th October 2014 in Tarbes
For innovative public lighting which benefits the Hautes-Pyrenees and its dark sky

« Les Hautes-Pyrénées aiment leur ciel étoilé ! »

JEUDI 9 OCTOBRE 2014

De **20H15 à 22H30**
AU PARC DES EXPOSITIONS DE TARBES
CENTRE DES CONGRÈS

Conférence exceptionnelle de Hubert Reeves
astrophysicien, sur la cosmologie, la pollution lumineuse et la Réserve Internationale de Ciel Étoilé du Pic du Midi (la conférence sera suivie par une observation du ciel animée par l'astroclub du Hautacam).

Tarif : 10 € pour les + de 18 ans, gratuité pour les - de 18 ans.
Réservation en ligne sur www.picdumidi.com
Possibilité de prendre les tickets sur place, dans la limite des places disponibles.
Le prix d'entrée sera reversé à l'association Heim unité et Biodiversité, présidée par Hubert Reeves.

Cette conférence s'inscrit dans le cadre d'une journée sur l'éclairage public, organisée par le Syndicat Départemental d'Énergie des Hautes-Pyrénées (SDE 65), la ville de Tarbes, l'ARE, le Syndicat nocte et la Réserve Internationale de Ciel Étoilé du Pic du Midi.

Objectives:

- promote the night sky and the reduction of light pollution
- inform people about the innovative techniques in terms of public lighting
- raise awareness about practical energy saving

Programme:

- a **technical afternoon**: Themed presentations, A roundtable on energy saving, Various stands)
- a **"starry evening"** : "Ciel Étoilé" Prize Giving, Dinner, Conference with Hubert Reeves, Observation of the night sky
- a conference with **Hubert Reeves**

This awareness event united almost 2500 people.

See appendix: - report of the forum

4. Activities in the Pic du Midi IDSR area

Raising awareness, events, initiatives, public relations
the life of the Pic du Midi IDSR

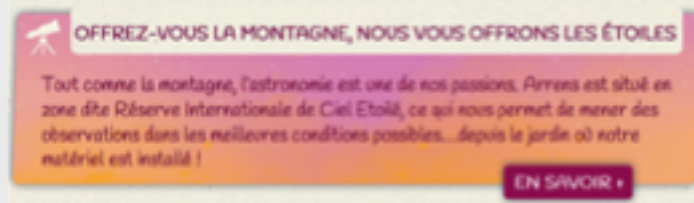
The programme of activities and awareness events in the towns and villages of the Pic du Midi IDSR



All the meetings and events linked to the Pic du Midi IDSR : concerts under the stars ; cycling up mountains by night ; beginners' lessons in nocturnal photography; discovering nocturnal wildlife ; film screenings ; conferences, and so on.

See appendix : - presentation of the activities in the Pays de Lourdes and the Gaves Valleys
- flyers advertising the activities offered in the towns and villages within the Pic du Midi IDSR

Achievements, projects and initiatives related to the Pic du Midi IDSR



From left to right: the Hautacam Astro Club logo, an associative group created to construct and manage the new astronomical observatory on Hautacam.; the “Refuge aux Etoiles”, astronomical observations from the high mountain refuge offered by the keeper of the Oulettes de Gaube refuge ; The “Estives d’Arrens” (Summer pastures in Arrens) a holiday cottage which offers astronomy related activities.

Links :

- Refuge aux étoiles blog: <http://lerefugeauxetoiles.over-blog.com>
- Hautacam Astro-club website: <http://www.astrosurf.com/astrhautacam/>
- Estives d’Arrens cottage website : <http://www.estives-arrens.com/fr/>

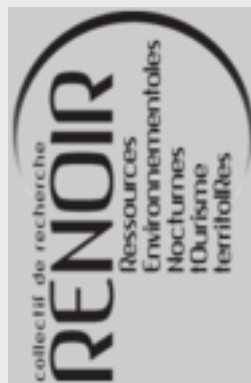
5. Research and development on the IDSR and on the protection of the night sky

5.1 Doctoral Thesis : “Emergence and application of the protection of the night sky”.

- see appendix :
- article « Half the Park is After Dark »

5.2 Partnership with the RENOIR Group

Collectif RENOIR



The RENOIR team brings together geographers, political scientists and economists with different backgrounds (from Paris, Toulouse, Dijon) around the emerging issue of Nocturnal Environmental Resources, Tourism and Territories. Its thoughts are based on this hypothesis : the night sky - and more generally "nocturnity" - are gradually considered as environmental goods valued in local projects. We can observe a value change in the perception of the night as a cultural, scientific and touristic resource.

Site internet : <http://renoir.hypotheses.org>

The RENOIR Group is a partner of the Pic du Midi IDSR in order to ensure an independent study on the activities which take place there and also to participate in the different work groups of the governance structure.

6. Upcoming priority actions

The priorities and needs of the Pic du Midi IDSR in the short and long term

Institutionalisation of the Pic du Midi IDSR

The main priority of the Pic du Midi IDSR is to go beyond the voluntary approach which the Reserve is currently based on, in order to strengthen and sustain this new territory project. Several solutions and hypotheses have been considered by the MANCO and the Pic du Midi IDSR.

- making the Pic du Midi IDSR a trial site for application and experimentation of future Grenelle Environment Act II regulations on the reduction of light pollution
- initiating a process of status recognition by the State of the natural protected spaces within the Pic du Midi IDSR. Exploring the possibility of assimilating the Pic du Midi IDSR to a Regional Park and / or creating a "Dark Sky Reserve" class / specific distinction

Local specific regulations on lighting

Improving lighting in the Reserve is currently based on the agreement of those bodies in charge of lighting, in compliance with the Pic du Midi IDSR Lighting Guide. Treatment of lighting within the Pic du Midi IDSR perimeter needs to be more restrictive in accordance with Article R. 583-4 of Decree n°2011-831 from Grenelle Environment Act II. However, the absence of formal regulation, recognised by the State, limits the fields and possibilities for action, particularly with regard to private lighting

In order to strengthen and refine the improvement and control of all lighting within the Pic du Midi IDSR, it appears necessary for the MANCO to develop and implement, in association with Grenelle Environment Act II, local regulations on specific lighting for areas close to protected natural areas and astronomical observatories.

Signs and public relations

In order to establish the IDSR territory and strengthen its appropriation, a strategy involving signs and public relations is being developed. The first future operations will be the following:

- setting up signs on the main roads marked "Entering the Pic du Midi IDSR"
- installing signs which read "New Pic du Midi IDSR lighting being installed here" on all public lighting improvement projects
- informing and training staff in local tourist offices, and distributing information resources
- creating and activating the Pic du Midi IDSR website
- reflecting on an overall public relations strategy on a Departmental level and beyond, in partnership with the General Council of the Hautes-Pyrénées, and Hautes-Pyrenees Tourism Environment, in the context of a working group focused on Events and Public Relations

Structuring astro-touristic opportunities across the Hautes-Pyrénées Department

The protection of the night sky must be seen as a sustainable development approach. The conservation of the nocturnal environment is not an end in itself, but more a means of enabling activities which combine positive impacts for the environment, and economic benefits for the territory. Thus, improved lighting allows the reduction of light pollution whilst reducing expenditures for local towns and villages. The protection of the night sky and the federation of workers from the Pic du Midi IDSR project also encourage the creation of new tourism products.

In order to promote the emergence of this new territorial resource and this future industry, the Pic du Midi IDSR working group dealing with tourism started its work in the course of 2014.

Strengthening financial means

The functioning of the governance structure, the general activity of the Pic du Midi IDSR, the lighting conversions, and so on: each of these requires funding in order to function properly.

The Pic du Midi IDSR currently receives financing from partnerships that will shortly be renewed, strengthened and extended in order to continue its development and achieve its goals.