ACCU 11-06-2019
CERN AND THE ENVIRONMENT

Mathieu Fontaine - Juin 2019
The energy transition is one of the components of the ecological transition. It refers to a profound structural change in the modes of production and consumption of energy.

It results from technical developments, evolution of prices and availability of energy resources, but also from the political willingness of governments and the public, businesses, etc. who wish to reduce the negative effects of this sector on the environment.

CERN has begun its own transformation and is trying to meet its challenges to reduce its impact on the environment by consuming less and differently.

Less: The reduction in energy demand obtained, in particular by improving the energy efficiency of buildings and technologies.

Differently: A change in lifestyle. It is therefore also a behavioral and sociotechnical transition.
CERN is strongly committed to maintaining a minimal environmental impact as expressed in the CERN Safety Policy. CERN strives to:

- Ensure the level of environmental safety and protection specified by the Host States regulations, European standards and directives.
- Monitor all parameters that might reveal any impact on the environment, such as those related to atmospheric emissions, effluent water, ionising radiation, consumption of water and electricity, production of waste, etc.
- Inform and report regularly to the Host States, France and Switzerland, the results of its Environmental Monitoring Programme.
Environmental impact

Recycling and sorting waste

Clean Air and Water

Minimising ionising radiation

Reducing Noise

Preserving the landscape

Sustainable Buildings and Transport

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Electricity consumption

Every year, CERN takes part in a bike-club campaign which aims to promote soft mobility between home and work.
The activities of the service of green spaces are the following:

- Maintenance of the green spaces of the fenced sites is 100 Ha
- Management and conservation of arboreal and floristic heritage
- Management of agricultural parcels rented to farmers
- CERN Forest and Forest Management (90 ha)
- Maintenance of the banks of rivers present on the territory of CERN
- Assistance to building and civil engineering project managers for the green space component
- Maintenance and new works of the fences of the sites

Our objectives are:

- Securing the CERN domain
- Improving the living environment of CERN users
- Conservation and enhancement of CERN's natural, agricultural and forest areas
CERN: a land, agricultural and forestry reserve

• CERN is a different international organization in many respects:
  • Its positioning straddles France and Switzerland,
  • Its scientific and research vocation,
  • Its tertiary and operational (machine), aerial and underground activities
  • Its area and its land reserve with its fenced area and its unfenced area.

• CERN is one of the major geographical and economic components of the Geneva basin

• Its land reserve of 6.25 km² is comparable to that of municipalities like Ferney-Voltaire or Cessy

• This land reserve gives CERN a strong environmental value with the presence of agricultural land, forests and rivers on its territory.

• CERN thus allows thanks to its land reserve to contribute to the maintenance of agricultural activity, the preservation of landscapes and the preservation of wooded areas accessible to
CERN DOMAIN

**Fenced Domain**
- Meyrin (79 Ha)
- Prévessin (83 Ha)
- Points LHC
- Points SPS

- Total area: 211 Ha
- Green spaces area: 101 Ha
- Roads and parkings area: 57 Ha
- Building area: 39 Ha

**Non Fenced Domain**
- Forest 136 Ha
- Fields 258 Ha
- Total area: 415 Ha

**TOTAL AREA CERN’S DOMAIN: 626 Ha**
ENVIRONMENTAL MEASURES
What the green spaces service does today

• Differentiated management
  • Meadows with orchids
  • Eco sheep pastures
  • Zero fertilizers and limited chemical treatments
  • Label environnement

• Horse skidding

• Inventaires
  • Trees
  • Entomology
  • Flora

• Control of invasive animals and plants
Differentiated management

- Changing modes of green space management
- Fostering biodiversity through extensive maintenance
- Limit or eliminate the use of fertilizers or treatment chemicals
- Limit watering to maximum
- Improving the living environment for users
- Environmental education, eco-citizenship
Meadows with orchids

- Conservation and protection of wild orchids
- Parcel status plans
- Transmission of plans to the patrimony service
- Inventory and counting
- Establishment of new plots (5ha to date)
- Communication: articles in the CERN bulletin and creation of new information panels
ENVIRONMENTAL MEASURES
What the green spaces service does today

Eco sheep pastures

- Increased in grassland areas (+ 24 ha since 2013)
- Reduced maintenance time and costs
- Preservation and conservation of fauna and flora
ENVIRONMENTAL MEASURES
What the green spaces service does today

Zero fertilizers and limited chemical treatments

- No chemical fertilizers are used on CERN sites
- Only electrical and controlled areas can be chemically treated with a total weed killer. These areas are only accessible during machine shutdowns, chemical processing remains the only technical and economically viable solution today to ensure the safety of installation of these sensitive and strategic areas.
Nature and environment label

- Label awarded by the Nature and Economy Foundation to companies promoting and taking measures to conserve their natural spaces
- First label awarded in 2009
- Label renewed in 2012 and 2015
- Renewal in 2019
ENVIRONMENTAL MEASURES
What the green spaces service does today

Horse skidding
Low impact on the soil
Pollution free
Preserving an Endangered Trade and knowledge
Public Awareness
ENVIRONMENTAL MEASURES
What the green spaces service does today

INVENTORY AND MANAGEMENT OF CERN TREE HERITAGE

- **2010**: Sanitary inventory of trees for Meyrin site
  - Tree felling of large numbers of poplars

- **2018**: Quantitative and qualitative inventory of alignment parking and isolated trees on Meyrin and Prévessin sites

- **Replanting**
  - Winter 2019/2020
    - 100 trees on Meyrin Switzerland in compensation for trees felled since 2010
  - Winter 2019/2020
    - Tree plantings on the French part of the Meyrin site
  - Winter 2021/2022
    - Tree plantings on Prévessin
  - Winter 2022/2023
    - Tree plantings on LHC points
Entomological inventory
- Started in 2017
- Entomologist of the Museum of Natural History of Geneva makes surveys and counts of species in the meadows of CERN
- Know the populations of insects on CERN land
- Know the natural heritage of CERN

Floristic Inventory
- Inventory started in 2008
- An amateur botanist makes surveys and counts of species in the CERN meadows
- Know the natural heritage of CERN
- Have a rating of biodiversity
- Qualifying meadows (dry, oily, etc.)
ENVIRONMENTAL MEASURES
What the green spaces service does today

Floral inventory

CERN – Club Nature et Abeilles
Inventaire Botanique site de Meyrin
Entre les bâtiments 5 et 172
Inventaire réalisé par Monsieur Michel Vauthey - 2018
ENVIRONMENTAL MEASURES
What the green spaces service does today

Floral inventory
ENVIRONMENTAL MEASURES
What the green spaces service does today

Floral inventory

Achillea millefolium
Achillée millefeuille
ENVIROMENTAL MEASURES
What the green spaces service does today

Control of invasive animals

- Processionary caterpillar
- Pirale of the box tree
- Asian hornet
ENVIROMENTAL MEASURES
What the green spaces service does today

Control of invasive plants

- Goldenrode
- Japanese knotweed
Promoting beekeeping and nature protection

Date of creation: 2016

Number of members in 2018: 18

Number of hives in 2019: 17

Annual fee: 40€

Harvest 2018: 100 KG

Apiary school
ENVIRONMENTAL MEASURES
What we would like to do tomorrow

Tree heritage and living environment on the CERN sites

- Planting trees on CERN sites
- Renew CERN’s tree heritage
- Make compensatory plantations owed by CERN to the State of Geneva following the felling of trees since 2010
- Create a CERN compensation procedure for each tree felled on Switzerland and France
- Make a list and map of remarkable trees
ENVIRONMENTAL MEASURES
What we would like to do tomorrow

Agriculture: prepare for the future

• Inventory of existing agricultural holdings (cultivation and breeding methods)
  ➢ Have an overview of practices, the good, the bad and be able to propose solutions for improvement

• Working with farmers
  ➢ CERN’s commitment to working with farmers to change practices and attitudes towards environmentally responsible agriculture
  ➢ Creation of a CERN agricultural charter

• Transition to agroecology
  ➢ Restoring soil life
  ➢ Promoting biological control
  ➢ Developing agroforestry
  ➢ Carrying out an educational project for citizens
    ➢ healthy eating
    ➢ Local production and consumption
    ➢ Training and integration
ENVIRONMENTAL MEASURES
What we would like to do tomorrow

Agriculture: prepare for the future

Rental of CERN agricultural plots for small-scale agricultural holding with organic gardening activities

- Would allow for the installation of young farmers
- Allow the creation of an AMAP (Association for the maintain of a peasant agriculture)
- Promote short distribution of fruit and vegetable sales
ENVIROMENTAL MEASURES
What we would like to do tomorrow

Conservatory Orchard

Provision (rental) of a CERN agricultural plot for the creation of an association, the planting and the maintenance of a conservation orchard of fruit trees

- Preservation of old varieties of apples, pears, prunes, ... of the Geneva area
- Maintain of fruit trees species
- CERN/ Association Partnership
ENVIRONMENTAL MEASURES
What we would like to do tomorrow

Hedges plantings on CERN agricultural plots

- Fight against erosion
- Thermal control
- Preserving water quality
- Conserve and enhance wildlife corridors
- Honey plants
- Production of shredded wood
THANK YOU FOR YOUR ATTENTION