

CLIMATE CHANGE

@egis takes action

Faced with collective commitments that remain insufficient to bring global warming down to below 2°C, regions will have to quickly adapt to the many impacts of climate change. With our ability to be innovative, Egis offers concrete solutions to adapt to your projects and reduce their environmental impact.

Thanks to the variety of our business activities and the coordination of around 10 billion Euros of investment a year, Egis is a leading international player in the fight against climate change.



For Egis, climate change is:

1

AN OPERATIONAL OBJECTIVE: reduced carbon and energy impact

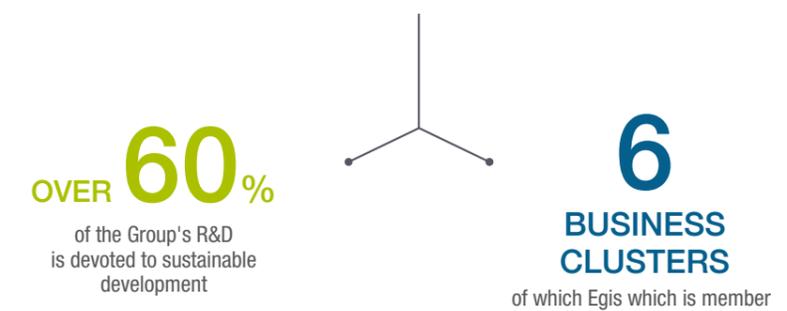
Our unique expertise, based on a range of multidisciplinary skills, allows us to deploy a comprehensive mitigation approach to climate change. The challenge is to identify upstream of projects, the energy and carbon impact of their various technical variables, to make the best choices, and to offer solutions for optimising operations.



3

A CONTINUOUS PROCESS: R&D on climate change data

As a partner of many research projects in both France and abroad, we are also a member of various networks highly committed to the fight against climate change. The Egis leverage lies in our ability to achieve the most ambitious compromises between the economic, environmental and social positions of our clients' projects.



2

A LONG-TERM GOAL: adapting to climate change

Our priority: to improve the resilience of the regions hosting our projects, in other words their ability to cope with disruption, particularly climate-related and to continue to work the same way as before. For us, this resilience and ability to adapt to climate hazards is an important element of the sustainability of infrastructure, in addition to its intrinsic performance.

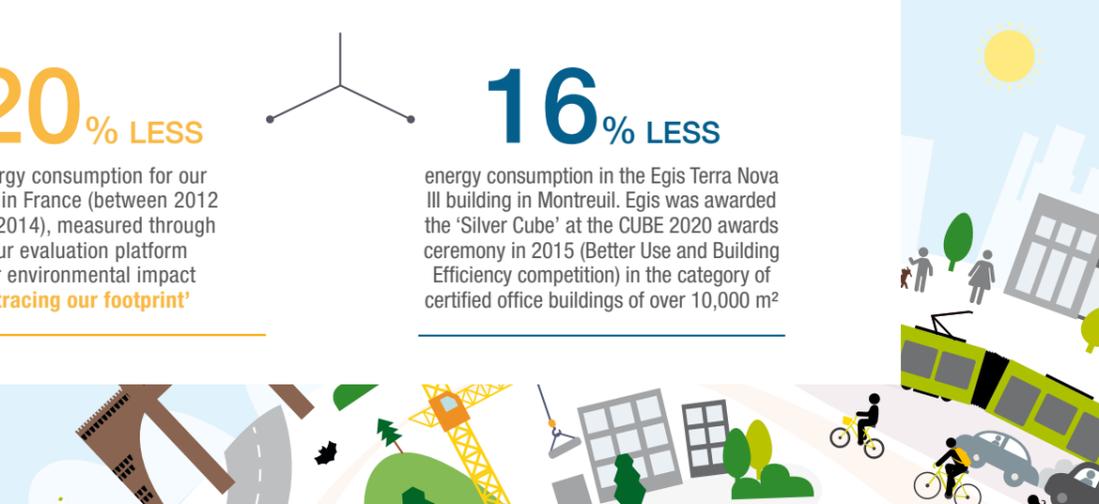
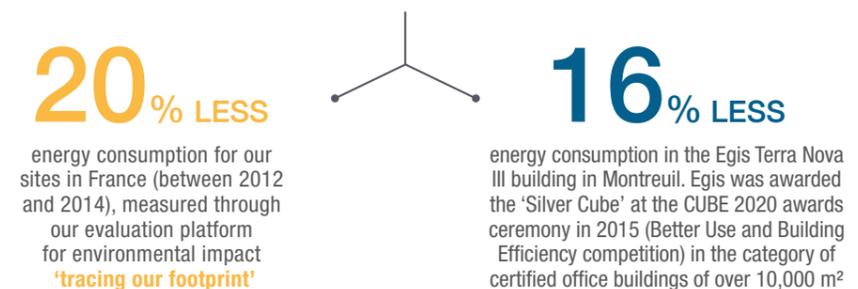


*Sterile Variety

4

A DAILY CONCERN: reducing the carbon intensity of our activities

In order to define and manage our own eco-responsibility approach, we have established a sustainable development charter, a CSR roadmap (Corporate Social Responsibility) and extra-financial reporting. Among the indicators for this reporting, the energy and carbon intensity of the Group's activities is subject to ever-more diligent monitoring.



Stabilised and strengthened soils...

Vetiver grass, planted very close together...
 ...a plant with deep roots (3 to 4m), helps to combat soil erosion and stabilise road embankments. In 2013, this solution received the Trophy for Innovation and sustainable development from the Caisse des Dépôts. Used successfully in Brazzaville (Congo), it has successfully prevented the use of heavy and expensive protective solutions that impact the landscape, and has helped to improve living conditions of the inhabitants.

- THE +** Less polluting than concrete
- 6 times cheaper than a solution such as gabion walls or concrete
- Creates a habitat for protecting biodiversity (fauna and flora)
- Enriches soils and increases their fertility
- Absorbs and stores carbon
- Restores balance to ecosystems disrupted by road works

Urban transport adapted to the size of cities...

Faced with cities' new requirements in relation to sustainable mobility...
 Egis has developed the 'tramway autrement®' (alternative Tramway design) approach which offers four tramway types adapted to various urban configurations: the classic tramway, the short tramway, the economical tramway and the express tramway.
 Specific urban landscaping, stations and depots, number of stops, complexity of technology, vehicle capacity and operating frequency are defined for each tramway type. A range of options are possible, from the most value-added to the most streamlined.

- THE +** A cost appropriate to the size of the city with a refocused look at the essential features
- Part of a high-quality urban development
- Choice of tramway system according to utility, performance and cost criteria
- Optimised consumption
- Reduced emissions per transported passenger

More responsible behaviour...

Road traffic congestion has significant negative consequences...
 ...for the environment, the economy and quality of life. A solution developed by BNV Mobility (a subsidiary of Egis) aims to reduce traffic peaks with an incentive for motorists to change their behaviour. The system rewards those who agree not to use their vehicles during rush hours, either by delaying their journey or choosing public transport or carpooling. In 2009, this solution achieved great success in the Netherlands. A pilot scheme is planned in France.

- LES +** Lower greenhouse gases
- Reduced health risks (stress at the wheel, air pollution)
- Improves quality of life (time saving)
- Increases purchasing power of users (fuel gain, less wear on the car)
- Reduces maintenance costs of roads

Anticipating rising water levels and floods...

To help areas facing a risk of flooding...
 Egis is proposing a forecasting, risk monitoring, warning and crisis management system. It prioritises a holistic approach that takes into account economic aspects, land use, social needs and environmental protection. This system was awarded a Special Award at National Engineering Grand Prix.

- THE +** Enables a spatialised cost-benefit analysis of protection measures against flooding
- Reduces the vulnerability of people and assets
- Results in increased economic, health and environmental benefits

Coastlines are the most exposed areas to climate change.
 Egis has developed IT modelling tools to study phenomena and how these change and develop the coastline accordingly in order to preserve it. This solution prioritises soft protection techniques, for example 'reconstituting' the dune ridge with vegetation.

- THE +** Selecting development projects appropriate to the area with capacity for adding value
- Minimising the impacts of the projects and organising the compensation of these

A CLOSER LOOK AT SOME



egis
climate Solutions

Looking ahead to the Climate Conference to be held in Paris in December 2015, Egis has highlighted some of its solutions on the Web platform 'Climate Solutions COP21', a tool initiated by the Comité 21 and sustainable development Club France in order to promote innovations, products and services developed for the climate throughout the world. An overview of some Egis solutions.

Valued and preserved eco-systems...

Nature provides people with many services.
 To better integrate these services into development projects, Egis established AULNES, a tool for mapping the services provided by our ecosystems, assessing the losses (economic, environmental and even societal value), evaluating the AMC approach (Avoid, Mitigate, Compensate) and incorporating the loss of 'Natural Capital' into the socio-economic assessment of projects.

- THE +** Assessment of the value of biodiversity and the services provided by nature
- Assessment and analysis of the loss of services
- Optimisation of the project, in order to maintain biodiversity and the associated ecological functions

Bats are seeing their survival constantly threatened...
 ...by human projects (infrastructure, wind farms, etc.). In order to help their preservation, Egis has developed an innovative tool, Bat3Data, which allows bat species to be identified, and their trajectories monitored and stored in 3D. The tool has been successfully tested on the A406 motorway (south of Macon) and the A65, connecting Langon to Pau. It received the 'Entreprises pour l'Environnement' 2014 prize in the category 'Business and Biodiversity'.

- THE +** Differentiation of species and flights of each individual present
- Identification of ecological corridors (green and blue outlines)
- Proposal of appropriate prevention measures and eco-design of works

More efficient buildings...

For more energy efficient buildings, Egis has designed Clim'Elioth.
 This eco-design tool is able to assess a building's energy needs and costs, but also to propose and optimise the architectural and technical options right from the design phase: natural ventilation, air conditioning, ground source heat pumps... Any solutions are possible with this software which offers a holistic climate and energy approach to an architectural project in a short timeframe.

- THE +** Defining the geometry of the construction and the associated physical properties
- Assessment of a building's thermal behaviour
- Upstream identification of architectural and technical solutions from an energy point of view

More resilient cities...

Climate change increases The pressures on cities.
 Urban resilience, which reflects the ability of an urban system to restore its functions after a natural disaster, is becoming a major issue for local communities. The RESILIS approach maps the vulnerability of urban services and identifies the technical solutions to increase the city's resilience as a whole.

- THE +** Assessment of multiple disturbance scenarios using maps
- Predicting the domino effects caused

Better adapted and less polluting infrastructures...

Identifying the vulnerabilities of infrastructures and evaluating the climate risks...
 ...to which they are subjected. This is the aim of the GERICI® solution. Paired with a GIS, this methodological approach assesses the ability for adaptation of the systems studied (resilience) and identifies the upgrades required. This solution has been tested on two motorway sections in France.

- THE +** Better integration of environmental risks and constraints in the design and management of infrastructures
- Optimising investment and maintenance costs for the operator
- Assessment of socio-economic benefits for the areas served
- Predicting and managing structural and operational risks related to climate dangers

Road infrastructures are responsible for more than 70% of greenhouse gas emissions...
 ...linked to the transport sector. Today, controlling these emissions is imperative right from the design stage. Egis has developed an Eco-comparison tool for road variants, Variways®, that assesses the carbon impact of a road infrastructure during the construction and operating phases by means of two indicators: greenhouse gas emissions (GHG emissions) and energy consumption.

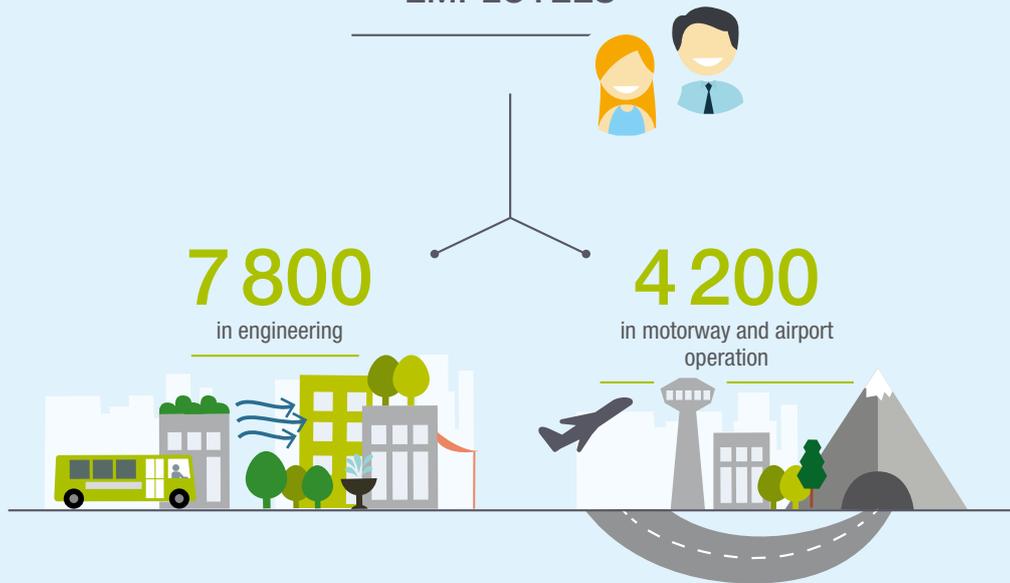
- THE +** Helps decision-makers to optimise their projects and make their choices from the variants using maps, histograms, tables, etc.
- GHG emissions are displayed for each variant

Egis is an international group offering engineering, project structuring and operations services.

In engineering and consulting its sectors of activity include transport, urban development, building, industry, water, environment and energy. In roads and airports its offer is enlarged to encompass project structuring, equity investment, turnkey systems delivery, operation and mobility services.

Egis is 75% owned by the French 'Caisse des Dépôts' and 25% owned by Iosis Partenaires, (a 'partner' executive and employee shareholding).

12 000
EMPLOYEES



854 M€

of managed turnover in 2014

17

engineering subsidiaries worldwide

32

operational companies

www.egis-group.com

Contact: sustainable-development.egis@egis.fr

