

# PROPOSALS FOR A LOW CARBON ECONOMIC RECOVERY

Version 2 enhanced with references and solutions developed by Egis January 2021





As a leading industry figure in consulting and engineering for construction and the operation of transport infrastructure, and in line with its commitment to support its clients in their low carbon pathways, **Egis has brought together its experts** to formulate 21 proposals to ensure that French and European economic stimulus initiatives are part of an accelerated change in the production model.

THE AIM IS TO CONTRIBUTE TO CREATING A LESS CARBON-INTENSIVE FUTURE THAT PROTECTS BIODIVERSITY AND LEARNS THE LESSONS FROM THE COVID-19 CRISIS THAT WE HAVE BEEN LIVING THROUGH.

The group thus echoes a concern widely expressed in society. In France, for example, the High Council for the Climate (*Haut Conseil du Climat*) considered it imperative for the government's COVID-19 crisis response to support structural transformation towards a low carbon economy to strengthen our resilience to public health and climate risks. The government has a duty to place climate issues at the heart of its Covid-19 crisis exit plan, failing which our societies will remain vulnerable to health and climate risks, says its latest report (*Haut Conseil du Climat, April 2020*). Meanwhile, the European Commission unveiled its proposal for a recovery plan on 27 May entitled Next Generation EU. The acceleration of the Green Deal is presented as one of the two pillars which must guide the European economic recovery, alongside the digital transition.

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# CLIMATE EMERGENCY AND BIODIVERSITY PROPOSALS



# MAKE THE CLIMATE EMERGENCY AND THE GOAL OF CARBON NEUTRALITY THE NEW FRAME OF REFERENCE FOR ACTION AND THEREFORE STUDIES FOR DECISIONS TO BE TAKEN NOW

Maintaining a 1.5°C pathway relies on the implementation of immediate and powerful actions. Deviating from this path will inescapably lead to a crisis on a larger scale and of a longer duration than that of Covid. The more time wasted, the steeper the slope towards neutrality, the goal of the national low carbon strategy.

Simply calculating and observing the carbon footprint of construction, or leading the occasional low carbon design initiative, are not enough to stay on track. HQE, Breeam or Leed certification to obtain "green grants" is no longer enough to tackle the emergency we face, and is often solely green washing. Shifting to from low carbon design to carbon

Shifting to from low carbon design to carbon neutral-aimed design must become the reference.

neutral-aimed design must become the reference. Changing from indicators expressed as kg  $CO_2/m^2$  to indicators expressed as kg  $CO_2/person$  would enable us to revolutionise the way we design structures by factoring in the "use" aspect.



### Where we were – where we want to go

# EGIS REFERENCES

# THE CLIMATE, AIR AND ENERGY PLAN FOR THE GREATER PARIS REGION



Creation of a climate plan for the Greater Paris Area within a short time frame.

### **ADAPTATIO RESEARCH PROJECT**

Adaptatio is a research project created to propose new methodologies for responding to the question of adapting to climate change and developing new, simple tools for evaluating water and energy consumption during construction projects. Adaptatio is led by the Paris School of Urban Engineering (EIVP), Egis, CDC Climat, the Scientific and Technical Center for Building (CSTB) and the City of Paris.

### **ECO-RESPONSIBLE TOURISM IN MONGOLIA**



Analysis of the potential impacts of climate change on the bioclimatic conditions and ecosystems of the Khuvsgul Lake National Park in northern Mongolia.

### ROAD INFRASTRUCTURE ADAPTED TO CLIMATE CHANGE IN CAMBODIA



Creation of a road project to integrate climate change predictions.

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# EGIS Solutions

The Egis group has made the climate emergency and the goal of carbon neutrality its new frame of reference. It provides assistance to clients on the following themes:

- Carrying out (prospective, strategic) studies on carbon neutrality on a scale encompassing regions, neighbourhoods, buildings and companies who integrate interactions between neighbourhoods and regions, energy, users and material flows; search for new opportunities, modelling and expertise, creation and implementation.
- Support for projects, businesses and asset managers in their climate strategies: the Avoid-Minimise-Offset Mitigation Hierarchy, calculation of carbon footprint, analysis of climate vulnerability risks (in collaboration with the Task Force on Climate-related Financial Disclosures), working towards the 1.5°C pathway in particular with the Science-Based Target initiative, mechanisms for offsetting carbon, the low-carbon label, etc. Climate adaptation and resilience strategy, raising awareness and dialogue with stakeholders, training on the issues related to climate change.

### ⇒ Green bonds:

- Proving assistance to green bond issuers in selecting and evaluating projects, financial structuring of bond issues, drafting information memoranda for markets and reporting the issuance anniversary date
- Support for investment funds in meeting requirements for the Greenfin label and in auditing funds to participate in the Climate Bond Initiative.
- Environmental audit, assistance for ISO 14001 certification, environmental impact study, resilience study and assistance in planning/anticipation, eco-design processes. Audit and due diligence of climate resilience.

# **SMART CARBON SOIL:** a biosequestration solution in soil to sustainably enhance property

This innovative solution manages the carbon in soil and provides social and environmental benefits for the area (respect for soil biodiversity and more broadly the ecosystems present).

### **SMART ENVIRONMENTAL SYSTEM**

This solution tracks the state of the environment in real time. It is suitable for construction sites, industrial sites, infrastructures, business parks and urban areas.

### **WATENERGY:** a solution to combine water collection/ treatment projects with the energy transition

This tool benefits local users and operators in identifying the potential to reduce greenhouse gases and increase renewable energy production during new projects or rehabilitation of water treatment plants..

# **QUICK SCAN:** rapidly identify climate change risks on infrastructure

This participatory communication strategy uses collective intelligence from think tanks to diagnose and develop a progressive vision and put forward an action plan. Participants are selected from the technical design team and/or management teams from the chosen infrastructure. They range from specialists in a given field to engineers with a global and interdisciplinary view of infrastructure.

### **VARIWAYS**®



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A solution to calculate the GHG emissions of a road infrastructure in design and operation.

### **<u>GeRiCI</u>**: Climate risk management for road infrastructure

This methodological solution identifies vulnerabilities in road infrastructure and surrounding areas, assesses the corresponding climate risks and determines the adaptability of the systems studied (resilience) as well as the necessary improvements.

# PRÉDICOUCARBONE

This solution calculates carbon emissions for Tramway projects (during the construction and operational phases).

# AIRPORT CARBON ACCREDITATION

Egis provides assistance to its clients in obtaining Airport Carbon Accreditation (ACA). In addition, Egis assists its clients in defining their long-term airport climate strategy, which covers the region, its users and governance.

# **CARBON SOLUTIONS FOR BUILDINGS**

These include calculation, simulation and decision-making solutions to decarbonise the construction and operation of buildings: <u>Carb'elioth</u>, <u>Clim'elioth</u>, and Carb'impact (calculates the carbon footprint of building construction in kg CO2 eq).

# **CLIMAT SOLUTIONS FOR CITIES**

### ROSAU

This solution ensures that our cities are resilient in the face of climate change and have the capacity to quickly recover control of operations.

# **CITY ON ALERT**

This solution is dedicated to monitoring and managing hydrological risks in real time using a system of detailed hazard maps connected to a matrix.

# **E+C- APPROACH FOR THE COMMUNITY**

This is a solution for communities with the low-carbon label and uses a specific evaluation method.

### A STRATEGIC STUDY FOR LARGE COASTAL CITIES IN NORTH AFRICA in the face of climate change and natural risks

(4 years of investigations)



Damien Boillev

Egis participated in a study on four large coastal cities in North Africa: Alexandria, Algiers, Casablanca and Tunis. The study aimed to raise awareness in policy makers and developers about the effects of hazards related to climate change (erosion and coastal flooding, flooding of cities, water shortages and heat waves) and also presented risks related to landslides, earthquakes and tsunamis. It also gave a global view of the natural risks that large urban areas are exposed to and highlighted the priority areas for action.

# **2 RADICALLY CHANGE APPROACHES** TOWARDS THE ENVIRONMENT

The crisis that we are experiencing once again underlines the urgent necessity of addressing the collapse in the quality of our environment.

Climate change generates a higher risk of flooding and major climate events

such as typhoons and droughts.

Climate change generates a higher risk of flooding and major climate events such as typhoons and droughts. According to a report by the French foundation for research and biodiversity, "Science is increasingly showing correlations between global environmental change, loss of biodiversity and the associated regulatory services, and the emergence or increase in the prevalence of infectious diseases." The inevitable but

disorderly development of growing urbanisation as practised or endured today causes a deterioration in air quality, an increase in noise pollution, an increase in industrial accidents at the heart of cities, a deterioration in the living environment, etc. This damage has a major impact on the health of the population.



"One Health" approach

The issues of climate change and biodiversity are intimately linked. Climate change entails a modification of temperatures, ocean acidity and the distribution of freshwater, leading to altered ecosystems and the disappearance of many species. When biodiversity deteriorates, the entire living world collapses. Some scientists speak of a sixth mass extinction. Following those caused by the ice age, volcanoes or even a meteorite, this one would be caused by the actions of mankind.

Some scientists speak of a **sixth mass extinction.**  What are the causes behind this? Intensive farming methods, pesticides, the proliferation of waste and various pollutants and the spread of urbanisation through the artificialisation of soils which destroys and fragments the habitat of living species.

In concrete terms, quick wins can be achieved by incorporating into all construction or planning projects, from the earliest design phases, the following goals:

# Counteract the harmful effects on biodiversity:

- provide alternative habitats for various species to encourage proliferation
- boost the carrying capacity for wildlife in an urban environment
- include the benefits delivered by these natural species in social and economic impact assessments
- exploit urban wasteland to limit the artificialisation of land.

# Pre-empt environmental problems relating to landscaping projects by factoring in operating constraints and soil characteristics

Mitigate the impact of climate change in the urban environment, with trees and plants performing several vital functions for the city: temperature regulation, carbon sequestration, regulation of rainwater, particle filtration, etc.

- provide carbon sequestration solutions
- optimise mobility and modes of travel
- promote the reuse of materials and the circular economy.

# EGIS REFERENCES

# SEINE-NORD EUROPE CANAL PROJECT: AN ECO-FRIENDLY PROJECT

Egis used an eco-design approach agreed upon in the engineering contract and based on a specific management plan. The plan includes differing management techniques for road verges and unused roads and agri-environmental enhancement in collaboration with agricultural professionals and local communities.

# **ENVIRONMENTAL OBSERVATION.** Bretagne - France



This is an observatory to understand the impact of the project on the environment and its perception by public opinion, for a period extending from the design of the works up to several years of usage.

# THE FLAUBERT NEIGHBOURHOOD. Rouen - France



Using natural urban spaces to limit soil artificialisation

# **<u>1.5°C PATHWAY</u>**

Protect and restore mangrove ecosystems

# **<u>GREEN RIYADH,</u> THE GREENING PROJECT IN THE SAUDI CAPITAL.** Saudi Arabia



With over 7 million trees to be planted by 2030, the Saudi capital's greening project, under the name Green Riyadh, is the first of its size and extent.

# EGIS Solutions

# LANDBOOST AND SEABOOST, TWO SOLUTIONS IN FAVOR OF BIODIVERSITY



<u>SEABOOST</u>, combines human activities and aquatic biodiversity more efficiently,
 LANDBOOST, promotes biodiversity development in urban areas.

# EVA BIODIVERSITÉ, MEASURING BIODIVERSITY PERFORMANCE

This solution assesses and promotes the performance of a project's biodiversity. The method was initially created by Egis for Icade to promote construction of new buildings using a net-positive design.

### **AULNES**

A tool for taking into account the services that nature provides to humanity in the evaluation of a project.

# **L'OEIL VERT** (GREEN EYE): A SOLUTION TO REINTRODUCE NATURE TO CITIES

- This involves installing a hypervisor for the natural resources of the city and/or verges of infrastructure to track their state and upkeep operations and optimise management of surrounding plants.
- ⇒ Remote data collection using satellites, drones, feedback from residents, etc..

# CITIES PROPOSAL



# **3 LAUNCH AN EXTENSIVE PROGRAMME TO REDESIGN CITIES THAT RISES TO THE CHALLENGE OF CLIMATE CHANGE AND IN THE CONTEXT OF LESSONS LEARNED FROM THE PUBLIC HEALTH CRISIS**

Concentrating more than 70% of carbon dioxide emissions and home to more than 55% of the world population, cities are a key place where the sustainable future will be decided. Cities represent not only the promise of freedom, meetings and urban life but are also places where inequality abounds, a factor in soil

Cities are a **key place** where the **sustainable future** will be decided

artificialisation or sealing, and hotbeds for the spread of viruses, as we have seen in recent weeks. They are complex and strategically important places that we must recast to make them sustainable, peaceful and attractive.

Today, all over the world, we are faced with a number of challenges: population growth, increasing urbanisation, longer life expectancy, changing family structures and growing income disparities, in particular in large cities. These challenges are exacerbated by social distancing, a key measure to fight the spread of epidemics. Public spaces such as stations, interchange hubs, squares, streets and avenues are the places where exchanges, services and commerce continue to happen. These are also the places where social distancing imperatives are the most complex to implement.

### Social distancing,

a key measure to fight the spread of epidemics. Aiming for carbon neutrality is a rational, reasonable, possible, attractive and accessible imperative that must be pursued at every level of society.\*

### This positive vision of a carbon neutral city is more relevant than ever in the wake of the summer of 2018 which was the second hottest since 1900. This challenge involves:

- Putting the user-inhabitant back at the centre of urban thinking
- Designing districts as the basic cell of the sustainable city
- Encouraging the return of production activities to cities
- Designing and networking eco-friendly buildings (see below)
- Designing the city taking into account microclimate effects created by urbanisation (heat islands intensified by global warming).

# The learnings from the public health crisis lead to the identification of other requirements

- Welcoming and safe public spaces: the notion of security, generally associated with the risk of accidents and violence towards people, must include health safety requirements such as social distancing during an epidemic.
- Mixed use districts and those guaranteeing the performance of urban flows: lockdown periods create pressure on the supplies of food and certain manufactured products. More than ever, the issues of autonomy and short selling channels enabled by mixed use districts are crucial.
- Compact urban forms, construction of the city on the city: many voices express reservations about city density in view of the Covid-19 crisis, but urban sprawl cannot be a solution. Density must be compensated by specific developments: returning the lost square metres through public spaces with multiple uses (leisure, rest, sport, culture, even disconnection) and getting rid of single function spaces which are used for several hours a day at the most. Density and health security must be combined with great care, in connection with mixed and multi-use districts and the performance of urban flows. The impact of the growth of home office working on regional planning and urban concentration must also be examined.
- The social and economic inclusion of all populations: the Covid-19 public health crisis is leading onto an economic and social crisis on a huge scale. The city of the future must be able to provide every-one with the means to satisfy their basic needs, fight poverty and reduce inequality often already exacerbated by extreme weather events.

# EGIS REFERENCES

## CARBON NEUTRALITY OF PARIS IN 2050



Several proposals from a variety of measures were put forward to obtain neutrality, such as: 6 million m<sup>2</sup> of solar roofs, the renovation of up to 75% of current housing, 150 hectares of urban agriculture, 75% flexitarian diets, reduce by half the amount of waste per inhabitant, half as many cars and twice as full (carpooling), a massive shift towards electric cars, etc.

## INVENTING ONE OF THE FIRST DECARBONISED NEIGHBOURHOODS IN FRANCE IN PARIS



 $\mathsf{BRUNESEAU}, an area of 95,000\,\mathsf{m}^2, will be one of the first decarbonised neighbourhoods in France.$ 

- $\Rightarrow$  A carbon footprint divided by 5
- E+C- label for all new buildings, including high-rises, at the highest category of the label, E3C2.
- ⇒ 65% of the energy used in the neighbourhood will be either renewable or recovered, and half of the energy will be produced on site.

### URBAN INSERTION IN THE LYON PART-DIEU NEIGHBOURHOOD

This ambitious programme aims to make Lyon Part-Dieu an international benchmark for urban innovation and economic performance.

 $\Rightarrow$  The objective is to decongest the area ahead of the strong growth in traffic predicted for the next 20 years.

 $\Rightarrow$  The total surface of buildings in the Lyon city centre, currently at 1.5 million m<sup>2</sup>, is to double in order to expand the property supply: accommodations, tertiary buildings, businesses and public spaces.

# ROSAU, A GIS TOOL FOR IMPROVING URBAN RESILIENCE

The tool identifies and evaluates the interdependencies of urban services to determine possible domino effects on electricity, water, telecommunication and transport systems, among others. The evaluation and identification of corresponding solutions are carried out in collaboration with local stakeholders to ensure integrated risk management.

# MURMURE: PUTTING RESIDENTS BACK AT THE CENTRE OF PROJECTS

- This project aims to transform Enedis' former Nation 1 electrical substation into a cluster for sound technicians.
- A co-working space exclusively for musicians, producers, editors and other sound professionals to collaborate on the project. The building will also inform its users on measures to reduce energy consumption in real time.

# SMART ENVIRONMENTAL SYSTEM PLATFORM

Offering citizens the possibility to participate daily in the construction of their future city. This is an urban development project (ZAC) near the Mines-Fillettes station in Paris.

# THE HEBERT NEIGHBOURHOOD AS THE CENTRE OF THE SUSTAINABLE CITY

- $\Rightarrow$  A year of discussions with residents
- Senergy and carbon performance of newly constructed buildings
- $\Rightarrow$  Reversibility of shared areas
- $\Rightarrow$  Potential integration of renewable energy
- ⇒ Promotion of less carbonised forms of mobility.

# PEACE&LOG: REINTRODUCING PRODUCTION ACTIVITIES TO CITIES

- Converting a former petrol station into a logistics platform for the Espace Champerret exhibition centre (Paris' 17th arrondissement)
- Promote urban agriculture using an underground Agripolis shop to provide residents with local produce from the largest urban rooftop farm in the world (1.5 ha.) located in Porte de Versailles.

# SAINT-BRIEUC BUS PROJECT: HIGH QUALITY SERVICE DISCUSSED WITH RESIDENTS

Many discussions were previously held in a variety of formats: public meetings, local visits with feedback from residents, digital platforms, public forums, activities in schools, specific information systems (mailings, monthly meetings, visits) and local events.

# A CONSTRUCTION CABLE CAR TO REDUCE DISTURBANCES IN CITIES



Use of cable cars in cities to transport rubble and construction soil to limit the amount of dust, noise and pollution caused when compared to road transport solutions.

# BOOSTING THE TOURISM POTENTIAL OF CAMBODIA'S CITIES

The project aims to balance regional development and strengthen city centres to aid large regions and boost the tourism potential of local communities.

# THE NEF: RENOVATING A BUILDING WITH HIGH ARCHITECTURAL AND ENERGY PERFORMANCE

- This was designed to produce as much energy as it consumes.
- Residents and employees share technical equipment (assessment of the building's energy performance using an online portal so that each resident can track their own energy consumption in real time. A user guide is provided to future residents).
- ⇒ Rainwater from roofs is collected for reuse in homes.
- All components related to insulation and the frames for terraces are made of wood, which significantly reduces CO2 emissions.

## **INNOVATIVE GROUND COVERINGS IN LYON**



To integrate the effects of the microclimate created by urbanisation
 To experiment the retroreflective power of certain coatings and materials

# **REFERENCES LINKED TO NEW HEALTH REQUIREMENTS IN CITIES**

### WORKSITE NOISE MANAGEMENT DURING LOCKDOWN

Construction during lockdown, especially in the day, becomes very disruptive for people working remotely and for health workers resting at home. To limit the noise factor, Egis implemented:

- ⇒ Sound level metres and adapts construction when certain levels are surpassed,
- ⇒ Tools to communicate with residents

### **MANAGING AIR QUALITY IN CITIES**

Use of innovative air treatment solutions (biotechnology, bioscrubbers, biofiltration, phytodepuration, etc.) and the implementation of an Aleph filter for places open to the general public (train stations, metro stations, airports, etc.).

### **MANAGING URBAN SPACES**

With the Deepmapper  $\ensuremath{\mathbb{B}}$  solution, combining online mapping tools and Deep Learning, the possibility exists to:

- ⇒ Identify the visible sewage system and rainwater system (manholes and drains)
- $\Rightarrow$  Offer greater knowledge of the area and track changes in near real time.

# BUILDINGS PROPOSALS



le Biha

# ACCELERATE ENERGY EFFICIENT BUILDING RENOVATION ACCORDING TO A SYSTEMIC LOGIC: INSULATION, MATERIALS AND TECHNOLOGY

All over the world, stimulus plans pumping out thousands of billions of dollars or euros offer a unique opportunity to build a better future together. Massive funding of the energy and ecological transition would make it possible to combine the public health crisis, economic salvation and a way out of the crisis, and make our world more resilient.

A large number of 'green' rating systems have been established to encourage, measure and recognize

# Reaching neutrality between now and 2050.

sustainability performance of buildings: BCA Green Mark Scheme (Singapore), Passivhaux in Germany, Green globes in USA and Canada, and many other... To take the example of France, the new version of the national low carbon strategy was adopted by ministerial decree on 21 April 2020, with the building sector tasked with reaching neutrality between now and 2050. One of the priority levers is accelerating the pace and improving the quality of renovations. For housing, the short term target is to reach 370,000 "high performance" renovations per year by 2022.

The momentum has been set in motion: a tertiary decree, a new heat energy regulation (R2020) for new buildings in 2021, energy efficient renovation labels (e.g. the BBCA Renovation label brought out in 2018), but real change in practices has been slow to happen. At the beginning of 2020, only four renovation operations had received the BBCA label\* (three of which in collective housing). The aim therefore is to move up a gear by supporting investment in the most effective practices and solutions. Energy performance in renovation must be considered in a global and long-term perspective. It involves not only taking into account the efficiency, maintainability and durability of fittings and the improvement in the build-ing's thermal performances (insulation), but also the choice of low carbon materials (use of wood and reuse, see below); the development of "smart" technologies enabling better control of demand and the development of self consumption systems, (e.g. solar power), an increase in the proportion of renewable energy in energy purchases - the connection to heating networks, the consideration of resilience issues to anticipate the effects of climate change (heatwave, rainfall, etc.); finally the mobilisation of users and the guarantee of providing optimised living conditions.

\*Article in Le Moniteur, 14/02/2020, "Logement - Le label bas carbone se hisse en rénovation"

## 

# ENERGY EFFICIENT RENOVATION OF BRÉQUIGNY HIGH SCHOOL



- $\Rightarrow$  Renovation of the biggest high school in Brittany, with 10,000 m<sup>2</sup> of occupied space  $\Rightarrow$  An example of innovative repovation, guaranteeing energy performance and a low
- An example of innovative renovation, guaranteeing energy performance and a low carbon footprint (7-year commitment)
- ⇒ Bio-based materials and "off-site" prefabrication
- A solution to respond not only to the priorities of the climate emergency but also the financial stakes of public entities.
- ⇒ Engineering grand prize 2020.

# ACCELERATE MEASURES TO PROMOTE MATERIAL REUSE

Reuse and the circular economy appear to be a serious option for economic stimulus in the construction sector. Reuse generates savings, contributes to creating local jobs, promotes short supply circuits and therefore reduces the need for transport and therefore constitutes a significant **Reuse** generates

lever for low carbon practices.

Reuse generates savings.

The transition from a linear production and consumption model to a circular resource management model is struggling to develop, and this is particularly true for the reuse of construction materials, which in France make up more than 70% of total waste.

# To develop the circular economy and reuse, the sector should engage in the following transformations:

- Secure and control the reservoir. To do so, diagnostics on the resources of the proposed materials must be generalised, professionalised, anticipated and facilitated by the use of BIM (Building Information Modelling)
- Support and professionalise the offering by accompanying the development of reconversion channels, the training of all players and promoting all the economic and tax incentive measures to stimulate circular resources compared with linear supply chains
- Stimulate demand and circular purchasing in public and private projects and reduce the operational and methodological regulatory obstacles.

# EGIS Réferences

# CYCLE UP: A PLATFORM SPECIALISING IN REUSING CONSTRUCTION MATERIAL

- This platform covers all available materials (deconstructed components, excess construction materials, leftover building materials, unsold or excess raw materials, etc.).
- Cycle up des ressources à l'infini
- $\Rightarrow$  A marketplace with electric signatures for legal documents.
- $\Rightarrow$  Calculation of CO2 balance to include the reused materials in environmental and climate certifications.
- ⇒ Diagnosis of resources, recycling audits.

### **BUILDING REVERSIBILITY**

- $\Rightarrow$  Transforming former offices into accommodations.
- ⇒ REVERSE: building reversibility tool designed by Egis to facilitate the site reconversion process.
- REVERSE's assessment uses a site's environment to identify better uses

# **ENCOURAGE THE USE OF LOW CARBON** MATERIALS, IN PARTICULAR WOOD

Wood construction can help to store up to 200 kg of  $CO_2e/m^3$ .

If 50% of the entire surface area built in France every year were made from wood, the French carbon footprint could be reduced by 1% (compared with 3 to 5% of the drop in footprints caused by coronavirus).



(Findings of HEQ test, performance for the 2012-13 sample)

Anticipating future regulation and applying ambitious and compulsory carbon targets including sequestration and promoting bio-based materials and the circular economy are both necessary and in line with the current trends.

# EGIS Réferences

### USE OF WOOD AT FRANCE'S NATIONAL FORESTS OFFICE HEADQUARTERS



A commitment based on the E3C2 category of the E+Clabel and the Excellence level of the BBCA label.

OTHER EGIS WOOD REFERENCES

# MANAGING THE LIFE-CYCLE ANALYSIS METHODOLOGY FOR BUILDING MATERIALS

Egis created a life-cycle analysis tool specifically for low-carbon projects and has partnered with the Swiss Federal Institute of Technology Lausanne to further develop the LCA and recycling.

### **STRAW: THE ULTIMATE SOLUTION FOR GREEN BUILDING**

Egis, in collaboration with DCL-Architectes, worked on a straw construction project for a new school in the Netreville neighbourhood of Evreux in France. Straw has multiple advantages: insulation qualities, cost effective, fire resistant, clean and can be ordered in large amounts for prefabrication (shortened waiting times)

# 7.

# **DECARBONISE THE ENERGY USED** TO OPERATE BUILDINGS

Government policies around the world have for very many years encouraged the development of renewable energy (RE) in particular in the form of subsidies, research grants or tax incentives. This investment has paid off, since according to REN21,

RE accounted for 33% of the world energy production in 2018, but only supplied 10% of heating energy and 3% of the energy required for transport.

# Renewable energy accounted for 33% of the world energy production. In 2018.

Aid for the development of new RE (such as the hydrogen sector) and the inclusion in climate

and development plans of the energy mix and the accounting of pooling through smart energy grids have been implemented and tested effectively on iconic operations such as the Bruneseau and Hébert districts in the Paris region.



Sankey diagram of the energy consumption of the smart grid in the Bruneseau district of Paris

Among these smart solutions, smart grids help to re-establish the link between uses and reality with networks. It is no longer a question of having a network disconnected from its uses, but of effectively optimising the investment and operation of the network based on weather data. From now on, these networks must be optimised from a carbon emission perspective, according to a long-term economic and ecological rationale.

# EGIS REFERENCES

### A BIOCLIMATIC DESIGN USING WIND FOR THE MONTPARNASSE TOWER



In complete sync with the climate, wind, and the light of the sky, Montparnasse tower will become a symbol of its time. "Super-passive", the building joins the ranks of the world's most efficient new buildings. And it is even set to overtake them in terms of its carbon footprint, by saving on resources required for its reconstruction.

# RENEWABLE ENERGY: AN ANALYSIS OFTHE SOLAR POTENTIAL OF ROOFS IN THE GREATER PARIS AREA



This study presents the characteristics of the two main solar energy conversion technologies, then compares their respective technical and economic advantages and disadvantages.

- The study presents the issues surrounding the integration of this renewable energy into the network, and the notions of solar self-consumption and self-generation.
- $\Rightarrow$  It concludes that over 2 million m2 can be used for solar power.

# A DIGITAL TWIN TO MANAGE



Bim - Istock

Egis uses its technical knowledge of thermal modelling associated with volumetric 3D models, processing data collected on site, displaying data, technical consulting, legal and financial assistance and performance tracking in order to ensure long-term energy consumption for its clients.

# TRANSPORT Proposals



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# 8.

# INVEST IN ACTIVE URBAN MOBILITY POLICIES

In recent years, the range of public and active transport services has grown exponentially. Combined with the boom in new technology, it has revealed previously unsuspected potential. Montreal, Bogota, Helsinki and many other cities have successfully developed policies promoting active mobility.

\*Green transportation modes such as bikes, scooters, et where the passenger is "active" In France, 38% of people surveyed say that they could get around more using active mobility\*, according to a study by Forum Vies Mobiles conducted during lockdown. The deployment of these modes can therefore turn the tide in terms of investment priorities; they must nonetheless fall within a global and coherent vision of mobility in cities

# In France, **38% of people** surveyed say that they could get around **more using active mobility.**

Study by Forum Vies Mobiles.

according to an approach which takes into consideration the need to rethink mobility more broadly.

# Policies have been ratified to introduce **low emission zones** in cities.

Policies have been ratified to introduce low emission zones in cities such as London, Brussels, Antwerp or Barcelona, as well as in France in the 15 French city regions most affected by atmospheric

pollution. The social acceptability of such a measure, built around "control and enforce" is far from a given; meanwhile, incentive policies to encourage vehicle trade-up are necessary but insufficient. We think that these zones should be more considered as "alternative mode high provision zones". By recasting mobility from a general perspective in these regions, the aim is to promote electric mobility and the shift to green and active transportation modes, by investing in inter-modality: increasing the number of transportation hubs and investing in

Promote **electric mobility** and the shift to **green and active transportation modes.**  the quality of their fixtures: parking security, means of payment, etc.

# EGIS REFERENCES

### DEPLOYMENT OF LOW EMISSION ZONES



Cable transport solution



O Brest métropole

- Carpooling with Covegis: image processing to work towards dynamic carpooling (accurately determining the number of passengers in a vehicle). In partnership with CEA Tech.
- Positive Toll solution to reduce congestion by rewarding motorists' good behaviour (to reduce traffic congestion, users are rewarded for not using the roads during rush hour).

### **FLOW OPTIMISATION:** the Mobility Control Hub solution helping urban transport organisation authorities to define their transport strategy

- Defining measurable performance indicators and translating their transport policy: wait time, pollution, congestion, accidents, scope of territory, etc.
  - Implementation of a mobility supervision platform
  - Consultancy to optimise mobility (economic issues can be evaluated)

### AN URBAN HYPERVISOR TO MANAGE URBAN MOBILITY AND SAFETY FOR ALL MODES OF TRANSPORT

- Allow MaaS and ticketing applications to have reliable data as it regards public institutions.
- This allows for overall management of the city, and ensures ease of mobility (free-flowing traffic, intermodality, clean vehicles), with management of public transport, alternative solutions, electric energy (lights to ensure safety for road users at night and charging stations for electric cars) and video surveillance
- Several components of this solution were implemented in Curitiba, Brazil, such as open data strategies, centralised urban management using big data and smart mobility.

# 9.

# URGENTLY REVITALISE THE USE OF URBAN PUBLIC TRANSPORT

Public transport ridership collapsed during lockdown. It is now very slowly picking up again. It has become essential to tailor the service offering to new work and mobility patterns. The consequence of the health crisis should not be a climbdown from the

# EGIS REFERENCES



### <u>A TRAMWAY FOR CASABLANCA</u> <u>In Morocco</u>

Two tram lines measuring 14 km each will introduce a new form of mobility to Casablanca. Around 315,000 passengers will use the new lines daily (roll out scheduled for 2021 for T3 and 2022 for T4).. massive commitment of all players in recent years to the promotion of urban public transport.

### If social distancing measures were to be continued in the long term, or used as a precaution in the event of new waves tackled without enforcing total lockdown, urgent investment in adaptations must be carried out to maintain the appeal and development potential of urban public transport:

- Adapting the organisation of flows in places such as stations and stops, to comply with distancing requirements
- Equipment in line with health precautions to count passengers and collect fares, but also to manage social distancing in heavily crowded zones
- Equipment to better inform passengers on their travelling conditions (train crowding, suitable service offering, etc.)
- Use of new technologies to make work easier for operators and maintainers (ridership forecasts, digitalisation of their assets by a digital twin to help them optimise maintenance tasks and reduce callouts).

# Development of fleets of electric or hydrogen powered buses

To cater to the fact that mainline guided public transport is not appropriate for closeknit network situations, particularly in sparsely-populated areas, public transport by road remains necessary but can become virtually non-polluting. Specific actions at European level to help public transport authorities accelerate this conversion would also have the advantage of boosting an industrial sector of excellence.



ELECTRIC BUS FLEETS FOR AIX-EN-PROVENCE AND ORLEANS

Fleets of zero carbon emission buses to decarbonise modes of transport

# **10** ELECTRIC MOBILITY: PERMANENTLY SOLVE THE ISSUES OF VEHICLE RANGE

One of the current limitations of electric mobility remains vehicles' operating ranges for long distance trips and, more broadly, all the practical difficulties of charging. The implementation of an ambitious policy that might allow the rapid transition of the vehicle fleet and give new impetus to the automotive sector necessarily involves the mass deployment of fast charging stations, in particular for intercity journeys. The necessary investments, together with the need for top-quality service (being sure to find a charging station), and the reliability of installations over time all point to the relevance of a long-term infrastructure financing model calling on the private sector for the construction and management of this fleet. In the case of residential buildings, these operations could be connected to those of energy efficient renovation.

# EGIS References



In response to the emergence of new challenges in mobility, autonomous cars are a major breakthrough.

For the scalable capacity shuttle bus project in Dubai in the United Arab Emirates, Egis, in partnership with Parsons and Atkins, will be in charge of the design and construction engineering of the transport platform, a station and the depot/maintenance centre/ control centre, as well as the integration of the project as a whole.



# IMPLEMENT NEW URBAN LOGISTICS FORMATS

The crisis has highlighted the importance of the logistics chain and notably the benefits of short supply circuits. Hence the opportunity of developing urban goods transport using existing infrastructure, whether this be non-polluting road solutions or urban transport. The first key lies in the willpower in terms of organisation, giving a collective impulsion that takes the thinking beyond the existing scopes of all players involved.

# EGIS REFERENCES

# CONVERTING A FORMER PETROL STATION INTO A LOGISTICS PLATFORM FOR THE ESPACE CHAMPERRET EXHIBITION CENTRE

(Paris' 17<sup>th</sup> arrondissement)

- A majority of deliveries to the centre will take place underground in order to reduce disturbances for the neighbourhood, as well as reduce transport time, noise and atmospheric pollution and road congestion linked to the exhibition centre.
- Among the innovative services planned is the unique Eelway® all-in-one luggage management platform (delivery, storage, collection, early registration). It aims to strengthen "Destination Paris", marketed to tourists and foreign conference delegates, by promoting simple modes of transport (bus, bicycle, walking) once they are no longer encumbered by their luggage.

## **BERCY TRIMODAL LOGISTICS CENTRE PROCESSING 170,000 TONNES OF MERCHANDISE PER YEAR**



This project will reduce CO2 emissions of the logistics chains involved by 82%.

# PLATOONING SOLUTION FOR AUTONOMOUS TRANSPORT OF MERCHANDISE

An experiment controlling convoys of heavy-duty vehicles from a short distance using real conditions.

# A NATIONAL MULTIMODAL TRANSPORT PLAN

**FOR TURKEY** (Freight and passengers)



<sup>o</sup>ureEyePhoto Thinkstock n National de Transports multimod

- This plan covers all modes of freight and passenger transport and aims to define investments over three time frames: short term (2017-2023), medium term (2024-2030) and long term (2031-2036).
- It will contribute to lowering environmental impacts, improving accessibility and safety, and contributing to the reduction of poverty in the country.

# **12 REVITALISE SMALL SUBURBAN TRAIN LINES AND REVIVE A TRAM TRAIN PROGRAMME**

The lockdown period may have an **accelerating effect on urban exodus.** 

The lockdown period may have an accelerating effect on urban exodus. Many people have developed a taste for home office working and, fearing the enforcement of another lockdown, are considering going to live in "greener" places far from major urban centres. To avoid the consequent development of individual transport, an appropriate suburban public transport service should be developed without delay, such as already exists in countries such as Germany or Switzerland.

# Whilst remaining frugal in investment needs, we recommend two avenues:

- Revitalising secondary lines (with rail services or other, lighter systems) for which regional councils now have investment and operational responsibility,
- Developing a tram train offer to combine service distance and urban penetration capacity without changing transport modes.

# EGIS REFERENCES



This is a planned 41-km tram-train reusing an existing railway right-of-way. With 17 stations, it will run between the centre of Bogotá and the city's western suburbs (Madrid, Facatativa). Demand is estimated at 126,000 passengers per day.

# **INVEST IN MAJOR INTERCITY TRANSPORT** 13 **PROJECTS ON A GLOBAL SCALE, PROJECTS OFFERING SOLUTIONS TO THE CLIMATE CHALLENGE BY REDUCING THE USE OF INTERCITY ROAD FREIGHT FOR GOODS** TRANSPORTATION

Coronavirus affects the world economy as a whole, especially logistics. Globalisation made the supply chain vulnerable. This vulnerability can be seen through the impact of COVID-19. Business continuity has been the number one priority for most government, yet looking to the future and planning strategically for the post-crisis period should be at the top of the agenda too. Europe has taken and interesting initiative in this regard : the development of the Trans-European transport network (TEN-T) engendered a financial impetus which has proven decisive for the accomplishment of structural projects which had already been ranked by priority according to their contribution to the climate challenge. France today is an interested party in the Seine-Nord Europe Canal and Tunnel Euralpin Lyon-Turin projects, and in the deployment of ERTMS (European Rail Traffic Management System) and the "Motorways of the sea" programme. In the current circumstances, it is vital to obtain confirmation of the political and financial commitment to these different projects. A new European impetus should be given to major rail, port and waterway projects (which can help to reduce the use of polluting freight) and they should be financed under the auspices of an extensive European stimulus plan. As an illustration, let us recall the benefits of the two current infrastructure projects referred to above. Indeed, even if short supply circuits should always be given precedence for goods, long distance transportation will continue to exist, and credible alternatives must be offered to road freight.

# EGIS References

### THE SEINE-NORD EUROPE CANAL TO MAKE **MERCHANDISE TRANSPORT AND TRADE EASIER**



The Seine-North Europe Canal project is a real accelerator of the transition energy and environmental friendly. By allowing the accommodation of barges that can transport up to 4400 tonnes (the equivalent of 220 trucks), it will encourage the transfer to other low-carbon and economically competitive modes of transport. The Seine basin will thus be connected to the 20 000 km of Europe's wide-gauge river network. In a network logic, the canal will fluidify the circulation of goods and facilitate the exchanges between Northern Europe and the ports of Dunkerque, Le Havre and Rouen.

# ENERGY PROPOSALS

# 14 15 16 PARISHCLAY

# **SUPPORT THE DEVELOPMENT OF URBAN** HEATING AND COOLING NETWORKS

Heat accounts for approximately 45% of our final energy consumption and about half of fossil fuel consumption, and therefore  $CO_2$  emissions (on an equivalent level to fuel). Replacing these fossil fuels by renewable and naturally local energy (biomass, waste recovery, solar power, geothermal, recovery of waste heat, etc.) has been recognised as one of the most efficient from an economic point of view, expressed in terms of  $\mathcal{C}$ /tonne  $CO_2$  avoided.

\*See the proposals in the document "<u>Mai</u> <u>2020 : FEDENE Plan</u> <u>de relance -</u> <u>Contributions des</u> <u>opérateurs de services</u> <u>énergétiques</u>"

# All around the world there are multiple possibilities to develop these resources\*:

- Heating and cooling networks: extension, densification, new networks
- Recovery and optimisation of waste heat in industry

This work conducted on a local scale can be launched quickly to kickstart the economy. In many cases, all that is required is to dynamize the economic balance of a model which has already proven its worth in the form of a public service delegation.

# EGIS References

### SURVILLE BIOMASS HEAT PLANT (IN THE SOUTH OF LYON)



By powering the Lyon Centre Métropole heat network using renewable energy, it will supply 20% of the heat distributed across the Lyon Centre Métropole network. This heat plant will reduce CO2 emissions by 44,000 tonnes per year, the equivalent of removing 20,000 vehicles from the roads.

# **15** CONTINUE THE TRANSFORMATION OF NUCLEAR POWER

Nuclear power is an essential component in the fight against global warming by helping to reduce the production of electricity by greenhouse gas (GHG) to zero and pending the development of alternative renewable energies combined with the ramping-up of energy efficiency to cover this production in full.

### In the debate underway as to "what next?", it is patently evident that nuclear power ticks all the boxes in the aspirations and requirements born out of this crisis:

- Energy and industrial independence for countries which have already nuclear electricity in their energy mix
- Resilience of their electrical and productive system to future shocks
- Low carbon economic recovery: nuclear power squares the circle between economic activity and the fight against global warming.

# EGIS Réferences

# EPR HINKLEY POINT C: A 3RD GENERATION NUCLEAR PLANT IN THE UNITED KINGDOM



© EDF Energy 2020

- This is the first 3rd generation nuclear plant constructed in the United Kingdom. In the long run, it will respond to 7% of the country's demand, corresponding to around 6 million homes.
- The reactors, both with 1,650 MW of electrical power, are more efficient, have a longer lifespan than older generations (60 years) and have enhanced safety levels.

### **ITER REPRODUCING THE SUN'S ENERGY**

The International Thermonuclear Experimental Reactor (ITER) project aims to verify the scientific and technical feasibility of nuclear fusion as a new energy source.

- $\Rightarrow$  The fusion process does not generate carbon dioxide or other greenhouse gases.
- The main by-product is helium, a non-toxic inert gas.
- $\Rightarrow$  No high-level and long-lived radioactive waste

# **16** ACCELERATE RESEARCH PROGRAMMES IN NEW FORMS OF ENERGY With the aim of channelling economic support towards low

With the aim of channelling economic support towards low carbon solutions, support should be given to research initiatives and experimental programmes, which should always be considered as bearing promise for the future:

- Secure financing from actors in this sector (CEA (the French Atomic Energy Agency) projects, ITER projects, etc.). The ITER programme, which since its outset has been internationally funded by the seven world powers, must be confirmed and reinforced to display the international commitment to focusing on the energy solutions of the 21st and 22nd centuries and not those of the past.
- Develop the sector of hydrogen for transport, to go beyond its current limit of equipping only public transport vehicle fleets.

# EGIS Réferences

SOBER, COMFORTABLE AND INNOVATIVE: THE NEW HEADQUARTERS OF THE FRENCH MINISTRY OF DEFENCE IN BALARD



This is an energy project made possible by bringing together and optimizing energy resources. Three-quarters of the annual needs for heat, cold temperatures and ventilation are met by high-performance systems that use exchanges in the environment (air, geothermal energy) and energy recovery from buildings. Nearly 80% of the energy needs are covered by renewable energy made on site.

# EGIS Réferences

### A HIGHLY ENERGY EFFICIENT DATA CENTRE IN SAUMUR



- Underground storage: use of the thermal and physical characteristics of underground quarries to naturally cool servers.
- An energy efficiency indicator of 1.1, compared to the national average of 2.5 (fullscale test in Saumur over three years)

### DECARBONISED MOBILITY IN OCCITANIE



ale-sat-IllmI M0-unsulae

9 departments joined together to analyse the opportunities for deploying stations for NGV, bio-NGV and hydrogen (H2).

- $\Rightarrow$  Proposal of a deployment plan for NGV and hydrogen stations for each department.
- ⇒ Evaluation of strategic sites for implementation
- Identifying the technical and legal interests of 18 station implementation projects (two per department).
- Case-by-case description of the technical, legal and financial procedures related to converting and creating new stations.

# SECTOR SPECIFIC ACTIONS PROPOSALS



# **17 CHANGE APPROACH IN THE OVERHAUL OF HOSPITAL SPACES**

The immediate return on experience from the Covid-19 crisis has led to the formulation of three recommendations to optimise the rollout of the recovery plan in the hospital sector:

Based on experience, practices and actions taken during the crisis, work in consultation with professionals to define fundamental, simple and pragmatic principles to redevelop hospital spaces:

- functional: separation of circuits, medical outposts, capacity increases, etc.
- architectural: reconfigurable sectors, quality of life in the workplace, deployment zones, etc.
- technical: confinement and air treatment, resource availability, plug and play systems, etc.

# Review the sector's property strategy, including the low carbon dimension

# Redesign spaces using a participative and concerted approach

This relates to the reorganisation and construction of establishments with their representatives (managers, care staff and non-care staff) by employing an approach based on an iterative and consultative programme/project comparison, on upstream dialogue between the needs and their possible translations, and on the progressive adoption of the project by everyone. This approach requires more upstream discussion with users than the way we used to do.

# EGIS REFERENCES

# TRANSFORMING THE TIMONE HOSPITAL IN MARSEILLE INTO A MASSIVE MODERN TECHNICAL PLATEAU FOR HEALTHCARE AND INNOVATION



- Construction engineering of work packages, scheduling, overseeing and coordination, research as well as deconstruction and asbestos disposal.
- Implementation of a logistics transport solution at Marseille's three main hospitals. This innovative solution will also have a pneumatic tube system to avoid unnecessary road transport

## AN INDEPENDENT ENERGY UNIT AT THE REIMS UNIVERSITY HOSPITAL



© Groupe-(

⇒ A hospital centred on flow and movement

- A hospital capable of adapting to changing needs, technical innovations and innovative modes of organisation and management
- Optimised energy performance with precise dimensioning using a digital thermal model implementation of a smart energy grid
- ⇒ The ventilation system was redesigned to be easily taken into account in future remodels
- $\Rightarrow$  Choice of a wooden structure for accommodations and tertiary departments.

# **18** INVEST IN THE TOURISM AND HOSPITALITY SECTOR TO CONTRIBUTE TO THE IMAGE OF MANY COUNTRIES WHOSE ECONOMY IS DIRECTLY LINKED TO THESE SECTORS

Tourism accounts for 8% of greenhouse gases in the world. While the majority of this carbon footprint is to date related to air travel (20% including international and domestic flights), the rest is attributable to accommodation (air conditioning or heating), food and purchases at the destination.

Tourism accounts for 8% of greenhouse gases in the world. While the majority of this carbon footprint is to date related to air travel (20% including international and domestic flights), the rest is attributable to accommodation (air conditioning or heating), food and purchases at the destination. Tourism is an economic sector in its own right, with its own specific levers through which to reduce GHG

emissions, but which today lacks clearly defined goals and ambitions for such a reduction. Recovery plans are an opportunity to define a clear direction for the development of a positive impact in tourism sector. This will necessarily entail providing support to reconversion, modernisation and innovation. A range of levers exist\*: reconversion strategy, development of innovative concepts,

**Recovery plans** are an opportunity to define a clear direction for the development of a positive impact in tourism sector.

\*Proposals include those of the ATD (Sustainable Tourism Association)

formulation of local low carbon mobility plans, energy efficient renovation of accommodation infrastructure, support to investors or project sponsors in the definition of performance milestones and environmental returns to achieve on operations and investment; assistance to operators in adopting responsible practices (reception, operation, catering, etc.) through certification submissions, team training, defining carbon neutrality roadmaps, creating awareness and engagement among clients in favour of behaviour that respects the destination and nature; and finally contribution to the emergence of new tourism models which amalgamate proximity and change of scenery, relaxation, togetherness, nature, pleasure and responsibility.

# EGIS REFERENCES

# ECO-FRIENDLY TOURISM IN MONGOLIA'S PROTECTED NATURAL ZONES



- $\Rightarrow$  These zones will represent 30% of the country by 2030
- ⇒ Proposals to preserve permafrost, highlight local culture and create employment

## A MULTIMODAL STRATEGIC MOBILITY PLAN



- $\Rightarrow$  Ahead of the world freestyle skiing and snowboarding championships in 2023
- A strategic transport plan for the Bakuriani station and surrounding areas
- Detailed studies for urban modernisation of the Bakuriani city centre while supporting the local tourism economy.

### **REVERSIBLE TOURISM PROJECTS**

- This is made possible with REVERSE, a reversibility tool designed by Egis to facilitate the site reconversion process. REVERSE's assessment uses a site's environment to identify better uses
- This solution links future or existing work sites with programmatic needs in a dynamic way
- It reduces costs, delays and environmental impacts, while increasing the quality of the space used.

# **199 SUPPORT AIRPORTS' BIOSECURITY PLANS**The extremely rapid fallout of the Covid-19 crisis on new air travel standards must enable the inclusion and acceleration of the essential shift towards more environmentally friendly commercial and operational models.

towards more environmentally friendly commercial and operational models. Current practices cannot go on as they are, and this message is easier to assert since Covid-19. This public health crisis is an opportunity to generate strong motivation to seek a new balance in the fight against climate change and to obtain the buy in and necessary engagement to achieve significant change.

Airports have the opportunity and responsibility to become a model for other sectors in the fight against Covid-19 and any future viral threat. To do so, they will need the help of regulators and other stakeholders in the aviation sector.

Airports, as gateways to countries and regions, must implement efficient measures to control the spread of viruses if they wish to remain competitive and offer reassurance to passengers and staff. Just as airports place priority on security and cyber security in their planning and implementation today, they will also from now on give priority to bio security. Biosecurity must go beyond plants and animal pests and diseases, and address those transmitted by humans. The following investment is urgent to restore the economic role of air travel when other means of transport are not available.

### Improve passenger flow management

If there is no vaccine or "health passport", airports must invest in better passenger flow management. Airports can promote "safe separations" between passengers so as to maintain social distancing as far as possible. This approach, in an "end-to-end" logic, must enable passenger require-ments to be dealt with as early as possible in advance of the flight not only in the terminal (by avoiding congestion through redesigned circulation) but also as far as the passenger's home by doing as much processing as possible before the flight.

# EGIS References

### PREDICTING PASSENGER BEHAVIOUR IN AIRPORTS TO ANTICIPATE MEASURES

"Smooth & Safe pax processing" is an online application for predicting passenger behaviour days or hours before their flight (Machine Learning)

- Identification by anticipating the time periods where passenger demand is greater than airport capacity
- "What if" functions to evaluate the advantages of taking a specific measure (decision making).



### Invest in automation and robotics

Airports can rely on increased automation to reduce contact between staff and passengers. Automated information desks are already a reality in many airports and will be reinforced by more artificial intelligence and decision aid software.

### **Deploy contactless technology**

Limiting the number of things that users must touch in an airport is an important way of reducing the spread of a virus. Both ground staff and passengers have tactile interaction with various physical objects such as doors, door handles, touch screens, elevator buttons, etc.

# Guarantee the quality of interior air in airports

The quality of interior air is an important component in quality of life in the airport and obviously has a major health impact in high footfall venues. Investing in its efficient ventilation systems also helps to reduce energy consumption.

# 20 ACHIEVE AN UNIVERSAL AND HIGH QUALITY ACCES TO DIGITAL SERVICES

Home office working, implemented extensively during the lockdown, has reinforced the impact of inequality of access to digital technology on a nationwide scale. The existence of mobile black spots not covered by traditional telecom operators has become a genuine handicap which must be tackled by governments and local authorities in charge of these deployments.

Many governments have already announced the resumption and reinforcement of operations to accelerate the deployment of broadband for all. As this is long-term infrastructure, we recommend that financing methods such as concessions over long periods be deployed with the appropriate specifications, drawing on the example of the motorway network construction model in France.

# EGIS References

### DEPLOYING A VERY HIGH-SPEED NETWORK FOR RESIDENTS IN LOZÈRE, FRANCE

- $\Rightarrow$  To provide this service to the main strategic sites
- To give the majority of Lozère residents the possibility of accessing future services which will be developed on the fastest fibre optic networks.



# PUBLIC PROCUREMENT MEASURES PROPOSAL



# 21 TEMPORARILY RELAX THE OBLIGATIONS OF PUBLIC PROCUREMENT OFFICIALS TO CONCENTRATE ON NEW CHALLENGES

The aim is to enable services tasked with stimulating economic activity through public procurement to spend time on defining new projects - incorporating low carbon transition requirements - rather than catching up on the work often delayed by the Covid-19 crisis, which on the contrary could potentially cause contracts and therefore activity to be interrupted.

# In this regard, three actions could be taken to fulfil this goal:

- The possibility of extending framework contracts for a year to deal with the difficulties of putting contracts out to tender when they expire
- Simplified treatment of Covid-19 crisis financial compensation (where they exist, allow the thresholds for the conclusion of amendments to be exceeded)
- Temporarily increase the amounts authorized for direct agreements



Egis is an international player active in the consulting, construction engineering and mobility service sectors. We design and operate intelligent infrastructure and buildings capable of responding to the climate emergency and helping to achieve more balanced, sustainable and resilient territorial development.

With operations in 120 countries, Egis places the expertise of its 16,000 employees at the disposal of its clients and develops cutting-edge innovation accessible to all projects. Through its wide-ranging fields of activity, Egis is a central player in the collective organisation of society and the living environment of citizens all over the world.

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