

An aerial photograph of a city, likely Paris, showing a wide river with a bridge. The river is a vibrant blue-green color. The bridge has the word 'NOUVEAU' visible on its arch. The city is densely packed with buildings, and there are large green spaces and trees along the riverbanks. The sky is clear and blue.

Adapting the wastewater management of Greater Paris to its future challenges

PRESENTATION OF THE SIAAP'S STRATEGY FOR THE FUTURE

2	Editorials
4	I. Public service: taking control of our future
6	II. A new deal
8	III. A shared culture of wastewater management
9	A. The best service at the lowest cost
9	B. The resource at the service of the climate
10	C. Wastewater management at the service of the smart city
11	D. The shared efficiency of wastewater management
12	IV. The SIAAP tomorrow
13	A. Efficient wastewater management
17	B. An asset for the sustainable city
20	C. Driving forces for progress
24	V. SIAAP 2030: the action plan
25	A. 1 st strategic direction: efficient wastewater management
28	B. 2 nd strategic direction: an asset for the sustainable city
30	C. Driving forces for progress: employees and innovation at the heart of change
32	SIAAP 2030: Synthesis



The aim of the long-term strategic plan initiated by the SIAAP opens perspectives that are essential for the future of our wastewater management public service in Greater Paris. It is a matter of both redoubling our missions and anticipating the challenges of wastewater treatment, and also of affirming the power of our unique and special positioning in Île-de-France and asserting the central role of our wastewater management operations.

The extremely rich collective reflection presented in this synthesis, along with the guidelines that were unanimously approved at the last Board of Directors meeting in 2016, constitute the solution that our federation, a model public service, intends to put forward to meet the urban, environmental and climatic challenges which are becoming more acute every day.

The development of the SIAAP 2030 strategic plan has confirmed our ability to step back and provide answers that can improve both the performance of our facilities and the efficiency of our services, by placing people, the environment, at the heart of our missions.

The SIAAP is an innovative, responsible and committed player in the construction of a sustainable Metropolis. Its richness lies in its ability to reconcile a long-term strategic vision with a daily involvement in the wastewater treatment issues of the inhabitants of Greater Paris. Today, the implementation phase now starting is the key to accomplishing this.

Belaïde Bedreddine

President of the SIAAP



Throughout 2016, the SIAAP has worked to prepare its future. This deliberation is unprecedented in the history of our Federation. It is a new departure, both in its content, as summarised by this synthesis, and in its form, since for the first time, we wanted to involve the maximum number of employees in this forward-looking movement. The result today is a long-term strategic plan of great richness.

I wish to thank all contributors to this collective work. The elaboration of the diagnosis of today's SIAAP by the working groups set up last April and consolidated during the major meetings of 16th June and 17th November 2016 has enabled the conception and development of strategic orientations derived from innovative solutions on which we will build the SIAAP of tomorrow.

In this way, our Federation is now in a position to strengthen its status as a major public industrial enterprise, the master of its destiny in the face of evolving challenges that oblige us to adapt in order to further improve our efficiency in the service of the people of Greater Paris and their environment.

The deployment phase that begins today is a key phase. It will enable the SIAAP to succeed and take its place alongside the Sustainable Metropolis of Greater Paris.

Jacques Olivier
CEO of the SIAAP

I. Public service: taking control of our future



When the SIAAP, a public service responsible for wastewater management in the Greater Paris region, embarked on the collective and participatory development of a long-term strategic plan in 2016, it was with the desire to control its future and to take full ownership of the major climatic, urban, economic and societal issues.

This project was accomplished thanks to the extensive participation of SIAAP staff, with the sense of responsibility, professionalism and commitment that customers have a right to expect from a public service which is recognised as a benchmark in its sector.

Today, this thought process has resulted to an action plan that aims to give the SIAAP control over its future as a public industrial wastewater management company and the capability to accomplish its mission by offering the best service at the lowest cost to the inhabitants of Greater Paris. ♦

It was also with the objective, shared by its elected representatives, its president and its senior management, to enhance the effectiveness of its actions by adapting to major evolutions in issues related to its activity.

The project «SIAAP 2030: building the future together» was thus, throughout all of 2016, a shared and forward-looking deliberation entirely dedicated to identifying the transformations that need to be made in order to increase the quality, efficiency and safety of an industrial and environmental mission that is essential to the construction of a sustainable future in the Île-de-France region.



II. A new deal



The SIAAP's activities are based on a technical infrastructure designed in terms of sharing resources between territories via the networks and defined by the general wastewater management program of Paris and its suburbs.

The wastewater management program approved by the General Council of the Seine in 1929, and subsequently by that of the Seine-et-Oise in 1933, has undergone subsequent developments, the most important of which occurred in 1968 with a redistribution of wastewater management between upstream and downstream Paris to take into account the evolution of the Parisian conurbation. In its present legal form, the SIAAP was born in 1970 following the disappearance of the Seine and Seine-et-Oise departments.

Thus for more than forty-five years, teams from the SIAAP have been responsible for the treatment of waste domestic, industrial and rain waters from the Paris urban area; a territory which has at its centre one of the most densely populated areas in the world, having a population of just over 9 million inhabitants.

Today, the circumstances of this activity, the various constraints imposed upon it and the expectations associated with it have changed.

Global awareness of environmental issues has shaken up the conception of wastewater management activities, for it has transformed the perception of how the water cycle should be managed. A common asset of humanity, water is now recognised as rare and fragile: its protection and preservation have thus become priorities in order to guarantee that future generations may share a high quality access to this vital resource.

Weakened by urban pressure, population growth, increasing soil impermeability and the multiplication of new types of pollution linked to changing patterns of consumption, the host environment is now the subject of particular attention within the great water cycle. These developments have also changed the relationship between citizens and the environment.

In particular, they are embodied in the specific regulatory requirements of the European Union in recent years, with a view to ensuring a greater protection of the resource. Thus, the SIAAP has had to take a proactive approach by investing in additional storage and treatment capacity aimed at restoring a satisfactory ecological status to the Seine, the Marne and to other rivers which drain the agglomeration and receive most of its treated effluent. Today, the SIAAP is confronted with a new challenge to further improve the sanitary quality of the processed wastewater, which will enable the introduction of bathing sites.

The financial sustainability of urban services is an important issue contributing to the prosperity of the company. Economic performance should guide the actions of the SIAAP in order to guarantee the best service at the lowest cost for customers.

Climate change has become a major concern, the first consequence of which is a questioning of individual, collective, domestic and industrial modes of consumption. The emergence of alternatives to fossil energies has made its mark on world opinion, reinforced by the Paris Agreements on climate.

At the heart of the Paris metropolitan area, the SIAAP find itself partially affected by territorial reforms, implemented in particular through the NOTRe law of 2015. This text, which establishes the metropolis of Greater Paris, marks a new turning point in the evolution of the institutional landscape, in the organisation of territories and in the distribution of their domains of expertise.

In this context, the SIAAP occupies a unique place within its territory: it constitutes a major interface between people, the city and the environment. It is at the service of life in all its forms, a manager of resources and an urban infrastructure that is unique in its size and technical complexity. ♦



III. A shared culture of wastewater management

In this rapidly evolving context, our vision for the SIAAP is to fully exploit the potential of wastewater management for the benefit of people, the city and the environment.

The issue is that of giving women and men a central place in a city, where tomorrow everyone will be able to benefit from the right to good quality water and wastewater treatment under economically sustainable conditions. This city will need to contribute to the good state of waterbodies, the attenuation of climate change and the emergence of a circular economy that creates value. It will offer a shared quality of life conducive to well-being and public health whilst at the same time promoting biodiversity.

Based on this vision, SIAAP is committed to offering the best service at the lowest cost, putting resources at the service of the climate, developing wastewater management in the service of a smart and sustainable city, listening and collaborating in order to better address the issues related to its activities and preparing its future.

A♦ The best service at the lowest cost

In the front line for protecting water resources and meeting the treatment objectives set by European regulations, the SIAAP is establishing itself as a public operator engaged in the implementation and operation of technologies that are expected to ensure the treatment of increasingly complex urban pollutions. The prerequisite for this objective is to create the conditions for the control, maintenance and optimisation of industrial facilities, as a guarantee of performance and safety.

These technically demanding missions can only be conceived through an approach that uses the expertise and competence of the teams an essential lever for their accomplishment.

Innovation and a partnership approach will also be important drivers of industrial performance and success.

At the SIAAP, there is no project without a reasoned approach to its financial equation. In a constrained economic context, good management and an effort in productivity are necessary to ensure proper control of the cost of wastewater treatment. These principles must guarantee both the quality of the service and its accessibility for all, in particular for the low-income households for whom the burden of the water bill has sometimes become too heavy.

B♦ The resource at the service of the climate

The vocation of a responsible economic player is coupled with the growing role of wastewater management in the energy domain. The megacities of tomorrow cannot be carbon tumours at the same time as modern societies are manifesting a desire to build a world that as far as possible is liberated from the need for fossil energies.

This observation places a responsibility on the wastewater management sector to strengthen its role in the fight against climate change and the management of natural resources.

Thus, the climate challenge forces us to reduce our industrial consumption and develop renewable energies. The optimisation of energy production derived from wastewater treatment maps out a future for the SIAAP as the leading producer of bio-energy in Île-de-France. The SIAAP must also remain a major supplier of organic conditioners, useful for nourishing agricultural soils, by using a "short circuits" approach to pursuing and strengthening its policy of recycling nutrients that are transported by wastewater: carbon, nitrogen and phosphorus.



C Wastewater management at the service of the smart city

The obligation to maintain the ecological balance of the natural environment in urban areas is all the more demanding since megacities draw together increasingly large populations. In this context, water plays a major role in the quality of life and urban development. This provides an opportunity to those involved in wastewater management to take part, upstream, in the design of urban projects, so that they participate more actively and effectively in preventive rather than solely curative actions. For this, our vision is in harmony with those who are engaged in the conception of a «smart city» which is also resolutely «water-responsible». At the heart of the city, wastewater management will bring new expertise, above and beyond the management of networks and the purification techniques in operation at industrial sites. This may include opening the door to alternative, often more decentralised, wastewater treatment systems, of integrating wastewater management data with that from the city in order to

develop new applications. The operational conditions of the wastewater management service on the scale of Île-de-France are directly influenced by the continual transformation of the territory, be it demographic (an expected growth of the order of one million inhabitants over the next twenty years), urban or institutional.

The construction of the Greater Paris Express transport network is an accelerator of population density in the outskirts of Paris at the interface between the inner and outer suburbs. It will have a gradual impact on the distribution of flows between the different SIAAP treatment plants.

In terms of city planning, two basic underlying trends confront each other: on the one hand there is increasing urbanisation, and on the other hand there are solutions under development to reduce the amount of wastewater entering the treatment system. The control of the development of the former is essential otherwise the SIAAP will not be able to maintain the waterbodies in good condition over the long term. The second is expected to better control the effects of accelerating population growth in the suburbs.

The establishment of the Greater Paris metropolis leads to a new distribution of expertise with the creation of territorial public Institutions and the regrouping of inter-municipal public Establishments. This evolution of our institutional environment is an opportunity for the implementation of a coordinated and coherent wastewater management policy at the level of our territory

In this context, our mission is to promote strong and effective synergies between the urban services of water management, wastewater management, waste disposal and energy. This perspective of complementarity and breaking barriers is a lever that will ultimately provide a better quality of life in the city.

D♦ The shared efficiency of wastewater management

«All responsible for the environment, today and tomorrow» is a trend that has gradually been accepted in the daily actions and thinking of public, economic and industrial players. Concerning wastewater management, this remark is all the more significant in that the water professions, be they for drinking water or wastewater management, have always nurtured a "blue culture" that aims to involve everyone. More than ever, water in the city means life in the city.

Moreover, the conjunction of a certain number of developments, notably the digital revolution, has transformed the reflexes, expectations and demands of everyday life and has led to each individual being a potential shareholder of environmental responsibility, asserted or refused, but in any case very real. This is also reflected in the more systematic participation of citizens and local stakeholders in public action, particularly in environmental decisions, which both the French Constitution and the European and national laws have imposed.

One of our missions is therefore to strengthen and develop an open ecosystem in which users, communities and their elected officials, institutional representatives of the sector and of urban politics, and partners in the economic and industrial world are all involved in the continuous improvement of the Greater Paris wastewater management system. This capacity of listening and discussion, but also of detachment, analysis and questioning of choices draws the image of a SIAAP «beyond the walls» by the strengthening of its collaboration with partners in France, Europe and the world.

This openness and this culture of dialogue have as a corollary the sharing of information and the commitment to transparency. The SIAAP's activity, because it is directly linked to the daily life of inhabitants of Greater Paris whilst at the same time having a real global dimension via the intermediate and long term issues on a territorial scale, imposes a principle of accessibility of information. Beyond the obligation of transparency inherent in a public service, the challenge is also to perceive this mission of information and pedagogy pertaining to its activity as one of the levers for the collective mobilisation and empowerment of all players.

Among the information that the SIAAP shares concerning its activity, there is that which illustrates its essential role in protecting public health. Today's environmental standards go beyond satisfying this imperative. For example, the prospect of swimming in the Seine and the Marne in the framework of the 2024 Olympic Games creates a new level of ambition for SIAAP. ♦

IV. The SIAAP tomorrow



A ♦ Efficient wastewater management

Whilst a final phase of substantial work in the plan to upgrade its industrial facilities reaches completion, the SIAAP has set itself the goal of fully exploiting it in order to achieve its objectives for maintaining the waterbodies in a good state. This new frame of reference for evaluating the SIAAP's performance will require an increasingly efficient use of the entire wastewater management system, reconciling the achievement of quality objectives with the search for sobriety.

The quality targets, combined with population growth and the effects of climate change, lead to a real tightening of constraints for which it is necessary to prepare now, with a vision of the entire wastewater management system, from effluent collection to the operation of the networks and the six treatment plants.

These objectives will be pursued by the implementation of an action plan, the main lines of which are set out in the remainder of this chapter.

IN THE FACE OF THESE CHALLENGES, WE MUST:

- seek an optimal performance which combines quality of purification and sobriety;
- develop an effective asset management policy to ensure the reliability and overall performance of the wastewater treatment system;
- manage investment and operating costs;
- search for alternative sources of income, especially those related to rainwater management, in order to loosen the stranglehold on the price of water. Other avenues are possible, such as the valorisation of the SIAAP's depth of expertise.



1. Operating with efficiency and sobriety

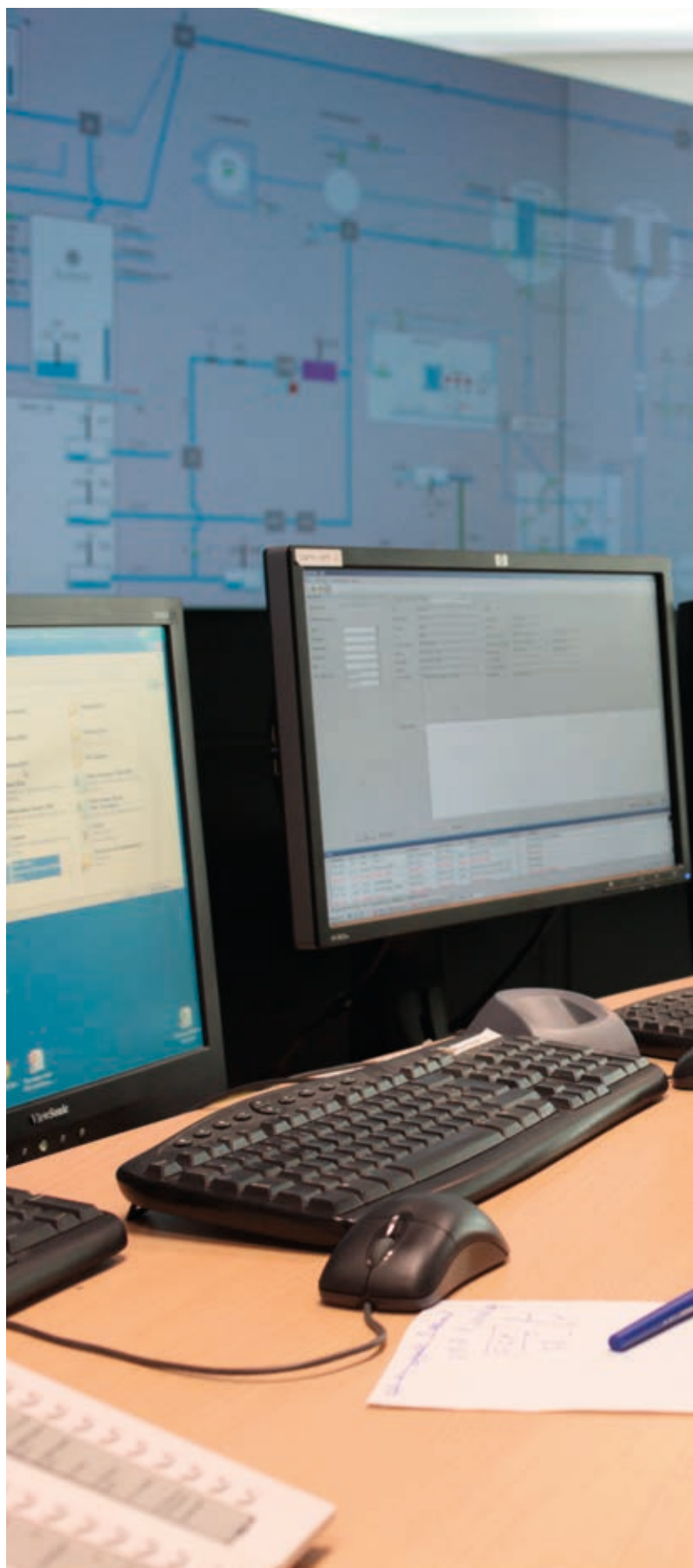
Conscious of our economic and environmental responsibility, we must reconcile two seemingly contradictory objectives: purification efficiency and sobriety by using less energy and fewer treatment products.

Optimisation of the consumption of reagents will be considered at all stages of the process: from the injection of flocculation products into the network to deodorisation, by way of primary decantation and biological treatment. The reduction in energy consumption will be based on the optimisation of the management of treatment plants and pumping stations, an increase in energy autonomy and the improvement of equipment efficiency.

These projects are linked to a more stringent procurement policy which will enable us to reduce the unit costs of supply and service contracts but also to select our suppliers on the basis of a better cost analysis over the complete life cycle of our facilities.

The management of these projects and the measurement of their effects will be ensured by monitoring the relevant techno-economic indicators, as close as possible to the field. They will complement the regular dialogue between the employees and management so as to optimise the quality, the reliability and the performance of the exploitation.

The expected benefits are the achievement of performance objectives for wastewater management, in harmony with healthy waterbodies, with sustainable economies and a reduced environmental footprint.





2. Managing the wastewater management system at the SIAAP level

Our wastewater management system has become complex, and the search for optimisation can only be performed in a global manner. This approach was initiated many years ago, notably by the development of centralised tools for real-time management, and it will be extended by a more integrated operation of our services, the six treatment plants and the networks. This enhanced coordination will be achieved through the establishment of governance and collaborative methods, through the formalisation of feedback, the systematic sharing of good practices and the implementation of common performance indicators.

The management of effluent routing between the plants is already largely implemented by the Mages modelling tool, which provides a forecast of the expected volumes according to the meteorological context and the upstream configurations of certain departmental works. We will continue to automate in order to integrate new parameters in the trade-off analysis, in particular the level of pollution loading and its impact on the quality of the environment. We seek the best system performance, as much in terms of quality of the Seine and the Marne rivers as the optimum techno-economic trade-off. The objective is to control an increasingly complex wastewater management system that requires more responsiveness and increased performance.

3. Optimising the management of SIAAP's industrial heritage

After twenty years of major investments in purification capacities, our goal is to ensure the transition to a sustainable management of our industrial heritage in order to ensure the long-term reliability of infrastructures and operational security in a financially constrained context.

Maintaining the waterbodies in good condition requires a level of performance that is effective and stable over time in spite of variable external conditions, either because of climatic events or due to operational constraints. The system must therefore rely on robust and reliable infrastructures.

In general terms, failures and malfunctions of the wastewater management system, as well as the conjunctions of scheduled maintenance operations, increase the risk of failing to achieve the quality objectives.

The availability of the facilities is therefore essential insofar as it determines reliability and operational performance. Our strategy is based on optimised maintenance and enhanced asset management.

3.1. OPTIMISED MAINTENANCE

The maintenance strategy will focus on central coordination and enhanced harmonisation of practices across sites and will be based on innovative tools and revised methods. The systematic use of computer-aided maintenance management (CMM) will improve the effectiveness of operations, in particular by strengthening the planning and scheduling of tasks and by optimising the management of inventories of spare parts.

Maintenance requirements will be streamlined by the analysis of equipment criticality, the development of conditional maintenance and the establishment of common indicators to measure the availability of facilities.

Some maintenance functions will be shared. Others will be internalised, as the effects of the new maintenance strategy make themselves felt. Formalised coordination of maintenance activities will also allow for multi-year and multi-site planning which is linked to the central coordination of plant operations. Greater control over maintenance will also promote a more refined control of the execution of service contracts and the techno-economic optimisation of the main outsourcing contracts.

3.2. IMPROVED ASSET MANAGEMENT

Data from the CMM system, in combination with legacy data and the investment program, will be the entry point for a formalised process of optimised investment specification and planning.

Taking into account the investment policy of the last twenty years, which has been aimed at improving treatment capacities and performance, the project definition process that handles the creation of new facilities is very well controlled. Progress now needs to be made on the knowledge of the financial value and condition of the heritage. This will be achieved by making a physical inventory of the assets consistent with the accounting inventory, as well as a physical diagnosis of the assets.

In parallel, investment planning will be formalised using tools to objectively prioritise medium- and long-term needs, taking into account the analysis of the lifetime value of the equipment.

B♦ An asset for sustainable cities

To meet the environmental challenges - climate change, scarcity of natural resources, conservation of the Seine and Marne in a good state within an expanding conurbation, significant loss of biodiversity - it is necessary to establish new relationships with those involved in the construction of the city and with our various users.

In response to these challenges, there are several fields of action in which the SIAAP should invest: the exploitation of urban wastewater as a resource and the upgrading of its by-products, the indispensable control of the effects of urban development on rainwater, discussion and communication with the beneficiaries of wastewater management and, more broadly, taking water into account in the city. This will require changes in our organisation and in our professions. We will strengthen cooperation with new players by opening ourselves more towards the outside world. We will integrate new professions, in particular those related to the management and optimisation of resources and energy

1. Leveraging resources across the territory

Considering urban wastewater as a resource is nowadays a widespread idea in most urban wastewater management services around the world. The link between water, energy and agricultural production is at the top of the agenda at all major wastewater management services.

1.1 ENERGY ISSUES

Energy is the principal line of work, given the stakes and the associated potential. Today, it is one of the first budget items of the business.

Strategic decisions will be taken over the next few years, notably concerning the best use of the different sources of energy inherent in our processes: biogas, sludge, heat carried by water, unavoidable heat. We will have a choice between different strategies ranging from the widest energy autonomy to «carbon neutrality». The pursuit of these objectives opens up a new universe of synergies with external players.

THE FOLLOWING WORKING AREAS ARE TO BE DEVELOPED:

- a systematic search for energy saving, since the best energy is that which is not consumed;
- research on the best uses that can be made of biogas produced from the organic matter contained in urban waste water and the residual energy content of sludge;
- the development of partnerships for new complementary approaches to the digestion of organic matter with the objective of strengthening the role of the SIAAP as an actor in bioenergy, as is already the case with Sycdom;
- recycling the deposits of unavoidable energy that are at the SIAAP's disposal. This is the case for the heat inherent in waste water or the heat dissipated by incinerators or other equipment. Several opportunities exist to recycle these energies, in particular in collaboration with players in the energy sector and local authorities.

1.2 NUTRIENTS: PHOSPHORUS AND NITROGEN

Urban wastewater is rich in phosphorus and nitrogen. These raw materials are of interest to agriculture:

- with a view to the sustainable management of phosphorus, a crucial and limited resource on the planet, we will maximise recycling;
- in the long term, we will also work to control the flow of nitrogen, with two objectives; on the one hand, to preserve the quality of the Seine and Marne despite the cumulative effects of a foreseeable decline in low-water flow and a growing population, and on the other hand, to better recycle this fertilizer.

We always seek to recycle our by-products locally, in a rationale of short circuits. We are committed, for example, to making more use of industrial water in our processes so as to reduce the consumption of drinking water, but also to offer it to partners for irrigating crops, green spaces and reclaiming wetlands. We will develop new procedures to make use of our sands and ashes, especially in the construction sector.

These actions, which have already been launched, will form part of a comprehensive approach enabling all options to be evaluated within a precise assessment framework, based on the development of closer relations with external partners in the territory.



2. Initiating urban synergies

Controlling the flow of inputs is essential to the overall efficiency of the wastewater management system. The development of Greater Paris makes this issue a priority over the coming years.

The current modes of operation, concerning both domestic connections to the network and the monitoring of non-domestic water and rainwater, do not give us all the levers necessary for this control.

This is why we need to define and develop stronger partnerships based on information sharing tools that will enable us to support urban development in a proactive and sustainable way.

For example, the adoption of regulations for a unified wastewater management service covering the Ile-de-France territory would make it possible to share and approve common rules, to ensure consistency between all players in the collection network and, in the end, better control the flow of inputs.

Concerning rainwater, the major challenge is the stabilisation, and even the regression, of impermeable surfaces, with the objective of developing alternative and local wastewater treatment solutions of the «management at the source» type. Furthermore, we wish to promote the formalisation of a plan of action which is common to all local authorities and wastewater management operatives and contribute to the logistics of its implementation.

3. Taking developments of society into account

In general, the new environmental expectations of inhabitants are likely to encourage a greater involvement of citizens in the management of water and resources in the city.

Water occupies an essential place in these urban environments and it is also crucial for providing new landscapes that at the same time integrate rainwater management, green and blue spaces needed for preserving biodiversity, reduce the effects of urban heat, as well as providing recreational sites. Consequently, wastewater management becomes an important component of the quality of the environment and the pleasure of living in the city.

A feeling of environmental insecurity manifests itself in fears about environmental contamination by various sources of pollution. Residues of medicinal products, endocrine disruptors and constant doubts about the quality of tap water contribute to this, creating a feeling of mistrust of «experts» and institutions.

Taking the expectations of society into account is therefore at the heart of the objectives of the SIAAP 2030 project, covering topics as varied as biodiversity, reducing the environmental footprint, protection against nuisances, the possibility of bathing, access to information and participation in public action, with as a backdrop, a constant concern for keeping the cost of the wastewater management service under control.

Also, over the coming years the SIAAP has the objective of developing new services for the inhabitants of Ile-de-France, building on all the resources and skills associated with operating the wastewater management system. In particular, it plans to develop a platform for publishing structured data that is reusable by third parties, thereby preparing the conditions for citizen participation in its actions.



C♦ Driving forces for progress

1. Putting SIAAP employees at the heart of change

The proposition of a consultation about the long-term strategic plan, involving and soliciting all employees of the SIAAP, provides an open and collective brainstorming which endeavours to deal with all future matters in the context of both their current reality and the likely developments over the coming years.

1.1 THE DYNAMICS OF A COLLECTIVE CONSULTATION

By mobilising SIAAP employees in a major collective deliberation, SIAAP 2030 targeted first of all an in-depth exploration of a project that was not yet defined, focussing on the key areas to be studied. This study also made it possible to take a lucid and taboo-free look at the SIAAP's work,

its professions and their practices by those who are involved on a daily basis. This proximity to the reality of our profession was a prerequisite for a good balance between a long-term vision and the everyday tasks.

Thus, 12 working groups mobilised more than 110 employees and more than 450 employees proposed ideas that complemented the work of taking stock and analysing what exists already. They were invited to discuss openly, participate in roundtables and submit their ideas via an intranet platform.

Throughout 2016, this approach, proposed for the launch and elaboration of the SIAAP 2030 plan, has proved to be very positive and will be maintained for the implementation phase of the action plan (phase 2 of the project). This will consist of involving staff above and beyond the communication plans by applying new working methods, skills and management methods, modifying the dynamics of the teams, sometimes using new tools.

1.2 THE INVOLVEMENT OF EVERYONE

In phase 2, progress will be measured within the project management framework and with the help of techno-economic dashboards devised by management. The accountability of the pathfinders, the management and the steering committee will be a key element in the success of the project.

In order to ensure greater coherence of collective actions, we envisage implementing an internal reference framework for managing objectives consisting of a tool that is shared between management and the field. This techno-economic dashboard will link day-to-day actions, in particular the implementation of the SIAAP 2030 action plan, with longer-term strategic orientations and objectives.

Ultimately, we want to give everyone the means to be able to understand and communicate the meaning of his mission on a daily basis.

1.3 STAFF TRAINING AND THE DEVELOPMENT OF SKILLS AND RESPONSIBILITIES

Implementation of the SIAAP 2030 programs and actions will require, in a number of cases, new ways of working, new tools and sometimes, new professions. Training, support for managers and the empowerment of SIAAP employees will be part of the global approach to progress.

Training courses will be adapted in order to prepare for the future and to offer an opportunity to those who wish to evolve towards new responsibilities.

Encouraging progress within the SIAAP is an essential challenge to motivation and performance, right from the moment of hiring. The processes of induction and monitoring job performance during the first year are paramount. To ensure perfect integration, we plan to make use of the technique of sponsorship or tutoring.

1.4 PROTECTING EMPLOYEES AND REDUCING OCCUPATIONAL AND INDUSTRIAL RISKS

Numerous actions and training sessions on the topic of safety have been carried out in recent years at the SIAAP.

The safety of our employees remains our priority. The reduction of risks and the improvement of working conditions are based first and foremost on formalised and shared feedback and on suitable training, as close as possible to the challenges and needs of the field. This feedback is essential in the overall design and construction of facilities. More interactions, based on past experience, are to be put in place in advance of projects.

Beyond this, it is necessary to involve managerial staff in order to follow up on initiatives that disseminate good practices on a daily basis and build on a strengthened commitment and exemplarity. The development of leadership in the field of safety will consolidate the dynamics of performance and the continuous improvement of practices. The approach will be based on the definition of common and shared objectives, as well as on the establishment of proactive indicators to anticipate actions.

In terms of roles and responsibilities, their assignment and formalisation at each level of the organisation will facilitate the spread of good practices by empowering each actor.



2. Boosting innovation

2.1 SOLID ASSETS

Thanks to its research and development capacity, the SIAAP has grown and refined its rich and widely recognised technical expertise through numerous national and international programs and publications.

This capability allows us to improve operational performance, to control the transformation of industrial facilities and to anticipate regulatory, technological and scientific developments.

Our approach is based, on the one hand, on a quest for a detailed understanding of the wastewater management system and its environment, and on the other hand, on the development of methodological and technological tools that address current and anticipated problems. In this approach, we rely on a network of partners made up of scientific and academic organisations, as well as leading industrialists, notably by coordinating multidisciplinary programs focused on today's industrial problems.

Among the significant fruits of this approach, we find projects as diverse as the understanding and control of the aging process in materials (membranes, concrete), the optimisation of fluid injections, the development of innovative measurement methods and tools, as well as the development of powerful models to predict the functioning of treatment systems and the quality of the river which is subjected to urban discharges. Calibrated and validated on an industrial scale, these models constitute assessment tools and aids for decision that will be vital in the effort to optimise operations in the years to come.

The river and, more broadly, the assimilation of impacts on the environment are also an essential area in which we have invested; technological advances stemming from laboratory testing or research and pilot experiments, followed by deployment on an operational scale.

This investment in research and development is the foundation of our expertise, our mastery of the processes and the technical knowledge essential to an efficient public service. Our objective is the pursuit and intensification of innovation, focused on the new objectives to be accomplished: use of resources, improvement of purification performances and of the wastewater management system as a whole, exploration of alternative methods for the wastewater management system of tomorrow, new uses of water (bathing, recycling purified water, micro-pollutants) and the exploration of new challenges in governance and the promotion of local water management policies, with a global vision of water in the city and the support of human and social sciences.





We are associated with the largest public scientific institutes, schools and universities, often in a multidisciplinary approach (Piren-Seine, Opur, Mocopée), in order to be able to independently make the appropriate choices concerning these challenges. The expansion of our field of cooperation with foreign research institutes, initiated by the process of benchmarking, will allow us to have a broader view of international thinking and the solutions deployed or explored in our fields.

We are committed to long-term sustainability of this capacity in order to continue to maintain and develop our expertise and anticipate the challenges of tomorrow.

2.2 A PROCESS OF OPENING

The place, the role and importance of the SIAAP in the environmental equation of the Paris metropolitan area are such that it would have been ineffective to conceive the future alone; to confront the challenges, constraints, objectives and realities without the involvement of those who already support us in the accomplishment of our missions.

The issues encountered in Île-de-France often encompass the situation of megacities throughout the world. The SIAAP 2030 project seeks to enrich itself with the experiences of equivalent foreign public services. Ten study visits to major European and North American cities have enhanced the project with their best practices. This benchmarking approach is the first step in the construction of an international network, from which we can profit very concretely as regards our operational mission and its continuous optimisation. ♦



V. SIAAP 2030: The action plan

The SIAAP 2030 action plan is divided into two strategic directions and eight programs. In support, the catalysts of progress provide the means to initiate and maintain the momentum of the action plan over time. They are divided into three programs.

A

1st strategic direction : efficient wastewater management

1

Operating with efficiency and sobriety

This concerns action items for the management of the treatment units inside the processing plants, the improvement of the efficiency of factory and network maintenance, actions concerning the consumption of energy and reagents in keeping with the quality objectives to be achieved to meet the goals of the Water Framework Directive (WFD).

An example of such an action is the optimisation of a biological treatment which leads to significant economic gains thanks to the perfectly-tuned settings.

2

Managing the wastewater treatment system at the SIAAP level

This is a question of seeking the optimal exploitation of all of the SIAAP's installations within a global vision in order to achieve the goals of the WFD for the water quality of the Seine and the Marne and to lay the foundations for more ambitious objectives such as enabling bathing, whilst at the same time seeking the optimum techno-economic solution for operating the facilities.

An example of such an action is making the best use of the different possible variations in flow and loads on the treatment plants with the object of increasing the margins of manoeuvre for complying with the WFD.

3

Optimising maintenance

The aim is to put in place a coordinated maintenance policy based on criticality, systematic planning of interventions and the harmonisation of methods and practices, in particular through the use of new connected tools.

An example of such an action is the deployment of conditional maintenance which provides a significant economic gain and the reduction of failure risks.

4

Strengthening asset management and control of the investment process

This is a matter of successfully transitioning the SIAAP from a phase of heavy investments in treatment resources to a phase of optimising the operation of its industrial heritage.

An example of such an action is the undertaking of a physical diagnosis of the SIAAP's heritage, serving as a basis for prioritising renewals by a conditional rather than systematic approach.

5

Optimising purchases related to operations and maintenance

This concerns the optimisation of such operational purchases as energy, reagents and sediments, as well as facility maintenance services.

An example of such an action is the techno-economic optimisation of electromechanical maintenance markets. This action was launched in autumn 2016.



B

2nd strategic direction: an asset for the sustainable city



6

Recycling resources at the territorial level

The aim is to define strategies for the management of resources contained in urban wastewater (water, sludge, sand, phosphorus, ash ...) with a view to recycling them within the territory.

An example of such an action concerns the definition of a global strategy for recycling sediments which takes into account both the supply of energy and the return to the environment.

7

Initiating urban synergies

This concerns the definition and implementation, with the SIAAP's partners, of a coherent wastewater management policy at the territorial level, as well as the rules of operation and information sharing which will allow urban development to be proactively supported.

An example of such an action is the development of a rainwater management strategy in order to reduce the risk of flooding in the territory whilst at the same time controlling the impact on the environment.

8

Taking evolutions in society into account

This concerns understanding the changes in the expectations of both users of the service as well as those involved in the territory in order to integrate them and adapt our objectives accordingly. The goal for the coming years is to develop new services for the benefit of the population of Île-de-France, drawing on all the resources and skills associated with the management of the wastewater treatment system.

An example of such an action is the launching of a project for the reuse of data collected by the SIAAP, providing public access to new data, intended to be the basis for the development of new applications and services concerned with the risks of breakdowns.

C

Driving forces for progress: employees and innovation at the heart of change



9

Strengthening safety management

The objectives to be pursued are both the development of tools and a strengthening of the level of accountability at each level in the SIAAP organisation in order to accelerate the activity of continuous progress and thus develop the capacity to anticipate and prevent individual and collective risks.

An example of such an action is taking safety into account during the process of designing/modifying facilities.

10

Strengthening and sharing skills

The practice of sharing expertise is a lever for the entire SIAAP 2030 action plan, for it is an essential step in conducting change programmes on a SIAAP-wide scale. Indeed, a significant part of the actions consist of developing new practices concurrently on all sites, whether in the field of the optimisation of operating processes or maintenance methods.

In particular, the actions of sharing expertise are based on setting up transversal technical networks, the aim of which is to facilitate feedback.

11

Boosting innovation

Innovation is already widespread within the SIAAP and will remain an important driver of progress. This is indeed already the case for many actions anticipated in the action plan. This evolution will be reinforced by the implementation of a specific program.

An example of such an action is the setting up of a scientific committee which is largely outward-looking.

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