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ARTIFICIAL INTELLIGENCE COMMISSION

OUR AI: OUR AMBITION FOR FRANCE

MARCH 2024

CONTENT

EXECUTIVE SUMMARY OF OUR VISION AND KEY RECOMMENDATIONS	3
Asserting a responsibility principle so that innovation contributes to a collective project	5
Aiming for humanism in AI deployment.	6
Realizing its major economic and social potential	7
The scale of the economic challenge: the worrying weakness of France and Europe	8
Innovating to control our future	9
Relying on the openness of artificial intelligence systems.	11
What does the future hold in the age of artificial intelligence?	12
METHOD	13
Composition	13
Areas of expertise	14
Mission	14
Principles and methods	14
Key figures	15



EXECUTIVE SUMMARY OF OUR VISION AND KEY RECOMMENDATIONS

Artificial intelligence is an massive technological revolution. The sudden emergence and spread of generative AI marks an important stage in this revolution. We can't help but notice the ease of use of certain tools, the speed of content generation, the realism of the texts, images and sounds generated, and more generally the abilities of recent AI models.

This technological revolution affects all areas of activity. It affects the economy, employment, public services, the environment, information, cultural industries... Every aspect of our society is concerned, and will be even more so in the future, given its considerable potential.

We don't expect mass unemployment or an automatic growth acceleration. In the coming years, AI will not replace humans, nor will it be the solution to all the challenges of our time. We must neither overestimate the impact in the very short term, nor underestimate it in the long term.

Europe and France are well placed to play a leading role in this revolution, first and foremost thanks to the excellence of our talent. This wealth and the exceptional dynamism of the French AI ecosystem must not, however, mask a worrying reality. For several decades, the trend has been for our continent to fall behind technologically and economically, jeopardizing its prosperity and independence.

At a time when the United States and China have made mastery of AI one of the pillars of their national strategies, we must rise to the challenge of AI, or risk losing the control of our future. We need to reform our institutions and public policies, so that AI can play its full part in driving progress.

We propose six main lines of action:

- ▶ **immediately launch a plan to raise awareness and train the nation:** lead ongoing public debates in everyday places on the economic and societal impacts of AI, structure the higher education training offer, bring to scale the lifelong training in AI tools, integrate AI as an object and tool of social dialogue;
- ▶ **structurally redirect French savings towards innovation and create, in the short term, a €10bn "France & AI" fund,** to finance the emergence of the AI ecosystem and the transformation of the French economic fabric;

- ▶ **make France a major location for computing power:** secure collective supply on a national and European scale, solicit projects to set up computing centers in France with a public guarantee of usage and simplification of procedures, set up a tax credit for model training on national computing power;
- ▶ **facilitate access to data:** in terms of personal data, modernize the mandate of the *Commission nationale de l'informatique et des libertés* (CNIL – France's Data protection authority) and its board, abolish certain prior authorization procedures for access to health data and reduce response times; in terms of cultural data, put in place the technical infrastructure to encourage the training of AI models on French and European cultural data while respecting intellectual property rights;
- ▶ **experiment an "AI exception" in public research:** freeing researchers from administrative constraints, upgrading their remuneration, doubling the resources of public research specialized in AI;
- ▶ **promote global governance of AI:** create a World AI Organization to evaluate and oversee AI systems, an International AI Fund to serve the public interest, and a "1% AI" solidarity mechanism for developing countries.

A collective, massive, immediate and long-term mobilization is imperative. With this in mind, our Commission has set out to draw up an action plan that is as ambitious as it is realistic, serving people, our needs, our values and our principles. The plan represents an annual public investment of €5bn over five years. It includes technological investments but also investments to catalyze at the same time the diffusion of AI in the economy, its deployment for public interest, and opportunities to train the whole society.

This investment is significant, but it is necessary if France is to become a leading country in artificial intelligence, and if our society is to reap its full benefits. This ambition is achievable, given France's and Europe's strengths. It's also realistic and affordable for our country: the "AI plan" we're proposing would represent 0.3% of total public spending. The cost of inaction, on the other hand, would be very high. We would forgo major economic and social gains, and risk a historic downgrade. The question set before us is this one: which spending will enable France to take control of its future?

A. ASSERTING A RESPONSIBILITY PRINCIPLE SO THAT INNOVATION CONTRIBUTES TO A COLLECTIVE PROJECT

Societies everywhere are being challenged by the spread of digital technologies. Social networks are undermining political systems. Technological concentration polarizes the distribution of wealth. Algorithms contribute to inequalities in work and employment. The massification of uses is accompanied by a growing environmental impact. The power of certain companies limits the ability of sovereign states to act.

Artificial intelligence extends and deepens this trend. Contrary to the horror scenarios put forward by some, today's AI systems will not lead to the end of humanity. They are, however, far from infallible, and come with undesirable side-effects: reproduction of stereotypes, disclosure of confidential information, violation of intellectual property rights, and so on. They open up new possibilities for malicious acts, particularly cyber-attacks and disinformation. They are a source of systemic risk, particularly in terms of the potential for technological concentration in the hands of a small number of countries, companies or individuals.

Faced with these major challenges, we cannot repeat the mistakes of the past. Over the past two decades, France and Europe have acted too late, too little, with little commitment to technological innovation and late regulation. Today, it's up to us to take advantage of AI by putting it in its rightful place: that of a technological means at the service of an ambition for humanity, equality, solidarity, justice, prosperity and freedom.

Since these issues concern the whole world, several models of international organization have been considered in recent years. France was one of the pioneers, co-founding the Global Program for Artificial Intelligence (GPAI) in 2020. International discussion forums on AI abound, with at least fifty to date. To go further and anchor these initiatives in concrete actions, parallels have been drawn with global climate and energy issues. Our Commission notes that these parallels are insufficient: AI cannot conform to a previous model. We also believe that the international community must take advantage of the window of opportunity in 2024 to bring together many initiatives under one umbrella.

To steer AI technologies, we recommend setting up a global governance structure with a coalition of like-minded countries. Our Commission considers three major steps forward. First, a coalition of countries would set up the **World AI Organization**. This international organization would share scientific findings on the workings and effects of AI, and define binding standards for AI systems and how they should be audited. It would be democratically governed, bringing together governments, civil society (researchers, citizens, trade unions) and companies.

Secondly, France could support the creation of an (*International Fund for Public Interest AI*), with an annual budget of €500 million. It would finance public interest initiatives: free and open AI services, independent research projects, innovations (in the environment, science, health...). Thirdly, France could promote the **"1% AI" solidarity mechanism**, whereby all international players investing in computing power would commit to offer 1% to developing countries.

The goals of this global governance should also be pursued at a national level. France has the opportunity to position itself as a pioneer in the evaluation of AI systems if it structures its evaluation and market surveillance network. We also need to carry out ongoing and ambitious forward-looking work on AI developments, in order to anticipate its effects on society and prepare for the necessary transformations.

B. AIMING FOR HUMANISM IN AI DEPLOYMENT

The technological revolution of artificial intelligence will have to give more power to citizens and workers. Failure to do so runs the risk of mass rejection of AI. In the past, other technological innovations have affected social cohesion. Above all, innovation only makes sense if it serves the free development of our humanity. In other words, the deployment of AI must aim to be humanistic. To achieve this, our Commission has identified three main pillars: training, social dialogue and public services.

We recommend immediately launching a plan to raise awareness and train the nation. To achieve this, we must first create the conditions for collective critical use of AI and its challenges. This means holding ongoing public debates in our society, encouraging the creation of places for experimentation, public engagement of the technology ("AI cafés"), providing a digital information tool, and launching a competition for positive use cases of AI.

We also need to invest in **training for everyone, at every age:** young people in school and after-school, specialized and non-specialized students, employees, the self-employed and public-sector workers, retirees. This means preparing for tomorrow's professions, in particular by structuring a range of hybrid higher education courses, such as "AI + biology" and "law + AI", or by creating AI chairs in design schools. We must also enable the use of AI in today's professions, for example by planning an AI awareness course for all civil servants.

Renewed social dialogue should be the cornerstone of AI deployment. At both national and company level, AI uses need to be built through a collaboration with workers. At the same time, we need to invest in analyzing the impact of AI on the quantity and quality of jobs. AI itself can be put at the service of social dialogue, with the creation and deployment of specialized tools.

Finally, AI systems should be used to improve the quality of public services. Artificial intelligence can improve public services, by helping to personalize education, give patients more time, better support and anticipate professional transitions, and reduce bureaucracy. We can achieve these gains only if we transform our institutions. Not only do public administrations need to strengthen their infrastructure and pilot AI projects. We need to accelerate, deepen and scale AI interest in each and every public services.

C. REALIZING ITS MAJOR ECONOMIC AND SOCIAL POTENTIAL

Provided we deploy and steer AI, it should increase collective prosperity and can contribute to improving the quality of work and reducing inequalities. According to our analysis, France's annual economic growth could double thanks to the automation of certain tasks. After ten years, the increase in GDP would be between €250 and €420 billion. This would be like adding a second industrial sector. However, this increase would be temporary: once AI has been adopted by the entire economic fabric, there would be no further productivity gains to expect.

More than just improving productivity, AI could have a major impact on prosperity as it seems capable of accelerating innovation. This effect remains uncertain, but it is supported by many recent uses of AI: finding new proteins, identifying new materials, etc. If this effect is confirmed, it would be a remarkable feature of AI: it could induce a permanent increase in the economy's growth rate. In other words, in addition to a temporary effect linked to automation, AI could produce a *longer-term* effect linked to the emergence of new innovations, new products, new forms of organization and so on.

In the coming years, AI systems will lead to the transformation of many jobs. Most workers will benefit from the automation of some boring and gruelling tasks. The vast majority of jobs will change. Some tasks will be added, some will be automated. Yes, AI automation will lead to the elimination of some jobs and hasten the obsolescence of some skills. It will create a challenge for the training system, on a sectoral or individual level. However, at a national level and despite the uncertainties, our Commission believes that the effects of AI will be generally favorable to employment: AI could generate jobs in new professions, some of which are unknown today, as well as in existing professions.

The mere existence of technology is no guarantee for these economic and social gains. Recent history proves the point. While digital technologies have contributed to American growth, France has benefited little. French activity has grown far less than on the other side of the Atlantic, and no real global digital player has emerged: between 2001 and 2022, wealth per capita grew by 29% in the United States, compared with just 14% in France.

It is therefore essential to put in place a set of appropriate public policies to maximize gains: innovation policy, industrial policy, competition policy... Support for professional retraining and continuing education will also be decisive. The challenge of supporting individual career development is all the more important given that the rapid spread of AI will make transitions difficult.

The main benefits will accrue only to those countries that give themselves the means to master AI. To date, France and Europe are lagging behind.

D. THE SCALE OF THE ECONOMIC CHALLENGE: THE WORRYING WEAKNESS OF FRANCE AND EUROPE

The digital economy is two to three times weaker in Europe than in the US, and AI is following the same path. Of the 100 largest-cap technology companies at the end of 2023, 10 are European. The problem is not only that Europe doesn't produce any digital giants, but also that it doesn't produce any second or third tier companies: neither Adobe, Uber, AirBnB, Shopify nor Stripe are European, even though their biggest markets or founders are European. In the digital services sector (software, data processing, etc.), activity is 2.5 times higher in the United States than in the European Union and the United Kingdom combined. We find a comparable order of magnitude in AI. The number of specialized companies financed over the period 2013-2022 is 2.5 times higher in the United States than in Europe.

If this superiority continues or strengthens, France and Europe run the risk of rapid economic decline. This risk is twofold: being largely bereft of companies *specializing in AI*, and seeing *existing* companies lose competitiveness. Like the previous wave of digital innovations, we could not only miss out on the AI economy, leading to the increasing capture of our economic value by others, but also see the weakening of other business sectors.

No company is immune. Over the past ten years, the integration of AI into companies has been slower and shallower overall in France than in the USA, the UK or Scandinavia. In the absence of rapid, structural critical, each of France's companies will face the erosion of its market share, margins and value, but also the risk of being ousted by a new player (*disruption*). This prospect becomes more acute as AI systems become more accessible and more powerful.

What's more, our lag in the field of artificial intelligence undermines our sovereignty. Weak control of technology effectively implies a one-way dependence on other countries. In the privatized and ever-evolving field of AI, public power appears largely outmatched, limiting our collective ability to make choices aligned with our values and interests.

This weakness in French innovation can be explained by a number of factors. A lack of public engagement of the technological issues underlying AI and its potential impact on society. Our collective aversion to risk, which leads us to avoid unproven technologies and business models. Bureaucracy, which hinders public research in particular.

Lagging behind is not inevitable, and it's not too late to act. Our continent has assets that should not be overlooked. European companies are positioned across the entire AI value chain. French higher education is training engineers and researchers of excellence in AI. On the other hand, the technological innovations at the heart of generative AI are recent, and the economic value chain is far from mature. The AI economy is still in its infancy, and most business models have yet to be invented. Since Cédric Villani's report (2018), the French government has also set itself in motion as part of the "*investissements d'avenir*" and France 2030. This action has spurred the creation of specialized training programs in AI, strengthened public AI research and helped private innovation.

E. INNOVATING TO CONTROL OUR FUTURE

If we want to control our future, we cannot just use AI systems developed on other continents.

If France and Europe do not catch up, this will reinforce our dependence on other countries, affect our social cohesion and weaken our economy. Similarly, it's an illusion to believe that we can take a self-sufficient path. So it's up to us to take advantage, right now, of the potential of AI systems, wherever they come from, while creating the conditions for a European AI offer. The emergence of an AI ecosystem depends on three key areas of action.

Firstly, current funding for the AI ecosystem is insufficient to bring about the emergence of world-class players: we recommend redirecting a portion of savings towards innovation. The amounts invested in AI in the United States are now 20 times greater than those invested in France. For comparable wealth, we invest around three or four times less than the Americans, and the gap is likely to widen. In the medium term, a structural increase in the allocation of savings to innovation is essential. Proactive action must be taken quickly in this direction, for example with regard to tax incentives of life insurance, so that in a few years' time we will have a significantly increased capacity for financing.

In the short term, we propose the creation of a "France & AI" investment fund. The fund will mobilize €10 billion in corporate private equity and public support to bring about the emergence of the AI ecosystem and accelerate the transformation of the economic fabric through AI. Alongside financial resources, the fund will be accompanied by the pooling of activity data to drive certain digital projects. Such a scale of resources and the tandem of funding and data are unprecedented in France. Faced with the risk of economic downgrading, boldness will contribute to the emergence of innovative, high-performance solutions and accelerate the modernization of French companies.

Secondly, we won't reap the benefits of generative AI without access to reliable, high-quality data: we therefore recommend rethinking data governance. Firstly, it is essential to **facilitate access** to personal data to enable its use in therapeutic innovations, notably by abolishing certain prior authorization procedures for access to health data and reducing response times from the French Data Protection Authority (*Commission nationale de l'informatique et des libertés* - CNIL). This implies reforming the CNIL's mandate to include a focus on innovation, revising the composition of its board and increasing its resources.

Secondly, we must **enforce the transparency obligation** of training data for large-scale AI models. Provided for in the European AI Act, this principle must ensure respect for literary and artistic property rights. It must be implemented in the simplest possible way, for AI model developers and rights holders alike, in particular by drawing up standards for the publication of information on AI models and the enforcement of the opt-out clause.

Finally, from a more forward-looking perspective, it's up to us to **devise a new, collective way of managing data.** While data protection is centered today on the individual, with the European General data protection regulation (GDPR), access to data from AI models and the resulting benefits are mainly collective. This dichotomy has so far favored the digital giants, who alone have hundreds of millions of users who generate streams of data every day to drive their models. We need to explore new models of joint data governance, without of course weakening individual protection.

Thirdly, computing power is the other essential ingredient of generative AI: we therefore recommend making France a major hub in this field. This is a *sine qua non* for strategic autonomy, and public supercomputer capacity, which we must support, will not be enough. On the supply side, we need to secure supplies for the French ecosystem without delay, through a European order for private computing power. At the same time, solicit the installation of private computing power in France and Europe with a public guarantee of usage and support for installation and electrical connection. On the demand side, an AI tax credit would support research and development projects involving the leasing of computing power, subject to the use of a computing center established in the country. Finally, industrial policy could be geared towards the emergence of an electronics industry adapted to AI.

It's not a question of chasing behind technological advances, but of creating our own comparative advantages. Targeting and concentrating resources will therefore be key to establishing our superiority in certain segments of the value chain, and thus being able to speak on an equal footing with our competitors and partners. Targeting must go hand in hand with the gradual emergence of AI innovation ecosystems in France and Europe. The path to differentiation could focus in particular on the environmental dimension, by targeting new generations of AI, from hardware architecture to the choice of models, that will consume less energy.

F. RELYING ON THE OPENNESS OF ARTIFICIAL INTELLIGENCE SYSTEMS

The development of AI brings with it a major risk of market domination by a few players. A single — American — company currently holds 80% of the global market share in graphics processor design. Three — American — companies capture 80% of the increase in French spending on cloud service infrastructures and applications. These same three companies are combining their cloud services with — mostly American — generative AI tools.

We cannot be glad that mastery — in every way possible — of the AI technological revolution is limited to a handful of companies, even more so when none of them is European. We need to ensure the emergence of a diversity of economic players, particularly French and European, on economic and sovereignty grounds. Limiting dominant competitive positions promotes growth and a fair distribution of economic gains.

European competition policy must therefore be fully mobilized to prevent the emergence of dominant positions. In the short term, it is important to make use of the range of actions provided by the European Digital markets Act. This regulation could also be supplemented to take account of the specific features of the AI value chain. In the medium term, we need to consider a change in competition policy doctrine, moving from a static system (what market shares does this company hold *today*?) to a *dynamic* vision (what market shares could this company hold tomorrow, and what companies could enter this market *tomorrow*?)

Beyond this, our Commission recommends supporting an open ecosystem of AI developers, offering the benefits of transparency, pluralism and competition. We consider that such an ecosystem is a powerful lever for innovation and can contribute to the security of AI systems and the development of benevolent uses, including countermeasures against malicious uses. It also contributes to public confidence and the reduction of certain negative impacts of AI on individuals. We therefore need to provide the ecosystem with legal certainty and quality data, as well as develop model inspection and evaluation capabilities.

Finally, to shape the future of AI, it is essential to free researchers up from administrative constraints: we recommend adopting the principle of an "AI exception" in public research. In the form of an experiment, this principle aims for "zero hindrance for researchers", notably through a commitment on response times to requests and the introduction of an indicator of administrative simplicity. The AI exception should also make it possible to raise the salaries of researchers and teacher-researchers, and facilitate part-time work with companies or other socio-economic players in AI.

From the Enlightenment to the present day, openness has been at the heart of our European continent and our values. Let's embrace this core tradition.

G. WHAT DOES THE FUTURE HOLD IN THE AGE OF ARTIFICIAL INTELLIGENCE?

Generative AI is a milestone in the history of innovation. It is far from being the last. In the months and years to come, we are likely to see further rapid and far-reaching advances. Models will gradually be able to be factual, to conduct reasoning, to understand the physical world around us. AI will accompany people continuously and in all their tasks, perhaps in the form of personalized assistants. Products and gestures will be invented to enable us to take full advantage of these new AI systems. Robotics will also make major advances.

The societal transformations brought about by these innovations will depend on our ambition and commitment. AI can be harnessed to reduce social inequalities, increase collective prosperity and improve the quality of work. These benefits will not come spontaneously. In the absence of a political project and collective commitment, AI can, conversely, weaken our democracy, alter our sovereignty and concentrate wealth. Let's be careful neither to underestimate the potential of AI in the long run, nor to overestimate it in the short run.

Let's give ourselves, collectively and without delay, the means to reap the benefits of AI. Its effects will be all the more beneficial if France and Europe master the technology and its value chain. This mastery is essential. Our Commission therefore recommends closing the French and European gaps and launching a new AI strategy by the end of the first half of 2024. Measures will have to be subject to ongoing evaluation and annual or even biannual review if the pace of innovation remains very high.

It's a race against time. The strategy recommended by our Commission is only the first mile. Going beyond that will require not only consistency in public intervention, but also action to strengthen the adaptability of our organizations, both public and private. A collegial approach to anticipation is also essential, to prepare our country for the effects of the technological revolution.

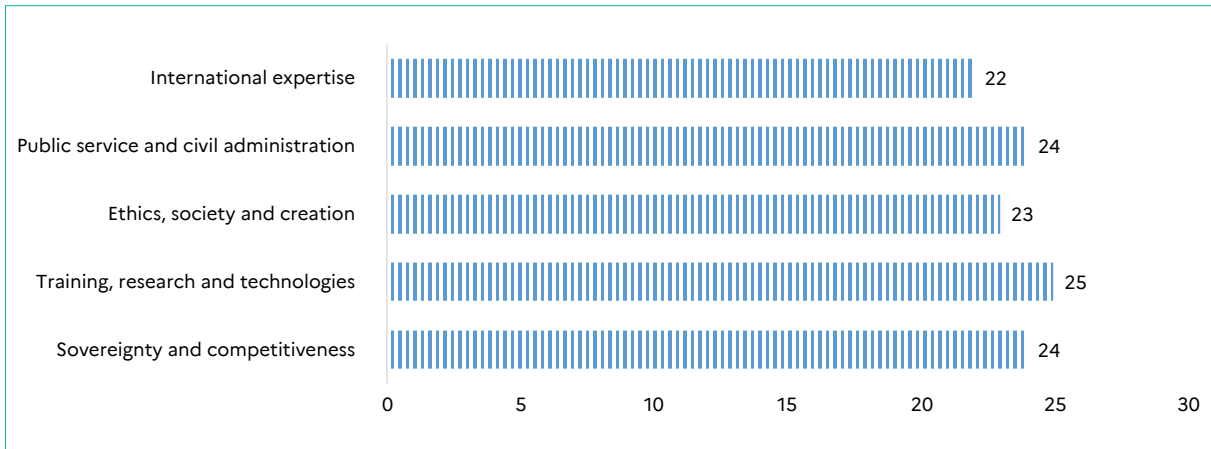
METHOD

COMPOSITION

Chairpersons	Philippe Aghion	Anne Bouverot	
General Rapporteurs	Arno Amabile	Cyprien Canivenc	
Members	Gilles Babinet Joëlle Barral Alexandra Bensamoun Nozha Boujemaa	Bernard Charlès Luc Julia Yann Le Cun Arthur Mensch	Cédric O Isabelle Ryl Franca Salis-Madinier Martin Tisné Gaël Varoquaux
Rapporteurs	Marc Auberger Simon Bunel Philippe Chantepie Eloy Dorado	Emilie-Pauline Gallié Paul Jolie Arnaud Mazier Vincent Montreuil	Erwan Paitel Timothée Paris Christophe Ravier Ulrich Tan Louis Charles Viossat



AREAS OF EXPERTISE



MISSION

In September 2023, the Government named the Artificial Intelligence Commission to "help make France a country at the forefront of the AI revolution". The Commission was thus tasked with putting forward operational, realistic and ambitious proposals supported by a long-term, global and objective vision. It is with this mandate in mind that we wrote this report.

PRINCIPLES AND METHODS

Expertise

The Commission's members and rapporteurs have been appointed, in a personal capacity, for their expertise in artificial intelligence. This expertise is made available to the government to help improve the efficiency of public action.

Collegiality

The Commission's plenary sessions, which brought together the fifteen members and fifteen rapporteurs on a weekly basis, embodied collegiality. The plurality of expert opinions and the free, adversarial discussion contributed to the objectivity of the work, as well as to the measure and balance of the recommended action plan. The members of the Commission gave their general approval to the report and recommendations, which represent a majority consensus.

Consultation

The Commission's debates and conclusions were enriched by hearings with experts and stakeholders from a wide range of backgrounds, experiences and geographical horizons. They were enriched by the consultation of citizens, who contributed to the timeliness, realism and pragmatism of the recommendations.

Independence

The Commission has freely defined its program of work and its organizational structure, within the framework of the mission entrusted to it on September 19, 2023. It has conducted its deliberations and drawn up its conclusions independently of the executive and legislative powers.

KEY FIGURES

600

hearings with AI experts
and stakeholders

200

spontaneous contacts
with the Commission

7,000

contributors to
the Agora application

23

plenary Commission
working sessions

25

recommendations
to the government

