



science for people, life & earth

**INRAE**

French national research institute for  
agriculture, food & environment

**INRAE is a broad community of people who are committed to tackling this century's challenges and guiding the transformations that will affect agriculture, food, and the environment**

## a word from the CEO >

INRAE, the new French National Research Institute for Agriculture, Food, and Environment, resulted from the merger of INRA and IRSTEA. Although these two institutes differed in size, approach, and research specialties, they shared an interest in three key themes: agriculture, food, and the environment.

Under the supervision of the Ministry of Higher Education, Research, and Innovation (MESRI) and the Ministry of Agriculture and Food (MAF), we initiated the merger in February 2018, following a period of reflection during which the institutes evaluated the proposal. Our preliminary appraisal of the project affirmed our conviction that the idea was sound and could lead to the synergies necessary for better, higher-impact research.

This merger of two public research institutions is unique in the history of French research. It required more than two years of work and close collaboration between our two communities, as well as a continual dialogue with all our staff members. The overarching aim of the new institute is to capitalise on the strengths of its predecessors, creating the basis for a new dynamic. There remains much to do. However, given the intrinsic potential of this new venture, combined with its

sound strategic choices and the great resolve of those involved, INRAE's future holds great promise. As I write these words, the creation of a new research community is underway. The process we have chosen is based on participation. Therefore, our strategic plan, entitled INRAE 2030, will be presented to and discussed with our diverse social and economic stakeholders.

In our rapidly changing world, we have a duty to facilitate societal transitions by providing the knowledge required to invent tomorrow's agricultural and food systems while simultaneously protecting and restoring our environment. We also have a duty to contribute to the economy by promoting the use of renewable resources to drive economic growth and social responsibility. INRAE has resolved to tackle these unprecedented challenges.

We are aware that society is expecting research-based solutions.

Given what lies ahead, I am proud to be working with a committed and unified group of people who are keenly aware of the societal challenges we are facing. I know that I will be able to count on each and every one of you to help build our sustainable future by working towards the greater good with confidence and determination.

**Philippe Mauguin**  
Chair and Chief Executive Officer

# Vision & missions



Humankind and the planet are facing global changes that, in turn, create challenges for research. These challenges include mitigating climate change and adapting to its effects; increasing food and nutrition security; transitioning to new agricultural systems; preserving natural resources; restoring biodiversity; and anticipating and managing risks. It will also be important to consider more regional issues like living conditions, farmers' salaries, the economic competitiveness of companies, land use, and universal access to healthy and varied diets.

As the world's foremost institute for research on agriculture, food, and the environment, INRAE has a responsibility to address today's greatest challenges. INRAE therefore intends to conduct research, develop innovations, and support public policies with a view to permanently transforming the way we grow crops and breed animals, produce food, and interact with the environment. The institute will pursue research that serves people, life, and the earth by finding solutions to our greatest current problems.

INRAE's diverse research gives rise to ready-to-use results and knowledge via a process that seamlessly combines basic and applied science and that includes both discipline-specific research and interdisciplinary approaches. In the pursuit of its mission, INRAE can rely on a network of research infrastructures and experimental facilities that is unequalled in Europe.

This network is at the centre of the institute's commitment to open and participatory science. Moreover, within France's dynamic network of research institutes and higher education establishments, INRAE carries out its work hand in hand with a variety of partners and contributes to both local and national research policy, most notably through its contributions to French thematic research alliances. Beyond France, INRAE pursues its objectives via international partnerships that allow the institute to collaborate with the best research teams in Europe and the world. Consistent with its strong desire to uphold the essential values of scientific research, INRAE operates according to a code of ethics that is rooted in responsibility, impartiality, integrity, dignity, and probity. These values apply to all the institute's scientific work and management practices.

INRAE is open for business and ready to partner with and provide support to any stakeholders seeking to tackle challenges related to the development of more sustainable agricultural, food, aquatic, forestry, or regional systems. INRAE is actively dedicated to developing new knowledge and delivering novel solutions. These statements are more than just a declaration of intention. They are an engagement.



The world's number one institute for research on agriculture, food, and the environment\*

\*Based on the Web of Science (WOS) specialisation index score: INRAE's representation within the 10 following research domains/ INRAE's representation within all the WOS research domains at the international scale: Agriculture, Plant sciences, Veterinary sciences, Genetics & heredity, Food science & technology, Nutrition dietetics, Biotechnology & applied microbiology, Environmental sciences & ecology, Water resources, Microbiology.





# An ambitious & collaborative research strategy

As an institute performing targeted research, INRAE aims to generate, disseminate, and exploit knowledge, technology, and expertise to inform and promote transitions in agricultural and food systems and to develop strategies for preserving the environment.

## Researchers at INRAE

- **produce and disseminate** knowledge to help solve major societal challenges
- **put** this knowledge to work to foster innovation, provide training and expertise and support public policy
- **collaborate** with a broad diversity of stakeholders, including academics, socio-economic players, non-profit organisations and the general public

## INRAE's approach involves

- interdisciplinary foresight analysis of current challenges
- research at the frontiers of knowledge that favours breakthroughs
- academic partnerships at regional, national, European, and international scales that are firmly tied to regional structures within the system of higher education and research
- partnerships with various stakeholders in the field, such as farmers, private companies, NGOs, and regional governments
- open-source tools for promoting innovation that allow the free exchange of ideas, knowledge, and experience
- infrastructures that encourage collaborative research through the sharing of data and knowledge assets
- outreach to the general public to explain, debate, and contribute



**"At INRAE, we are all enthusiastic about doing research that will help the planet and its inhabitants"**

Christine Cherbut

## INRAE 2030, a participatory project

Drawing on the strength of its research community, INRAE is committed to collaboratively defining its strategic plan for the coming decade. To this end, the institute invites all its partners to take part in this common exercise, which is both ambitious and realistic. It is anticipated that using such a participatory approach will increase the number and diversity of contributions to INRAE's 2030 plan, leading to a richer and sounder final result.



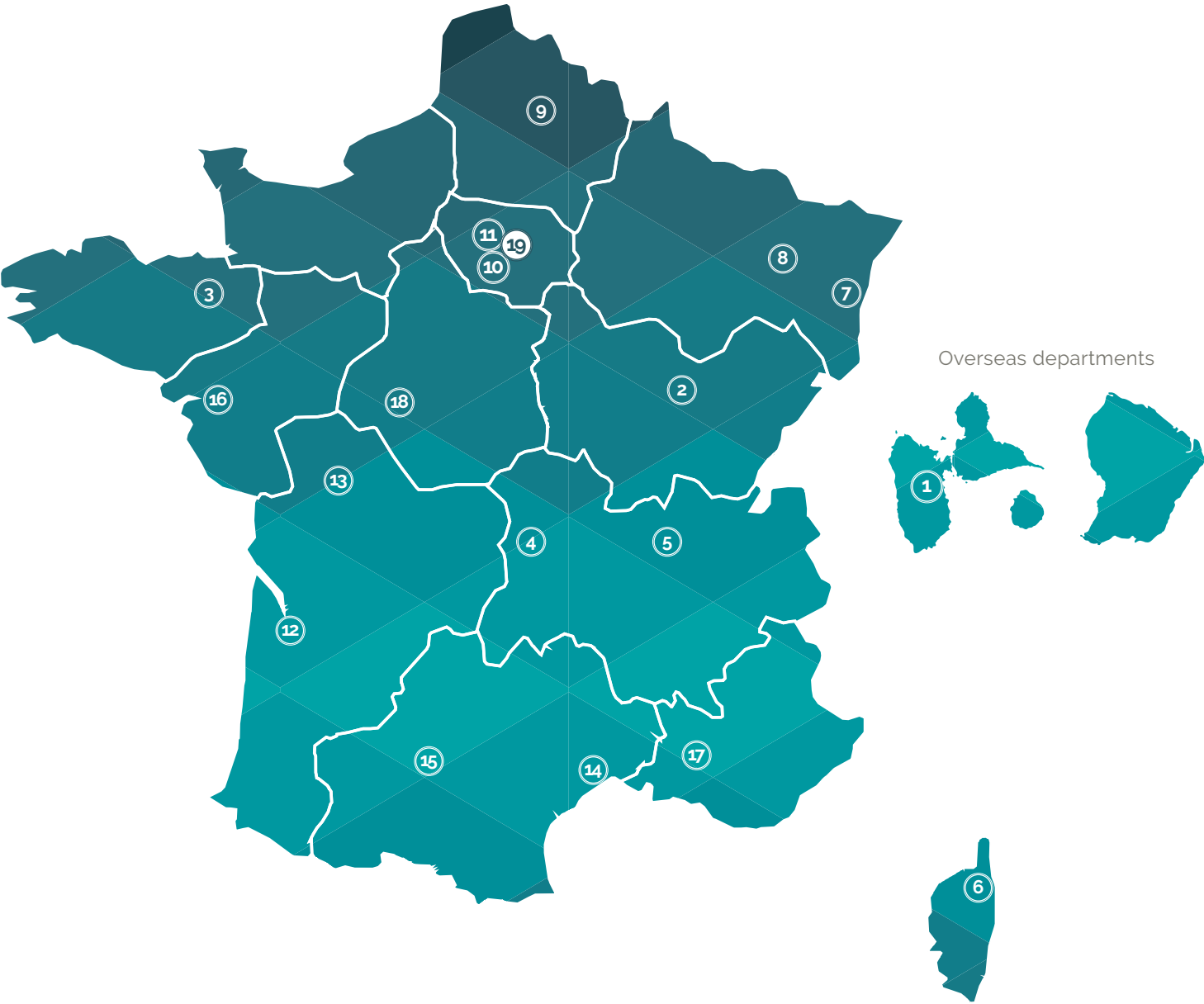
Tackling the major complex challenges faced  
by humanity and the planet





# The centres

With its 18 research centres, INRAE is rooted in all of France's regions. The institute's headquarters are split between two locations.



- ① **French Antilles and French Guiana**  
President: Harry Ozier-Lafontaine

② **Burgundy-Franche-Comté**  
President: Nathalie Munier Jolain

③ **Brittany-Normandy**  
President: Hélène Lucas

④ **Clermont - Auvergne-Rhône-Alpes**  
President: Emmanuel Hugo

⑤ **Lyon-Grenoble - Auvergne-Rhône-Alpes**  
President: Pascal Boistard

⑥ **Corsica**  
President: François Casabianca

⑦ **Grand Est-Colmar**  
President: Serge Kauffmann

⑧ **Grand Est-Nancy**  
President: Meriem Fournier

⑨ **Hauts-de-France**  
President: Jean Tayeb

⑩ **Île-de-France - Jouy-en-Josas-Antony**  
President: Thierry Pineau
- ⑪ **Île-de-France - Versailles-Grignon**  
President: Camille Michon

⑫ **Nouvelle-Aquitaine-Bordeaux**  
President: Olivier Lavialle

⑬ **Nouvelle-Aquitaine-Poitiers**  
President: Abraham Escobar-Gutierrez

⑭ **Occitanie-Montpellier**  
President: Sylvain Labbé

⑮ **Occitanie-Toulouse**  
President: Pierre-Benoit Joly

⑯ **Pays de la Loire**  
President: Emmanuelle Chevassus Lozza

⑰ **Provence-Alpes-Côte d'azur**  
President: Jean-Philippe Nabot

⑱ **Val de Loire**  
President: Catherine Beaumont

⑲ **Headquarters in Paris-Antony**  
Head administrator: Karine Gueritat



# The divisions

INRAE has 14 scientific divisions, each structured around specific disciplines but engaged in both disciplinary and interdisciplinary research



## AGROENV

Design and evaluation of agroecosystems; characterisation of agroecosystem functions and changes at different organisational scales  
Head of division:  
Philippe Hinsinger



## ALIM. H

Relationships between food, health, the environment, and society; nutrition security and food toxicology  
Head of division:  
Jean Dallongeville



## GA

Structure, expression, and evolutionary dynamics of animal genomes; genetic architecture of traits; management and exploitation of genetic variability  
Head of division:  
Edwige Quillet



## MICA

Functioning, management, and exploitation of micro-organisms and microbial ecosystems (food, health, biotechnology)  
Head of division:  
Sylvie Dequin



## NUMM

Mathematics, informatics, and artificial intelligence; data and digital sciences and technologies; modelling and complex systems  
Head of division:  
Hervé Monod



## PHASE

Design of sustainable, animal welfare-friendly livestock systems; mechanisms underlying the development of phenotypes, behaviours, and products  
Head of division:  
Françoise Médale



## AQUA

Functions of and changes in aquatic ecosystems, the water cycle, and biogeochemical cycles  
Head of division:  
Mohamed Naaim



## BAP

Characterisation of the main functions of plants; management and exploitation of genetic diversity  
Head of division:  
Isabelle Litrico-Chiarelli



## SA

Animal health: preventing, detecting, and fighting diseases of livestock caused by infectious agents and chemical agents using a One Health/ecohealth approach  
Head of division:  
Muriel Vayssier-Taussat



## SPE

Crop health and protection: plant- to landscape-level agroecological approaches  
Head of division:  
Christian Lannou



## ECOFA

Structures, functions, and changes observed in continental ecosystems little affected by humans  
Head of division:  
Catherine Bastien



## ECOSOCIO

Economics and sociology for agriculture, food, and the environment  
Head of division:  
Alban Thomas



## TERRA

Transformations in agriculture, socio-ecological systems, and food systems from the perspectives of stakeholders and as manifest in their actions  
Head of division:  
Benoît Dedieu



## TRANSFORM

Processes for transforming renewable resources into food and bio-based products; upgrading waste produced by human activities  
Head of division:  
Michael O'Donohue

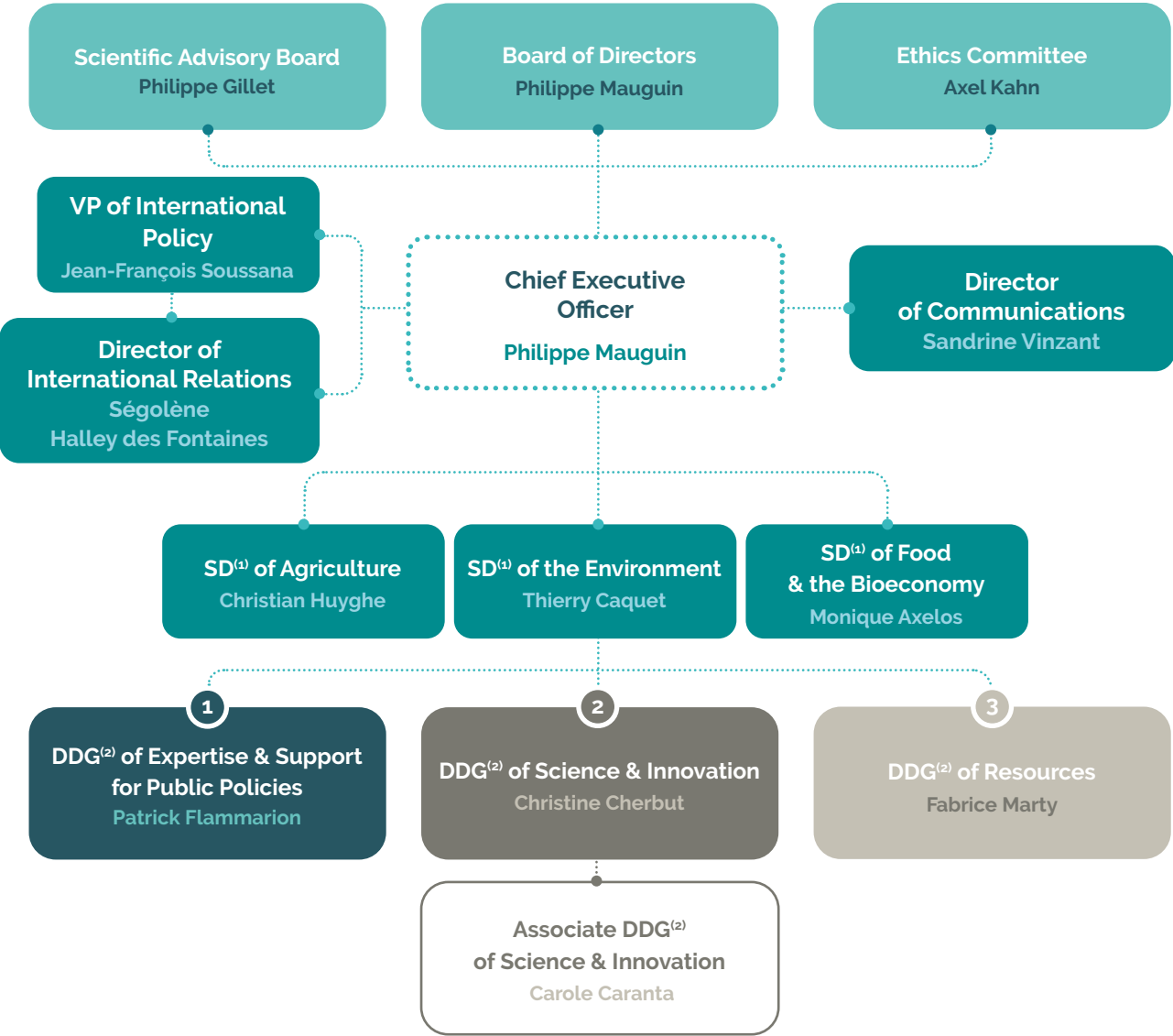


An organisation that works to produce knowledge, foster innovation, provide expertise, and inform public policies

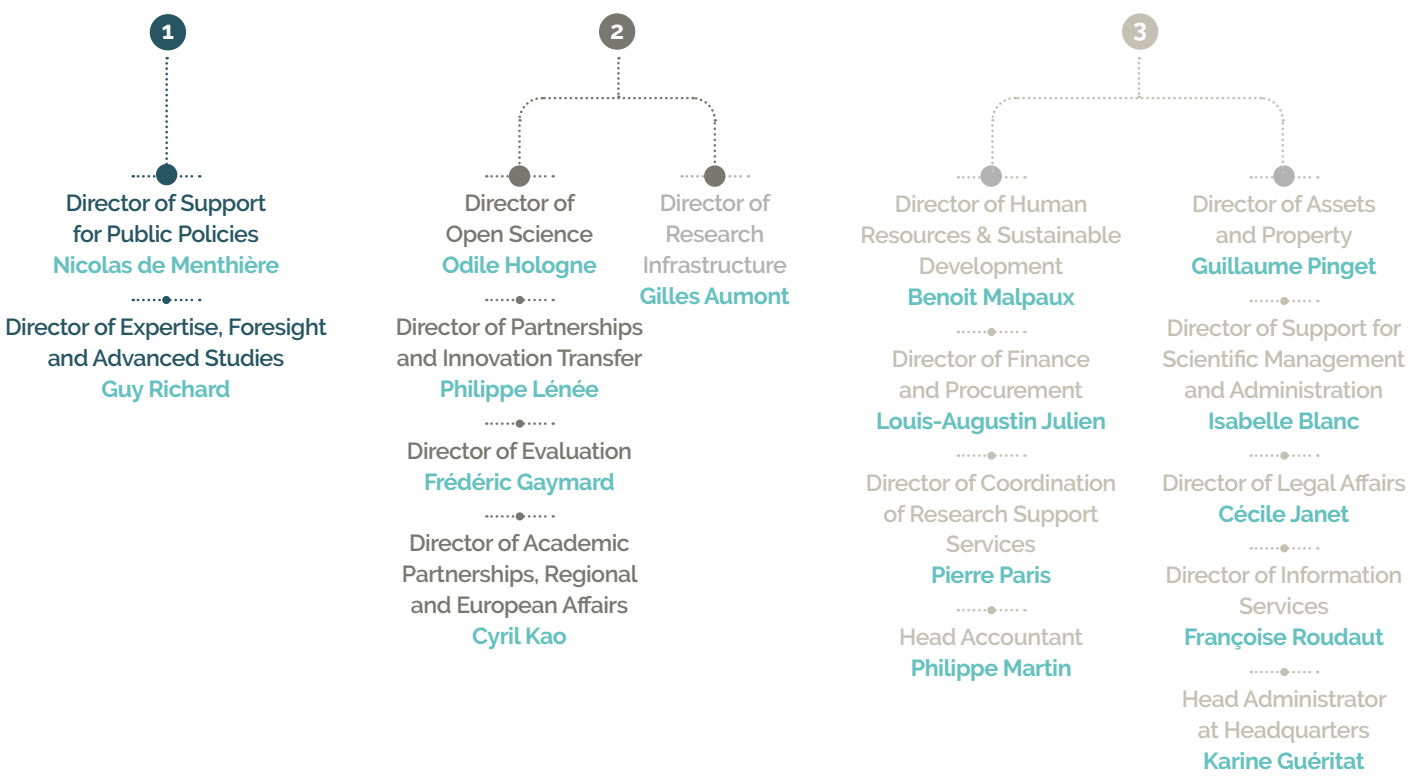


# Our structure

INRAE's Management Board defines the institute's main types of research and research support



<sup>(1)</sup> Scientific Director  
<sup>(2)</sup> Deputy Director General





A group of people are sitting in a circle, engaged in a discussion. The focus is on their hands and arms as they gesture while talking. The background is slightly blurred, showing more people in the circle. The overall tone is collaborative and participatory.

**A firm belief that science should be  
open and participatory**







## Expertise and support for public policies

INRAE's Directorate-General of Expertise and Support for Public Policies helps put the institute's scientific knowledge to use in the development of expertise, foresight studies, and support for the creation and implementation of public policies. The aim is to anticipate societal challenges.

By transmitting its research results to policy stakeholders, policy-makers, ministries, national agencies, regional governments, the European Commission, and/or international organisations, INRAE embraces a collaborative approach that balances long-term perspectives and current policy priorities. These exchanges enrich the institute's work, infuse its research with relevance, and contribute to societal debates.

### The goal of this directorate is to

- **help** policy-makers exploit 1) recent research developments in the agricultural, food, and environmental sciences; 2) the results of INRAE foresight studies; and 3) INRAE's ability to incorporate knowledge via a transversal approach
- **build** close collaborations with policy-makers at local to international scales
- **offer** expertise that provides a standard of reference at the national, European, and international level
- **use** innovative tools and participatory processes to provide expertise and support for public policies



"We must anticipate the major challenges we will face, contribute to societal debates, and inform public policies"

Patrick Flammarion



## Partnerships & innovation transfer

A wide range of shared facilities are found in the institute's research infrastructures, whose excellence is highlighted by their inclusion in national and European roadmaps.

INRAE's socio-economic partnership strategy is built around a set of key innovation areas; several of the latter overlap with the themes of certain Carnot Institutes (French public research centres that contract with industry partners).

### Actions that foster a culture of innovation

- All invention disclosures and exploitable results are subject to in-depth assessments to determine the form that innovation should take (e.g., patents, software, serious games, or plant variety certificates).
- Research teams are trained to exploit their findings and transform them into innovations via workshops focused on creating value from research.
- INRAE holds one-day workshops on business creation to help guide individuals who wish to create their own companies.

### A network dedicated to helping scientists exploit and transform their results

- 40 project engineers found across France help researchers put together, carry out, and manage projects.
- 15 staff members are tasked with developing new partnerships and innovation-generating projects; their responsibility is to provide support for the target strategy in each domain of innovation.
- 10 staff members focus on value creation; they help transfer inventions to the socio-economic sphere and create new companies.



# 40

project engineers  
found across France  
help researchers

# 15

staff members are tasked with  
developing new partnerships and  
innovation-generating projects

# 10

staff members focus  
on value creation





# Europe and the World

Bolstered by its European and international partnerships, INRAE is committed to playing a key role in the conversion of knowledge into concrete, sustainable solutions.

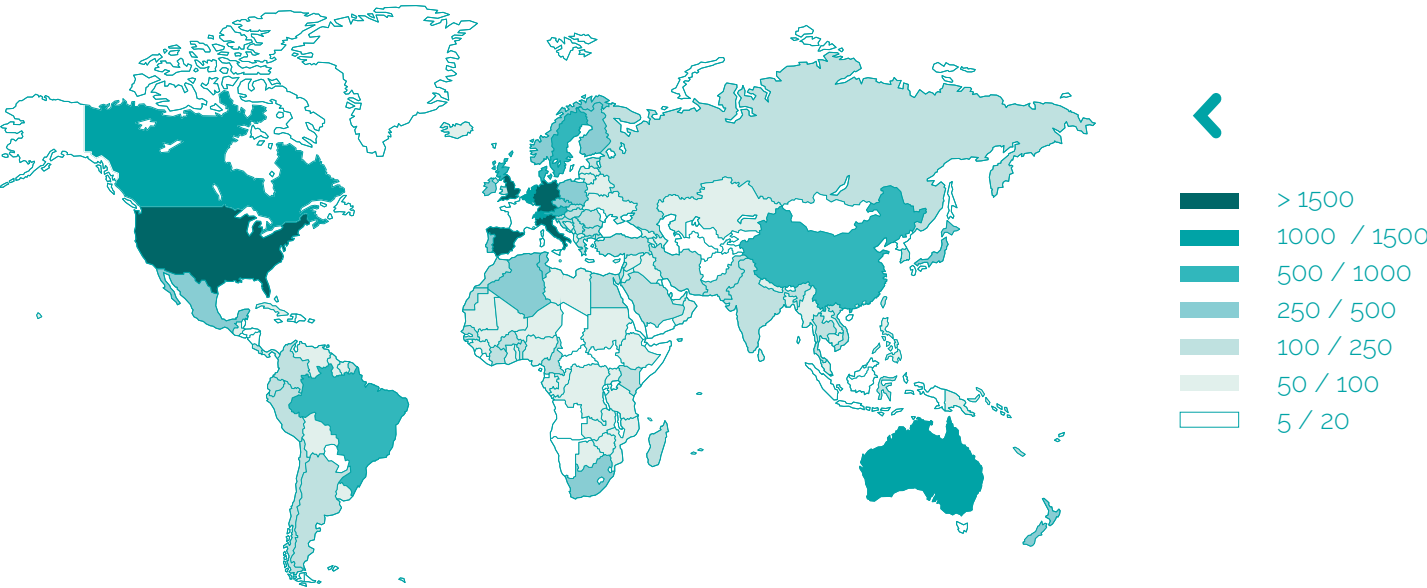


"The support that institutes in the European Union provide to international collaborators creates synergies between Europe and the rest of the world"

Jean-François Soussana

Map of publications co-authored by INRAE scientists

Data from Web of Science InCites Clarivate Analytics - 2014-2018 (InCites dataset 26/09/19)



## European partnerships

INRAE plays a major role in advancing European research. The institute coordinates and participates in numerous European projects and contributes to shared infrastructures.

- **Research projects:** In 2019, INRAE participated in 166 European research projects (acting as coordinator in 49 cases)
- **Infrastructure:** INRAE leads or participates in 7 ESFRI projects (which involve collaborations among European countries) and 11 projects aimed at consolidating research infrastructures (which involve collaborations among European research institutes)

## Active collaboration with European and international partners

INRAE plays an active role in EU-funded programmes. Through various means (via joint research programmes focused on water resources and climate change and via networks of European institutes, such as the Partnership for European Environmental Research [PEER]), the institute is building structured partnerships with European collaborators. INRAE's international partnerships take three forms:

- **International associated laboratories (LIAs):** laboratories without borders where INRAE scientists work with international collaborators to build shared projects of excellence
- **International research networks:** INRAE participates in networks focused on specific research themes of strategic importance
- **Priority projects of international scope:** INRAE helps to structure tools and resources to boost research in specific subject areas

## The priority project of international scope "Soils and climate change"

emerged from the 4 per 1000 initiative proposed by France during the 2015 United Nations Climate Change Conference (COP 21). It has established a global research alliance (during a preparation phase funded by the European Commission) that is linked to innovation-focused projects centred on carbon storage and carbon monitoring in soils, notably via the Climate Knowledge and Innovation Community (Climate KIC).

166  
European research projects



Scientific solutions for  
people, life, and the earth







## Human resources and attractive working conditions

With a staff of over 12,000 people, an annual budget of more than 1 billion euros, and an unparalleled wealth of expertise, INRAE embodies a different approach to collective action and is committed to making broad strides in sustainable development. To this end, the institute is using first-rate approaches to manage its human resources.

### ➤ Human Resources Excellence in Research Award from the European Commission

INRAE received the European Commission's Human Resources (HR) Excellence in Research Award because of its high-quality recruitment, hiring, and training practices, as well as its work to promote healthy psychological and social working conditions. The institute remains committed to applying this HR approach to create a favourable work environment for all its staff.



### ➤ A commitment to equality and diversity

INRAE has adopted a vigorous gender equality policy to increase the representation of women in all areas and at all levels of responsibility. When it comes to hiring decisions and career advancement, the institute's diversity policy ensures a level playing field for everyone. Notably, INRAE is committed to the greater inclusion of people with disabilities. This policy reflects the institute's belief that a diverse and multicultural workforce is a valuable resource. As a result of these efforts, INRAE received Diversity and Equality at Work certification from AFNOR in January 2020.




- We firmly believe that promoting a **healthy work-life balance** is important to fostering positive working conditions. INRAE provides attractive employee benefits to staff at all levels. These benefits include flexibility in defining one's work shift and location, the option to telecommute, the option to work part-time, and structural support during life transitions.

### Strengthening our level of commitment



- By encouraging a caring approach, respecting the right to make mistakes, and promoting openness to the world
- By demonstrating our commitment to sustainability through our daily actions, such as limiting our greenhouse gas emissions via researcher mobility policies, purchasing decisions, the use of digital tools, and optimised building management; using more sustainable management methods during our research projects; and transforming our 11,000 hectares of experimental land into unique biodiversity hotspots



"Working at INRAE gives me an opportunity to express my values through my work"

Fabrice Marty

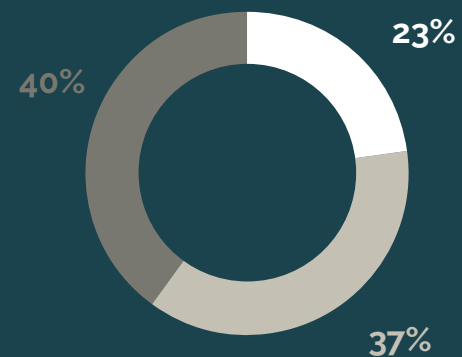
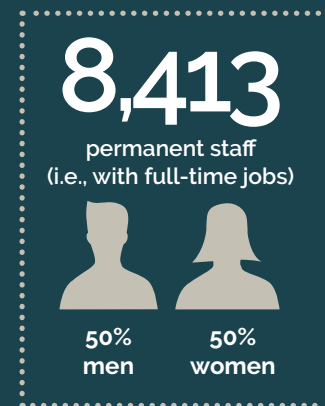


# Key Figures

Combined data from 2018 for INRA and IRSTEA

## Personnel

(employees at INRA and IRSTEA in 2018)



- 1,965 researchers
- 3,115 engineers and assistant engineers
- 3,333 technicians

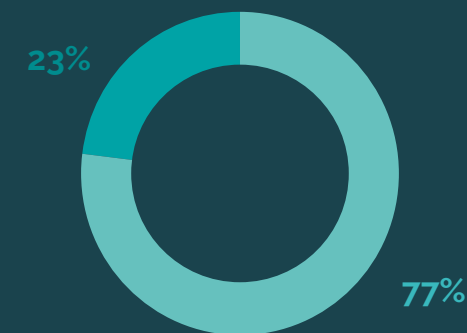
## Structure

**18**  
centres

**14**  
scientific  
divisions

**268**  
research units,  
experimental research  
units, and support units

## Budget



**Resources:**  
**Budget of €1.0271 billion**

➤ **€794.9 M** in public  
subsidies from the French  
government

✓ **€232.2 M** in  
autonomous resources

**€184 M** in autonomous  
resources produced by  
research contracts

**€48.2 M** in autonomous  
resources from other  
sources

## Partnerships & innovation transfer

### Socio-economic partnerships

- More than **450** socio-economic partners
- **€30.9 M** in revenue
- **5** Carnot Institutes

### Intellectual property

- **156** invention disclosures & exploitable results
- **46** patent applications filed

### Value creation from research results

- **97** new licenses requested for patents, expertise, software & plant variety certificates
- **€9.1 M** of revenue obtained from patents, consultancy work, software & plant variety certificates

### Business creation

- **137** start-ups home grown at INRAE since 1999

## Education

- **2,000** PhD students  
(40% from foreign countries)
- INRAE is partnered with **33** local universities across France



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**INRAE**  
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