



*Liberté • Égalité • Fraternité*

RÉPUBLIQUE FRANÇAISE

AMBASSADE DE FRANCE EN INDE



## Indo-French cooperation : Different mechanisms

Srini Kaveri

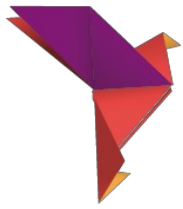
CNRS

New Delhi

[srini.kaveri@cnrs.fr](mailto:srini.kaveri@cnrs.fr)

# Three priorities





# Ways of Collaboration with EU

1. **Collaborative research - Horizon Europe** : Health, Water, Bio-economy, Biotechnology, Nanotechnologies, Advanced materials, ICT, Energy, ICT etc.
2. **Researchers Mobility: Marie Skłodowska-Curie Action** : PhD, Post-Doc and short-term mobility of research and innovation staff;
3. **European Research Council (ERC)** grants support individual researchers of any nationality and age who wish to pursue their frontier research.

# H2020 and the ERC

Researchers career development and complementary EU funding schemes-  
Possible path for individuals





Institut de Recherche  
pour le Développement  
FRANCE

French National Research Institute for Sustainable Development

**A major player**  
in sustainability science







# National Institute for Research in Digital Science and Technology

*Institut National de Recherche en Informatique et en Automatique*



# Some figures



- **Horizon 2020 :**
  - **52** Individual Fellowships
  - **42** Innovative Training Networks (**47** recruited PhD Students / **8** are still about to be recruited)
  - **8** Research and Innovation Staff Exchanges
- **FP7 :**
  - **97** fellowships : **49** Individual Fellowships (IXF) & **48** Reintegration fellowships (CIG, RG)
  - **15** Innovative Training Networks (**22** recruited students)
  - **3** International Research Staff Exchange Scheme
  - **1** Industry-Academy Partnerships and Pathways

Inserm has signed the Charter & Code in **2006** and has received the "HR Excellence in Research" **label in June 2016**.





**600 M€**  
budget (2019)



**6300 collaborators (2019)**  
including University, CNRS, INSERM -> 32 joint labs

- 950 PhD (50% foreign)
- 900 post-docs and non permanents



**3759**  
publications p.a  
(2019)



**203 industrial**  
research  
contracts



**566 active**  
patents  
(2018)



**33 startups**  
since 2000



**250 H2020**  
European  
Projects



**89 ERC grants**  
since 2007

## Research in physics and related instrumentation

- ❖ Climate and environmental sciences
- ❖ Condensed matter physics, physics of complex systems, laser-matter interactions
- ❖ Nuclear and high-energy physics
- ❖ Astrophysics
- ❖ Cryotechnologies
- ❖ Theoretical physics
- ❖ Modelling and associated tools

## Microelectronics

- ❖ Nanosciences including quantronics, photonics, spintronics

## Basic research in life sciences

- ❖ Fundamental biology and health
- ❖ Radiobiology, toxicology
- ❖ Fundamental biology, sustainable development and the energy transition
- ❖ Methodological innovations for fundamental biology (structural biology, omics method, etc.)

## Technologies for the medicine of the future

- ❖ Medical imaging and development of associated tools
- ❖ Technologies for prevention and diagnosis
- ❖ Therapeutic innovations
- ❖ Digital health methods (large scale analysis)

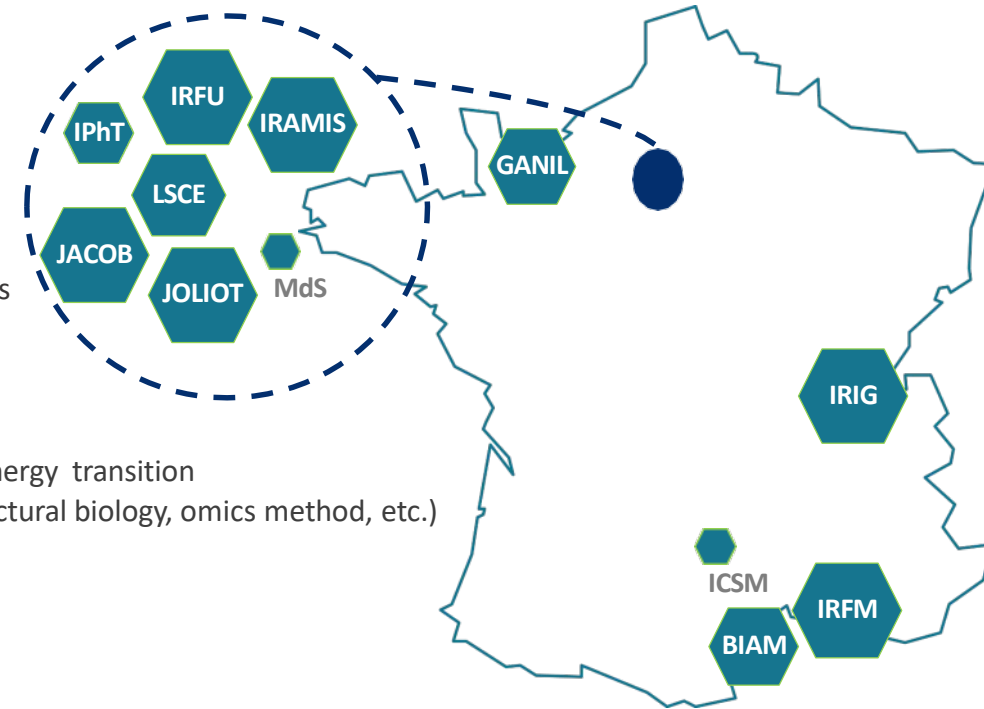
## Renewable energy

- ❖ Materials science and chemistry

## Nuclear fusion

- ❖ Tokamak plasma physics
- ❖ Fusion systems engineering

## Development of very large research infrastructures, including high performance computing





# Ifremer

**Institut Français de Recherche  
pour l'Exploitation de la Mer**



# EXPLORING, UNDERSTANDING AND PREDICTING THE OCEAN, FOR OUR PLANET AND OUR FUTURE

## OUR MISSIONS

### RESEARCH

Improving  
KNOWLEDGE  
of the ocean

### INNOVATION

Contributing  
to BLUE  
GROWTH

### EXPERTISE

Supporting  
the deployment  
of PUBLIC  
POLICIES



## OUR AREAS OF EXPERTISE

**INRAE**

la science pour la vie, l'humain, la terre

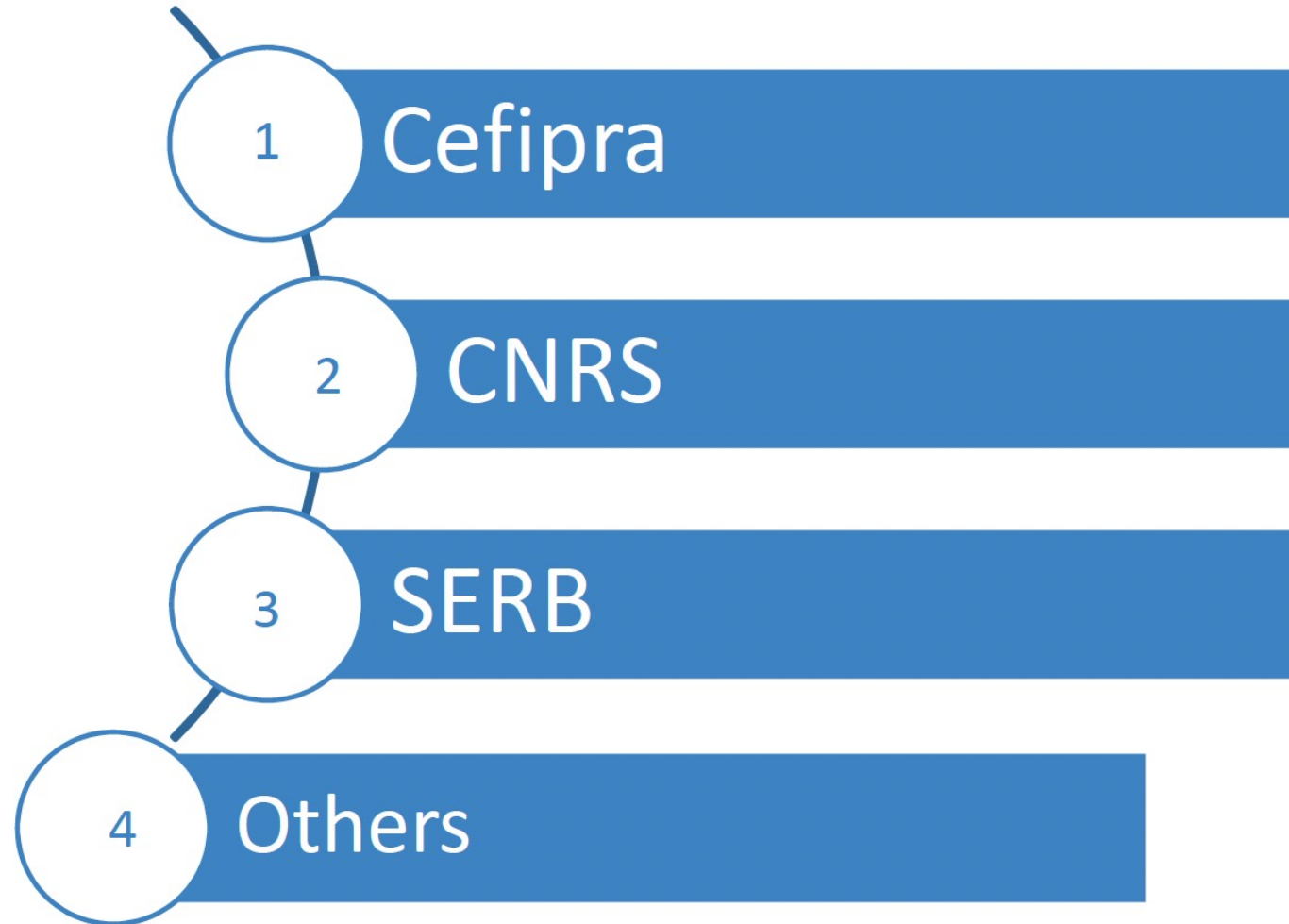
***Institut national de  
recherche pour l'agriculture,  
l'alimentation et  
l'environnement***



**cnes**

How can we collaborate with  
France?

# Financing Sources





1

# Cefipra

<http://www.cefipra.org/>

- **Collaborative Scientific Research Programme –CSRP** focuses on academia-to-academia collaborations between Indian and French academic collaborators in various domains.
- **Industry Academia Research & Development Programme - IARDP** emphasizes to develop the linkage between Industry and Academia from France and India.
- **Seminars/Workshops/Training Schools** in topics of current relevance and interest to both India and France in the areas of Science &Technology

**TWO CALLS PER YEAR !!**



# Raman-Charpak Scholarship: Doctoral stay in France

For students already enrolled for PhD in India

For a doctoral stay in a French lab

Duration: 2-6 months

Amount: 1500 €/months

Also for students doing their Master or PhD in France, for a doctoral stay in an Indian lab

Fields of research: Atmospheric and Earth Sciences, Chemical Sciences, Engineering Sciences, Life and Medical Sciences, Material Sciences, Mathematical and Computational Sciences, Physical Sciences, Environmental Sciences



# Charpak Programme : Master and Bachelor

[www.inde.campusfrance.org](http://www.inde.campusfrance.org)



## *Charpak Exchange (Autumn and spring session)*

- Living allowance of **700 euros**
- Student visa and Campus France fee waiver
- Assistance to find affordable student accommodation

## *Charpak LAB*

- Monthly stipend for maximum 3 months (May to July) of **650 / 800 euros** (students interning outside / in Paris)
- Student Visa and Campus France fee waiver

3

SERB

<https://www.serbonline.in/SERB/HomePage#>

## Schemes & Programs

- **Intensification of Research in High Priority Areas (IRHPA)**
- **Start-up Research Grant (SRG)**
- **Core Research Grant**
- **Scientific and Useful Profound Research Advancement (SUPRA)**
- **Empowerment and Equity Opportunities for Excellence in Science**
- **Mathematical Research Impact Centric Support (MATRICS)**
- **Impacting Research Innovation and Technology (IMPRINT-2)**
- **International Travel Support**
- **Seminar/Symposia**
- **Short-term special call on COVID-19**
- **SERB-POWER Grant**



## Awards & Fellowships

- **National Post Doctoral Fellowship**
- **J.C. Bose Fellowship**
- **Ramanujan Fellowship**
- **Teachers Association for Research Excellence (TARE)**
- **Visiting Advanced Joint Research Faculty (VAJRA)**
- **Overseas Visiting Doctoral Fellowship (OVDF)**
- **SERB Science and Technology Award for Research (SERB-STAR)**
- **SERB Women Excellence Award**
- **SERB-POWER Fellowship**
- **SERB Technology Translation Award (SERB-TETRA)**
- **National Science Chair**

# For International Faculty

## Research and Mobility Funding in India

Are you a scientist, faculty member or R&D professional ?

Are you looking for research and mobility funding in India?

**Here are some interesting schemes by the Government of India**

## Visiting Advanced Joint Research (VAJRA)



- An opportunity to do research with the fastest growing major economy
- An opportunity to work with talented Indian researchers
- An opportunity for accomplished researchers worldwide



## Scheme For Promotion Of Academic And Research Collaboration (SPARC)



SPARC aims to enhance collaboration between Indian academic and research institutions, and the best foreign institutions, mainly by increasing foreign faculty and student participation in Indian institutions, promoting high quality joint research monographs, joint workshops/conferences and GIAN-type courses



**Global Initiative for Academic Networks (GIAN)** in Higher Education is aimed at tapping the talent pool of scientists and entrepreneurs internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence. GIAN is envisaged to catalyse higher education institutions in the country, and that it will initially include all IITs, IIMs, Central Universities, IISc Bangalore, IISERs, NITs and IIITs subsequently cover good State Universities where the spinoff is vast. GIAN is an evolving scheme which will initially include participation of foreign faculty in Institutes as Distinguished / Adjunct / Visiting faculty / Professors of Practice, etc., to participate in delivering Short or Semester-long Courses. Other activities will be included in due course.

## CONTACTS



### **Dr. Praveenkumar S**

Programme Coordinator  
Science and Engineering Research  
Board  
5 & 5A, Lower Ground Floor  
Vasant Square Mall  
Sector-B, Pocket-5  
Vasant Kunj  
New Delhi-110070

Phone: 011 2659 0353  
Tele fax: 011 2696 3695  
E-mail: [praveen@nic.in](mailto:praveen@nic.in)



Scheme for Promotion of Academic and Research Collaboration

SPARC Cell  
Indian Institute of Technology  
Kharagpur  
Kharagpur 721302  
West Bengal, INDIA

Email: [support@sparc.iitkgp.ac.in](mailto:support@sparc.iitkgp.ac.in)

Website: <http://sparc.iitkgp.ac.in>



**Global Initiative for Academic Networks**  
Indian Institute of Technology, Kharagpur  
Kharagpur - 721302, India

Official Query

Email: [gian@iitkgp.ac.in](mailto:gian@iitkgp.ac.in)  
Phone: +91-3222-282288

Technical Queries of GIAN Application Portal

Email: [ddprasad@gmail.com](mailto:ddprasad@gmail.com)  
CC To: [technicalgian@gmail.com](mailto:technicalgian@gmail.com)

Profile Updating, Courses Registration  
& Participant Login Portal

Email: [kdkuntalxyz@gmail.com](mailto:kdkuntalxyz@gmail.com)  
CC To: [technicalgian@gmail.com](mailto:technicalgian@gmail.com)

UC Related Query or Submission

Email: [uc.gian.iitkgp@gmail.com](mailto:uc.gian.iitkgp@gmail.com)



# Young International Faculty Program



**IIT MADRAS'  
YOUNG INTERNATIONAL FACULTY  
PROGRAM**

## Young International Faculty – Program & Responsibilities

### Program Objective

To recruit full-time foreign faculty (non-Indian citizens/ non-OCIs) at the equivalent level of Assistant Professor.

Targeting recent doctoral graduates who would like to primarily focus on academic research with a host research group at IITM. As a faculty member within the research group, the YIF will also jointly supervise M.S. and Ph.D. students. The faculty member may also assist in teaching.

**Ratio of time allocated for research : teaching is 90%:10% (approximately).**

Expectations of the YIF:

- The establishment of an independent, high-impact research program within the larger framework of the affiliated research group by the end of the 1<sup>st</sup> year
- Significant and measurable research output (such as papers in top journals in related field, patent filing, industry / socially-relevant solutions, etc.) by the end of the 2<sup>nd</sup> & 3<sup>rd</sup> years

The YIF Program is seeking recent doctorates and post doctoral Fellows from renowned universities across the globe.

Applications should be made through a host faculty member at IIT Madras in the form of a detailed academic CV, stating the educational background of the applicant, research plan and industrial consultancy plan (if applicable), details of prior research output, awards & other recognitions.







**Short-term Visiting program  
for French students/researchers  
at Indian Institute of Science, Bangalore**



## CNRS was created on 19 October 1939

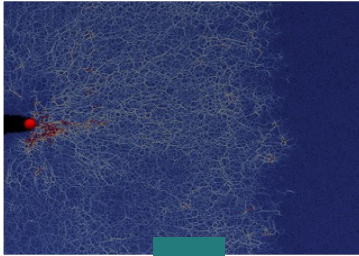
*"Il n'est pas de science possible où la pensée n'est pas libre, et la pensée ne peut pas être libre sans que la conscience soit également libre. Chacun de nous peut bien mourir, mais nous voulons que notre idéal vive".*

Jean Perrin, 23 septembre 1939, extrait du discours  
raté devant le parlement

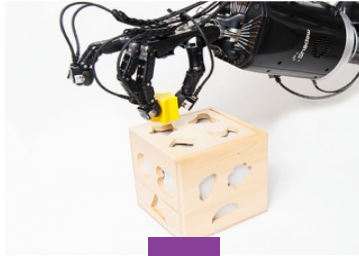
**"...the mobilization of French laboratories through CNRS amounted to the creation of a new regiment.."**

"CNRS. **la naissance**" c'est aussi une exposition virtuelle :  
[www.cnrs.fr/paris-michel-ange/CNRSnaissance/](http://www.cnrs.fr/paris-michel-ange/CNRSnaissance/)

# Our 10 scientific DEPARTMENTS (*Instituts*)



**Mathematical Sciences  
& their Interactions**



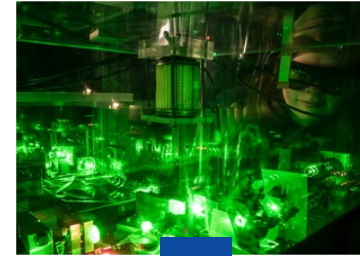
**Information  
Sciences &  
Technologies**



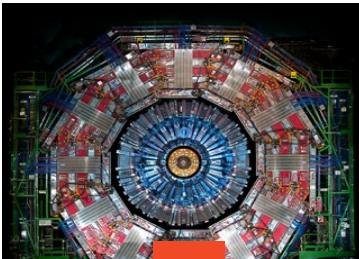
**Engineering  
& Systems  
Sciences**



**Chemistry**



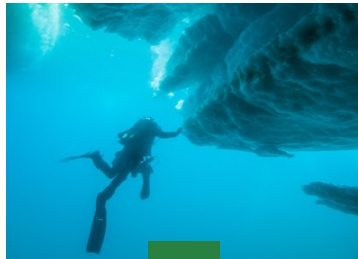
**Physics**



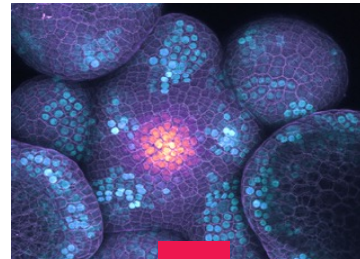
**Nuclear & Particle  
Physics**



**Earth Sciences and  
Astronomy**



**Ecology  
& Environment**



**Biological Sciences**



**Humanities &  
Social Sciences**





## CNRS - French National Centre for Scientific Research

- Interdisciplinary public research organisation
- Internationally recognised for the excellence of its scientific research

### Research fields :

- Biology
- Chemistry
- Ecology and environment
- Humanities and social sciences
- Engineering and systems
- Mathematics
- Nuclear and particles
- Physics
- Information sciences
- Earth sciences and astronomy

**3.3 billion**  
A budget of

**33,000**  
people dedicated  
to research

**1,144**  
research  
laboratories in  
France and  
abroad

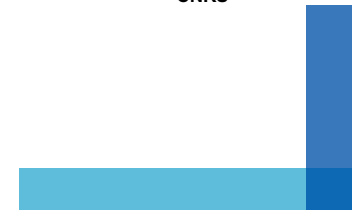
### CNRS participation in Horizon 2020 (2014-2020)

- Participation in 1728 H2020 projects (~18% success rate) including 507 MSCA projects (all actions incl.)
- **324 MSCA Individual Fellowships funded** (17,3% successrate)

<https://www.cnrs.fr/en>



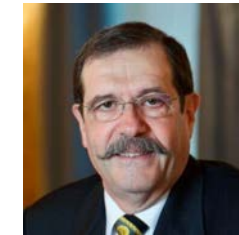
CNRS



# CNRS in Numbers

- **Research**
    - Over 55 000 publications per year, 60 % of which with international collaboration
    - 6th in patent filing
  - **Ressources**
    - Budget 2021 : 3,7 Billion €
    - Over 32 000 staff at CNRS
- 12 Fields Medal winners  
- 23 Nobel Laureates

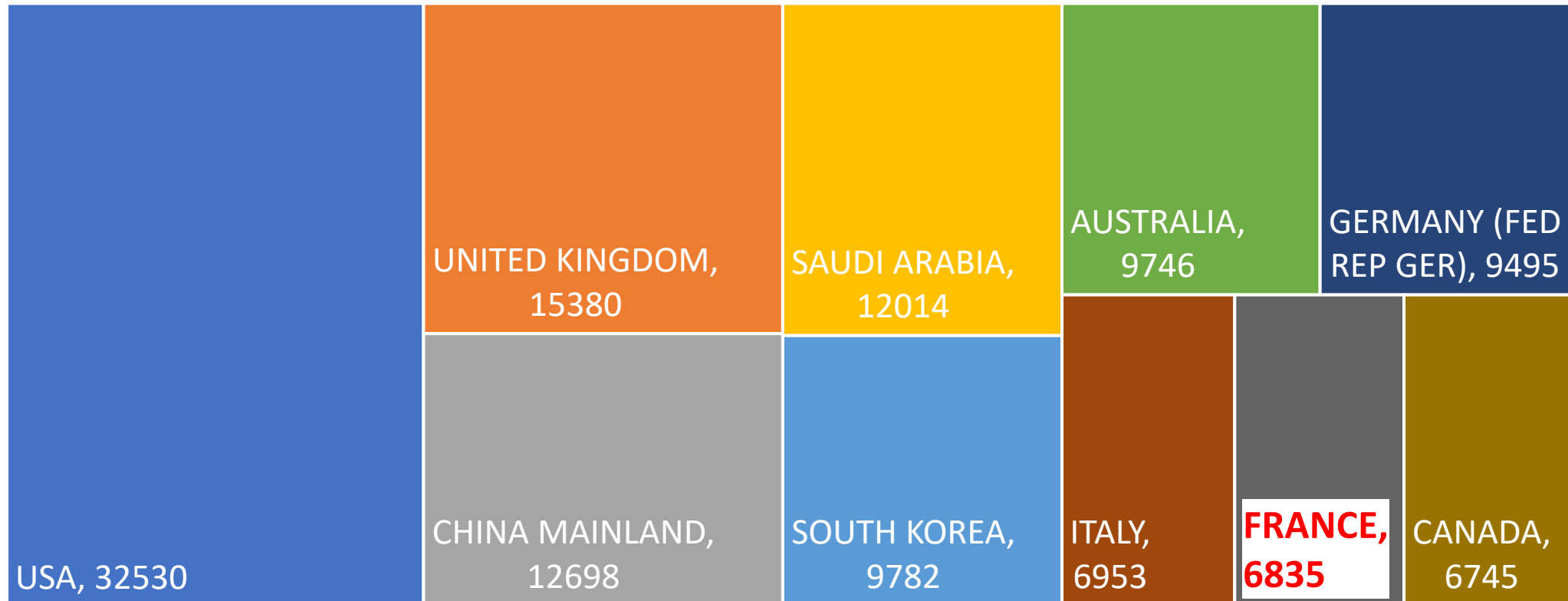
Alain Aspect  
Physics 2022



## Implantations

- Over 1100 research units
- 80 International Res Labs
- 10 offices all over the world

## India's top 10 scientific partner countries in 2019-21 (N= 112,800 international co-publications)



Source : Web of Science, Incites ; traitement CNRS-Derci

# CNRS in India

## Scientific cooperation agreements

- Council of Scientific and Industrial Research (CSIR)  
signed in 1975, renewed in 1990, 1997, 2004 , 2012 and 2019

- Department of Science and Technology (DST)  
Ministry of Science & Technology: 2004, 2012 and 2015

- Department of Biotechnology (DBT) (2015)  
Centre of Excellence in Marine Biotechnology (Goa)

- Indian Institute of Science Education and Research  
(2016)

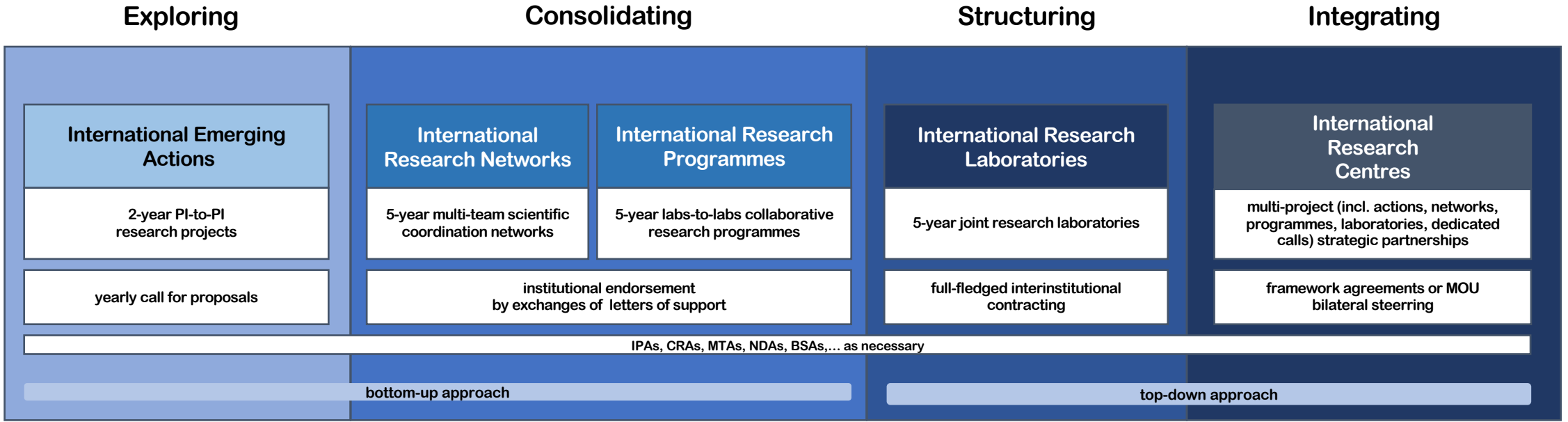
- **National Centre for Biological Sciences (NCBS)**  
**Signed in 2012 with Institut Curie**







# Tools of cooperation with CNRS



Instruments for International Collaboration

[www.cnrs.fr](http://www.cnrs.fr)

# International Emerging Actions (PICS)



Urb-India  
TELLE Olivier, Géographie-cités, Paris  
MUKHOPADHYAY Partha

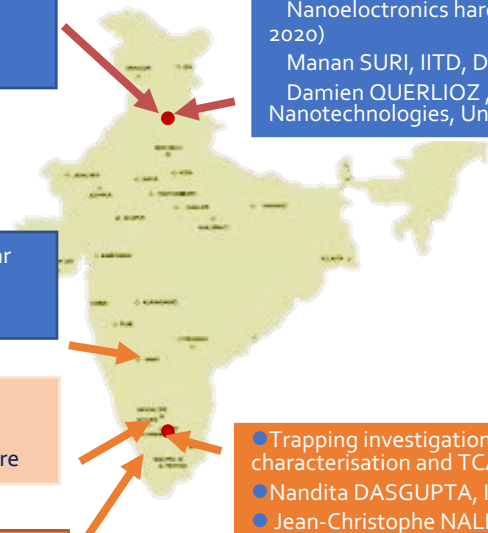
Nanoelctronics hardware for unconventional computing(2018-2020)  
Manan SURI, IITD, Delhi  
Damien QUERLIOZ , Centre de Nanosciences et de Nanotechnologies, Université Paris- Saclay,

Role of prebiotic processes on the origin of molecular complexity on the early Earth  
DERR Julien, Paris; Sudha RAJAMANI, IISER Pune

Microwave remote sEnsing for watEr Resources managEmEnt iN berambaDi wAtershed ZRIBI Mehrez, TOULOUSE Sekhar MUDDU, IISc, Bangalore

Advanced NANocomposites for micro and nanoSensors Applications  
ROUXEL Didier, Institut Jean Lamour Nancy  
Sabu THOMAS, Mahatma Gandhi University, Kottayam,

● Trapping investigation in GaN-based HEMTS using experimental characterisation and TCAD simulation (2018-2020)  
● Nandita DASGUPTA, IITM, Chennai  
● Jean-Christophe NALLATAMBY , Université de Limoges , Limoges



# International Research Programme



Indo-French Cell for Water Sciences (IFCWS)  
IRD/INRAe/CNRS (J Riotte/ L Ruiz)  
IISc: B'lore (Sekhar Muddu)

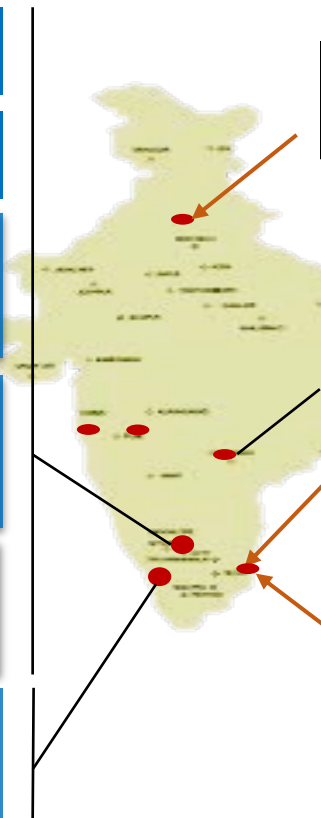
Indo-French Lab of Solid State Chemistry (LAFICS)  
ICMCB, UPR9048 (MH Delville, Bordeaux)  
IISc – SSCU, B'lore (Satish Patil/Abhishake Mondal)

NextGen (2022-2027)  
Next-Generation (Macro)-Molecular Self-Assembled Systems  
Jean-François LUTZ, CNRS UPR22 Institut Charles Sadron, Strasbourg;  
S. Ramakrishnan, Dept Inorganic and Physical Chemistry, IISc, Bangalore

CALIM (2022-2027)  
Impact and regulation of Calcium signaling in Drosophila immune cells  
Angela GIANGRANDE, Institut de génétique et de biologie moléculaire et cellulaire, Strasbourg  
Gaiti HASAN, National Centre for Biological Sciences (NCBS), Bangalore

SySTIM (2022-2027)  
Impact and regulation of Calcium signaling in Drosophila immune cells  
Thomas LECUIT, Institut de Biologie du Développement de Marseille (IBDM)  
Jitu MAYOR, National Centre for Biological Sciences (NCBS)

Advanced polymer nanocomposites for microactuator and energy harvesting devices (APONAMA)  
Inst Jean Lamour Nancy (Didier ROUXEL)  
International and Inter University Centre for Nanoscience and Nanotechnology (Sabu THOMAS / Nandu)



SPINPER (2018-2021)  
Social Profile of Indian's National and Provincial Elected (1919-2019)  
Giller VERNIER, Ashoka University, Sonapat  
Christophe JAFFRELOT, Centre de recherches internationales (CERI), Paris

GANGA-Rhone Project  
Shishir GAUR, IIT BHU  
Hervé Piegay, UMR5600 EVS, ENS de Lyon

Nat Prod & Synth towards Affordable Health (NPSAH)  
Uni Rennes, UMR6226, Rennes (J Boustie)  
IICT, H'bad, (Srivari Chandra Sekhar /Raji REDDY )

IFPM (2016-2019)  
Indo-French Program in Mathematics  
Ramachandran Balasubramanian, Institute of Mathematical Sciences, Chennai  
Patrice Philippon, Institut de mathématiques de Jussieu - Paris Rive Gauche

MEMS and GaN Development ThRough Complementary CollaboratiON (MEGATHRON)  
J.C. NALLATAMBY, Institute of Mathematical Sciences, Chennai  
Nandita DASGUPTA, IIT Madras



# International Research Laboratories (UMI)



IRL : (Indo-French Centre for Applied Mathematics IFCAM) UMI 3494  
Uni Paul Sabatier, Toulouse (JP Raymond)  
IISc, Bangalore, (G Rangarajan)

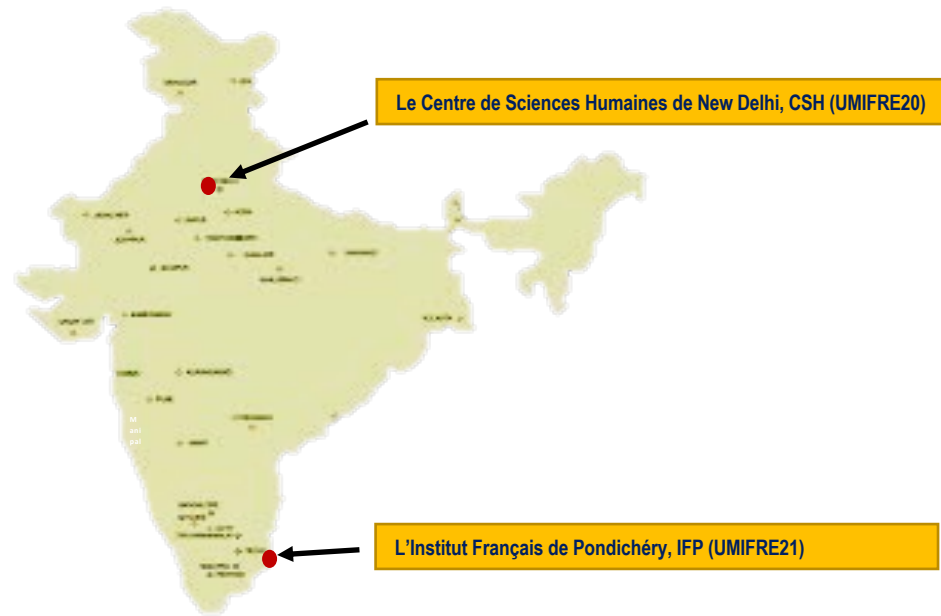
IRL : Indo French Research Lab In Computer Science (RELAX)  
UMI 2000  
Chennai Mathematical Institute, Siruseri (R. Karandikar)

CNRS | DERCI





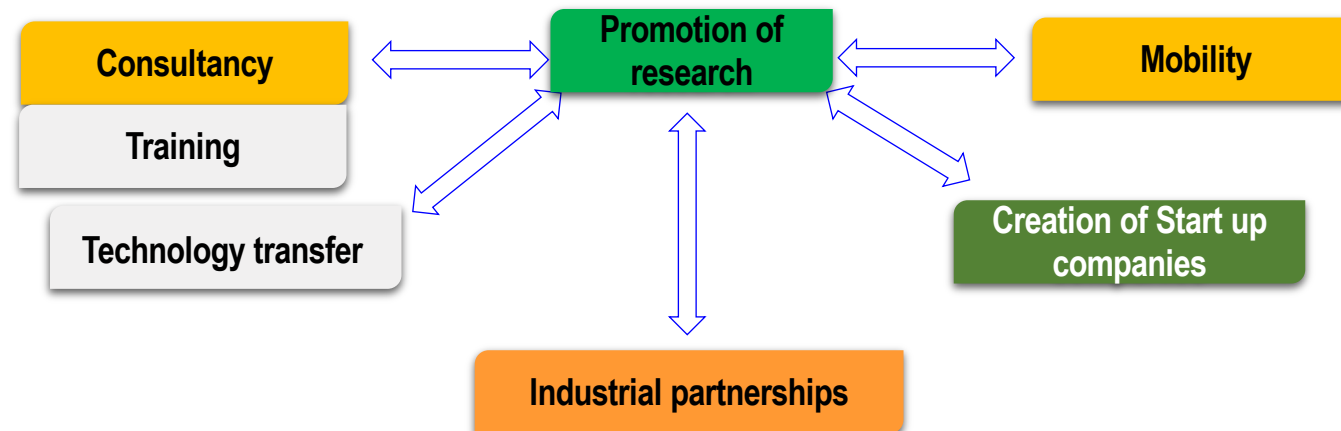
# UMI FRE



# CNRS and Industrial partnerships

➤ Décret n°82-993, 24 November 1982 : CNRS missions are

- To evaluate and carry out research capable of advancing knowledge and **bringing social, cultural, and economic benefits** to the society
- To contribute to the **application and promotion of research results**.
- To develop scientific information.
- To support research training.
- To participate in the development of the national policy.





Confidential

# CNRS and Solvay 4 mixed laboratories to prepare the future



2004

**Lab of the Future (LOF)**  
Bordeaux, France



1997

**Complex Assemblies of Soft Matter (COMPASS) Lab**  
Bristol, USA



**Polymers Advanced Lab**  
Lyon, France



**Eco-Efficient Products and Processes Lab (E2P2L)**  
Shanghai, China



2009

2011



## Top 20 topics of India's publications 2019-21 (N=406800)

| Name  | Web of Science Documents | Category Normalized Citation Impact |
|---|--------------------------|-------------------------------------|
| MATERIALS SCIENCE MULTIDISCIPLINARY             | 46655                    | 1,05                                |
| ENGINEERING ELECTRICAL & ELECTRONIC             | 40943                    | 0,86                                |
| PHYSICS APPLIED                                 | 19887                    | 0,89                                |
| CHEMISTRY PHYSICAL                              | 19035                    | 0,77                                |
| TELECOMMUNICATIONS                              | 18810                    | 0,94                                |
| ENVIRONMENTAL SCIENCES                          | 18154                    | 1,17                                |
| CHEMISTRY MULTIDISCIPLINARY                     | 18120                    | 0,76                                |
| COMPUTER SCIENCE THEORY & METHODS               | 18088                    | 0,74                                |
| COMPUTER SCIENCE ARTIFICIAL INTELLIGENCE        | 16825                    | 0,74                                |
| COMPUTER SCIENCE INFORMATION SYSTEMS            | 15275                    | 1,04                                |
| BIOCHEMISTRY & MOLECULAR BIOLOGY                | 14815                    | 0,83                                |
| ENERGY & FUELS                                  | 13405                    | 1,02                                |
| PHYSICS CONDENSED MATTER                        | 12258                    | 0,71                                |
| ENGINEERING CHEMICAL                            | 9940                     | 0,87                                |
| PHARMACOLOGY & PHARMACY                         | 9872                     | 0,98                                |
| MECHANICAL ENGINEERING                          | 9450                     | 1,01                                |
| NANOSCIENCE & NANOTECHNOLOGY                    | 8978                     | 0,67                                |
| COMPUTER SCIENCE INTERDISCIPLINARY APPLICATIONS | 8791                     | 0,84                                |
| BIOTECHNOLOGY & APPLIED MICROBIOLOGY            | 8009                     | 0,95                                |
| PLANT SCIENCES                                  | 7984                     | 0,84                                |

Source : Web of Science, Incites ; traitement CNRS-Derci



## The research areas of the CNRS-India 2019-21 joint publications (n=3300)

| Name                                | Web of Science Documents | Category Normalized Citation Impact |
|-------------------------------------|--------------------------|-------------------------------------|
| ASTRONOMY & ASTROPHYSICS            | 661                      | 3,31                                |
| PHYSICS PARTICLES & FIELDS          | 539                      | 1,92                                |
| PHYSICS NUCLEAR                     | 280                      | 1,95                                |
| MATERIALS SCIENCE MULTIDISCIPLINARY | 268                      | 0,99                                |
| PHYSICS APPLIED                     | 190                      | 1,18                                |
| CHEMISTRY PHYSICAL                  | 172                      | 0,87                                |
| PHYSICS MULTIDISCIPLINARY           | 164                      | 6,25                                |
| CHEMISTRY MULTIDISCIPLINARY         | 155                      | 1,04                                |
| ENVIRONMENTAL SCIENCES              | 150                      | 2,50                                |
| ENGINEERING ELECTRICAL & ELECTRONIC | 112                      | 0,97                                |

# Thales PhD Program



A decorative banner at the top of the slide features a collage of images: a woman in a patterned top, a white cylindrical object with circular openings, a green and blue abstract shape, and a close-up of a man wearing safety glasses.

## Congratulatory Note from Prof Vijay Raghavan, PSA



[www.cnrs.fr](http://www.cnrs.fr)

## Congratulatory Note from Prof Renu Swarup, Secy, DBT





# Congratulatory Note from Prof Ashutosh Sharma Former Sec , DST



# Congratulatory Note from Prof Shekhar Mande, DG CSIR



**CSIR: An Indian Innovation System For Self-Reliance In Non-Strategic Sectors**

ision  
e science which strives for global impact, technology  
nables innovation-driven industry and nurture trans  
inary leadership thereby catalyzing inclusive econo  
mpment for the people of India”

**CSIR–Pan India Footprint**

Total Number of:  
CSIR Institutes - 38  
CSIR Units - 5  
CSIR Institute Outreach Centres - 38

India indicating locations of CSIR Institutes & Units

CSIR Institutes  
Engineering Sciences





# Higher Education and Research Opportunities in EU and France



CEFIPRA

EURAXESS



CNRS Bureau



Thank you!

**SAY OUI**  
**TO FRANCE**

[jerome.bove@diplomatie.gouv.fr](mailto:jerome.bove@diplomatie.gouv.fr)