



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

National strategy for research and innovation



conseil supérieur de la
recherche et de la
technologie



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Outline

- Context
- The SNRI project
- Working method
- Synthesis of chapters (préliminary versions V1)



conseil supérieur de la
recherche et de la
technologie



Liberté • Égalité • Fraternité

RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Context



conseil supérieur de la
recherche et de la
technologie



Research is a national priority :

- More 23 billion € per year
- **A series of reforms** aiming at increasing the performance, the competitiveness and the attractiveness of the French system of research and innovation (FSRI);





Two laws, a common objective

- Programmatic law for research (LPR - 2006) and Law concerning freedom and responsibilities of universities (LRU - 2007)
- A more efficient SFRI by a continuous optimization
 - At the 3 functional levels of the system
 - By some transversal measures



The 3 functions of a SRI

- orientation and national policy (macro-objectives)
- National programming (implementing the macro-objectives into priorities and programs)
- Operation (effective realization of research and innovation)



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

The SNRI project



conseil supérieur de la
recherche et de la
technologie



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

The SNRI project

A major step in the evolution of the French system of research and innovation

First document concerning the national strategy of research and innovation in its different dimensions : outcomes for society, creation of knowledge, transversal and organizational aspects

Definition of the orientations which will take place in the framework contracts concerning research institutes and agencies

First milestone of a continuous process (next milestone in 4 years) :

- **Inter-ministerial Exercise**
- **better involvement of the various stakeholders into the SNRI definition process**
- **Better readability**

Our ministry will be evaluated on its capacity to implement the national strategy and on the effects of this strategy.



The SNRI project (2)

Objectives

- Globalization \Rightarrow increase national attractiveness and competitiveness
- Research and innovation at the heart of society, at its service
- Pushing forward the frontiers of knowledge \Rightarrow taking into account :
 - The long term range
 - The importance of non finalized research which is vital for creating knowledge



The SNRI project (3)

Time constraints :

- One step in a continuous process
- Many existing studies to work with

Basic Axioms :

- Large « *brainstorming* » inside thematic groups
- Acknowledgement of the autonomy of the actors of the French SRI : focus on the orientation level
- Macroscopic analysis (France into Europe and the whole World)
- Every orientation needs to be « evidence based »
- Orientations have to be implementable



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Working method



conseil supérieur de la
recherche et de la
technologie



Actors and timetable

- Challenges identified by a steering committee and approved by the government (October 2008)
- Preparation of a working version V0 by the ministry for higher education and research and working parties (December 2008)
- Debates & consultation based on V0 inside experts groups, analysis of interactions between challenges, production of a version V1 (march 2009)
- Large debates based on V1 (internet, other ministries, research institutes, ...)
- Production of version V2 and final remarks from expert groups (end of April 2009)
- Consultation of national science and technology « bodies »
- Final version and validation by the Council of Ministers



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

3 kinds of challenges

- Societal and economic
- Pluridisciplinary knowledge production
- Transversal and organizational



conseil supérieur de la
recherche et de la
technologie



Societal and economic challenges

- National competitiveness and attractiveness
- Food and water
- Sustainable energy
- Natural resources
- Health
- Risks, aleas, security of people, goods and communications
- Quality of life (including housing, urban planning, mobility)
- Mondiality

Pluridisciplinary knowledge challenges

- Life sciences
- Environment sciences
- Sciences and innovative technologies in the field of matter and materials (nanos, biomaterials, electronics, ...)
- Numerics, mathematics and massive computing
- Human beings and society facing global changes



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Transversal challenges of the SRI

- European Research Area
- International policy for French research
- Ecosystems of innovation
- Research - Innovation - Society



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Synthesis of chapters (preliminary)



conseil supérieur de la
recherche et de la
technologie



Work still in progress

- Mondiality
- Attractiveness and competitiveness
- Territorial tools (networks, centers, clusters ...)
- Large research instruments and platforms
- Research and precaution principle
- Pluridisciplinarity
- Adaption of curricula to the new stakes



Synthesis of chapters

3 kinds of challenges

- Societal challenges : R&I at the service of society and reciprocally (for instance : public procurement of innovation)
- Pluridisciplinary knowledge challenges : Improving knowledge and answering societal needs
- Transversal Challenges : Tools for taking up the two other kinds of challenges

Two grids of synthesis :

1. Societal vs. Knowledge
2. Transversal vs. (Knowledge and Societal)



Societal challenges

vs.

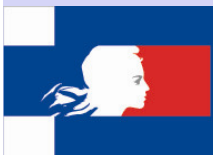
Pluridisciplinary knowledge challenges

- Evolution of the culture of researchers
 - Awareness of societal concerns
 - Innovative spirit
- Orientations corresponding to needs identified by the "societal challenges"
 - Either already mentioned in the strategic plans of institutes and agencies
 - Or mentioned in the proposals of the "knowledge challenges"
- A large number of challenges ask for a better organization of the dialogue with society



Societal and knowledge challenges : a few interactions

- Food and water
 - Sustainable energy / matter and material (nano-materials for solar energy, ...)
 - Natural resources
 - Health / Life Sc. and numeric (Biotech's and autonomy, ambient intelligence)
 - Risks, aleas, security of people, goods and communications
 - Quality of life / Env. Sc. and numerics (Eco-systems, autonomous life)
- And
- All /Hum. Soc. Sc. (creativity, human-techn. interactions, applied economics, ...)
- But also some logical interactions between "societal challenges"





Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Transversal challenges vs. Knowledge and societal challenges



conseil supérieur de la
recherche et de la
technologie

International policy for French research

- Good academic production, 6th rank worldwide
- Co publications
 - Strong links with UK, Germany... and also US
 - Less focus on Asian powers than its competitors
- Attractiveness
 - An important place in the worldwide networks of exchanges of students and young scholars
 - Strongly oriented towards developing countries, particularly in Africa
- Cooperation for development
 - A very privileged partner for some countries having deep historical relations with France
 - An important network of researchers dedicated to developing countries and a large portion of PhD students in France coming from these countries

International policy for French research

Orientations

- Strengthen French positions in international scientific arenas (IPCC, ...) ⇒ coordination (through leading institutions), build a European leadership, ...
- Foster partnerships with Asia, Brazil, Russia, developing countries...
- Increase national attractiveness for researchers ⇒ welcoming conditions, visa scientific visas, teaching in English language, ...
- Outreach of public and private national research activities abroad

"International" as seen by the other challenges

- Globalization and emerging countries - mobility of researchers
- European coordination and/or leadership

Ecosystems of Innovation

Key points :

- Reform of Research tax credit, generic help for R&D of companies, should foster intensely innovative sectors
- Startups : strengthen financing tools and better select projects
- Recent evolution of the *policy mix* which needs to be assessed
- Measures for stimulating the link research - innovation (management and costs of patents, mutualization and professionalization of offices for industrial partnerships)
- Centers for integration of technologies
- Technology universities
- Tools for SME and Startups
- collaborative programs at different time scales, public procurement



Pluridisciplinarity

- General awareness that convergence is at the heart of emerging technologies
- Presence in all the Knowledge and Societal challenges, Human and Soc. Sc. deeply demanded
 - Modeling
 - Integration of knowledge
 - Systemic viewpoints (complex systems)
- Common Orientations to (almost) all challenges
 - Pluridisciplinary curricula
 - Take it into account when assessing people or projects
 - R&D (&teaching) Platforms
 - Priorities for finalized research, correctly implemented (through recruitment, budget, ...)

Large infrastructures and platforms

- The French roadmap on internet for public consultation
- A need for all the challenges
 - Some infrastructures/platforms already in the national and/or European *roadmap*
 - Others are to be defined
- Openness to Europe
- A shared need : data collection, treatment and diffusion for many purposes
- To come :
 - Follow up and implementation of the strategy
 - Links with public procurement of innovation
 - Balance between Large and Medium size equipments

Human resources

- Identified by almost all the challenges, including transversal ones
- Common points :
 - Teaching - evaluation - Professionalization link with HR management to better take into account the real diversity of researchers' (expertises, innovation, pluridisciplinarity, management, ...)
 - Lack of "researchers-managers" ⇒ towards a school of management of research and innovation (public/private, France/foreign countries)
 - Problems of culture and attractiveness of sciences ⇒ training (innovation and business, pluridisciplinarity, evolution of primary and secondary school programs, ...)



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ENSEIGNEMENT SUPÉRIEUR
ET DE LA RECHERCHE

Research – Innovation – Society

- At the heart of all the challenges
- Appears in some orientations (notably about the coordination of the programming or about observatory platforms but also for a better awareness of risks)
- Orientations
 - Elaboration, adoption and diffusion of best practice guides for all the researchers' activities (inc. expertise)
 - Identification and treatment of arising scientific and societal questions (at all levels)
 - Involvement of stakeholders (at all levels)
 - Development of the management of debates and controversies
 - Place of risks in research programs