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Research and Innovation Policy in France:

I.   Recent Changes in Policy, Institutions and Networks.

II. Reforms Impact and Debates on Evaluation Policy and System.

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Introduction: some facts to be faced in 2005

In 2005, France is among the five first R&D producers in the world but some indicators suggest a risk of stagnation or decay

Performance Indicators	1994	2005
Domestic R&D Expenditure/GDP (Thomson Reuters/OST)	2,35%	2,10%
2 years publications impact index (OST)	0,92	0,94
% of World Publications (Thomson Reuters/OST)	5,4%	4,10%

Before a set of reforms started to be implemented in 2005, the Research and Higher Education System's main features were:

- *Centralism under the rule of the Ministry : Strategy elaboration, Programming, Financing, Operators monitoring and control, Evaluation). Researchers became civil servants in 1982, as Faculty Staff were already.*

- *A clear dichotomy between Universities, Research Organizations, Schools ("Grandes Ecoles") and private Companies.*

- *A relative weakness of universities since the 18th century*

- The 1999 **Law on Innovation** aimed nevertheless at improving the relations between Research and Society by encouraging researchers to creating start-ups companies from technologies developped in public labs

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- The 2001 **Law on performance driven budget**, implemented in **2006**, had given to the Ministry of Research and to the Research Community at large a new duty of accountabilty towards the Parliament, especially through 12 **indicators** (reviewed by CIAP, an interministerial auditing committee) in 7 fields of research, such as:

- *Share of self financed extramural budgets in the organizations*
- *Scientific outputs: publications, citations (Thomson Reuters data, OST)*
- *Share of foreign researchers and professors recruited (attractivity)*
- *Share of budgets provided by industrial property returns (patents)*
- *Share of budgets provided by contracts with private companies*
- *Participation in EU FP and % of publications with an european partner*

- ***Evaluation** became usual, frequent, compulsory,and…. a strategic tool*

A strong need appeared in this context for reshaping the system towards:

   - Decentralization of the main functions of the Research system (*Steering*, *Programming*, *Operating*)

   - Use of common international standards and practices linked to performance results (projects funding and evaluation)

A continuous policy has been undertaken since 2005, to improve autonomy and responsibility, accountability, decentralization, performance and networking between organizations

I. Recent Changes in Policy, Institutions and Networks

- 1. A National Strategy for Research and Innovation (SNRI)
- 2. A Funding Agency : Agence Nationale de la Recherche (ANR)
- 3. An Evaluation Agency : Agence d'évaluation de la recherche et de l'enseignement supérieur (AERES)
- 4. Universities Autonomy Act
- 5. The Pôles de recherche et d'enseignement supérieur (PRES)
- 6. The Alliances
- 7. The Carnot Institutes
- 8. RTRA, RTRS, CTRA and CTRS
- 9. The Pôles de compétitivité
- 10. Changes in the Ministry organization
- 11. Important Investments in Research and Innovation, one mean to address the world finance crisis

I.1. The SNRI (1)

- **A National Strategy for Research and Innovation (SNRI) has been defined in 2009 (6 months and 600 persons involved):**

    - A reference and not a compulsory plan. A strategic influence on programmation and budgeting for Agencies and Government

    - HCST, a national advisory committee to the Prime Minister, since 2008, coordinates, in an interministerial view, the SNRI

    - CSRT, a national advisory committee to the Minister (MESR), 4 times a year for consultation on choices

I.1. The SNRI (2)

- **5 SNRI Guiding Principles:**
  - Basic research is essential and must be the heart of the policy
  - Research must be open on innovation, economy and society
  - Security and risk management must be focused on
  - Social sciences and humanities must have a major role
  - Pluridisciplinarity, a key issue for advanced research

- **3 SNRI National Priorities:**
  - Health, well being, food and biotechnologies
  - Environment and ecotechnologies
  - Information and communication technologies, nanotechnologies

I.2. A Funding Agency: ANR

- ANR starts in 2005 as an EPA
- Entitled to finance any kind of operators (JSPS, NEDO and JST)
- A change in funding paradigm and an influence on HRM
- Should research organizations become funding agencies as well?
- Link with SNRI?
- A regular budget of 800 M € and an enlarging role in specific operations of « Excellence » (7,7 B € for IDEX)
- 50% of blue programms
- An average of 0,5 M€/ project
- Rate of selection : 24%
- 11% of overhead costs

I.3. An Evaluation Agency: AERES (1)

- A many purposes and quasi-monopolistic Agency (instead of CNE, CNER, CoNRS, IGAENR) for HEI and RO.
- AERES budget is 18 M€. It is staffed with 70 full time personnal, 180 part time scientific advisers and 4 000 experts.
- IGAENR still in charge of auditing and controlling organizations, or of policy evaluation.
- CTI still in charge of engineering schools evaluation.
- The Parliament has also an office of evaluation (OPECST)
- AERES was founded as an IAA in 2006 to reduce assessment discrepancy between organizations involved in evaluation and to contribute to universities autonomy (J.R. Cytermann – L'évaluation dans l'enseignement supérieur en questions – L'Harmattan – Paris – 2010)
- Integrated in the European ENQA-EQAR network
- Important roles of OST (data) and of CIAP (global performance)

I.3. An Evaluation Agency: AERES (2)

- AERES is not funding nor delivering accreditation (Ministry mission)

- The AERES 4 main missions of evaluation:

  - Evaluation of operators: Universities and RO (5 years contracts), ANR or FCS
  - Universities training programs and diplomas
  - Research Units (in Universities and RO) often common to both
  - Researchers and academics **evaluation system** in RO and Universities
  - and also evaluation abroad or of international programs

I.4. Universities « autonomy »

- **2007 Act on Universities autonomy:** still State organizations but empowered by global budget transfer (including faculty staff salaries), by land and building property transfer (optionnal), and by a more effective governance (board size and president's powers)

- Preliminary audits lead by IGAENR on HRM, Finance, IS and Real Estate

- All Universities under this regime at the end of 2011

- A new strength for the Universities and for the HE system (though no change in personnal status, selection and tuition fees)

- The empowerment drives a change in performance management

- Self evaluation, through IGAENR audits, and AERES evaluations, helps to consider evaluation as a strategic tool and not as a form of control

I.5. The PRES (Pôles de recherche et d'enseignement supérieur)

- PRES (pôles de recherche et d'enseignement supérieur):a new type of federation and a new type of agency, created in 2006
- Groups of Universities and Grandes Ecoles with Research organizations through the UMR on a given territory. A voluntary basis. An EPCS form, especially designed.
- A mixed function: increase of national and international visibility (Shanghaï ranking) and mutualisation of functions generally in the field of research (doctoral studies, technology licensing offices, international networking)
- Can be metropolitan, regional or lead to merging several universities 3 mergers have been successful in Strasbourg, Aix-Marseille and Nancy. Others will follow. Some large merged universities have resources comparable to the Research Organizations, except CNRS.
- 15 PRES gather to-day 50% of the Universities.
- Evaluated by AERES

I.6. The ALLIANCES

- The new concept of **ALLIANCES** (2009) is linked to the SNRI and to the creation of the funding agency (ANR). The reform of CNRS organized into 10 Institutes meets this new perspective too.
- Aims at strengthening the programmation function in Research
- Mission of coordinating Universities, Schools and RO to conceive programs coherent with SNRI and help ANR to do the same
- Should cooperate with companies, clusters and PRES

- *AVIESAN (Health and biosciences) : INSERM, CNRS, CEA, INRA, INRIA, IRD, Pasteur, CPU, CDGCHU*
- *ANCRE (Energy): CEA, CNRS, IFP and many others*
- *ALLISTENE (IT): CNRS, INRIA, CEA, CPU, CDEFI*
- *ALLENVI (Environment): BRGM, CEA, CEMAGREF, CIRAD, CNRS, CPU, IFREMER, INRA, IRD, LCPC, MNHN, Météo France*
- *ATHENA (Social sciences and humanities): CNRS, CGE, CPU, INED*
- *One Institute of CNRS, at least, is involved in each Alliance*

I.7. Carnot Institutes (and label)

- Created in 2006, aim at enhancing innovation in public labs and cooperation with private companies (German Fraunhofer Companies are the reference)

- ANR evaluates, Ministry funds (such as doubling the money involved in the patrnership by the public lab) and gives a 4 years label

- 33 Institutes including 13 000 personnal (7 000 PhD students)

- A State funding of 200 M€/year

I.8. THE RTRA, RTRS, CTRA, CTRS

- The RTRA (réseaux thématiques de recherche avancée) were settled in 2006 to empower existing excellent groups of research units specialised in the same basic scientific thematic on a given territory

- Legal status of a foundation with a majority of public funding and tax exemption for donors

- 250 M€ of initial funding

- 13 created among 37 applicants

- 9000 researchers

- And also, 9 CTRS (INSERM in each) with 35 M€ of initial funding

I.9. The Pôles de compétitivité

- Started in 2005, the Pôles de compétitivité (Clusters) policy aims at strengthening the relationships between research labs, universities, companies and local governance stakeholders, in order to boost innovation in France

- Financed by ANR

- 71 created but only 7 to 10 of an international level

- Free organization of members to coordinate and define strategy

- A State funding of 600 M€ in 2009

I.10. Changes in the Ministry organization

- A new organization within the Ministry of Higher Education and Research was necessary to meet the new national scheme of organization, since ANR and AERES had been created and since the Universities were becoming autonomous

- The Ministry has now two main directorates : DGRI (General Directorate for Research and Innovation) and DGESIP (General Directorate for Higher Education and Graduates Employment) and a *contractualisation and funding* division in charge of the new relationships with autonomous universities

- A work still in progress for the Ministry : management, control, steering?

I.11. Answering the world finance Crisis by investing in Research and Innovation

- The **tax exemption policy**, in link with the need for increasing private research expenses in private companies, has led to experiment a vigourous tax exemption policy linked to research expenses : in 2009 up to 4,5 B€ of taxes exemption for the companies research expenses (1,8 B€ in 2007).

- The present policy *INVEST FOR THE FUTURE* is increasing the investments in the field of research in a very significative way: 25 B€ for HE and Research (starting 2010).

- 5 B€ for campus buildings renovation

- 7,7 B€ for IDEX (Excellence Initiatives)

- 1 B€ for new TLO (Technology Licensing Offices)

- 2 B€ for Technology Research Institutes etc…

II. Reforms Impact and debates on Evaluation Policy and System

- 1. Evaluation is part of the Reform

- 2. Evaluation impact on HEI and RO

- 3. AERES activities have increased very fast

- 4. A discussion on the AERES global mark has been developped

- 5. Debates on evaluation at large

II.1. Evaluation is part of the Reform

- External evaluation by AERES backs Universities Autonomy (former dual system of UMR evaluation by OR and MSTP): an important structural effect (1) with the externalisation of evaluation

- New link between quality of training and accreditation of Diplomas by the State (leading to « no more once for ever »)

- Evaluation process becomes part of the decison-making process both for operators and Government (link with the OR and Universities contracts agenda)

- Data like number of active researchers in research units evaluated by AERES are used by the Ministry to allocate funding

- The new importance of evaluation leads to debates and criticisms

(1): J.R. Cytermann-Evaluations des établissements, in L'évaluation dans l'enseignement supérieur en questions-L'Harmattan-Paris-2010

II.2. Evaluation impact on HEI and RO (1)

- **The case of universities** (85% of State funding): the SYMPA model (MESR and Futuris 2011 – J.Lesourne – D. Randet – La recherche et l'innovation en France – Odile Jacob -)

Funding criteria	Teaching	Research	Total
Activity	**60%** Students number	**20%** Number of active researchers	**80%**
Performance	**5%**	**15%**	**20%**
Indicators based performance	4% (value-added in BA, number of graduates in Masters)	12% **Research Units marking (AERES)**	16%
Goals achievement based performance	1% (success in BA, share of small M, employment)	3% (licensing and contracts, PhD employment)	4%
Total	**65%**	**35%**	**100%**

II.2. Evaluation impact for HEI and RO (2)

- The performance based funding (F) for research, after AERES marking, is calculated directly:
    - F= 37 000 € (in 2010) x Number of active researchers x K
    - K is valued 2, 1 or 0, if the AERES mark is A, B or C.

- AERES impact may be found also in other parts of the model, for:
    - The number of active researchers is estimated through the evaluation
    - The other indicators (such as licenses) also
    - The diplomas analysis leads to accreditation of BA and Masters
    - In some bids for tenders, the research unit mark is taken into account
    - All the stakeholders (local governments and authorirtes, companies, networks of different kinds, students and faculty staff) are interested in the AERES evaluation results

II.2. Evaluation impact for HEI and RO (3)

- The case of Research organizations

  - Each RO has its own evaluation system (CNRS and CoNRS)
  - These systems are used, with AERES results, to internal funding
  - AERES evaluates RO as organizations but also their research units
  - AERES evaluates their researchers evaluation system, as it does for universities, but not the researchers themselves

  - *In both cases, Higher Education Institutions and Research Organizations have a strong interest in following the information delivered by the Agency and to close the units poorly marked. The evaluation results are public and available during four years.*

II.3. AERES activities have increased very fast
www.aeres-evaluation.fr

- Betweeen 2007 and 2011, AERES has conducted 10 000 evaluations (3 000 in all research units), mainly in Universities [1], all of them have been evaluated
- AERES complies with ENQA's *European Standards and Guidelines*
- Evaluation is not limited to bibliometrics and Peer review is essential
- Self-evaluation is encouraged and spreading
- Many criticisms on the global mark to research units (see below)
- Wish to reduce the burden both on investigators and evaluators
- AERES hopes to spread homogeneous practices in Europe: marking with 4 levels, self SWOT analysis and multicriteria approach
- The case of SSH is still pending but changes occur

[1] : AERES 2010-Analyses régionales des évaluations réalisées entre 2007 et 2010-Paris-2011

II.4. A discussion on the AERES global mark has been developped (1)

- Up to 2012, each research unit was evaluated with **4 multicriteria marks:**
  - scientific excellency and production,
  - attractivity, rayonnement and interactivity with environment,
  - research unit life and governance,
  - strategy and scientific project interest and quality
- **A global mark** (A+, A, B or C) was given separatly from the 4 marks
- Several criticisms:
  - limited concern for applied research activities, expertises
  - too many units quoted A+ for an useful benchmarking
  - unclear link between global mark and the 4 marks
  - the global mark has often been the only one to be read
  - too many different expectations from different users

II.4. A discussion on the AERES global mark has been developped (2)

- A new attempt to achieving goals (Starting 2012):

  – Inform properly all those who have an interest in the evaluation results
  – Allow research units to identify possible improvements
  – Improve the decision-making process by stakeholders. In this perspective, informed details are necessary.
  – According to the law, the Government takes into account AERES evaluation results to fund Research Organizations and Higher Education Institutions.
  – The decisions to be taken by the stakeholders may concern the research unit existence, its management or its funding.

II.4. A discussion on the AERES global mark has been developped (3)

- 3 main groups of people and organizations have been identified as specific targets for AERES information :

Research Units heads and personnal

Decision makers

Citizens, public leaders
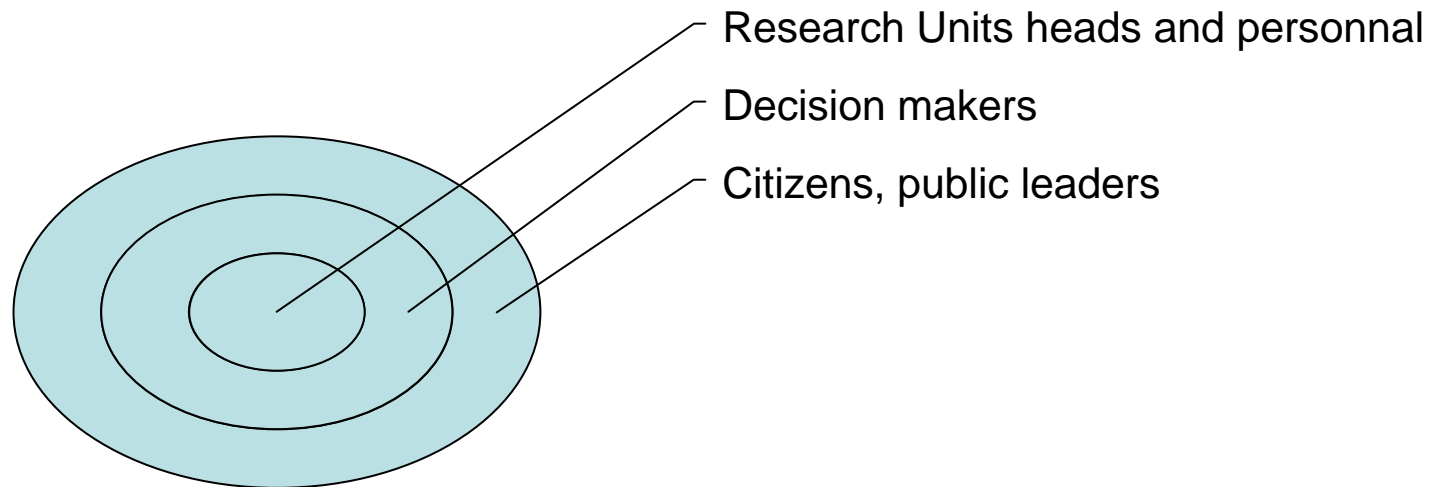
II.4. A discussion on the AERES global mark has been developped (4)

- A review of the marking process:
    - The 4 marks are maintained but their criteria revisited (EREFIN, RAF, U-Multirank)
    - The granularity of the marking will be adapted to the coherence of the research unit organization
    - The global marking is withdrown and is replaced by a two lines informative global comment
    - The global comment will be delivered to the « third circle » to avoid the use of a global mark as a benchmark to ranking
    - The Research Units leaders and personnal, as well as the decision makers, will receive the evaluation report and the 4 marks with comments on the criteria used. The 4 marks are becoming a « quality profile », AABA for instance, of the Research Unit

II.5. Debates on evaluation at large :
the need for more evaluation

- The deep and fast growing share of bids for tenders in research funding is demanding for many *ex ante* and *ex post* evaluations

- The new networks, the *Invest for the future* programms, as well as the clusters policy, contribute to this development (70 performance indicators for clusters and clusters policy designed by the BCG)

- The new European Framework Programm 2014-2020 (FP8) will fund research organizations with 100 B € (50 for FP7) : the European Parliament is requesting an evaluation focused on performance for both FP

- Rankings, often following evaluations, are diversifying and customized (C. Paradeise - Classement des universités : jusqu'où ira la fascination? – AEF – 2011)

- The demand for research impact (*benefits that research outcomes produce for wider society*) evaluation is increasing. Main concern in UK with RAF. Also in France when looking for evidence based funding. (Research evaluation – Special issue on research impact assessment – Beech Tree Publishing – 2011)

II.5. Debates on evaluation at large : criticisms and disputes about evaluation (1)

- Policy scientists still emphasize on making « science metrics more scientific » to evaluate research activities (1), but the new status and visibility of Evaluation in France has enriched a debate on some critical issues such as:

  – The biais of language, with the under-estimation of research performance for publications into French or German. That is why, according to CWTS, Leiden (2), French or German universities may appear to be weak in Leiden ranking, Academic ranking of world universities (Arwu), or THE. Are bibliometrics fair enough when comparing publications written into English only?

  – Bibliometrics practices vary from one discipline to another(confidence in biology, difficulties in SSH with the importance of books and conferences, low frequency of publications in Mathematics) and therefore are not the ultimate tool (3)

(1) J.Lane-*Let's make science metrics more scientific*-Nature-March 2010
(2) A.F.J. van Raan, T.N. van Leeuwen, M.S. Visser-Germany and France are wronged in citation-based rankings-CWTS-Leiden University-2010
(3) Académie des Sciences-Du bon usage de la bibliométrie pour l'évaluation individuelle des chercheurs-Paris-2011

II.5. Debates on evaluation at large : criticisms and disputes about evaluation (2)

- Is Evaluation designed to improve Science Policy or to *discipline* the community by settling norms, standards and good practices? (Musselin – CSO – HE and evaluation – Admee-Europe Conference – Paris – 2011)

- Some evaluations may lead to ranking (AERES global mark): are rankings a fair substitute to evaluation? The 2011 EUA report on rankings and their impact : « Policy decisions should not be based solely upon ranking data ».

- Is there a specific issue with SSH evaluation? Marginalization of small domains of research, when the need for funding may be in favor of market linked programms?(Academia Europea – Cambridge – UK).

II.5. Debates on evaluation at large : criticisms and disputes about evaluation (3)

- Are evaluations and evaluators concerned mostly by what is mesurable or by what is relevant ? (Annual CUS Conference – Switzerland)

- Evaluation of research activities only, taken as an evaluation of an HEI as a whole, may give a distorted image of universities (The Shanghaï Jiao Tong University ranking of world universities takes english papers only in its evaluation, minimizes the share of SSH and does not make any reference to performance in the field of training)

- Evaluation should be more contextualized to fit all goals (basic v/s applied research)

- Some evaluation tools are not relevant for all (*h index* discriminates against young researchers)

II.5. Debates on evaluation at large : a work in progress

- A new set of references and nomenclature has been made in SSH by a joint committee of the Ministry of Higher Education and Resarch (MESR), the CNRS and the AERES. This should increase evaluation acceptability into the SSH community

- As an answer to the existing ranking models, France and other countries of the EU are implementing the U-Multirank project (OST is in charge for France), a european ranking of universities including research activities, of course, but also training (initial and LLL), other functions such as TLO or international activity. Customization will be possible with each organization's own parameters

- The ministry (MESR) wants to lighten the burden of evaluation for the research units by introducing a common evaluation formula

- AERES is improving its own practice (especially with the end of global marking) and the number of experts may be a good driver to make all the research community becoming more familiar with the new policy

Conclusion

- The changes in designing the Evaluation System has been made for improving Science and Innovation policy, as well as Higher Education policy, which cannot be separated one from each other

- AERES is looking to enhancing its practices and to meeting the research organizations and HEI expectations and needs

- There is a better articulation to establish between AERES and evaluation authorities in RO and Universities (CoNRS, CTI, CNU)

- Some results are promising:
  - Thanks to the tax exemption policy, the costs of a researcher in companies is becoming one of the lowest in OECD countries (ANRT - Comparaison internationale sur le coût du chercheur – 2011)
  - The 2 years publications impact index has been growing by 10% between 2003 and 2008 (0,92 to 1,01) – (OST)
  - The share of world publications has started to rise again between 2005 and 2008 from 4,10% to 4,2% (OST and MESR)
  - The ratio Domestic R&D expenditure/ GDP rose from 2,08 in 2007 to 2,26% in 2009 (OECD and MESR)

Thank you for your attention

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