LA TRANSITION ÉNERGÉTIQUE pour la CROISSANCE VERTE

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RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'ÉCOLOGIE,
DU DÉVELOPPEMENT
DURABLE
ET DE L'ÉNERGIE

French RDI ecosystem & strategy

Mission Innovation - Webinar

October 20th 2016









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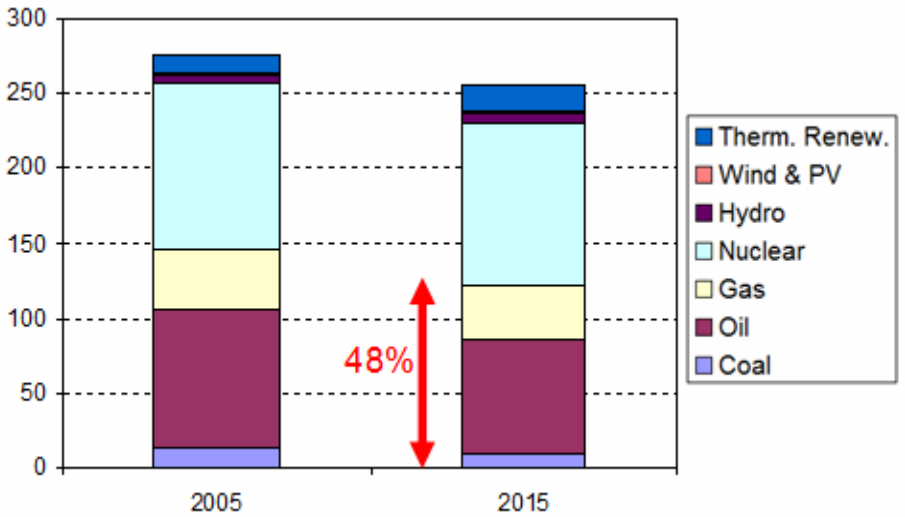
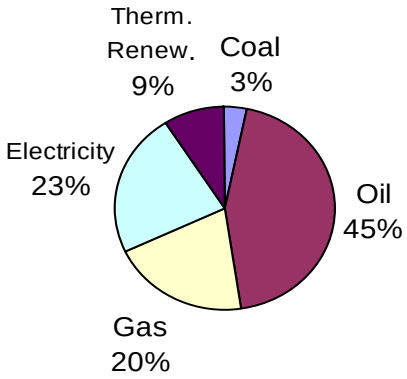
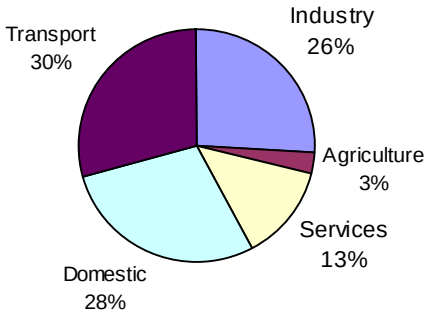
Context: key energy and climate figures about France

Gross inland consumption (2015): 257 Mtoe



Total final energy consumption (2015): 162 Mtoe





- Final energy intensity (2014): 73 toe/M€ GDP or 2.4 toe/capita
  - *EU average : 83 or 2.3*
- Energy import dependancy (net imports/gross consuption, 2015) : 45%
  - *EU average (2013) : 53%*
- Energy related CO_2 emissions (2014): 324 Mt or 151 t/M€ GDP or 4.9 t/capita
  - *EU average : 245 or 6.7*

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Energy transition for green growth act (2015) : clear and ambitious goals

40% less greenhouse gas emissions in 2030 compared to 1990

30% less fossil fuel consumption in 2030 compared to 2012

Increase the share of renewable energy sources to **32%** of the final energy consumption in 2030 and **40%** of the electricity production

Reduce final energy consumption by **50% in 2050** compared to 2012

- 50 % less waste in landfill by 2025

Diversify electricity production and reduce the share of nuclear power to **50%** by 2025

Carbone price : a target of 56 € in 2020 and 100 € in 2030 for a ton of carbon

- For the carbon component of the domestic tax on consumption of energy products
- In order to focus investments on long term horizons and to channel behaviours into low carbon economy
- Will be compensated by a taxation reduction for products and services contributing to the energy transition

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The national energy research strategy

- **Energy transition for green growth act (article 183): need for a national energy research strategy (SNRE)**
  - ✓ Takes into account the national low carbon strategy (2015) and the energy multiannual plan (end 2016)
  - ✓ Precise the national research strategy (2015) in the field of energy
  - ⇒ *Work in progress with stakeholders, to be finalized by the end of 2016*

- **The national research strategy (SNR)**
  - ✓ Must be taken into account in the contracts with research organizations, and in the annual programming of funding agencies
  - ✓ Built around 10 great societal challenges setting priorities, in particular:
    - ➢ Secure, clean and efficient energy
    - ➢ Sustainable resources and adaptation to climate change
    - ➢ Mobility and sustainable urban systems

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The national energy research strategy

- **The secure, clean and efficient energy challenge of the national research strategy**
  - Dynamic management of energy systems
  - Multi-scale governance of new energy systems
  - Energy efficiency
  - Reduced need for strategic materials
  - Decarbonisation of energy and chemistry sectors

- **Some orientations for national energy research strategy (draft)**
  - *Adopt a systemic approach and focus on transversal issues related to energy (impact on environment, social and economic issues, digital revolution)*
  - *Consolidate a basic energy research community*
  - *Foster public-private collaboration, through industrial research and demonstration*
  - *Articulate the RDI policies at different geographic levels (local, national, European and international)*

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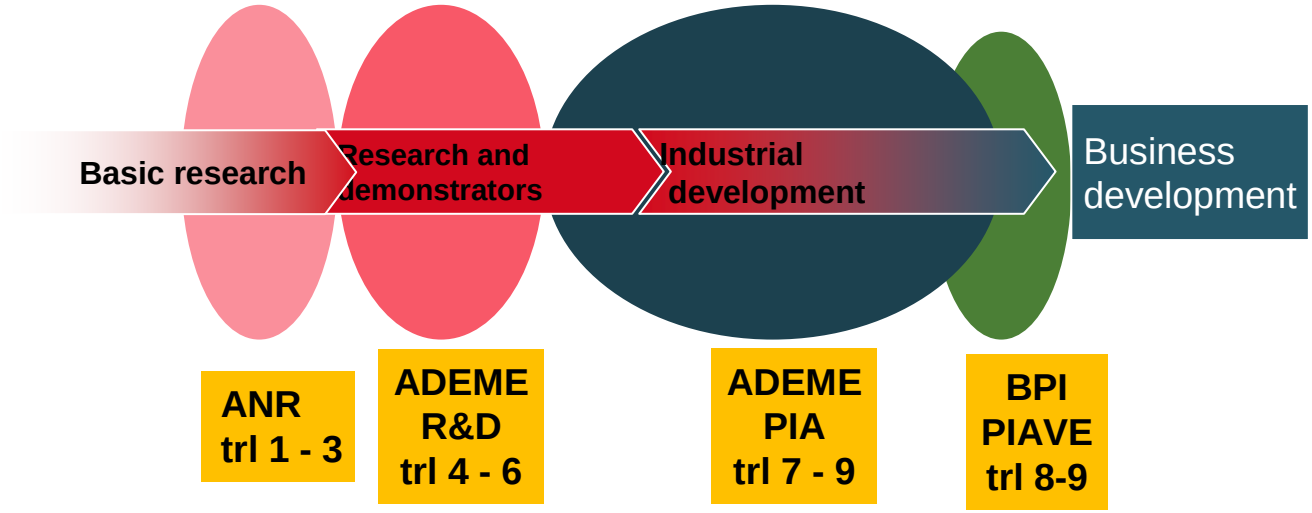
Public support for RDI on low carbon technologies

- **Public research organisms support basic or industrial research conducted by their researchers**
  - ✓ CNRS, CEA, IFPEN, …
- **Public funding agencies driving RDI programs on energy technologies through call for projects:**
  - ✓ ANR (research generalist)
  - ✓ ADEME (energy & environment),
  - ✓ BPI (generalist innovation)



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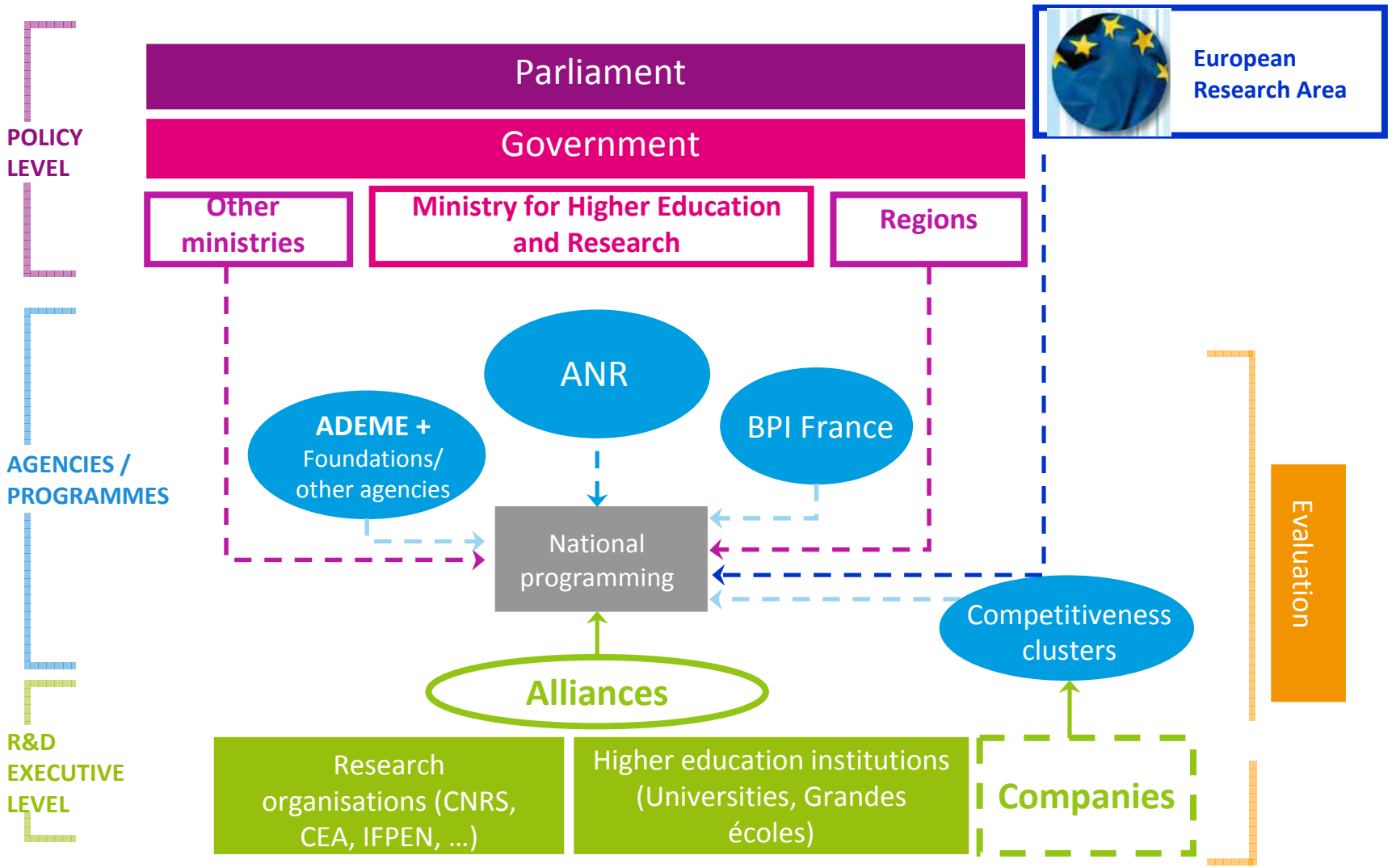
France general RDI system



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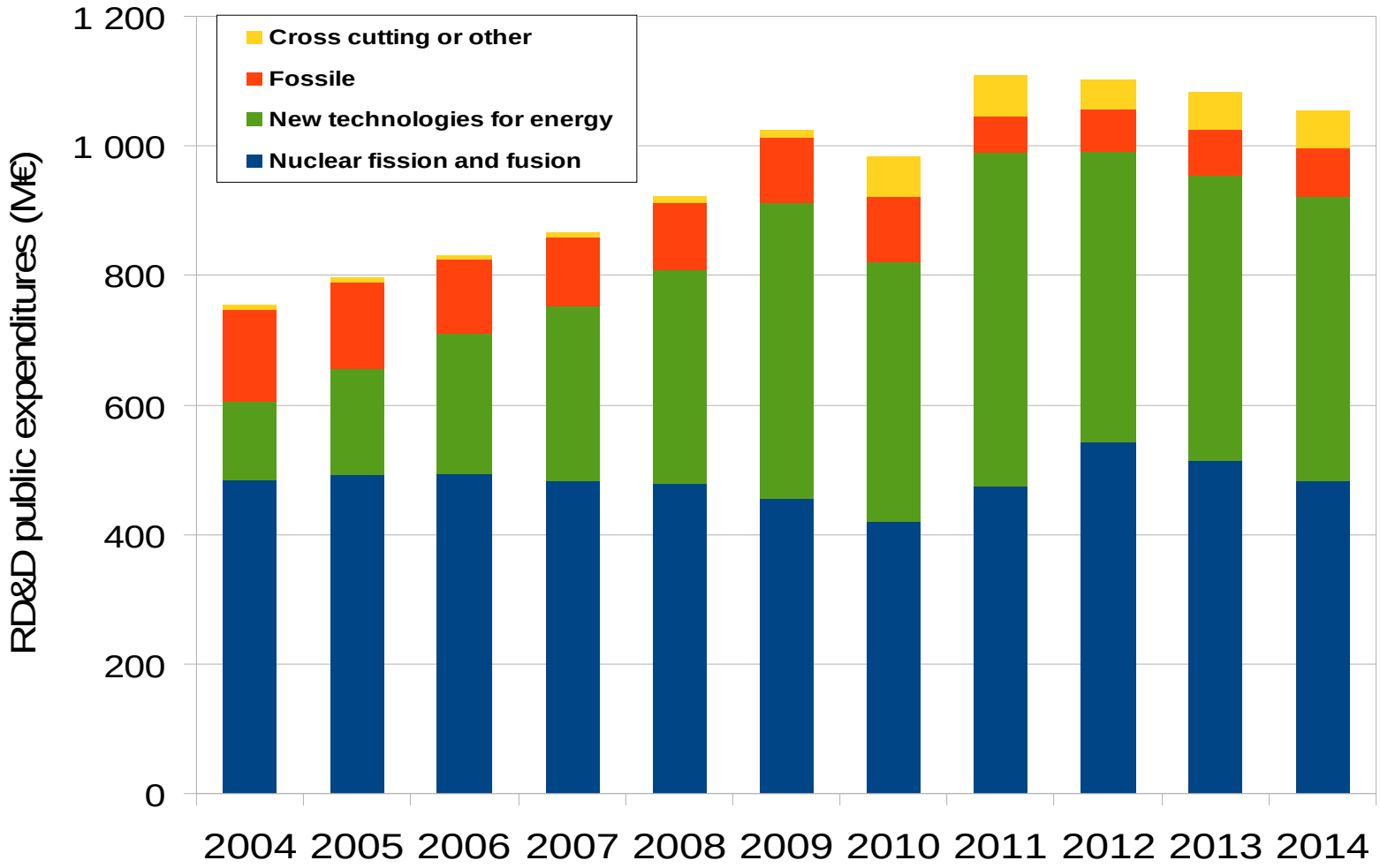
Energy public R&D budget



A rise (source: IEA reporting) in the last 10 years, especially on « new technologies for energy » = RE + energy efficiency + grids and storage

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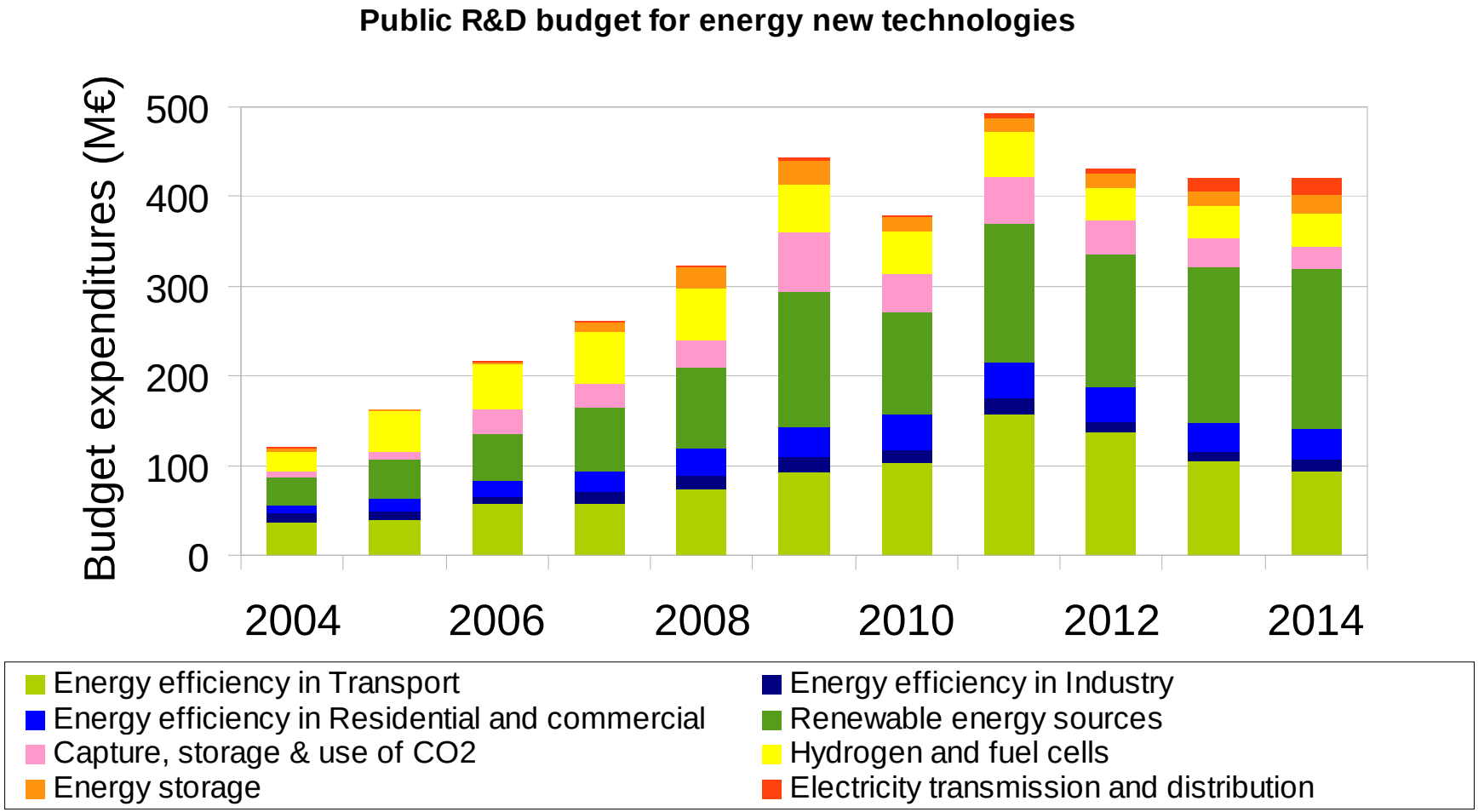
Energy public R&D budget



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France's commitment to Mission innovation

COP21 · CMP11 PARIS 2015 UN CLIMATE CHANGE CONFERENCE

- France will focus on :
  - ✓ renewable energy, energy storage and smart grids
  - ✓ energy efficiency (industry, buildings, transports, circular economy)
  - ✓ carbon capture storage and use
- Over the 2012-2014 period, average state-directed public investments in these areas of **440 M€ per year = France's baseline**

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France's commitment to Mission innovation

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- Doubling effort mainly **through the "Programme d'Investissements d'Avenir" (PIA)** and will cover the whole chain of innovation, from basic research to demonstration.

- NB: besides, France also contributes significantly (around 16%) to the **European programme Horizon 2020** on clean energy, that amounts to 9.8 billion euros for the 2014-2020 period.

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The “Programme d’Investissements d’Avenir” (PIA)

- **Supporting the whole chain of innovation**
  - To share risks with companies and research organisms developping innovative solutions and access (new) markets
  - From basic research to industrial demonstrators

- **An important financial effort for low carbon innovation**
  - Around 5 bn€ on clean energy from 2010 to 2017 (« PIA 1 & 2 »)
    - in the form of subsidies, refundable grants, equity and loans)
    - out of a total amount of 47 bn€ (education, digital, health, …)
  - « PIA 3 » in preparation (budget law for 2017) : a total of 10 bn€ with a significant part on the energy transition

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Energy transition in the PIA

- **Main actions related to clean energy:**

  - Institutes of the energy transition
    operated by Agence Nationale de la Recherche

  - Demonstrators of ecology & energy transition
    operated by Ademe

  - Vehicles & transports of the future
    operated by Ademe

  - Industrial project of the future
    operated by BPI France

Institutes of the energy transition

- **An ambitious model : creation of public-private structures for R&D and innovation in the field of clean energy**
  - ✓ Private companies and public laboratories working together in a common structure with dedicated assets and staff
  - ✓ Activities ranging from basic research to industrial development and launch of new products on the market
  - ✓ Actions of RDI but also training (initial or continuous) to disseminate knowledge

- **Initial budget of 1 bn€**
  - ✓ including both capital and subsidies

- **10 ITE active on various topics of the energy transition**
  - ➢ SUPERGRID is focused on future electric transmission grids,
  - ➢ VEDECOM is specialized on sustainable mobility and connected vehicles,
  - ➢ INES2 and IPVF are dedicated to solar energy,
  - ➢ PIVERT and IFMAS are focused on bio energy,
  - ➢ EFFICACITY on urban systems,
  - ➢ etc.

Thank you for your attention

- **Useful links:**

➢ **SNR/SNRE:**
- http://www.developpement-durable.gouv.fr/-Recherche-et-demonstration-.html
- http://www.enseignementsup-recherche.gouv.fr/pid24538/strategie-nationale-de-recherche-s.n.r.html

➢ **PIA:**
- http://www.gouvernement.fr/investissements-d-avenir-cgi
- http://www.ademe.fr/entreprises-monde-agricole/innover-developper/programme-investissements-avenir-pia
- http://www.bpifrance.fr/Actualites/Appels-a-projet-concours/Appel-a-projets-PIAVE-9657

➢ **ITE:**
- http://www.supergrid-institute.com/en/home
- http://vedecom.fr/en/
- http://www.ines-solaire.org/
- http://www.ipvf.fr/en/
- http://www.institut-pivert.com/?lang=en
- http://www.ifmas.eu/
- http://www.efficacity.com/en/