

**State aid program  
evaluation**  
**Experience sharing  
from the Investment  
for the future  
program**



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**EPATEE Workshop**  
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# Introduction to the Investment for the Future Program led by ADEME (1/3)



Governmental program launched in **2010** to

- **Foster innovation** in environment and energy
- **Share public & private technical & marketing risks** of innovative technologies and services

## Low carbon energies

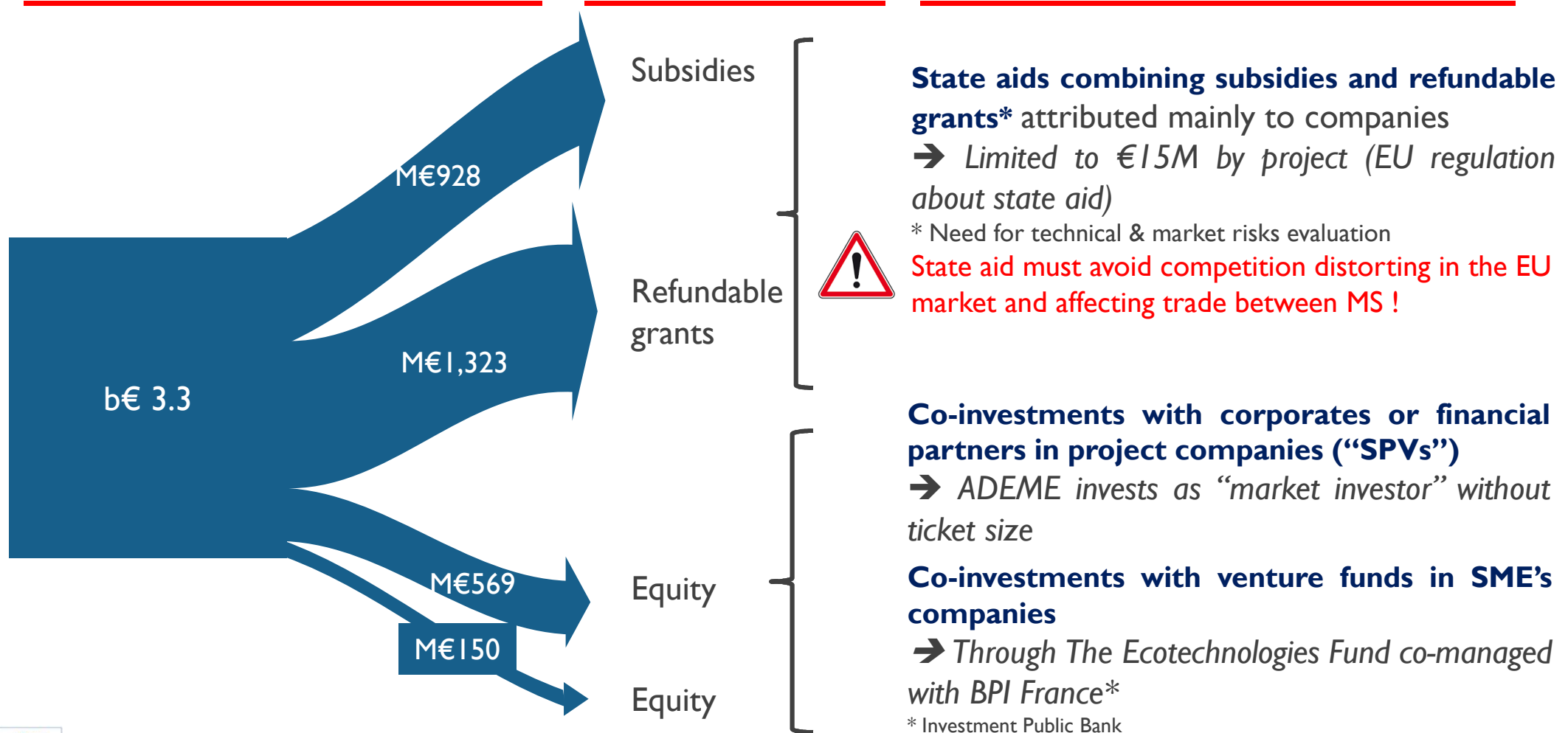
Wind energy	Eco-efficient building sector
Solar energy	Eco-efficient industrial process
Marine renewable energies	Bio-based chemistry
Geothermal energy	Waste treatment
Hydrogen	Water treatment
Smart grids	Sites and soil decontamination
Energy storage	Biodiversity
CO <sub>2</sub> capture and storage	

## Transport for the Future

Electric vehicles  
Thermal and hybride engines  
Vehicles weight reducing  
Heavy vehicles  
Logistic and mobility  
Rail transport  
Future ships

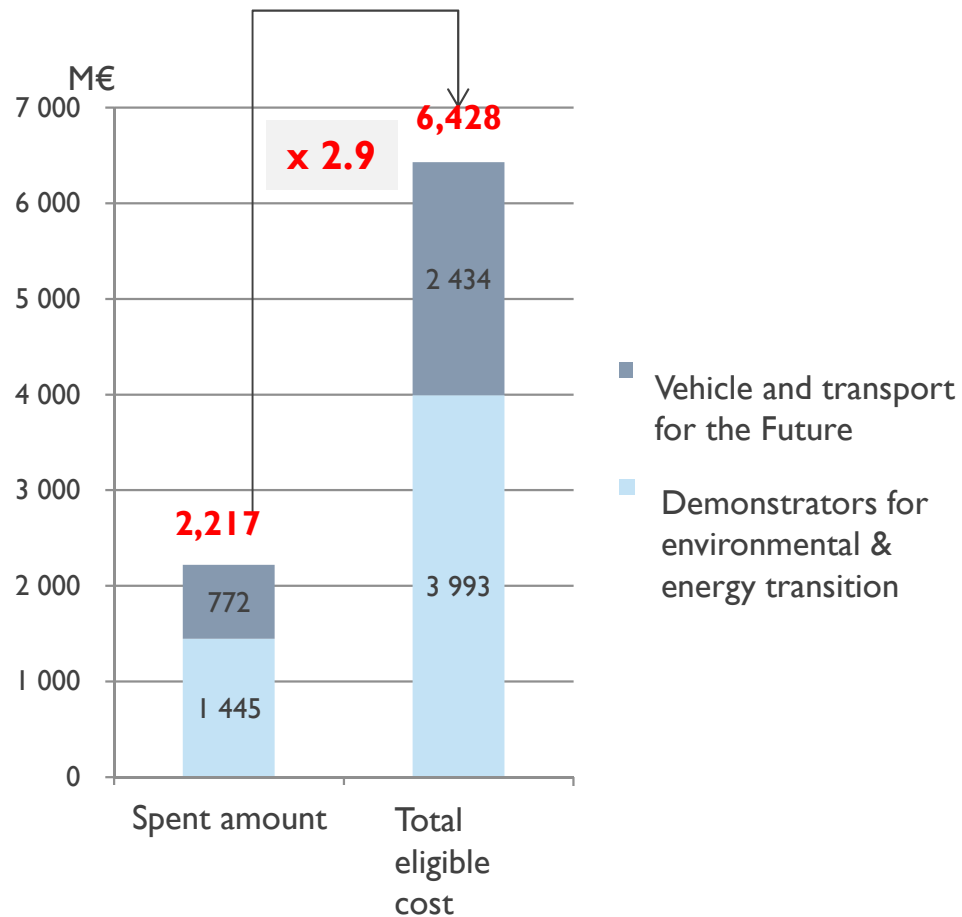
# Introduction to the Investment for the Future Program led by ADEME (2/3)

Budget distribution  
(IFP 1&2 : 2010-2016)



# Introduction to the Investment for the Future Program led by ADEME (3/3)

## Spent amounts and total costs of awarded projects (M€) in March 2017



### A massive support to innovation

- 603 awarded projects
- 1,433 funding contracts
- A large potential spillover effects on the rest of the economy

### Significant amounts for each instrument

- M€ 1,699 of State aids
- M€ 431 of capital investment with the direct intervention of ADEME
- M€ 88 invested within the «Ecotechnologies Fund »

# Ex-post evaluation of the « ADEME IFP », a long run process

## ■ Starting point

Evaluation expected by ADEME and CGI right from the origination of the program

**Mandatory Evaluation:** EU obligation for large State aid program (annual expenses  $\geq 150$  M€)

## ■ Steps

### I- Evaluation preparation

Submission of a draft evaluation plan to the EC (DGCOMP) for approval

**A.** « **Econometric Evaluation** » based on statistical modelling (DG COMP guidelines)

**B.** « **Qualitative Evaluation** » based on survey methods and qualitative explanations

### 2- Methods development & test

- **A.** Methodology selection for the econometric study & modelling (feasibility study in 2016)

- **B.** Development of an operational methodology for the « Qualitative Evaluation » :

test on a small sample (31 projects)

current evaluation : a sample of 56 ended projects (= 300 firms)

### 3- Final studies and results dissemination

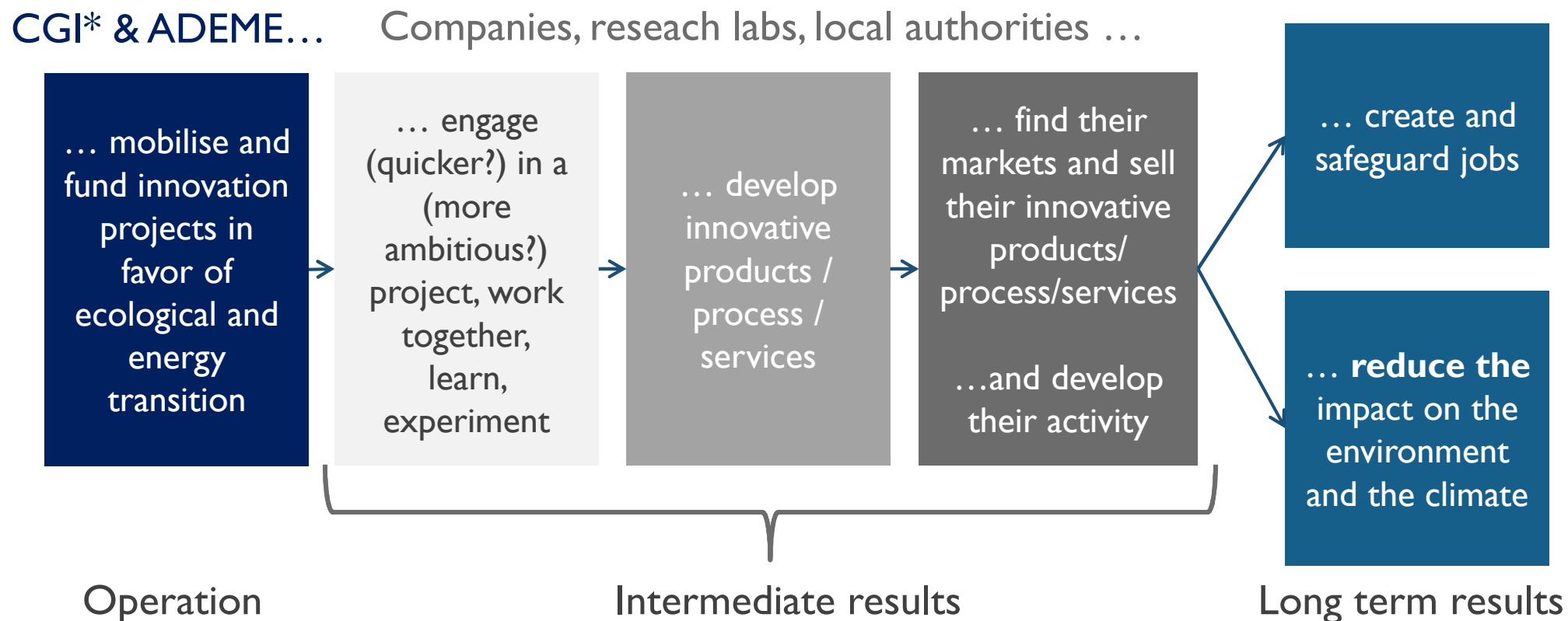
June, 30th 2020 → transmission of evaluations results to the EC

2015

2016/  
2017

2018/  
2020

## Identified effects all along the causal chain



\*The General Investment Commission is the governmental structure steering the program.

# Key evaluation approaches

## 1. **Relevancy** - To what extent was the program suitable to the identified needs ?

- Relevancy of the general objectives to the stakes (quality of the initial diagnosis)
- Relevancy of the type of support (refundable grants vs subsidies, amounts, conditions, time schedule)

## 2. **Effectiveness** - To what extent the program produced the expected effects (results and impacts)?

- Mobilization of the actors and durability of partnerships
- Trigger and/or amplifier effect regarding innovation
- Emergence of new sectors
- Development of activities and job creation
- Impact on the environment and the climate

## 3. **Efficiency** - Were the effects produced at a reasonable cost?

- Cost-effectiveness of the program
- Financial returns



**Discussion on  
comparative analysis  
of evaluation  
mechanisms**



# «Qualitative » evaluation : Economical, social and environmental impacts assessment

## ■ Principle :

Create a **counterfactual** based on a **reference scenario** in order to identify what would have happened in the absence of the ADEME IFP program.

## ■ Results are built on:

- ✓ multi-steps process (e.g. preliminary workshop to define the relevant reference scenario and innovation perimeter)
- ✓ self-declaration
- ✓ subsample controlled by experts

## ■ Several indicators are studied

- ✓ **Economical impact** : Turnover evolution on the innovation perimeter due to ADEME IFP (Major Indicator)
- ✓ **Social impact** : Number of jobs evolution on the innovation perimeter due to ADEME IFP (Major Indicator)
- ✓ **Environmental impact** : Reduction of carbon emissions due to ADEME IFP (Major Indicator)

# “Econometric evaluation”

- **Objective: evaluate the causal impacts of the scheme :**

- direct impacts : private R&D expenses, R&D success in innovation
- indirect impacts : employment, turnover

- **Focus on firms as beneficiaries and on subsidies**

- **Proposed method : «Difference-in-difference» combined with matching**

To compare the results between subsidized companies and a control sample -> a statistical way to create a counterfactual and to identify the causal effect of the program.

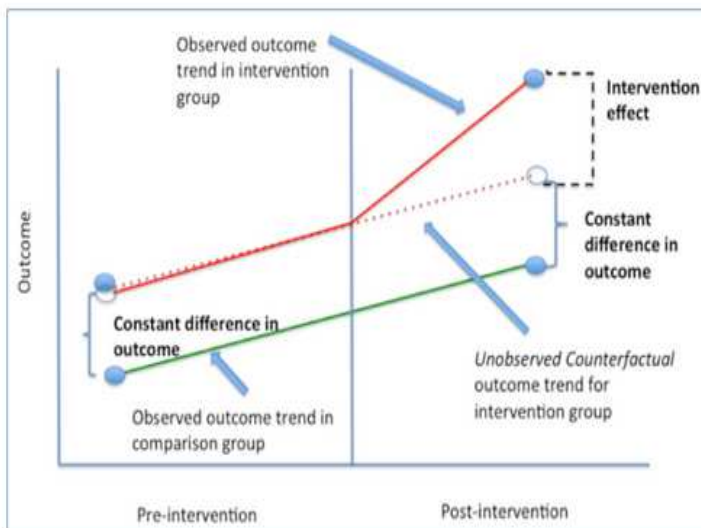


Figure 1. Difference-in-Difference estimation, graphical explanation

## Feasibility study :

- **Panel data over 2009-2013**

- Data collected by ADEME (quantitative monitoring)
- External administrative database available with a lag (fiscal data, R&D surveys...)

- **Initial sample :**

3,081 observations (partners × project)  
883 projects and 1,492 different partners

- **Data analysis and database implementation lead to several recommendations to optimize the feasibility of the final evaluation:**

E.g. : to avoid observations loss during data matching (mainly due to firm ID changes)

## Conclusion & perspectives (I)

Two **complementary evaluation approaches** based on different strategies to build an appropriate counterfactual in order to identify the impacts of the ADEME IFP program.

	« Qualitative » evaluation	« Econometric » evaluation
Advantages	<ul style="list-style-type: none"><li>- More ability to understand complex causality</li><li>- Possibility to build tailored counterfactual</li></ul>	<ul style="list-style-type: none"><li>- More « objective »</li><li>- Use of existing information (less costly)</li></ul>
Limits	<ul style="list-style-type: none"><li>- Self-declaration (even if challenged)</li><li>- More costly</li></ul>	<ul style="list-style-type: none"><li>- Demanding in terms of data availability (sample size, degree of precision on available data for both treatment and control groups)</li></ul>

## Conclusion & perspectives (II)

- Impact of the EC guidelines on ADEME evaluation practices.
- Learning-by-doing process between the conception of selection, monitoring and ex-evaluation tools : the needs in terms of ex-post evaluation should be anticipated at the moment of conception of the selection & monitoring tools.
- Ex-post evaluation feedbacks : an opportunity to create dialogue between different scales in the policy making ?
  - Explore the environmental externalities of R&D&I programs rules (especially for those based on State Aid) in link with EU energy & climate policies (energy efficiency & energy performance building directives).
  - Opportunity to design & evaluate schemes in a global view, and benefit from advantages & drawbacks from the different initiatives (especially regarding data collection & treatment).

# Thank you for your attention

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# Appendix

# Economical, social and environmental impacts assessment

## ■ Economical impact

### ✓ Major Indicator

- For change: **Turnover evolution on the innovation perimeter** (yearly turnover after the introduction of the innovation if new products directly sold on the market, differential of turnover when the innovation is introduced in a preexisting product + other specific cases)
- For impact : Turnover evolution \* % of change due to IFP

### ✓ Other cases (when projects do not lead to sales)

- For change: project holders are directly asked how they value the innovation benefits
  - Internal invoicing (€)
  - « customer value » (€)
  - Costs reduction (in %)
  - Margin improvement (in %)
  - Market share increase (in %)
- For impact: valuation evolution \* % of change due to IFP

# Economical, social and environmental impacts assessment

## ■ Social impact

### ✓ Major Indicator

- For change : **number of jobs evolution on the innovation perimeter**  
(yearly number after the introduction of the innovation when a new product is directly sold on the market; differential of jobs number, if the innovation was introduced in a preexisting product)
- Unit : full time equivalents
- For impact jobs number evolution in the perimeter \* % of change due to IFP

ADEME has developed 3 main methodological approaches applied on the estimation of employment effects of investments in the ecological transition:

- Bottom up approach
- Input-Output analysis
- Computable general equilibrium models



# Economical, social and environmental impacts assessment

## ■ Environmental impact

### ✓ Major Indicator

- For change : **Reduction of carbon emissions or energy consumption in comparison with a reference solution**
- For impact : Reduction of carbon emissions/energy consumption \* % of change due to IFP

NB: for projects funded under rules for State aid for environmental protection and energy (incl. EE measures such as cogeneration and DH & DC) → obligation to size the aid amount by taking into account the additional cost of the supported technology compared to a reference solution

### ✓ Other cases (when innovations lead to other environmental benefits)

- For change: → project holders directly asked how they value the environmental benefits (waste reduction, energy performance improvement, pollutants reduction, resources conservation...)
- For impact : valuation evolution \* % of change due to IFP