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## ANNEX I

### ELIGIBILITY CRITERIA

#### A. PROJECT CATEGORIES

##### I. **CCS demonstration project categories (with minimum capacity thresholds<sup>(1)</sup>)**

- power generation: pre-combustion 250 MW,
- power generation: post-combustion 250 MW,
- power generation: oxyfuel 250 MW,
- industrial applications implementing: (a) CCS on refineries with 500 kilotonnes per year (kt/y) stored CO<sub>2</sub> from one or more sources within the refinery; (b) CCS application to cement kiln with 500 kt/y stored CO<sub>2</sub>; (c) CCS application for primary production routes in iron and steel production with 500 kt/y stored CO<sub>2</sub>; or (d) CCS application for primary production routes in aluminium production with 500 kt/y stored CO<sub>2</sub>.

##### II. **Innovative RES demonstration project categories (with minimum size thresholds)**

- Bioenergy – project subcategories:
  - Lignocellulose to intermediate solid, liquid or slurry bioenergy carriers via pyrolysis with capacity 40 kt/y of the final product.
  - Lignocellulose to intermediate solid, liquid or slurry bioenergy carriers via torrefaction with capacity 40 kt/y of the final product.
  - Lignocellulose to Synthetic Natural Gas or synthesis gas and/or to power via gasification with capacity 40 million normal cubic metres per year (MNm<sup>3</sup>/y) of the final product or 100 GWh/y of electricity.
  - Lignocellulose to biofuels or bioliquids and/or to power including via directly heated gasification with capacity 15 million litres per year (Ml/y) of the final product or 100 GWh/y of electricity. Production of Synthetic Natural Gas is excluded under this subcategory.
  - Lignocellulosic raw material, such as black liquor and/or products from pyrolysis or torrefaction, via entrained flow gasification to any biofuels with capacity 40 Ml/y of the final product.
  - Lignocellulose to electricity with 48 % efficiency based on lower heating value (50 % moisture) with capacity 40 MWe or higher.
  - Lignocellulose to ethanol and higher alcohols via chemical and biological processes with capacity 40 Ml/y of the final product.
  - Lignocellulose and/or household waste to biogas, biofuels or bioliquids via chemical and biological processes with capacity 6 MNm<sup>3</sup>/y of Methane or 10 Ml/y of the final product.
  - Algae and/or micro-organisms to biofuels or bioliquids via biological and/or chemical processes with capacity 40 Ml/y of the final product.

*Note: sustainability criteria as provided in Directive 2009/28/EC of the European Parliament and of the Council<sup>(2)</sup> on the promotion of the use of energy from renewable sources shall be met for biofuels and bioliquids within the meaning of that Directive.*

- Concentrated solar power – project subcategories:
  - Parabolic trough or Fresnel system using molten salts or other environmentally-benign heat transfer fluid with nominal capacity 30 MW.

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- Parabolic trough or Fresnel system based on Direct Steam Generation with nominal capacity 30 MW. Direct steam solar temperature to be above 500 °C.
- Tower system using superheated steam cycle (either multi-tower or combination liner collectors – tower) with nominal capacity 50 MW.
- Tower system using pressurised air with temperature above 750 °C and solar hybrid gas turbine with nominal capacity 30 MW.
- Large-scale Stirling dish power plants with solar to electric efficiency of over 20 % and nominal capacity of at least 25 MW.

*Note:* Dry cooling, hybridisation and (advanced) heat storage solution may be included in the demonstration plants.

- Photovoltaics – project subcategories:
  - Large-scale concentrator photovoltaics power plants with nominal capacity 20 MW.
  - Large-scale multi-junction Si-thin-film photovoltaics power plants with nominal capacity 40 MW.
  - Large-scale Copper indium gallium (di)selenide (CIGS)-based photovoltaics power plants with nominal capacity 40 MW.
- Geothermal – project subcategories:
  - Enhanced geothermal systems in tensional stress fields with nominal capacity 5 MWe.
  - Enhanced geothermal systems in compressional stress fields with nominal capacity 5 MWe.
  - Enhanced geothermal systems in areas with deep compact sedimentary and granite rocks and other crystalline structures with nominal capacity 5 MWe.
  - Enhanced geothermal systems in deep limestone with nominal capacity 5 MWe.

*Note:* Combined Heat and Power (CHP) applications with the same electricity thresholds are equally eligible.

- Wind – project subcategories:
  - Off-shore wind (minimum turbines size 6 MW) with nominal capacity 40 MW.
  - Off-shore wind (minimum turbines size 8 MW) with nominal capacity 40 MW.
  - Off-shore wind (minimum turbines size 10 MW) with nominal capacity 40 MW.
  - Floating off-shore wind systems with nominal capacity 25 MW.
  - On-shore wind turbines optimised for complex terrains (such as forested terrains or mountainous areas): with nominal capacity 25 MW.
  - On-shore wind turbines optimised for cold climates (compatible with temperature lower than – 30 °C and severe icing conditions) with nominal capacity 25 MW.
- Ocean – project subcategories:
  - Wave energy devices with nominal capacity 5 MW.
  - Marine/tidal currents energy devices with nominal capacity 5 MW.
  - Ocean thermal energy conversion (OTEC) with nominal capacity 10 MW.
- Hydropower – project subcategories:

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- Power generation with High Temperature Superconducting Generators: 20 MW.
  - Distributed Renewable Management (smart grids) – project subcategories:
    - Renewable energy management and optimisation for small and medium-scale Distributed Generators in rural environment with predominant solar generation: 20 MW on Low Voltage (LV) network + 50 MW on Medium Voltage (MV) network.
    - Renewable energy management and optimisation for small and medium-scale Distributed Generators in rural environment with predominant wind generation: 20 MW on LV network + 50 MW on MV network.
    - Renewable energy management and optimisation for small and medium-scale Distributed Generators in urban environment: 20 MW on LV network + 50 MW on MV network.

*Note: The use of active loads (electric heaters/heat pumps etc.) shall not be excluded.*

## B. PROJECT REQUIREMENTS

### I. Common requirements

- The capacity thresholds laid down in Part A must be met.
- With regard to the first round of calls for proposals, projects must demonstrate a reasonable expectation of entry into operation by 31 December 2015 on the basis of the adoption of the respective award decision by 31 December 2011.
- All relevant national permits for the project must be in place and in line with relevant requirements under Union legislation or the relevant permit procedures under way and sufficiently advanced to ensure start-up of commercial operation could take place by 31 December 2015 for the first round on the basis of the adoption of the respective award decision by 31 December 2011.
- The project operator has to make a binding commitment to knowledge-sharing pursuant to the requirements laid down in Article 12.
- Projects shall be located in the territories of the Member States, their exclusive economic zones and their continental shelves.

### II. CCS demonstration projects

- Each project has to implement the full chain (capture, transport and storage).
- Each demonstration project must implement heat integration for the capture component of the process.
- The capture rate has to be at least 85 % of CO<sub>2</sub> from the flue gases to which capture is applied.
- Each project has to contain an independent research block related to safety of storage sites and improvement of monitoring technologies especially in the field of brine migration, its possible pathways and impacts.

## ANNEX II

### KNOWLEDGE-SHARING REQUIREMENTS

#### A. Technical set-up and performance

- reliability,
- CO<sub>2</sub> captured,

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- performance at different levels, including differences between expected and real performance,
  - increase in fuel demand; electricity, heat and cooling demand,
  - key inputs and outputs and design,
  - future identified Research and Development issues,
- B. Cost level**
- capital and operating costs,
  - totals and costs per unit performance (tonne CO<sub>2</sub> stored, clean MWh produced),
- C. Project management**
- legislation/permitting,
  - stakeholder management, including interaction with Governments,
  - planning,
  - project organisation,
- D. Environmental impact**
- effectiveness: reduction of CO<sub>2</sub> emissions per unit energy,
  - other environmental impacts at undisturbed operation,
- E. Health and safety**
- incidents and near misses occurred (disturbed operation),
  - monitoring and resolution systems to track safety,
  - health issues in undisturbed operation,
- F. CCS storage site performance**
- models and simulations (development CO<sub>2</sub> plume – pressure front),
  - history match results and adjustments (assessment to be made: normal within a deviation range or significant irregularity that needs action),
  - behaviour of displaced brine through CO<sub>2</sub> injection.

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- (1) CCS power thresholds are expressed as gross electrical output before capture.
- (2) [OJ L 140, 5.6.2009, p. 16.](#)

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