

# SET Plan implementation Key Action n.10

## Temporary Working Group Deep Geothermal

### State of Play - Advancement Report



**Loredana Torsello - Chair**  
**On behalf of TWG Deep Geothermal**

**20<sup>th</sup> June 2017**

# Participant

N.	Last Name	Name	Country / Role
1	Bonnetblanc	Paul	FR – Country representative
2	Basosi	Riccardo	It--Country representative
2	Bertani	Ruggero	ETIP DG
3	Bruhn	David	EERA JPGE
4	Dumas	Philippe	EGEC
5	Figueroa	Inmaculada	SP – Country representative
5	Galloni	Susanna	EC, RTD
6	Jóhannesson	Guðni A.	IS – TWG chair
7	Lehance	Pascal	BE – Country representative
8	Manfrida	Giampaolo	IT – TWG chair
9	Menna	Pietro	EC, ENER
10	Michopoulos	Apostolos	CY – Country representative
8	Provaggi	Alessandro	DHC+ Technology Platform
9	Ramsak	Paul	NL – Country representative
10	Sanner	Burkard	ETIP RH&C, Geothermal Panel
11	Schreiber	Kai Stephan	DE – Country representative
12	Shortall	Ruth	EC, JRC
13	Siddiqi	Gunter	CH – Country representative
14	Torsello	Loredana	IT – TWG chair
15	Yildirim	Cagri	TR - Country representative



## Targets of the Declaration of Intent

- Increase reservoir performance\* resulting in power demand of reservoir pumps to below 10% of gross energy generation and in sustainable yield predicted for at least 30 years by 2030;
- Improve the overall conversion efficiency, including bottoming cycle, of geothermal installations at different thermodynamic conditions by 10% in 2030 and 20% in 2050;
- Reduce production costs of geothermal energy (including from unconventional resources, EGS, and/or from hybrid solutions which couple geothermal with other renewable energy sources) below 10 €/kWh<sub>e</sub> for electricity and 5 €/kWh<sub>th</sub> for heat by 2025\*\*;
- Reduce the exploration costs by 25% in 2025, and by 50% in 2050 compared to 2015;
- Reduce the unit cost of drilling (€/MWh) by 15% in 2020, 30% in 2030 and by 50% in 2050 compared to 2015;
- Demonstrate the technical and economic feasibility of responding to commands from a grid operator, at any time, to increase or decrease output ramp up and down from 60% - 110% of nominal power.

\* Reservoir performance *includes underground heat storage.*

\*\* Costs have to be confirmed establishing at least 5 plants in different geological situations, of which at least one with large capacity (20 MWe or, if for direct use only, 40 MW<sub>th</sub>).

# Sample fiche of Implementation Plan (From Set Plan Master Presentation)

## Description of each R&I Activity (repeat as many times as the number of R&I Activities)

**Title:** a concise but informative title of the R&I Activity (max. two lines)

**Targets:** the targets that the R&I Activity will help to achieve

**Monitoring mechanism:** an explanation of how each target will be monitored and reported to SETIS

**Description:** a summary of the R&I Activity including the goals and a justification of why the Activity is key

**TRL:** Advanced research / Industrial research & demonstration / Innovation & market uptake. Also mention TRL at start and envisaged at the end

### Total budget required

### Expected deliverables

### Timeline

*Fill in one line per deliverable*

...

### Party / Parties

(countries / stakeholders / EU)

### Implementation instruments

### Indicative financing contribution

*Each R&I Activity might be implemented by one or more groups of parties working together. One line should be filled in per group of parties*

...

...



## IP R&I Activities (Ongoing and Scheduled):

1. Geothermal heat in urban areas
2. Materials for harsh environments (high temperature, corrosion, scaling)
3. Demonstration of EGS projects
4. Improvement of performance (conversion to electricity and direct use of heat)
5. Increasing awareness of local communities and involvement of stakeholder in more sustainable (socially, environmentally and economically friendly)
6. Exploration techniques (including resource prediction and exploratory drilling)
7. Advanced drilling techniques
8. Risk mitigation (financial/project)
9. Knowledge transfer + training (including peer-to-peer learning and research infrastructures)
10. Data availability unification
11. Grid flexibility and energy system integration
12. Zero-Emission Geothermal Power Plants



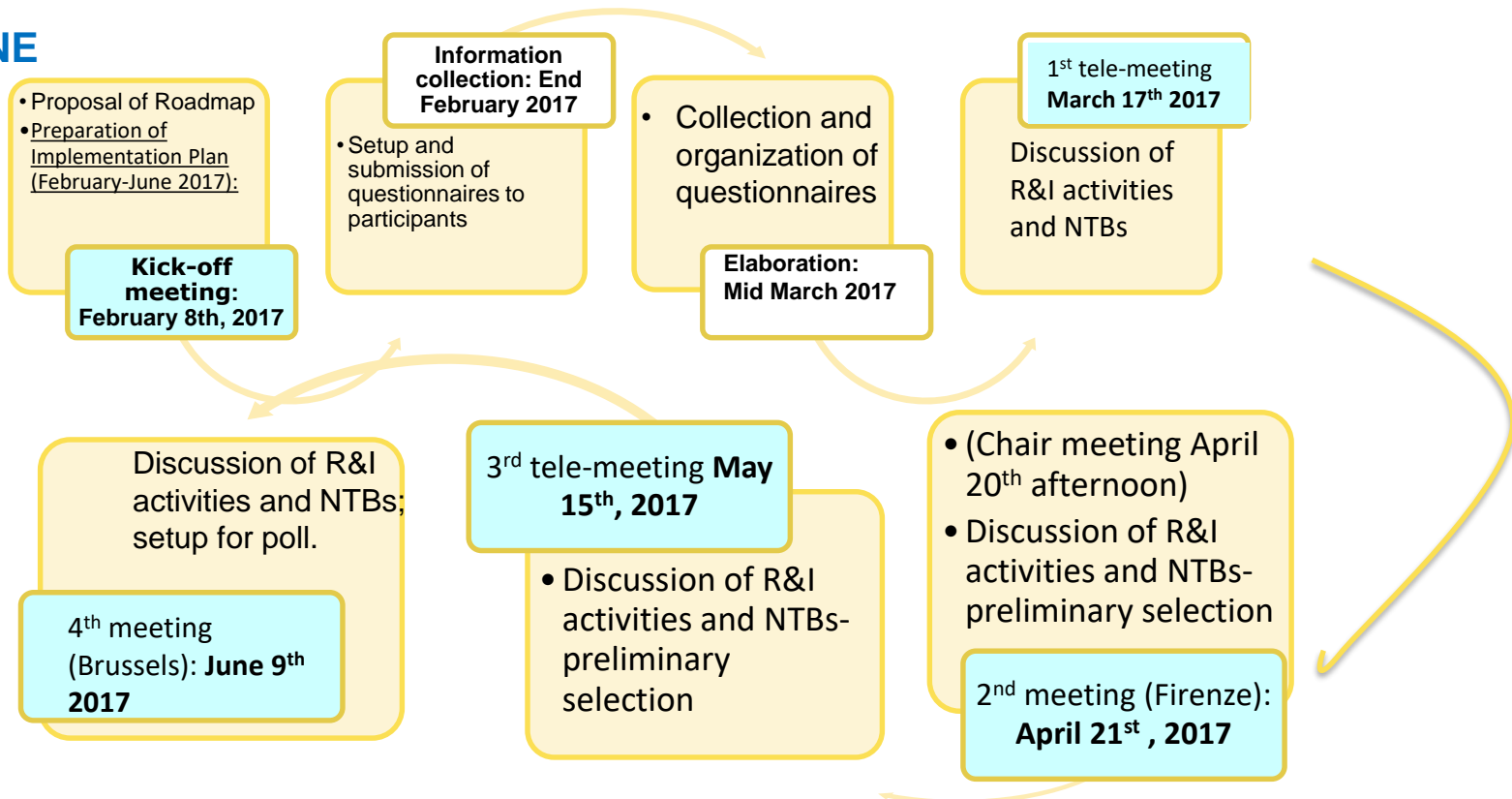
## Applied Criteria and Evaluation procedure:

All DG TWG participants (member states + stakeholders) are currently called to participate in a poll evaluating R&I and NTB/Enablers, based on the following criteria:

- ✓ *Correspondence to the targets of the DOI*
  - ✓ *Common interest among several countries*
  - ✓ *Existence of funding (Private and Public)*
  - ✓ *Existence of adequate preceding research*
  - ✓ *Expected benefits for consumers*
  - ✓ *Interest of Industry*
  - ✓ *Social acceptance*
  - ✓ *Development of research infrastructures*
- **Poll:** Each participant would be asked to assign a score to each criterion in each fiche in order to rank the proposed actions

# TWG Deep Geothermal Roadmap - Timing guide for the work of the TWG DG

## DONE



## "TO DO" IN AGENDA

Revised version of IP R&I/NTBE fiches;  
Poll; sharing of results - **June / July 2017**

Evaluation of poll results, preparation of final version of IP; approval by TWG - **September 2017:**





## Expected results and Timeline

- A first revision of the 12 R&I/NTBE fiches for the IP was produced and revised
- The final version will be used for a poll, to be performed in the month of June/early July
- The results of the poll will be collected, presented and discussed in the TWG during summer
- The final, validated version of the IP is expected by the end of September 2017





# THANKS FOR YOUR PRECIOUS ATTENTION!

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