

Abschlussbericht

SmartReFlex Smart and Flexible 100 % Renewable District Heating and Cooling Systems for European Cities

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SmartReFlex

**Smart and Flexible 100 % Renewable District Heating and Cooling Systems
for European Cities**

Intelligent Energy – Europe (IEE)

Final Technical Implementation Report (FR)

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1 Summary

1.1 Objectives of the action

The SmartReFlex project aimed at increasing the diffusion of smart and flexible district heating and cooling (DHC) grids and systems, basing on high shares of renewable energy sources (RES), in European cities.

In order to reach this goal, 6 regions in 4 countries (Germany, Ireland, Italy and Spain) implemented legislative and organisational measures for promoting high-RES DHC, as reported in the next paragraph, also benefitting from the know-how transfer by the two Danish partners, bringing in the consortium the success story from Denmark.

1.2 Main activities, results and lessons learned

The project activities allowed the SmartReFlex consortium to meet the foreseen objectives. The main project results could be summarised as follows (further quantitative results are report in paragraph 1.5 about performance indicators):

- **6 Regional strategies:** Action plans for 100% RES DHC were developed in the participating regions.
- **Capacity building:** more than 500 people were trained through national workshops on three different topics (design & planning, technical issues, organization and financing) and training material have been made available on the project website for further replication activities.
- **Practical case studies:** 20 cases of real plants at local level and / or policies on RES DHC have been developed.
- **SmartReFlex towards replication:** Several guidelines have been prepared for Local and Regional Authorities willing to 'copy, adapt and paste' the 'SmartReFlex recipe' among which:
 - Recommendations for setting up a task force on RES DHC: How to effectively involve all local stakeholders for carrying out a fruitful process towards 100% RES DHC.
 - Guide for regional authorities: Knowledge and inspiring examples on RES DHC for local authorities and communities – residents, commercial and industrial enterprises.

Thanks to a continuous and fruitful interaction with the main stakeholder categories, it was possible also to gather several ‘dos and don’ts’. The key lessons learned can be listed as follows:

- The role of the ‘know-how’ partners is crucial: Thanks to the expert partners from DK and DE, the draft versions of the regional strategies have been reviewed to make them as practical as possible. Especially the availability of partners from DK not directly involved in a country team allows a very helpful view from ‘outside’ to improve the strategy and implementation process for the regional partners.
- Capacity building workshops have shown to be a very good framework for discussion between the local stakeholders, especially with a balance between speakers for abroad and local representatives, and the right place to find the potential case studies on the territory. A careful preparation of the programme and selection of the potential participants are key issues to determine the success of training initiatives.
- Local energy planning, and heat planning in particular, is at an early stage of development in participating regions. Further capacity building and piloting in the framework of the SRF project will help establishing a methodological framework and demonstrate best practice in this area.

Finally, as **publishable final report**, a combination of the main project results have been chosen, namely the project leaflet (in its revised result-oriented version), the brochure highlighting the local actions, the guide on RES DHC for local and regional authorities and the detailed EU report in English on performed case studies.

1.3 Success stories

SmartReFlex success stories, reported below, cover the 4 project countries and also the whole project flow, from the task forces, through the policy and technical case studies, to the dissemination and replication impact.

Task force – Catalonia stakeholder group: Effective, committed and alive beyond the project period (Spain)



Though working in SmartReFlex as a ‘newcomer’ region on RES DHC, Catalonia succeeded in creating a very effective regional task force on this topic which could act as a best practice for other Regions and Cities willing to use such a policy tool.

The following are the main features and results of this task force:

- **Comprehensive:** Led by INCASÒL (a public company that belongs to the Ministry of Territory and Sustainability of ‘Generalitat de Catalunya’), the task force was able to

collect 18 relevant stakeholders from many different target groups of the project: Energy agencies, industrial districts, Municipalities, consumer associations, legal firms, research institutes, professionals, etc.

- **Committed:** because of the interest shown by stakeholders, 12 meetings (8 plenary + 4 thematic) were held during the project period, much more than the 6 foreseen when the project started.
- **Effective:** Task force discussions have always been held to solve practical issues and overcome technical or legal barriers in real cases; For instance, an environmental solution was found for the new residential area 'l'Estrella' in the city of Badalona, where a strict protection against air emissions is in place. One of the task force stakeholders, the Catalan Biomass Cluster, provided a detailed regulation for biomass boilers which was then included in the urban plan to show to the environmental office that the boiler emissions will be much lower than they expected.
- **Sustainable in the long term:** on February 28th, 2017 (the very last day of SmartReFlex), the final meeting of the task force was held and there the members have expressed their interest in continuing the activities, committing to meet at least once a year, because of the mutual enrichment and the practical results obtained.

Policy – How RES DHC was included in the Regional Energy Plan of Emilia-Romagna (Italy)

In November 2015 Emilia-Romagna Region started the update of its regional energy plan that led to two different documents: the Regional Energy Plan 2030 and the Regional Energy Action Plan 2017-2019. ANCI Emilia-Romagna, also using the concept developed in its SmartReFlex regional strategy for RES DHC, opened a consultation with its Municipalities, teaming up with ARPAE (regional agency for environment and energy), to try to include RES DHC in the regional energy plan.



After the publication of the drafts of the two documents mentioned above, a public consultation was opened and ANCI Emilia-Romagna sent its contribution, of course stressing the relevance of RES DHC. Thanks to this action, the final version of the energy plan foresees a more relevant role for RES DHC, planning the creation of a regional energy observatory to implement a study on DH potential at a regional level, with a focus on areas not reached by the natural gas network.

Policy – Local heat planning in Kerry (Ireland)

The case study undertaken by Kerry County Council together with XD Consulting on Local Heat Planning for the town of Tralee and County Kerry was particularly exemplary. The objective of this case study was to support the integration of heat and district heating into the local energy planning framework. The first step was to create a heat density map of Tralee (100 x 100 m grid) and the whole county (250 x 250 m grid), based on a GIS dataset which includes the annual heating requirement of all dwellings and non-residential buildings. We used this heat density dataset to derive the total cost of heat supply and distribution via district heating per unit of heat sold, for each land plot within Tralee. Our analysis shows that district heating could possibly attract a 90% share of the heat market in Tralee, moving from individual heating if cheap renewable heat is available as a by-product of biomass CHP. This case study will inform the local authority's spatial planning and development plans for Tralee and Kerry respectively. Additional support is given by the Sustainable Energy Authority of Ireland to leverage the associated know-how to provide a template for other local authorities to develop their heat plans and renewable energy strategies.

Implementation – Toward solar district heating in Trappenkamp (Germany)

SmartReFlex partner Hamburg Institut has supported the municipality of Trappenkamp (5000 inhabitants, 80 km north of Hamburg) by carrying out an economic analysis of their current district heating system and conducting a feasibility study on the integration of a large-scale solar thermal plant into the existing heat supply provided by a natural gas CHP system. The key findings of their analysis are that with the end of the CHP premium payment in approximately two years, the profit for the municipal district heating utility will deteriorate significantly. The proposed 2.5 million investment in a large scale solar thermal plant (5000 m² collector array) to cover the summer load would increase the gross profit in the district heating. The attractive regional and federal funding schemes in place that could cover parts of the investment in the solar thermal plant would increase the return on investment even further. The solar heat is already competitive with fossil fuels today and could stabilize the heat production cost of the district heating system for the next 25 years. The projected cost of solar heat is 3-4 cents/kWh. Following the support provided by the SRF partners as part of this case study, the municipality of Trappenkamp has decided to go ahead with the project and has initiated its implementation. Their key issue now is to provide the land required to install the solar thermal collector field.

Dissemination and replication – Working together with other EU-supported projects and organizations

SmartReFlex has carried out a close and fruitful cooperation with ‘neighbouring’ EU-supported projects and relevant international organizations for activities of both joint dissemination and mutual knowledge transfer to stimulate replication. The main activities and results can be summarized as follows (details can be found in the dissemination report):

- RES H/C SPREAD:
 - Common task force meeting in Emilia-Romagna (Italy, December 1st, 2014).
 - Common workshop with Lazio Region (Italy, October 7th, 2016).
- CELSIUS:
 - A SmartReFlex page was created in the ‘CELSIUS Toolbox’, as well as the link to the recording of the SmartReFlex international webinars. The Toolbox is a private area in the CELSIUS website with 238 registered users including researchers, public servants and representatives of private and non-profit organisations.
 - A CELSIUS representative spoke in one of the SmartReFlex international webinars (January 25th, 2017).
- progRESsheat:
 - Additional webinar (not foreseen in the Annex I) where SmartReFlex Regions presented their strategies to the progRESsheat partners as input to develop their action plans (February 21st, 2017).
 - Interest towards SmartReFlex training material to include it in their ‘training pool’.
- Stratego:
 - Paul Kenny presented SmartReFlex in the Stratego webinar on local governments (May 2014).
 - SmartReFlex was presented by Euroheat&Power in the Stratego final event (October 12th, 2016).
- BEenerGI: SmartReFlex Catalan partners presented SmartReFlex results in a round table in Spain (July 17th, 2015).

- CELSIUS, progRESsheat, Stratego, Flexynets, HeatRoadMap Europe, SDHplus, CoolHeating: Close cooperation on dissemination through social media channels (Twitter and LinkedIn). For SmartReFlex, Ambiente Italia's social media accounts were used.
- EU Heat Roadmap:
 - Xavier Dubuisson (XDC) exchanged experience and knowledge with the EU Heat Roadmap team (David Connolly of Aalborg University, Sven Werner of Halmstad University) in the framework of the Heat Planning activities undertaken within SRF for Tralee and County Kerry (IRL).
 - Xavier Dubuisson (XDC) presented the results of the Tralee Heat Planning case study at the 4DH conference in Aalborg in Autumn 2017.
- Sunstore:
 - Xavier Dubuisson (XDC) organised a stand at the Sunstore conference 2016 in Billund (DK) and represented the SRF project together with other partners at the event.
- ICLEI:
 - Promotion of and participation in SmartReFlex webinars.
 - Invitation to the SmartReFlex Regions and Cities to join both the 'Global District Energy in Cities Initiative' (led by UNEP and where ICLEI is co-coordinator of the capacity building task force) and the 'Global 100% Renewable Energy Cities and Regions Network' (where ICLEI acts as a facilitator as part of a multi-stakeholder global campaign).
- Concerted Action – Renewable Energy Sources Directive: the Project Coordinator, invited by EASME, presented the SmartReFlex project in a workshop of CA-RES II (May 2014).
- Concerted Action – Energy Performance of Buildings Directive: through the Italian Energy Agency ENEA, SmartReFlex was presented in the session 'Attractive RES DH' (February 15th-16th 2017).
- International District Energy Association (IDEA): Promotion of SmartReFlex results through one of the project webinars (http://www.districtenergy.org/blog/2016/12/13/think-big-design-rules-and-monitoring-results-of-solar-district-heating-eu-smartreflex-program/?utm_source=rss&utm_medium=rss&utm_campaign=think-big-design-rules-and-monitoring-results-of-solar-district-heating-eu-smartreflex-program).

1.4 Involvement of target groups and key actors in the action

As defined also in project Annex I, the foreseen target groups were:

- Primary (first priority): regions/provinces
- Secondary (second priority): local authorities (Municipalities), DHC utilities and DHC industry, consumers

The involvement of such target groups in the project activities, namely the task forces, the capacity building and the development of case studies, was quite straightforward in all the participating regions given the presence of a relevant regional (or similar) actor in the project consortium. Such actors were able to convey all relevant stakeholders, first of all through the task forces, as can be seen looking at the task force participants reported in Deliverable D2.3.

Also the composition of the audience in the capacity building workshops shows a remarkable active participation of the two main target groups, as can be verified in Deliverable D3.1 reporting about the training activities. Deliverable D3.2, on pages 20-23 also summarised the involvement of target groups in the different capacity building workshops in all participating regions.

To complete the project flow, also practical case studies at local level were carried out with the active participation and involvement from the target groups, namely Local and Regional Authorities and DHC utilities, as can be seen in Deliverables D4.1 and D4.2.

Finally, the involvement of the target groups went beyond the project boundaries thanks to the relevant dissemination effort, in particular looking at the cooperation with similar EU-supported project or other international activities, as reported above in one of the success stories of paragraph 1.3. From this point of view, the common activities with 'CELSIUS' and 'progRESsHEAT' should be highlighted.

Further information about the project impact among the target groups, focusing on replication and on increased knowledge and acceptance on RES DHC thanks to the SmartReFlex activities, are reported in Deliverable D5.7 'D5.7_Monitoring report_No3' on pages 12-15.

One aspect that could be improved is to foresee, from the very beginning of the project, quite short capacity building activities due to the type of target groups to be involved. In fact, it is very hard for Public Bodies to be able to attend 2-days events and, therefore, shorter and more condensed training packages should be prepared.

1.5 Performance indicators

Project performance indicators:

Performance indicator	WP	Planned Target	Actual achievement	Comment on performance
Number of regions implementing process (survey and task force).	2	6	5	The work on Ireland was carried out mainly at national level due to the country limited size and organisational structure; Therefore, only one strategy and task force was set up instead of the two foreseen (see also Deliverable D2.1 for Ireland).
Total number of stakeholder organisations involved in the implementing process.	2	60	166	See Deliverable D2.3 for the detailed list of stakeholders involved in the Task Forces and in the elaboration of the regional strategies.
Number of policy framework improvements enacted or in clear development, number of instruments and promotion activities implemented or in planning by authorities.	4	12	13	13 policy framework improvement activities (task 4.1) were undertaken (see below paragraph 2.4 for a detailed list).
Adequate capacity building activities.	3	18 seminars, 144 hours, 120 participants	17 seminars, 179 hours, 668 participants	The number of hours and participants were much higher than expected also thanks to 2 additional replication workshops (not foreseen in the contract) held in Italy and Spain. See also Deliverable D3.2 for further details.
Working seminars are performed on the basis of practical case studies.	3	20	29	13 case studies on policies and 16 on plants (see below paragraph 2.4 for details).
Municipalities or market actors start activities with RES DHC.	4	20	29	In all 29 case studies local authorities and other market players being worked on by SRF partners in participating regions.

Involvement and commitment by re-gional market actors to new RES DHC capacity.	4	14 new plants or renovations, 1 project in planning or realized by the end of the project.	16	A total of 16 DH projects (new or upgrade of existing ones) have been worked on as case studies by project partners. All project, though not at tendering stage yet, are close to bankability and show a strong and clear commitment by stakeholders and decision makers.
Permanent RES DHC task forces are created in the target regions and established as permanent working groups.	2, 3, 4	6 Task Forces created and maintained involving 10 stakeholders at average.	5 Task Forces, 33 stakeholders at average.	See the comment on the first performance indicator about the actual number of Task Forces.
Capacity building activities adopted by sector organisations and integrated into existing schemes.	3	4 organisation adopting the working seminar concept of SRF and performing capacity building on RES DHC	3	SRF training courses approved for CPD by Engineers Ireland. Technical workshop in Italy organised within the DH school of the Italian DH association. Partners of progRESsHEAT project asked to use SmartReFlex training material for capacity building within their project.
National and international stakeholder and networks show new interest in RES DHC and start own replication activities and Task Forces.	5	10	14	Granollers, Sant Cugat del Vallès, Nasuvinsa, Provincial Council of Ávila (Spain), small Municipalities in Italy, Mayo, Leitrim, Dublin (Ireland), Thuringia Region (Germany), 'Celsius Cities', progRESsheat partners, ICLEI, 2 EC Concerted Actions. For details see Deliverable 'D5.7_Monitoring report_No3' on pages 12-13 and paragraph 1.3 above (success story on dissemination and replication).
Absolute public acceptance for DHC is improved.	5	20%	25%	See Deliverable 'D5.7_Monitoring report_No3' on pages 13-15 for details on the calculation method.
Participants reached through dissemination events.	5	500	3,000 ÷ 10,000	See Deliverable 'D5.7_Monitoring report_No3' on page 4 for an explanation of such a wide range (substantially due to some fair presences). Furthermore, the total figure of people reached through dissemination is much higher, due to the articles (see again D5.7 for details).
Website visits per month at average.	5	500	251	See Deliverable 'D5.7_Monitoring report_No3' on pages 6-8.
Downloads of project products.	5	2000	3,100	See Deliverable 'D5.7_Monitoring report_No3' on page 7-8.

IEE Common performance indicators:

Within the duration of the action			
Common Performance indicator	Planned target	Actual achievement	Comment on performance
Cumulative investment (Euro)	280,000,000	320,000,000	16 systems under development (see above WP4 performance indicator on case studies). An average investment of 20 M€ per system has been assumed, as in Annex I calculation.
Renewable Energy (toe/year)	540,000	617,000	
Primary energy savings (toe/year)	420,000	480,000	
Reduction GHG emissions (t CO2e/year)	1,248,000	1,426,000	

By 2020			
Common Performance indicator	Planned target	Actual achievement	Comment on performance
Cumulative investment (Euro)	1,070,000,000	1,110,000	Since the common performance indicators within the project period are quite close to the planned values, no substantial modification of the 2020 scenario with respect to what calculated in Annex I is needed. Therefore the actual achievement just takes into account the difference shown above between actual achievement and planned target for the indicators of the project period.
Renewable Energy (toe/year)	1,780,000	1,857,000	
Primary energy savings (toe/year)	1,380,000	1,440,000	
Reduction GHG emissions (t CO2e/year)	4,100,000	4,278,000	

1.6 Important problems and deviations from Annex I

Although the flow of activities was very smooth, small problems and deviations should be reported:

- With respect to the initial plan, webinar discussions have not been widely used for communication among partners for the following reasons:
 - Regarding Project Committee coordination, email exchanges have always worked very well so, even though asked by the Coordinator, WP leaders thought it was not necessary to hold specific webinars.
 - Many project activities were carried out on a bilateral basis, so email communication and phone seemed to be the most effective way to perform these activities.
 - Furthermore, webinars involving all project partners seemed to be somehow dispersive since it is quite hard to keep the attention of the attendance;
- It was decided to merge deliverables D3.3 and D4.2, since they both concerned the development of case studies and, for sake of clarity and of following use of such documents for dissemination purposes, the whole project consortium agreed that it would have been much more fruitful to have the whole “history of development” of each case study in one document. This change was communicated to the EASME through the 2nd Progress Report.
- WP5 activities faced some delays for two main reasons:
 - The process of finding and subcontracting a suitable professional communication agency was harder and took longer than expected.
 - For some deliverables, for instance the project brochure, it was decided by the Consortium that the dissemination effectiveness would have been much higher if practical content about case studies had been included; Therefore it was decided to postpone its preparation.

2 Performance review by work package

2.1 Work package 1: Management

As requested in the 'Guidelines for Drafting the Final Technical Implementation Report', the details of WP1 are reported separately in Chapter 4.

2.2 Work package 2: Improving the regional framework

2.2.1 Objectives

The objective of WP2 was finding the optimal strategies, measures and instruments for the participating regions to improve the framework for developing DHC systems with high RES shares, aiming at 100% RES in the long term. By this the main steps for each region have been to define its goals, elaborate a strategy, build up a task force and continue the task force activities. In parallel the findings had to be summarized in a summary document and published in a guide for regional authorities.

2.2.2 Major activities and achievements

D 2.1: The country teams analysed the legislative status regarding RES DHC aspects in the different regions (survey) and elaborated their regional strategies. The regional strategies have been reviewed by the DK and partly by the DE expert partners and afterwards updated by the country teams. Furthermore an action plan was added to the regional strategies and updated every six months.

D 2.2: Basing on the input of the regional strategies Solites prepared the summary report. It describes legislative and market opportunities for 100% RES DHC in Catalonia (ES), Kerry and Tipperary (IE), Emilia Romagna (IT), Schleswig-Holstein and Baden Württemberg (DE), including the inputs from all partners for improving the legislation framework.

D 2.3: The partner consultants and regional authorities discussed the goals for the task force and decided which stakeholders should be invited with the aim to involve 10 to 15 representatives. Basing on these decisions the country teams set up the task forces and organised regular meetings. A description of the strategy and the conducted activities were added to the task force reports and updated regularly.

D 2.4: A guide with recommendations to regional authorities in EU for creating, organizing and managing a process for the market introduction of 100% RES DHC was prepared. It also includes recommendations on how to create and manage a successful task force. The guide (EN) was edited by Solites with contributions from all partners and published in July 2015. It was printed (run: 1.000) and is available as download on the website. The printed version is used as hand-out at meetings with regional authorities and referred to in articles addressing interested stakeholders. Additionally national versions (DE, ES and IT) have been prepared that are available as download on the website.

D 2.4 add on: To underline the importance of the task force, an evaluation of the task force experiences in the different regions has been done. This ‘add on’ to the guide is also available as download (see ‘Recommendations for setting up a task force’).

Six WP2 workshops took place as part of the project meetings: Apr. 2014 in Rome, Oct. 2014 in Barcelona, Mar. 2015 in Tralee, Oct. 2015 in Stuttgart, Mar. 2016 in Cloughjordan and Nov. 2016 in Kolding. Furthermore, two WP2 webinars were organized in June 2014 and Nov. 2014.

2.2.3 Assessment of the performed work

ES: A task force has been set up including representatives of the region, DHC representatives, municipalities, banks, consumer associations and law firms. Five task force meetings and four parallel thematic meetings with different topics (producers, legislators, consumers and planning developers) have been carried out.

A regional strategy tackling the legal, economical, technical and social barriers is completed. IREC and INCASOL have realized a survey among the regional stakeholders targeting four different profiles with common and specific questions: DHC developers, legislators, users and financing specialists.

Several possible DH case studies have been identified. Capacity Building Workshops have been organized. There was the opportunity to follow up with the task force members and thanks to these workshops, new members could be added to the task force.

IT: Together with the IEE project RES H/C SPREAD a ‘general’ regional task force has been set up. The kick-off meeting was in Dec. 2014. In March 2016 SmartReFlex contributed and collaborated to the organization of a second public encounter on thermal energy planning organized by RES H/C Spread. Initially 4 sub task forces were identified and one was added later (several meetings have been held for each sub-task force): 1. Integration and/or extension of existing DH with FER or industries thermal waste; 2. Integration and/or extension of existing networks with spread ST micro-plants; 3. Small rural/mountain RES networks with the cooperative model and/or crowdfunding; 4. New DHC networks with RES or waste heat (Medium municipalities without DHC); 5. Inclusion of favourable DHC policies in the regional energy planning and ERDF fund management. This sub task force was added to support the renewal process of Emilia Romagna’s regional energy planning (started Nov. 2015) and to include policies favourable to RES DH development. The activity of this task force has been carried on in strict collaboration with ARPAAE (Emilia Romagna Agency for energy and environmental protection).

IE: In Kerry, the task force has been set up to include members of the county council, local energy users, forest services and farmer association, with a focus on the development of the Tralee DH project. In Tipperary, there have been several task force preparation meetings with the local development company, local authority and the local woodland owners cooperative.

A first regional strategy document was prepared by the Irish partners and submitted to the Department of Energy (DCENR) in the framework of its consultation on the Green Paper on Energy Policy. SmartReFlex partners also made representations at the consultation workshops organized by the department (Dublin, 24th Sept. 2014).

The strategy and action plan have been submitted in the framework of the consultation undertaken by the DCENR (Irish ministry for energy) on the development of a Renewable Heat Incentive (RHI) scheme in Ireland. The joint submission by the Irish SRF partners reinforced the importance of RES DHC in achieving the RED's target for Ireland in terms of RES heat targets, and recommends specific provisions to support RES DHC under the RHI scheme. In addition, the SRF guide for regional authorities has been sent to all local and regional authorities in Ireland, and has been disseminated at relevant events attended by SRF partners, e.g. annual Irish Bioenergy Association conference, Energy Ireland conference, etc.

XDC and TEA have introduced RES DHC into the delivery of SEAI's training courses for the Local Authority Renewable Energy Strategy (LARES) methodology, which targets Irish planning officers and consultants. Five such courses have been delivered throughout Ireland in 2015 and 2016. A section of the training course is dedicated to Heat Planning and the role of RES DHC in the transition to 100% local RES supply. In addition, the SRF partners have made direct representations to key decision-makers at the Irish energy ministry and administration to advocate support measures for the deployment of RES DHC, following on submissions in the framework of Energy White Paper and RHI consultations.

DE: In Baden-Württemberg in cooperation with the Ministry of the Environment several task force meetings were organized by Solites, e.g. the workshop 'Zukunftsfähige Wärmenetze für Baden-Württemberg' on 02.07.2015. On 15.07.2015, another workshop took place at the ministry where German SRF partners participated. As a result, support to quality criteria could be given to the new subsidy program 'Energieeffiziente Wärmenetze' (energy-efficient DH systems) by the Ministry of the Environment that came into effect in February 2016. The subsidy program funds (1) municipal climate protection concepts, (2) regional initiatives in 12 regions of Baden-Württemberg promoting RES DH and giving advice e.g. to municipalities and (3) investments in energy-efficient DH systems linked to advanced quality criteria.

Furthermore, in Baden-Württemberg the competence centre 'district heating' was created at the Climate Protection and Energy Agency Baden-Württemberg (KEA). There is a close cooperation of Solites with the competence centre. In addition, a collaboration of Solites and Solar Cluster BW was set up with the goal to work together on the issue of land areas and to participate at events and workshops.

DK: The regional strategies have been successfully reviewed by the DK expert partners and partly by the German expert partners.

2.3 Work package 3: Capacity building for stakeholders

2.3.1 Objectives

The objective for the WP3 activities was to coach the regional key stakeholders for the development of 100 % RES DHC systems. This should be done by transferring successful experiences from Denmark and Germany and convince the stakeholders that common district heating solutions are economic and environmentally better than individual solutions by providing them with a pool of technical and organisational solutions coming both from the existing examples in Denmark and Germany and also from the analysis carried out in WP2.

2.3.2 Major activities and achievements

The activities to reach the objectives was to set up working seminars (workshops), which in principle should have the same structure in all participating regions. The capacity building workshops were expected to be:

- **Kick-off workshop** for all stakeholders presenting the aims, creating interest and collecting stakeholders needs.
- **Design and planning workshop** for technical staff and city planners from municipalities, regional authorities, DHC utilities and designers to train in design and planning issues on RES DHC.
- **Technical workshop** for technical and managing staff from DHC utilities, DHC industry and technical designers to train how to optimize technical solutions in 100 % RES project implementation.
- **Organisational and financial workshop** for technical and managing staff from DHC utilities, DHC customers, cooperative unions, consumer protection associations, banks and financial institutes to train how to organize and run 100% RES systems.

In the workshops case studies identified by the task forces in WP2 should be further developed by using them as examples in the capacity building process.

The workshop program was detailed in co-operation with the regional task forces. Since the boundary conditions and the level of development of DH systems differ from region to region, the workshop program also differs from region to region. All regions merged the kick-off workshop with the first workshop. The regions in Ireland decided to arrange workshops together and start with workshop 3 and the Baden Württemberg region arranged workshops in co-operation with the project SOLNET-BW. The workshops should involve 80 persons from each country, in total 320 persons, but more than 600 persons have been involved.

Region	Workshop 1 Design and planning	Workshop 2 Technical	Workshop 3 Org. and financing	Participants
Catalonia	April 2015	May 2015	June 2015	122
Catalonia replication		June 2016		70
Emilia-Romagna (ER)	Nov. 2015	Nov. 2015	April 2016	118
ER replication			December 2016	35
Baden-Württemberg	April 2016	May 2016	November 2016	171
Schleswig-Holstein	Feb. 2016	April 2016	May 2016	75
Tipperary	May 2015 and January 2017		December 2014	77
Kerry				

Total number of capacity building workshops in the six regions.

Efforts have been made to coordinate the workshops with other events and the general activities in the region within the field of district heating. Therefore the time schedule was adjusted accordingly. Replication activities have taken place or are planned in several regions. During the workshops Danish external presenters from authorities and DHC industry was used. This was:

- Workshop 1: Central Denmark Region
- Workshop 2: Danfoss (substations in buildings), Logstor (pipes), Isoplus (pipes) and EMD (EnergyPRO software)

Besides that, several regional presenters from authorities, industry and institutions participated. The workshop activities have been reported in D3.1 Country reports and D3.2 Summary report on outcomes of the capacity building.

The case studies have been used as examples in the workshops. 5 case studies should be the output from each country. The result is 5 case studies from Spain, 6 case studies from Italy, 7 case studies from Germany and 4 case studies from Ireland. The case studies have been reported in D3.3 and D4.4 Publishable reports on case studies.

2.3.3 Assessment of the performed work

In the workshops the idea was to use Danish and local examples in parallel. This worked well and the development during the workshops was, that local consultants and stakeholders took more and more over and by the end of the project duration, they were able to continue and replicate the capacity building process by themselves.

The amount of capacity building workshops were as planned and also the structure with having a similar program for the regions with regional changes functioned well but was a challenge to the “capacity builders” since separate preparation for each workshop was necessary.

Compared to the expected outputs it can be stated that:

- All relevant stakeholders have been adequately trained on all aspects of 100 % RES DHC projects.
- The capacity building is long-term sustainable since the task force structure continue and local consultants and stakeholders are able to continue the capacity building activities.
- 19 capacity building seminars has been arranged (workshop 1 and 2 in Ireland counted as 2 seminars) and more than 600 persons have participated.
- 22 case studies have been kicked-off and developed.
- Several participants from other regions and national level have attended with regional workshops.

2.4 Work package 4: Initiating 100% RES DHC and supporting implementation

2.4.1 Objectives

The overall objective of this WP is to proactively assist key regional and local stakeholders in the development of 100% RES DHC in their area of influence. The specific objectives of the work package tasks will be a) to foster the improvement of the legislative and institutional framework for RES DHC; b) to support the implementation of RES DHC projects; c) to share the experience and lessons learned with local and EU stakeholders.

2.4.2 Major activities and achievements

The main activities of WP4 were to conduct case studies on initiatives to improve the policy framework for RES DHC in the participating regions and to support the practical deployment of RES DHC in their towns and cities. The partners also reflected on the lessons learned from these initiatives with a view to guide replication in other regions at early stages of their RES DHC market development. These activities build on a participative process of engaging with key stakeholders, capacity building through training and know-how transfer from our expert partners from Denmark. The relevant constraints and opportunities will have been identified in WP2 and appropriate responses will have been formulated during the capacity building process of WP3.

Task 4.1 activities focused on driving key regional policy initiatives in areas such as spatial heat planning, consumer protection, subsidies, technical assistance, etc. The following table outlines the case studies performed per region/country as part of task 4.1.

<i>Case Study</i>	<i>Outline of activities</i>
Ireland	
Tralee	Heat density mapping of Tralee town & district heating potential analysis.
Kerry	Heat density mapping of the whole county & district heating

	potential analysis.
Tipperary	Introduction of Renewable Heat Plan into County Tipperary's Renewable Energy Strategy.
National	Continued advocacy for supportive policy framework for RES DHC in Irish energy policy.
Catalonia	
Barcelona, Cerdanyola del Valles, Igualada y de Jorba, Estrella de Badalona	Urban planning strategies for residential, commercial and industrial developments integrating RES DHC.
Catalonia	Creation of thermal energy demand and renewable energy sources mapping tools for Catalonia
Italy	
Emilia Romagna	Integration of RES DHC into update of Regional Energy Plan for the region
Milano – Cassano d'Adda	Heat demand mapping and waste heat recovery planning study.
Germany	
Schleswig Holstein	Regional screening of DH networks suitable for RE integration.
Schleswig Holstein	Improvement of the legal framework for DH in the region to increase transparency and consumer protection.
Schleswig Holstein	Free technical and financial advice for municipal RES DHC projects and awareness raising programme.
Baden-Württemberg	Working group on support framework for RES DHC development.
Baden-Württemberg	Analysis of barriers and opportunities for land use for large-scale solar thermal systems.

The 13 initiatives undertaken in the framework of task 4.1 provide a range of successful approaches to improve the support policy landscape for RES DHC at local, regional and national level. Details of the associated case studies are available in the National Case Study reports (Del 4.2) for each region/country (in their language), and the EU Case Study report (Del 4.2) presents selected case studies and gives an overall assessment of the lessons learned and recommendations for replication.

Task 4.2 focussed on supporting the development of RES DHC projects in the participating regions/country, involving the installation of entirely new RES DHC infrastructure or the extension of existing networks, or the integration of RES into existing networks. The associated case studies generally included the following steps:

- analysis of the heat demand within the targeted urban areas.
- preliminary design of DHC network to service heat users in these areas c) preliminary design of RES heat generation plants.
- estimation of projects' capital and operational expenditures.
- modelling the lifecycle of different RES DHC solutions to test different options and optimise key technical and economic parameters.
- sensitivity analysis of the project feasibility against variation of key parameters.

The following table outlines the nature of case studies undertaken in each participating region/country.

Case Study	Outline of activities
Ireland	
Tralee	Feasibility study of new RES DHC system in town centre to service all heat users.
Killarney	Feasibility study of new biomass fuelled DH network servicing large heat users, mainly in the tourism sector.
Claremorris	Feasibility study on new small-scale RES DHC system servicing municipal buildings and social housing.
Cloughjordan	Auditing of existing RES DHC and technical support to improve the operational performance of the system.
Catalonia	
Granollers	Technical advice and study tour for local stakeholders on between industrial and residential areas of the municipality and the recovery of waste heat for DH in particular.
Estrella en Badalona	Feasibility study for the development of RES DHC in a new NZEB residential development, and definition of associated urban planning framework.
Parc de l'Alba, Cerdanyola del Valles	Feasibility study for the integration of RES in existing District Cooling system servicing a Technology Park, and its future extension.
Sant Joan les Fonts, Girona	Feasibility study for the development of a mini RES DH system for municipal buildings, with biomass and solar thermal.

Italy	
Mirandola	Feasibility study for the extension of an existing small-scale gas-fuelled DH and integration of biomass and solar thermal energy.
Monchio delle Corti	Pre-feasibility study for the extension of an existing DH and improvement of operational performance via controls and heat loss reduction.
Monte San Pietro	Feasibility study for the installation of a new small-scale RES DH, integrating biomass, solar thermal and geothermal heat pump.
Maccaretolo	Feasibility study for new DH system to recover waste heat from existing biogas CHP plants.
Germany	
Trappenkamp	Feasibility study on the integration of large-scale solar thermal system into existing small-scale gas-fuelled DH.
Tornesch-Ahrelöhe	Feasibility study on the integration of RES-heat and waste heat into existing medium-scale DH system, considering innovative business models.
Schopfloch	Feasibility study on the construction of a new small-scale RES DHC with high solar thermal fraction, in the framework of co-operative ownership.
Gotha	Feasibility study on the construction of new DH network and its integration with two existing DH networks, with large solar fraction and seasonal heat storage.

In total, 16 case studies on RES DHC projects were carried out across the participating regions. While none of these projects have reached tendering stage, the SRF activities undertaken as part of task 4.2 had a considerable impact in increasing the knowledge of decision-makers on the technical and financial feasibility of the proposed RES DHC projects. The SRF partners have also worked with local stakeholders to improve the local frameworks for these projects e.g. in terms of planning regulations, ownership and business models, financing options, etc. In certain cases, like in Ireland, the economic analysis of potential projects has helped inform policy-making in terms of financial incentives required to make projects viable in a context of low conventional energy costs. Overall, the case studies undertaken by the partners have brought the proposed projects closer to bankability.

Details of the above case studies are available in the National Case Study reports (Del 4.2) for each region/country (in their language), and the EU Case Study report (Del 4.2) presents selected case studies and gives an overall assessment of the lessons learned and recommendations for replication.

Task 4.3 consisted in monitoring the progress of the case study activities and to report on same on a quarterly basis (D4.1), during the implementation phase. Instead of online surveys, these reports were prepared on the basis of a common template by from the partners and collated by the WP leader in advance of the partners' meetings. The presentation of the case studies for each region were presented by the partners at these meetings, and generated discussions and sharing of experience.

2.4.3 Assessment of the performed work

The initiatives undertaken in WP4 have been a very positive experience for the SRF partners and the stakeholders involved in the project. The key benefits are to have stepped up the capacity building process initiated in WP3 by getting them to work on actual projects at different stages of development. The wide-ranging nature of the projects in terms of scale, financial and political framework, environmental conditions, existing or new DHC systems, etc. has created a wealth of know-how. The monitoring and presentation of progress at the various partners' meeting and at the EU workshop held in Kolding in Autumn 2016 were very beneficial in exchanging this knowledge and cross-fertilisation between countries and participating regions. The national and EU case study reports (Del 4.2) provide a methodological background and outline the results of the studies performed as well as the lessons learned during the process, together with recommendations for replication. The Kolding study tour and the project webinars were successful dissemination initiatives to share this knowledge. This will help sustain the impact of the SRF project in the participating regions and in similar emerging RES DHC markets.

Having been trained on and developing practical experience of the EnergyPro simulation software (with free temporary license from EMS International), with technical support from PlanEnergi and Groen Energi experts, was very helpful in building a network of competent users in the participating regions and in facilitating exchange of know-how. Generally, the ongoing expert advice and support provided by our Danish partners was invaluable in continuing building up capacity and confidence, and facilitating the completion of the case studies.

As explained above, the ambition of bringing at least one project in each region to tendering stage, as stated in Annex 1, hasn't been met yet but the SRF project has definitely helped bringing the projects studied closer to bankability. In addition, the difficult economic conditions faced in several of the participating regions meant that decision-making for the proposed large capital infrastructure investments was conservative.

In certain cases, the learning curve for the project partners was very significant and it would have been beneficial to accelerate the capacity building process and start working on case studies earlier on in the project. It would have also been beneficial to focus some resources earlier on in creating a common pool of cost data on CAPEX and OPEX for RES DHC projects in emerging markets, adapted to local markets.

2.5 Work package 5: Dissemination and replication

The work package 5, led by AGFW, contained the development of dissemination infrastructure, coordination and monitoring of all dissemination activities, as well as the activities and potential synergies with other 'twin' projects, such as the IEE projects SDHplus and GEODH as well as the DHC+ technology platform.

2.5.1 Objectives

The main purpose of the SmartReFlex project is to provide knowledge and inspiration from the work with appointed DHC-cases in order to increase the number of district heating and cooling systems with a high percentage of renewables in European cities. In this work package, the main objective was to disseminate the work within the project and in special the results to the identified target groups in order to stimulate replication of the project actions beyond the consortium.

To reach the main objective some stopover with special features were necessary. Some key features of the dissemination concept were:

- use of targeted actions as well as use of a language understandable by and appealing for to the project target groups (Regions/ Provinces, Local authorities/ municipalities, DHC utilities/ DHC industry and consumers and owners of buildings;
- the dissemination strategies were differentiated for each country starting from their needs
- the dissemination concept and strategies was developed in collaboration with a professional communication company
- Monitoring and tracking of the dissemination effects with documentation and evaluation of the executed dissemination activities

2.5.2 Major activities and achievements

Achieved objectives of WP 5

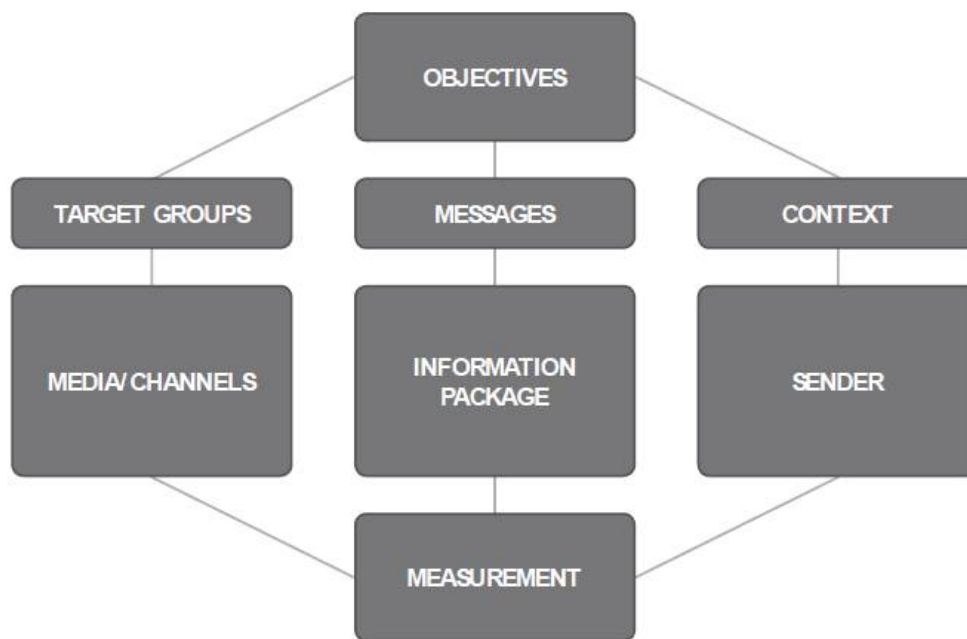
- Communication plans in English for all regions.
- General and national project website in English, German, Spanish and Italian language.
- Leaflet in languages: EN, DE, ES, IT.
- A Publishable Brochure with in English
- The periodic E-newsletters
- Report on dissemination activities
- The monitoring report on the communication impact.

In addition to these objectives, the finalizing of the **corporate design templates** for the following media was an important task to enable the partners to represent the project to stakeholders:

- Letter paper with cover and standard sheet (for reports, minutes and documents).
- Power Point Presentation with cover and standard sheet
- E-Newsletter design for recognition of SRF
- Icons and pictures

- SmartReFlex website with subcategories in languages
- Website design for an omnipresent online presence.
- Guide on the used typo and colours

In cooperation with a professional communication company, who attended the project meetings, **communication plans** were developed. This dissemination guide presented some marketing tools helping partners disseminate their involvement in the ‘SmartReflex’ project and the results of their work on both a local and a national level. The developed communication models based on the communication scheme in **Errore. L'origine riferimento non è stata trovata.** the figure below and the communication guides. Finally, every country received an individual communication plan. The planned activities of the communication company were very comprehensive and time intensive, with the necessary bidding process the activity started not right from the start so some delays occurred. Also the communication company needed access to many information’s regarding the project partners, which is not easy available and caused some extra management processes. This leads to some issues, which meant that some administrative and also technical support tasks came on top.



Communication scheme as a basic for the communication model

The template of the **E-Newsletters** was designed by the communication agency. Besides the collection of articles and the coordinating activities the whole arrangement of text and images were done by AGFW. Even if there were some experiences and the necessary software available, this took much more time than originally planned. However, six newsletters are available on the project homepage and offer important and summarized information on the passed and ongoing project activities. The content follows the different project steps and started when the first publishable news were available, for example the first task force meetings, case studies, relevant meetings or special publications. A special

edition was Newsletter 2/2016 were the fruitful cooperation between two other EU projects (CoolHeating and Celsius) leads to presentative articles of the projects content (see figure below). At the beginning of the project the main objective was to promote the project itself and acquire stakeholders. For this measures the project leaflet in national languages was much more useful than any kind of newsletter with more or less the same general information on the planned project activities. That is why the newsletter started with some delay in 2015. However, the Newsletter were published regularly and the content increases during the project lifetime. The request for content for dissemination activities was an ongoing process. The very different situations in all six regions makes it in certain areas challenging to prepare comprehensive content to report on. However all partners needed to reach the same milestones, that is why the publication of six newsletters were seen as sufficient to deliver relevant news only. Short news and specific dates of events were mostly posted at the news area of the homepage. This area was much easier to keep up to date, because the posts could be rearranged every time and time-dependent links (e.g. for the handling of registration processes or new multimedia information of an old event) could be edited anytime the status changed. This was not possible with a static designed newsletter.

The screenshot shows the SmartReFlex Newsletter 02/16. The header includes the SmartReFlex logo, the European Union flag, and the project title 'Smart and flexible 100% renewable district heating and cooling systems for European cities'. The main content is divided into three columns:

- Left Column:** 'Cooperation with the CoolHeating and the CELSIUS project'. It discusses the CoolHeating project in South-Eastern Europe and the CELSIUS project in Croatia, highlighting the transfer of knowledge and the role of local stakeholders.
- Middle Column:** 'CELSIUS - extending the network'. It describes the CELSIUS team's efforts to expand the network of smart district heating and cooling systems across Europe, mentioning various workshops and webinars.
- Right Column:** 'Upcoming Events'. It lists two events: a '26.10.2016 Webinar (14.00 - 15.30 GMT) Renewable district heating - Small local grids and cooperative utilities' and a '24.-25.10.2016 Workshop and final event Renewable district heating and cooling Kolding (DK)'.

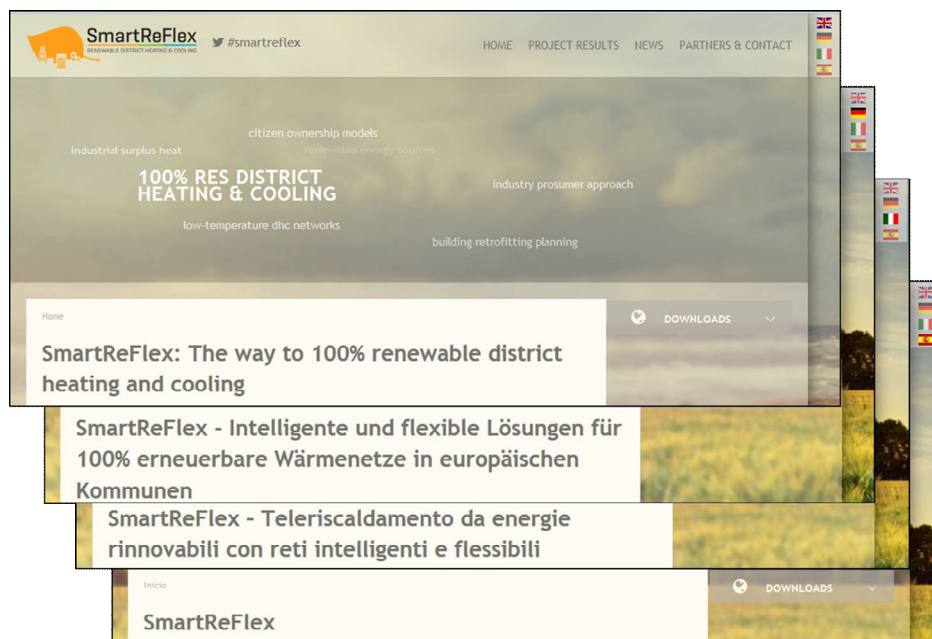
At the bottom, there is contact information for SmartReFlex and the project coordinators, including phone numbers and email addresses.

EU projects in the SmartReFlex Newsletter

The **project website** was designed to have a platform for all stakeholders to get the latest news, results and project details. The easy access platform promised by the developer was for non-computer affine persons difficult to comprehend. Therefore it was decided to have a main person in charge to implement the structure and media in the backend of the website. Additionally the structure was reorganized because of difficulties in linking contents to different regions and countries / languages at the same time. Therefore this was solved by having the first level on languages and following the regions on the second level. Besides the English sections there are also special sections in regional languages to reach all target

groups (see figure below). All sections contained a sub menu divided in 'HOME', 'NEWS', 'PARTNERS & CONTACT' and a special dropdown for downloads. The completing of the project website was a major milestone for the WP5 and offered a multifunctional tool for providing general and individual information about SmartReFlex. The requirements for the website structure reduces the foreseen budget quicker than expected. Finally there was barely budget left for further professional programming, maintenance and care but these accompanying activities had to continue over the entire project period. Taking into account the efforts for the public website area the project partners agreed to cancel the development of the special project area to exchange documents. This service was offered with the existing, free and frequently used tool "Dropbox", with the benefit that this tool can be used on all devices and the handling is quite intuitive.

Stimulated by the feedback of the EU project officer and with the concentration of relevant articles, deliverables, activities and news in the last year of the project time, a restructuring of the homepage became unavoidable. Besides some more consumer friendly arrangements of the representation, a complete new topic called 'PROJECT RESULTS' was established. The Project target to have more than 500 sessions per month could be achieved during this time, when frequently new findings and results were published. The number of downloads were with roundabout 3100 (including webinar documents on partners websites) more than 50% higher than the requested minimum of 2000. Because of some problems with the detection of downloads after the restructure of the website (just count the visitors of the 'PROJECT RESULTS' pages were you can find more than 50 documents in total) there were just 1800 traceable downloads directly on the project website but it is assumed that the true number will be much higher. More details are available in "D 5.7 Monitoring report on the communication impact".

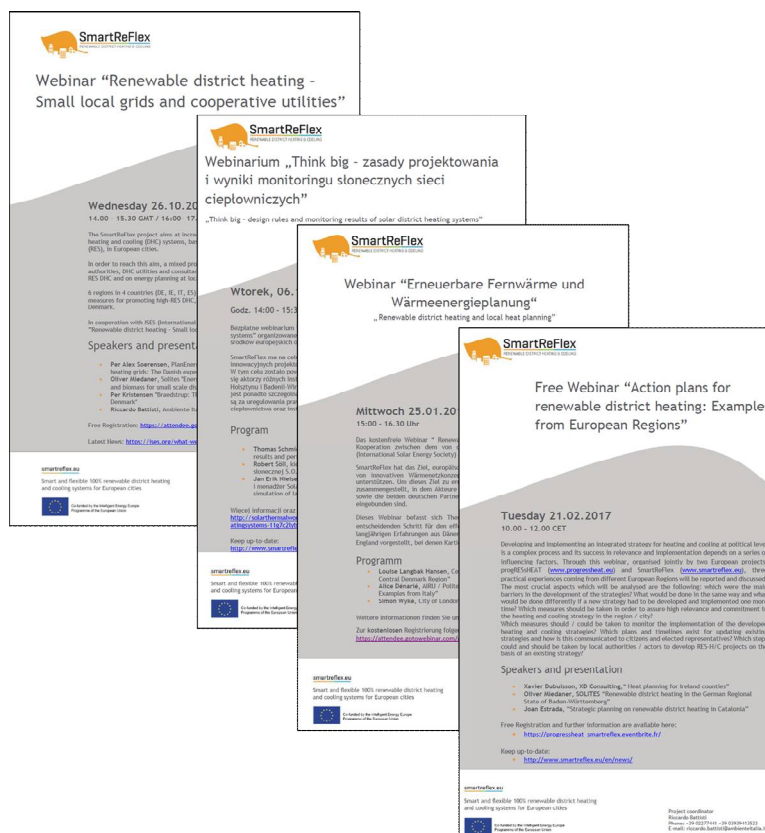


The SmartReFlex homepage in 4 languages

With the professional designed **project leaflet**, which is available in all four project languages, the partners had the possibility to hand out some project information in a physical way. This opportunity was mainly used on ferries, meetings and task force activities. During the development of the project, the communication of general objectives and ideas was overtaken and the leaflet was updated to focus more on the findings and results of the project. At this stage the regional stakeholders were already involved and the target group of the leaflet was more on an administrative European level, that's why the project partners decided to update the English version only.

The Deliverable 2.4 '**Guide for local authorities**' was professional designed, printed and sent to specific stakeholders to call the target groups attention to the project findings. With the project **brochure**, which was developed the same way, there exists another high quality document. The second one focus especially on the case studies to give potential replicators some examples of local actions, which could increase the amount of renewable energy for district heating and cooling.

One of the most successful stories of the project were the **webinars** held by the SmartReFlex partners. In cooperation with different organisations and projects the number of participants was much higher than expected. Within four webinars 660 people participated (more than 1200 registrations) and also the recordings were watched many times (more than 1100 views). This leads to the conclusion that the people were interested in this topic and the project partners spread the information widely and that the advertising measures (e.g. multilingual invitations, see figure below), SmartReFlex & Partners Website entries, post at social media platforms) carried out were quite successful.



All partners were regularly asked to update the information of their dissemination activities by AGFW. Categorized by 'articles' and 'events' everybody had to fill the table and report on the specific kind of activity, used languages, main addressed stakeholders, organizer and in the end the number of reached people. By care of this file it was possible to see how much people were reached with the dissemination activities at a specific time and the partners could compare their success in comparison to each other. Further the inventory file was the basic for the evaluation of dissemination activities, happened in the **'Report on dissemination D5.6'** and the **'Monitoring report D5.7'**. It also contains information to cooperation's with other 'twin' projects and started replications. With the results of the reports it is comprehensible that the project objectives to reach more than 500 participants where reached multiple times. For that, the project partners used the possibilities of social media as well. The overview of the articles, events and social media activities is listed separately as an excel file (Dissemination inventory file).

As can be seen in the dissemination inventory file all the partners wrote more than three main articles did lots of presentations at events. To spread the project conclusions and advertise for events existing networks were stimulated by sending out news. This happened on national level with mailing lists (contain the national actors with letters of support and taskforce members) and personal visits as well as on EU level for example in cooperation with 'Euroheat and Power' (figure below).

The screenshot shows the Euroheat & Power website. The header includes the logo, tagline 'The international network for district energy, promoting sustainable heating and cooling in Europe and beyond.', a search bar, and social media icons. The main navigation bar contains links for Home, About, News, Policy, Events, Knowledge Centre, Publications, DHC+, CoolingEU, and Contact. The page content is titled 'Other Events' and includes a sidebar with 'Euroheat & Power Events' and 'Latest News'. The main content area features a grid of event cards with the following details:

Date	Event Name	Description
31.03.2017	New geothermal heating plant started operations in Paris, France	
11-12.05.17	DECARB HEAT	
11.05.2017	Decarb Heat 2017	
07.03.2017	13th SEE Exhibitions and Conferences on Energy Efficiency & Renewables, Smart Cities	
25.01.2017	Webinar "Renewable district heating and local heat planning"	
30.11.2016	SET Plan 2016 – Central European Energy Conference	
17.11.2016	7th ECTP Conference – Innovative Built Environment	
16.11.2016	2016 AEBIOM Conference: European Bioenergy Future	

Advertisement of the SRF Webinar at EH&P Website

2.5.3 Assessment of the performed work

- The most successful action were the webinars in cooperation with some more or less professional partners. With the cooperation it was very easy to reach many interested people following the partners webinars regularly. Also the technical infrastructure was on a very professional level which made the webinars comfortable to listen. With more than 600 participants this dissemination activity could have fulfilled the project requirements (reach 500 people with dissemination activities) without any other event.
- Same story to tell for the recordings of the webinars, while just three webinars were uploaded on YouTube and public available, more than 1000 viewers is a successful story. It might be a good idea to include YouTube uploads for further projects or establish a YouTube Channel combining webinars out of different projects to create a fixed group of subscribers.
- Although there was a cooperation with CoolHeating, which included some eastern European countries and a webinar invitation was translated in polish language, it was very challenging to create a project awareness in this countries. Also some personal invitations send out from German DH association to partners in this regions was not so effective as expected. Maybe it is worth here to set up some specific platforms to spread information to this countries and overcome some language barriers.
- At a global level the communication activities have been very successful. The project is very well known at international level and in most of the participating countries. Information reached well the energy policy, district heating, industry and communities sectors.
- The website took a while before the traffic came up. The main reason might be that the level of information and knowledge raised during the project also the number of activities and publishable information did.
- Dissemination activities have been even supported by many external stakeholders e.g. through press partnerships with various sector journals. Also many invitations were received for presenting SmartReFlex at external events.
- The production of good quality publishable documents (leaflet, brochures and guidelines) and their translation and adaption requires a significant effort. These documents are important communication means, however, the necessary number of publishable documents per project should be reflected well.
- Foreseen content for dissemination activities are not always present at planned milestones within the project. Therefore the content to “tell a story” to the stakeholders is challenging without sufficient content.
- A professional communication agency needs need to be available right from the beginning otherwise delays occure. Also they need access to many information’s regarding the project partners, which is not easy available.

Domestic specifics regarding dissemination is challenging to collect, process and apply from abroad. Project partners tend to use own templates for public activities out of convenience.

2.6 Work package 6: IEE Common Dissemination Activities

2.6.1 Objectives

The aim of this WP was to contribute, upon request by the EACI, to common dissemination activities to increase the visibility of IEE-supported actions as well as the synergies among ‘twin’ projects.

2.6.2 Major activities and achievements

The main results obtained in this WP were:

- The update of the set of IEE Common Performance Indicators.
- The submission of several versions of the project fact sheet and slides, according to the development of the project activities (start of the project, Interim Report and Final Report).
- The close and fruitful cooperation, also thanks to the EASME initiative of trying to exploit potential synergies, with the ‘twin projects’. Details will not be repeated here since they have already been included in one of the success stories in paragraph 1.3. This cooperation should also be considered as part of WP5 since it stimulated knowledge transfer and replication, as underlined in paragraph 1.3.
- SmartReFlex regional and local success stories were sent to the Project Officer for inclusion in a document under development by DG ENER about the review of the energy efficiency EU Directive.
- Inclusion of SmartReFlex in the document ‘Overview of support activities and projects of the European Union on energy efficiency and renewable energy in the heating and cooling sector’ by the European Commission.
- In March 2014, the Project Coordinator participated in a coordinators' workshop organized by EASME in Brussels.
- In May 2014, the Project Coordinator, invited by EASME, presented the SmartReFlex project in the workshop in Rome of CA-RES II, the Concerted Action on Renewable Energy Sources Directive.
- In July 2014, the Project Coordinator participated in a webinar, organized by EASME, for networking with other IEE project on the topic of heating and cooling.
- In May 2015, Paul Kenny from TEA, invited by EASME, presented the SmartReFlex project in the workshop in Dublin of CA-RES II, the Concerted Action on Renewable Energy Sources Directive.
- An application was made, together with 3 more EU-supported projects on district heating, for organising a specific event in the Brussels EUSEW; surprisingly, though 4 project gathered together, we were asked to group everything in just one short presentation and to participate in a different event.

2.6.3 Assessment of the performed work

As can be drawn from the long list of activities carried out, the performed work was much more than expected at the beginning and also in comparison to previous IEE projects. This was because both the Project Coordinator and EASME considered the cooperation with the EC as well as with other EU-supported projects of utmost importance and also thanks to the relevance of the topic of renewable district heating in the overall energy scenario. As a matter of fact, such a topic is also intertwined with ‘neighbouring’ concepts like heating and cooling more in general and local energy planning and, therefore, it is potentially connected with many other projects and initiatives.

The additional work, however, cannot be considered as a burden for the project development since it allowed to increase the dissemination outreach as well as to give concrete opportunities for knowledge transfer and replication to the main project target groups (see paragraph 1.3 for real examples).

3 Individual performance review by partner

3.1 Coordinator: Ambiente Italia S.r.l. (AMBIT)

Author: Riccardo Battisti, Project Manager.

3.1.1 Role in the project

At consortium level, AMBIT played the role of project coordinator.

Regarding activities in Italy, it had the role of giving technical support to ANCI ER, the regional partner, together with the Politecnico di Milano which performed the work as a member of AIRU, the Italian District Heating Association.

The communication company FIF Marketing was subcontracted, as foreseen in Annex I, for supporting the dissemination activities with professional advice, focusing especially on the project logo and corporate image, the templates for documents and presentations, the dissemination plans for all countries, the two versions of the project leaflet and the project brochure.

3.1.2 Main activities and achievements

WP1:

- Activities: Project coordination: Coordination of activities, project meeting and reports to the EASME.
- Achievements: 6 projects meetings, 4 reports to the EASME.

WP2:

- Activities: Technical and expert support, together with AIRU, to ANCI ER for the regional survey, the definition and development of the regional strategy, the concept and the realization of the task force.
- Achievements: Creation of a smooth project workflow from the initial survey, strategy and task force activities to the following activities in WP3 and WP4.

WP3:

- Activities: Support, together with AIRU, to ANCI ER for the planning and realization of the capacity building workshop (programme, invited speakers, invited participants, moderation, minutes).
- Achievements: 3 capacity building workshops + 1 additional replication workshop with a very active participation by relevant regional stakeholders.

WP4:

- Activities: Technical and organizational support, together with AIRU, to ANCI ER and the involved Municipalities for selecting and performing the case studies.
- Achievements: realization of a good number of relevant case studies, also with a high replication potential in the region.

WP5:

- Activities: Managing of the subcontract tender for dissemination support, social media dissemination through Ambiente Italia's accounts, organization and management of the international webinars, dissemination at national level.
- Achievements: Smooth cooperation with the subcontracted company, intense social media activity (30 project posts, creation of a specific LinkedIn group, use of the #SmartReFlex hashtag on Twitter), 4 international webinars (1 more than what foreseen in Annex I) with almost 700 participants and more than 3,000 views of the recordings, about 10 articles at national level.

WP6

- Activities: Update of the set of IEE Common Performance Indicators, submission of several versions of the project fact sheet and slides, cooperation with other EU-supported projects, communication to EASME.
- Achievements: Development of performance indicators, project slides and project fact sheet, common dissemination activities and knowledge transfer to about 10 'twin' projects, inclusion of SmartReFlex in two documents by the EC, participation in the workshop in Rome of CA-RES II, the Concerted Action on Renewable Energy Sources Directive, in an EASME coordinators' workshop and in a webinar for networking with other IEE project on the topic of heating and cooling.

3.1.3 Assessment of individual performance

Regarding the coordination role, the activities were very smooth, even requiring less web meetings than foreseen because of a shared vision of the main project goals with WP leaders and all partners. Some delays in dissemination activities were recovered thanks to an increased effort by the WP5 leader, the project coordinator and the subcontracted company, after a physical meeting in Denmark in the Solar District Heating conference, where also roles and responsibilities were clarified.

As far as national activities are concerned, the interaction with the other Italian partners was very efficient, as witnessed by the good results in both the capacity building workshops and the case studies. An activity which went particularly well was the cooperation for dissemination and knowledge transfer to other EU-supported projects, also thanks to the role of EASME as a bridge to the other coordinators. What could have been done in a slightly different way is the involvement of stakeholders and potential plant developers: Much more importance should have been given to study tours to real plants (also in other countries) because this proved to be the most effective activity to convince them of the feasibility of renewable DH.

3.1.4 Sustainability of the action after the end of the project

SmartReFlex has been only one of several district heating-related projects carried out by Ambiente Italia in the last years and, therefore, the topic of renewable DH will continue to be one the working field of the company, also thanks to the fact that a Horizon 2020 project 'Solar District Heating – From Policy to Market' has been approved and Ambiente Italia plays there the role of the only Italian representative. There was also an informal agreement with ANCI ER to continue the work done with the SmartReFlex case studies also thanks to this new project.

From a dissemination and replication point of view, several activities will last after the project end, such as: The professional LinkedIn group on renewable DHC, managed by Ambiente Italia, the connection to ICLEI and UNEP for including SmartReFlex local actors in their DH initiatives, the link with the European Fund for Energy Efficiency (for financing the SmartReFlex case studies) which contacted SmartReFlex thanks to one of the project webinars.

3.1.5 Review of resources

Staff resources

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP1 Management	R.Battisti R.Pasinetti C.Lazzari	574 92 144	Coordination with WP leaders Interaction with EASME Preparation of the report Supervision on the project
WP2 Improving the regional framework	R.Battisti R.Pasinetti C.Lazzari	106 88 46	Technical support to ANCI ER, together with AIRU, for the setting up of the stakeholder group and for the elaboration of strategy
WP3 Capacity building for stakeholders	R.Battisti R.Pasinetti C.Lazzari	82 130 108	Joint organisation of the capacity building workshops Presentations and moderation in the workshops Translation from English into Italian during the workshops
WP4 Initiating 100% RES DHC and supporting implementation	R.Battisti R.Pasinetti C.Lazzari	54 192 138	Support to ANCI ER and AIRU for the case studies choice and elaboration.
WP5 Dissemination and replication	R.Battisti R.Pasinetti C.Wolter C.Lazzari	64 102 54 48	Dissemination at national level (see WP5 results) Dissemination through EU channels, e.g. organisation and coordination of the project webinars Interaction and coordination with WP5 leader and the subcontracted company
WP6 IEE common dissemination activities	R.Battisti R.Pasinetti	69 24	Activation of international networks (e.g. ICLEI, Energy Cities) Joint dissemination with 'twin' EU-supported projects

Variations in WP:

WP	Hours - planned	Hours – actual	Justification
1	700	810 (+16%)	The high number of partners (14) and of participating regions (6) required an additional coordination effort.
2	226	240 (+6%)	Slight variation for increasing difficulties in setting up the regional stakeholder groups.
3	290	320 (+10%)	Additional effort due to an additional workshop carried out.
4	340	384 (+13%)	The selection of case studies required slightly more time than foreseen, also in order to choose the one which were most likely to become reality.
5	200	268 (+34%)	Strong dissemination activities were carried out at both Italian and EU level.
6	70	93 (+33%)	High effort in cooperation with other EU project, for instance one additional webinar was carried out.
Total	1826	2115 (+16%)	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Subcontracting	WP 5 Communication strategy: planning and 6 months revisions	20.000,00	18.000,00 FIF MARKETING (DK)	The contract was for 20k€. 18k€ is the amount invoiced during the project duration.
Other Costs	-	0,00	630,63	WP1 Organization of the kick-off meeting in Rome (Venues and catering). The meeting should have been organized by AIRU but, due to the need for a quick project kick-off, the coordinator took this task over.
Other Costs	-	0,00	500,00 CU-European Copper Institute (BE)	WP5 Organization of project webinars in cooperation with strong international

			500,00 ISES- International Solar Energy Society (DE)	organisations: This allowed to reach a wide and relevant audience.
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Travel costs

WP	Budget	Actual	Justification
1 – project meetings	6.000,00	3.100,86	Cheaper solutions
1 – training of coord.	600,00	487,38	Cheaper solutions
1 – pres.of results	600,00	0,00	Not organised within the project time frame
5 – intern.travels	1.000,00	0,00	
2 – task force IT meeting	0,00	99,91	Travel costs not done for dissemination were used here
3 – capacity building ws IT	0,00	524,78	Travel costs not done for dissemination were used here
Total	8.200,00	4.212,93	

Report on budget shifts

Savings in Subcontracting have covered some unforeseen expenses in Other Costs.

Savings in Travel costs have been used for Staff.

Budget line	Budget	Variation	New budget
Staff	87.600,00	+ 2.731,25	90.331,25
Subcontracting	20.000,00	- 2.000,00	18.000,00
Travel costs	8.200,00	- 4.000,00	4.200,00
Other costs	0,00	+ 1.630,00	1.630,00
Indirect	52.560,00	+ 1.638,75	54.198,75
Total	168.360,00	0,00	168.360,00

Variation under the threshold of 20% (see budget transfer form A attached to financial report).

3.2 CB2: Steinbeis Transfer GmbH (StT)

Author(s): Dipl.-Ing. Oliver Miedaner, Dipl.-Ing. Thomas Pauschinger (StT Solites)

3.2.1 Role in the project

Solites is WP leader of WP 2 'Improving the regional framework'. Furthermore, Solites organised and contributed to the activities within WP2, WP3 and WP4 in Baden-Württemberg. Namely, these are the task force activities, the capacity building events and the development of case studies. In addition, Solites contributed to the international dissemination activities in WP5. Key personnel are Oliver Miedaner and Thomas Pauschinger.

It must be highlighted that, during the course of the project, CB2 changes its name from Steinbeis Forschungs- und Innovationszentren GmbH (short: SFZ) to Steinbeis Transfer GmbH (short: StT), both having the same registry number (HRB 25312).

3.2.2 Main activities and achievements

WP1: Solites participated at all project meetings. As WP2 leader, Solites took part in all WP leader activities, e.g. coordination and preparation of project meetings, WP leader webinars, etc.

WP2: Solites coordinated the WP2 activities and prepared templates for all deliverables. Furthermore, Solites organised six workshops as part of the project meetings: Apr. 2014 in Rome, Oct. 2014 in Barcelona, Mar. 2015 in Tralee, Oct. 2015 in Stuttgart, Mar. 2016 in Cloughjordan and Nov. 2016 in Kolding. Furthermore, two WP2 webinars were organized in June 2014 and Nov. 2014.

In addition Solites organised in Baden-Württemberg several task force meetings in cooperation with the Ministry of the Environment, e.g. the workshop 'Zukunftsfähige Wärmenetze für Baden-Württemberg' on 02.07.2015. As a result support could be given to the quality criteria of the new subsidy program 'Energieeffiziente Wärmenetze' (energy-efficient DH systems) by the Ministry of the Environment that came into effect in February 2016. The subsidy program funds(1) municipal climate protection concepts, (2) regional initiatives in 12 regions of Baden-Württemberg promoting RES DH and giving advice e.g. to municipalities and (3) investments in energy-efficient DH systems linked to advanced quality criteria.

WP3: For the capacity building seminars in Baden-Württemberg a slightly different approach in comparison to the other regions was chosen by Solites. Reason is that there are quite a lot of experiences with DH systems in Germany and some first experiences in integrating solar heat (renewables) in DH. Therefore instead of a pure coaching event a more open format with exchange of experiences was chosen for part of the workshops:

- The workshop 'land areas for RES DH production' took place on 11.04.2016. The idea was to exchange ideas on availability and ecological quality of the required land areas for RES DH production, e.g. solar district heating installations. 17 persons participated at the workshop, among them experts from Solites and HIR. It was a start to improve e.g. planning and approval procedures for RES DH installations.
- On 11./12.05.2016 the 'Forum Solare Wärmenetze' referring to solar DH systems was organised. More than 140 persons participated at the event and the small exhibition of suppliers and collector manufacturers on 11.05.2016, among them experts from Solites, AGFW, HIR and PlanEnergi. On 12.05.2016 two site visits were organized with more than 50 persons taking part at. This event was a joint event, exploiting synergies from existing activities and in the sector within the regional project SolnetBW.
- On 10.11.2016 the workshop 'Solare Nah- und Fernwärme in der kommunalen Wärmeversorgung' took place in Sindelfingen with 14 participants, mainly utilities. The workshop was organized by the Association of Municipal Companies (VKU) in Baden-Württemberg together with experts from Solites with the goal to transfer knowledge on solar district heating to utilities.

WP4: Solites supported the implementation of a RES DHC project, the case study Schopfloch: This case study concerns a local RES DH system planned in the rural municipality of Schopfloch. Solites provided advice during the process on technical questions, funding possibilities etc. Furthermore, the concept and the feasibility study have been refined by Solites.

In addition, Solites supported the development of regional & local RES DHC policy and institutional frameworks in two cases: (1) The Ministry of the Environment Baden-Württemberg drew a new subsidy program funding that came into effect in February 2016 (see WP2). Solites gave support e.g. to the quality criteria. (2) One issue with RES DH systems is to find land areas for the technical installations. Therefore an initial workshop took place at the Ministry of the Environment Baden-Württemberg in April 2016 (see WP3). Consequently, a process was started by Solites to improve amongst others the planning and approval procedure for solar thermal and other RES DH installations in urban areas.

WP5: Solites presented the topic of RES DH and findings of SmartReFlex at 12 events and workshops and published 6 news and articles within the project period. Furthermore, Solites contributed with presentations to 3 international webinars that have been organised within SmartReFlex. In addition, Solites gave input to the brochure, the leaflet (EN and DE) and the project website (EN and DE).

3.2.3 Assessment of individual performance

As WP2 leader we are quite satisfied with the course of the project and its impact. Although due to the complexity of the task most of the regional partners needed more time to work on their WP2 regional strategy. Thanks to the expert partners from DK and DE the drafts of the regional strategies have been reviewed to make them as practical as possible. Especially the availability of partners from DK, not directly involved in a country team, allowed a very helpful view from 'outside' to improve the strategy and implementation process for the regional partners.

Regarding the activities in Baden-Württemberg it was very helpful that the elaboration could be settled on already existing surveys and documents, e.g. the 'Integriertes Energie- und Klimaschutzkonzept' (IEKK), an energy and environmental protection plan that was introduced by the ministry in 2014. On the other hand the challenge in Baden-Württemberg was to further elaborate the regional strategy and set up the task force without having the ministry as partner within the project. Solites solved the difficulties with help of the other German partners and by using direct contacts. The results are quite good when looking on the new subsidy program 'Energieeffiziente Wärmenetze' and the triggered activities regarding the issue of land areas for RES DH installations. Furthermore, the support that was given to the case study Schopfloch will presumably lead to a project realisation in 2017.

Through the 15 presentations at events, workshops and webinars a considerable amount of replicators could be reached. This should also help to get further concrete projects started in Baden-Württemberg.

3.2.4 Sustainability of the action after the end of the project

Thanks to the state funded project 'SolnetBW II' (probably starting in April 2017) several activities that have been triggered within the SmartReFlex project can be continued in Baden-Württemberg:

- As a result of the workshop on 'land areas for RES DH' at the ministry in April 2016 (see capacity building activities in BW) a process started to improve e.g. the planning and approval procedure for RES DH installations. Several experts will elaborate this issue more in detail.
- A second edition of the 'Forum Solare Wärmenetze' is planned for 30.05.2017.

Furthermore, a collaboration of Solites and Solar Cluster BW was set up with the goal to work together on the issue of land areas and to participate at different events and workshops in the future. For example a common guide on solar thermal and PV 'open land' systems is in work.

Besides that a very strong commitment was made by the Regionalverband Neckar-Alb (regional authority) that participated at several SmartReFlex meetings and workshops. The authority decided to support municipalities in its region that are looking for land areas for installing a solar DH system.

3.2.5 Review of resources

Staff resources

WP	Involved staff member	Hours spent	Keywords on undertaken activities
WP 1	Thomas Pauschinger	112	Project Management; Participation at project meetings, project and project committee webinars; Reporting
	Oliver Miedaner	63	Participation at project meetings and webinars; Reporting
WP 2	Thomas Pauschinger	194	Organisation of activities in Baden-Württemberg
	Oliver Miedaner	340	Management and coordination of European WP2 activities; Planning, preparing, developing and supporting the elaboration of WP2 deliverables; Upload of WP2 deliverables and other materials
WP 3	Thomas Pauschinger	141	Finding and elaboration of possible case studies in Baden-Württemberg; Organisation and evaluation of capacity building activities in Baden-Württemberg
	Oliver Miedaner	136	Organisation and evaluation of capacity building activities; Development of deliverables
WP 4	Thomas Pauschinger	191	Elaborating the project and framework case studies in Baden-Württemberg

	Oliver Miedaner	165	Supporting the case study activities; Evaluation and reporting on the progress
WP 5	Thomas Pauschinger	96	Presentations at national and international events and webinars
	Oliver Miedaner	58	Presentations at events and webinars; Elaboration and updating of dissemination plans; Preparing input for website, brochure, leaflet, etc.
Total		1496	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	<u>Estimated</u> costs [EUR]	<u>Actual</u> incurred costs [EUR]	Reason for over-, under- or not spending
Other specific costs	Organization of one project meeting	700	~ 1600	Over spending as a technical excursion was organized to a regional RES DH market actor and RES DH plant
Other specific costs	None	0	800	Over spending for additional dissemination activities (e.g. conference booth)

Travel costs

Foreseen costs: Meetings 3.600 €, Dissemination 1.500 €

Slightly more travel costs have been used as planned, e.g. for dissemination purposes.

Report on budget shifts

No internal budget shifts applied as all categories show over spending. Covering of over spending by budget shifts from other partners when possible.

See Overview Tables for budget shift among partners.

3.3 CB3: ANCI Emilia Romagna (Associazione Nazionale Comuni Italiani Emilia Romagna)

Author(s): Alessandro Rossi, Michele Bartolomei

3.3.1 Role in the project

ANCI Emilia Romagna is the Association of Municipalities of Emilia Romagna Region. Within Smartreflex ANCI ER worked on each one of the WPs particularly committing in activities concerning stakeholder engagement, training and policy making with the technical support of other partners: AIRU, PlanEnergie and Ambiente Italia. Doing so it took advantage of its strategic positioning that allowed ANCI ER to work as a connection between local stakeholders and the Regional government both in bottom-up and top-down processes. Furthermore ANCI ER teamed up with ARPAE (Regional Agency for Environment and Energy) partner of IEE RES H/C Spread, a project with similar scope and intent to SmartRefLex in order to create a synergy and maximize the results of both projects.

Key persons of the project are Mr Alessandro Rossi (Project Manager), junior expert Miryam Cafaro and the in-house consultants Alessandra Cavalletti (from beginning to October 2015) and Michele Bartolomei (from October 2015 to the end).

3.3.2 Main activities and achievements

ANCI ER was involved in all the work packages of the project. Hereafter the main activities are listed per WP.

WP2

The first activity of this WP has been the analysis of the national and regional framework towards DH. This analysis led to the elaboration of the Regional strategy for Emilia Romagna. The document was periodically updated during all the project.

From the beginning of the project ANCI ER began the implementation of the regional task force of Emilia Romagna. This activity went through different phases during the 3 years of the project. The task force was originally designed to take advantage of existing conditions: ANCI ER has a consolidated energy working group with regular meetings and it was possible to benefit of the collaboration with ARPAE and IEE RES H/C Spread.

A joint task force was created with ARPAE (first meeting 1/12/2014) and an initial group of 5 sub task forces were organized within ANCI's Energy Working group.

In parallel to the work of the task force ANCI Emilia Romagna started to lobby the regional government to create better framework conditions for DH with RES. This activity was necessarily informal and based on personal relationships.

At the end of 2015 a change in the program of the task force was needed to adapt to a major opportunity: the update process of the regional energy planning that started in November 2015 and went on until the end of 2016.

In order to fully benefit from this opportunity both ANCI Emilia Romagna and ARPAE decided to take the work of the task force into the participatory process organized by the regional government. This led to the organization of two workshops: one led by ANCI Emilia Romagna on February the 19th and the other led by ARPAE on March the 11th 2016.

Eventually the third phase of the work of the task force, that will continue after the end of SmartReFlex, started with the approval of the Regional Energy Plan and will concentrate around the Regional Energy Observatory that will be instituted by ARPAE.

Overall a total of 48 relevant stakeholders participated to the work task force.

The Regional Energy Plan and Regional Energy Action Plan was first published in August 2016. The Plan included the improvement of District Heating (with renewable energy) in the strategy to meet the regional energy target 2030. After the publication, a public consultation was opened. ANCI Emilia Romagna sent its contribution (representing both its members and the task-force), proposing the implementation of a study on the regional DH potential with a focus on areas off the natural gas network where DH could be an effective option.

In the last and final version of the Plan, the role of efficient and renewable District Heating is improved. The Plan foresees the institution of a regional energy observatory managed by ARPAE (a member of the task force). This Observatory will implement a study on DH potential at a regional level.

Furthermore, the regional Energy Observatory will be an institutional space to continue the work of the task force. The observatory has not been created yet, but ARPAE will be the managing authority and other task force member will be involved.

WP3

ANCI ER organised 3 workshops in Bologna with the collaboration of Planenergie, AIRU and Ambiente Italia and supported AIRU in the organisation of 1 workshop in Milan:

- 16th November 2015 Technical aspects of DH with RES hosted by AIRU in Milan (WS2)
- 18th November 2015 Planning and design of DH with RES, Bologna (WS1)
- 19th April 2016 Financial Aspects of DH with RES, Bologna (WS3)
- 14th December 2016 Replication of the financial workshop (WS3), Bologna. This workshop, by the title “innovative financial tools for DH with RES”. To elaborate the contents of this workshop ANCI ER contracted Chiara Candelise as expert in crowdfunding for RES.
 - Chiara Candelise helped elaborate a financial model for Small DH networks specific for the Italian and regional framework.
- A total of 123 persons participated to the 3 workshops organized by ANCI ER in Bologna. Most of the participants work for municipalities, utility companies, regional government and agencies and engineer firms.
- Case studies: ANCI ER and AIRU collaborated in the elaboration of 5 case studies located in Emilia Romagna:
 - 4 cases regarding the development of DH projects: Monte San Pietro, Monchio delle Corti, Mirandola, Maccaretolo (San Pietro in Casale). ANCI ER was particularly committed in the individuation of the case studies and in the engagement and connection with municipalities and other stakeholders.

- 1 case regarding the regional policy framework for RES DHC: The regional energy planning

WP4

ANCI ER collaborated with AIRU to support the 4 Regional DH project selected as case studies in WP3, keeping in contact with the persons in charge of the project, involving them in the Smartreflex activities (WP2-WP3) and providing guidance when needed.

Two of the case studies (Monchio delle Corti and Mirandola) are now executive.

At the same time ANCI ER was very active to foster a better regional policy towards DH with RES, particularly during 2016 and within the renewal process of the Regional Energy Plan. This activity is very connected with the work of the task force and the achievements are described in WP2.

WP5

ANCI ER disseminated SmartReFlex events, outputs and achievements mainly using its Energy Workgroup Newsletter and internet page (3 pages in ANCI ER website and 13 news sent). The Energy Workgroup Mailing list has more than 4000 addresses of significant stakeholders (municipalities, utility companies, regional government, regional agencies and others). We also presented smartreflex and distributed smartreflex leaflets in events organised by ANCI ER regarding energy policies.

We participated to the implementation of the project website (particularly for the Italian version).

3.3.3 Assessment of individual performance

As project partner ANCI ER is very satisfied with SmartReFlex's overall outcomes. We are confident that the increase of attention and positivity brought to DH with RES in the Italian and regional framework will be an important legacy of the project.

The organisation of WP3 seminars was a major success and we believe that we contributed to disseminate know-how and awareness on the potential of DH with RES to relevant stakeholders in and outside the region. The financial model for small DH elaborated with the support of Chiara Candelise will be a possible base for the implementation of new small DH project.

The case studies are an interesting outcome too, since they present the potential of DH in different context and can be used for replication. Furthermore, two of them have been approved and will be most probably implemented.

The final version of the Energy Plan is more positive toward DH than the first version and that was not granted from the beginning since DH is not a completely safe political topic in the region. This achievement cannot be entirely credited to SmartReFlex, but we contributed for sure.

Being a major opportunity, the renewal of the Regional Energy Plan was mostly unforeseen and required more work than scheduled to adapt, in particular for what concern the task force during 2016. Being more foreseeing and sensible we could have been more effective.

3.3.4 Sustainability of the action after the end of the project

As said ANCI ER considerate the increased attention brought to DH with RES, the know-how spread and the improved debate in Emilia Romagna as an important immaterial legacy of the project. ANCI ER will use all the materials produced during SmartReFlex to continue to stress the opportunity offered by DH with RES in its regular work. We believe that after the project the opportunity offered by DH with RES are much clearer to many stakeholders in the regions.

ANCI ER will be involved in the works of the Regional Energy Observatory (instituted by the Regional Energy Plan) and will make sure to bring DH into the debate. The Regional Energy Observatory will provide an institutional place to carry on the task force activities and it will be lead by ARPAE. The works of the observatory will be the occasion to improve our cooperation with ARPAE on thermal energy policy in general and DH in particular. One of the first activities of the observatory will be the implementation of a Study on regional DH potential, ANCI ER will make sure to add SmartReFlex expertise to the work.

The observatory will be one of the occasion to continue the dialogue with the Regional Government on DH started during the project. ANCI ER will monitor the implementation of the Regional Energy Plan to make sure that DH with RES will be considered as a resource to reach the regional energy targets, as foreseen in the plan.

ANCI ER and AIRU are going to continue their collaboration. We will help AIRU identifying every small district heating network in Emilia Romagna to add to AIRU's annual report. This will allow AIRU to monitor their annual performances. ANCI ER will continue to support new DH projects in Emilia Romagna referring to AIRU for technical help.

3.3.5 Review of resources

Staff resources

The overall hour actually worked exceed the foreseen amount by 26% the reason of this deviation are explained by WP in the following table.

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP1	Miryam Cafaro	35,5	Financial reporting Management and administration Participation to project meetings Financial and technical reporting.
	Alessandro Rossi	44,5	
	Alessandra Cavalletti	23	
	Michele Bartolomei	29,5	
WP1 exceeded the foreseen amount of hour by 32 hours mainly due to the unforeseen leave of Alessandra Cavalletti substituted by Michele Bartolomei (both in-house consultants)			
WP2	Miryam Cafaro	73	Analysis of regional and national framework Elaboration of the regional strategy Organisation of task force; Stakeholder engagement, Relationship with regional government (initial) Relationship with ARPAE and
	Alessandro Rossi	74	
	Alessandra Cavalletti	80	
	Michele Bartolomei	34	

			RES H/C Spread.
WP2 exceed the foreseen amount of hour by 45% this was mainly due to the additional effort put by ANCI Emilia Romagna in fostering better framework condition for DH with RES. In particular the update process of the Regional Energy Plan in 2016 was unforeseen and was a major opportunity that required a significant amount of additional work.			
WP3	Miryam Cafaro	101,5	Organisation and participation to the seminars (3 organised in Bologna and hosted by ANCI ER) Case studies: Selection and elaboration, involvement and relationship with contact persons.
	Alessandro Rossi	144,5	
	Alessandra Cavalletti	136	
	Michele Bartolomei	98	
WP3 exceeded foreseen hour by 37% this was mainly due to: <ul style="list-style-type: none"> The long process to select reliable case studies (more case studies were initially reviewed and discarded) The realisation of an additional financial seminar (replication) 			
WP4	Miryam Cafaro	127	Support to the implementation of the case studies (DH projects) Support to the implementation of regional RES DH policy particularly within the new Regional Energy Plan
	Alessandro Rossi	111	
	Alessandra Cavalletti	43	
	Michele Bartolomei	191	
WP4 exceeded foreseen hour by 18% mostly for similar reason to WP2: more efforts needed to foster better policy toward DH with RES and the major opportunity of the renewal process of the Regional energy Plan			
WP5	Miryam Cafaro	61	Elaboration of newsletter and website Dissemination in events organized by ANCI ER, Questionnaire for the evaluation of the impact of SRF
	Alessandro Rossi	40	
	Alessandra Cavalletti	46	
	Michele Bartolomei	49	
WP5 is in line with expected hours			
Total 1541			

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Subcontracting	Not foreseen	/	3510,00	External assistance to elaborate an innovative financial model for small DH network with RES specific for Italian framework and including crowdfunding. See below for further

				explanation.
Other specific costs	Capacity Building seminar WP 3	2500,00	1472,00	ANCI ER managed to use its own or used Regional Government's meeting room for free to host the seminars. It was decided to offer a catering in two occasion in order to create an opportunity of informal debate among participants.
Other specific costs	Management of the task force (e.g. meetings logisitics, experts travles, webinar organisation) WP 2	4000,00	0,00	No money was spent in the management of the task force. ANCI ER could use the meeting rooms for free and could benefit from the collaboration with ARPAE and Regional Government (update process of the regional energy plan)
Other specific costs	Organization of one project meeting	700,00	0,00	ANCI ER did not organise a project meeting. The meeting was organised by AMBIENTE ITALIA instead.

- Subcontracting: External assistance to elaborate an innovative financial model for small DH network with RES specific for Italian framework and including crowdfunding.

The necessity to elaborate this model emerged during the financial seminar organised in Bologna in april 2016.

During the seminar and in the feedback, the participant asked for a financial approach for DH more based on Italian experiences and that could answer to the specific needs of small municipalities.

Crowdfunding was identified as one of the topic to be investigated. ANCI ER did not have the specific expertise in this regard so it was decided to find external assistance.

The person identified to elaborate the model was Chiara Candelise Phd. A qualified economist in the energy sector and expert in crowdfunding, both ANCI ER and AMBIENTE ITALIA had contacts with her before. ANCI ER decided to designate her because her expertise was particularly fitting for the task: economist, specialised in the energy sector, founder and CEO of a crowdfunding platform for the energy sector. It was not possible to identify any other person with the same set of skills.

ANCI ER subcontracted its in-house company ANCI COM for this assignment and ANCI COM designated Chiara Candelise to carry on the activity described. This is a standard procedure for ANCI ER.

We are sending all the documents inherent to this assignment:

- The letter of offer from ANCI ER to ANCI COM
- The letter of offer from ANCI COM to Chiara Candelise

- The invoice from Chiara Candelise to ANCI COM
- The invoice from ANCI COM to ANCI ER.

The Contribution of Chiara Candelise was fundamental for the success of the financial seminar replication organised in Bologna in December the 14th 2016 and is one important output of the project for Emilia Romagna.

Travel costs

ANCI ER Participated with 1 person to all project meetings and 2 persons to the kick off meeting in Rome. The expenses for the travel are generally in line with the foreseen budget with the exception of the final event in Kolding Denmark that exceeded the budget due to logistics of the travel from Bologna to Kolding and to high cost of accommodation in Denmark.

Michele Bartolomei participation to a workshop hosted by AIRU in Milan was not originally foreseen in the budget. However ANCI ER saved approx. 25% of the overall budgeted travel costs.

Report on budget shifts

A budget shift was decided by ANCI ER during the project: 3,510 Euro were moved from "Other specific costs" to "Subcontracting" to elaborate an innovative financial model for small DH network with RES specific for Italian framework and including crowdfunding. The shift was possible thanks to the savings in the management of the task force (WP2). See detailed explanation in paragraph 2.

See Overview Tables for budget shift among partners.

3.4 CB4: HAMBURG INSTITUTE

Authors: Christian Maaß, Dr. Matthias Sandrock, Simona Weisleder

3.4.1 Role in the project

As a member of the international consultancy team, the main role of the Hamburg Insitut was to analyse and improve the framework conditions for RES DH in follower regions. Most work was made in cooperation with MELUR from the region of Schleswig-Holstein but consulting services were also given for other regions. In particular, the institute was involved in activities in Baden-Württemberg. Furthermore, the Hamburg Institut has communicated intensively with the State of Thuringia and convinced the region to join the SmarReFlex-project on its own costs as an indirect follower region.

3.4.2 Main activities and achievements

Work package 2

a. Analysis of regional framework conditions (WP 2)

Starting point of the support measures was an analysis of the existing regional framework conditions.

- The region of Schleswig-Holstein is geographically and socio-economically comparable to Denmark. Nevertheless, the share of RES DH is far lower. The most important step was to identify the reasons that could be addressed at the regional level. The economic and socio-

demographic situations with respect to DH in Baden-Württemberg and Thuringia were not comparable to Schleswig-Holstein, so that specific regional analysis was needed.

- In February 2017, the parliament of the state of State of Schleswig-Holstein has adopted a Law on Climate Protection and Energy Transition that has led to significant improvements for the framework conditions for RES in DH. Since the project partner MELUR has drafted the law and was in constant exchange with the Hamburg Institute on the issues regarding RES in DH, the SmartReFlex project has had a concrete and noticeable influence on this state law and on regional framework conditions for RES DH (see more detailed below).

b. Analysis of the legal framework for Solar District Heating (WP 2 and 5)

Apart from the regional framework, it was also found that there are regulatory and economic obstacles at higher levels (EU and national law). In particular, it became evident that there was a high uncertainty in the implementation of national environmental law regarding the planning process for the key technology “ground-mounted solar DH”. As there had been hardly any experiences with such plants in Germany, the uncertainty among planners and administrations was high. To lower this legal uncertainty and thus to improve the legal framework conditions, the Hamburg Institute has spent time to thoroughly examine the legal situation and to publish the results in a renowned legal journal that is widely read among environmental lawyers and administrations (Zeitschrift für Umweltrecht 2015, pg. 78 et sqq.; only a portion of the time spent on this publication was booked on the SmartReFlex project.) This publication has become a standard reference used by practitioners to develop SDH-projects.

c. Consumer protection (WP 2)

A key finding of the analysis of the existing framework conditions was that there was a lack of consumer trust in DH in the region. There had been a large media coverage on non-transparent – and potentially abusive - pricing policies of some DH providers. How to increase transparency and consumer trust in DH has frequently been subject of discussions between the project partners MELUR and Hamburg Institut. Partially as a result, MELUR had integrated a new provision in its above mentioned proposal for the Law on Climate Protection and Energy Transition that forces DH providers to provide more information on prices and the environmental quality of the heat in the internet.

d. Heat planning and screening (WP 2)

Heat planning was identified as another important key for success. At the time of the project start, there was no regulatory framework for heat planning in the region. Partially as a result of the project, the State of Schleswig-Holstein has adopted legal measures to facilitate municipal heat planning by regulating data transparency regarding local heat demand and supply. As a consequence, the necessary data for local heat planning is easier available for municipalities than before.

e. Conflict between fossil CHP and RES DH (WP 2)

In the course of the framework analysis, it has turned out that there is a structural conflict between the German regulatory regime for fossil CHP-units and RES DH: Existing financial incentives for fossil CHP may lead to unwanted unfavourable market conditions for heat of renewable resources. The Hamburg Institute has made this a topic in the scientific community and among energy policy makers. This resulted in an article in the weekly journal DIE ZEIT with a reach of ca. 2 million readers.

f. Criteria development and regional screening for potential pilot projects (WP 2)

Another obstacle for RES DH that was identified for the region of Schleswig-Holstein, was a lack of regional pioneer projects. Despite the good conditions for RES in the region and its front-runner position regarding wind power, the existing DH networks are dominated by fossil fuels. To identify suitable potential regional front runner projects, the Hamburg Institut has worked out – based also on experiences from Denmark - the key success factors for RES DH projects. Particular attention was paid to identify the success-criteria for potential sites for solar DH (SDH), since the state government was interested to initiate a SDH pilot project. Based on these results, HI has applied these criteria in a survey (“project screening”) and identified the most suitable candidates for front runner projects.

g. Land area development (WP 2)

One of the main obstacles to implement RES DH projects with a high demand of surface area, such as particularly ground-mounted solar thermal plants, is a lack of land area in densely populated areas. Even in relatively small towns, land availability is a bottleneck for SDH projects. The search of planning concepts and legal solutions for the conflict between different land uses has been a main subject in the project region of Baden-Württemberg. The Hamburg Institut has contributed to these efforts through its input on environmental and planning law and its active participation in a workshop organized by the project partner solites at the Ministry of Environment Baden-Württemberg (11 April 2016).

The Hamburg Institut has invested more hours than expected in WP 2 due to several reasons:

- High amount of varying and complex topics covered
- Intensive communication with several regions
- Labor intensive collection of geographic data for the regional screening to identify suitable cases for pilot projects and case studies.
- In depth-analysis of the legal situation in a scientific legal journal

Work package 3

h. Capacity building and case studies (WP 3)

To improve the framework for RES DH, a main task of the Hamburg Institute was to build up capacities and knowledge among key stakeholder groups.

One main instrument for capacity building were workshops. Along with the project partner MELUR, the Hamburg Institut has organized four workshops and one excursion for different key groups in Schleswig-Holstein:, reaching in total 105 participants

- **Administrative and economic capacities:** „Potential for the production and use of RES in DH - the Danish experience“, 23. February 2016, Flintbek, 21 participants
- **Technical capacities:** „Technical solutions and practical solutions for RES supply in DH - the Danish experience“, 28./29. April 2016, Kiel, 28 participants
- **Finance and organizational capacities:**
 - „Organizational forms and finance for RES in DH - the Danish experience“, 18. Mai 2016, Flintbek, 24 participants
 - „Financing of large, ground-mounted solar thermal DH production plants and DH“, 16. September 2016, Kaltenkirchen, 42 participants

Due to the high diversity of the key stakeholders and the demand, the project partners Hamburg Institut and MELUR have organized one workshop more than initially planned in the project proposal. This has led to a higher volume of working hours in WP 3 than expected in the proposal.

- **Excursion – SDH and nature conservation:** Based on the analysis of the framework conditions in the region, the project partners decided to address the subject of Solar District heating and nature conservation: The potential impact of large ground-mounted SDH plants on landscape and ecosystems is a frequent concern and argument against potential SDH-plants the region. 17 participants, particularly experts from municipalities, planners and NGOs participated in a one-day travel on 13 April 2016 to Denmark and to speak with Danish experts on how to solve the conflict.

Initiation of pilot projects through case studies

Based on the above mentioned criteria for the screening process (WP 2), the two most promising potential RES DH sites were selected for case studies.

- **Trappenkamp:** For the municipal DH provider of Trappenkamp, HI has elaborated a case study on the feasibility of SDH. At that time, DH in the town of Trappenkamp was based entirely on natural gas. The case study concluded that the introduction of solar thermal heat would have economic benefits for the utility. As a result, the mayor of the municipality and the general manager of the utility have since then been pushing the project forward, including communication with MELUR and concrete efforts to acquire land area for the solar panels.
- **Tornesch:** The local waste company GAB (partially owned by surrounding counties and municipalities) runs a waste incinerator and produces heat for the neighbouring town of Pinneberg. However, there are still large amounts of waste heat that are so far not used. The case study examined the economic feasibility and the potential for an additional sale of waste heat and identified potential customers. GAB has, as a result of the case study, started to implement suggestions of the study and started promising retail activities for the waste heat.

In order to achieve reliable results in the RES DH case studies, the Hamburg Institut acquired the right to use a specialized planning software ENERGY PRO for the two case studies. The software is widely used in Denmark. With support from the Danish project members and through intensive work in the case studies, Hamburg Institut has developed skills in modelling RES DH networks that can be applied in future projects.

The intensive work with the new software, the in-depth modelling of the RES DH cases and the labor intensive research on potential heat sinks and costs for their connection to the existing grid in the Tornesch-case have resulted in more hours for work package 3 than expected.

i. Work package 4: Initiating 100% RES DH and supporting implementation

The work in WP 4 consisted in activating and supporting municipalities and local utilities to develop RES DH projects. This work was done by numerous talks to several stakeholders in the region. In particular, the following stakeholders were supported:

- Vattenfall Wärme Hamburg: HI presented the idea to erect a SDH plant and to include the heat into an existing DH network in Allermöhe. The DH network now runs with natural gas, the CHP has to be replaced in the near future. Vattenfall has adopted these plans and put them, according to statements by Vattenfall responsables, on top of their investment priorities for Hamburg. Hamburg Institut has also talked to environmental NGOs and with City officials in several meetings to improve public support for the plans. Vattenfall has been implementing a feasibility study with an engineering company, the planning process is still ongoing due to difficult planning law issues.
- Preetz: The city of Preetz is considering to build a new DH network. Hamburg Institut has visited city officials several times to develop ideas on how to include a maximum amount of RES in the new network. These activities have led the city to give out a feasibility study to an engineering company. The study is to be completed soon.
- Westerau: The village of Westerau is also considering to build a new DH network. Hamburg Institut has visited local stakeholders several times to develop ideas on how to include a maximum amount of RES in the new network. These activities have led the village to give out a feasibility study (KfW 432) to an engineering company in February 2017.
- Tornesch: After completion of the above mentioned case study, Hamburg Institut has kept in touch with GAB and supported in the follow-up of the study. GAB has made final investments decisions to use additional RES at the site; the retail activities to enlarge the heating grid and gain new customers for waste heat are making promising progress.
- Trappenkamp: Regarding Trappenkamp as well, Hamburg Institut has been supporting the municipality and its utility after completion of the above mentioned case study. Among others, a common meeting at MELUR was organized to gain support for the project development. At the time of the end of SmartReFlex-project, intense efforts to realize the plant are still ongoing.

j. Dissemination/replication (WP 5)

- **Presentations and participation in conferences:** The Hamburg Institut has contributed to raise attention to the subject of RES DH and the SmartReFlex-project through numerous presentations on congresses, discussions with stake holder groups (among them: utilities, consumer associations, environmental NGOs, municipalities)
- **Publications:** The above mentioned publication on the legal foundations for planning SDH has been widely conceived in the community of environmental law.

3.4.3 Assessment of individual performance

For several reasons, the Hamburg Institut is generally very content with the result of this project in the regions covered by the Institute.

- a. Activation of municipalities: Particularly in the region of Schleswig-Holstein, the project was able to raise a lot of interest in RES DH by the municipalities. There has been a constant rise in the interest to bring the “Energiewende” to the municipal heating sector by the means of RES DH.
- b. Awareness of key actors: The workshops have not only reached a high amount of participants but also some of the crucial actors. In particular, some of the most important banks for financing RES in the Schleswig-Holstein region have been involved in the finance workshop.
- c. The case studies have turned out as a door opener with a sustainable impact on investment strategies of the involved public companies. We expect that both case studies will eventually result in concrete investments in projects that can serve as “RES DH lighthouses” in the region.
- d. The Hamburg Institut has been able to gain expertise with the EnergyPro software, that can be valuable for upcoming RES DH projects.
- e. More time and resources than projected were needed for traveling. The amount of meetings and workshops in several regions were higher than expected. Since the expertise of the Hamburg Institut’s staff is very different (lawyer, technical expert, planning expert) it was necessary to attend many meetings with more than one person.
- f. From the Institut’s economic point of view, the investment by the Hamburg Institut has been significantly higher than expected. All work packages needed more hours than proposed. The future will show if these expenditures, that are only be partly covered by the IEE funding, will be brought back in by upcoming projects for municipalities or DH companies.

3.4.4 Sustainability of the action after the end of the project

- a. The HI’s work has laid some important foundations for RES DH in the whole of Germany. This is particularly valid for the article on the legal framework for SDH, that will be useful for planners, administrations and lawyers for many years to come.
- b. The new law of the State of Schleswig-Holstein, that was influenced by the work of the project partners, will improve the framework for heat planning and consumer trust in DH for the years to come.

- c. The capacities built in the workshops will improve the technical, financial and organizational framework for RES DH in the Schleswig-Holstein region in the future.
- d. Cooperation links between regions have been established. In particular, all involved German regions (Schleswig-Holstein, Baden-Württemberg and Thuringia) have established a stable working cooperation and a common understanding as “heat transition” forerunner states in Germany.
- e. If the Trappenkamp case study results – as we expect – in a concrete investment in SDH, this would constitute a major breakthrough for a key technology in Northern Germany with significant effects on the market development for SDH.
- f. Feasibility studies for projects in several municipalities have been initiated, some of them with good prospects for realisation.

3.4.5 Review of resources

Staff resources

Task n° + name	Involved member staff	Hours planned HI	Hours planned with 140h MELUR HI shift from	Hours spent	Keywords on undertaken activities
WP 1					
Management	Christian Maaß	44	44	56,5	Management, Project Meetings
	Dr. Matthias Sandrock	36	36	38,5	Project Meetings, financial management
	Simona Weisleder	20	20	19,5	Project Meetings, reports
in total WP 1		100	100	114,5	
WP 2					
Improving the regional framework	Christian Maaß	77	77	111	Task 2.1 Analysis of framework conditions
	Dr. Matthias Sandrock	63	63	77,5	Task 2.1 Analysis of framework conditions
	Simona Weisleder	35	35	3	
in total WP 2		175	175	191,5	
WP 3					
Capacity building for stakeholders	Christian Maaß	132	132	89	Task 3.5 development of case studies
	Dr. Matthias Sandrock	108	108	100,5	Task 3.1-3.5 Preparation of seminars; calculation and development of case studies
	Simona Weisleder	60	185	258,5	Task 3.2-3.5 Preparation of seminars; development of case studies
in total WP 3		300	425	448	
WP 4					
Initiating 100% RES DHC and supporting implementation	Christian Maaß	163	163	179,5	Tasks 4.1.-4.3 Development of deliverables
	Dr. Matthias Sandrock	133	133	124	Tasks 4.1.-4.3 Development of deliverables
	Simona Weisleder	74	89	23,5	Tasks 4.1.-4.3 Development of deliverables
in total WP 4		370	385	327	
WP 5					
Dissemination and replication	Christian Maaß	61	61	23,5	Task 5.1 dissemination planning and reporting ; 5.2 presentations and articles
	Dr. Matthias Sandrock	51	51	46,5	Task 5.1 dissemination planning and reporting ; 5.2 presentations and articles
	Simona Weisleder	28	28	80	Task 5.1 dissemination planning and reporting ; 5.2 presentations and articles
in total WP 5		140	140	150	
in total		1085	1225	1231	

In total, HIC send 1231 hours in the project.

For the reasons explained above, HI spent more hours than expected and proposed nearly in most work packages. HI therefor seeks to shift otherwise not needed project resources to cover the surplus costs for staff and travel of HI.

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Other specific costs	National travels for stakeholder participating in capacity building workshops in DE (10 travels)	2.000	168,22 539,41	Stakeholder participation / Expert Excursion / Bus ride and Catering / Hamburg/Gram/Hamburg 13.04.201
Other specific costs			285,00	Additional external research for partner MELUR on potential for DH in SH
Other specific costs			900,00	Energy Pro usage fee for the case studies

HI exceeded the budget mainly because it was necessary to buy of the right to use the software EnergyPro for two case studies.

Travel costs

Travel costs: 5.988,52 €

Planned: 3.600 €

As explained above, more time and resources than projected were needed for traveling. The amount of meetings and workshops in several regions were higher than expected. After the analysis of the framework conditions have shown that the obstacles for RES DH in Schleswig-Holstein are very diverse, it became necessary that the expertise of different staff members (lawyer, technical expert, planning expert) of the Hamburg Institut were involved in some of the project meetings. Particularly in the early stage of the project it was there for necessary to attend the meeting with two staff members instead of one.

Report on budget shifts

MELUR agreed to shift 140 hours in total to Hamburg Institute (WP3 125 hours, WP4 15 hours). The reason for this shift is that HI took over additional work that was initially foreseen for MELUR, particularly with respect to the screening for frontrunner RES DH projects, case studies and the implementation of the workshops. In the annexed sheet budget shift those 140 hours from MELUR are included.

To cover the TOTAL costs of 138.037,76 € HI apply for an internal budget shift to cover the higher travel costs.

See Overview Tables for budget shift among partners.

3.5 CB5: AGFW Projektgesellschaft für Rationalisierung, Information und Standardisierung (mbH)

German Heat & Power Association: Project Company for rationalization, information and standardization
 Author(s): Dr. Heiko Huther, Sebastian Grimm, Ole Budenz

AGFW is the national energy efficiency association for heating, cooling and combined heat and power. This allows the AGFW to operate as the connecting link between the district heating industry in German-speaking world and the SmartReFlex project. With the lead on WP 5 the intensive connections in industry, research and politics of AGFW were used to spread the project findings and bring together the different stakeholder on national level.

3.5.1 Role in the project

The main role in the project was the coordination of the dissemination activities in work package 5. With the aim to support the partners by finding a way to transfer the experience gained with their activities. With the exchange of the partners and the monitoring of all project dissemination activities, the way to reach the dissemination targets could be traced. With the national and European networks of AGFW many dissemination activities were advertised purposeful to the specific stakeholders and spread out to the German district heating sector. As the national district heating association of Germany, AGFW worked closely with partners of both German regions, Baden-Württemberg and Schleswig-Holstein.

3.5.2 Main activities and achievements

WP1

- **Activities:** Attending and present on project events: Project Committee meetings, Project Webinars, Project Meetings. Provide sections of different reports.
- **Achievements:** 6 projects meetings, 4 reports to the EASME.

WP2

- **Activities:** Coordinating the printing and distribution processes of the “Guide for local authorities”; Development, technical and expert support for the regional action plan of Baden-Württemberg, in cooperation with SFZ and HIR; Stakeholder consultation; Supporting the conceptual design and realization and participating on taskforce activities;
- **Achievements:** High quality print run of the guide forwarded to all partners, Regional Surveys in English and German; Fruitful task force activities;

WP3

- **Activities:** Give lectures and attend on different workshops in both German regions; Organize and implement the workshop “Forum Solare Wärmenetze” in cooperation with SFZ; capacity building for the case studies;
- **Achievements:** Biggest workshop with 145 participants and 11 speakers, affect a district planning process with project know how and accompanied the development process of the case study;

- **Main Problems:** One very promising case study with a big supplier in Germany failed at an advanced time caused by a change of seats within the company.

WP4

- **Activities:** Manage the cooperation between three German partners to development a German case study report; communicate the project results within the AGFW networks to transfer them to industry and politics, continuously exchange with research and development expert group as well as special project advisory groups; Elaborating the framework for case studies and introducing the potential activities to representatives of target utilities; Exchange with Solar DH utilities and knowhow transfer to the running project efforts;
- **Achievements:** publishable report on German case study report with a wide range of tasks and boundary conditions that leads to high transferability for other replications; Enlargement of knowledge and know-how transfer;

WP 5

AGFW was WP leader for dissemination, therefore detailed documentation is reported in chapter 2.5.

3.5.3 Assessment of individual performance

What went particularly well?

In an overall view the dissemination activities went very well. The targets (number of reached people) were exceeded. Also the awareness in the district heating industry increases, many members of AGFW, also European research partners, start to discuss about the topics and requested information out of the SmartReFlex project. On a technical view the project partners working/ exchange area, which was implemented with 'Dropbox', worked very well and was easy to handle for all partners.

What did not go so well?

The cooperation with the professional communication company was challenging as there was a lot of support needed and some tasks took much longer than expected. Similar problems occurred with the website were the difficult architecture needed some extra work and the handling and structure was not easy enough to upload important files and news by the authors themselves.

The project partners working/ exchange area (Dropbox) was not used by all partners in the same way which leads to some confusion regarding the status of some documents (work in progress or release process finished).

What would you do different next time?

Even with the "technical" problems, occurring with the dissemination activities, the information on project results and activities were spread widely. With the knowledge generated within the project it is necessary to estimate the budget for the external tasks precisely to submit the tasks completely or calculate with more hours for the coordination.

To avoid the confusion of documents status in Dropbox the handling needs to be more regulated and maybe managed with some extra time.

3.5.4 Sustainability of the action after the end of the project

The workshop Forum Solare Wärmenetze “Forum Solare Wärmenetze” got such a good feedback, that the stakeholders asked for a continuance of that event. Simulated with such a result AGFW and SFZ going to continue that event format (2nd Workshop on 30th May 2017).

The projects results are quite common used for general association activities and events to support the rise of RES in district heating. Especially the “guide for local authorities” often serves as an entry in a discussion with local municipalities, particularly when they are not well informed before the meeting. Furthermore the guide and the brochure will be used to spread the findings to other stakeholders as well, for example to chambers of commerce and industry or regular’s table on local energy supply.

Influenced by the findings of the SmarrtReFlex project the German district heating association came to the conclusion that an increase of renewables in district heating and cooling is not only necessary but will also be possible, within the right framework. For the next government election period in 2017 the AGFW position paper request a new technology neutral incentive system to stimulate that market. It also recommended that this need to be done at an early stage of the legislative period to create a remarkable effort until 2030.

The project website will be online at least until the end of 2018 and hosted by AGFW. Once a year the “department of research and development of AGFW” forwards the members special information folder. Even the project is finished at that time this sending will contain selected SmartReFlex publications.

With the positive findings at the case study Gotha the next steps are already in the approval phase. With the positive attitude of the responsible we are confident to go on that path during the next years.

AGFW will also be part of the Solnet-BW project, were the SmartReFlex experience can be very useful.

Because the most important project findings are available at the Celsius Toolbox, where similar projects are presented as well, the documents will be available for further projects.

3.5.5 Review of resources

Staff resources

WP	Involved staff member	Hours spent	Keywords on undertaken activities
WP 1	Heiko Huther	75	Project Management; Attend on Project meetings, project webinars and project committee webinars; General check of quality
	Sebastian Grimm	45	Attend on Project meetings and project webinars

	Maria Grajcar	70	Attend on Project meetings, project webinars and project;
	Ole Eichhorst	123	Attend on Project meetings, project webinars and project committee webinars; Reporting; Testing project workspace options;
WP 2	Heiko Huther	61	Support WP2 activities in Baden-Württemberg; Advise, prepare and support the development of survey of regional framework and regional strategie; Discussions with association members to clarify potential project participation;
	Maria Grajcar	54	Prepare and support the development of WP 2 deliverables;
	Ole Eichhorst	42	Prepare and support the development of WP 2 deliverables; Organization of printing and forwarding of the project guide;
WP 3	Heiko Huther	155	Acquire possible case studies in Germany; Participate, prepare and organize the Workshop capacity building; Support the establishment and participate at Baden Württemberg task-force activities; Selection and elaboration, involvement and relationship with local authorities, researchers and utilities;
	Maria Grajcar	126	Prepare and support the development of WP 3 deliverables; Organization and preparation of the capacity building Workshop;
	Ole Eichhorst	34	Prepare and support the development of WP 3 deliverables;
	Norman Fricke	36	Supporting and attending the Workshop on organisational & financial issues;

WP 4	Heiko Huther	142	Elaborating the framework for case studies and introducing the potential activities to representatives of target utilities; Support to the implementation of regional RES DHC policy Exchange with Solar DH utilities and knowhow transfer to the running project efforts;
	Sebastian Grimm	38	Organization and preparing of the German case studie report; Organization of printing and forwarding of the project brochure
	Maria Grajcar	133	Prepare and support the development of WP 4 deliverables; Review and translation of case study report; Support to the implementation of regional RES DHC policy; Advise municipalities with RES DHC activities
	Ole Eichhorst	27	Prepare and support the development of WP 4 deliverables;
WP 5	Heiko Huther	249	Project management for the WP lead; Manage the project website and E-Newsletter content; Preparation and review of WP 5 Deliverables; Presentations on national and international events; Solicit the project webinars and events to representatives of target groups; Stimulation of EU Networks;
	Sebastian Grimm	120	Reorganization of the project website; Technical and administrative website support; Redesign of the project leaflet; Manage the activities of the marketing company; Prepare and support the development of WP 5 deliverables; Organization of printing and forwarding of the project brochure;

	Maria Grajcar	108	Administer of the whole project dissemination reporting; Review and translation of WP 5 Deliverables; Stimulation of EU Networks; Prepare and support the development of WP 5 deliverables;
	Ole Eichhorst	111	Administer of the whole project dissemination reporting; Manage the project corporate design templates and activities of the marketing company; Managing the development of the project leaflet; Prepare and support the development of WP 5 deliverables;
Total for the project		1749	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	<u>Estimated costs</u> [EUR]	<u>Actual incurred costs</u> [EUR]	Reason for over-, under- or not spending
Subcontracting	Website design, update and maintenance	5.000,00 €	9.435,00 €	The effort to develop the multilingual website with specific sections was significantly higher than assumed.
	Layout E-Newsletter	2.000,00 €	0,00 €	After the template was produced by FIF-Marketing, AGFW managed and produced the Layout of the E-Newsletters by themselves
	Support in EU dissemination activities	5.000,00 €	0,00 €	Internal AGFW staff could conduct the EU dissemination activities.
Other specific costs	Printing Material, Hosting Task-force activities	9.500. 00 €	5.192,22 €	The ministry of environment of Baden-Württemberg hosted the task force meetings. The project leaflets were sent to the partners as a PDF-file and printed by themselves.

Travel costs

<u>Estimated travel costs</u>	<u>Actual incurred travel costs</u>	Reason for over spending
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4.600,00 €	6437,54 €	<p>The involvement of internal AGFW staff for the support EU- dissemination activities and the exchange with project partners caused more travel costs; Some meeting locations were not easy to access with public transport and the shared rental car was paid by AGFW. The complicated arrival and departure once caused some extra travel time;</p>
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Report on budget shifts

As explained in the previous sub chapters the costs for subcontracting decreased because of some in-house effort which led to some extra costs. Also the layout design of all E-Newsletters reduced the specific costs but increased staff costs. The task force hosting of the ministry reduced also the other specific costs.

For that reasons a formalised budget shift was necessary:

- Other specific costs (-45 %)
- subcontracting (-22 %)
- more staff costs (+5 %)
- travel costs (+40 %)

3.6 CB6: XD Sustainable Energy Consulting Ltd (XDC)

Author(s): Xavier Dubuisson, Lead Consultant and Managing Director, XD Sustainable Energy Consulting Ltd.

3.6.1 Role in the project

XDC's role in the project as Irish partner was to provide local consultancy support to the regional Irish partners throughout the implementation of the different work packages (WP) of SmartReFlex (SRF), in particular Kerry County Council (KCC, local authority). XDC also played a coordination role between the Irish partners' activities and took a lead in the development of key deliverables. XDC also acted as WP 4 leader (see WP performance review in section 2). We also had a prominent role in dissemination activities at an Irish and European level.

3.6.2 Main activities and achievements

As one of the partners and WP leader, we contributed dutifully to the project coordination WP1 in terms of activity and performance reporting, participation to the Project Committee, participation to project meetings (including organisational support for partners' meetings in Ireland). We also assisted with the quality of key deliverables for EU wide dissemination, notably in terms of editing for correct English.

We also played a key role in WP 2 implementation with regard to developing the Regional Strategy for Ireland (and its regular updating) in cooperation with the Irish partners TEA and KCC and the underlying engagement with key stakeholders at regional and national level. One of our key achievements in WP2 has been to contribute to local and national energy policy making and to advocate a supportive framework for RES DHC. We led submissions to consultation processes undertaken by the Irish government for the Green Paper for Energy Policy in Ireland as well as for the Renewable Heat Incentive programme, and more recently to the National Climate Mitigation Plan. We also participated to representations to relevant departments such as the Sustainable Energy Authority of Ireland, the Department of Housing and Local Government (Building Regulations and Spatial Planning) as well as the Department of Climate Change and the Environment (Energy). Overall, this advocacy work has contributed to improving the policy framework for RES DHC in Ireland. In addition, we assisted the task force group for Kerry run by KCC. We also contributed to the WP2 summary report (D2.2) and the EU guide (D4.2). Some of the key objectives we had set for ourselves as part of the Regional Strategy were too ambitious for the timeline of the project and the effort required to mobilise all the relevant stakeholders, however we are confident that the momentum achieved will help continue sustaining the implementation of the strategy after the project.

We also actively participated to WP 3 activities for capacity building, by supporting the advertising of the Irish training workshops, and by contributing to the training content and its delivery in close collaboration with PlanEnergi and the other Irish partners. We helped achieve a significant contribution to the workshops with specific Irish content, notably with regard to local energy planning as well as the case studies undertaken in WP 4. While attendance at the workshops could have been higher, we accept that 2-3 day long workshops in a niche topic in the Irish context, was a challenge for relevant professionals. However, we are confident we supported a group of skilled and committed professionals expanding their know-how in RES DHC. We also co-ordinated closely with WP 3 leader with regard to the case studies development as merged D3.3 and D4.2 outputs.

As WP 4 leader, we provided guidance and support to the project partners in the implementation of their regional case studies, and we coordinated the monitoring and regular reporting of activities in this area (D4.1). We also reviewed each national/regional case study reports (D4.2 for Germany, Catalonia, Italy) and provided feedback to the relevant partners. Moreover, we were lead editor on the EU case study report (D4.2) by bringing together selected case studies and lessons learned from the participating regions, and formulating common recommendations for replication. We have also led the WP 4 technical reporting in section 2 above. As Irish partner with a consultancy support role, we have worked closely with KCC in the relevant case study activities, notably for the Heat Planning case studies for Tralee and County Kerry, as well as for the RES DHC project feasibility study for Tralee town centre. While the learning curve required to implement the case studies was substantial, and required significant background research, we believe our work in local heat planning is ground-breaking in Ireland. Similarly, the project feasibility studies we have undertaken will help bring these projects closer to becoming bankable. The knowledge base acquired and the lessons learned will continue supporting other project developers and will inform policy-making for RES DHC.

We also played a key role in the dissemination activities of WP 5, at national level and at European level. We worked together with the project communication consultants to define the Irish Communication

Plan and we actively contributed to the development of common dissemination tools such as the initial project leaflet and its update, as well as the overall SRF brochure. At national level, we have made a number of representations on SRF and its activities at local and national events., we have disseminated the project newsletters and brochures to relevant stakeholders in the participating regions and nationally. At EU level, we coordinated the SRF presence with a stand at the Solar Heating and Cooling 2016 conference in Billund (DK), we made a presentation on Irish Heat Planning case studies at the 4DH 2016 conference in Aalborg. In addition, we participated and presented at the EU RES DHC workshop in Nov 16 in Kolding, and we made a presentation at the joint SRF ProgressHeat webinar in February 2017. Overall, we are satisfied that the SRF project outreach and dissemination activities have been successful, and we will continue disseminating the results and encourage replication, particularly for the results of the case studies completed.

3.6.3 Assessment of individual performance

Generally speaking, we are satisfied with XDC's performance in the SRF project and its role as consultant supporting local/regional stakeholders. The project has been a great opportunity to learn from our partners, and in particular from our Danish experts, and to support the development of RES DHC in Ireland by adapting this knowledge to local conditions and needs and helping Irish stakeholders build their capability in this area. The range and depth of Irish case studies we have contributed to is testimony to this. The cooperation between the 3 Irish partners, based on a common commitment to RES DHC deployment in Ireland, was very successful and amplified the impact of our individual activities. In this regard, we are particularly pleased with having contributed to a concerted effort to raise awareness about RES DHC among key stakeholders and to advocate a stronger, more supportive policy framework.

Moreover, we are pleased with the pioneering work (in an Irish context) we have accomplished in Heat Mapping and District Heating Planning in Tralee and Kerry. The knowledge acquired in this context has been directly used in the RES DHC network design and feasibility study for Tralee, showcasing how it can be replicated in other towns and cities in Ireland. Our contribution to the Irish SRF training workshops, as well as national and European seminars, gave us the opportunity to share this knowledge with other professionals and stakeholders.

We also recognise that completing the case study work was challenging because of the lack of experience on RES DHC in the Irish market, notably when it comes to obtaining robust data on capital and operational costs for heat generation plant and DH network construction. Equally, detailed knowledge of heat demand profile for relevant sectors is missing in Ireland. While we would have hoped to bring potential RES DHC projects closer to bankability, the difficult market conditions (low competing fuel costs) and the lack of finance in Ireland for major infrastructural projects have had a negative impact on the decision-making process. In addition, we recognise that we were over-ambitious in terms of progressing the implementation of the Regional RES DHC strategy for Ireland and some of the objectives we had set ourselves were not realised, due to lack of time and commitment from relevant stakeholders.

Should we have the opportunity to do things differently, we would have dedicated more time and resources on building a stronger, wider alliance with key players in Ireland to broaden the commitment to deliver on the Regional Strategy. Equally, it would have been advantageous to accelerate the capacity

building process to be in a better position to start the project case studies earlier and to have more time to cooperate with the Irish and EU RES DHC supply chain for knowledge development, notably in the area of costs.

3.6.4 Sustainability of the action after the end of the project

Developing RES DHC in Ireland will be a long-term endeavour but we are confident that SRF has created a strong momentum and will have a positive legacy in this regard. The Irish Regional Strategy for RES DHC has been promoted to key stakeholders and its integration into Irish energy policy at local and national level has been advocated by XDC and its partners. Key references to RES DHC in the White Paper for Energy and its consideration for the Irish Renewable Heat Incentive are encouraging, as well as the organisation of the first District Heating Conference in Ireland in 2016. XDC will continue engaging with the relevant authorities to continue building commitment to the Regional Strategy, and towards a national Renewable Heat Strategy.

The training workshops and the dissemination activities undertaken by the Irish partners have generated a wider awareness on RES DHC among decision-makers as well as professionals and practitioners in the supply chain. It is very positive that the Irish District Heating Association has been created in Spring 2017 against this background and XDC will work closely with the association to continue promoting awareness and knowledge of RES DHC.

We will also continue working with Kerry County Council in the framework of ongoing initiatives to promote RES DHC to local communities in Kerry's towns and villages. XDC and KCC will capitalise on their joint involvement with community groups, businesses and public sector bodies in the framework of the Sustainable Energy Community (SEC) and the Better Energy Community (BEC) programmes supported by the Sustainable Energy Authority of Ireland (SEAI). These programmes provide technical support and capital funding which will be leveraged to continue develop RES DHC projects in Tralee and Killarney.

SEAI has already committed to support a feasibility study on RES DHC for the town of Killorglin, to be undertaken by XDC on behalf of the Kerry Sustainable Energy Cooperative. XDC is also supporting capacity building within the newly created Cooperative and has funded the travelling expenses of one of its members to participate to the European workshop and study tour on RES DHC in Kolding in Autumn 2016. The continued collaboration between XDC, KCC and the Cooperative, as well as the continue engagement with the Kerry Task Force, will sustain the drive for RES DHC development in the county.

Furthermore, we are very encouraged by SEAI's stronger awareness of RES DHC and its initial support for dissemination activities. The Irish Guide for District Heating authored by CODEMA (Dublin energy agency) and published recently by SEAI, features the Killarney RES DHC case study undertaken by Kerry County Council. This provides a comprehensive knowledge resource on the planning, design and implementation of RES DHC projects in an Irish context. In addition, SEAI is supporting XDC to build on the heat mapping and district heating planning case study for Tralee and Kerry, to publish guidelines for local authorities in this area. These guidelines, to be released in June 2017, will encourage replication and the integration of Heat Planning and County and Local Development Plans in Ireland.

3.6.5 Review of resources

Staff resources

Expenditure in relation to staff resources are broadly in line with what has been budgeted for by XDC in Annex 1 of the contract, and the variation is below 20%. However, while the contribution from a senior engineer as well as a junior engineer was initially foreseen, all tasks have been performed by Xavier Dubuisson, senior consultant at XDC, to ensure the necessary know-how and skillset was available throughout the project, to deliver high quality outcomes. There was a shift of staff hours from WP3 to WP4 as resources for case study activities were consolidated in WP4.

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP Management 1	Xavier Dubuisson	150	Contribution to: <ul style="list-style-type: none"> • Project committee • Project webinars • Project meetings • Deliverables' quality • Reporting • Synergies with Stratego/EU Roadmap projects.
WP2 Regional Strategy	Xavier Dubuisson	225	
2.1 Survey of regional DHC framework		66	<ul style="list-style-type: none"> • Analysis of local energy & climate change policy, spatial planning legislation • Survey of local stakeholders on RES DHC barriers and opportunities, existing initiatives. • Review of national policy framework for energy, spatial planning, local government, rural development. • Survey of RES DHC sector in Ireland. • Analysis of economic parameters and business models for RES DHC.
2.2 Strategy definition		159	<ul style="list-style-type: none"> • Definition of Regional Strategy for RES DHC in Ireland. • Review with PlanEnergi and WP2 leader. • Regular progress update of the strategy. • Assistance to Kerry task force and participation to task force meetings. • Contribution to D2.2 Summary Report • Contribution to D2.4 Guide for Regional Authorities and help with EN editing, and dissemination. • Engagement with local and national

			policy makers, submission to energy policy consultations.
WP3 Capacity Building	Xavier Dubuisson	166	
3.1-3.4 Capacity building workshops		166	<ul style="list-style-type: none"> • Contribution to scoping of training content & definition of agenda for workshops. • Preparation of Irish content for training workshops and help with advertising. • Participation to 3 combined workshops (tasks 31 to 3.4) and delivery of content. • Dissemination of training material and review of learning outcomes. • Contribution to WP3 reporting (Del 3.2)
3.5 Case studies			Case study work combined with WP4. See WP4 for details.
WP4 Initiating and Supporting RES DHC projects.	Xavier Dubuisson	641	
4.1 Development of regional framework		234	<ul style="list-style-type: none"> • Methodological research & data¹⁵ collection • Heat Mapping (GIS based) for Tralee • Heat Mapping (GIS based) for County Kerry • RES DHC planning study for Tralee & Kerry. • Inform spatial & energy planning in Kerry. • Initiate guidelines for local authorities. • Writing of individual case study summary. • Synergies .with EU Stratego/Heat Roadmap.
4.2 Supporting RES DHC projects		256	<p>Support for feasibility study of RES DHC project for Tralee Town Centre, in collaboration with Groen Energi & KCC:</p> <ul style="list-style-type: none"> • Scoping deployment area using heat density map. • Heat demand data collection and analysis, creation of heat demand profile curves. • DH network design • Heat generation plant design • Capex and Opex cost definition • EnergyPro simulations of energy flows and lifecycle costs for a range of scenarios. • Feasibility study and sensitivity of analysis.

			<ul style="list-style-type: none"> • Writing of individual case study summary. <p>National Case Studies report (Del 4.2):</p> <ul style="list-style-type: none"> • Assembling of individual case study summaries; • Editing into national report, with lessons learned and recommendations.
4.3 Monitoring and evaluations		23	Preparation of monitoring report template. Completion of 4 quarterly monitoring (del 4.1) reports for Irish team.
WP 4 leadership		128	<ul style="list-style-type: none"> • General guidance and support to regional partners on WP4 activities. • Gathering of monitoring reports from regional partners. • Reporting on WP4 progress at partners' meetings. • Preparation of template for national case study reports. • Review and feedback to regional partners on National Case Study Reports. • Collection of selected national case studies from regional partners and review of lessons learned. • Writing of publishable EU Case Study Report (D4.2). • Writing of interim and final WP4 technical reports.
WP 5 Dissemination & Outreach	Xavier Dubuisson	170	Local and national dissemination & outreach
5.1 Dissemination planning & reporting		24	<ul style="list-style-type: none"> • Creation of Irish communication plan with Communication consultant • Periodic reporting on dissemination activities
5.2 Dissemination material		106	<ul style="list-style-type: none"> • Contributions to website content. • Contributions of articles to newsletters. • Contribution to project leaflet and its update (plus EN editing) • Contribution to EU project success stories brochure. • RES DHC article in BS News specialist magazine. • Blogging (xdconsulting.eu) on SRF events and activities. • Dissemination of project's dissemination materials to Irish contacts. • Presentations at local and national events on SRF activities and

			<ul style="list-style-type: none"> outcomes. Representation of SRF at national conferences and trade shows.
5.3 Active stimulation of EU networks		40	<ul style="list-style-type: none"> Representation with stand at SDH conference 2016. Presentation and participation to 4DH 2016 conference in Aalborg. Synergies and knowledge transfer from Stratego/EU Heat Roadmap Presentation to SRF/ProgressHeat joint webinar with ISES.
Total		1352	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Other costs	Promotion material for use in Ireland. Training material for use in Ireland.	3000	660 euro Actual costs include covering expenses for Kerry Sustainable Energy Cooperative representative to attend EU workshop in Kolding + project banner for events.	Printed promotion material provided by WP2 and WP5 leaders. Training and other promotion material disseminated electronically.

Travel costs

Travel costs total 7640 euro compared to 6600 originally budgeted for, or a 16% overspend. This is largely due to extended study tour to Denmark and associated participation to SDH 2016 conference and the 4DH conference as well as work at PlanEnergi's offices in Aarhus.

Report on budget shifts

Budget shift from Other Costs to Travel costs / Staff (see justifications above).

3.7 CB7: Tipperary Energy Agency

Author(s): Paul Kenny, Tipperary Energy Agency

3.7.1 Role in the project

The Tipperary Energy Agency's role was that of implementation partner in the Region of Tipperary and surrounding counties. The Tipperary Energy Agency, in advance of the project had commenced the aligning of stakeholders for an investment in a district heating network in the town of Nenagh (Pop 7200). This initial feasibility study was completed under the concerto project SERVE (TREN07/FP6EN/S.07.71106/038382). However, shortly after the commencement of the project, a large lobby group formed within the Town of Nenagh to bring natural gas, and this was subsequently successful resulting in the expansion of the natural gas grid to all the large heat loads rendering the DH project unfeasible.

With Agreement from the project officer the Tipperary Energy agency commenced work on the following tow potential projects:

- New DH scheme in Claremorris. See case study in WP4 for details
- Optimisation and Remedial works to the solar district heating installation in clougjordan Co. Tipperary.

3.7.2 Main activities and achievements

3.7.2.1 National Framework

The Tipperary energy agency has presented a held a policy workshop for a number of stakeholders for the support of the development of national policy for district heating.

- Concerted action on the Renewable energy directive in May 2015 in Dublin including representatives of 20+ EU governments.
- Department of Communications, climate action and energy senior officials in April 2016.
- National Utility (gas/ Electricity) Electricity supply board in October 2016.

It was clear that the objectives, engineering technology, cost drivers and more importantly low carbon heat choices were relatively unknown by most policy makers in Ireland and while a number have attended workshops, there still is a large cohort of decision makers do not understand what District heating is, and why it is necessary.

3.7.2.2 Local Legal framework

The Tipperary County has proceeded to establish a local renewable energy framework, as part of this local renewable energy strategy, District heating is now an objective in this planning framework. In addition to this, the Local authority has completed heat map training, and has commenced heat mapping into the last large town in Tipperary that is not already connected to the gas grid. In addition, the County's official development plan has now included District heating as a key objective over the next four years.

One of the senior influential officials of the County attended a tour to Denmark, and she is now championing the cause of district heating in the County.

3.7.2.3 Claremorris District Heating Feasibility and development plan.

The Claremorris Case study elaborated in WP4 shows a project that has a robust local connection / development plan and pathway. A new renewable heat incentive is planned to be launched in the coming months, and this will form part of the backbone of the business case for the 1M euro initial development costs.

3.7.2.4 Cloughjordan Eco-Village

The Ecovillage has a biomass and solar District heating plant that was poorly installed and commissioned in Cloughjordan, with the solar district heating contributing negligible heat and the homes utilising a low percentage of the overall heat generated. A detailed analysis, as outlined in the case study was completed, remedial actions (no/ low Cost) were implemented and a reduction in energy used was achieved. A significant investment is planned for the summer of 2017 that will further enhance the district heating scheme and reduces primary biomass input.

3.7.2.5 Capacity building

A significant element of the Tipperary Energy Agency's role in Smart Reflex was organisation of the four main District heating seminars throughout the project. Over 150 people attended these between Dublin, Tipperary and Kerry, with many of the main Engineering consultancies attending various courses. This will further the knowledge of what is required for district heating in Ireland.

3.7.3 Assessment of individual performance

Notwithstanding the change from Nenagh Town District heating, the overall project was a success in Tipperary:

- The local authority now has a planning framework and ability to identify key measures and characteristics of a district heating plant should it arise.
- There is a commitment to fulfil the local heat mapping objectives from the local authority.
- There is a significant improvement in the Cloughjordan DH.

- There is a pipeline of new DH development awaiting the new renewable heat incentive, both supported by Smart Reflex and a further number (Holycross and Newcastlewest).
- There is a much larger awareness between engineers, communities, local authorities about district heating and the success factors

3.7.4 Sustainability of the action after the end of the project

The Local planning framework and development ambition instilled within the local authority is a significant improvement in the county. It will ensure that the forthcoming renewable heat incentive has significant fertile ground with which to grow district heating projects.

3.7.5 Review of resources

Staff resources

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP1 Project management	Paul Kenny	118	Attendance at Consortium Meetings; Internal project reviews, financial reviews;
	Michael Bell	10	Internal project reviews,
	Donal Deering	45	Attendance at Consortium Meetings; Internal project reviews.
WP2: Improving the regional framework	Paul Kenny	119	Liaison with Local authority, meeting with national government, Submissions to planning documents, 3 no. workshops with elected members, meeting with local planners.
	Michael Bell	15	Supporting the local Authority renewable energy strategy; supporting Elected members through information.
	Donal Deering	10	Input to county development plan for DH
	Paula Gallagher	4	Planning workshop
	Sandy McSwiney	9	Organised tours to other DH in region (Kerry)
	PJ Mcloughlin	3	Inclusion of DH in Renewable energy stratgy
WP3 Capacity building	Paul Kenny	104.5	Hosted courses, arranged speakers (local and international) developed some course content, delivered some elements. Case studies
	Michael Bell	30	Developed some course content, delivered some elements. Case studies
	Sandy McSwiney	19	Hosted courses, applied for CPD, course content, delivered some elements. Case studies
	Liam O'dwyer	24	Capacity building event in Dublin, supporting DH learning in ecovillage

	Orla O'Shaughnessy	88	Organised 4 no. courses, Venue, registration, recruitment etc.
WP4: Implementing DH	Paul Kenny	53	Reviewed Claremorris DH feasibility study; identified Cloughjordan remedial works
	Michael Bell	30	identified Cloughjordan remedial works; researched requirements for improvement, base plan for investment identified.
	Donal Deering	181	Worked on Claremorris DH feasibility study; supported Cloughjordan remedial works
	Chris Noonan	59.5	Worked on Claremorris DH case study and feasibility
WP5: Dissemination	Paul Kenny	34	CA-RES dissemination; input to National energy policy through presentation of District heating at national policy workshops
	Sandy McSwiney	13.5	Dissemination of courses through professional institutions.
	Catherine wall	72	SRF course Dissemination; newsletter input, Renewable ebneryt strategy (DH) dissemination
	Orla O'Shaughnessy	30	SRF Course dissemination
Total		1072	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Other costs	Organisation of Project meeting & Courses (note organised together with task force and project meetings)	700+2500=3,200	8075	Some task force meetings included (common venue and catering costs)
	Management of task force	4000	Some costs included above & Below	Lower costs than expected on task force (Nenagh task force was not required). Some costs included above.
	Project Partner meeting.	700 (see above)	1034	Project meeting costs higher than expected, Mainly catering due to larger than expected numbers (included local task force at PM meeting dinner).

Travel costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	<u>Estimated</u> costs [EUR]	<u>Actual</u> incurred costs [EUR]	Reason for over-, under- or not spending
Travel	Travel costs	5100	7768.18	Additional costs for Claremorris Versus Nenagh (local); Travel costs per EU meeting slightly higher than budgeted

Report on budget shifts

See Overview Tables for budget shift among partners.

3.8 CB8: PlanEnergi

Author: Per Alex Sørensen

3.8.1 Role in the project

- Arrangement of special meeting in Kolding November 2016 for presenting project results.
- Commenting on framework conditions (WP2, Task 2.1).
- Contribute to D2.4, Publishable guide with recommendations to regional authorities.
- Coordination of WP3.
- Preparation and participation in workshops.
- Contribute to calculation of case studies.
- Responsible for deliverable D3.2.
- Coordination of deliverables D3.1 and D3.3.
- Consultancy to implementation activity.
- Contribute to D4.2 Publishable report on case studies.
- Contribute to dissemination.

3.8.2 Main activities and achievements

PlanEnergi's main activities have been as responsible for WP3 including 18 workshops, 22 case studies and 3 deliverables.

PlanEnergi has participated in all workshops except the first and the last in Baden-Württemberg and has been active supporting especially EnergyPRO calculations and other topics in case studies.

In the Workshops PlanEnergi normally had presentations of DH in Denmark, planning in Denmark, mapping of consumption and resources, screening of DH possibilities and design calculation tools in Workshop 1.

In Workshop 2 PlanEnergi presented DH production technologies and key figures, design calculations of DH feasibility in Excel and supported with EnergyPRO calculations.

In Workshop 3 PlanEnergi presented the Danish model for organizing and financing DH, how to start new DH projects and how to monitor consumption and organize billing.

PlanEnergi's main achievements have been to present Danish experiences, transform them according to demands in the participating regions and to support with design calculations in case studies.

According to evaluation results from the Workshops our participation has been a success. This is also confirmed by the fact, that local consultants and stakeholders have been able to continue the activities without our support.

The workshop idea with “parallel” presentations (first a presentation of how for instance mapping is done in Denmark, then a presentation of mapping in the actual region and discussion upon methodologies) worked quite well. Also we could see, that our original Workshop program and time schedule worked well in Catalonia as the first region and also when it was replicated in other regions.

In Ireland it was evident that district heating as an option for heating in cities was nearly not existing when the project started and during the last Workshop a couple of years later it was seen as a serious solution. Same result but not so evident can be seen in other regions.

3.8.3 Assessment of individual performance

What went particularly well?

Transforming knowledge in the workshops and involving DH industry (Danfoss, Logstor, Isoplus and EMD) in the Workshops.

What did not go so well?

EnergyPRO was used for designing case studies. But the software is not simple to use and especially calculating district cooling and Spanish electricity market prices is a challenge. PlanEnergi used a lot of efforts doing this and educating our partners in Catalonia. This was a success since they were able to do calculations themselves afterwards, but it was time consuming.

What would you do different next time?

The overall structure with task force workshops and case study worked very well, but next time we will ask for more working hours to be able to give more calculation support in the case studies.

Also citizen involvement and how to achieve acceptance of DHC projects should have a major role since this is a main condition for realisation of projects.

3.8.4 Sustainability of the action after the end of the project

In Catalonia the task force is working after the project period and even extended with new participants in the last part of the project.

In Emilia-Romagna AIRU (the Italian DH organisation) has taken over the SmartReFlex activities.

In Baden-Württemberg the project activities will continue in the SOLNET-BV project.

In Ireland DH will probably be realized in one or more projects in Dublin in near future and a network seems to function and also in Schleswig-Holstein the first new DH project is under realization and a couple are in the pipeline.

3.8.5 Review of resources

Staff resources

Task no + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP1 Project management and coordination	Morten Hofmeister Per Alex Sørensen Linn Laurberg Jensen	181,0 14,0 1,0	Project report, Project meetings Quality assurance
WP1 – Total		196,0	Budget: 150
WP2 – Improving the regional framework	Morten Hofmeister Per Alex Sørensen Daniel Trier	9,5 26,0 2,0	Contribute to D2.4 Commenting framework conditions
WP2 – Total		37,50	Budget: 50
WP3 – Capacity building for stakeholders	Morten Hofmeister Per Alex Sørensen Max Guddat Linn Laurberg Jensen Anders Odgaard Morten Vang Bobach Tobias H. Kristensen	621,50 363,50 60,5 46,0 4,5 5,0 28,0	Workshops Workshops Workshops EnergyPRO GIS, mapping EnergyPRO Pipes and substations
WP3 – Total		1.129,0	Budget: 705
WP4 – Initiating 100 % RES DHC and supporting implementation	Morten Hofmeister Per Alex Sørensen Linn Laurberg Jensen Max Guddat	16,5 26,0 36,5 17,0	Consultancy to implementation activity EnergyPRO EnergyPRO
WP4 – Total		96,0	Budget: 320
WP5 – Dissemination and replication	Morten Hofmeister Per Alex Sørensen	5,0 21,0	Webinar participation Webinar participation
WP5 – Total		26,0	Budget: 120
Total for the project		1.484,5	Budget 1.345

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	<u>Estimated</u> costs [EUR]	<u>Actual</u> incurred costs [EUR]	Reason for over-, under- or not spending

Travel costs

Budget: 14,598.00 €
Actual costs 18,796.64 €

The reason why travel costs are more than expected is that PlanEnergi sent 2 persons first time the Workshops were arranged. Also for the first Workshop 1+2 in Ireland PlanEnergi sent 2 persons (Morten Hofmeister and Per Alex Sørensen). After the first Workshops the following were divided, so that Morten Hofmeister was responsible for Emilia-Romagna and Schleswig-Holstein. Per Alex Sørensen was responsible for Catalonia, Ireland and Baden-Württemberg.

As a consequence of this both Morten Hofmeister and Per Alex Sørensen participated in all project meetings.

Report on budget shifts

See Overview Tables for budget shift among partners.

3.9 CB9: IREC, CATALONIA INSTITUTE FOR ENERGY RESEARCH

Author(s): Joana Tarrés Font , Laura Sisó

3.9.1 Role in the project

IREC was the expert partner in Catalonia for heat planning, renewable energy and DHC. IREC has been in close collaboration during all the project with the other catalan partner of the project, Incasòl, who represented the regional authority. IREC has been involved in the creation of the regional task force and with the definition of the regional strategy, by carrying surveys, collecting information and participating in meetings (WP2). IREC has been a key partner on the organization of the capacity building seminars, specially the seminar on design and planning and the one of technical issues (WP3). IREC's main role was the lead and development of the case studies (WP4), performing several feasibility analysis. IREC has been very active in dissemination of the results (WP5) by writing articles and attending to conferences and seminars.

3.9.2 Main activities and achievements

WP1

- **Main activities:** participation in all six projects meetings and contribution to the organization of 1 project meeting in Barcelona. Contribution to the progress report, to the different deliverables and reporting to WP leaders.
- **Main achievements:** the coordination was performed according Annex I.
- **Main problems and deviations:** the coordination with the partners was carried out without major problems.

WP2

- **Main activities:** This workpackage had two main parts, one was the creation of a regional task force who met periodically during the project. IREC contributed to the identification of the main DHC stakeholders to be involved and have participated in the organization of all the meetings done during the three years of project. The second part of the workpackage was the creation of a regional strategy for Catalonia. IREC performed specific research about opportunities and barriers for DHC in Catalonia, and , together with Incasòl, has carried a survey to the main DHC

stakeholders IREC and compiled the results, presenting them in the regional task force meeting on July 2014. This work was complemented by thematic meetings with task force members to develop a final regional strategy, which has been monitored and evolved during the whole project.

- **Main achievements:** Incasol and IREC manage to consolidate a regional task force during the length of the project. The stakeholders have been very involved and have the will to continue after the end of the project.
- **Main problems and deviations:** There is a slight deviation of hours because there was a need of update some of the deliverables every 6 months.

WP3

- **Main activities:** IREC and Incasol have organized the capacity building seminars together, in coordination with the expert partner PlanEnergie. IREC's contribution has been mainly in the two first seminars: design & planning and technical, where IREC prepared the main content and presented it. IREC and Incasol have selected the case studies to be developed during the project, and IREC presented the initial feasibility study of one of them during the workshops, as an example and in order to receive support from the participants
- **Main achievements:** In total 122 participants attended the capacity building seminars, which increased their knowledge about DHC. The attendants were very participative and enriching. The seminars served to increased the network of DHC stakeholders participating in the regional task force.
- **Main problems and deviations:** It was carried out without major problems. More hours were used than planned to organize the seminars.

WP4

- **Main activities:** IREC has carried three feasibility studies of integrating renewable energy into new and existing DHC, using the software EnergyPRO. One case showed the feasibility of a 100% RES DH network in a new district with highly energy performant buildings. The second case studied the integration of RES in an existing DHC in a technology park. The study included the model of the current plant and validation, the forecast of heat, cold and electricity demand and the design of a new DH plant with renewables to cover the increase of demand of heat and cold. The other case was the study of a DH to supply heat to 4 municipal buildings. IREC, moreover, gave support to other municipalities in the frame of the task force. At the end of the project IREC compiled a set of indicators in Catalonia and compared it with other European regions.
- **Main achievements:** IREC successfully finished the feasibility studies about RES DHC and presented it to the different consortiums or municipalities promoting them.
- **Main problems and deviations:** It was carried out without major problems. The activities required more hours than planned.

WP5

- **Main activities:** IREC was active disseminating the results at regional, national and at international level. IREC participated in regional workshops and two international conferences, SDH 2015 and Eurosun 2016. Several news in the website and emailing campaigns were done.
- **Main achievements:** An article about one case study was published in a technical magazine at Spanish level.
- **Main problems and deviations:** It was carried out without major problems. The activities required more hours than planned.

3.9.3 Assessment of individual performance

The great success of the SmartReFlex of Catalonia was the creation and maintenance of the regional task force, which has been very interactive and has increased during the length of the project. On the other hand, some of the case studies have shown that RES DHC is a feasible option in Catalonia from technical point of view. The regional stakeholders and the consortiums and municipalities involved, valued positively the results obtained. The project had impact in other regions in Spain. The implementation of the case studies has not reached the decision making phase, due to the legislative and economic context in Spain. SmartReFlex provide with a set of indicators which allow the preliminar evaluation of DH in an area.

3.9.4 Sustainability of the action after the end of the project

The members of the task force has shown their will to continue with group meetings at the end of the project and there are foreseen at least once a year. There is the will to keep an event during the energy week in June to disseminate about DHC topics. Some of the case studies are following more in depth studies for the implementation of DHC. The partners of the SmartReFlex project gained more knowledge in DHC as well as the members of the task force, and several initiatives started to replicate the SmartReFlex format at local level.

3.9.5 Review of resources

Staff resources

	WP 1	WP 2	WP 3	WP 4	WP 5	Total number of hours
Planned	100	310	390	450	200	1450
Actual	96.5	330.8	484.5	549	274.5	1735.3
Difference (actual – planned)	-3.5	20.8	94.5	99	74.5	285.3
(actual - planned)/planned	-4%	7%	24%	22%	37%	20%

Task n° + name	Involved member	staff	Hours spent	Keywords on undertaken activities
Task 1.3 Project Webinars	Joana Tarrés Font		20.5	Participation in webinars
Task 1.4 Project Meetings	Joana Tarrés Font		56	Participation and preparation of project meetings
	Laura Sisó Miró		20	Participation and preparation of project meetings
Total WP1			96.5	
Task 2.1 Survey on framework	Joana Tarrés Font		131.3	Compilation of information, survey realization, meetings and report writing
	Laura Sisó Miró		53.5	Meetings and supervision
Task 2.2 Strategy definition	Joana Tarrés Font		121	Preparation of meetings,

			meetings attendance, report writing
	Laura Sisó Miró	25	Meeting attendance and preparation
Total WP2		330.8	
Task 3.1 Kick-off workshop	Joana Tarrés Font	10	Preparation
Task 3.2 Design & planning	Joana Tarrés Font	125	Content preparation, case studies development, presentation at the event
	Laura Sisó Miró	16	Content preparation and case studies development
Task 3.3 Technical issues	Joana Tarrés Font	115	Content preparation, case studies development, presentation at the event
	Laura Sisó Miró	45	Content preparation and case studies development
Task 3.4 Organisational and financial	Joana Tarrés Font	74	Content preparation, case studies development,
Task 3.5 Case studies	Joana Tarrés Font	63	case studies development, EnergyPro simulations
	Jaume Salom Tormo	6.5	Technical supervision
	Laura Sisó Miró	30	Coordination of case studies; stakeholders communication
Total WP3		484.5	
Task 4.1 Development of policy and institutional frameworks	Joana Tarrés Font	102	Development of case studies
	Laura Sisó Miró	56	Coordination of case studies; stakeholders communication
	Alaia Sola Saura	58	Development of case studies. Energy Pro simulations
Task 4.2 Implementation of projects	Joana Tarrés Font	130	Development of case studies
	Laura Sisó Miró	74	Coordination of case studies; stakeholders communication
	Alaia Sola Saura	62	Development of case studies; EnergyPro simulations
Task 4.3 Monitoring and Evaluation	Joana Tarrés Font	37.5	Refine case studies according task force feedback
	Laura Sisó Miró	27.5	Getting feedback from stakeholders (Municipalities, Managers of DHC in operation, etc)
	Jaume Salom	2	Technical supervision
Total WP4		549	
Task 5.1 Planning and reporting	Joana Tarrés Font	75	Planning and reporting
Task 5.2 Material and	Laura Sisó Miro	48	Participation in events and contribution to articles

channels	Alaia Sola Saura	47	Participation in events, articles and newsletter preparation, mailing campaigns, report writing
	Joana Tarrés Font	62	Participation in events, articles and newsletter preparation, mailing campaigns, report writing
	Eduard Oro Prim	5	Articles contribution
Task 5.3 EU networks	Laura Sisó Miró	10.5	Article contribution
	Alaia Sola Saura	10	Article contribution
	Joana Tarrés Font	17	Article contribution
Total WP5		274.5	
Total		1735	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending

Travel costs

Travel costs are lower than budgeted because we have reserved low cost flights to attendance the five consortium meetings.

Report on budget shifts

The personnel costs has incremented but the deviation is underneath of the 20%. Due to maternity leave of Joana Tarrès, the activity was distributed between Laura Sisó (Senior) and Alaia Sola (Junior). This causes that total costs varied from planned budget. Due to Alaia Sola is less expert profile than Joana Tarrès the effort (total hours required) is higher than the planned to be done by Joana. Reporting of hours corresponding to January 2017 and February 2017 has not been possible due to internal accounting processes of IREC. However involvement in SmartReFlex has been carried out to accomplish project goals. Small savings on travel costs have been moved to staff costs.

3.10CB10: Catalan Land Institute (INCASÒL)

3.10.1 Role in the project

The Catalan Land Institute is a public company belonging to the Ministry of Territory and Sustainability of the Government of Catalonia. Among other functions, its activity focuses on the development of residential and industrial land, building of public housing and district renovation. In the Smartreflex project, INCASÒL has acted as the promoter and coordinator

of the Task Force composed of 18 organizations linked to DHC RES from different areas. These contacts and the INCASÒL activity have allowed the selection and inclusion of case studies related with the current urban planning in the project. Therefore, the role of INCASÒL was to coordinate the activities and studies in Catalonia, as well as to disseminate and to contact with other projects.

3.10.2 Main activities and achievements

WP1 activities, achievements, problems

A good achievement was to involve the Catalan task force with the European partners during the Project Meeting in Barcelona.

The lack of fluency in English of workshops attendants may not have favoured discussions. Even so, participation was high and debates were numerous and enriching.

WP2 activities, achievements, problems

To comply with the regional strategy defined at the beginning of the project, INCASÒL has held 8 plenary and 4 parallel thematic meetings with the Catalan Task Force.

The main achievements in the project have been:

- The creation of a large, diverse, multidisciplinary, committed, involved and stable Task Force which has allowed mutual learning and cooperation on specific issues related to the development of DHC RES.
- The drafting of a comprehensive report that includes learning strategies as a result of the Task Force activity.
- The commitment of continuing the Task Force meetings once per year.

We had no noteworthy problems throughout the project. We should notwithstanding mention the failure to achieve an active participation of the Association of Consumers and of Financial Institutions in the Task Force. Being a service not very widespread in Catalonia, DHC doesn't seem to be of interest to them despite the repeated invitations to participate in the taskforce meetings.

WP3 activities, achievements, problems

During the third workshop was arranged a visit to Districlima's DHC facilities for all the attendees.

Thanks to the workshops, the city of Granollers was incorporated to the task force. They asked us to participate in a conference focused on a DH development which they are carrying on in the industrial

area called Ecocongost. It was very fruitful and useful to share our new knowledge to the stakeholders of the Granollers project.

Perhaps a negative aspect of the workshops was the duration, they lasted too much (one day and a half each one) and in the afternoon sessions the number of attendees tended to decrease.

WP4 activities, achievements, problems

One of the achievements has been the development of three map viewers about renewable energy resources, about the estimate demand in the land to be planned and about the demand map according to the climatic zones.

We could have an environmental solution to new residential area called l'Estrella at the city of Badalona, thanks to one of our stakeholders, who gave us the detailed regulation of the biomass boilers which we included in the urban plan regulation in order to show to the environmental office that the boiler emissions will be much lower than they expected.

Even though it's hard to change the actual policy on renewable energy aspects and DHC, we were successful in some aspects. For instance, we noticed that a recently approved ecolabel for hotels in Catalonia by the Directorate of Environmental Politics (DGPA) didn't allow the biomass energy supply for hotels. We told it to the Catalonia Biomass Cluster who weren't aware of that. As a result, they presented an administrative appeal in this respect and DGPA has withdrawn that condition. We can say that thanks to Smartreflex, now the Hotel's ecolabel in Catalonia admits biomass supply.

WP5 activities, achievements, problems

We have participated and organized conferences and workshops for the dissemination of DHC RES. We also have used our presence in numerous fairs to disseminate the project activities, and that's why we had to print more guides and brochures of the project.

We know that the project has arrived at the end, but our task of dissemination is not concluded. We are working hard for writing the SmartReFlex Catalan conclusions and spread them out through articles and meetings.

3.10.3 Assessment of individual performance

The most successful aspect has been the consolidated taskforce that has been set up during the project. There were many interested companies and organizations that were aware of the project and requested their inclusion. We have the commitment of calling a taskforce meeting at least one per year.

We have had some difficulties with consumers' institutions. Although the initial answer was positive, the subject didn't seem of much interest to them and their attendance was discontinued, without relevant contributions to the project.

The exchange of information turned out easier than expected. All the taskforce members have shown a strong interest for promoting DHC and have made available to the group all the information and resources to foster RES DHC in the Catalan territory.

The lack of interest or knowledge of some institutions with influence on the urban network success has been a negative aspect of the project. And a greater challenge not achieved has been the goal of changing the policy framework to foster RES DHC. Our conclusion is the importance of defining achievable goals with realistic deadlines. Nevertheless, these failures have not prevented the success of the project results in Catalonia.

3.10.4 Sustainability of the action after the end of the project

The seriousness and the results of the work done with the Task Force in Catalonia have led to the satisfaction of its members, who have requested the continuation of the work carried out together. For this reason, we have agreed to hold an annual meeting to share experiences and knowledge as they occur from now. Maintaining this network is crucial since it brings together the key players in the development of new RES DHC networks. On the other hand, we are permanently available to all members of the Task Force to facilitate the dissemination of any action related to RES DHC.

We must also emphasize that we have sent a written request to the working group in charge of the draft of the Territory Act of Catalonia, to incorporate a mandatory evaluation of energy efficiency and RES DHC in new developments and urban renewals in Catalonia.

Regarding the case study of l'Estrella in Badalona, we are working to ensure that the development of DH will be a reality in this new neighbourhood. So far, we have hired a global study of this residential area to analyse the feasibility of an integrated district energy management.

In April we will conduct a second internal conference in INCASÒL to explain the final results of the project Smartreflex and of the case studies from the other regions to our urban planners. This action is important to integrate RES DHC networks in the urban planning processes driven by INCASÒL. Due to the internal dissemination made during the project, the group that worked on the project Smartreflex is a reference for our planners when any answer related to RES DHC is needed.

3.10.5 Review of resources

Staff resources

Incasòl has had a deviation of 5.8% of the total hours planned in the project, which concerned in all work packages but mostly in WP2.

WP1 (4.6% more than planned):

The time invested in organizing the first project meeting in Barcelona was longer than expected, as we had the will of linking our Task Force with the project partners. Although with a lower incidence, the preparation of the rest of the project meetings also required more effort than expected.

WP2 (22.5% more than planned):

This is the larger deviation above forecast. The success and the commitment of the Catalan Task Force depend not only on its members but also on a serious and hard work of INCASOL staff who have been working on the project. We should also notice that we have held 12 Task Force meetings (8 plenary and 4 parallel thematic meetings) which represent 6 meetings over what was expected by the project. Their success can be explained by the previous preparation and also by the resulting minutes that were sent later to the attendees. And with the final report of Catalan Task Force activity attached to the Deliverable 2.3 we have tried to summarize all that work done.

WP3 (2.7% more than planned):

This slight increase is justifiable if we consider the success of the workshops where 75 different people attended with an attendance average of 30 people per workshop. Good results were confirmed by the evaluation of the surveys with a score of 4 out of 5. Also, it is necessary to emphasize our strict compliance of the project schedule. In addition we made replications of the results in Barcelona Energy Week in June 2016, and a second one in INCASOL.

WP4 (1.1% more than planned):

In that workshop we were quite efficient because we have been able to develop the mapping viewers as an unforeseen case study with the expected project resources. In addition, we collaborate with the Case Study of the Ecocongost Project in Granollers.

WP5 (5.2% more than planned):

Our dissemination inventory clearly shows our intense activity in this Work Package and justifies the slight increase of resources. We should also say that we made an extra effort to translate many of the documents and presentations not only in English and in Spanish but also in Catalan. As a co-official language in Catalonia, Catalan is the usual communication language not only among the task force but also, for instance, in Barcelona Energy Week, and in the other forums or conferences that we attended. An example is the translation of the Guide into Catalan what has undoubtedly improved the dissemination of the project.

Task n° + name	Involved member	staff	Hours spent	Keywords on undertaken activities
WP1	Elisabet Cirici		79	Management, project meetings
	Joan Estrada		64	Project meetings, webinars, reports
	Cristina Clotet		16	Project meeting, financial management
WP2	Elisabet Cirici		163	Management of the taskforce, taskforce meetings, commitment of the taskforce
	Joan Estrada		65	Management of the taskforce meetings, reports
	Cristina Clotet		17	Reports and support for

			activities
WP3	Elisabet Cirici	300	Management of the workshops, look for speakers and content
	Joan Estrada	75	Support for workshops
	Cristina Clotet	5	Workshop guests
WP4	Elisabet Cirici	354	Proposal for the new Law on land, mayors commitment for case studies development, feedback of the evolution and results to Catalan politicians, case study evolution
	Joan Estrada	81	Badalona's and mapping case study evolution and implementation, reports
WP5	Elisabet Cirici	149	Dissemination of the project, in international events & fairs, stakeholders contacts
	Joan Estrada	38	Articles, dissemination materials, presentations
	Cristina Clotet	13	Content website
Total		1419	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Other specific costs	WP1: Project meeting organization: Catering, subsistence allowance, logistics	700	528.50	We could do the project meeting in Incasol's offices
Other specific costs	WP2: Management of the taskforce	4000	582.07	All the taskforce meetings were done in Incasol's offices. And other kind of seminars have been allocated in WP5
Other specific costs	WP3: Capacity Building seminars	2500	844.85	We could do the capacity building seminars in Incasol's offices. And it wasn't necessary translation services.
Other specific costs	WP5: Dissemination	0	845.16	Dissemination copies and seminar logistics. It wasn't contemplated in the CPF.

For dissemination task, the fair's stands have been paid by Incasòl, no costs have been charged to the project, due to the difficulty of allocate just a part of the full amount.

Travel costs

The budget eligible costs for travel and subsistence expenses were 5,600€ and the costs incurred have been 5,121.30€.

Report on budget shifts

The money saved in Other Costs has been moved to Staff Costs, as we have done more hours than ones that were planned at the beginning.

3.11 CB11: AIRU

Authors: Alice Dénarié, Marco Calderoni, Ilaria Bottio

Reference person: Ilaria Bottio, AIRU Segretario Generale.

3.11.1 Role in the project

AIRU, the Italian Association of District Heating together with the Energy department of Politecnico di Milano University, worked, in parallel with ANCI ER, in supporting local authorities and utilities involved throughout the project with the role of technical support and consultant. Even before the project AIRU has always been the reference for scientific and technical support regarding innovation in DH for utilities. In the SRF project this aspect has extended to local authorities of Emilia Romagna region, also through the strengthening of connection with ANCI ER. Being a technical partner, AIRU had a major role in capacity building, case study analyses and implementation support in WP3 and WP4. In WP2, five subtask-force meetings focusing on technical aspects for utilities have been held into the existing framework of the thematic working group in AIRU - Smartcities Committee. In WP3 capacity building activities, the workshop on technical aspects have been held in AIRU offices. AIRU has also been committed in dissemination at EU and national level besides the usual dissemination work towards members, mainly utilities and technology suppliers. (see SRF website IT version for details).

3.11.2 Main activities and achievements

AIRU has been involved in all WPs, mainly in WP3-WP4. The implication in these two WPs was stronger than planned having hosted 1 of the workshops and having done one additional case study analysis. One of the most successful activities of SmartReFlex project for AIRU has been the analyses of the case studies and support to implementation. These activities, together with workshops, created and strengthen a connection that was very weak at the beginning of the project: connection between district heating technicians, utilities and local authorities. DH was associated with big dense cities, while thanks to this project a contact between the association and lots of small local initiatives has been created and will hopefully continue after the project through ANCI.

Through the synergy with the sister EU project RES H/C spread, after the first joint task force meeting, a strong collaboration for energy mapping has started with ARPAE ER (the regional agency for environment and energy) which resulted in the industrial waste heat potential mapping case study in Milano. For what concerns activities in WP3, AIRU and Politecnico di Milano have been actively involved in workshops, in their management, and in definition of contents together with Danish partners. Workshops activities have been really successful, with strong participation and interest by the audience and good involvement of the stakeholders engaged in case studies, in particular local authorities and utilities. Some of them “become” case study subject by showing interests in the task force meetings (Mirandola, Monchio delle Corti), others showed an interest and joined the project during capacity building activities, such as Monte San Pietro and Maccaretolo. A replication of WP3 on financial aspects has been held in ANCI ER and a replication of WP 2 in AIRU is planned in summer 2017.

Another good results of WP3 activities is that the Italian Regulatory Authority for Electricity, Gas and Water (AEEGSI) attended 3 SRF workshops out of 4. During one of them, its representative, Marcella Pavan, presented their current activities on DH. The AEEGSI was recently given some specific tasks for regulating the DH sector, so the participation of AEEGSI in the workshops has been really important and created the base for future collaboration, which is particularly crucial considering the fact that it is not yet clear what exactly, and how, AEEGSI will regulate the DH sector.

During WP2 task force meetings and WP3 capacity buildings, interests showed up and case studies started. AIRU with scientific support of Politecnico di Milano had major role in WP3 and WP4 in calculation and analyses of case studies and support of municipalities involved in the implementation phase. AIRU was responsible of 5 out of six case studies analysed while ANCI ER was involved in Emilia Romagna Energy plan (case n1). SmartReFlex had an important impact on the new Energy Plan of Emilia Romagna. Thanks to capacity building and dissemination activities an additional case study was developed in a different region: industrial waste heat recovery mapping in Milano (case n2). So in total 6 case studies have been carried out instead of the 5 foreseen by the project representing a significant range of networks types and contexts that can be used as a reference for further replication in and outside the region.

<i>Energy planning</i>	1 Emilia Romagna Regional Energy Planning	Regional energy planning update Mapping for future DH project
	2 Milano-Cassano industrial heat recovery	
<i>DH projects</i>	3 Mirandola	RES integration in Existing DHC
	4 Monchio delle Corti	
	5 Monte San Pietro	New DH based on RES feasibility
	6 Maccaretolo	

The case study of Milano Cassano is a great example of how to assess the potential of DH development. It involved the local utility of Milano A2A and the Region of Lombardia, and it's effectively a replication activity undertaken outside of our target region within the timeframe of the project. The region will use SRF case study analyses as one of the documents in the decisional process of approving the extension of the actual DH network of Milano. The involvement of Lombardia region in RES DH and energy planning has been very high: as important result, 2 representatives of Lombardia Region came together with AIRU at SRF final meeting and visit tour in Denmark, Kolding, in November 2016. Some important results have been obtained also in WP4, in implementation phase of case studies. Mirandola utility had the DH extension approved by local authority and particular support has been given by AIRU for solar thermal integration and issues with local authority regarding land use. Monchio delle Corti feasibility study document has been used by local authority as the base project thanks to which they are now running for public funding to implement the network extension project. Furthermore, Monchio delle Corti's involvement in SRF project led to including its existing DH plant in AIRU national DH inventory ("Annuario AIRU") (www.airu.it/annuario-2016/) and it will be monitored every year. So it can be stated that among all the case studies, 4 out of 6 have started a concrete process through implementation.

Finally, several dissemination activities have been carried out by AIRU. From an international point of view, SRF results have been presented at the SDH conference 2016 in Billund, at the SSPCR 2015 in Bolzano and online in the ISES webinar on January 25th 2017.

At national level, SRF results have been presented at two important national events, Ecomondo Rimini 2015 and VIII Conferenza nazionale sull'efficienza energetica 2016. Project Newsletter has been disseminated through AIRU members mailing list, and two articles on important online energy magazine has been published (qualenergia.it). Evidence of all these results can be found in SRF results webpage ([Italian version](#)).

Besides the support to municipalities directly involved in the case studies, during workshops and thanks to dissemination activities, others municipalities asked for information throughout the project and support has been given, even if in minor depth, to Cremona (potential for RES in city DH where Waste to Energy plant giving 80% of the heat is going to be dismissed in 2025), Modena (Heat recovery in new DH from an existing Waste to Energy plant)

3.11.3 Assessment of individual performance

Having AIRU the purpose to promote research and innovation among district heat providers and technology suppliers, AIRU major role in the project has been in WP3 and WP4, and secondary in dissemination activities. AIRU has worked in parallel with ANCI ER in WP2 activities acting as a technical support in two principal ways: giving information and evaluation tools resulting from case studies analyses to support local authorities, as stated in Regional strategy; and taking advantage of the existing AIRU working group, "SmartCities committee", as framework for subtask force meetings to deal with technical aspects of RES DHC.

Case study analyses has been the most intense activity, considering also that 6 case studies instead of 5 have been realised. During mapping of industrial waste heat potential in Milano (case n.2), AIRU was actively involved in the regional work table to assess the sustainability of a new DH project in Milano_Cassano, so much involved to be able to bring two regional representatives at SRF final event in Denmark to see really successful DH projects. For what concerns the case studies about pilot projects, the two dealing with extensions of existing DH are one the way of implementation. In particular, Mirandola has already received the local authority authorization for the extension and for the land use for the solar thermal installation thanks to AIRU support; Monchio delle Corti municipality received a concrete help from AIRU to improve the management of the existing system and they will use the analyses made by SRF partner about DH extension to participate at call for public financing for plant project in rural areas as soon as the call opens.

The analyses of the two projects about new DH initiatives has been less successful: in Monte San Pietro case study, location and the technologies proposed by a local energy manager to the municipality are not suitable for the size of the project the municipality was thinking about and bigger projects are out of the budget. Maccaretolo on the other side was at a too early stage to be able to fluidly continue the project.

At the beginning of the project, there was not big confidence renewable energy sources others than biomass. A success factor is that the case studies have integrated different alternative energy sources, from waste heat to solar and geothermal and show their feasibility. These technologies are even mentioned in the new [Emilia Romagna Energy plan](#).

With regard to taskforces, it can be stated that the decision to create sub-taskforces and divide the work according to themes (in order to better reach target groups), rather than working with one large taskforce, created a series of fragmented events, preventing different stakeholder typologies from sharing knowledge and opinions. Nevertheless, working with sub-taskforces enabled exploiting existing successful working groups in ANCI and AIRU and disseminate SRF results effectively. For what concerns AIRU activities, five committee meetings have been held throughout the project focusing on use of solar thermal and biomass in DH systems, industrial waste heat recovery in DH, mapping, solar and biomass in rural district heating systems, geothermal energy and heat pumps in small networks.

Capacity building activities received more interest than foreseen, showing that DH is a solution that several local authorities are considering for their municipalities. AIRU had a deeper involvement in WS 2, the technical one, which was organized by AIRU instead of ANCI ER. This choice was motivated by the fact that AIRU is already a reference for technical aspects of DH: Italian workshops have been organized in different places by different partners in order to better reach the project target groups. In addition to that, in a moment in which the National Regulatory Authority for Electricity, Gas and Water (AEEGSI) has to create a regulation for DH, their involvement in the projects has been really important.

3.11.4 Sustainability of the action after the end of the project

As mentioned above, this project started a connection between DH technical world and local authorities that will continue after the project. SRF contributed to making DH in Italy an option not just for big dense cities, but also for villages, following local initiatives. AIRU and ANCI ER will continue to collaborate to pinpoint the small DH networks of the region (existing and new ones) to include them in AIRU annual report. This inclusion will allow AIRU to monitor their annual consumptions and performances.

AIRU will continue to support stakeholders involved in case studies in their implementation phase and will have the same approach for new interested local authorities that may come in the future:

- For new networks (i.e. Maccaretolo and Monte San Pietro) AIRU will commit to facilitate the connection with its local member (utilities) that could be interested in investing in the project.
- For network extensions (Monchio delle Corti), AIRU still continues its support in optimizing the network and monitoring consumption in its annual report.

The interest of local authorities towards RES others than biomass is foreseen to increase because pollution-protection legislation about biomass burning in plane areas will be stricter in the Region. AIRU will continue its support to ANCI towards local authorities after the end of the project.

Dissemination activities in SmartCities committee will continue, new subtask committee about geothermal energy, heat pumps and optimization of user substation toward lower temperature have already been planned. AIRU is also evaluating the elaboration of a methodology to assess cost/benefit of new DH network to support Municipalities to elaborate the “Municipal plan for the development of DHC” (D.lgs. 28/2011 art. 22).

Dissemination of results at international level is foreseen: participation at International Conference on “Smart and Sustainable Planning for Cities and Regions – [SSPCR 22-24 March 2017](#)” in Bolzano has been confirmed with a presentation of case study. Proceedings will be published in Springer. A paper in International scientific journal is in preparation to describe mapping activity done for Milano case study.

3.11.5 Review of resources

Staff resources

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP 1 - Management	Calderoni	35	3 Project meetings
	Denarie	72	6 Project meetings
	Fontana	12	Project management and reports
WP 2 - Improving the regional framework			
Task 2.1 Survey on framework	Mazzarella	80	Support in regional strategy elaboration
	Fontana	43	Translation and review of D 2.4
Task 2.2 Strategy definition	Denarie	4	Sub task force meetings
WP 3 - Capacity building for stakeholders	Motta	4	Review of deliverables
Task 3.1-2-3-4 Workshops	Calderoni	61	Workshops
	Denarie	47	Workshops/case study analysis
	Fontana	60	Workshops
Task 3.5 Case studies	Mazzarella	184	Case study scientific support
	Bottio	25	Case study
WP 4 - Initiating 100% RES DHC and supporting implementation	Motta	4	Review of deliverables
Task 4.1 Development of policy and institutional frameworks	Calderoni	39	Case study on planning
	Denarie	13	Case study analyses
	Fontana	30	Contribution to case study
	De Lorenzi	10	Contribution to case study
Task 4.2 Implementation of projects	Mazzarella	162	Case study analyses, report
	Bottio	25	Contribution to case study
WP 5: Dissemination and replication	Motta	8	Review/ participation event
	Mazzarella	87	Review and contributions to articles
	Calderoni	3	Articles contribution
	Denarie	54	Events/articles
	Bottio	12	Newsletter
	Fontana	25	Newsletter/website
	De Lorenzi	10	Newsletter/website

Total		1109	
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The final deviations, in which staff costs too are involved, refers to the exceed number of hours spent on the project. These additional hours, that result in Workshops and Dissemination, were necessary because Smart ReFlex project had a positive influence on some Municipalities choices about energy investments.

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Other specific cost	Kick off meeting Roma	1200	554,00	Saved money on dining and train tickets.
Other specific costs	Project meeting I Barcellona	600	472,80	Saved money on dining.
Other specific costs	Project meeting II Kerry	600	1076,49	Two people joined the project meeting instead of one.
Other specific costs	Project meeting III Stoccarda	600	386,79	Found super-economy flight and saved money on dining.
Other specific costs	Project meeting IV Cloughjiordan	600	390,06	Stayed in a Hostel and saved money on dining.
Other specific costs	Project meeting V Kolding		702,87	Expensive night accommodations.
Other Specific Costs	Dissemination		951,95	Participation to SDHPlus conference in Billund and to conference in Rome to disseminate the results of smart ReFlex project
Other Specific Costs	Workshops		1224,40	Participation and organisation.

Travel costs

Please, see other specific costs. The Other Specific Costs, reported in AIRU financial statement, correspond to POLIMI Staff travel costs.

Report on budget shifts

No budget shifts reported.

See Overview Tables for budget shift among partners.

3.12 CB12: Ministry of Energy, Agriculture, the Environment and Rural Areas Schleswig-Holstein (MELUR)

Author(s): Anna Rohwer

3.12.1 Role in the project

MELUR is project partner for the most northern region in Germany “Schleswig-Holstein”. With a total area of 15.700 km² and a population of 2.8 million people the federal state is dominated by rural areas. In Schleswig-Holstein the climate conditions and the landscapes are similar to the neighbouring country Denmark. There are significant differences in the legal and economic framework in both regions, but never the less MELUR wanted to learn more about how to organize more district heating grids and more renewable energies in the heating sector.

3.12.2 Main activities and achievements

WP 1 “Management”

MELUR was participating in the project meetings and web meetings.

WP 2 “Improving the regional framework”

In Germany the Hamburg Institute elaborated the survey document ‘The Legal Framework for Renewable District Heating in Germany’.

Within this document the legal framework in Germany as well as in particular in Schleswig-Holstein and in Baden-Württemberg has been analyzed. The German version of the document has been elaborate within the project SolnetBW (www.solnetbw.de) financed by the state of Baden-Württemberg.

MELUR tried to build a task force with the regional housing industry. There have been four task force meetings, but in the end it was not possible to agree on concrete common goals and to figure out a common strategy. But even without an agreement the task force meetings lead to a very good basis for further common activities with some of the representatives of the housing industry.

WP 3 “Capacity building for stakeholders”

In Schleswig-Holstein there have been 4 regional workshops. The fourth workshop about district heating for the financial institutions was necessary, because the participants in the first three workshops often complained about problems to find a financing partner.

Timeline of the workshops:

- Workshop 1 (design and planning): 23. February 2016 at BNUR in Flintbek
- Workshop 2 (technical): 28. / 29. April 2016 at the Wissenschaftszentrum Kiel
- Workshop 3 (organization and financing): 18. Mai 2016 at BNUR in Flintbek

- Workshop 4 (district heating for financing institutions): 16. September at “Dreiklang” in Kaltenkirchen

The workshops were very successful, with a total of over 100 participants. These gave over all a very positive feedback. The workshops were important for networking and establishing contacts with the Danish project partners. The process to more renewable energies in the heating sector in Denmark was explained and differences to the German framework have been pointed out.

The workshops have been organized with Hamburg Institut and the regional energy agency, which is operating the regional energy and climate protection initiative (“EKI”) to support municipalities in Schleswig-Holstein. The forth Workshop has been paid for by the energy agency within EKI.

WP 4 “Initiating 100% RES DHC and supporting implementation”

The case studies in Schleswig-Holstein have been mainly prepared and calculated by the Hamburg Institut. MELUR supported the activities with a letter of support. In Schleswig-Holstein two promising case studies have been found. In one of them the topic was the use of waste heat in the other one a big solar thermal plant could possibly integrated into an existing district heating grid.

WP 5 “Dissemination and replication”

There have been presentations about SmartReFlex, for example on the fairy “New Energy”. Within the participants of the Workshops in Work package 3 there has been done an evaluation about the success of SmartReFlex.

3.12.3 Assessment of individual performance

We failed to implement a regional task force in form of the “covenant of heat transition” with the housing industry. But we prepared the ground for common activities in the future.

The SmartReFlex workshops have been a success. The knowledge about renewable energies in district heating has increased in the region and the participants get to know other experts and could share their experience.

Two case studies showed promising results and could probably be the basis for new renewable energy plants in district heating grids in the region.

3.12.4 Sustainability of the action after the end of the project

The regional energy- and climate protection initiative (EKI) will work at least until 2020 to offer municipalities help within the energy transition and climate protection. EKI is financed by MELUR. Till the end of 2016 there have been already more than 70 initial consultancies in Schleswig-Holstein.

The goal is to help building new district heating grids and to integrate more renewable energies into district heating. We had the SmartReFlex Workshops together with EKI, so we spread the knowledge about renewables in district heating, which is a good basis for the further work.

3.12.5 Review of resources

Staff resources

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP 1 – “Management”	Anna Rohwer	55	Preparing and participating the project meetings Consultation about focus of the project
	Bernd Maier-Staud	2	
WP 2 - “Improving the regional framework”	Anna Rohwer	91	Preparing and organisation of Task Force meeting Participating in Task Force Meetings
	Bernd Maier-Staud	23	
WP 3 “Capacity building for stakeholders”	Anna Rohwer	149	Preparing and organisation of Workshops Consultation about focus of the workshops
	Bernd Maier-Staud	14	
WP 4 “Initiating 100% RES DHC and supporting implementation”	Anna Rohwer	96	Supporting the work for the case studies Consultation about the goals of the case studies
	Bernd Maier-Staud	6	
WP 5 “Dissemination and replication”	Anna Rohwer	20	Presentations about SmartReFlex and evaluation of the workshops Exchange about status
	Bernd Maier-Staud	2	
Total		458	

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending
Other specific costs	7.200 €	7.200 €	3.338,67 €	Because of the possibility to prepare the workshops with BNUR (regional education centre) there have been low costs for meeting rooms and organisation of the workshops. The 4 Workshop has been paid by the cooperation partner energy agency in the name of EKI.

Travel costs

Travel costs are lower than expected. One reason is that MELUR did not participate in the third and fifth project meeting. Hamburg Institut took care of showing the status / results in Schleswig-Holstein with prepared presentations from MELUR.

The other reason is, that for the project meetings in Stuttgart (Germany) and Kolding (Denmark) the costs for the transport could be saved because of using internal resources (staff car and special business agreements for using the train).

Report on budget shifts

There has been a budget shift of 20 percent (140 hours) to Hamburg Institut. For the calculation of the amount of the shifted budget the hourly staff costs from Anna Rohwer in 2016 have been used. These are hourly costs from 48,74 €/h, the total budget shift is $140 \text{ h} * 48,74 \text{ €/h} = 6.823,60 \text{ €}$.

Motivation from February 2016:

“The project partners MELUR and Hamburg Institut closely cooperate to implement the work programme for the region of Schleswig-Holstein. MELUR has offered Hamburg Institute to shift 140 hours from its budget to Hamburg Institut in order to have sufficient work capacities available in the upcoming months for the remaining work programme in Schleswig-Holstein, particularly in **work package 3**.

So far, in framework of work package 3 the project partners MELUR and Hamburg Institute have been – among various activities at the community level – working on the preparation of the workshops and the case studies. This included a criteria development, regional screening and a selection of suitable communities for the case studies and an involvement of stakeholders in the potential cases. Hamburg Institute has developed a tool for a structured screening of the region to identify suitable areas to implement RES DH.

In the next few weeks and months, the remaining work of WP 3 has to be implemented in an intensive process, particularly the workshops and the case studies. In both German regions (Baden-Württemberg and Schleswig-Holstein) there will be two to three case studies developed. Two sites for case studies with a high potential for a development of RES DH in Schleswig-Holstein have been identified by Hamburg Institut. They will be examined more closely in the case studies. For an efficient organization of the work in Schleswig-Holstein between both project partners, Hamburg Institut wants to continue its work on these case studies. Based on the hours already spent for WP 3 and on the available work capacities in the upcoming weeks, it is necessary to shift resources between the two project partners to tackle the remaining tasks with a high quality in a limited time period. MELUR will be able to deliver its remaining contributions to the project with the remaining time budget.”

See Overview Tables for budget shift among partners.

3.13 CB13: Danish District Heating Association

Author(s): Kasper Nagel and Nina Detlefsen

3.13.1 Role in the project

- Provide knowledge on Danish experiences within district heating
- Preparation and participation in project meetings and workshops
- Prepare presentations and conduct of energyPRO workshops
- Contribute to calculation of case studies

3.13.2 Main activities and achievements

The main activities for Danish District Heating Association (DDHA) has been to provide expert knowledge on Danish experiences within district heating.

This has been done by attending project meetings and workshops throughout the project period. During these events DDHA has held several presentations on the organisation of cooperatives of Danish decentralised district heating systems. This was for instance the case in WP3 in both Barcelona, Bologna and Kiel.

In WP4 the DDHA planned a project meeting in Kolding, Denmark which among other included a visit to a Danish district heating plant with solar collectors.

A big part of the contribution from DDHA in WP4 has been on assisting XD Consulting in making a case study on district heating for Tralee town in Kerry County Council.

Also in WP4, DDHA held an energyPRO workshop as part of the final workshop in Dublin, Ireland.

3.13.3 Assessment of individual performance

What went particularly well?

The energyPRO workshop held in Dublin went well even though the amount of time allocated to get familiar with energyPRO was limited. The participants seemed very enthusiastic and curious about the software and some of the participants also managed to make a simulation of an imaginary CHP plant.

What did not go so well?

The case study of Tralee could have included more scenarios and thereby be more detailed.

What would you do different next time?

For future projects the case studies and simulation in energyPRO should be initiated as soon in the process as possible. Collecting information on assumptions, understanding the local framework conditions, design the scenarios, setting up the energyPRO models etc. always end up taking more time than expected.

3.13.4 Sustainability of the action after the end of the project

The participants on the project meetings and workshops in Denmark should have got a first-hand insight in how a CHP plant could look like and how district heating has been implemented in Denmark. This will hopefully to some degree inspire coming district heating projects in Ireland.

The energyPRO workshops held throughout the project period can hopefully work as a good introduction to a software that can be used when planning, simulating and calculating district heating projects.

3.13.5 Review of resources

Staff resources

Task no + name	Involved staff member	Hours spent	Keywords on undertaken activities
WP1 Project management and coordination	Anne Baastrup Holm	2	Project report, Project meetings Quality assurance
	Jesper Koch	7,5	
	Kasper Jessen	32	
	Morten Hofmeister	41	
WP1 – Total		82,5	Budget: 75
WP2 – Total		0	Budget: 34
WP3 – Capacity building for stakeholders	Anne Baastrup Holm	35	Workshops, EnergyPRO modelling
	Birthe Boisen	48	
	Kasper Jessen	85	
	Kim Clausen	2,5	
	Morten Hofmeister	34	
	Nina Detlefsen	1	
WP3 – Total		205,5	Budget: 230
WP4 – Initiating 100 % RES DHC and supporting implementation	Anne Baastrup Holm	1,5	Consultancy to implementation activity, EnergyPRO
	Birthe Boisen	74	
	Christian H Hansen	3	
	Kasper Jessen	187,75	
	Kasper Nagel	285,5	
	Kim Clausen	5	
WP4 – Total		556,75	Budget: 485
WP5 – Dissemination and replication	Anne Baastrup Holm	7	Workshop
	Kasper Jessen	67,5	
WP5 – Total		74,5	Budget: 96
Total for the project		919,25	Budget 920

Subcontracting and other specific costs

Cost category (subcontracting or other specific costs)	Foreseen item according to CPF	Estimated costs [EUR]	Actual incurred costs [EUR]	Reason for over-, under- or not spending

Travel costs

Budget: 7,200.00 €
Actual costs 4.619,93 €

Report on budget shifts

The coordinator suggest to move the amount saved in Travel Costs to Staff Costs, as shown in the Consolidated form.

3.14 CB14: Kerry County Council

Author(s): Sandy McSwiney, Assistant Energy Officer

3.14.1 Role in the project

SmartReFlex aims to increase the deployment of smart district heating and cooling (DHC) systems using a high-share of renewable energy sources (RES) in European urban areas. District Heating (DH) is an established method of increasing energy efficiency, lowering fossil fuel use, and utilising waste heat sources. It has been successfully implemented in many other European countries, particularly in Scandinavia. DH can potentially contribute toward meeting national level targets of energy efficiency and renewable energy in the heating sector in Ireland, but as yet, large scale DH has not taken a foothold in the Irish market.

Kerry County Council has been at the forefront of promoting the development of district heating in Ireland, with its Mitchels Boherbee 1 MW biomass district heating project in Tralee playing an important demonstration role.

Kerry are front runners in the area of DHC in Ireland as the DHC market is very new. The role of Kerry in such a project is key in the development of supporting structures and schemes for other municipalities and DHC stakeholders across the country. The role includes:

- implementation of measures at regional level
- monitoring of the results and suggestions for improvement
- implementation of case studies at local level
- monitoring of the results and suggestions for improvement

The role of Kerry also included capacity building and the dissemination of information regarding DH and the facilitation of education about DH in the region.

3.14.2 Main activities and achievements

Submission of a Strategy to Improve the Support Framework for Smart, Renewable Energy Based District Heating in Ireland, Green Paper on Energy Policy – Response to the DCENR Consultation by Irish members of the European project SmartReFlex. This submission was prepared by XD Sustainable Energy Consulting Ltd., Kerry County Council and Tipperary Energy Agency. This submission focuses on District Heating, and specifically the surrounding policies and regulations needed in order to successfully implement it in Ireland. It recommends a number of measures to improve the technical, social, economic and policy framework for RES-DHC in Ireland, with a strong focus on the regional and local framework which is essential for district heating projects development. It is based on a comprehensive assessment of the barriers and opportunities for district heating here, and a review of best practice for its support in leading EU countries.

Kerry County Council set up a Task Force group and organised several task force meetings to build awareness, knowledge and interest in DH with key stakeholders across the region. This task force group consisted of the large energy user in the region, community representatives, technical experts and member of the local agricultural co-operatives, as well as representative from government departments.

Kerry County Council organised and facilitated a number of workshops on DHC and energy planning to all for optimum knowledge transfer.

Kerry County Council carried out several case studies including:

- a detailed cost benefit analysis of proposed schemes for the larger town in the county
- detailed analysis of the biomass fuel available locally
- analysis of the operation of the existing plant in Tralee and optimisation measures carried out as a result of the analysis
- worked with XD Consulting (also a partner in SmartReFlex) in the development of heat maps for the county with particular focus on the 2 major towns of Tralee and Killarney

Kerry County Council have been, and continue, to work with XD Consulting in relation to incorporating the findings of the case studies and heat mapping exercise into appropriate legal, planning and development policies going forward. This work is ongoing.

Kerry County Council took a very active role in working with the government department in relation to the development of a suitable Renewable Heat Incentive and are partaking in a consultation process in relation to this which is ongoing.

3.14.3 Assessment of individual performance

This was the first European project that Kerry County Council participated in, in relation to DH. The project was deemed as a success locally. It allowed Kerry County Council the platform to develop case studies and strategies that will assist in the achievement of local and national renewable energy targets. The project also allowed the opportunity to develop a partnership with European neighbours and learn from the DHC experts from Denmark

The project identified improvements in the operation of the existing DH plant in Tralee, which were implemented and significant efficiencies achieved as a result.

Kerry County Council's involvement lead to the development of detailed financial and technical feasibility studies for the potential development of large DHC project in Killarney and Tralee which proved financially viable with the introduction of a suitable Renewable Heat Incentive.

The recession and in particular the lack of a functional bank in Ireland made it very difficult to make any significant progress in getting project developed beyond feasibility during the life time of this project. However, the feasibility studies completed and heat maps developed mean that Kerry is in very strong position for implementing DHC when financial conditions improve.

3.14.4 Sustainability of the action after the end of the project

Kerry County Council are committed to achieving the 2020 targets set nationally and reduction of fossil fuel consumption. Given that there is currently no natural gas network in Kerry and the local availability of biomass means that the potential for future development of DHC is a very real prospect.

Case studies completed as part of this project, as mentioned above, have proved that the development of DHC the larger towns is economically and financially viable with the introduction of a suitable Renewable Heat Incentive. Consultation is currently underway between the relevant government

department and key parties, including Kerry County Council and the other SmartReFlex partners, in the development of such an incentive. It is expected to be announced in the coming year.

3.14.5 Review of resources

There was a larger staff resource requirement to deliver the project than originally anticipated.

Staff resources

Task n° + name	Involved staff member	Hours spent	Keywords on undertaken activities
Workpackage 1: Management	Tom Sheehy, Tim McSwiney, Adam Stack, Sandy McSwiney	2.8 hours 12 hours 55.75 hours 5.7 hours	Project meeting etc.
Workpackage 2: Improving the regional framework	Tom Sheehy, Tim McSwiney, Adam Stack, Sandy McSwiney	8.5 hours 15.25 hours 63 hours 5.93 hours	Development and improvement to regional frame work for Ireland, Task force meetings etc.
Workpackage 3: Capacity Building for stakeholders	Tom Sheehy, Tim McSwiney, Adam Stack, Sandy McSwiney	1.82 hours 17 hours 21 hours 15.16 hours	Case Studies Arrangement of workshops
Workpackage 4: Initiating 100% RES DHC and supporting implementation	Tom Sheehy, Tim McSwiney, Adam Stack, Sandy McSwiney	3.88 hours 22 hours 45.2 hours 15.39 hours	Attendance at DH workshops Analysis and optimisation of existing Tralee DH plant
Workpackage 5: Dissemination and replication	Tim McSwiney, Sandy McSwiney	8 hours 8 hours	Task force meetings, Dissemination of material on SmartReFlex Tours of existing Dh plant in Tralee
Total		326	

Subcontracting and other specific costs

The original budget for the category of subcontracting and other specific cost was higher than what was actually spent, this was due to a decision by Kerry County Council to do more of this anticipated work with own staffing resources. This would allow for better learning and knowledge transfer to own staff.

Travel costs

Nothing to report on Travel cost

Report on budget shifts

A budget shift of 17.65% was requested from 'other cost' which was underspent to 'staff cost', 'Travel and Subsistence' and 'Indirect Eligible Costs' which was overspent by €3,142.72, €441 and €1886.28 respectively. There was a larger staff resource requirement to deliver the project than originally anticipated.

There was an underspend in 'Other Cost' but and overspend in 'Staff costs', 'Travel and Subsistence' and 'Indirect Eligible Cost' so a budget shift of €5,470 should be made between these allocations. It is within the allowance of a shift of 20% of the overall cost.

4 Consortium management

4.1 The partnership

SmartReFlex was born out of the merging between two different project proposals and, therefore, partnerships. A good number of partners (6 out of 14) had previously worked together in several EU-supported projects and this made communication and working together very easy.

Furthermore, the ‘newcomer’ partners, basically from Ireland and Spain, showed from the very beginning a strong commitment towards the topic of RES DHC and, therefore, their integration into the ‘core group’ of the consortium was really smooth. From this point of view, also the decision to assign the leadership of WP4 to one of the ‘newcomers’ (XD Consulting) was crucial.

A final comment is on the very active role played and commitment showed by the partners representing Regional Authorities which, unfortunately, is not always the case in EU-supported projects.

4.2 The management structure

The project management structure was based on two main bodies: The project committee, formed by WP leaders, and the national teams, constituted by consultancy companies and/or DH associations and representatives of Local and Regional Authorities. The project committee has been ‘used’ less than expected because no major barriers took place in the project development and, therefore, main decisions could be taken in the plenary session in the project meetings, thus giving to all partners the opportunity to participate and provide their opinion.

The project did not foresee any additional committee or group because there were already task forces (stakeholder groups) which have been operating in all participating regions through the whole project period.

4.3 Project meetings

A total of 6 meetings, as foreseen in Annex I, were held during the project period. In all cases, there was a very wide participation with just one possible partner missing because of a last minute inconvenience. Meetings were held in all 4 participating countries (2 in Ireland, 1 per involved Region) plus the final one in Denmark because this meeting was combined with a guided tour to two renewable DH plants.

Project meetings were very useful for discussing and agree on solutions for both bureaucratic issues and technical points of project development. As explained in clause 4.5, also agreements on the format and content of deliverables to be developed were always reached thanks to the project meeting.

Furthermore, they were also the main platform to allow the European level exchange among partners (see following clause).

Ideally, however, the bureaucratic issues should be tackled with before (maybe through specific web meetings or bilateral call), since meetings are too good an opportunity for partners to meet and exchange practical experiences of their work.

4.4 European exchange activities

The mutual exchange between different country experiences was done mainly in project meetings by using the WP2, WP3 and WP4 sessions.

By allowing all regions to present there their activities on the creation and management of the task force, on the planning and performing of the capacity building workshops and, more on the technical side, on the peculiarities of case studies, mutual transfer of tips and ideas was really helpful to reinforce partners' activities.

The exchange with other EU projects, then, was particularly intense and effective as already reported in details in one of the success stories in paragraph 1.3 and also in paragraph 2.6.

4.5 Quality control

The concept and table of contents of the main project deliverables has always been discussed during project meetings, thus giving the opportunity to all partners for having a say on that. The usual procedure was the following: The responsible partner for a specific deliverable (usually the WP leader) drafted a template and sent it by email to all partners some days before the meeting, then the WP session in the meeting was used to receive feedback and agree on the changes. The final version was then sent to all partners some days after the meeting.

Depending on the WP leader will, also the shared Dropbox project folder (see next clause) was used as a common tool to directly work on the documents. For instance, WP3 deliverables have been developed mainly by working on Dropbox.

The use of such shared tools (e.g. Dropbox or Google docs), if compatible with privacy issues, could be a good solution for making shared work on the deliverables much easier for all partners.

4.6 Project website

- **Internal use:** The project website was not used for internal communication since the cost of a dedicated private area was too high; Instead a shared Dropbox folder was used by the partners to exchange documents and ideas. This option proved to be very effective also to work on the drafts directly on Dropbox.
- **Resources:** About 9,000 Euros were used by AGFW to subcontract a IT company for designing, programming and maintaining the website. Details of single payments and motivations are reported in the AGFW financial statement.
- **Website maintenance:** The website will be maintained by AGFW, supported by AMBIT, especially updating the news section in connection to the SmartReFlex LinkedIn group, the SDHp2m project and other initiatives related to RES DHC.

4.7 Contact with the EASME

Communication with EASME has always run very smooth during the project period. Technical and financial doubts and questions asked by the partners through the coordinator have always been answered quickly.

After the official assessment of the report, a phone call with the Project Officer really helped to better understand the evaluation and the project bottle-necks.

When the Project Officer changed (in the last months of the project), a web call between the coordinator and the new Officer was held in order to show and check the project status.

Furthermore, as reported above, EASME was very active in promoting and encouraging the exchange of experiences and the synergies among IEE and Horizon 2020 projects focusing on the same topic.

4.8 Amendments to the grant agreement

The small changes made in the project work plan, reported above in the specific WP sections, did not need any official contract amendment but only a communication to the EASME through the project reports.

4.9 Suggestions for improvements

Maybe a better balance could be found in the supervision role of the Project Officer in this kind of projects: Reducing his/her desk and paper work, allowing instead more time and resources for traveling to project meetings and events would mean a better understanding of the project by EASME, of its capacity to reach the target groups with effective measures and of its weaknesses as well.

5 Overview tables

Budget shift

Beside the individual internal budget shifts, with the final budget consolidated, the coordinator proposes some budget shifts among partners in order to cover the increase of expenditures on Travel, Sub-contracting and Other costs.

SMARTREFLEX

Final budget shift among partners

	<i>contractual budget</i>	FROM					total	TO					total	<i>final budget</i>	
		<i>staff</i>	<i>ext.ass.</i>	<i>travel</i>	<i>other</i>	<i>indirect</i>		<i>staff</i>	<i>ext.ass.</i>	<i>travel</i>	<i>other</i>	<i>indirect</i>			
AMBIT	168.360,00													168.360,00	
SFZ	113.664,00								600,00	1.980,00			2.580,00	116.244,00	
ANCIER	100.921,00	- 1.218,00				- 732,00	- 1.950,00							- 98.971,00	
HAMBURG INSTITUTE * from Melur	127.120,00							5.397,00			2.389,00	- 107,00	3.238,00	10.917,00	138.037,00
AGFW	120.068,00													120.068,00	
XD CONSULTING	118.216,00													118.216,00	
TEA	70.289,00								2.570,00	3.651,00			6.221,00	76.510,00	
PLANENERGI	130.806,00								4.102,00				4.102,00	134.908,00	
IREC	69.176,00													69.176,00	
INCASOL	143.181,00													143.181,00	
AIRU	75.120,00								2.100,00				2.100,00	77.220,00	
MELUR * to Hamburg Institute	65.740,00	- 6.824,00				- 4.093,00	- 10.917,00							-	41.770,00
MELUR final		- 3.777,00		- 3.150,00	- 3.860,00	- 2.266,00	- 13.053,00							-	
DDHA	87.440,00													87.440,00	
KCC	30.992,00													30.992,00	
	1.421.093,00	- 11.819,00	-	- 3.150,00	- 3.860,00	- 7.091,00	- 25.920,00	5.397,00	-	11.761,00	5.524,00	3.238,00	25.920,00	1.421.093,00	

* The budget shift between MELUR and HAMBURG INSTITUTE has been agreed during the project and was related to 140 hours of activities for WP3 and WP4

Table 1: Updated list of submitted deliverables of the action

Del. N° ¹	WP N° ¹	Deliverable name ¹	Available format(s)	Available language(s)	Initial submission with: ² (PR1, IR, PR2)	Actual month of completion	Available on project website? ³ (yes, no)	Hard copy with FR (yes/no)	Information on deviation to Annex I ⁴
D1.1	1	Meeting reports	Electronic	EN	PR1, IR, PR2, FR	Apr 2014, Oct 2014, Mar 2015, Oct 2015, Apr 2016, Dec 2016	No	No	
D1.2	1	Online workspace	Electronic	Not applicable	IR	Oct 2014	No	No	Dropbox was used instead of an internal workspace on project website
D2.1	2	Regional strategy recommendations on legislative and market opportunities	Electronic	DE, IT, ES, EN, summaries in EN	IR	Nov 2014	Yes	No	
D2.2	2	Summary report on legislative and market opportunities	Electronic	DE, IT, ES, EN	IR	Nov 2014	Yes	No	
D2.3	2	Country summary reports on the task forces activities	Electronic	EN	IR	Nov 2014	No	No	
D2.4	2	Recommendations for market Introduction to regional authorities	Electronic, printed	EN	IR	Nov 2014	Yes	Yes	
D3.1	3	Four country reports on capacity building seminars	Electronic	EN	PR2	May 2016	No	No	
D3.2	3	Summary report on outcomes of the capacity building	Electronic	EN	FR	September 2016	Yes	No	
D3.3	3	Report on case studies	---	---	---	---	---	---	D3.3 was merged with D4.2, as reported in the 2 nd Progress Report
D4.1	4	Four country progress reports on tasks 4.1 and 4.2	Electronic	EN	PR2	May 2016	No	No	
D4.2	4	Four country reports and EN summary report on case studies and RES DHC projects including lessons learned	Electronic	DE, IT, ES, EN, summary report in EN	FR	September 2016	Yes	No	
D5.1	5	Communication plan	Electronic	EN	FR	Every 6	No	No	

						months, starting month 6			
D5.2	5	Website	Electronic	DE, IT, ES, EN	PR1	Month 4	Yes	No	
D5.3	5	Leaflet	Electronic, printed	DE, IT, ES, EN	IR, PR2	Month 4, Update 28	Yes	No	
D5.4	5	Brochure	Electronic, printed	EN	FR	Month 29	Yes	Yes	
D5.5	5	E-newsletters	Electronic	EN	IR, PR2, FR	Every 4 months, starting month 4	Yes	No	
D5.6	5	Report on dissemination activities	Electronic	EN	IR, PR2	Month 9, 18, 27, 36	No	No	
D5.7	5	Monitoring report on the communication impact	Electronic	EN	FR	Every 4 months, starting month 4	No	No	
D6.1	WP6	Set of updated IEE Common Performance indicators including their baseline and assumptions for extrapolation	Electronic	EN	IR	Nov 2014	No	No	

¹ This information must be identical with your List of Deliverables in Annex I of your grant agreement. If additional deliverables were produced indicate "new" next to the deliverable name. If a deliverable was renamed, please indicate the old and the final title in this overview to facilitate its identification.

² Indicate the relevant report (PR1, IR or PR2). Note that deliverables indicated as CO (= confidential) must also be submitted to the EACI in order to be able to assess the effort related to the activities/deliverable(s).

³ All key deliverables with public dissemination level (PU) should be available for public download in all available language versions. Deliverables uploaded at an internal website area are not considered as being uploaded for public download. As general rule deliverables should be available for download without requiring registration or similar actions.

⁴ Explain any kind of deviation, e.g. format, length, language(s) etc.

Table 2: Updated excel table of hours per partner and work package

WP	Achievement	Total	Ambiente Italia	SOLITES	ANCI ER	Hamburg Institute	AGFW	XD Consulting
WP 1	Actual	2653	810	175	132	115	313	150
	Planned	2244	700	150	100	100	150	150
WP 2	Actual	2716	240	534	261	191	157	225
	Planned	2407	225	410	180	175	135	225
WP 3	Actual	5106	320	277	480	448	351	166
	Planned	4573	290	300	350	300	310	320
WP 4	Actual	4951	384	356	472	327	340	641
	Planned	4777	340	390	400	370	270	520
WP 5	Actual	2487	268	154	196	150	588	170
	Planned	2432	200	140	190	140	480	170
WP 6	Actual	93	93	0	0	0	0	0
	Planned	70	70	0	0	0	0	0
Total	Actual	18006	2115	1496	1541	1231	1749	1352
	Planned	16503	1825	1390	1220	1085	1345	1385

WP	Achievement	TEA	PlanEnergi	IREC	INCASOL	AIRU	MELUR	DDHA	KCC
WP 1	Actual	173	196	96	159	119	57	82	76
	Planned	177	150	100	152	100	75	100	40
WP 2	Actual	160	38	331	245	127	114	0	93
	Planned	182	50	310	200	105	110	40	60
WP 3	Actual	266	1129	484	380	381	163	206	55
	Planned	333	705	390	370	350	195	330	30
WP 4	Actual	323	96	549	435	283	102	557	86
	Planned	337	320	450	430	270	260	270	150
WP 5	Actual	149	26	275	200	199	22	74	16
	Planned	182	120	200	190	180	60	180	0
WP 6	Actual	0	0	0	0	0	0	0	0
	Planned	0	0	0	0	0	0	0	0
Total	Actual	1071	1485	1735	1419	1109	458	919	326
	Planned	1211	1345	1450	1342	1005	700	920	280

Table 3: List of contact persons after end of the action

Participant N°	Participant Short name	Family name, first name of contact person	Telephone N°	E-mail	Updated since last report (yes/no)
1	AMBIT	Battisti, Riccardo	+39 02277441	riccardo.battisti@ambienteitalia.it	N
2	StT	Pauschinger, Thomas	+49 711 67320000	pauschinger@solites.de	N
3	ANCI ER	Rossi, Alessandro	+39 051 6338911	alessandro.rossi@anci.emilia-romagna.it	N
4	Hamburg Institute	Maass, Christian	+49 (0)40-39106989-0	maass@hamburg-institut.com	N
5	AGFW	Huther, Heiko	+49 69 63041	h.huther@agfw.de	N
6	XD Consulting	Dubuisson, Xavier	+353 (0)86 0476124	xavier@xdconsulting.eu	N
7	TEA	Kenny, Paul	+353 52 744 3090	paul@tippenergy.ie	N
8	PlanEnergi	Soerensen, Per Alex	+45 9682 0400	pas@planenergi.dk	Y
9	IREC	Salom, Jaume	+34 933 56 26 15	jsalom@irec.cat	N
10	INCASOL	Estrada, Joan	+34 932 28 60 00	j_estrada@gencat.cat	N
11	AIRU	Bottio, Ilaria	+39 02.45.41.21.18	segreteria.generale@airu.it	N
12	MELUR	Rohwer, Anna	+49 0431 988-0	Anna.Rohwer@melur.landsh.de	N
13	DDHA	Koch, Jesper	+45 76 30 80 00	jko@danskfjernvarme.dk	N
14	KCC	McSwiney, Sandy	+353 066 7183500	Sandy.McSwiney@kerrycoco.ie	Y