

D4.2 Intervention Monitoring Plan

The operational plan for implementation

Report No. ENCHANT Deliverable D4.2 // Date: 25/08/2021



Source: Pixabay

Mehmet Efe Biresselioglu, Muhittin Hakan Demir, Berfu Solak



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 957115.

ENCHANT Report

Intervention Monitoring Plan

VERSION: 02 // DATE: 27.08.2021

AUTHOR(S)

Mehmet Efe Biresselioglu¹, Muhittin Hakan Demir¹, Berfu Solak¹

Quality ensurance: Christian Klöckner², Giuseppe Carrus³, Jens Røyrvik⁴

PROJECT NO.: 957115 (H2020) // PAGES/APPENDICES: 106/0

ABSTRACT

The intervention packages for each user-partner were previously designed and reported in ENCHANT Deliverable D2.2 Design of Intervention Matrix and Definition of RCT Research Protocols. For the implementation of the interventions, the guidelines and operational plan were established in Deliverable D4.1 Guidelines and Operational Intervention Plan.

This deliverable provides the methodology and the plan for the systematic monitoring of the interventions. Systematic monitoring of the interventions is crucial for the following reasons: ensuring the establishment of the required coordination between and within the interventions, assessing issues pertaining to the validity of the results and conclusions drawn from the interventions, taking corrective actions where necessary, and ensuring that the data is collected and utilized as intended.

The Intervention Monitoring Plan addresses the steps of Recruitment, Randomization, Pre-intervention data collection, Intervention kick-off, Implementation of the intervention, Post-intervention data collection, and Intervention closure. The monitoring plan tracks the management of ethics requirements and data management, and privacy requirements at each of these steps.

The Intervention Monitoring Plan involves the following tasks: Defining the planned/expected mode of operation, Tracking the implementation, Assessing/Measuring

¹ IUE

² NTNU

³ ROMA3

⁴ NSR



the actual performance, Comparing the actual performance with the expected mode of operation and identifying the differences/deviations, and Determining reasons for differences/deviations from the expected mode of operation and taking actions to restore this mode. Intervention Monitoring is intended to be implemented periodically, with frequencies to be determined by user-partners and the scientific partners involved. Moreover, in case of unforeseen issues in the implementation, further monitoring cycles can be added.

REPORT NO.: D4.2 ISBN: NA

CLASSIFICATION: Public

CLASSIFICATION THIS PAGE: Public



EXECUTIVE SUMMARY

The ENCHANT project aims at achieving changes in the energy-behaviours of European households towards more sustainable energy behaviour. The intervention packages are designed in order to test the impact of parameters in different combinations on behavioural change; the parameters include intervention types, communication channels, and timing. These intervention packages will be tested within real-life settings.

Following the design of the intervention matrix and definition of RCT (Randomized Control Trials) research protocols and the guidelines and operational intervention plan in the earlier deliverables of ENCHANT, this deliverable provides the methodological guidelines and the plan for the systematic monitoring of the interventions. Systematic monitoring of the interventions is significant in that it will contribute to ensuring the following outcomes: the required coordination between and within the interventions is established, assessing issues pertaining to the validity of the results and conclusions drawn from the interventions, taking corrective actions where necessary, and ensuring that the data is collected and utilized as per the intervention designs.

The methodology for the Intervention Monitoring Plan follows the lines of the methodology for process control. This methodology covers a range of process steps that start prior to the intervention implementation and continues until the completion of the intervention. That is, the Intervention Monitoring Plan framework covers process steps from the Pre-intervention, Execution, and Post-intervention phases. These steps are Recruitment, Randomization, Pre-intervention data collection, Intervention kick-off, Implementation of the intervention, Post-intervention data collection, and Intervention closure. Each step includes checks on compliance with ethics requirements, and data management and privacy requirements.

The 6 steps of the Intervention Monitoring Plan are as follows: 1. Defining the planned/expected mode of operation, 2. Tracking the implementation, 3. Assessing/Measuring the actual performance, 4. Comparing the actual performance with the expected mode of operation and identifying the differences/deviations from the expected mode of operation, 5. Determining reasons for differences/deviations from the expected mode of operation and taking actions for restoring the expected mode of operation, and 6. Updating planned/expected mode of operation and repeat steps 2-5 periodically.

The Intervention Monitoring Checklist Template was developed for use during the intervention monitoring process. This template allows for monitoring the process steps, and tracking and recording the results of the monitoring activities. Monitoring Checklist Template is used to record any deviations from the designed mode of operation, along with the identified reasons, and actions to be taken.

The Timeline Gantt Chart is another main tool designed for the Intervention Monitoring Plan. The Timeline Gantt Chart allows for time-phased tracking the progress of the interventions.



It allows visualization of the actual progress of the intervention, the designed progress based on the timeline provided by the user-partners, and the comparison of the actual versus designed progress. This tool is particularly useful for signalling issues in meeting the deadlines set for intervention steps and triggering necessary action. The chart also allows results of corrective actions to be visualised.

The last step of the Intervention Monitoring Plan involves Updating planned/expected mode of operation. The Intervention Monitoring needs to be implemented periodically, following the steps as defined in the methodology of the plan. The frequency for monitoring needs to be decided by the user-partners and the scientific partners involved, through communication with relevant stakeholders, and considering the specifics of the particular implementation. Moreover, in case of unforeseen issues, additional monitoring cycles can be executed.



DOCUMENT HISTORY:

VERSION	DATE	VERSION DESCRIPTION
1	18.08.2021	First version for quality check
2	27.08.2021	Final version delivered to the European Commission



Table of Contents

1.	Introduction and Background	9
2.	Methodology	18
3.	Intervention Monitoring Plan	24
3.1.	Pre-Intervention	24
3.1.1.	Recruitment	24
3.1.2.	Randomization	24
3.1.3.	Pre-intervention Data Collection	24
3.2.	Execution	25
3.2.1.	Intervention kick-off	25
3.2.2.	Implementation of the intervention	25
3.3.	Post-intervention	25
3.3.1.	Post-intervention Data Collection	25
3.3.2.	Intervention Closure	26
4.	User Partners and Interventions	30
4.1.	AUSTRIA	30
4.1.1.	Energie Kompass – 7energy Platform	30
4.1.2.	Energie Kompass - Energy Account App	35
4.2.	GERMANY	40
4.2.1.	Hansgrohe – Pontos	40
4.2.2.	Solar Panel	45
4.2.3.	Waldsee Quartier Street Festival	50
4.2.4.	Landesgartenschau	54
4.3.	ITALY	59
4.3.1.	Ninfa Garden and its Hydroelectric Power Plant	59
4.3.2.	Energia Positiva Cooperative	64
4.4.	NORWAY	69
4.4.1.	Viken Municipality	69
4.4.2.	Norges Naturvernforbund (Nnv)	79
4.5.	ROMANIA	89



4.5.1. Consumers with an Online Account	89
4.5.2. Consumers without an Online Account.....	94
4.6. TURKEY	99
4.6.1. Gediz Electricity	99
4.6.2. Izmir Metropolitan Municipality	105
5. Conclusion.....	110
6. Sources	112



1. Introduction and Background

The interventions of the ENCHANT project are of critical importance regarding the project's aims and objectives. ENCHANT aims at triggering behavioural change, which, in turn is intended to contribute to the utilization of the potential for energy efficiency in the general public. In order to assess the behavioural change potential, planned interventions will be implemented in various geographical, cultural and organizational contexts in Europe, targeting millions of European citizens. ENCHANT employs a Randomized Control Trial (RCT) approach; to this end, the intervention packages are defined by scientific partners and then implemented based on a systematic RCT approach. Implementation of the interventions, on the other hand, will exploit the existing communication channels of the user partners. The interventions will be implemented by three types of user-partners: energy providers, municipalities, and environmental NGOs. These formalized actors will play a key role in implementing the interventions, in real life settings, in their respective target populations, consisting of customers, communities, or groups. The interventions focus on how, and to what extent, energy-related behaviours are transformed through behavioural change. The targeted behaviours include investment behaviour, maintenance behaviour with relation to energy efficiency, and everyday energy saving behaviour.

The intervention matrix and definition of RCT research protocols is elaborated in Deliverable D2.2 (ENCHANT, 2021c). Along with this, the guidelines and operational plan for the interventions are defined in Deliverable 4.1 (ENCHANT, 2021d). This deliverable, as part of WP4, develops the Intervention Monitoring Plan, critical to ensuring the interventions' proper implementation, collection of the required data, and providing the expected results and contributions to ENCHANT's subsequent tasks and work packages.

In what follows, an overview of the fundamental components of the ENCHANT interventions along with the current progress is provided.

The principal objective of ENCHANT is to influence the energy behaviours of European households towards greater sustainability, in particular, with regard to energy efficiency. ENCHANT aims to achieve this in a real-life setting and provide support for policies towards



global sustainability transition. The second objective is to contribute to the know-how in terms of the mapping between interventions and behavioural change. That is, it aims to determine what types of interventions are most successful for which type of behaviour change, which conditions or which communication channels are most suitable for which type of sender for achieving behaviour change. The final main objective of ENCHANT is to utilize the existing knowledge-base for determining the drivers of energy choices and sustainable energy lifestyles in European society, identifying pathways to incorporating these in interventions, and determining methods for replication and upscaling at the level of local, national and European institutions.

There are seven types of interventions within the scope of ENCHANT (ENCHANT, 2021c). These are: 1. Feedback on own consumption, 2. Social norms, 3. Information including simplification, 4. Monetary incentives, 5. Commitment, 6. Competition, and 7. Collective vs. individual framing.

The user-partners will play a key role in the implementation of the interventions. Each user-partner is expected to provide different types of contributions, based on factors such as their organizational structures, roles in the energy system, available communication channels (press, advertising, applications, SMS messages, smart phone apps, and web portals), target populations. There are three categories of user-partners: Energy providers and/or producers (electricity, gas) who take an active role in supplying large customer databases, providing an opportunity to test interventions which are designed to use strategies based on consumption feedback, information, and social norms in relation to individual's and households' energy consumption; Municipalities and governmental energy agencies (centralized or local) will run information campaigns reaching large numbers of citizens, with the aim of developing and testing interventions based on strategies such as information, commitment or competitions, to promote greater sustainability in energy behaviours among the larger public; NGOs in the energy and sustainability sector will take the opportunity to involve specific stakeholders or organized groups in the civil society and the public, in order to develop and test interventions based on strategies such as commitment, information, or social norms for the promotion of a sustainable energy transition and sustainable lifestyles.

The user-partners of ENCHANT are listed in Table 1:



Table 1. User-partners in ENCHANT

User-partner	Category	Country
Energie Kompass	Consultancy	Austria
Badenova (with City of Freiburg, and KPO)	Energy provider (Local government/Municipality, NGO in energy and sustainability sector)	Germany
Energia Positiva	Energy provider	Italy
FONDAZIONE ROFFREDO CAETANI (Fondazione)	NGO in the energy and sustainability sector	Italy
Naturvernforbundet	NGO in the energy and sustainability sector	Norway
Viken County	Local government/Municipality	Norway
Asociatia Centrul pentru Studiul Democratiei (ACSD)	NGO in the energy and sustainability sector	Romania
Cluj-Napoca Municipality	Local government/Municipality	Romania
Electrica Furnizare	Energy provider	Romania
Gediz Energy Company (GDZ)	Energy provider (electricity)	Turkey
Izmir Metropolitan Municipality	Local government/Municipality	Turkey

The interventions are based on bringing about behavioural change in three main types of energy-related behaviours. These behaviours are: Investment behaviour, by encouraging people to invest in energy efficient technology, building upgrades and/or transport (e.g., house renovations, replacing electric appliances with more energy efficient ones); Maintenance behaviour in relation to energy efficiency through promoting household equipment that achieves high energy efficiency (e.g., maintenance of heaters, cars, tires, water heaters, etc. relevant to high energy efficiency); and Everyday energy saving behaviour, via encouraging people to adopt high impact energy behaviour at home and more sustainable mobility behaviour (e.g., reducing heating, cooling, and consumption of hot



water; changing transport mode, increasing the use of trip chaining, co-driving, public transport, e-biking, biking, etc.).

The interventions were designed for each partner and reported in ENCHANT Deliverable D2.2 Design of Intervention Matrix and Definition of RCT Research Protocols and ENCHANT Deliverable D4.1 Guidelines and Operational Intervention Plan, along with type of intervention, targeted behaviour, communication channel, and data collection instrument to be utilized as follows (ENCHANT, 2021c; ENCHANT, 2021d):

Table 2 below shows types of interventions to be implemented that are determined, the targeted behavioural change, communication channel and data collection instruments.

Table 2. Planned Intervention Strategies, Instruments and Design (based on user-partners' involvement)

User-partner	Type of Intervention	Targeted Behaviour	Communication Channel	Data Collection Instrument
Energie Kompass – 7energy platform	<ul style="list-style-type: none"> Information provision 	<ul style="list-style-type: none"> Energy savings behaviour 	Self-reporting of energy consumption/saving through 7energy platform	7energy platform Electricity bills
Energie Kompass – Energy Account App	<ul style="list-style-type: none"> Monetary incentives 	<ul style="list-style-type: none"> Energy savings behaviour 	Energy account app	Energy account app Electricity bills
Badenova - Hansgrohe	<ul style="list-style-type: none"> Information Incentives 	<ul style="list-style-type: none"> Maintenance behaviour Consumption behaviour 	Interview on water and energy consumption habits (questionnaire) Installation of the “Pontos” system Interview after 4-6 weeks on water and energy consumption (questionnaire / interview)	Pre & post survey (interview) Questionnaire



Badenova - Solar Panel (with City of Freiburg and KPO)	<ul style="list-style-type: none"> Information 	<ul style="list-style-type: none"> Energy consumption behaviour Investment behaviour 	Households have to respond to a questionnaire as candidature for the competition (also using channels from City of Freiburg and the NGO KPO) Selection of the winning household (according to technical criteria + person not (previously saving energy on a daily basis) Installation of the solar panel Interview of the person 4-6 weeks after installation of the solar panel	Questionnaire Interview
Energia Positiva	<ul style="list-style-type: none"> Information Feedback Social norms 	<ul style="list-style-type: none"> Energy consumption behaviour Investment behaviour 	Questionnaire on energy consumption/ investment behaviours Measured consumption overall/peak (referring to specific hours)	Questionnaire Self-report Electricity bill
Fondazione (Ninfa Garden and	<ul style="list-style-type: none"> Information Incentives 	<ul style="list-style-type: none"> Investment behaviour 	Questionnaire on energy	Questionnaire Self-report



Hydroelectric Power Plant)		<ul style="list-style-type: none"> Maintenance behaviour 	consumption/saving behaviour and pro-environmental practices Immersive tour to the hydroelectric power plant Informative brochure about hydroelectric power plant	Contribution to charity box for maintenance
Naturvernforbundet and Viken County (Website)	<ul style="list-style-type: none"> Information Feedback Social norms Commitment 	<ul style="list-style-type: none"> Energy savings behaviour 	Self-reported behaviour on energy use behaviour, energy consumption (kW and costs) pre- and post-intervention Information about how the people ended up on the website User behaviour on the website Self-reported energy consumption (kW and costs) pre- and post-intervention Comparison of who checks out the website and who	Website for information, initial survey, and follow-up survey Email (TBD)



			does not (as far as possible)	
Naturvernforbundet and Viken County (Energy upgrades)	<ul style="list-style-type: none"> • Information • Feedback (energy audit) 	<ul style="list-style-type: none"> • Energy savings behaviour • Investment behaviour • Maintenance behaviour 	Self-reported investment and maintenance behaviour Monitoring activities on the web-counselling platforms measuring various activities. Measured and self-reported energy consumption (kW and costs) Changes in energy investment related mind-sets	Website Email Focus groups (TBD)
Electrica (online)	<ul style="list-style-type: none"> • Information including simplification • Feedback on own Consumption • Commitment • Social norms 	<ul style="list-style-type: none"> • Adjustment of everyday behaviours and behaviours in the private sphere 	Questionnaire Self-reported energy consumption/saving behaviour and pro-environmental practices, lifestyles Consumption data including historical data	Questionnaire Self-report
Electrica (offline)	<ul style="list-style-type: none"> • Information including simplification • Feedback on own Consumption • Commitment • Social norms 	Adjustment of everyday behaviours and behaviours in the private sphere <ul style="list-style-type: none"> • 	Questionnaire (optional) Consumption data including historical data Other socio-demographic data owned by the	Questionnaire Consumption data



			company with respect to the specific consumers.	
Gediz Electricity	<ul style="list-style-type: none"> • Information • Feedback • Social norms 	<ul style="list-style-type: none"> • Energy savings behaviour 	Gediz smart phone app	Electricity bill
Izmir Metropolitan Municipality	<ul style="list-style-type: none"> • Information • Social norms 	<ul style="list-style-type: none"> • Energy savings behaviour 	Izmir Metropolitan Municipality's transportation Database - IZULAŞ BizIzmir platform (web-based interactive platform hosted by the Izmir Metropolitan Municipality for information exchange, announcements, surveys etc.)	Survey Self-report through the questionnaire on the BizIzmir platform
ACSD	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A 	N/A	N/A
Cluj Napoca	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • N/A 	N/A	N/A

Upon completion of the ENCAHNT interventions (Work Package 4), there will be an assessment of their impacts, replicability, as well as the limitations involved. The assessment of the KPIs (key performance indicators) will also be addressed during this phase (Work Package 5). Following this step, the barriers and success factors will be identified, in order to determine best practices, and to develop a policy instrument matrix. This matrix will make use of the intervention matrix for establishing a mapping of standardised interventions for



behavioural change. During the final phase of ENCHANT, results of the interventions will be utilized and disseminated via a web-based decision tool for policymakers, energy providers, NGOs, and municipalities (Work Package 6). The decision tool will synthesize information from the interventions and all preceding work packages. Interventions are also significant to the communication and dissemination activities of ENCHANT (Work Package 7). A specially designed multimedia platform will disseminate ENCHANT activities during and beyond the project period.



2. Methodology

The interventions are of crucial importance for the ENCHANT project from several perspectives. To begin with, the interventions are central in the ENCHANT Work Plan (ENCHANT, 2020) as demonstrated in Figure 1. Moreover, the proper implementation of the interventions as designed and as defined in the Guidelines and Operational Intervention Plan (ENCHANT, 2021d) is important for ensuring the validity of the results and conclusions drawn from the interventions (Sundnes, 2014a; Sundnes, 2014b; Sundnes, 2014c; Hales et al., 2016). Another factor stressing the importance of the proper implementation of the interventions is that the pre and post intervention data and the intervention results contribute to the other tasks and work packages of ENCHANT.

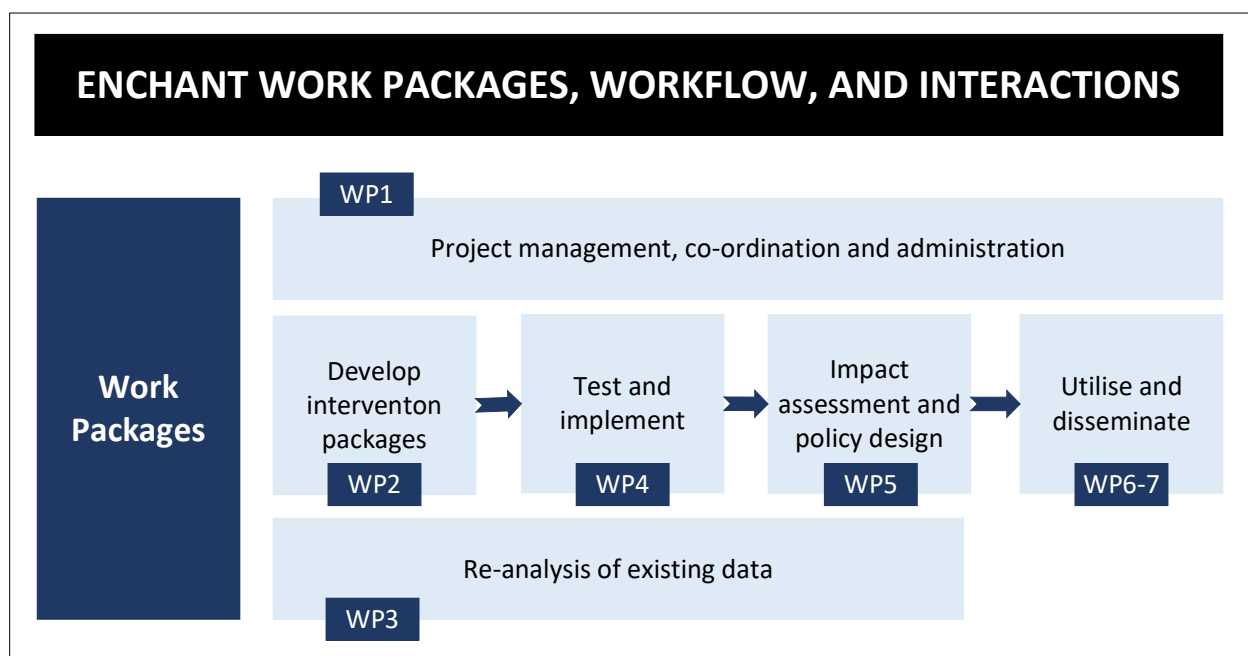


Figure 1. ENCHANT Work Packages, Workflow, and Interactions

To this end, this deliverable defines the monitoring plan for the interventions, along with a time-phased tracking tool and checklists for following the intervention status.

The Intervention Monitoring Checklist Plan is designed along the intervention process flow as defined in D4.1, Guidelines and Operational Intervention Plan. Hence, the scope of the Intervention Monitoring Checklist Plan is extended beyond the intervention implementation itself to include recruitment, randomization, pre-intervention data collection, and post-implementation data collection. The main scope of the ENCHANT Intervention Monitoring Plan (Steps 4-10 in the Planning Framework) is demonstrated by the blue coloured steps in Figure 2. Steps 1-3, Communication with partners and Providing a Timeline are conducted by establishing communication with partners and collecting the estimated dates for the



relevant process steps from partners in charge of interventions using a shared Googledocs template. Gantt Charts and checklist templates are formed for monitoring the progress of each intervention against these predetermined dates.

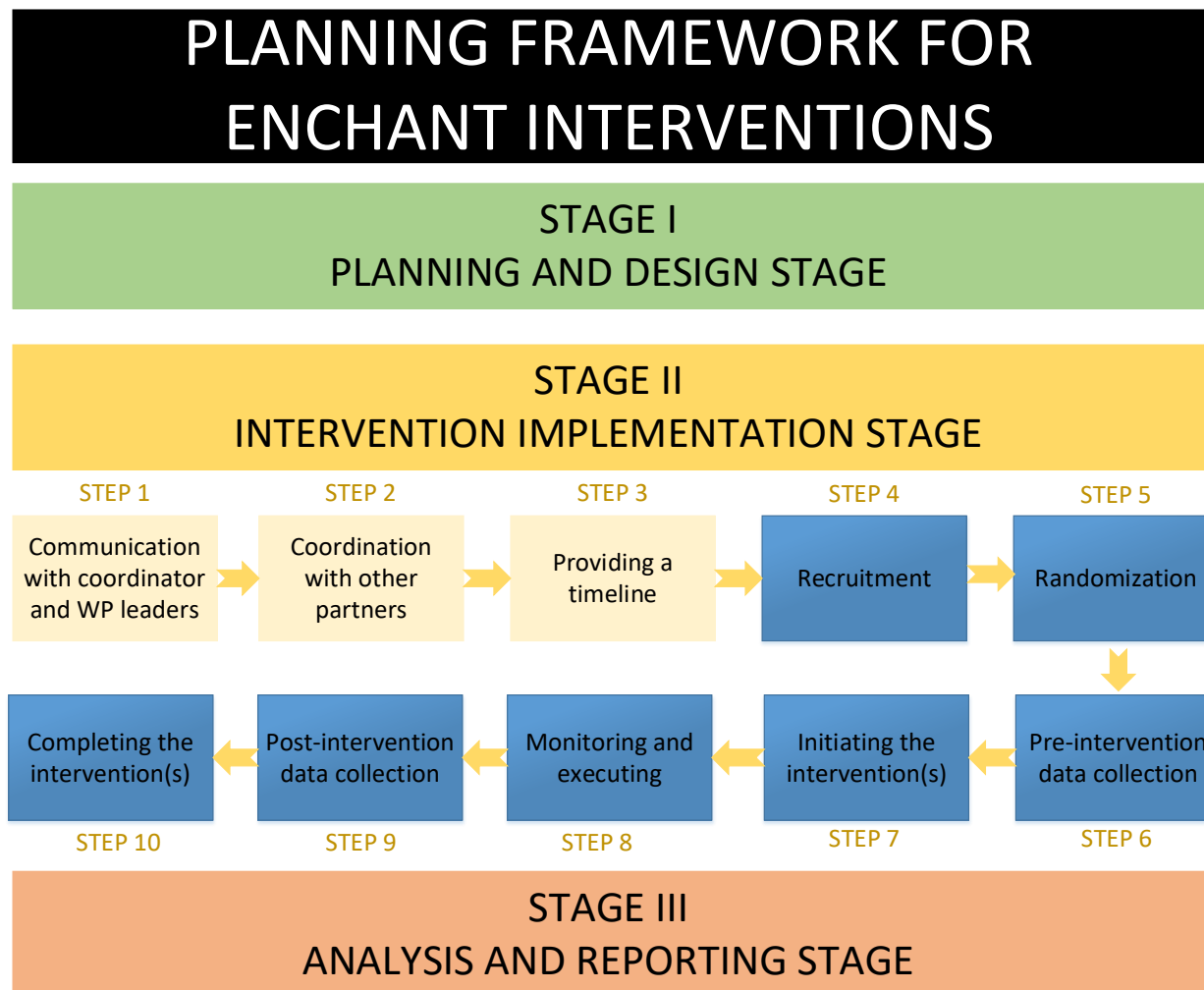


Figure 2. Main Scope of ENCHANT Intervention Monitoring Plan (Steps 4-10 of the Planning Framework Stage II)

The methodology for the Intervention Monitoring Plan utilizes components of the typical process control techniques. The overall methodological framework for process control consists of the following steps (Pourmirza et al., 2017; Jakhar, 2017; Cangussu et al., 2003):

1. Defining the planned/expected mode of operation
2. Tracking the implementation
3. Assessing/Measuring the actual performance
4. Comparing the actual performance with the expected mode of operation and identifying the differences/deviations from the expected mode of operation



5. Determining reasons for differences/deviations from the expected mode of operation and taking actions for restoring the expected mode of operation.

This methodology is adapted for ENCHANT Intervention Monitoring Plan, as described below:

1. Defining the planned/expected mode of operation

The intervention packages are designed by the scientific partners for each user-partner. The definitions of the interventions also include the RCT research protocols. The intervention designs are reported in ENCHANT Deliverable D2.2 Design of Intervention Matrix and Definition of RCT Research Protocols. These designs also included specific details on the type of intervention, targeted behaviour, the communication channel used to deliver the intervention, and the subsequent data collection instrument (ENCHANT, 2021c).

Further, Deliverable D4.1 Guidelines and Operational Intervention Plan established comprehensive guidelines and an operational plan for the ENCHANT interventions, addressing the process steps and detailing tasks for intervention planning and design, intervention implementation, and analysis and reporting (ENCHANT, 2021d).

Given the design of the intervention packages and the detailed process steps, the timelines for the process steps are also relevant for defining the expected mode of operation for the interventions. Following the intervention steps, as defined in ENCHANT Deliverable D4.1 (ENCHANT, 2021d), a template for collecting user-partners' inputs was constructed and shared through Google docs. Each user partner was asked to enter dates for the relevant process steps. This procedure also allowed user-partners to communicate with the scientific partners and other stakeholders to reiterate on the intervention timelines using a more detailed task breakdown, rather than simply determining starting and ending dates for the interventions, and to decide on a more comprehensive and agreed-upon realistic time plan.

The expected mode of operation also involves compliance with ethics requirements during each phase. These are particularly important regarding the recruitment processes, data collection and other interactions with stakeholders (ENCHANT, 2021a). Another significant component of the expected mode of operation is conformity to data protection requirements. All ENCHANT activities are expected to conform to Horizon 2020 ethical guidelines, including the Data Protection Directive (95/46/EC) and new Data Protection Regulation, "Data protection and privacy ethics guidelines", the "Guidance for Applicants on Informed Consent", and national regulations (ENCHANT, 2021b).

2. Tracking the implementation

The Intervention Monitoring Plan addresses the relevant steps of the Intervention Implementation Stage as defined by the Planning Framework of the ENCHANT Deliverable



D4.1 Guidelines and Operational Intervention Plan (ENCHANT D4.1). Hence, the implementation tracking covers the monitoring of the execution of a spectrum of steps from prior to Intervention kick-off until Intervention closure.

The steps prior to intervention kick-off include Recruitment, Randomization, and Pre-intervention data collection. During the intervention implementation, Intervention kick-off and Execution of the intervention will be monitored. Once the implementation is completed, Post-intervention data collection and Closure steps will be tracked. For efficient and standardized tracking of these process steps, an Intervention Monitoring Checklist Template will be constructed (Table 3 in Section 3).

As a complementary tool for implementation tracking addressing the process steps' timely execution, an Intervention Timeline Gantt Chart is constructed (See Table 4 in Section 3).

3. Assessing/Measuring the actual performance

A key component of the implementation monitoring methodology is accurately measuring the progress of the intervention. This performance will later be compared with the expected mode of operation to identify deviations from the expected mode of operation, determine their causes, and take necessary actions.

The Intervention Monitoring Checklist Template is utilized as the first tool for measuring the actual performance of the intervention implementation. In addition, the Timeline Gantt Chart is used to mark the progress of each step over a time scale.

In the Recruitment step, the main identifier is the actual number recruited. For the Randomization step, it is monitoring of the formation of the experimental and the control groups, along with their respective sizes. Pre-intervention data collection is assessed by two factors. The first of these pertains to assessing whether the data collection method is well-defined and confirmed, and the second relates to whether the planned pre-intervention data is collected.

For the Intervention kick-off, the actual starting date of the intervention is recorded, and a check is made on whether the participants and involved parties are sufficiently informed about the procedures pertaining to the intervention implementation. During the Execution of the intervention, the measurement consists of identifying whether the intervention is executed as designed. There are strong similarities between measurement for the Pre-intervention and Post-intervention data collection. First, the existence of a well-defined and confirmed method for post-intervention data collection is assessed, then the second type of assessment pertains to whether the planned post-intervention data is collected. At this stage, it is also important to determine the conformity between the collected pre-



intervention data and post-intervention data to ensure interoperability and validity of the prospective analysis using these data. Regarding the Closure step, a check is made on the timely completion of the intervention and any deviations affecting the closure of the intervention.

4. Comparing the actual performance with the expected mode of operation and identifying the differences/deviations from the expected mode of operation

The assessments in the previous step are compared with the designed plan and mode of operation for the interventions.

The Intervention Monitoring Checklist Template is utilized to compare record the comparison of the actual and planned modes of operation and can incorporate both qualitative and quantitative assessments. The Timeline Gantt Chart is very efficient in visualising and tracking the time wise progress of the planned mode of operation, the actual implementation, and the differences/deviations.

5. Determining reasons for differences/deviations from the expected mode of operation and taking actions for restoring the expected mode of operation

There are two forms of deviation from the expected/planned mode of operation. In the first case, the actual implementation of the intervention may differ from its definition in the intervention design. In the second case, the intervention may be implemented as designed, however, not within the designated timeline. Both cases can be determined through periodic controls and utilizing the Intervention Monitoring Checklist Template (mainly for the first case) and the Timeline Gantt Chart (for the second case).

In both cases, the user-partners need to communicate and consult with the scientific partners, Work Package Leaders, or other stakeholders as relevant. This communication is intended to assess whether the deviation will impact the validity of the intervention results or have effects on other tasks, work packages, and deliverables in terms of objectives or compliance with the respective timelines. Based on the identified effects, actions can be designed and implemented to restore the expected mode of operation and alleviate the impacts on other endeavours/activities of the project.

6. Update planned/expected mode of operation and repeat steps 2-5 periodically

The monitoring steps may result in the identification of issues with the implementation of the intervention that require taking actions. Following the communication with relevant stakeholders, these actions are decided upon, along with their task and activity details as well as respective timelines. These actions are then integrated into the planned/expected mode of operation by updating the initial intervention plan.



The steps of the overall monitoring framework should be implemented periodically to ensure that the interventions are progressing as planned, or to identify and resolve any issues. The monitoring frequency is to be decided by the relevant user-partners and scientific partners. Given the approximately 6-month average overall timeline for interventions, weekly or biweekly monitoring may be suggested, but different frequencies are possible. More frequent monitoring provides better control over the intervention implementation and allows for the early identification of any potential negative impacts on the implementation or achievement of the desired results. Bearing in mind that each implementation of the monitoring framework requires additional efforts by the partners, and additional tasks, including data collection, the appropriate monitoring frequency depends on the specifics of the particular intervention and needs to be decided upon by the partners involved.

In addition to the periodic monitoring, the intervention implementations may also call for additional monitoring, depending on information received from the field, for addressing issues raised by partners and/or stakeholders. The monitoring framework described above can also be implemented for these cases. Figure 3 demonstrates the methodological framework of the Intervention Monitoring Plan.

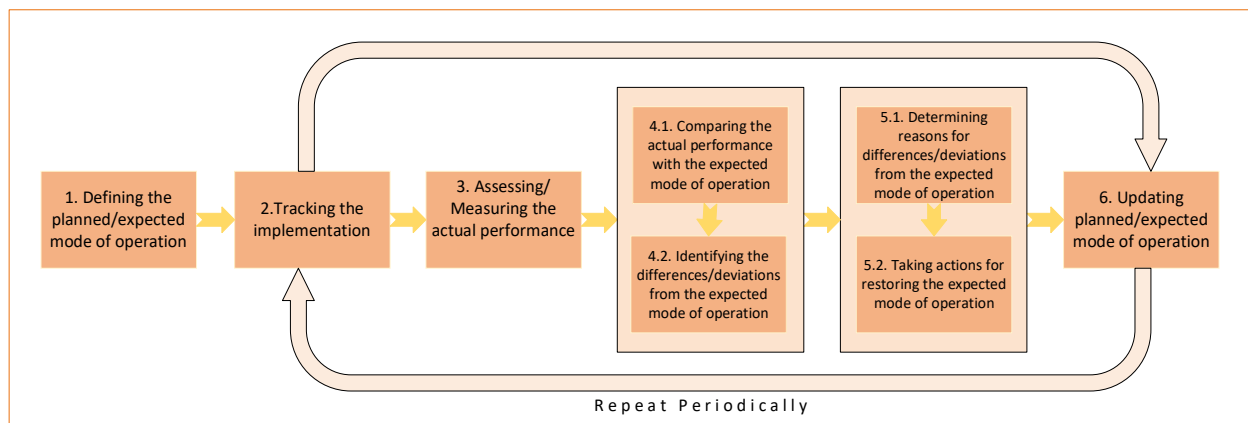


Figure 3. Methodological framework of the Intervention Monitoring Plan

3. Intervention Monitoring Plan

Following the methodology defined in the preceding section, the framework for the Intervention Monitoring Checklist Plan was designed in accordance with the monitoring mechanism and milestones specified in D4.1 Guidelines and Operational Intervention Plan. Table 3 shows a sample version of the Intervention Monitoring Checklist Template for the Intervention Monitoring Plan framework and the relevant tasks. The following section clarifies the steps in the Intervention Monitoring Plan framework.

The Intervention Monitoring Plan framework covers three main phases (Pre-intervention, Execution, and Post-intervention) and seven steps (Recruitment, Randomization, Pre-intervention data collection, Intervention kick-off, Implementation of the intervention, Post-intervention data collection, and Intervention closure).

3.1. Pre-Intervention

3.1.1. Recruitment

The recruitment process is vital in ENCHANT, and the relevant tasks should be completed on time. The potential participants in the interventions should be contacted and informed about the fundamental aim of the study. In each intervention, there will be experimental and control groups. For each intervention plan, the partners are expected to pre-determine the number of the potential participants, defined as the “targeted number of participants” in D4.2. Upon determining the targeted number, the partner will recruit the “actual number of the participants”. At this stage, the partners are expected to compare the targeted number with the actual number recruited.

3.1.2. Randomization

Randomized Control Trials (RCT) methodologically contribute to the strength of the ENCHANT’s interventions through the random assignment of participants into the groups, following the initial recruitment. Random assignment is key to guaranteeing that groups are balanced; hence, participants will not be allowed to self-select their group. To this end, ENCHANT will utilize experimental and control groups to observe the behaviour change as a result of the planned interventions. To this end, the purpose of these groups should be clearly defined. It should be noted that the control group and the experimental group are equally important in the evaluation of the impact of the interventions. In this step, the partners are expected to complete the assignment of the experimental and control groups on time.

3.1.3. Pre-intervention Data Collection

The behavioural change will be measured via different correlates, such as monthly energy consumption, demographic correlates, behavioural change variables including investment



behaviour, maintenance behaviour with relation to energy efficiency, and everyday energy saving behaviour. These variables will be categorized as dependent (the targeted behaviours that ENCHANT aims to change), and independent (the modifiers that influence and change the households' behaviour), or covariates (e.g., the main socio-demographic factors). Pre-intervention data collection phase will allow the partners to observe the current consumption patterns of the households involved in experimental and control groups, their maintenance, saving and investment behaviour. In this step, the partners should consider two important criteria. First, they are expected to decide on the data collection method. The data for ENCHANT interventions is measured either directly (e.g., by digital data tracking or by collecting consumption data obtained from utility companies) or indirectly (e.g., from the consumers self-reporting through mobile or web-based apps, from surveys). Second, the partners should compare the planned data collection with the actual data collected to assess whether they have achieved their initial target pertaining to pre-intervention data collection. Moreover, it is essential that the data from experimental and control groups should be collected within the same timeline and under the same conditions.

3.2. Execution

3.2.1. Intervention kick-off

Following the monitoring steps in recruitment, randomization, and pre-intervention data collection phases, the actual intervention(s) may be initiated. The user-partners will decide on the communication channels through which the intervention will be implemented. In this phase, the partners should ensure that the intervention is started on time, and also that the participants are informed about the procedures to be followed in intervention(s).

3.2.2. Implementation of the intervention

The actual implementation phase of the intervention requires the precise following of the steps in the Guidelines and Operational Plan (ENCHANT, 2021d) according to the intervention designs and RCT research protocols (ENCHANT, 2021c), and the timelines stated in the GoogleDocs template. For this, the user-partners will utilize their communication channels.

3.3. Post-intervention

3.3.1. Post-intervention Data Collection

One of the key phases for identifying behavioural change in ENCHANT is the post-intervention data collection. In this monitoring step, the partners are expected to carry out three main tasks: confirming that the post-intervention data collection method is as planned, comparing the planned data with the actual data collected, and finally, checking the post-intervention data is compatible with the pre-intervention data.



3.3.2. Intervention Closure

Following the successful implementation of the intervention, there will be two important completion criteria for the project. This will be the end point, which will be defined as the “exit strategy”, delineating when and how the intervention will be terminated. Accordingly, the first significant criterion is the timely closure of the intervention. In this framework, the user-partners are expected to complete and close the intervention on time. The second criterion is to make a check for any potential delay or deviations that might affect intervention closure.



Table 3. Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 4. Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR								
	Jul. 21	Aug. 21	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22	Mar. 22
Recruitment									
Recruitment process completed									
Comparison of targeted number of participants vs. actual recruited									
Randomization									
Formation of experimental group									
Formation of control group									
Pre-intervention data collection									
Planning data collection method									
Comparison of designed data to be collected vs. actual data collected									
Initiating the intervention									
Intervention kick-off									
Informing participants and involved parties about the procedures									
Intervention execution									
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed									
Post-intervention data collection									
Confirming that the data collection method is as planned									
Comparison of planned data vs. actual data									
Checking the compatibility with pre-intervention data									
Completing the intervention									
Timely closure									
Checking potential delay/deviations									



4. User Partners and Interventions

4.1. AUSTRIA

4.1.1. Energie Kompass – 7energy Platform

Energie Kompass is the hosting organization for the living lab initiative act4.energy, responsible for carrying out the Austrian case studies in Südburgenland. The digital platform, 7Energy – Platform, aims to establish energy communities, ensure people's participation and conduct their administration, in accordance with the EAG and Austrian energy market regulations. The platform will be launched in mid-June 2021, with 3 pilot communities among which 2 in Südburgenland and 1 in Styria.

	Energie Kompass - 7energy platform
Sector	Energy Consulting Company
Type of intervention	Information provision
Behaviour	Electricity consumption
Matrix Variables	TBD
Participants	Members of 7energy platform (yet to be launched)
Expected goals	To investigate the effects of information provision on customers' energy consumption
Methods (Quantitative, Qualitative; Mixed)	Quantitative



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	Measured electricity consumption Self-reported energy consumption/saving behaviour, lifestyles
Criteria for randomization	Full randomization over the web-platform
Name of data collection instrument <i>(if available in your national language)</i>	7energy platform
Design	Number of groups TBD Monthly measurements (electricity bills)



Table 5. Energie Kompass – 7energy Platform Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 6. Energie Kompass – 7energy Platform Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR								
	Jul. 21	Aug. 21	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22	Mar. 22
Recruitment									
Recruitment process completed									
Comparison of targeted number of participants vs. actual recruited									
Randomization									
Formation of experimental group									
Formation of control group									
Pre-intervention data collection									
Planning data collection method									
Comparison of designed data to be collected vs. actual data collected									
Initiating the intervention									
Intervention kick-off									
Informing participants and involved parties about the procedures									
Intervention execution									
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed									
Post-intervention data collection									
Confirming that the data collection method is as planned									
Comparison of planned data vs. actual data									
Checking the compatibility with pre-intervention data									
Completing the intervention									
Timely closure									
Checking potential delay/deviations									



4.1.2. Energie Kompass - Energy Account App

The Energiekonto enables the users to incorporate all information pertaining to their consumption behaviour into an app, such as energy expenses and energy services. In this way, the customers can monitor their energy expenses regarding electric usage, heat or mobility, and energy feed-in to the grid (PV, battery, bi-directional EV) through the energy account app.

	Energie Kompass - Energy Account App
Sector	Energy Consulting Company
Type of intervention	Monetary incentives
Behaviour	Electricity consumption
Matrix Variables	TBD
Participants	Users of Energy Account App (yet to be launched)
Expected goals	To investigate the effects of monetary incentives on customers' energy consumption
Methods (Quantitative, Qualitative; Mixed)	Quantitative
Type of data (Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)	Measured electricity consumption



Criteria for randomization	Full randomization over the app
Name of data collection instrument (if available in your national language)	Energy Account App
Design	Number of groups TBD Monthly measurements (electricity bills)



Table 7. Energie Kompass - Energy Account App Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 8. Energie Kompass – Energy Account App Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR							
	Aug. 21	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22	Mar. 22
Recruitment								
Recruitment process completed								
Comparison of targeted number of participants vs. actual recruited								
Randomization								
Formation of experimental group								
Formation of control group								
Pre-intervention data collection								
Planning data collection method								
Comparison of designed data to be collected vs. actual data collected								
Initiating the intervention								
Intervention kick-off								
Informing participants and involved parties about the procedures								
Intervention execution								
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed								
Post-intervention data collection								
Confirming that the data collection method is as planned								
Comparison of planned data vs. actual data								
Checking the compatibility with pre-intervention data								
Completing the intervention								
Timely closure								
Checking potential delay/deviations								



4.2. GERMANY

4.2.1. Hansgrohe – Pontos

Badenova and a private company, Hansgrohe, are cooperating on an intervention to manage water resources in private households. Hansgrohe is responsible for bathroom and kitchen fittings, and the company has developed the Pontos water management system to prevent possible water leaks. Accordingly, the system aims to ensure security, protecting water and energy resources.

	Hansgrohe
Sector	Energy Provider Company + hansgrohe (private company)
Type of intervention	Information + Incentives
Behaviour	<ul style="list-style-type: none"> • Maintenance • Consumption
Matrix Variables	2x2
Participants	Approx. 30 households
Expected goals	<ol style="list-style-type: none"> 1. Investigate the influence of the visualization of the own water consumption (via Pontos System) on the consumption 2. Investigate if there is a correlation: are people saving water also saving energy and vice versa
Methods (Quantitative, Qualitative; Mixed)	Quantitative (10 exp group + 20 control group) Qualitative interviews (10 exp group)
Type of data (Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)	2 groups: <ol style="list-style-type: none"> 1. households receiving the pontos --> pre & post survey (questionnaire + interview) before & after installation of the pontos system 2. Households not receiving the system: questionnaire (1 time)



Criteria for randomization	No randomization
Name of data collection Instrument (if available in your nationnational language)	<i>Ad-hoc questionnaire and interview track</i>
Design	<ol style="list-style-type: none"> 1. Qualitative interview on water and energy consumption habits + quantitative questionnaire 2. Installation of the Pontos system 3. Interview + questionnaire after 4-6 weeks on water and energy consumption



Table 9. Hansgrohe – Pontos Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 10. Hansgrohe – Pontos Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR							
	Mar. 21	Apr. 21	May. 21	Jun. 21	Jul. 21	Aug. 21	Sep. 21	Oct. 21
Recruitment								
Recruitment process completed								
Comparison of targeted number of participants vs. actual recruited								
Randomization								
Formation of experimental group								
Formation of control group								
Pre-intervention data collection								
Planning data collection method								
Comparison of designed data to be collected vs. actual data collected								
Initiating the intervention								
Intervention kick-off								
Informing participants and involved parties about the procedures								
Intervention execution								
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed								
Post-intervention data collection								
Confirming that the data collection method is as planned								
Comparison of planned data vs. actual data								
Checking the compatibility with pre-intervention data								
Completing the intervention								
Timely closure								
Checking potential delay/deviations								



4.2.2. Solar Panel

To carry out a survey in the second half of 2021, Badenova will cooperate with two subcontracted actors, the NGO Climate Partner Upper Rhine Valley (KPO) and the City of Freiburg. The Climate Partner Upper Rhine Valley acts as a climate protection network, and encourages climate protection efforts in the region, while the City of Freiburg, also known as “Green city Freiburg”, aims at a more sustainable city.

	Solar Panel
Sector	Energy Provider Company, City & NGO
Type of intervention	Information
Behaviour	<ul style="list-style-type: none"> • Energy consumption • Investment
Matrix Variables	1x2
Participants	N= 5000
Expected goals	<ol style="list-style-type: none"> 1. Motivation: Are people responding to the intervention to save money or to win the solar panel? 2. Addressing “other” target groups: Are people not thinking about energy saving in their daily habits also willing to participate to win the solar panel? 3. Are there more people willing to invest into green energy if it is affordable (=200-300€) & easy to implement? 5. Are only big energy consumer willing to participate (as not used energy is not sold but gets into house network)
Methods (Quantitative, Qualitative; Mixed)	Quantitative + Qualitative (1)



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	2 groups: 1. Questionnaire pre and post for with and without energy-related information 2. Interview of household receiving solar panel
Criteria for randomization	TBD
Name of data collection Instrument <i>(if available in your national language)</i>	TBD
Design	1. Households have to respond to a questionnaire as candidature for the competition (also using channels from City of Freiburg and the NGO KPO) 2. Selection of the winning household (according to technical criteria + person not saving energy in its daily habit) 3. Installation of the solar panel 4. Interview of the person 4-6 weeks after installation of the solar panel



Table 11. Solar Panel Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 12. Solar Panel Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR						
	Aug. 21	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22
Recruitment							
Recruitment process completed							
Comparison of targeted number of participants vs. actual recruited							
Randomization							
Formation of experimental group							
Formation of control group							
Pre-intervention data collection							
Planning data collection method							
Comparison of designed data to be collected vs. actual data collected							
Initiating the intervention							
Intervention kick-off							
Informing participants and involved parties about the procedures							
Intervention execution							
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed							
Post-intervention data collection							
Confirming that the data collection method is as planned							
Comparison of planned data vs. actual data							
Checking the compatibility with pre-intervention data							
Completing the intervention							
Timely closure							
Checking potential delay/deviations							



4.2.3. Waldsee Quartier Street Festival

The city of Freiburg has planned a street festival in the Waldsee district, and this includes increasing awareness of how climate protection will appear in everyday life via the project "Our Waldsee Climate Quarter". The citizens will have the opportunity to exchange ideas on the topic of climate protection, to inform themselves and to get involved.

	Waldsee Quartier Street Festival
Sector	Energy Provider Company, City of Freiburg
Type of intervention	Information
Behaviour	Behaviour
Matrix Variables	1x1
Participants	TBD
Expected goals	<ol style="list-style-type: none"> 1. Are people living in an eco-friendly quartier going to save more energy? Is the environment influencing the daily consumption habits or is it the other way round? 2. Are people informed with climate crisis consequences (e.g., concrete examples in the region like flooding or drought) willing to reduce their CO2 consumption in any way (investment or usage)
Methods (Quantitative, Qualitative; Mixed)	Qualitative interview / quantitative? / Focus Group?
Type of data (Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)	
Criteria for randomization	TBD
Name of data collection instrument (if available in your national language)	TBD
Design	<ul style="list-style-type: none"> • stand on a quartier / street festival: informing people about consequences of climate crisis / high energy consumption and its concrete consequences on their direct environment (flooding) • Tracking after which information or with which visual poster people are more responding to a Call to action (e.g. QR-Code to a landing page)



Table 13. Waldsee Quartier Street Festival Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off	Imple- mentation of the inter- vention		Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 14. Waldsee Quartier Street Festival Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR				
	Aug. 21	Sep. 21	Oct. 21	Nov. 21	Dec. 21
Recruitment					
Recruitment process completed					
Comparison of targeted number of participants vs. actual recruited					
Randomization					
Formation of experimental group					
Formation of control group					
Pre-intervention data collection					
Planning data collection method					
Comparison of designed data to be collected vs. actual data collected					
Initiating the intervention					
Intervention kick-off					
Informing participants and involved parties about the procedures					
Intervention execution					
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed					
Post-intervention data collection					
Confirming that the data collection method is as planned					
Comparison of planned data vs. actual data					
Checking the compatibility with pre-intervention data					
Completing the intervention					
Timely closure					
Checking potential delay/deviations					



4.2.4. Landesgartenschau

The State Garden Show (Landesgartenschau) usually takes place from April to October. The show is organized in different locations each year, and the upcoming Garden Show is in Neuenburg am Rhein from April 22 to October 2 in 2022. Badenova will be the premium sponsor, and during the show, a survey will be conducted to test the willingness of visitors to actively obtain information regarding energy efficiency topics via a QR code.

	Landesgartenschau
Sector	Energy Provider Company
Type of intervention	Information
Behaviour	Behaviour
Matrix Variables	1X1
Participants	N=50
Expected goals	<ol style="list-style-type: none"> 1. Influence of the environment during conducting the questionnaire on the answers given? 2. Are people living in an eco-friendly quartier going to save more energy? Is the environment influencing the daily consumption habits or is it the other way round? 3. Are people informed with climate crisis consequences (e.g. concrete examples in the region like flooding or drought) willing to reduce their CO2 consumption in any way (investment or usage)
Methods (Quantitative, Qualitative; Mixed)	Qualitative interview / quantitative? / Focus Group?
Type of data (Questionnaire, Observational, Stuctured test, Interviews, Focus groups GPS positioning, etc.)	Interview / questionnaire
Criteria for randomization	TBD
Name of data collection instrument (if available in your national language)	TBD



<i>Design</i>	<ul style="list-style-type: none"> • stand on a quartier / street festival: informing people about consequences of climate crisis / high energy consumption and its concrete consequences on their direct environment (flooding) • Tracking after which information or with which visual poster people are more responding to a Call to action (e.g., QR-Code to a landing page)
----------------------	--



Table 15. Landesgartenschau Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 16. Landesgartenschau Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR					
	Dec. 21	Jan. 22	Feb. 22	Mar. 22	Apr. 22	May. 22
Recruitment						
Recruitment process completed						
Comparison of targeted number of participants vs. actual recruited						
Randomization						
Formation of experimental group						
Formation of control group						
Pre-intervention data collection						
Planning data collection method						
Comparison of designed data to be collected vs. actual data collected						
Initiating the intervention						
Intervention kick-off						
Informing participants and involved parties about the procedures						
Intervention execution						
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed						
Post-intervention data collection						
Confirming that the data collection method is as planned						
Comparison of planned data vs. actual data						
Checking the compatibility with pre-intervention data						
Completing the intervention						
Timely closure						
Checking potential delay/deviations						



4.3. ITALY

4.3.1. Ninfa Garden and its Hydroelectric Power Plant

The Garden of NINFA has a reputation due to its unique natural environment and geographical location a few miles from the sea, near mountains, and built around and within the ruins of an ancient medieval city. Furthermore, the garden contains a lake with an ancient hydroelectric power station, which is key for ENCHANT's purposes. Accordingly, it will be possible to observe the Garden's visitors' interest in and enthusiasm for investments and maintenance of the turbines, as well as their daily energy behaviours, and their motivation to maintain the energy efficiency of a naturalistic and heritage-protection site.

	NINFA GARDEN and HYDROELECTRIC POWER PLANT
Sector	NGO
Type of intervention	<ul style="list-style-type: none"> • Information • Incentives (eventual 2nd study to be conducted)
Behaviour	<ul style="list-style-type: none"> • Investment/Maintenance (actual/reported)
Matrix Variables	2x2
Participants	Garden visitors (based visitors during 2020 = 75000)
Expected goals	<ol style="list-style-type: none"> 1. To investigate the effects of the interventions on visitors' investment and maintenance behaviours for the hydroelectric power plant (e.g., charity box donations) 2. Follow up survey on energy consumption behaviour
Methods (Quantitative, Qualitative; Mixed)	Quantitative



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	<ul style="list-style-type: none"> Observed behaviour on investment and maintenance Self-reported energy consumption/saving behaviour and pro-environmental practices, lifestyles
Criteria for randomization	Alternation between days (Saturday vs Sunday) and hours (morning vs afternoon)
Name of data collection instrument <i>(if available in your national language)</i>	<i>To be identified and shared among the partners (TBD)</i>
Design	<p>Study A T0: G1, G2:</p> <ul style="list-style-type: none"> questionnaire on energy consumption/saving behaviour and pro-environmental practices <p><u>Immersive tour to the hydroelectric power plant:</u></p> <ul style="list-style-type: none"> G1 immersive tour (information) at hydroelectric power plant G2 control group <p>T1: G1, G2:</p> <ul style="list-style-type: none"> Observed behaviour on investment and/or maintenance of the hydroelectric power plant (charity box) questionnaire on energy consumption/saving behaviour and pro-environmental practices <p>T2: G1, G2:</p> <ul style="list-style-type: none"> follow up for those who declare that they are available to be contacted by email to fill in the questionnaire one month after the visit <p>Study B: <u>Informative brochure about hydroelectric power plant</u> (follows the same methodology as study A)</p>



Table 17. Ninfa Garden and its Hydroelectric Power Plant Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 18. Ninfa Garden and its Hydroelectric Power Plant Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR					
	Jun. 21	Jul. 21	Aug. 21	Sep. 21	Oct. 21	Nov. 21
Recruitment						
Recruitment process completed						
Comparison of targeted number of participants vs. actual recruited						
Randomization						
Formation of experimental group						
Formation of control group						
Pre-intervention data collection						
Planning data collection method						
Comparison of designed data to be collected vs. actual data collected						
Initiating the intervention						
Intervention kick-off						
Informing participants and involved parties about the procedures						
Intervention execution						
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed						
Post-intervention data collection						
Confirming that the data collection method is as planned						
Comparison of planned data vs. actual data						
Checking the compatibility with pre-intervention data						
Completing the intervention						
Timely closure						
Checking potential delay/deviations						



4.3.2. Energia Positiva Cooperative

Founded in 2015 in Turin, Italy, Energia Positiva is an energy cooperative that aims to encourage citizens to produce and consume renewable energy through the participation of partners sharing the ownership of renewable energy production plants. Known as Energy Sharing, the model allows the partners to gain individual benefits as well as contribute to environmental sustainability.

	ENERGIA POSITIVA
Sector	Energy Provider Company
Type of intervention	<ul style="list-style-type: none"> • Information • Feedback • Social Norms
Behaviour	<ul style="list-style-type: none"> • Energy consumption • Investment
Matrix Variables	3x2
Participants	Users, customers, members (N = 600)
Expected goals	1. To investigate the effects of the interventions on customers' energy consumptions and investment behaviours
Methods (Quantitative, Qualitative; Mixed)	Quantitative



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	<ul style="list-style-type: none"> Measured and self-reported energy consumption (kW and costs) and investment behaviour (e.g. energy efficient house)
Criteria for randomization	TBD
Name of data collection instrument <i>(if available in your national language)</i>	<i>To be identified and shared among the partners (TBD)</i>
Design	<p>T0: G1, G2, G3, G4:</p> <ul style="list-style-type: none"> questionnaire on energy consumption/investment behaviours measured consumption overall/peak (referring to specific hours) <p><u>On the bill:</u></p> <ul style="list-style-type: none"> G1 feedback on own consumption G2 info on other customers' consumption (social norms) G3 general info on climate change/energy saving G4 control <p>T1: G1, G2, G3, G4:</p> <ul style="list-style-type: none"> questionnaire on energy consumption/investment behaviours measured consumption overall/peak (referring to specific hours)



Table 19. Energia Positiva Cooperative Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 20. Energia Positiva Cooperative Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR								
	Jun. 21	Jul. 21	Aug. 21	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22
Recruitment									
Recruitment process completed									
Comparison of targeted number of participants vs. actual compared									
Randomization									
Formation of experimental group									
Formation of control group									
Pre-intervention data collection									
Planning data collection method									
Comparison of designed data to be collected vs. actual data collected									
Initiating the intervention									
Intervention kick-off									
Informing participants and involved parties about the procedures									
Intervention execution									
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed									
Post-intervention data collection									
Confirming that the data collection method is as planned									
Comparison of planned data vs. actual data									
Checking the compatibility with pre-intervention data									
Completing the intervention									
Timely closure									
Checking potential delay/deviations									



4.4. NORWAY

4.4.1. Viken Municipality

Viken county, consisting of 51 municipalities in Eastern Norway, was established on 1 January 2020. Several initiatives have been launched by VIKEN aimed at alleviating future climate challenges and contributing to a low-emission society. These initiatives include transportation targets (fossil-free vehicle fleet and fossil-free transport within municipalities and businesses), research projects based on a socially just, low-carbon society, energy efficiency efforts, etc. Two different studies designed to fit with ENCHANT's aims are planned, a large-scale recruitment and a small-scale recruitment in Viken County.

Study 1: Large-scale recruitment, RCT on newly programmed intervention website

	VIKEN COUNTY
Sector	County/Municipality
Type of interventions	<ul style="list-style-type: none">• Control group• Information• Information + social norms• Information + feedback• Information + commitment• Information + social norms + feedback + commitment
Behaviour	<ul style="list-style-type: none">• Reduced energy consumption/maybe water use through behavioural change.
Matrix Variables	2x6x2
Participants	Inhabitants of Viken county (Approx. 1,3 mills in total)
Expected goals	<ul style="list-style-type: none">• Comparing the impact of two different types of senders (Municipality vs NGO).• Comparing the impact of different types of communication channels.• To investigate the effects of the interventions on customers' energy consumption behaviours



Methods <i>(Quantitative, Qualitative; Mixed)</i>	Mostly quantitative, some additional qualitative interviews
Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	<ul style="list-style-type: none"> • Self-reported behaviour on energy use behaviour • Information about how the people ended up on the website • User behaviour on the website • self-reported energy consumption (kW and costs) pre- and post intervention • Comparison of who checks out the website and who does not (as far as possible) <p>Type of data: Survey, interview, web-use data</p>
Criteria for randomization	Full randomization determined by web-platform developed by academic partners.
Name of data collection instrument <i>(if available in your national language)</i>	<i>To be identified and shared among the partners (TBD)</i>
Design	<p>T0: G1, G2, G3, G4, G5, G6</p> <p>...</p> <p>Tx1: G1, G2, G3, G4, G5, G6</p> <p>Tx2: G1, G2, G3, G4, G5, G6</p> <p>Tx3: G1, G2, G3, G4, G5, G6</p> <p>Tx4: G1, G2, G3, G4, G5, G6</p> <p>...</p> <p>T1: G1, G2, G3, G4, G5, G6</p> <p>Tx1-Tx? Are short in-between measures. T0 and T1 are the main data collection points</p>



Table 21. Viken Municipality Study 1 Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 22. Viken Municipality Study 1 Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR			
	Oct. 21	Nov. 21	Dec. 21	Jan. 22
Recruitment				
Recruitment process completed				
Comparison of targeted number of participants vs. actual recruited				
Randomization				
Formation of experimental group				
Formation of control group				
Pre-intervention data collection				
Planning data collection method				
Comparison of designed data to be collected vs. actual data collected				
Initiating the intervention				
Intervention kick-off				
Informing participants and involved parties about the procedures				
Intervention execution				
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed				
Post-intervention data collection				
Confirming that the data collection method is as planned				
Comparison of planned data vs. actual data				
Checking the compatibility with pre-intervention data				
Completing the intervention				
Timely closure				
Checking potential delay/deviations				



Study 2: Small-scale recruitment, deep targeted counselling on energy upgrades of homes

	VIKEN COUNTY
Sector	County/Municipality
Type of interventions	<ul style="list-style-type: none"> • Information • Energy audit
Behaviour	<ul style="list-style-type: none"> • Reduced energy consumption through Renovation/technology-investment
Matrix Variables	2x3
Participants	Inhabitants of specific municipalities in Viken county recruited because they are planning a renovation process, recruited in waves following the different rollout processes (6 x 100: role-out of six municipalities + a comparison group which is waiting on the role-out)
Expected goals (shared by both user partners)	<ul style="list-style-type: none"> • Comparing the impact of two different types of senders (Municipality vs NGO). • Comparing the impact of different types of communication channels. • To investigate the effects of the tailored energy counselling on investment behaviours • To test the effects of the two different counselling platforms (energiportalen and energismart)
Methods (Quantitative, Qualitative; Mixed)	Quantitative assessments of investments made and changes in peoples' mindsets (requires a pre- and post- questionnaire), in-depth interviews with selected participants



<p>Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i></p>	<ul style="list-style-type: none"> • Self-reported b investment and maintenance behaviour • Monitoring activities on the web-counselling platforms measuring various activities. • Measured and self-reported energy consumption (kW and costs) • Changes in energy investment related mind-sets <p>Data types: questionnaire, interviews, focus groups, electricity consumption data, web-use data.</p>
<p>Criteria for randomization</p>	<p>No real randomization possible, therefor a design is chosen where participants in a later rollout will be the control for people at a later role out.</p>
<p>Name of data collection instrument <i>(if available in your national language)</i></p>	<p><i>To be identified and shared among the partners (TBD)</i></p>
<p>Design</p>	<p>T0: G1 T1: G1, G2 T2: G1, G2, G3 T3: G2, G3</p>



Table 23. Viken Municipality Study 2 Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 24. Viken Municipality Study 2 Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR							
	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22	Mar. 22	Apr. 22
Recruitment								
Recruitment process completed								
Comparison of targeted number of participants vs. actual recruited								
Randomization								
Formation of experimental group								
Formation of control group								
Pre-intervention data collection								
Planning data collection method								
Comparison of designed data to be collected vs. actual data collected								
Initiating the intervention								
Intervention kick-off								
Informing participants and involved parties about the procedures								
Intervention execution								
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed								
Post-intervention data collection								
Confirming that the data collection method is as planned								
Comparison of planned data vs. actual data								
Checking the compatibility with pre-intervention data								
Completing the intervention								
Timely closure								
Checking potential delay/deviations								



4.4.2. Norges Naturvernforbund (Nnv)

Norges Naturvernforbund (NNV) (Friends of the Earth Norway) was founded in 1914 and is the oldest environmental and nature protection organization in Norway. Its fundamental objective is to protect nature and the environment from human activities. Two different studies designed to meet ENCHANT's purposes, are planned, a large-scale recruitment and a small-scale recruitment for Norges Naturvernforbund. The interventions aim to observe changes in energy saving behaviour in daily life.

Study 1: Large-scale recruitment, RCT on newly programmed intervention website

	Naturvernforbundet
Sector	NGO
Type of interventions	<ul style="list-style-type: none"> • Control group • Information • Information + social norms • Information + feedback • Information + commitment • Information + social norms + feedback + commitment
Behaviour	Reduced energy consumption/maybe water use(?) through behavioural change.
Matrix Variables	2x6x2
Participants	Users, customers, members (Approx. 30 000 in total)
Expected goals (shared by both user partners)	<ul style="list-style-type: none"> • Comparing the impact of two different types of senders (Municipality vs NGO). • Comparing the impact of different types of communication channels. • To investigate the effects of the interventions on customers' energy consumption behaviours
Methods (Quantitative, Qualitative; Mixed)	Mostly quantitative, some additional qualitative interviews



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	<ul style="list-style-type: none"> • Self-reported behaviour on energy use behaviour • Information about how the people ended up on the website • User behaviour on the website • self-reported energy consumption (kW and costs) pre- and post intervention • Comparison of who checks out the website and who does not (as far as possible) <p>Type of data: Survey, interview, web-use data</p>
Criteria for randomization	Full randomisation determined by web-platform developed by academic partners.
Name of data collection instrument <i>(if available in your national language)</i>	<i>To be identified and shared among the partners (TBD)</i>
Design	<p>T0: G7, G8, G9, G10, G11, G12</p> <p>...</p> <p>Tx1: G7, G8, G9, G10, G11, G12</p> <p>Tx2: G7, G8, G9, G10, G11, G12</p> <p>Tx3: G7, G8, G9, G10, G11, G12</p> <p>Tx4: G7, G8, G9, G10, G11, G12</p> <p>...</p> <p>T1: G7, G8, G9, G10, G11, G12</p> <p>Tx1-Tx? Are short in-between measures. T0 and T1 are the main data collection points</p>



Table 25. Norges Naturvernforbund (Nnv) Study 1 Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 26. Norges Naturvernforbund (Nnv) Study 1 Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR			
	Oct. 21	Nov. 21	Dec. 21	Jan. 22
Recruitment				
Recruitment process completed				
Comparison of targeted number of participants vs. actual recruited				
Randomization				
Formation of experimental group				
Formation of control group				
Pre-intervention data collection				
Planning data collection method				
Comparison of designed data to be collected vs. actual data collected				
Initiating the intervention				
Intervention kick-off				
Informing participants and involved parties about the procedures				
Intervention execution				
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed				
Post-intervention data collection				
Confirming that the data collection method is as planned				
Comparison of planned data vs. actual data				
Checking the compatibility with pre-intervention data				
Completing the intervention				
Timely closure				
Checking potential delay/deviations				



Study 2: Small-scale recruitment, deep targeted counselling on energy upgrades of homes

	Naturvernforbundet
Sector	NGO
Type of interventions	<ul style="list-style-type: none"> • Information • Energy audit
Behaviour	<ul style="list-style-type: none"> • Reduced energy consumption through Renovation/technology-investment
Matrix Variables	2x3
Participants	Selected members and others recruited because they are planning a renovation process (N=300)
Expected goals (shared by both user partners)	<ul style="list-style-type: none"> • Comparing the impact of two different types of senders (Municipality vs NGO). • Comparing the impact of different types of communication channels. • To investigate the effects of the tailored energy counselling on investment behaviours • To test the effects of the two different counselling platforms (energiportalen and energismart)
Methods (Quantitative, Qualitative; Mixed)	Quantitative assessments of investments made and changes in peoples' mindsets (requires a pre- and post- questionnaire), in-depth interviews with selected participants



<p>Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i></p>	<ul style="list-style-type: none"> • Self-reported b investment and maintenance behaviour • Monitoring activities on the web-counselling platforms measuring various activities. • Measured and self-reported energy consumption (kW and costs) • Changes in energy investment related mind-sets <p>Data types: questionnaire, interviews, focus groups, electricity consumption data, web-use data.</p>
<p>Criteria for randomization</p>	<p>No real randomization possible, therefor a design is chosen where participants in a later rollout will be the control for people at a later role out.</p>
<p>Name of data collection instrument <i>(if available in your national language)</i></p>	<p><i>To be identified and shared among the partners (TBD)</i></p>
<p>Design</p>	<p>T0: T1: G4 T1: G4 T1: G4</p>



Table 27. Norges Naturvernforbund (Nnv) Study 2 Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 28. Norges Naturvernforbund (Nnv) Study 2 Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR					
	Sep. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22
Recruitment						
Recruitment process completed						
Comparison of targeted number of participants vs. actual recruited						
Randomization						
Formation of experimental group						
Formation of control group						
Pre-intervention data collection						
Planning data collection method						
Comparison of designed data to be collected vs. actual data collected						
Initiating the intervention						
Intervention kick-off						
Informing participants and involved parties about the procedures						
Intervention execution						
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed						
Post-intervention data collection						
Confirming that the data collection method is as planned						
Comparison of planned data vs. actual data						
Checking the compatibility with pre-intervention data						
Completing the intervention						
Timely closure						
Checking potential delay/deviations						



4.5. ROMANIA

4.5.1. Consumers with an Online Account

The interventions in Romania will be implemented on the consumers of the energy provider Electrica Furnizare SA, the country's largest electricity generator. The online account owner-consumers, and the users of the MyElectrica Application will be involved, because they have already established interaction with the energy providers regarding energy behaviour and preferences.

	ELECTRICA Furnizare online
Sector	Energy Provider Company – possessors of online and MyElectrica App account
Type of intervention	<ul style="list-style-type: none"> • Information including simplification • Feedback on own consumption • Commitment • Social norms
Behaviour	Adjustment of everyday behaviours and behaviours in the private sphere
Matrix Variables	4x1
Participants	10.000
Expected goals	<ol style="list-style-type: none"> 1. To investigate the effects of the interventions on visitors' investment and maintenance behaviours for the hydroelectric power plant (e.g charity box donations) 2. Follow up survey on energy consumption behaviour
Methods (Quantitative, Qualitative; Mixed)	Quantitative



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	<ul style="list-style-type: none"> • Questionnaire on self-reported energy consumption/saving behaviour and pro-environmental practices, lifestyles • Consumption data including historical data • Other socio-demographic data owned by the company with respect to the specific consumers.
Criteria for randomization	TBD
Name of data collection instrument <i>(if available in your national language)</i>	To be identified and shared among the partners (TBD)
Design	<p>T0: G1, G2, G3, G4, G5</p> <ul style="list-style-type: none"> • questionnaire on energy consumption/saving behaviour and pro-environmental practices <p>T1: G1, G2, G3, G4, G5:</p> <ul style="list-style-type: none"> • application of treatments <p>T2: G1, G2, G3, G4, G5:</p> <ul style="list-style-type: none"> • follow-up questionnaire on energy consumption/saving behaviour and pro-environmental practices <p>T3: G1, G2, G3, G4, G5:</p> <ul style="list-style-type: none"> • consumption data interrogation



Table 29. Consumers With an Online Account Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:												
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION			
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time Any delay/deviations affecting intervention closure are checked
Deviation from plan												
Ethical considerati ons												



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 30. Consumers With an Online Account Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR					
	Aug. 21	Sept. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22
Recruitment						
Recruitment process completed						
Comparison of targeted number of participants vs. actual recruited						
Randomization						
Formation of experimental group						
Formation of control group						
Pre-intervention data collection						
Planning data collection method						
Comparison of designed data to be collected vs. actual data collected						
Initiating the intervention						
Intervention kick-off						
Informing participants and involved parties about the procedures						
Intervention execution						
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed						
Post-intervention data collection						
Confirming that the data collection method is as planned						
Comparison of planned data vs. actual data						
Checking the compatibility with pre-intervention data						
Completing the intervention						
Timely closure						
Checking potential delay/deviations						



4.5.2. Consumers without an Online Account

The consumers of the same energy provider Electrica Furnizare SA will be included in the intervention. However, this time, the focus will be on consumers who neither have an online account nor use the MyElectrica Application. This group of consumers prefer more traditional means of communication with the provider.

	ELECTRICA Furnizare offline
Sector	Energy Provider Company – offline consumers
Type of intervention	<ul style="list-style-type: none"> • Information including simplification • Feedback on own consumption • Commitment • Social norms
Behaviour	Adjustment of everyday behaviours and behaviours in the private sphere
Matrix Variables	4x1
Participants	3.5 mil
Expected goals	1. To investigate the effects of the interventions on customers' energy consumptions and investment behaviours
Methods (Quantitative, Qualitative; Mixed)	Quantitative



Type of data <i>(Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</i>	<ul style="list-style-type: none"> • Questionnaire (optional) • Consumption data including historical data • Other socio-demographic data owned by the company with respect to the specific consumers.
Criteria for randomization	TBD
Name of data collection instrument <i>(if available in your national language)</i>	<i>To be identified and shared among the partners (TBD)</i>
Design	<p>T0: G1, G2, G3, G4, G5 (TBD):</p> <ul style="list-style-type: none"> • questionnaire on energy consumption/saving behaviour and pro-environmental practices <p>T0: G1, G2, G3, G4, G5:</p> <ul style="list-style-type: none"> • application of treatments <p>T1: G1, G2, G3, G4, G5:</p> <ul style="list-style-type: none"> • consumption data interrogation <p>T2: G1, G2, G3, G4, G5 (TBD):</p> <ul style="list-style-type: none"> • follow-up questionnaire on energy consumption/saving behaviour and pro-environmental practices



Table 31. Consumers Without an Online Account Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:												
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION			
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time Any delay/deviations affecting intervention closure are checked
Deviation from plan												
Ethical considerati ons												



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 32. Consumers Without an Online Account Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR								
	Aug. 21	Sept. 21	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22	Mar. 22	Apr. 22
Recruitment									
Recruitment process completed									
Comparison of targeted number of participants vs. actual recruited									
Randomization									
Formation of experimental group									
Formation of control group									
Pre-intervention data collection									
Planning data collection method									
Comparison of designed data to be collected vs. actual data collected									
Initiating the intervention									
Intervention kick-off									
Informing participants and involved parties about the procedures									
Intervention execution									
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed									
Post-intervention data collection									
Confirming that the data collection method is as planned									
Comparison of planned data vs. actual data									
Checking the compatibility with pre-intervention data									
Completing the intervention									
Timely closure									
Checking potential delay/deviations									



4.6. TURKEY

4.6.1. Gediz Electricity

Operating in Izmir and Manisa in the Aegean Region of Turkey, Gediz Electricity provides service to approximately 6 million people, accounting for more than 3.5 million consumers. As a user-partner, Gediz Electricity is essential to ENCHANT, since it allows observation of the households' energy behaviour orientations and potential changes in these.

	Gediz Electricity
Sector	Energy Provider Company
Type of intervention	<ul style="list-style-type: none"> • Information • Feedback • Social Norms
Behaviour	Energy Saving Behaviour
Matrix Variables	3x1
Participants	Customers (users of the smart phone app) (N =100K-150K for the app - which is expected to be deployed until October 2021 and N= 250K- 300K (non-users of the smart phone app)
Expected goals	<ol style="list-style-type: none"> 1. To test the impacts of various energy efficiency information and ideas on the electricity use of household customers 2. To find salient information and means of providing this information that causes a behavioural shift in households towards lower electricity use 3. To compare the effectiveness of treatments through virtual and non-virtual environments
Methods (Quantitative, Qualitative; Mixed)	Quantitative



Type of data (Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)	Observed changes in energy consumption
Criteria for randomization	Use a random sorting of users of smart phone app Use a random sorting of non-users of smart phone app (customers receiving electricity bills)
Name of data collection instrument (if available in your national language)	<i>Gediz smart phone app (name not determined yet) Electricity bills</i> <i>Others to be identified and shared among the partners</i>
Design	<p>STUDY A (Users of the smart phone app)</p> <p>T0: G1, G2:</p> <ul style="list-style-type: none"> Information on pre-intervention monthly energy consumption through energy consumption data and/or electricity bills. (Data from Gediz) <p><u>TA: Informative graphics and on societal and personal benefits of decreasing electricity usage:</u></p> <ul style="list-style-type: none"> G1 informative graphics and short messages through the app G2 control group <p>T1: G1, G2:</p> <ul style="list-style-type: none"> Observed behaviour regarding changes in energy consumption through energy consumption data and/or electricity bills. (data will be provided by Gediz) <p>STUDY B (Non-users of the smart phone app)</p> <p>T0: G1, G2:</p> <ul style="list-style-type: none"> Information on pre-intervention monthly energy consumption through energy consumption data and/or electricity bills. <p><u>TA: Informative graphics and on societal and personal benefits of decreasing electricity usage:</u></p> <ul style="list-style-type: none"> G1 informative graphics and short messages through electricity bills G2 control group



	<p>T1: G1, G2:</p> <ul style="list-style-type: none">• Observed behaviour regarding changes in energy consumption through energy consumption data and/or electricity bills.
--	---



Table 33. Gediz Electricity Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 34. Gediz Electricity Intervention Timeline Gantt Chart

Monitoring Steps	MONTHS/YEAR				
	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22
Recruitment					
Comparison of targeted number of participants vs. actual compared					
Randomization					
Formation of experimental group					
Formation of control group					
Pre-intervention data collection					
Planning data collection method					
Comparison of designed data to be collected vs. actual data collected					
Initiating the intervention					
Timely kick-off					
Informing participants and involved parties about the procedures					
Intervention execution					
Timely execution					
Post-intervention data collection					
Confirming that the data collection method is as planned					
Comparison of planned data vs. actual data					
Checking the compatibility with pre-intervention data					
Completing the intervention					
Timely closure					
Checking potential delay/deviations					



4.6.2. Izmir Metropolitan Municipality

Izmir, with a population of 4.3 million, is located in the Aegean Region and covers an area of 12,000 square kilometres around the Gulf of Izmir. The city consists of 31 districts with varying population densities. Izmir Metropolitan Municipality has ambitions to increase the number of electric buses in its fleet to further contribute to a low-emission transportation system and a climate-friendly future. The intervention to be implemented in the Municipality is expected to provide information on the degree of a potential change in citizens' energy behaviours and lifestyles.

	Izmir Metropolitan Municipality
Sector	Local government (Municipality)
Type of intervention	<ul style="list-style-type: none"> • Information • Social Norms
Behaviour	Energy Saving Behaviour
Matrix Variables	2x1
Participants	Citizens, potential public transportation users (N =250K-300K)
Expected goals	<ol style="list-style-type: none"> 1. To investigate the effects of climate and environmental messaging on increasing the ridership and use of public transportation 2. To observe the effect of changing fuel prices on the usage of public transport
Methods (Quantitative, Qualitative, Mixed)	Quantitative



<p>Type of data (Questionnaire, Observational, Structured test, Interviews, Focus groups GPS positioning, etc.)</p>	<ul style="list-style-type: none"> ● Measured usage intensities of public transportation ● self-reported changes in energy savings behaviour and use of public transportation through the Bizlzmir platform
<p>Criteria for randomization</p>	<p>Sort public transport stations randomly into treatment and control groups</p>
<p>Name of data collection instrument (if available in your national language)</p>	<p>Izmir Metropolitan Municipality's transportation Database - IZULAŞ Bizlzmir platform (web-based interactive platform hosted by the Izmir Metropolitan Municipality for information exchange, announcements, surveys etc.)</p> <p>Others to be identified and shared among the partners</p>
<p>Design</p>	<p>Study A T0: G1, G2</p> <ul style="list-style-type: none"> ● Information on pre-intervention public transportation usage intensities in the selected stops through the usage frequencies (Data from IZULAS) <p><u>TA: Climate and environmental messaging on public transport stations for increasing the ridership and use of public transportation</u></p> <ul style="list-style-type: none"> ● G1 public transport stations with new messages / posters / information / videos ● G2 control group <p>T1:</p> <ul style="list-style-type: none"> ● G1, G2 Observed behaviour regarding changes in the intensity of public transport usage through the usage frequencies (Data will be provided by IBB and IZULAS) <p>T2: G1</p> <ul style="list-style-type: none"> ● Follow-up questionnaire on the Bizlzmir platform for those who have seen the messages on public transport stations ● Self-reported changes in the intensity of public transport usage through the questionnaire on the Bizlzmir platform



Table 35. Izmir Metropolitan Municipality Intervention Monitoring Checklist Template

USER-PARTNER: INTERVENTION: DATE:													
	PRE-INTERVENTION					EXECUTION			POST-INTERVENTION				
	Recruit- ment	Randomization		Pre-intervention data collection		Intervention kick-off		Imple- mentation of the inter- vention	Post-intervention data collection			Intervention Closure	
	Targeted number of participant vs actual recruited are compared	Experimental group that intervention is implemented is formed	Control group without any intervention is formed	Data collection method is planned	Designed data to be collected vs. actual data collected are compared	Intervention is started on time	Participants and involved parties are informed about the procedures	Guidelines and Operational Plan followed according to the intervention designs and RCT research protocol and the timelines	The data collection method is as planned is confirmed	Planned data to be collected vs. actual data collected are compared	Compatibility with pre-intervention data is checked	Intervention is closed on time	Any delay/deviations affecting intervention closure are checked
Deviation from plan													
Ethical considerati ons													



Data and privacy considerations													
Reason for Deviation													
Impact of deviation (timeline, validity, etc.)													
Proposed solution													

*Please insert a check mark (✓) if the relevant task is completed.



Table 36. Izmir Metropolitan Municipality Intervention Timeline

Monitoring Steps	MONTHS/YEAR				
	Oct. 21	Nov. 21	Dec. 21	Jan. 22	Feb. 22
Recruitment					
Recruitment process completed					
Comparison of targeted number of participants vs. actual recruited					
Randomization					
Formation of experimental group					
Formation of control group					
Pre-intervention data collection					
Planning data collection method					
Comparison of designed data to be collected vs. actual data collected					
Initiating the intervention					
Intervention kick-off					
Informing participants and involved parties about the procedures					
Intervention execution					
Guidelines and Operational Plan, intervention designs, RCT research protocol and timelines followed					
Post-intervention data collection					
Confirming that the data collection method is as planned					
Comparison of planned data vs. actual data					
Checking the compatibility with pre-intervention data					
Completing the intervention					
Timely closure					
Checking potential delay/deviations					



5. Conclusion

The interventions are important regarding both the workflow and aims and objectives of the ENCHANT project. The intervention packages are designed to assess the behavioural change impacts of a spectrum of combinations of intervention types, communication channels, timing, and other parameters. These parameters are tested in real-life settings, with targeted energy-related behaviours pertaining to investment, maintenance and everyday energy savings.

The earlier deliverables of ENCHANT, Deliverable D2.2 Design of Intervention Matrix and Definition of RCT Research Protocols (ENCHANT, 2021c) and ENCHANT Deliverable D4.1 Guidelines and Operational Intervention Plan (ENCHANT, 2021d), respectively, provided the design for the interventions per user-partner, and established the guidelines and operational plan for the appropriate implementation of these designs.

Given the varied nature of the intervention designs, and their guidelines and operational plan, monitoring of the interventions is important from several perspectives.

To begin with, the implementations are carried out in very different geographical locations, involving multiple stakeholders which include user-partners, scientific partners, and other stakeholders, and thus, require a systematic implementation and monitoring. Hence, intervention monitoring will serve to establish the required coordination between and within the interventions. Moreover, monitoring the progress of the interventions provides a mechanism for assessing issues pertaining to the validity of the results and conclusions drawn, and taking corrective actions where necessary. Since the result of pre-intervention and post-intervention data contribute to the other tasks and work packages of ENCHANT, the monitoring plan should include components to ensure that the data is collected and utilized as per the intervention designs. Ethics requirements and data management and privacy issues need to be addressed in each activity of the ENCHANT project, and therefore, within each step of the interventions (ENCHANT, 2021a; ENCHANT, 2021b). Particularly, careful monitored is needed for the activities of recruitment, informing and consent procedures, data collection, required anonymization of data, and data storage. The Intervention Monitoring Plan also involves checks for ethics requirements and data management and privacy requirements.

The methodology for the Intervention Monitoring Plan is based on adaptation of the general methodology of process control. The adapted methodology involves the following steps: Defining the planned/expected mode of operation, Tracking the implementation, Assessing/Measuring the actual performance, Comparing the actual performance with the expected mode of operation, and identifying the differences/deviations from the expected mode of operation, and Determining reasons for differences/deviations from

the expected mode of operation and taking actions for restoring the expected mode of operation.

Two main tools were utilized to guide the monitoring process, and to track and record the results of the monitoring activities: the Intervention Monitoring Checklist Template and the Timeline Gantt Chart. Both tools were developed for active use during the implementation of the Intervention Monitoring Plan.

Upon completion of one cycle of this methodological framework, it is important to incorporate the necessary actions into the planned/expected mode of operation by updating the initial intervention plan. The monitoring needs to be an ongoing process, repeated periodically and as required as result of unforeseen issues that may arise. Hence, the last step of the Intervention Monitoring Plan involves Updating planned/expected mode of operation and repeating the preceding steps periodically, and also with additional intermediate monitoring iterations.



6. Sources

Cangussu, J., DeCarlo, R., Mathur, A., 2003. Monitoring the software test process using statistical process control: a logarithmic approach. *ACM Sigsoft Software Engineering Notes*. 28. 158-167. 10.1145/949952.940093.

ENCHANT, 2020. D1.1: Work Plan. Deliverable 1.1 of the ENCHANT Project [Online] Available at: https://enchant-project.eu/wp-content/uploads/2021/04/ENCHANT_D1_1_Work_Plan_v1_R1.pdf [Accessed 5 August 2021]

ENCHANT, 2021a. D1.4: Data Management Plan. Deliverable 1.4 of the ENCHANT Project [Online] Available at: https://enchant-project.eu/wp-content/uploads/2021/04/ENCHANT_D1_4_DMP_R1.pdf [Accessed 5 August 2021]

ENCHANT, 2021b. D1.7: Ethics Requirements. Deliverable 1.7 of the ENCHANT Project [Online] Available at: https://enchant-project.eu/wp-content/uploads/2021/04/ENCHANT_D1_7_Ethic_requirements_R1.pdf [Accessed 10 August 2021]

ENCHANT, 2021c. D2.2: Design of Intervention Matrix and Definition of RCT Research Protocols

ENCHANT, 2021d. D4.1: Guidelines and Operational Intervention Plan

Hales, S., Leshner-Trevino, A., Ford, N., Maher, D., Ramsay, A., Tran, N., 2016. Reporting guidelines for implementation and operational research. *Bull World Health Organization*, 94, 58–64.

Jakhar, S. K., 2017. Stakeholder Engagement and Environmental Practice Adoption: The Mediating Role of Process Management Practices. *Sust. Dev.*, Vol. 25, 92– 110.

Pourmirza, S., Peters, S., Dijkman, R., Grefen, P., 2017. A systematic literature review on the architecture of business process management systems, *Information Systems*, Volume 66, 2017, 43-58.

Sundnes, K.O., 2014a. Operational planning for a specific intervention. *Scandinavian Journal of Public Health*, 42 (Suppl 14), 119–122.

Sundnes, K.O., 2014b. Selection of responses and interventions. *Scandinavian Journal of Public Health*, 42 (Suppl 14), 113–118.

Sundnes, K.O., 2014c. Implementation, execution, and completion of projects. *Scandinavian Journal of Public Health*. 42 (Suppl 14), 123–129.

