PRELIMINARY RESULTS PRESENTATION

ICT-ENABLED BEHAVIORAL CHANGE TOWARDS ENERGY EFFICIENT LIFESTYLES (INBETWEEN)
PROJECT COORDINATOR - FEDERICA FULIGNI, RINA-C

InBetween: Agenda

- Recap on Demosites and equipment installed

- Project KPIs:

  - Energy & economic consumption,

  - Acceptance Rate

  - Number of Users

InBetween: Where are our first end-users?

- **France , Leers**– 25 social housing dwellings (Vilogia) – *tenants in social housing*

- **Austria , Großschönau** – 7 residential plus 6 tertiary buildings (Sonnenplatz) – *home owners and building users*

InBetween: How do we measure?

- **External Meter Interface (EMI) :** *1 Develco EMI/dwelling on electricity meter*

- **Smart Cable:** *1 Develco smart cable on each heater and boiler (4-7 units/dwelling)*

- **Smart Plug Mini:** *1 Develco smart plug / dwelling*

- **Window sensor:** *1 Develco window sensor on main door and each window (3-7 units/ dwelling)*

InBetween: How do we measure?

- **VOC sensor:** *1 Develco VHT sensor / dwelling*

- **Motion sensor:** *1 Develco motion sensor in each main room (4-6 units/dwelling)*

- **Gateways:** *1 Develco gateway / dwelling*

- *Metering installation started in:* **October 2018**
- *Metering completed in :* **January 2019**

InBetween: Project KPIs

Expected Impacts		Expected results	
Impact # 1	Significant reduction of final energy consumption prompted by innovative ICT solutions clearly quantified and substantiated, and subsequent reduction of CO_2 emissions	**15 % energy savings (42-56MWh)** **15 % CO_2 reduction** **20 % cost savings**	
Impact # 2	Accelerated wider deployment and adoption of user-friendly ICT solutions prompting behavioral change and energy efficiency, including plans for its sustainability after the project's life and potential/readiness for replication	**> 90 % acceptance rate**	
Impact # 3	Number of energy end-users changing their behavior documenting why and how changes are an effect of articular measures taken, as well in terms of the sustainability of the behavioral change.	**> 150**	Users involved in demo
		>= 90 %	Participation rates
		<= 5 %	Withdrawal rates
		25 % (39 users)	Minimum numbers of users that will change their behavior
		76 % (> 111 users)	Additional number of users whose energy consumption will be reduced by the InBetween solution intervention

InBetween: Impact #1

Impacts for both demo sites

		Results [%]	Objective [%]	Variation with respect to the objective [%]
Energy savings [%]	All apartments	11.8	15	-3.8
	Apartments with savings	16.5	15	+1.5
CO2 savings [%]	All apartments	2.7	15	-12.3
	Apartments with savings	22.7	15	+7.7
Costs savings [€]	All apartments	5.7	20	-14.3
	Apartments with savings	17.2	20	+2.8

The following aspects must be retained when considering the abovementioned results:

- **Changes of habits** might have happened from baseline to validation period which are not linked to InBetween use (e.g. change in the number of people in the house, personal habits, COVID-19 lockdowns,etc)
- **The total number of apartments** is relatively low compared to the initial estimate (33 buildings used the app over a total of 47 that participated in the initial survey, only the 70%)
- **Technical issues that prevented the collection of data** to make the assessment possible (list available in D5.3 – 3.1.3). Anyway, all the technical issues have been solved and the InBetween platform is now fully functional and can be used for replication.

It is reasonable to think that the number of apartments and buildings with positive savings will increase through the adoption of the InBetween platform.

InBetween: Impact #2

Definition of KPIs related to Acceptance

Engage users in a sustained way (KPI-A1): Engagement with the platform	Applicability
It counts the number of times an end user enters the Mobile App or Web interface: number of Sessions • If count is strictly greater than to 2 times/user/month[1]: user is engaged, and the acceptance value is 1. • If count is less or equal to 2 times/user/month: user is not engaged, and the acceptance value is 0.	SEM & Web
Convince user to adopt energy-efficient behavior (KPI-A21):	
Number of times a change is registered within 30 min of a notification received by the user divided by the number of notifications received • If the user reacted to at least one notification received in the calendric month: user changed behavior and the value is 1. • If user did not react to any notification received in the calendric month: user did not change behavior and the value is 0.	SEM only
Compliance indicator (KPI-A22): Use of actuators	
• If user used any actuator in the calendric month: user changed behavior and the value is 1. • If user did not use any actuator in the calendric month: user did not change behavior and the value is 0.	SEM and Web* *in the future
Provide user with interesting information (KPI-A3): User satisfaction	
• If the average value of the rating is strictly greater than 2 over a calendric month: the platform is perceived as at least somewhat useful and the value is 1. • If the average value of the rating is lower or equal to 2 over a calendric month: the platform is perceived as not useful and the value is 0.	Notifications: SEM only

InBetween: Impact #2

Acceptance rate and KPIs values for both demo sites

	Overall acceptance rate [%]	% of apartments with an overall acceptance rate strictly positive [%]	KPI-A1	KPI-A2	KPI-A3
VIL all apartments (19)	49.5	84.2	31.6	45.3	1.1
SON residential buildings (7)	45.7	57.1	42.9	20	14.3
SON non-residential buildings (6)	86.7	100	70	53.3	23.3
Average on all apartment (32)	55.6	81.3	41.3	41.3	8.1

The following aspects must be retained when considering the abovementioned results:

- Evaluation performed only from March to May 2019 , summer period with less notifications
- Issues in sending alerts
- Covid-19 situation changing priorities for the tenants and leaving some buildings empty.

InBetween: Impact #3

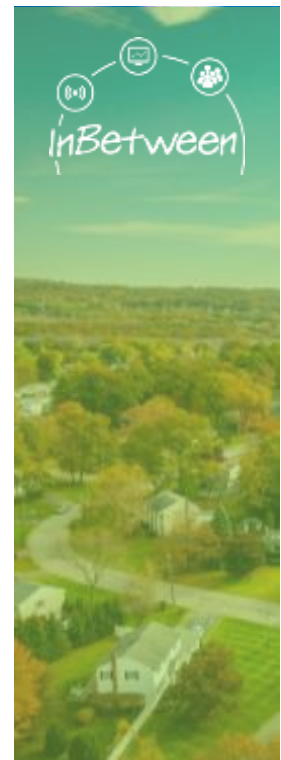**Achieved Impacts of end user involvement for both demosites**

InBetween impacts	Expected (on the total)	Achieved Results			
		Group A	Group B	Group C	Total
Users involved in demo	> 150	59	27	177	263
Participation rate	>= 90 %	76%[1]	100%	100%	83%
Withdrawal rate	<= 5 %	12%[2]	0%	0%	8%
Minimum numbers of users that will change their behavior	25 % (39 users)[3]	12% (19 users)[4]	5% (8 users)[5]	4% (6 users)[6]	22% (33 users)
Additional number of users whose energy consumption will be reduced to the intervention	76 % (> 111 users)	20% (29 users)	10% (15 users)	117% (171)	147% (215 users)

The following aspects must be retained when considering the abovementioned results:

- These information are more static compared to the previous two impacts. They often make reference to the total of buildings who accepted the survey in 2016 (47) and who finally installed the sensors (39 out of 47) and later on installed the App/ used the web platform (33 out of 39).
- Differently from Impact #2 where 5 households were excluded , only 3 are considered withdrawal in here (forced withdrawal only).

Three (3) objectives out of five (5) have performed well beyond the expected values.

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THANK YOU FOR YOUR ATTENTION!

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