



PROPOSAL LIFE 16-ENV-ES-000341

**“DESALINATED SEAWATER FOR ALTERNATIVE AND
SUSTAINABLE SOILLESS CROP PRODUCTION”**



“INITIAL REPORT FOR INDICATORS TABLE”

**ACCIÓN E2. “COMPILATION OF INFORMATION FOR
INDICATOR TABLES”**



22 October 2018



1. Abstract

The LIFE "Key Performance Indicators (KPIs)" allow the quantification of the impact of the project. For the estimation of many of the proposed KPIs, in particular for the more technical KPIs, it is necessary to have the results of the experimental trial, which started in September 2018. This is the case of KPIs that evaluate the savings of water and energy, the CO₂ footprint or the conservation of soils and aquifers. However, initial data are available for the preliminary quantification of the KPIs related to economic factors, the replicability of the project, the transferability of the results and the dissemination activities.

In compliance with EASME [2017] - 6804961 requirements (Annex I of First Progress Report), the compilation of a set of LIFE Program KPIs in the web application (01/2018; <https://webgate.ec.europa.eu/eproposalWeb/kpi>) was carried out. To update the KPIs for which data was generated in the first year of the project, a new scenario called "First Progress Report (FPR) scenario" was created. All KPIs updates are explained in section 4 (highlighted in blue).

2. Resumen

Los LIFE "Key Performance Indicators (KPIs)" permiten la cuantificación del impacto del proyecto. Para la estimación de muchos de los KPIs propuestos, especialmente los KPI más técnicos, será necesario disponer de los resultados del ensayo experimental de este proyecto, el cual ha comenzado en septiembre de 2018. Este es el caso de los KPIs que evalúan los ahorros de agua y energía, la huella de CO₂ o la conservación de suelos y acuíferos. Sin embargo, sí se dispone datos iniciales para la cuantificación preliminar de los KPIs relacionados con factores económicos, la replicabilidad del proyecto, la transferencia de resultados y las actividades de difusión.

Atendiendo a la petición de EASME [2017] – 6804961 (Annex I de First Progress Report), se procedió a la compilación de LIFE Programme KPIs a través de la aplicación web habilitada a este efecto (01/2018; <https://webgate.ec.europa.eu/eproposalWeb/kpi>).

Para la actualización de aquellos KPIs para los que se dispone de datos generados en el primer año del proyecto, se ha creado un nuevo escenario denominado "Progress Report (FPR) escenario". Todas las actualizaciones de KPIs (destacadas en azul) se describen en el apartado 4 de este informe.



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3. Table of indicators based on the EASME KPI web application

INDICATOR	Specific contexts	Unit	Begin Value	End Value	Beyond 3 years Value	Progress Report Scenario	Explanation of change
1.5. Project area/lenght	1.5.1 Implementation of irrigation closed soilless systems	ha	0	500	6000	0,0758	a151
	1..5.2. The use of desalinated sea water for irrigation	ha	0	500	6000	0,0252	a152
1.6. Humans to be influenced by the project	1.6.1 Implementation of irrigation closed soilless systems	Humans	0	500	3000	+2000	a161
	1.6.2 The use of desalinated sea water for irrigation	Humans	0	500	3000	+2000	a162
2.3.5.3. Water consumption for production	2.3.5.3.1 Implementation of irrigation closed soilless systems	kg tomato/year/ha	140000	307000	307000	NO DATA	a23531
	2.3.5.3.2 The use of desalinated sea water for irrigation	m3/kg	0.06	0.04	0.02	NO DATA	
4.1.1. Recource efficiency – energy - consumption	4.1.1.1. Implementation of closed soilless systems and irrigation with desalinated seawater	Kw-h/year	3840	3072	3072	NO DATA	a4111
8.1.1. CO2 emissions	8.1.1.1. Implementation of irrigation closed soilless systems	kgCO2/kg produced	0.01	0.01	0.01	NO DATA	a8111
	8.1.1.2. Implementation of irrigation closed soilless systems	kgCO2/year	1014	811	811	NO DATA	
10.2. Involvement of non-governmental	10.2.1 Implementation of closed soilless systems and irrigation with desalinated seawater	Number	0	5	10	2	a1021



organisations (NGOs) and other stakeholders in project activities							
11.1. Website	11.1.1 Implementation of closed soilless systems and irrigation with desalinated seawater	No. of unique visits	0	150	2000	+1300	a1111
	11.1.2 Implementation of closed soilless systems and irrigation with desalinated seawater	No. of individuals	0	150	2000	NO DATA	
	11.1.3 Implementation of closed soilless systems and irrigation with desalinated seawater	No. Downloads	0	20	200	+500	
	11.1.4 Implementation of closed soilless systems and irrigation with desalinated seawater	Average visit duration (minutes)	0	3	5	NO DATA	
11.2. Other tools for reaching/raising awareness of the general public	11.2.1 Implementation of closed soilless systems and irrigation with desalinated seawater	Publications/reports	0	5	10	3	a1121
	11.2.2 Implementation of closed soilless systems and irrigation with desalinated seawater	Print media	0	10	25	2	
	11.2.3 Implementation of closed soilless systems and irrigation with desalinated seawater	Other media (video/broadcast)	0	1	1	0	



	seawater						
	11.2.4 Implementation of closed soilless systems and irrigation with desalinated seawater	Hotline/information centre	0	1	2	2	
	11.2.5 Implementation of closed soilless systems and irrigation with desalinated seawater	Events/exhibitions	0	5	10	5	
	11.2.6 Implementation of closed soilless systems and irrigation with desalinated seawater	Displayed information (poster, information boards)	0	3	6	4	
11.3. Surveys carried out regarding awareness of the environmental	11.3.1. Implementation of closed soilless systems and irrigation with desalinated seawater	Number	0	38	60	0	a1131
12.1 Networking	12.1.1 Implementation of closed soilless systems and irrigation with desalinated seawater	Number	0	6	10	3	a1211
12.2 Professional training and education	12.2.1 Implementation of closed soilless systems and irrigation with desalinated seawater	Number	0	13	15	0	a1221
13. Jobs	13.1 Implementation of closed soilless systems and irrigation with desalinated seawater	Number	0	6	10	+10	a131
14.1 Running cost/operating	14.1.1 Implementation of closed soilless systems and irrigation with desalinated	€	0	1048026	105000	180738.91	a1411



costs during the project and expected in case of continuation	seawater						
14.2 Capital expenditure expected in case of continuation	14.2.1 Implementation of closed soilless systems and irrigation with desalinated seawater	€			105000	NO DATA	a1421
14.3 Future funding	14.3.1 Implementation of closed soilless systems and irrigation with desalinated seawater	€			105000	NO DATA	a1431
14.4.3 Entry into new areas	14.4.3.1 Implementation of closed soilless systems and irrigation with desalinated seawater	España ESTE				NO DATA	a14431
	14.4.3.2 Implementation of closed soilless systems and irrigation with desalinated seawater	ITALIA SUD				NO DATA	a14432



4. Explanation of changes in KPIs

Project area/length 1.5.1 Returna151
<p>Baseline scenario. 0 ha of closed soilless culture. At the end of the Project. Between 1 ha and 500 ha of closed soilless culture. Beyond 3 years. Up to 6000 ha of closed soilless culture During the Project, the implementation of closed soilless system for tomato crops will be demonstrated in a 758 m2 greenhouse in Almería. At the end of the Project, it is expected, due to the transference and replication plans, that the results of the projects are extended up to 500 ha (other plots with similar conditions). 3 years after the Project ends about 6.000 ha could have adopted closed soilless systems.</p> <p>Progress Report Scenario. The experimental plot has 0.0758 ha of soilless closed systems.</p>
Project area/length 1.5.2 Returna152
<p>Baseline scenario. 0 ha of land irrigated with desalinated seawater. At the end of the Project. Between 1 ha and 500 ha of land irrigated with desalinated seawater. Beyond 3 years. Up to 6000 ha of land irrigated with desalinated seawater. During the Project, the sustainable implementation of desalinated seawater for tomato crops irrigation will be demonstrated in a 758 m2 greenhouse in Almería. At the end of the Project, it is expected, due to the transference and replication plans, that the results of the projects are extended up to 500 ha (other plots with similar conditions). 3 years after the Project ends about 6.000 ha could have implemented the desalinated seawater in the irrigation programs.</p> <p>Progress Report Scenario. The experimental plot has 0.0252 ha of soilless closed systems irrigated by desalinated seawater.</p>
Humans to be influenced by the project 1.6.1 Returna161
<p>Baseline scenario. 0 Humans influenced by the project. At the end of the project. The Project contemplate to have, at the end of the project (i) more than 38 general stakeholders contacted, (ii) at least 150 visits to the webpage, (iii) 10 press released, (iv) 5 published manuscripts, (v) 5 conferences and (vi) 4 technical visits. Beyond 3 years. The Project beyond 3 years expects (i) more than 60 general stakeholders contacted, (ii) at least 2000 visits to the webpage, (iii) 25 press released, (iv) 10 published manuscripts, (v) 10 conferences and (vi) 4 technical visits.</p>



<p>Progress Report Scenario. (i) 150 general stakeholders contacted in events organized by project partners, (ii) +1300 visits to the webpage, (iii) 5 press releases, (iv) 3 published manuscripts, (v) presentation of DESEACROP in 2 conferences with +150 people and (vi) 2 technical visits with +20 people. TOTAL = +2000 people.</p>
<p>Humans to be influenced by the project 1.6.2 Returna162</p>
<p>Baseline scenario. 0 Humans influenced by the project. At the end of the project. The Project contemplate to have, at the end of the project (i) more than 38 general stakeholders contacted, (ii) at least 150 visits to the webpage, (iii) 10 press released, (iv) 5 published manuscripts, (v) 5 conferences and (vi) 4 technical visits. Beyond 3 years. The Project beyond 3 years expects (i) more than 60 general stakeholders contacted, (ii) at least 2000 visits to the webpage, (iii) 25 press released, (iv) 10 published manuscripts, (v) 10 conferences and (vi) 4 technical visits.</p> <p>Progress Report Scenario. Same as a161.</p>
<p>Water consumption for production 2.3.5.3.1 Returna23531</p>
<p>Baseline scenario. The per ha water consumption of tomato irrigated with well water rounds 8000 m3/ha with a yield of 140,000 kg/ha. This figure makes a water consumption for production of 0.057 m3/kg. At the end of the project. With the implementation of closed soilless systems and the recirculation of the treated drainages, about 1600 m3/ha can be saved. Accordingly, 6400 m3/ha will be used for irrigation with a yield of 140000 kg/ha. This figure makes a water consumption for production of 0.043 m3/kg. In addition, with the implementation of desalinated seawater, the closed soilless systems and the recirculation of the treated drainages, about 1600 m3/ha can be saved. Accordingly, 6400 m3/ha will be used for irrigation with a yield of 307000 kg/ha. This figure makes a water consumption for production of 0.0208 m3/kg. In the case of the units produced/year it is normal to observe an increase as the use of desalinated seawater will increase the yield.</p> <p>Progress Report Scenario. No data available yet.</p>
<p>Resource efficiency – energy - consumption 4.1.1.1 Returna4111</p>
<p>Electricity Baseline scenario. Energy consumption of the open soilless system before starting the project is 3,840 kW·h/ha. After the Project. Energy consumption of the closed soilless system will be 3,072 kW·h/ha. If desalinated sea water (DSW) is considered, energy</p>



<p>consumption will increase up to 28,480 kW·h/ha. This energy consumption comes mainly from the desalination plant activity. Therefore it cannot be reduced if DSW is used for irrigation. On the contrary, when the indicator is kW·h/kg, such a specific value would allow the comparison. Not with the present indicator. 3 years beyond the project. Same scenario as After the project as data are rated per hectare</p> <p>Progress Report Scenario. No data available yet.</p>
<p>CO2 emissions 8.1.1.1 Returna8111</p>
<p>Baseline scenario. CO2 emissions from the irrigation with underground water and open systems is 1,014 kgCO2/ha/year with a yield of 140,000 kg/ha After the Project. With the implementation of the closed soilless systems they will be reduced up to 811 kgCO2/ha/year with the same production. 3 years beyond the project. The same value as After the project as it is rated per hectare.</p> <p>Progress Report Scenario. No data available yet.</p>
<p>Involvement of non-governmental organizations (NGOs) and other stakeholders in project activities 10.2.1 Returna1021</p>
<p>Baseline scenario. 0 people involved in DESEACROP After the Project. The Project contemplate to have, at the end of the project (i) more than 38 general stakeholders contacted, (ii) at least 150 visits to the webpage, (iii) 10 press released, (iv) 5 published manuscripts, (v) 5 conferences and (vi) 4 technical visits. 3 years beyond the project. The Project beyond 3 years expects (i) more than 60 general stakeholders contacted, (ii) at least 2000 visits to the webpage, (iii) 25 press released, (iv) 10 published manuscripts, (v) 10 conferences and (vi) 4 technical visits.</p> <p>Progress Report Scenario. 2 entities. HERMISAN S.A. (private entity which develops advanced projects of agricultural drip irrigation, automation and fertirrigation) and Vitalplant S.L. (Plant nursery which supplies the latest plant varieties).</p>
<p>Website 11.1.1 Returna1111</p>
<p>Baseline scenario Average visit duration (0), N° Downloads (0), N° of individuals (0), N° of unique visits (0) After the Project Average visit duration (3), N° Downloads (20), N° of individuals (150), N° of unique visits (150 - at least the same as no of people) 3 years beyond the project.</p>



<p>Average visit duration (5), N° Downloads (200), N° of individuals (2000), N° of unique visits (2000 - as number of people)</p> <p>Progress Report Scenario. Average visit duration (NO DATA), N° Downloads (+500), N° of individuals (NO DATA), N° of unique visits (+1300). A new plug-in is to be implemented to retrieve more detailed information.</p>
<p>Other tools for reaching/raising awareness of the general public 11.2.1 Returna1121</p>
<p>Baseline scenario Displayed information (poster, information boards) (0), Events/exhibitions (0), Hotline/information centre (0), Other media (video/broadcast) (0), Print media (0), Publications/reports (0) After the Project Displayed information (poster, information boards) (3), Events/exhibitions (5), Hotline/information centre (1), Other media (video/broadcast) (1), Print media (10), Publications/reports (5) 3 years beyond the project. Displayed information (poster, information boards) (6), Events/exhibitions (10), Hotline/information centre (2), Other media (video/broadcast) (1), Print media (25), Publications/reports (10)</p> <p>Progress Report Scenario. Displayed information (poster, information boards) in 3 conferences in 2018 (Spain National Irrigation Conference, IWARESA, AEDYR) and Notice Boar in demo plot. Events/exhibitions (5 events: DESEACROP organized seminars, IWARESA, Irrigation National Congress, AEDYR, CUCN seminar), 2 Hotline/information centres (2 direct lines for information about the project), Other media (video/broadcast) (0), Print media (2: Project Flyer, Notice board), Publications/reports (3 manuscripts).</p>
<p>Surveys carried out regarding awareness of the environmental 11.3.1 Returna1131</p>
<p>Baseline scenario. 0 After the Project. 38 3 years beyond the project. 60</p> <p>Progress Report Scenario. 0. First surveys planned for 2019.</p>
<p>Networking 12.1.1 Returna1211</p>



<p>Networking with other LIFE projects such as DRAINUSE, IRRIMAN. Baseline scenario. 0 After the Project. 5 3 years beyond the project. 10</p> <p>Progress Report Scenario. 3 Networking activities done to date which include visits to the facilities of the LIFE project DRAINUSE and ERANET project DESERT and <i>Dirección General del Agua</i> (Water Authorities of Murcia Region Government).</p>
<p>Professional training and education 12.2.1 Returna1221</p>
<p>Baseline scenario. 0 After the Project. 13. 8 educational training plus 5 seminars at the end of the Project. 3 years beyond the project. 15</p> <p>Progress Report Scenario. 0 No trainings have been done up to date. First trainings planned for 2019.</p>
<p>Jobs 13.1 Returna131</p>
<p>Baseline scenario. 0 After the Project. 6 new contracts to develop and extend the project results. 3 years beyond the project. It is envisaged that closed systems may be installed in 20% of greenhouse surface; i.e. 6,000 ha. 100 new contracts to develop and extend the project results in the 6,000 ha</p> <p>Progress Report Scenario. 2 full time new contracts and +10 indirect contracts (contractors)</p>
<p>Running cost/operating costs during the project and expected in case of continuation 14.1.1 Returna1411</p>
<p>3 years beyond the project. UPCT and UAL will continue the demonstrative monitoring and the dissemination efforts by providing own personnel. It is envisaged a contribution about 30,000 euros each for a period of 5 years after the Project ends as personnel costs. In the case of Valiza-Agua, they will follow with the implementation of DESEACROP results following the replication plan. It is envisaged a contribution of 35000 euros for a period of 5 years after the Project ends as personnel costs and 2.000 euros year for infrastructures.</p>



Progress Report Scenario. 180,738.91 € at progress report date.
Capital expenditure expected in case of continuation 14.2.1 Returna1421
<p>UPCT and UAL will continue the demonstrative monitoring and the dissemination efforts by providing own personnel. It is envisaged a contribution about 30,000 euros each for a period of 5 years after the Project ends as personnel costs. 3 years beyond the project. UPCT and UAL will continue the demonstrative monitoring and the dissemination efforts by providing own personnel. It is envisaged a contribution about 30,000 euros each for a period of 5 years after the Project ends as personnel costs. In the case of Valiza-Agua, they will follow with the implementation of DESEACROP results following the replication plan. It is envisaged a contribution of 35000 euros for a period of 5 years after the Project ends as personnel costs and 2.000 euros/year for infrastructures.</p> <p>Progress Report Scenario. No data available yet.</p>
Future funding 14.3.1 Returna1431
<p>UPCT and UAL will continue the demonstrative monitoring and the dissemination efforts by providing own personnel. It is envisaged a contribution about 30,000 euros each for a period of 5 years after the Project ends as personnel costs. In the case of Valiza-Agua, they will follow with the implementation of DESEACROP results following the replication plan. It is envisaged a contribution of 35000 euros for a period of 5 years after the Project ends as personnel costs and 2.000 euros/year for infrastructures.</p> <p>Progress Report Scenario. No data available yet.</p>
Entry into new areas 14.4.3.1 Returna14431
<p>Southeast of Spain will adopt these technologies</p> <p>Progress Report Scenario. No data available yet.</p>
Entry into new areas 14.4.3.2 Returna14432
<p>They will face the same problem as us.</p>



Progress Report Scenario. No data available yet.