

Action Plan



REGION OF CRETE
ΠΕΡΙΦΕΡΕΙΑ ΚΡΗΤΗΣ



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1. General Information

Project: **iWATERMAP - Water Technology Innovation Roadmaps**

Partner organisation: **Region of Crete**

Country: **Greece**

NUTS2 region: **Crete**

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2. Policy context

The Action Plan aims to impact: **X Investment for Growth and Jobs programme**

- European Territorial Cooperation programme
- Other regional development policy instrument

Name of the policy instrument(s) addressed: Crete Regional Operational Programme 2021-2027

2.1 Policy instrument Crete OP 2014-2020

The policy tool that the Region of Crete is called to influence and improve through the interregional learning of the IWATERMAP project is the Operational Program of the Region of Crete 2014-2020.

The vision of the development plan for Crete, in the context of the NSRF 2014-2020, is: "Dynamic and Sustainable Crete".

- "Dynamic" in the sense of the existence of a comprehensive exit strategy from the crisis, with investments and strengthening of the interconnections and the export character of the "Dynamic Sectors: agri-food, culture, -tourism, environment, knowledge economy".
- "Sustainable" in economic, environmental and social terms.
 - "Sustainable in economic terms": sustainable development is pursued based on the characteristics of the region, of constant time value "culture - Cretan diet" where there is a strong background to enhance extroversion and increased competitiveness.
 - "Sustainable in environmental terms": protection and enhancement of natural and cultural resources.
 - "Sustainable in social terms": inclusive development while tackling poverty and strengthening weaker social groups.

The interventions co-financed by the Operational Program CRETE 2014-2020 refer to **7 Priority Axes** as follows:

Axis	Budget
PRIORITY AXIS 1 (ERDF): Enhancing the competitiveness, innovation and entrepreneurship of Crete.	51.662.092
PRIORITY AXIS 2 (ERDF): Sustainable Development by upgrading the environment and addressing the effects of climate change in Crete.	258.392.977
PRIORITY AXIS 3 (ERDF): Strengthening education and social cohesion in Crete	47.671.028
PRIORITY AXIS 4 (ECF): Promoting employment and adapting employees to change.	5.434.595

Axis	Budget
PRIORITY AXIS 5 (ECF): Promoting Social Inclusion and Combating Poverty in Crete	66.047.150
PRIORITY AXIS 6: ERDF Technical Assistance	4.375.000
PRIORITY AXIS 7: ECF Technical Assistance	1.340.283
Total DP of Crete Region 2014-2020	434.883.125

In particular, the IWATERMAP project focuses on Priority Axis 2 of the DP of Crete Region 2014-2020 for "Sustainable Development by upgrading the environment and addressing the effects of climate change in Crete". PA 2 includes Thematic Objectives 4, 5, 6 and 7 of the 2020 Strategy.

The objectives of the axis are the protection and promotion of natural and cultural resources, the rational management of water and solid and liquid waste, the reduction of CO2 emissions through energy savings, as well as the adaptation of Crete Region to climate change.

Thematic Objective 6 for "Environmental protection and promotion of resource efficiency" will seek to complete liquid waste management infrastructure in coastal and ecologically sensitive areas and the rational management of water resources of the Region by reducing water losses in quality networks, ensuring and actions that will support the implementation of the Wastewater Management Plan of the Water Department of Crete.

More specifically in the field of water potential and in Investment Priority 6b "Investments in the water sector, in order to meet the requirements of the Union's environmental acquis and to meet the needs identified by the Member States for investments that exceed these requirements" will be sought:

- rational management including the reduction of water losses in distribution networks and other infrastructure,
- ensuring good quality water supply,
- the protection and rehabilitation of groundwater systems
- the implementation of actions that will be highlighted by the Management Plan of the Watershed of the Water Department of Crete

through Specific Objectives 10 and 11.

Through SO10: "Improvement of water quality in the coastal area of Crete and the protection of the aquifer", the aim is to ensure good quality bathing water and groundwater, as well as its protection.

Through SO11: "Improving the efficiency of the use of water resources and ensuring good quality drinking water to all residents of Crete", seeks the rational management of water resources of Crete, by reducing leaks in water networks and other infrastructure projects, ensuring good quality drinking water (creation of new networks, replacement of unsuitable water supply networks) as well as the implementation of priority actions highlighted by the Management Plan of the Water Department of Crete, within the framework of Directive 2000/60 / EC.

The indicative actions of SO 11 include:

- Upgrading-completion of water supply networks and systems
- Reduction of water system leaks
- Actions / projects that implement the Management Plan of the Watersheds of Crete in accordance with Directive 2000/60 / EC

The output indicators set in the Program for SO11 are presented in the following table.

Code	Indicator	Target price 2023
02109	Master plans for water supply	6
SO002	Water Basin Management Plan Implementation Interventions	7
CO18	Water supply: Additional population served by improved water services	30.000

The actions that have been specialized so far in Thematic Objective 6 - Investment Priority 6.b for Specific Objective 11 are analyzed below:

Action	Budget	Invitations	Memberships
6.b.4 Rational water resources management infrastructure (drinking water)	7.200.000,00	7.200.000,00	9.421.318,41

6.b.5 Actions / projects that implement the Management Plan of the River Basin of the Water Department of Crete in accordance with Directive 2000/60 / EC	1.100.000,00	1.100.000,00	1.062.297,00
6.b.7 Drafting - Updating General Watering Plans and Strategic Environmental Impact Studies	900.000,00	900.000,00	1.126.647,00
6.b.9 Rational management of water resources (drinking water) in the Region of Crete »	6.000.000,00	6.000.000,00	0,00
6.c.la.1 Upgrading completion of water supply networks and systems - LASITHI	800.000,00	800.000,00	759.700
6.c.re.1 Upgrading of water supply infrastructure - RETHYMNO	1.000.000,00	1.000.000,00	1.476.000,00
6.c.un.1 Upgrading - completion of water supply systems - UNESCO	1.500.000,00	1.500.000,00	640.00,00

Source: <http://www.pepkritis.gr/>, own processing

The goal of IWATERMAP for the Region of Crete is to promote the effectiveness of the DP of Crete 2014-2020, seeking cooperation and exchange of good practices as well as new investment tools in an effort to address the pressure on the island's water resources.

2.2 Smart Specialization Strategy of the Region

The Smart Specialization Strategy of Crete adopts the vision of the development plan of Crete for the period 2014-2020: "Dynamic and Sustainable Crete" and sets the following goals:

- ✓ (a) the reconstruction of the agri-food complex by adapting to climate change, strengthening the export sectors and highlighting the value of the Cretan food, which is the intangible cultural heritage of Crete,
- ✓ (b) the consolidation of the cultural-tourist complex as competitive, with elements of uniqueness and authenticity in the international arena,
- ✓ (c) the reduction of Crete's dependence on conventional forms of energy,
- ✓ (d) the rational utilization of the natural resources of the island,
- ✓ (e) exploiting the potential of the sea,
- ✓ (f) the development of educational activities and training activities of human resources of international scope that will be based and will utilize the educational fabric of Crete,
- ✓ (h) the development of productive activities of high added value in emerging sectors that will be based and utilize the research web of Crete.

These aspirations are organized in the innovation system of the region of Crete in four sectoral priority complexes:

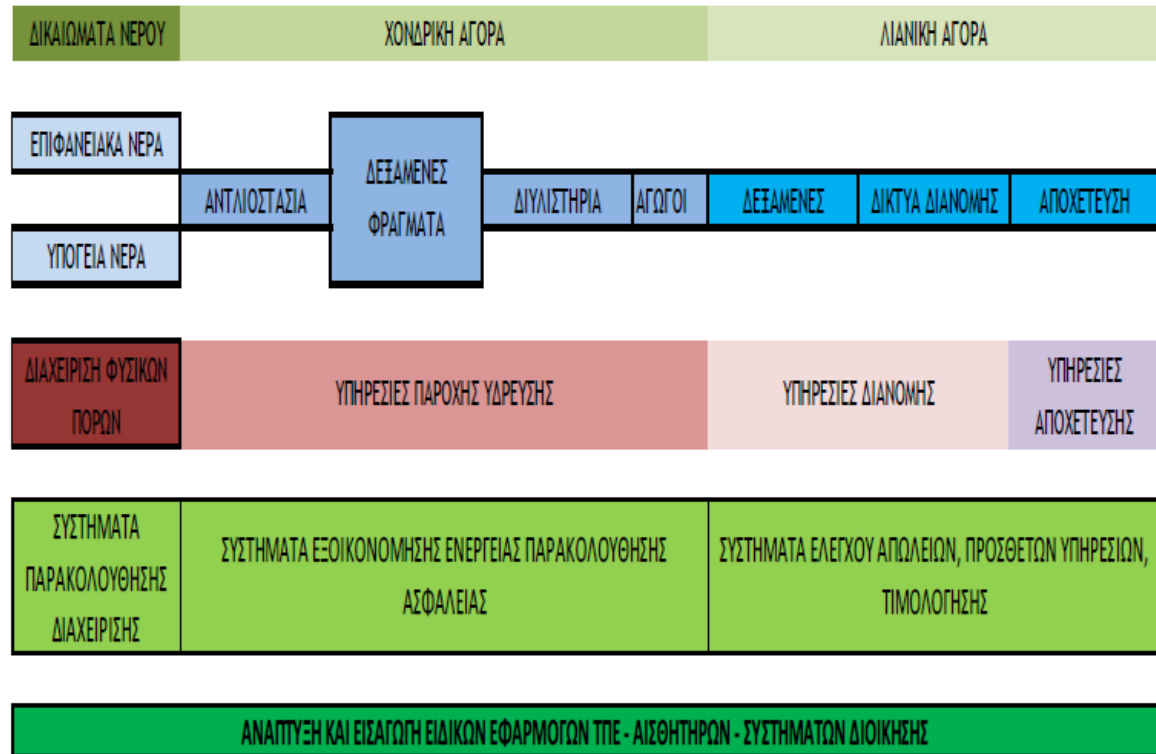
1. The agri-food complex
2. The cultural - tourist complex
3. The environmental complex and
4. The complex of knowledge

In particular, in the context of the IWATERMAP project, the environmental complex is relevant, which includes activities related to:

- ✓ the reduction of carbon dioxide emissions (energy savings, RES applications in terms of sustainable development),
- ✓ the rational utilization of the natural resources of Crete with emphasis on water resources and
- ✓ tackling the effects of climate change.

Through RIS3, the Region of Crete seeks the rational management of water, including the saving of water resources in irrigation and water supply through the utilization of scientific knowledge, innovation and ICT technologies, as well as innovative entrepreneurship.

RIS3's policy to achieve this is to develop and implement intelligent water management systems and technologies, as illustrated in the following diagram.



Source: Smart Specialization Strategy of the Region of Crete, 2015

The rational management of water resources and related innovations contribute not only to tackling climate change, but also to the resilience of the key economic sectors of Crete, which are primary production and tourism. At the same time, the knowledge complex, which includes an internationally recognized educational and research potential, cooperates in the specific aspirations in the environmental complex.

RIS3 of the Region of Crete in particular, provides the strengthening of the following categories of actions in the priority complexes (and in the environmental):

- ✓ Demonstration projects / pilot actions of research centers and universities, in the priority areas of RIS3
- ✓ Business partnerships with research organizations.
- ✓ Research and development by Small and Medium Enterprises (SMEs).

- ✓ Strengthen clusters.
- ✓ Supporting SMEs for investments.
- ✓ ICT services and applications (Information and Communication Technologies) for SMEs in the priority areas of RIS3.
- ✓ Business partnerships with research organizations to promote low CO2 technologies.

At the OP of Crete 2014-2020, the actions that have been specialized so far in Thematic Objective 1: "Strengthening research, technological development and innovation" in Investment Priority 1b for Specific Objective 1: "Increasing the participation of private companies in activities RTD in the priority areas of the "Smart Specialization Strategy" are analyzed below:

Action	Budget	Invitations	Memberships
1.b.1 Demonstration - experimental development projects promoting research and innovation in RIS3Crete	1.500.000,00	1.500.000,00	2.094.829,05
1.b.2 Business Partnerships with Research Organizations, in areas of RIS3Crete	8.724.418,75	8.724.418,75	8.860.098,82
1.b.3 Research and development by SMEs, in areas of RIS3Crete	1.500.000,00	1.500.000,00	389.074,65

Source: <http://www.pepkritis.gr/>, own processing

At the same time, a significant part of the RIS3 Strategy is funded by actions of EPANEK 2014-2020 and the program of the European Commission HORIZON2020.

The output indicators set in the Program for SO1 are presented in the following table.

Code	Indicator	Target price 2023
CO26	Research, innovation: Number of companies collaborating with research institutes	95

2.3 New programming period 2021-2027

The new programming period essentially concerns the new Multiannual Financial Framework 2021-2027 announced by the European Commission on 02/05/2018. Respectively, the proposals for the Cohesion Policy and the Regulations of the Funds of the new Programming Period 2021-2027 were announced on 29/5/2018.

At the country level, the planning for the period 2021-2027 has as a starting point the issuance of the 1st Newsletter by the Ministry of Development on 6/6/2019. The 1st Newsletter presents the new planning framework of the Operational Programs of the new NSRF, while at the same time it is the starting point of the consultation with the competent bodies, social and economic partners for the formulation of strategy proposals and priorities, which will feed the national objectives.

In relation to the current programming period, the 11 thematic objectives of the Europe 2020 strategy are grouped into 5 policy objectives.

<p>1. Smarter Europe</p>	<ul style="list-style-type: none"> • through innovation, digitization, economic transformation and support for small and medium-sized enterprises.
<p>2. Greener, carbon-free, Europe</p>	<ul style="list-style-type: none"> • implementing the Paris Agreement and investing in energy transition, renewable energy and the fight against climate change.
<p>3. More Connected Europe</p>	<ul style="list-style-type: none"> • with strategic transport and digital networks.
<p>4. More Social Europe</p>	<ul style="list-style-type: none"> • which will implement the European pillar of social rights and support quality employment, education, skills, social inclusion and equal access to healthcare.
<p>5. Europe closer to the people</p>	<ul style="list-style-type: none"> • supporting local development strategies and sustainable urban development across the EU.

The second policy goal "Greener Europe" includes issues related to low carbon emissions, energy transition, circular economy, climate change adaptation and risk management. This basically includes the current thematic target 6 for the environment, the current thematic target 5 for climate change and a part of the current thematic target 4 which deals mainly with energy saving.

Respectively, the 60 investment priorities are transformed into 32 specific objectives. For Objective 2 the investment priorities are:

2. Greener, carbon-free, Europe

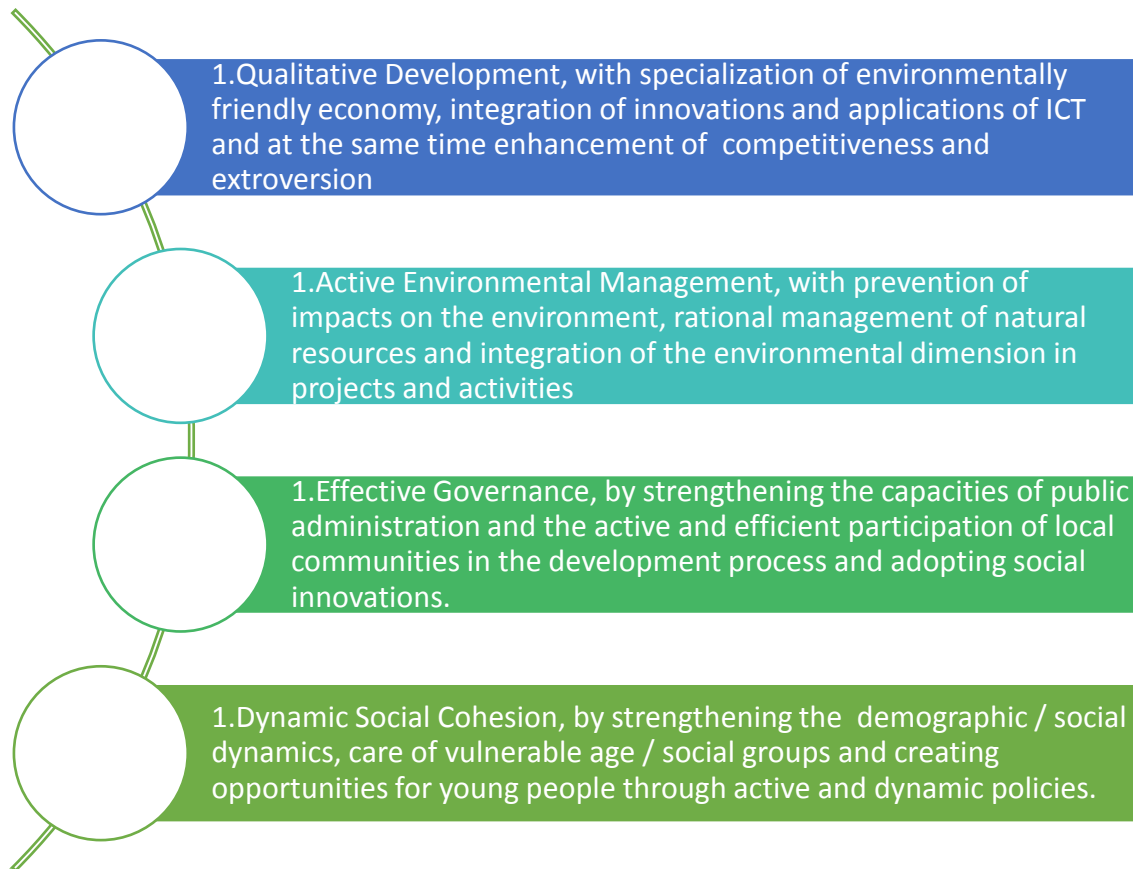
1. Promoting energy efficiency measures;
2. Promotion of renewable energy sources;
3. Development of smart energy systems, networks and storage equipment at local level;
4. Promoting climate change adaptation, risk prevention and disaster resilience;
5. Promoting sustainable water management;
6. Promoting the transition to a circular economy;
7. Enhancing biodiversity, green infrastructure in the urban environment and reducing pollution

Since the Operational Programme of the Region of Crete 2014-2020 is now coming towards its end, and there is no available funding to be influenced, given also the redirection of any remaining budget towards support measures for the impact of the COVID-19 pandemic, the Action Plan would be targeting the future Operational Programme 2021-2027.

The programming of the new Operational Programme has now begun with the issuance of the 2nd Circular by the Ministry of Development on 25-11-2020 and the first draft of the Programme is expected in the first months of 2021. The Region of Crete is fully responsible and has the competence to draft the new programme and organize the programming process according to the above Circular.

In this context, a Programme Planning Group is set up to undertake the design of the Programmes, which should identify by Policy Objective interested parties, who should be involved in the planning process of the 2021-2027 Programme. Under the responsibility of the Group, meetings are organised by policy objective, live or online, initially with management, bodies and partners, in order to specifically the categories of actions to be proposed for implementation on the basis of the eligibility of the Funds and the specialisation of the budget per specific objective.

The vision of the new Programme of the Region of Crete 2021-2027, which is under consultation, is formulated as follows: "Crete dynamic, sustainable, intelligent, with common values and social cohesion, creative with identity and self-confidence" and is specialized in four policy areas:



The new Programme is structured in six priorities, each proposing a number of indicative actions. Relevant to the Action Plan of the IWATERMAP project are the following:

- **PRIORITY 1** Promotion of innovation and support of Entrepreneurship in the Region of Crete
 - Cooperation between research institutions and businesses to promote Innovation
 - Strengthening research infrastructures
- **PRIORITY 2** Supporting green growth and reducing carbon dioxide emissions
 - Completion/upgrading of water supply networks
 - Wastewater Management

2.4 Other background policy documents

Operational Programme 2020-2023 of the Region of Crete (national funding)

The 4-year Operational Programme 2020-2023 of the Region of Crete is being formulated according to the provisions of Law 3852/2010 and 4555/2018. The Medium-Term Development Programme of the Region is reflected through a 4-year Operational Programme that includes three (3) sections:

1. Strategic Planning
2. Operational Planning and
3. Monitoring and Evaluation Indicators.

The Strategic Plan contains the Objectives and Actions of the Region in the following policy field:

- Quality development
- Active Environmental Management
- Effective Governance
- Dynamic Social Cohesion.

Regarding Active Environmental Management the proposed Measures and according Actions are defined as follows:

Measure 1.5. Sustainable water management (Active Environmental Management)		
Code	Objective	Indicative Action Categories
1.5.1	Sustainable water resources management	River Basin Management Plan Actions for water supply and irrigation (Replacement water supply network extension / Promoting, dam development / Management Plans and Telemetry Systems / Replacement - water supply network expansion - source reinforcement - desalination)
Measure 1.6. Development of Sustainable Environmental Infrastructures (Active Environmental Management)		
Code	Objective	Indicative Action Categories
1.6.1	Sustainable wastewater	River Basin Management Plan Actions for Wastewater Management (Upgrading

	management	Existing Sewage Treatment Plants, Mechanical, Membranes, Tertiary Treatment, Recycling and New Sewage Treatment Plants in Tourist and Ecologically Sensitive Areas / Antiques
1.6.2	Sustainable solid waste management	Actions of the Regional Solid Waste Management Plan of Crete (Big Green Points / Satellite Green Points / KAESDIP / SMA / Y / Green waste treatment units for agricultural residues)

2.5 Key Profile Elements of the Region

Policy directions regarding water resources

Based on the 1st revision of the River Basin Management Plan RBMP of Crete (2017), the largest part of the annual water drains concerns irrigation (83%), with water supply at 16%, livestock farming at 0.8% and industry at 0.15%.

The responsibility for the water supply in the 24 Municipalities have 12 DEYA, while the water supply needs of communities and small Municipalities are covered by local authorities. The main problems remain the large losses of the networks and the water quality provided, mainly due to the age or unsuitable materials of the networks. Since the approved 1st revision of the RBMP of Crete (2017), the basic needs for the promotion of water efficiency and sustainable use concern:

- drafting of general water supply plans
- recording, checking
- reduction of leaks and installation
- operation of remote control systems
- capacity enhancement
- rehabilitation
- expansion of water supply networks
- water quality assurance measures
- economic viability of water services

According to the National Special Framework for Spatial Planning and Sustainable Development for Renewable Energy Sources (Government Gazette 2464/B/03.12.08), in relation to small hydroelectric projects in Crete, the areas for the exploitation of water potential are mainly located in semi-mountainous and mountainous areas, but based on the estimates for the hydroelectric potential of the country per water district, the Region of Crete does not have a high density of exploitable potential.

From the Regional Spatial Framework of Crete, after the completion of the creation of the large reservoirs Varsamiotis, Aposelemis, Potamoi, Faneromeni, Ini, Bramiana and Plakiotissa and in order to address the problem of water sufficiency for the coming decades, the following directions are given:

- to promote the construction of the already studied dams of Didymos Tavronitis (Sembroniotis- Derianos) and Platis Potamos, as well as any other additional reservoirs required by the Management Plan of the Water District of Crete
- the promotion of water resources control and saving systems
- the energy utilization of dam water
- the exploitation of the potential for the management of the water potential in smaller spatial groups, at the scale of the place and the landscape, by constructing the small reservoirs provided by the Management Plan or by enriching the underground aquifers, from which irrigation water is currently pumped.

The upgrading of the elements of the environment for large projects linked to the management of a natural resource such as water and the support of agriculture, create opportunities for integrated development interventions, in their wider areas of influence. The reduction of the environment around the dams can be integrated into an expanded spatially integrated approach in the framework of:

- Policies to tackle climate change and
- Conservation of the biodiversity of the area

In the context of this integrated spatial approach, a comprehensive strategy for the exploitation of dams and their wider areas of influence can be formulated, in line with international experience, with interventions for the management of water infrastructure in order to achieve sustainable uses of support for agriculture,

energy production and recreation that are in line with the principles of sustainable management of natural resources and internationally accepted best practices.

Objectives in the enlarged zones of influence of dams may be:

- Minimization of risks to the quantity and quality of water
- Ensuring environmental sustainability in climate change conditions
- Utilization for energy production and demonstration projects
- Enhancing the diversity of leisure activities in the region with appropriate arrangements
- Facilitating sustainable leisure and integration into the tourist networks of the wider region
- Ensuring the financial viability of projects
- Creation of sustainable jobs

Furthermore, it remains a priority to support actions for the reuse of treated wastewater and sludge in the existing Wastewater Treatment Plants, as well as the creation of new infrastructure for the collection and treatment of liquid waste in coastal tourist areas or ecologically sensitive (NATURA 2000, UNESCO).

Economic structure and innovation performance of the Region

The regional economy is dominated by two clusters, tourism and agri-food, while due to the investments that have been made in previous programming periods (but also the prospects associated with the exploitation of hydrocarbons as well as the interconnection with Greece) an emerging environment (including energy) is formed, as well as a second of knowledge about university research institutions and where excellent centers have been developed.

At the level of complex specialization of the regional economy, there is a tendency to further strengthen them at different speeds. The strongest cluster, that of tourism shows an increase in turnover by 8.5% and employment by 25.8%. The accommodation and travel agency sectors form the backbone of the complex.

The agrofood complex strengthens its position at a faster pace as turnover increases by 18.6% and employment by 36.2%. The primary production and food industries form the backbone of the complex.

The emerging environmental complex (energy and water-wastewater management) has a starting point a lower base but shows characteristics of dynamic evolution, as turnover shows an increase of 22.7%. The energy, water management and waste treatment and disposal sectors form the backbone of the complex. The knowledge complex is not sufficiently reflected in the statistics of the regional economy as no economic activities of scale have been developed.

Total turnover in Activity Code 72 (scientific research and development) stood at €30.4m in 2017, up from 2014. The effects of its operation are diffused on a wider scale in the main urban centers of the regional economy and affect the economic climate in general.

The Region ranks 250th in Europe in terms of competitiveness (RCI-2019), but has strong advantages in tourism, natural resources, manufacturing and research and therefore with better policy coordination and with the expected improvement of the business climate, it can make better use of its potential, as well as the opportunities that emerge.

It should be noted that, according to the Regional Innovation Scoreboard 2019 of the EU, Crete is the only Greek Region that belongs to the group of strong innovators in Europe, ranking in the "95th" position of the general ranking of the 238 regions, while on a case-by-case basis it can be ranked in even higher positions. Although the report finds that innovative regions are generally located in the innovation-leading countries, Crete is the exception.

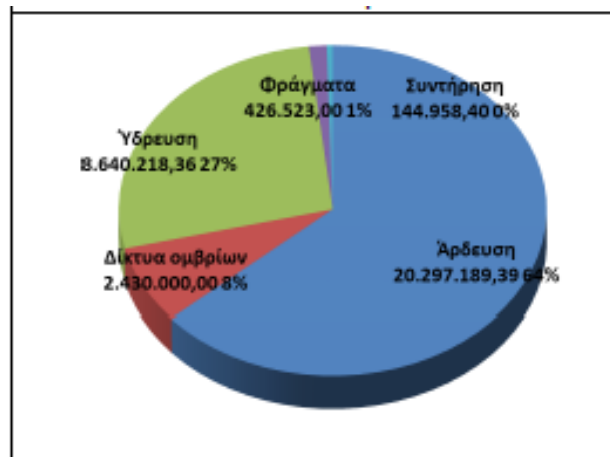
The Region of Crete has a strong business and research background, as it brings together important production units in tourism, agri-food and manufacturing with a high propensity to innovation, while at the same time it has an internationally level research community that is distinguished in 86 fields of excellence. A key weakness of the innovation ecosystem remains the limited cooperation of the two communities that affects the level of development and exploitation of innovations.

The development of partnerships is not sufficiently supported, due to the different orientations of specialization between enterprises and research institutions. In patent applications, the Region of Crete ranks 2nd in Greece (11.3 per 1 million) residents in 2012), but only 190th among EU regions. The absence of reliable interim support mechanisms for innovative entrepreneurship (combined with the general business environment prevailing in the country), does not sufficiently support the establishment and development of start-ups and the attraction of start-up and development capital.

Funding effort in water sector 2014-2019

For the subsector of water resources management, the Region finances and implements 159 actions with a total budget of 31.9 million €, with an additional funding of 21 maturation actions of a total budget of €2.7 million. Based on the breakdown into individual categories of action depicted in Figure 1, it appears that most of the actions concern irrigation, followed by the water supply where they gather the largest percentages of the budget. As far as sources of funding are concerned, the majority comes from National Public Funds, with the next source being the CAP.

Figure 1. Proportional participation and amounts by action category of the water resources management subsector



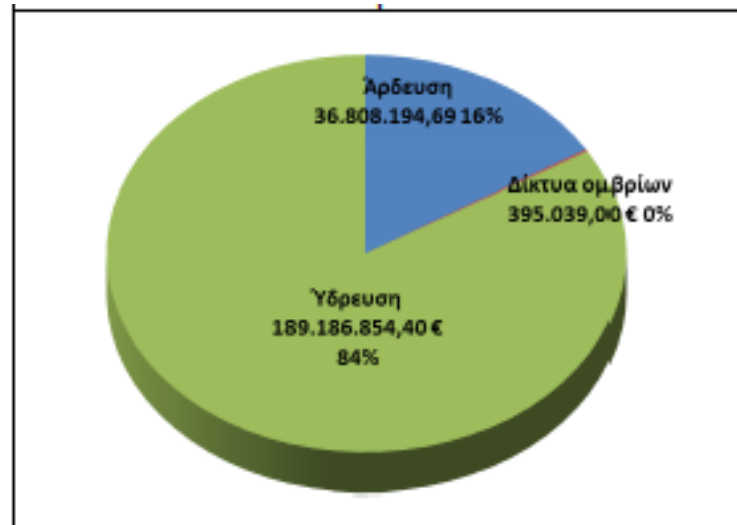
Source: Operational Plan of the Region of Crete 2020-2023

In the subsector of water resources management, 67 actions are implemented by bodies other than the Region with a budget of € 226.4 million. Based on the breakdown into individual categories of action shown in Figure 2 it appears that most of the actions concern water supply, with irrigation following. As far as the sources of funding are concerned, the majority of the resources come from the PHILODIMOS programme, with the Operational Programme "Transport Infrastructure, Environment and Sustainable Development" 2014-2020 in second place and in 3th place the Rural Development Programme.

It is important to emphasize that within the framework of the NSRF 2014-2020, the general water management plans are funded in 8 large municipalities, 6

remote control systems and 2 desalination units. In addition, the Regional Operational Program of Crete 2014-2020 finances actions/studies that have been highlighted by the RBMP, such as studies for protection-control zones at polluting points, monitoring of bathing water as well as the action plan for the treatment of drought-water scarcity in the Region of Crete.

Figure 2. Proportional contribution and amounts per category of action of the subsector water resources management



Source: Operational Plan of the Region of Crete 2020-2023

3. Details of the actions envisaged

3.1 Strategic vision

The self-assessment of the water sector in Crete has pointed out water sufficiency as a major issue in the region due to a variety of reasons such as the diversification into annual precipitation levels which have been affected by climate change, the overexploitation of underground water reservoirs to fulfil the need of irrigation water and touristic sector, as well as the high levels of water losses in the aged water pump network etc. A big constraint is also that there is no developed business sector that is interested and can invest in innovation at regional level.

From the first meetings with our stakeholders, it has emerged a need to organize information on a single platform, to focus on technical staff training and new talent development, to encourage business start-ups, and bring the research focus in accordance with business needs.

Thus, the 5-year vision for the region calls for more contacts among all branches of the triple-helix through stakeholders meeting and communication channels to highlight regional needs and deficiencies in water technology. This information would influence both the regional strategic plan and the research activity in the water sector. Training and reskilling seminars will be developed in this direction and academic institutions could play a major role. The business sector will be able to easily obtain the necessary information about needs and be prepared accordingly for the development, introduction and exploitation of innovative water loss reduction technologies, optimal water services management, systems for tracking and recording networks and infrastructures for rational use and reuse. At the same time, information and awareness programs for both the general public and students at all levels, through the resulting social pressure, will indirectly affect regional policy.

The strategic goals of the Action Plan for the Region are:

1. Articulation between the regional agricultural and agri-food industry, as well as tourism sectors with the scientific, technological and business competences to develop related products, with special focus in a correct and sustainable management of WATER:
2. Improve the stable and sustainable economic growth of the sector of water technologies through the qualification of human capital and by promoting

- the brain/talent retain: Specifically, promote lifelong learning in the water field as it is recognised as a key component in the human capital development that is missing at the moment.
3. Utilize connectivity with other knowledge regions abroad, strengthening networks and other forms of partnership and cooperation (new collaborative and exchange of personnel projects) aimed at consolidation of innovation and internationalisation of research centres and companies in the value chains of water technology and agri-food sector.

3.2 ACTION 1: Training professionals related to water management and use

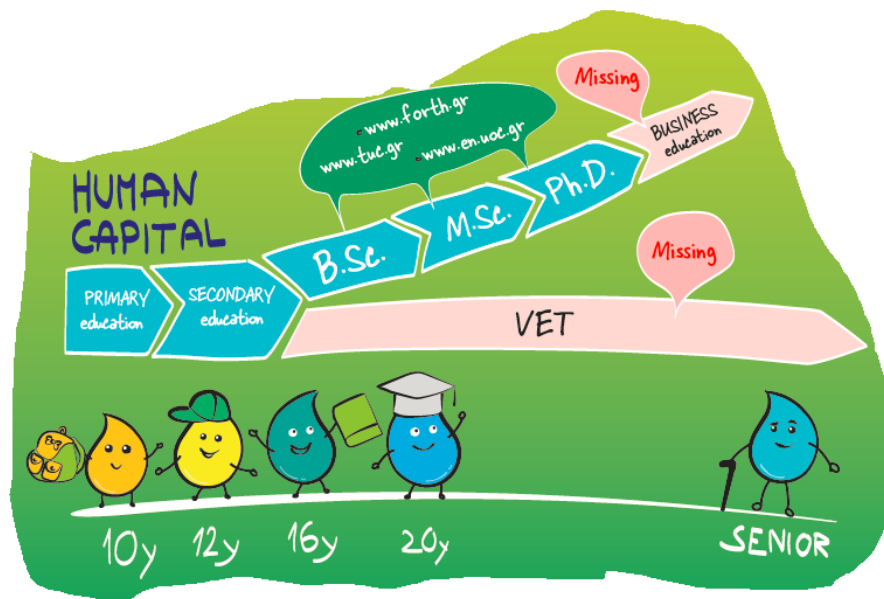
3.2.1 Relevance to the project

Adequate staff, in terms of quantity and quality of water management companies, is paramount for the appropriate maintenance and operation of the infrastructure. Neglected infrastructure creates several problems not only in safety and quality terms but also in economic terms for full restoration or new/replacement equipment. Moreover, trained employees in key water use activities such as HORECA, can contribute to the sustainable water management and savings, as well as proactively protecting hygiene and safety of customers.

There are three important instruments in the field of Vocational Education and Training in Crete, that took part in the stakeholders' meetings of the iWATERMAP project:

- The Centre for Vocational Training of Region of Crete is a dynamic educational and developmental institution that belongs to the Directorate of Development of the Regional Unit of Rethymno.
- The Center for Training and Lifelong Learning (KEDI.VI.M.) of the University of Crete aspires to stimulate the workplace by cultivating new skills and Producing innovation at national, regional and local level.
- The H2B HUB at the Chamber of Commerce and Industry aims to be a platform for interconnecting local society with innovation and entrepreneurship, effectively helping to create an innovative business culture in Crete. Its actions include -but are not limited to- the training and education of executives, new and existing businesses, the introduction of business culture in education and supporting the transition of local businesses to the digital economy.

During the 2nd and 3rd Stakeholders meetings in the Region the main results highlighted that the theme of education for professionals involved in water management (workers, plumbers, engineers, etc.) can contribute to the development of human capital in the sector, facilitating also critical mass, the innovation ecosystem in the Region of Crete.



Specifically, the cooperation and interaction of the co-competent bodies have revealed interesting possibilities for implementing training programs. Work subgroups have been created for individual objectives.

During the 4th Meeting Proposals for educational programs were presented by the Medical School of the University of Crete and by the Chamber of Heraklion. The contribution of the participants was valuable, as they transferred their experiences and their needs for support.

All information collected, was taken into account during the finalization of the two actions of the iWATERMAP Action Plan.

In addition, the good practices of Centre of Vocational Excellence Water (CoVE Water) (The Netherlands) and Expobiotec (Portugal) inspired the formulation of the first action:

Centre of Vocational Excellence Water (CoVE Water)

This Erasmus pilot project creates a European Platform of Vocational Excellence for the water sector. The project intends to create the infrastructure necessary to embed vocational excellence in the water sector in Europe, thus laying the grounds for vocational curriculum development and consequently competence development of VET students. The pilot project builds forward on the proven success at CIV-Water and their integration in the WaterCampus Leeuwarden, integrating VET into an innovation ecosystem and linking up with start-ups and SMEs. In the next programming period (2021-2027) ERASMUS has reserved 200 million euros for around 40 EU Platforms of Centers of Vocational Excellence.

It is a clear example how cooperation in VET Excellence linked to RIS3 topics can be achieved between various EU regions.

Through this approach many more regions can work on the integration of VET into their innovation ecosystem, support upward convergence and work inter regionally boosting their skills agendas and support mechanisms.

Of particular importance for our Region of Crete was the successful integration of VET into an innovation ecosystem and linking up with start-ups and SMEs.

Expobiotec

Expobiotec is a research and technological dissemination activity where key speakers in the field of Biological Engineering and Biotechnology are

invited to give a lecture to undergraduate and graduation students. As a side event, high school students are invited to visit Centre of Biological Engineering – CEB laboratories, where CEB researchers give a series of pitch presentations of the most relevant works developed in the research centre.

Expobiotec is organized at an annual basis by CEB, together with the Biological Engineering students' association, usually with a duration of 3 days.

Every year, circa 150 students participate in the event. During the past edition, 33 companies were present at Expobiotec and several speed business meetings between companies and graduation students took place (~15 speed meetings per student).

Of particular interest for our Region of Crete is to adopt the involvement of university students and graduates in the organization, and the speed business meetings between students and companies. The visits of students/graduates to water companies facilities also represent a great opportunity for increasing employability in the field.

3.2.2 Nature of the action

This action has a twofold target. On the one hand to improve the skills of professionals of water services and operators and on the other to raise awareness and the capacity of professionals of important water use activities in water management and safety.

More specifically, this action proposes:

1.1 Cooperation agreement between competent stakeholders to work together in order to identify the themes of the educational program, provide resources (human, equipment and physical space) for implementation, mobilize employees, members and students to participate.

1.2 Developing training material for the select seminars, presentations as well as study content and exercises.

1.3 Implementing pilot trainings on select themes and participants, covering both employees of water companies, HORECA and university students/graduates

1.4 Evaluating pilot trainings for identifying gaps, shortcomings, and new needs

1.5 Providing feedback to the Programme of Region of Crete 2021-2027 to mainstream training actions in water sector

The suitable type for such trainings is seminars of around 50 hours combining teaching and hands-on practice. The indicative educational program will be organized around the following themes:

- Waste treatment, problems and environmental protection
- Drinking water, recreation water, hygiene and safety
- Operation and maintenance of waste processing equipment
- Basic water chemistry, technologies of water processing
- Organization of chem lab
- Management of water resources

The Vocational Training Center of the Chamber of Industry and Commerce of Heraklion can accommodate lectures, whilst hands-on practice will be held in the Chem Lab of Greece Mediterranean, and Waste treatment facilities.

The results of the action to improve and certify the skills of professionals in the sector can lead to:

- 1) Proper operation & maintenance (Preventive, functional, repair) and maximizing project life and reliability
- 2) Proper hygiene and safety for workers
- 3) Proper controls, regulations and interventions to address problems, make full use of and efficient operation of infrastructure
- 4) Upgrading of work qualifications, new specialties and new job prospects.
- 5) Employees with certification of specialties can claim better pay and professional-work development

Other seminars of adult learning and training for “Water: Safety, Quality and Hygiene” will be developed addressed to university graduates in related fields to improve their respective skills and to employees in key water use activities, such as hotels and restaurants.

In total, target groups of the action comprise:

- employees, owners or managers of hotel units - apartments for rent, Hospitals, municipal water and sewage companies, etc
- employees in water-wastewater management systems (in hotels, factories, settlements in bodies of the wider Public Sector (DEYA-OTA) but also all those interested in experience, specialization and certification in the management of water-wastewater systems
- Municipal Water and Sewage Companies executives
- University graduates

3.2.3 Stakeholders involved

The actors involved in the implementation of the action are part of the Local Support Group. In the framework of the meetings of the local group and utilizing the experience of corresponding good practices that emerged in the interregional seminars of the iWATERMAP project, the initial roles of the stakeholders are distributed according to the table below.

Stakeholder	Role
Region of Crete	Region of Crete is the owner of the action and given its role as a planning and implementation body of policies it undertakes the coordination of the action. Raising public awareness
Chamber of Commerce and Industry of Heraklion	Chamber of Commerce and Industry contributes in the mobilization of professionals

Stakeholder	Role
	provides lecturing rooms/facilities and the implementation of the seminars
Centre for Vocational Training of Region of Crete	Provides lecturing rooms/facilities and the implementation of the seminars
Center for Training and Lifelong Learning (KEDI.VI.M.) of the University of Crete (School of Medicine)	Center for Training and Lifelong Learning (KEDI.VI.M.) of the University of Crete undertakes the development of training material and the organization and implementation of trainings.
Greek Mediterranean University – Institute of Agri-food	Greek Mediterranean University undertakes the development of training material.
Municipal Water and Sewage Companies	Municipal Water and Sewage companies are beneficiaries of the action

3.2.4 Timeframe

The total timetable of the action amounts to two (2) years. During the 1st year of implementation the action plan will continue to be a living document and updated if needed, while at the 2nd year results will be monitored in order to institutionalize the actions at the start of the next programming period of ERDF2021-2027, making sure that more impact is created, and more critical mass is being developed.

Activities	Semester			
	A2021	B2021	A2022	B2022
1. Training and lifelong learning related to water management and use				
1.1 Cooperation agreement between competent stakeholders				

1.2 Developing training material				
1.3 Implementing trainings				
1.4 Evaluating trainings				
1.5 Mainstreaming activities				

3.3 ACTION 2: Promotion of ICT in water management infrastructures

3.3.1 Relevance to the project

This action was formulated gradually during the implementation of the iWATERMAP project in the Region with the active participation of local stakeholders and the exchange of useful information between the various categories of stakeholders.

The first stakeholder meeting, with the participation of many local stakeholders, revealed the need to collect and disseminate data on the hydrological cycle and the need to co-operate in order to address individual implementation problems of new technologies. References were made to relevant programs implemented in the region of Crete and the possibility of using good practices and emerging collaborations.

During the 4th Stakeholders meeting they put forward their Innovative proposals for the Water Resources sector as well as the opportunity and the desire for partnerships among local stakeholders after the presentation of a "smart irrigation network management platform" by the Foundation for Research and Technology (FORTH) and the participation of local water and irrigation organizations. Furthermore on 17-6-2020 a working meeting of interested stakeholders was held in the Region of Crete on "Smart management of irrigation water" in the presence of the Vice Governor of the Region of Crete in European & International Affairs, , with the participation of the Authorized Regional Councilor for the Environment.

In addition, the good practices of S3P Thematic Area Water Smart Territories (The Netherlands) and Startup Braga (Portugal) inspired the formulation of this

action and mobilized local stakeholders to further develop their capacities and use of technology for improved water supply management:

S3P Thematic Area Water Smart Territories

Water Smart Territories facilitates interregional collaboration on water. Sustainable water management is essential for European key sectors such as tourism, agriculture, energy, but also chemical, paper and food industry. Within a growing global trend of water consumption, OECD countries water demand is expected to stabilise towards 2050 (350 km³/yr in the EU), and yet European society and economy in different territories must tackle the following trends that will determine the competitiveness of European water industry. Water Smart Territories aims to achieve this goal by cooperating in the framework of the S3P Partnership Industrial Modernisation.

Region of Crete through the participation in iWATERMAP project, together with another 6 partner regions, has signed up and became a formal member. Participating regions have completed a very intensive analysis of their regions capacities and needs and show a firm commitment to cooperate in the following years in the topic of Water Smart Territories. By cooperating in Water Smart Territories regions will be supported in their ambition to collaborate interregionally and empowered to reserve ERDF funding for this purpose within the next programming period.

Startup Braga

Startup Braga act in the promotion and development of an entrepreneurial ecosystem and in the creation, acceleration and incubation of startups, and is focused on providing the best possible support to community's startups.

Startup Braga offers three main supporting programmes:

RE-ACCELERATION - Intensive training program aimed at stimulating technology-based business ideas that arise in an academic context.

ACCELERATION - Program designed to support startups in the validation and development of their business model, access to international markets and financing.

INCUBATION - Program aimed at startups in the early stage who need workspaces that include access to a set of resources and services with added value.

Startup Braga ecosystem has the support of 63 national and international mentors, and more than 50 strategic relationships.

Of particular interest for our Region of Crete is to adopt the right tools to support organizations and SMEs to develop an innovative product, increase sales and prepare for investment phase and thus accelerate further business growth.

3.3.2 Nature of the action

The action refers to the preparation and of organizations and bodies with competence in water supply and water management to uptake innovations regarding monitoring and upgrade of their infrastructures and networks. The local stakeholders' meetings in Crete identified several examples of successful implementation of smart water monitoring systems. Also, stakeholders highlighted the advanced capacity of the Region to design such systems through established research institutes and the experience gained by Municipal Water and Sewage Companies.

Foundation for Research and Technology (FORTH), Institute of Computer Sciences (ICS), Signal Processing Lab (SPL) can provide such technical assistance to Local Land improvement Organizations, responsible for management of irrigation water. Furthermore, Municipal Water and Sewage Companies who have already completed such projects will assist other Companies in uptaking smart water solutions.

To achieve the above local stakeholders have decided to cooperate with the ambition to establish a local cluster for smart water management, in order to develop and implement successful technological solutions.

More specifically, this action proposes:

2.1 Collecting and assessing available resources regarding the technological solutions for water management (water supply and irrigation) in various stages (research, prototype, pilots, applications) in the Region.

2.2 Call to Municipalities, water companies, irrigation bodies, R&D institutions and SMEs that are interested in adopting smart water management solutions.

2.3 Implementation of awareness raising and co-planning workshops and work meetings to identify gaps, common problems, needs and common vision for a cluster

2.4 Elaboration of a Memorandum of Understanding for a local cluster of smart water management among interested parties that will outline responsibilities, obligations and select technological solutions, in order to prepare for funding from the Programme of Region of Crete 2021-2027 in smart specialization measures.

3.3.3 Stakeholders involved

The actors involved in the implementation of the action are part of the Local Support Group. In the framework of the meetings of the local group and utilizing the experience of corresponding good practices that emerged in the interregional seminars of the iWATERMAP project, the initial roles of the stakeholders are distributed according to the table below.

Stakeholder	Role
Region of Crete	Region of Crete is the owner of the action and given its role as a planning and implementation body of policies it undertakes the coordination of the action and the creation of the cluster
Foundation for Research and Technology (FORTH), Institute of Computer Sciences (ICS), Signal Processing Lab (SPL)	Provides technical assistance and develops solutions for cluster members
Organization of Development of Crete	Provides assistance for planning water management and supply infrastructures.
Local Land Improvement Organizations	Are the beneficiaries

Municipal Water and Sewage Companies	Provide assistance and/or are the beneficiaries
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3.3.4 Timeframe

The total timetable of the actions amounts to two (2) years. During the 1st year of implementation the action plan will continue to be a living document and updated if needed, while at the 2nd year results will be monitored in order to institutionalize the actions at the start of the next programming period of ERDF2021-2027, making sure that more impact is created and more critical mass is being developed.

Activities	Semester			
	A2021	B2021	A2022	B2022
2. Promotion of ICT in water management infrastructures				
2.1 Collecting available resources				
2.2 Call to interested stakeholders				
2.3 Creating critical mass for the local cluster (workshops, work meetings)				
2.4 Elaboration of a technical MoU for the cluster				
Creating technical guidelines				

3.4 Costs and funding sources

The funds for the above expenditure will come from own resources.

3.5 Action Plan monitoring

The following system of quantitative indicators of outputs and results is proposed for monitoring the implementation of the action.

Indicator	Type	Actions	Source	Target
Number of University students trained	Output	1. Training professionals related to water management and use	University of Crete (School of Medicine)	
Number of water professionals (technicians, engineers) trained	Output	1. Training professionals related to water management and use	Chamber of Commerce and Industry	
Number of other professionals trained (HoReCa)	Output	1. Training professionals related to water management and use	Chamber of Commerce and Industry	
Number of Municipal Water and Sewage Companies staff trained	Output	1. Training professionals related to water management and use	Municipal Water and Sewage Companies	
Number of innovative actions developed related to efficient management of water resources	Result	2. Promotion of ICT in water management infrastructures	Region of Crete	

Date: _____

Signature: _____

Stamp of the organisation (if available):
