

■ REPORT 4.1

IDENTIFICATION AND EVALUATION OF REGIONAL RESEARCH-DRIVEN CLUSTERS



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Executive Summary

The present report was prepared under Task 4.1 '**Identification and evaluation of regional research-driven clusters**' in the frames of the FP7 project '**Sustainable Innovations and Treatment in Industrial Waste Water Clusters – STInno**'.

STInno project brings together three research driven clusters and 12 partners from 5 European countries. The clusters from the regions of Päijät-Häme (Finland), Kalmar (Sweden) and Western Greece (Greece) have a common objective to strengthen RTD resources in industrial wastewater treatment and become world leaders in sustainable, cost and energy efficient methods.

The main objective of **Task 4.1** is to identify the industrial wastewater focused regional research-driven clusters in the participant regions. This task assesses the state of development of the clusters and benchmarks them among the different regions learning from other experiences. Aspects to be assessed are the following: organization (leadership, technology, collaboration, and performance), management of clusters, learning competences, strategies and other.

I. Introduction

STInno project brings together three research driven clusters and 12 partners from 5 European countries. The clusters from the regions of Päijät-Häme (Finland), Kalmar (Sweden) and Western Greece (Greece) have a common objective to strengthen RTD resources in industrial wastewater treatment and become world leaders in sustainable, cost and energy efficient methods.

STInno project is divided into seven (7) work packages, each aiming at specified results. **Work package 4** aims to define the policies for the support of the regional research driven clusters.

The **objectives** of this work package are the following:

- Identify the clusters in the partner regions and assess the state of development in them.
- Assess the regional industrial wastewater treatment capabilities and potential from the cluster policy point of view.
- Produce a financing strategy for the partner regions and their clusters.
- Guide regions to more efficient use of regions own resources.
- Benchmark and identify best practices from all the participating regions and worldwide
- Launch an awareness – raising campaign in Western Greece

The main objective of **Task 4.1** is to identify the industrial wastewater focused regional research-driven clusters in the participant regions. This task assesses the state of development of clusters and benchmarks them among the different regions learning from other experiences. Aspects which are assessed are the following: organization (leadership, technology, collaboration, and performance), management of clusters, learning competences, strategies and other.

The **approach** that was used was through the preparation of **interview forms**, their submission and completion by cluster members and comparative synthesis of the feedback.

Three different types of interview forms were prepared as these addressed the three different types of cluster bodies: enterprises, research & technology bodies and the support bodies. All three types of interview forms were addressing five common issues which are the following:

1. Internal operation
2. External Operation
3. Viewpoints of the interviewees regarding the rest of the cluster bodies

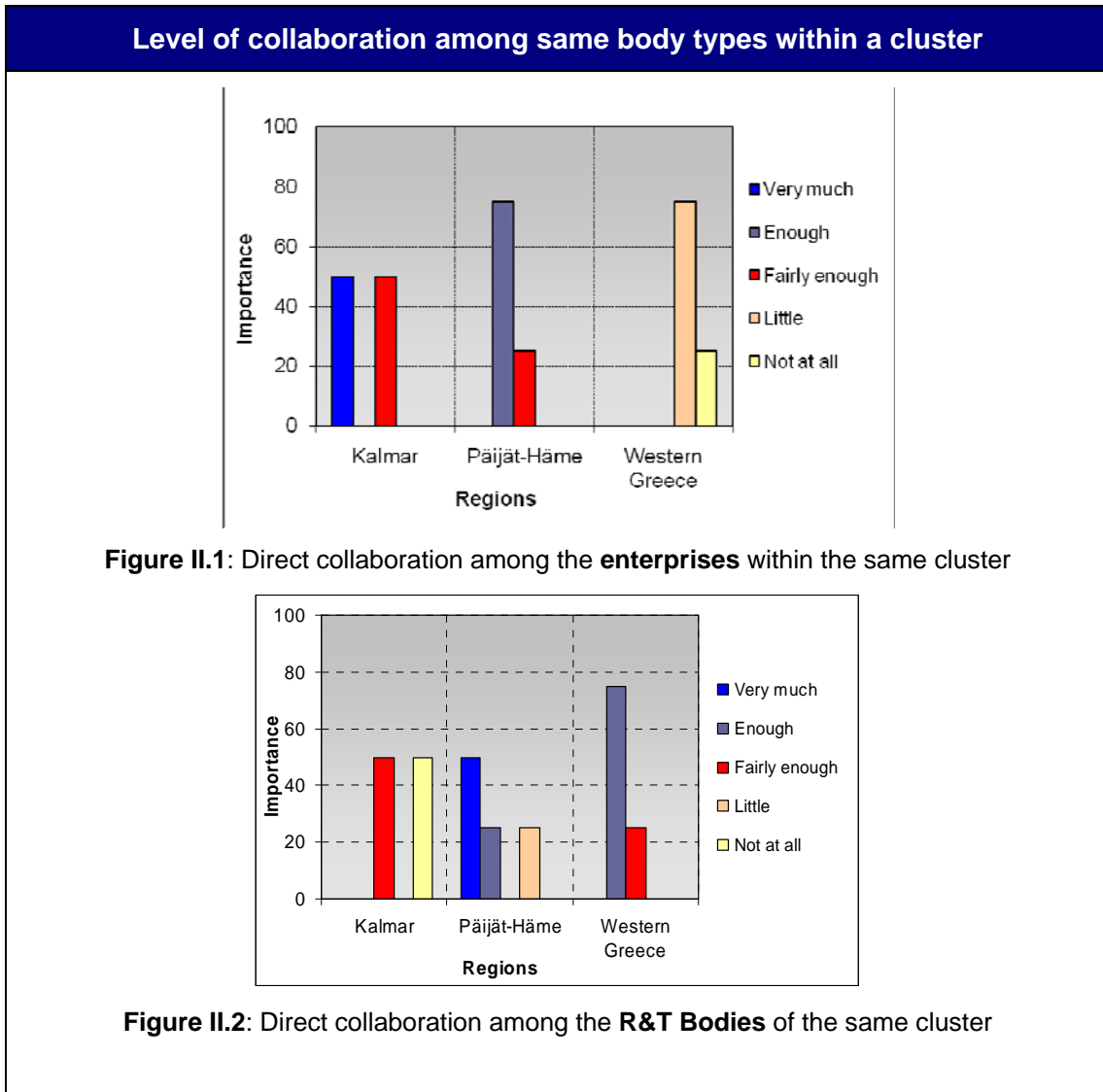
4. Cluster Segmentation
5. Future challenges

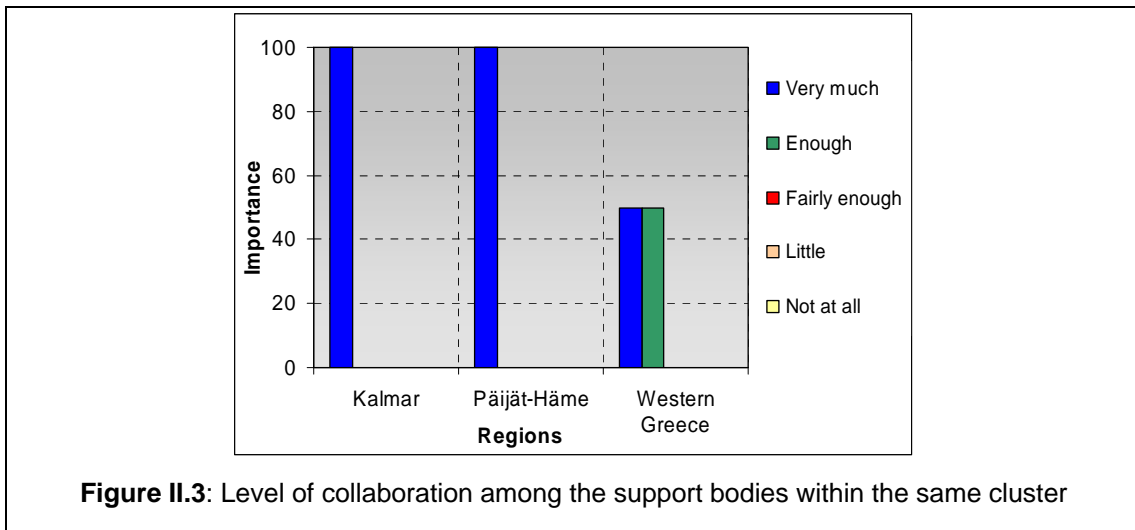
For each region **10 interviews** were carried out. For each regional cluster, four interviews were from enterprises, four interviews were from R&T bodies and finally two interviews were from support bodies which belonged to each regional cluster from the partner regions.

II. Internal Operation

This part of the report focuses on issues concerning the internal operation of the clusters from the three partner regions. Matters such as degree of collaboration among the bodies, degree of satisfaction are examined.

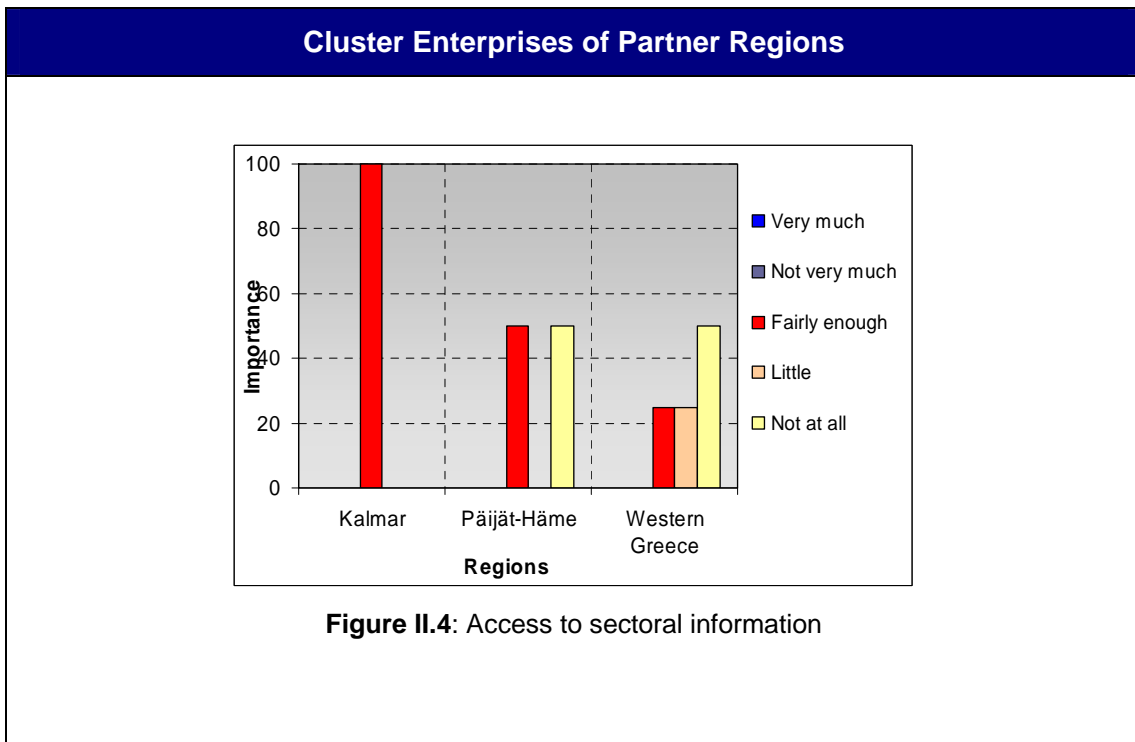
The **level of collaboration among the same types of bodies** was examined within each partner regional cluster. Regarding the enterprises of the clusters of Kalmar and Päijät-Häme, it appears that the level of collaboration among them is higher than average, whereas the enterprises within the cluster of Western Greece demonstrate a low level of collaboration among them. The R&T bodies from the cluster of Päijät-Häme collaborate on a higher level than the rest of the clusters, followed by the cluster of Western Greece. The R&T bodies from the cluster of Kalmar demonstrate a less than average level of collaboration among them. A common behavior between the three regional clusters is located, regarding the level of collaboration among the support bodies within the same cluster. It becomes obvious that all support bodies from the clusters of the partner regions is of highest level.





All **enterprises** of Kalmar's region have access to specific sectoral information such as on new trends, development, etc., whereas the corresponding enterprises from Päijät-Häme's and RWG's cluster demonstrate a less than average level of access to such information.

Overall, the enterprises from the clusters of Kalmar and Päijät-Häme deliver their knowledge about the market, trends, competitors etc to the other bodies of the cluster on an average level. The cluster from Kalmar region however is more active in delivering such knowledge to the bodies of its cluster, followed by the cluster from Päijät-Häme. The RWG's cluster is transferring very little information to the rest of its cluster bodies.



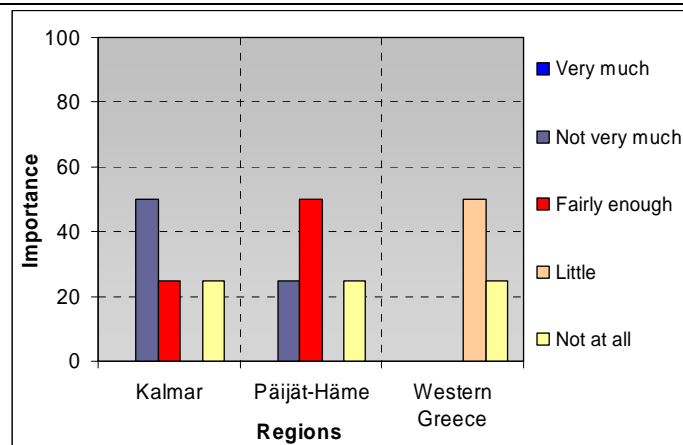


Figure II.5: Transfer of information to other cluster bodies

Overall, the **R&T bodies** from the clusters of the three partner regions have direct collaboration with the enterprises and the support bodies of their cluster. The clusters from Kalmar and Päijät-Häme region appear to have a better level of collaboration than the cluster of RWG demonstrates.

When the R&T bodies were questioned on their cluster contribution to the expansion of their research fields, the feedback varied. The cluster from the region of Kalmar, encourages to the maximum networking among the R&T bodies of its cluster and overall contributes to the definition of new topics and directions for them on a more than average level. The situation is similar in the cluster from Päijät-Häme region regarding the cluster contribution to the expansion of their research fields, although the level of encouragement among the R&T bodies demonstrates an average level. Finally, the R&T bodies from RWG's cluster are encouraged on a more than average level by their cluster for networking and state that their cluster contributes to the expansion of their research fields moderately.

Finally, all R&T bodies from the clusters of the three partner regions expect mainly to form new partnerships from their participation to the cluster. Other benefits of less importance for the R&T bodies from Päijät-Häme are to become visible, liaise with regional players and form business networks. The R&T bodies of RWG's cluster additionally to the formation of new partnerships expect on a less important level to liaise with regional players and expand their operations.

Cluster's R&T Bodies of Partner Regions

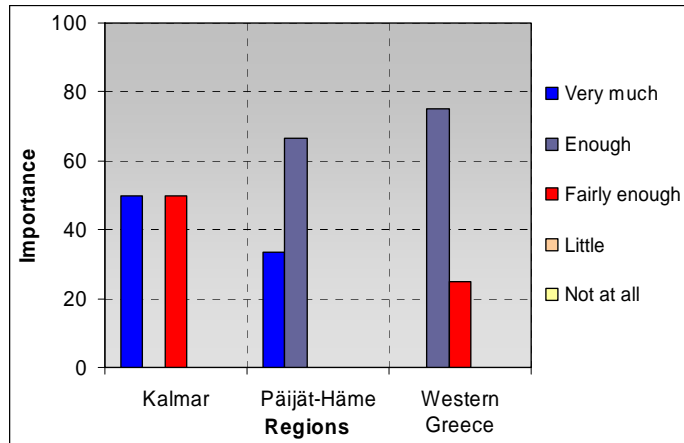


Figure II.6: Direct collaboration with cluster bodies

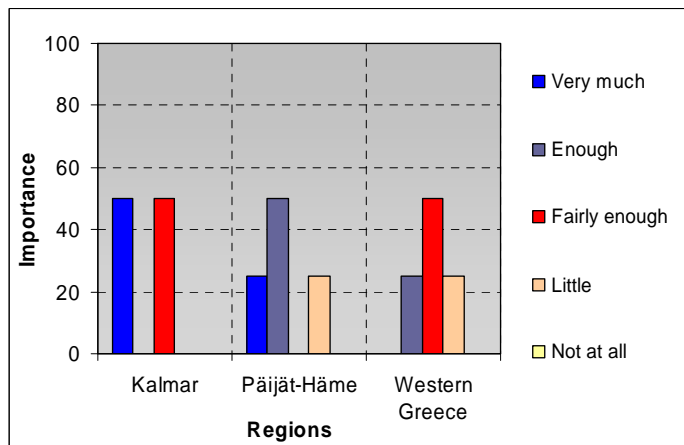


Figure II.7: Cluster contribution in expansion of research fields

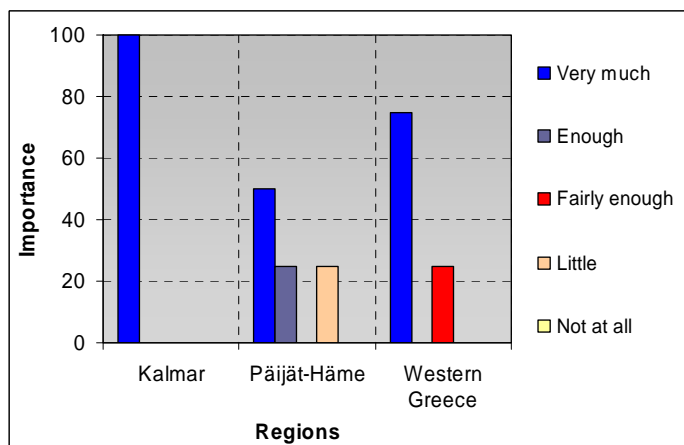
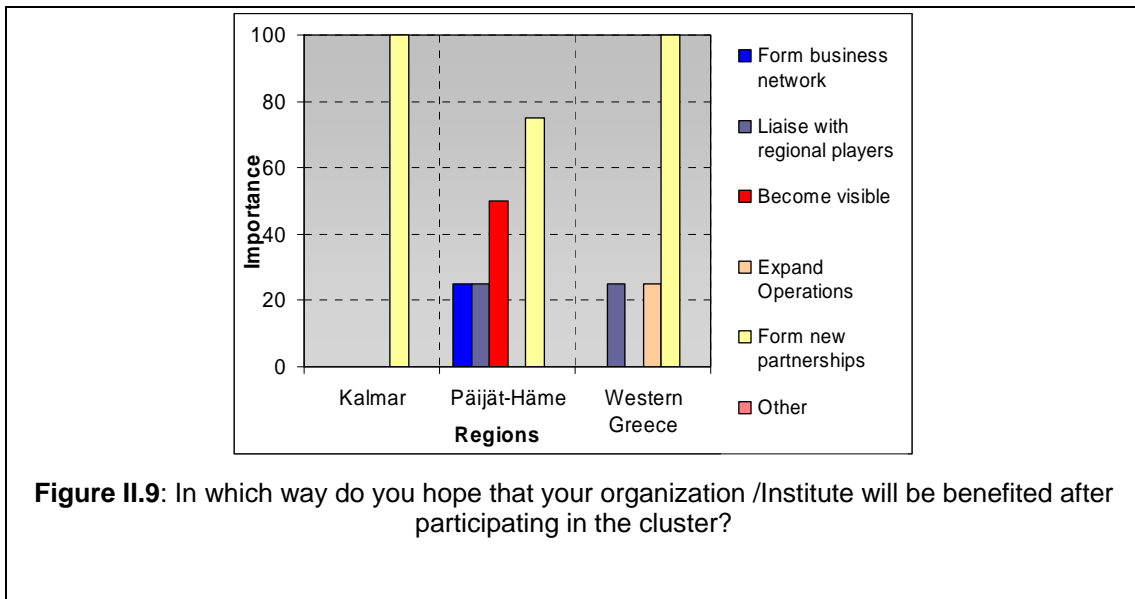
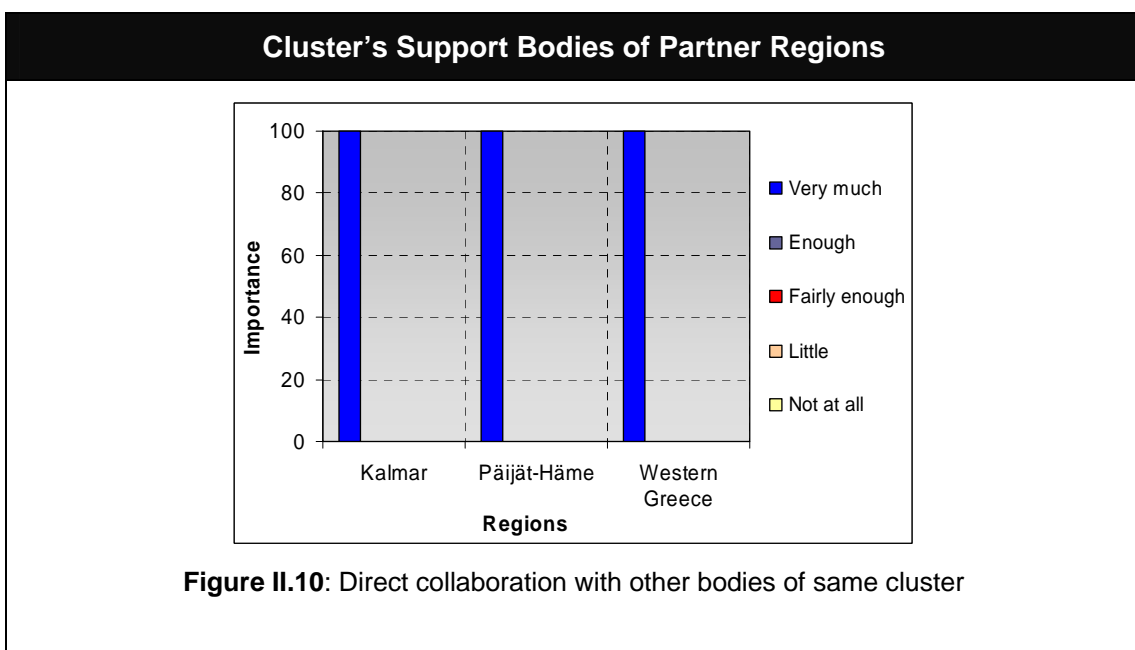


Figure II.8: Cluster encouragement of networking between R&T bodies of cluster



All **support bodies** from the clusters of the three partner regions collaborate directly with the other bodies of their cluster. The support bodies of Kalmar’s cluster provide funding resources within their cluster on a very high level, followed by the support bodies of Päijät-Häme’s cluster. The support bodies of RWG’s cluster provide funding resources to their cluster on a less than average level. Regarding the level of difficulty for the support bodies of the three clusters to provide funding resources to their own cluster, it appears to be of average level.

Finally, the extent to which the support bodies contribute to the formation of the strategy and the leadership of their cluster varies. It appears that the support bodies of Kalmar’s cluster demonstrate an average level whereas the support bodies of Päijät-Häme’s cluster demonstrate a very high level. RWG’s support bodies contribute to the overall management of the cluster on a higher than average level.



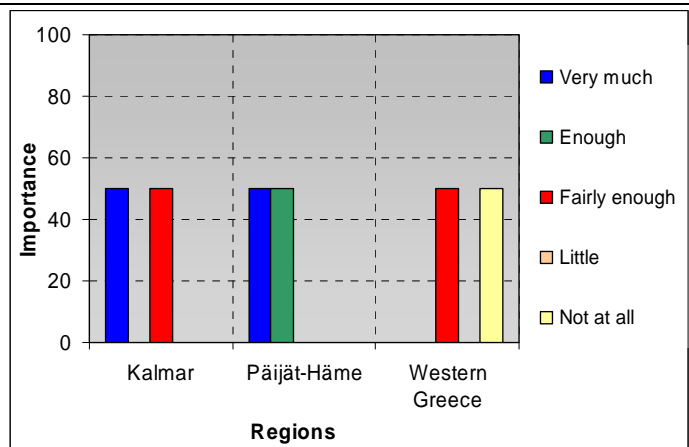


Figure II.11: Support bodies provide funding resources within their cluster

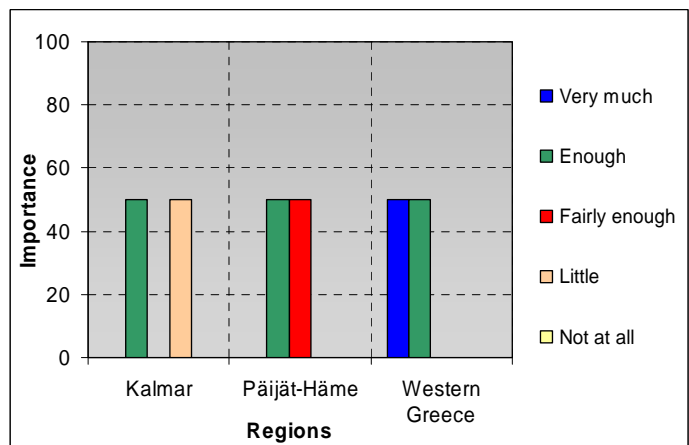


Figure II.12: Level of difficulty for support bodies to find financial resources for their cluster

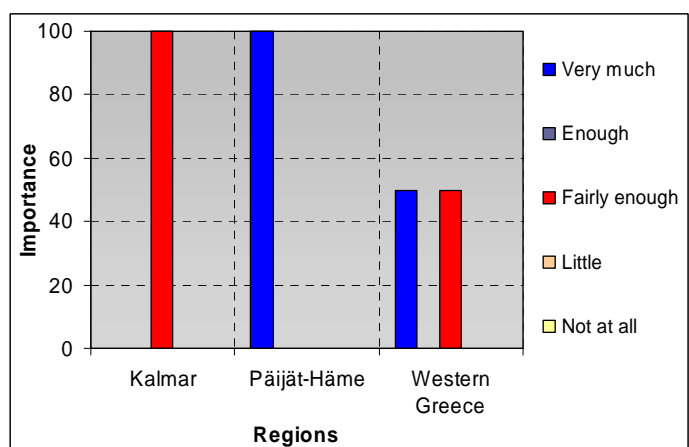


Figure II.13: Contribution of support bodies to the strategy, management of their cluster

III. External Operation

This part focuses on issues related to the external operation of the clusters from the three partner regions. Matters such as the degree of external collaborations on different levels, the exchange of knowledge, exports of services & products etc. are examined.

The first issue focuses on the creation of **partnerships between the three types of cluster bodies with companies or institutes out of their cluster on a regional level**. The cluster's **enterprises** from the regions of Kalmar and Päijät-Häme have created overall an average level of collaborations with bodies out of their cluster on a regional level, whereas the enterprises from the RWG cluster have not created many partnerships.

Moving on to **the R&T bodies** of the three clusters, the R&T bodies from Kalmar's and Päijät-Häme's region have created a substantial number (higher than average) of partnerships with regional bodies that do not belong to their clusters. The R&T bodies of RWG on the other hand state that they have created a very small number of similar partnerships.

Finally, the **support bodies** of Kalmar appear to be very active and thus have created a large number of partnerships with authorities or support bodies out of their cluster in their own region. The regions of Päijät-Häme and Western Greece demonstrate similarly a large number of similar partnerships on a regional level but less than those of Kalmar's region.

Partnerships with bodies out of the cluster on a regional level

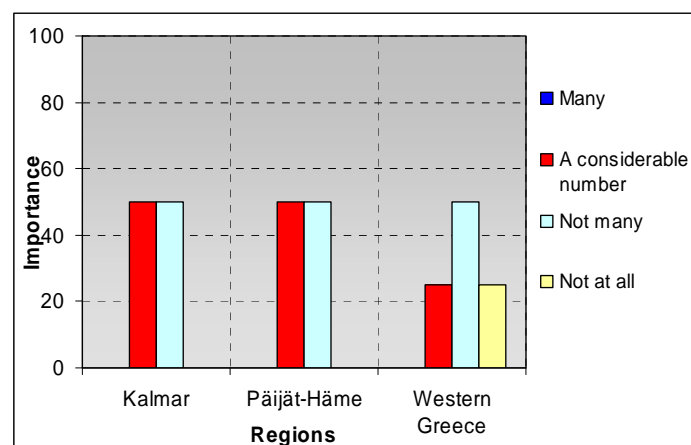


Figure III.1: Creation of partnerships between **enterprises** with regional bodies out of their cluster

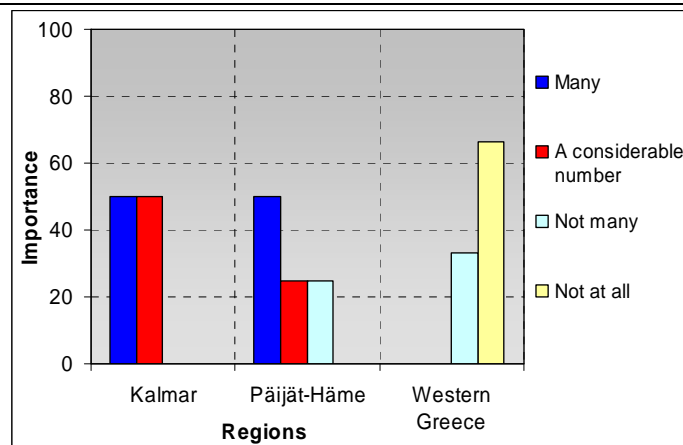


Figure III.2: Creation of partnerships between **R&T bodies** and bodies out of their cluster in same region

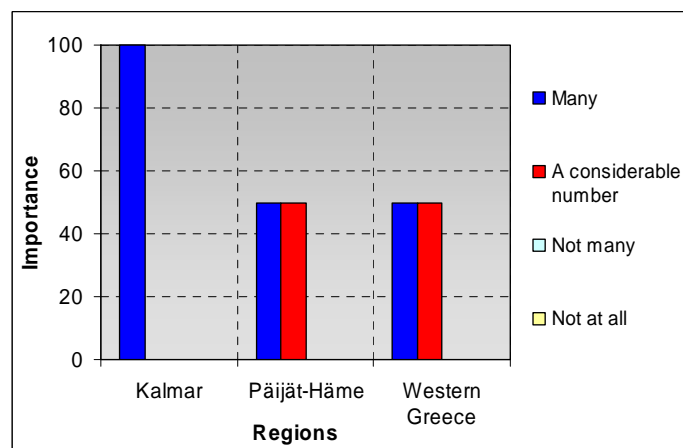


Figure III.3: Creation of partnerships between **support bodies** and bodies out of their cluster in same region

The next issue focuses on the creation of partnerships between the three types of cluster bodies with companies or institutes out of their cluster on a national level. The cluster's enterprises from the regions of Kalmar and Päijät-Häme have created overall an average level of collaborations with bodies out of their cluster on a national level, whereas the enterprises from the RWG cluster have created at most an average level of partnerships.

In the case of the **R&T bodies** of the three clusters, overall a high number of partnerships with bodies that do not belong to their clusters on a national level have been created.

Finally, the **support bodies** of Kalmar and Päijät-Häme have created a large number of partnerships with authorities or support bodies out of their cluster on a national level with the support bodies of in their own region with the support bodies of Päijät-Häme being in the lead. However the cluster of Western Greece demonstrates a low level of partnerships between its **support bodies** with authorities or support bodies out of their cluster on a national level.

Partnerships with bodies out of the cluster on a national level

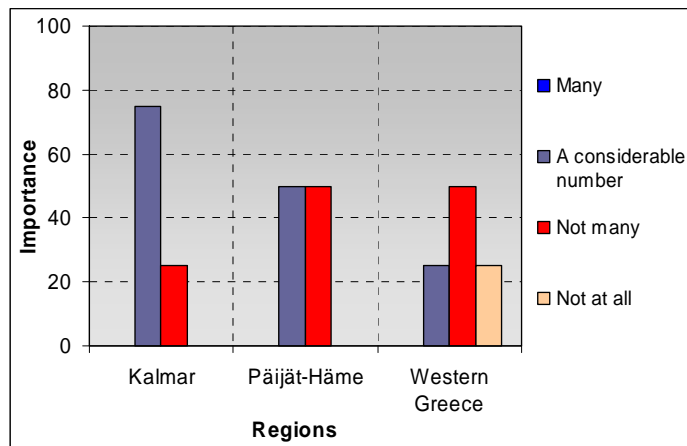


Figure III.4: Creation of partnerships between **enterprises** with bodies out of their cluster on a national level

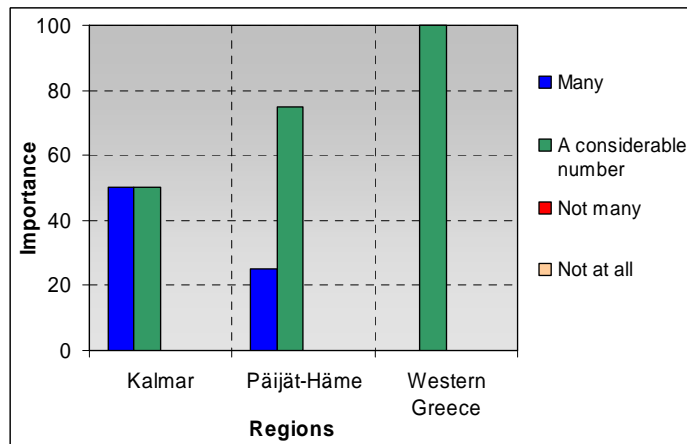


Figure III.5: Creation of partnerships between **R&T bodies** with bodies out of their cluster on a national level

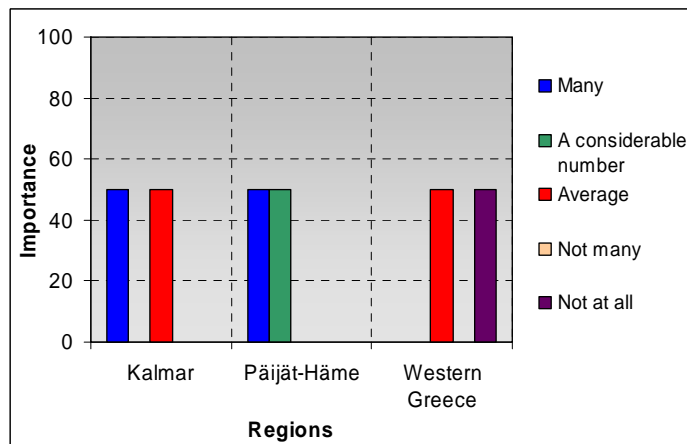
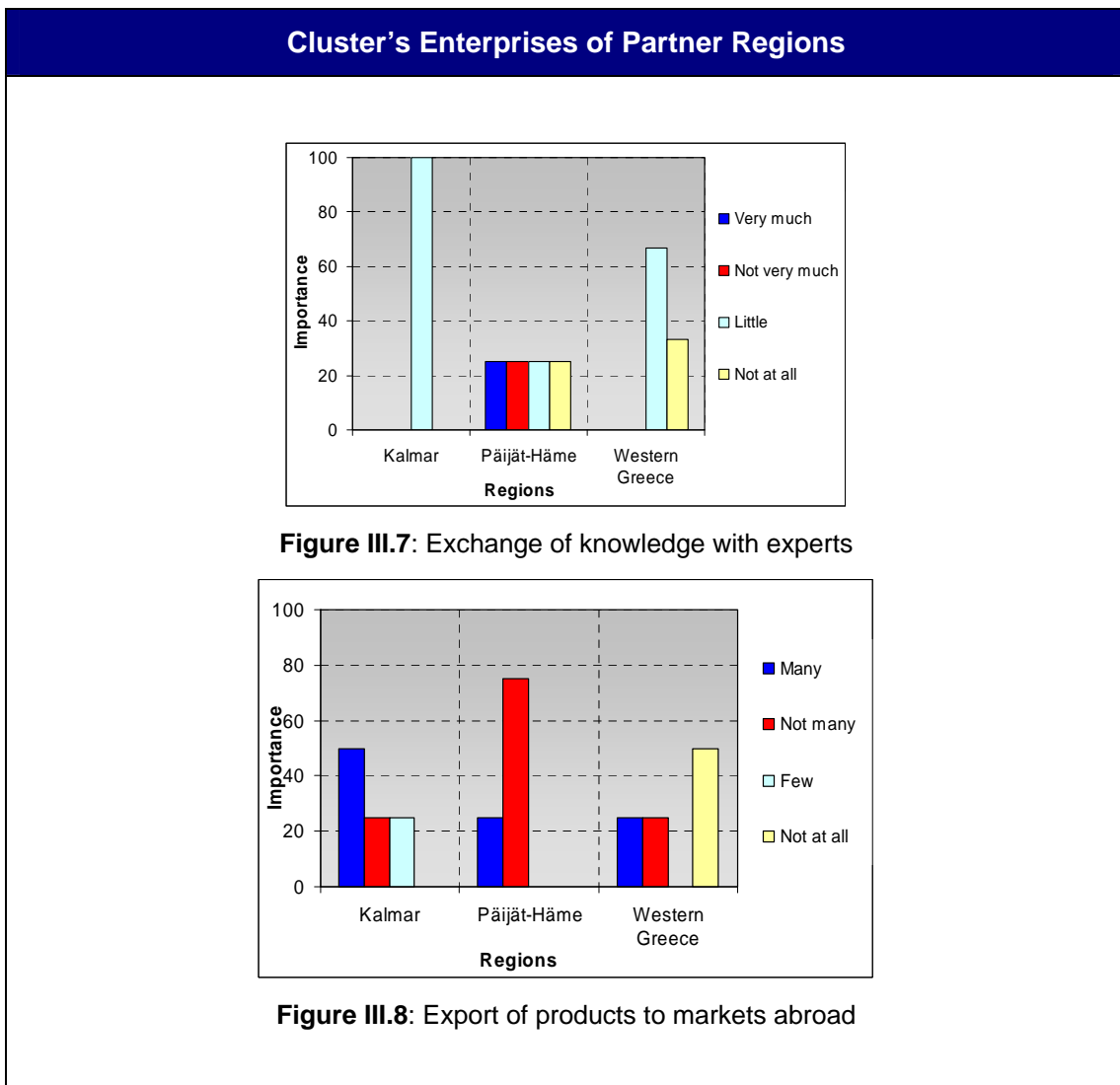


Figure III.6: Creation of partnerships between **support bodies** with authorities or support bodies out of their cluster on a national level

Other issues related to the **cluster's enterprises** focused on the exchanges of knowledge with experts. The feedback varies and does not demonstrate a common behavior. The cluster from the region of Päijät-Häme appears to be more active in the exchange of experiences and methods with experts on issues such as cluster management, SMEs support etc. than the rest of the clusters. However the level is still low, the same as in the case of the other two clusters.

Moving on, the enterprises of the three clusters demonstrate at least an average level of exports of their products to markets abroad. The enterprises of RWG's cluster in some cases demonstrate a low level of exports. Regarding their participation to EU programs overall the enterprises are active on an average level.

When the cluster enterprises were interviewed on the ways that their cluster, provides promotion of their activities and assistance to the creation of further collaborations, all of them stated that it is accomplished through their participation to workshops, conferences, exhibitions etc. The cluster from the region of Kalmar also underlined other ways such as through their participation in projects, newsletters, leaflets and other. The same is true for the clusters from the region of Päijät-Häme and Western Greece, although at a lower frequency.



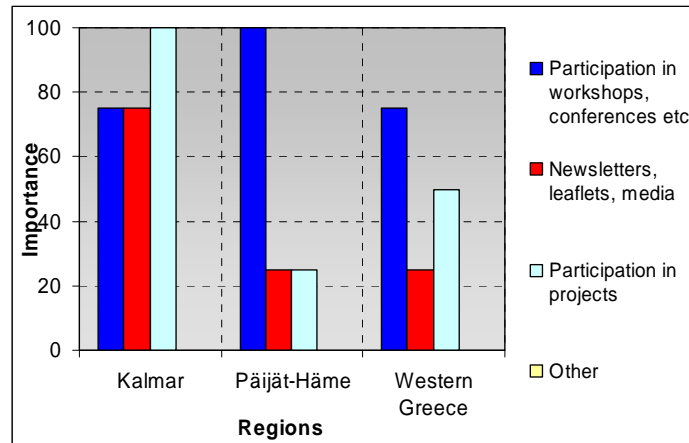


Figure III.9: Ways the cluster promotes activities and creates collaborations

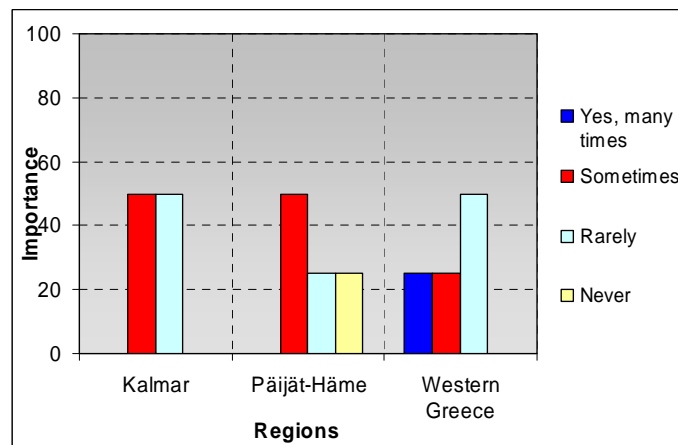


Figure III.10: European projects participation

Moving on to the **cluster's R&T bodies**, it appears that the cluster from Western Greece has created a considerable number of partnerships with companies or institutes out of their cluster on an international level. The same holds true for the clusters of Päijät-Häme and Kalmar on a lesser level but still higher than average.

Moving on, the R&T bodies of the Päijät-Häme cluster demonstrate an average level of exports of their research results to markets abroad, whereas the R&T bodies of the other two clusters demonstrate a lower than average level.

Regarding their participation to EU programs, the R&T bodies of RWG's cluster appear more active than the other two clusters. Nevertheless, the R&T bodies of the cluster from Päijät-Häme demonstrate an average level of participation, whereas the R&T bodies from Kalmar demonstrate a lower than average level.

Cluster's R&T Bodies of Partner Regions

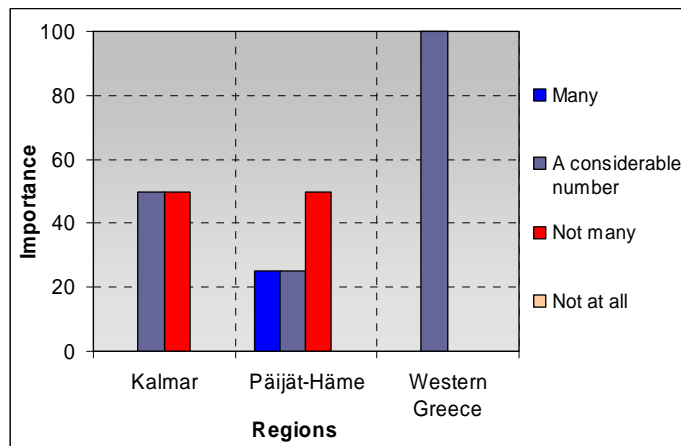


Figure III.11: Creation of partnerships with bodies out of their cluster on an international level

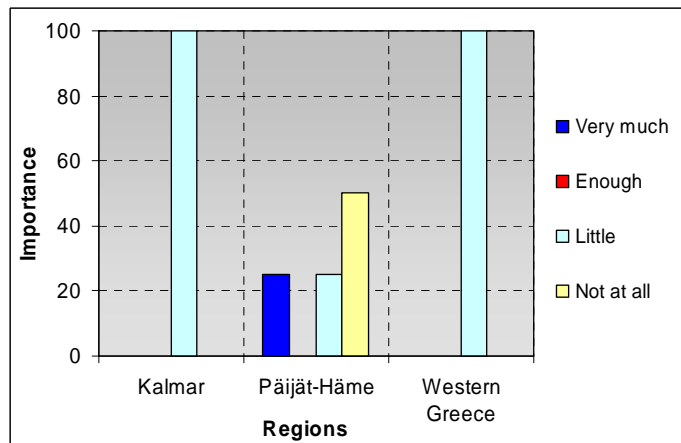


Figure III.12: Contribution of cluster to the export of research results to markets abroad

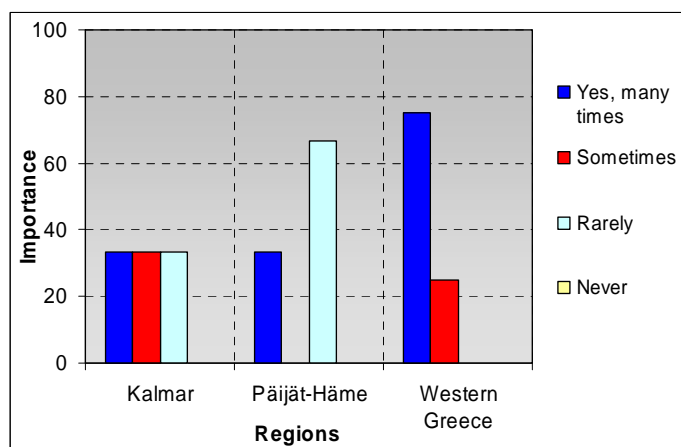
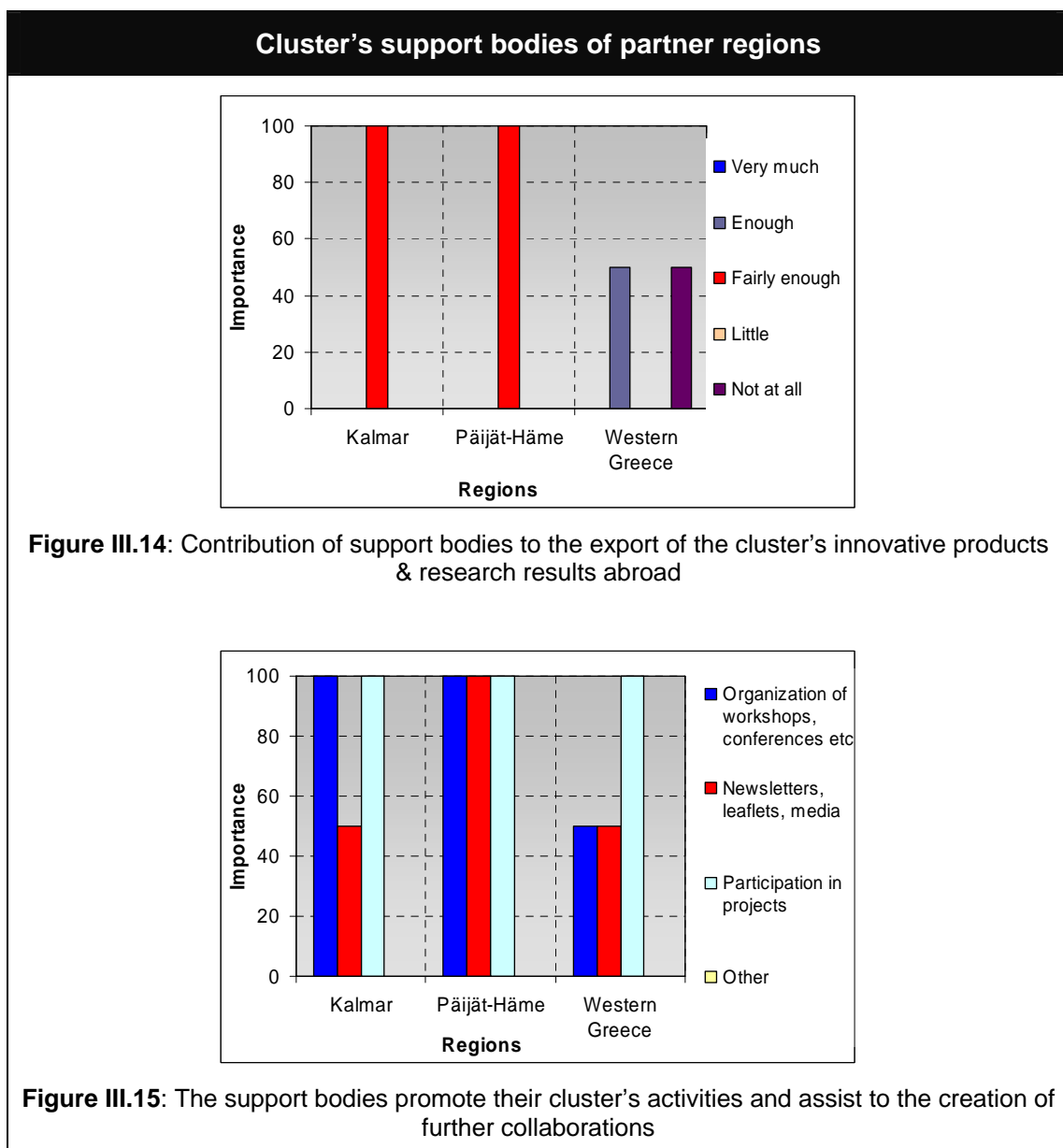


Figure III.13: European projects participation of R&T bodies

Regarding the external operations of the **cluster's support bodies** from the partner regions, it appears that the clusters from Päijät-Häme and Kalmar contribute to the export of the innovative results and research results abroad on an average level. In the

case of RWG's cluster there is no common behavior on this matter. In some cases the support bodies contribute to such exports on a fairly good level whereas in other cases these bodies do not contribute at all.

Finally, the support bodies of Kalmar's region promote their cluster's activities and assist the creation of further collaborations through the organization of workshops, conferences, exhibitions etc and the participation in projects. On a lesser level the promotion is accomplished through newsletters, leaflets and media. Similarly, the support bodies from the region of Pääjät-Häme promote their cluster mainly through the above ways. In the case of RWG, the main method used is through the participation to national and international projects.



IV. Viewpoints among Cluster Bodies

In this section, the results from the questionnaires are presented regarding the viewpoints among the three types of cluster bodies within each participating cluster.

IV.1 Viewpoints of Enterprises

About the Research Bodies

The enterprises of Kalmar's and Päijät-Häme's clusters overall have an average level of **collaboration** with the R&T bodies of their cluster, whereas the enterprises of RWG's cluster state that they have a higher level of collaboration with them.

In the clusters of Päijät-Häme and RWG, the **initial contacts** were made by both bodies depending each time on the specific needs that either side had to deal with. The enterprises of Kalmar's cluster however were put in contact through another body (Sustainable Sweden Southeast AB).

The enterprises of Päijät-Häme's and Kalmar's clusters believe that there is large number of **research results available** which have not been exploited. On the other hand the RWG's enterprises believe that in their cluster fewer results are available for exploitation.

Regarding the main **reasons that inhibit the collaboration** between the enterprises and the R&T bodies, Kalmar's cluster believes that it is due to the difficulties in communication from both sides and to a lesser extent to the lack of mechanism for promoting the research results. The cluster from Päijät-Häme states that there is a lack of mechanism for the promotion of research results as well but also stresses out that there is also a lack of interest from the companies' side for innovative technologies and research results. Another reason that inhibits such collaborations is the lack of appropriate resources and time. Finally, RWG's cluster states that the main reason for their cluster is the lack of mechanism for promoting the research results, followed by difficulties in communication from both sides, lack of trust between them and finally the lack of interest from the cluster's enterprises.

Following, the enterprises of Kalmar's and RWG's cluster are satisfied at least on an average level regarding the **knowledge and the innovative services that the research bodies have provided** to them and state that although there are enough results they could provide more. The enterprises from Päijät-Häme's cluster are satisfied at most at an average level with the knowledge that the R&T bodies have provided to and thus believe that the R&T bodies could definitely provide more research results and services to them.

Finally, the **collaboration between the enterprises and the R&T bodies** within the same cluster is characterizes by the companies overall as good.

What more do enterprises expect from the research bodies of their cluster

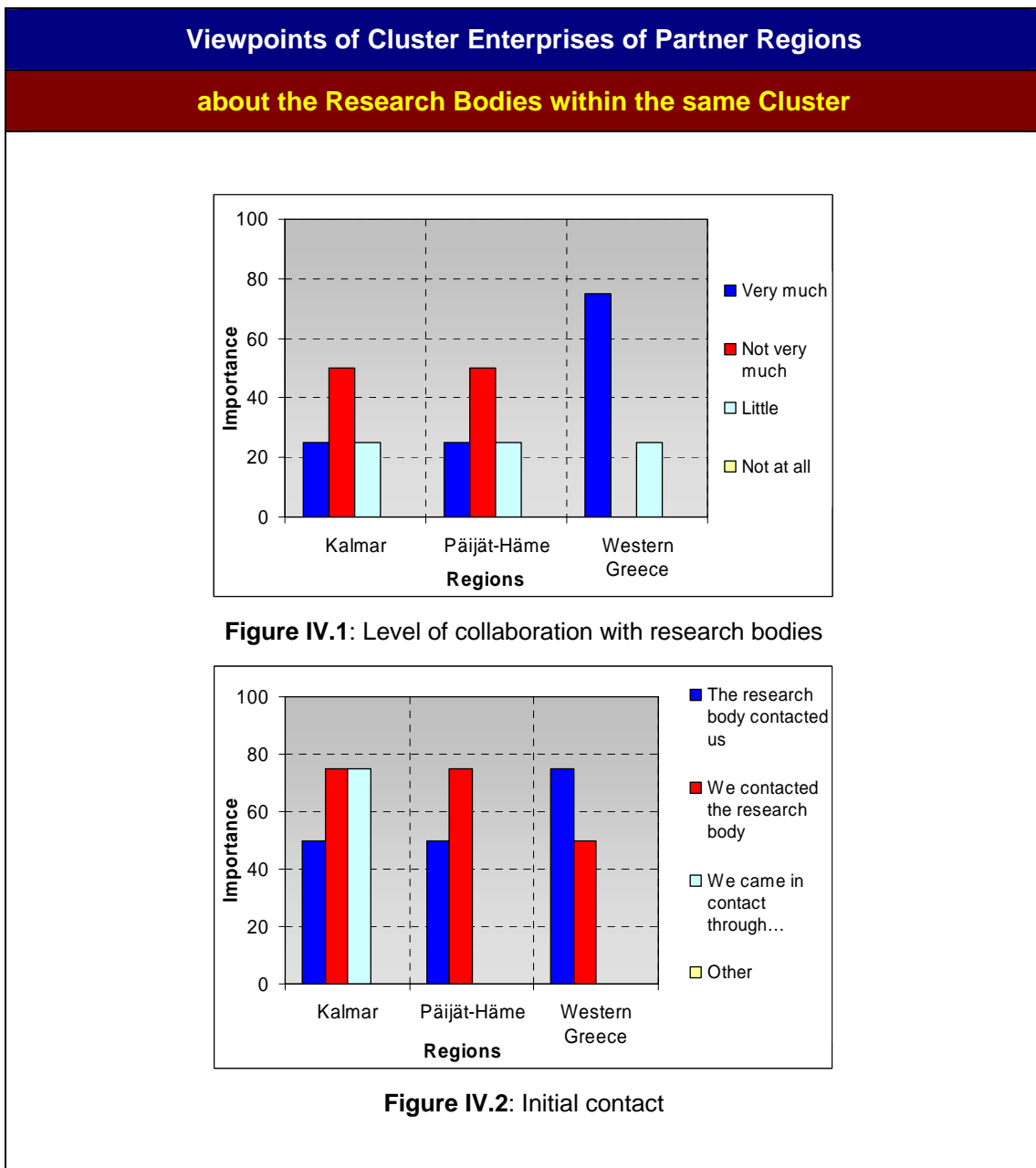
Enterprises of Kalmar's Cluster

Enterprises of Päijät-Häme's Cluster

- Availability of a larger number of research results for companies.

Enterprises of RWG Cluster

- Networking
- Knowledge and know-how transfer
- Research results applicable to the industry and enterprises in the short term.



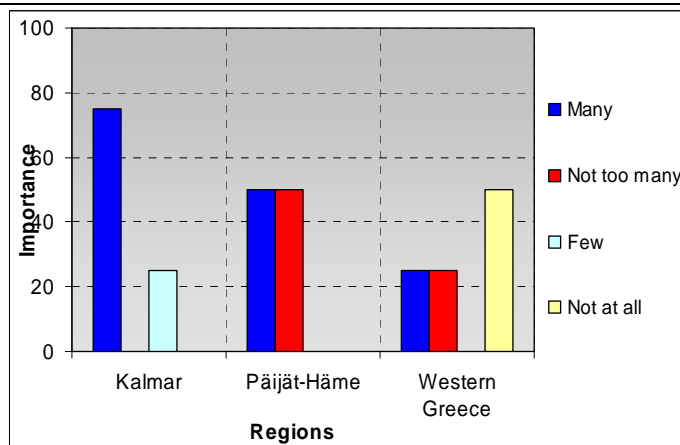


Figure IV.3: Research results that have not been exploited

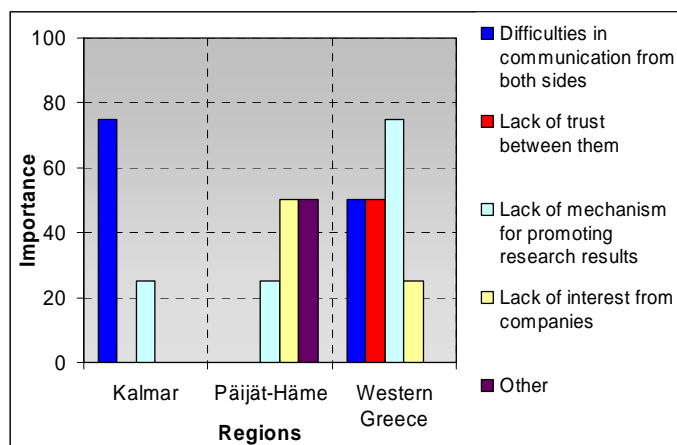


Figure IV.4: Reasons that inhibit collaboration with research bodies

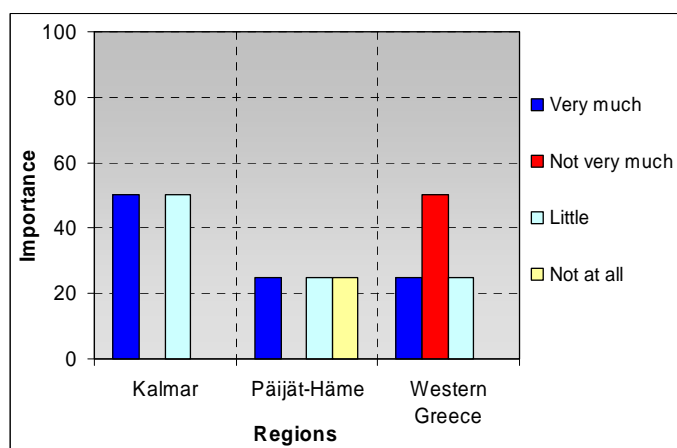


Figure IV.5: Degree of satisfaction with knowledge & innovative services that research bodies provide to cluster companies

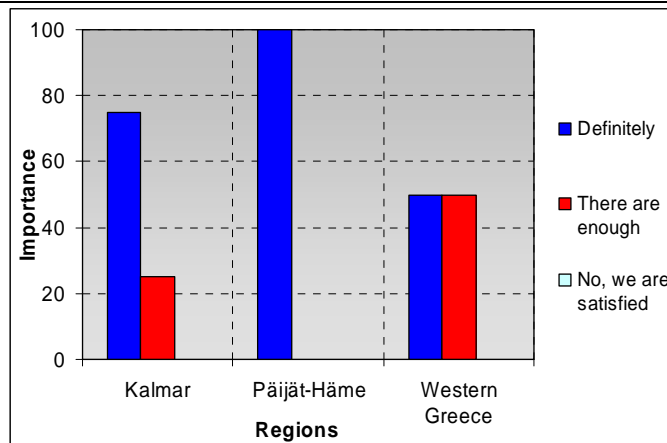


Figure IV.6: Could research bodies provide more?

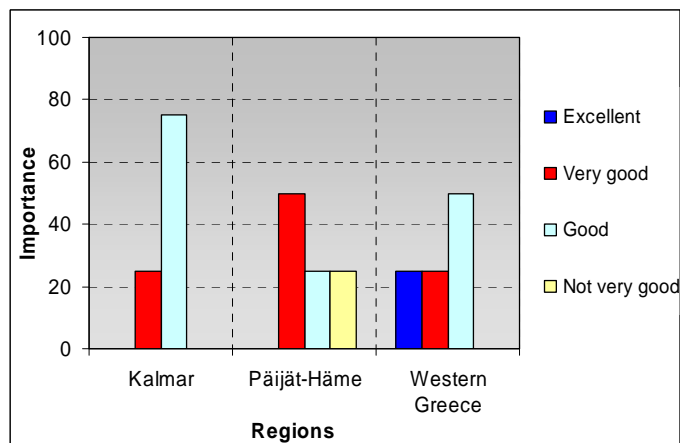


Figure IV.7: Level of collaboration with research bodies

About the Support Bodies

The majority of the enterprises of Kalmar's cluster state that the **advantages and useful information they have gained from the support bodies** of their cluster are of high level. In the case of Päijät-Häme's cluster, half of the enterprises state that they have gained benefits from the support bodies whereas the other half state that they have not gained any advantages from the support bodies of their cluster. Finally, the enterprises of RWG's cluster state that the received advantages are overall of average level.

When the enterprises were interviewed on whether the support bodies of their cluster have helped them **to expand their activities to other regions and/or countries**, it appears that in the case of Kalmar's cluster the contribution of the support bodies is of very high level. The corresponding level in the case of the other two clusters is less than average. Consequently, the enterprises of Päijät-Häme and RWG believe that their support bodies could **definitely exploit more their infrastructures and capabilities** in order to support their cluster.

The degree of the **enterprise's satisfaction regarding received investments by the support bodies** varies in the case Kalmar's and Päijät-Häme's cluster. The enterprises

of RWG's cluster are satisfied on an average level. As stated by the enterprises, the assistance of the support bodies in reducing or eliminating problems and obstacles of the enterprises is low as well.

Finally, through the interview forms it becomes obvious that the enterprises from the three clusters have not received much **assistance by the support bodies for the reduction or elimination of problems or obstacles** that have occurred to them.

What more do enterprises expect from the support bodies of their cluster

Enterprises of Kalmar's Cluster

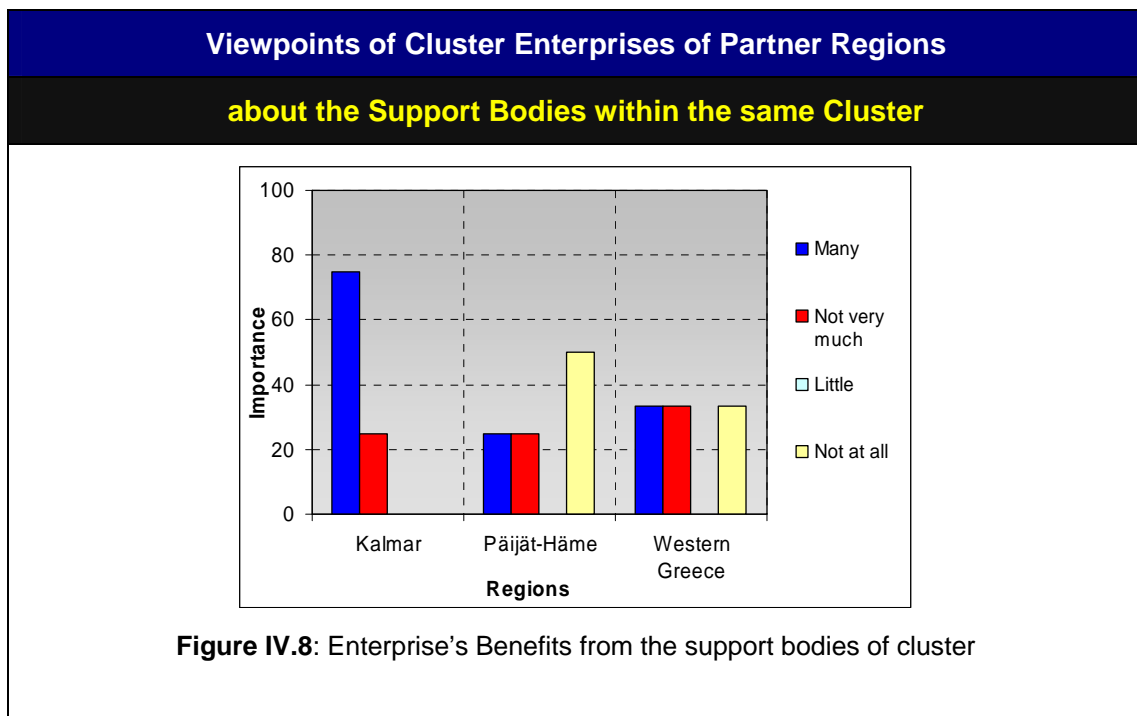
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Enterprises of Päijät-Häme's Cluster

- Support bodies need to provide more financial support services
- The support bodies should co-operate more with the enterprises towards the promotion of their products
- Support bodies need to be closer to the real companies' problems and also coordinate training meetings

Enterprises of RWG Cluster

- The enterprises of RWG's cluster appear to be expecting assistance by the support bodies of their cluster at a high level. The assistance ranges on a variety of matters which include problem solutions, product development, product promotion and support in industrial application of their products.



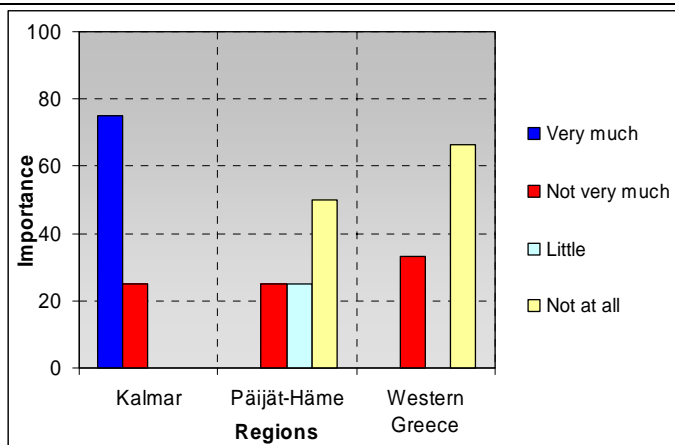


Figure IV.9: Support bodies assist enterprises to the expansion of their activities to other regions/countries

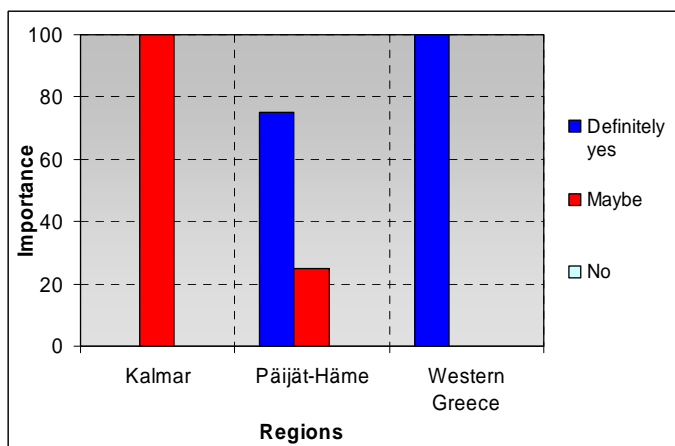


Figure IV.10: Support bodies could exploit more their capabilities in order to support their cluster

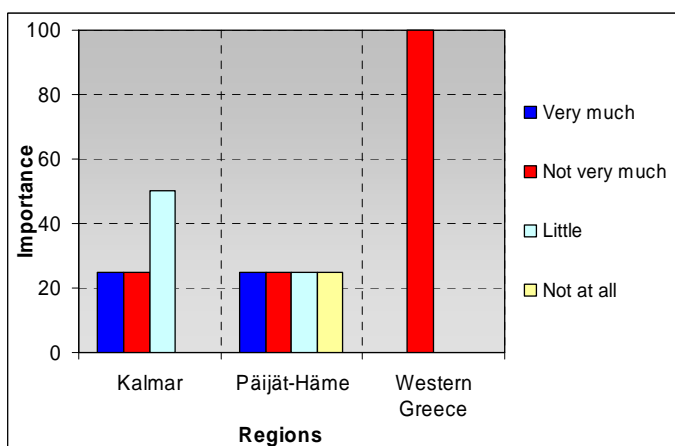


Figure IV.11: Degree of satisfaction regarding investments implemented to the enterprises

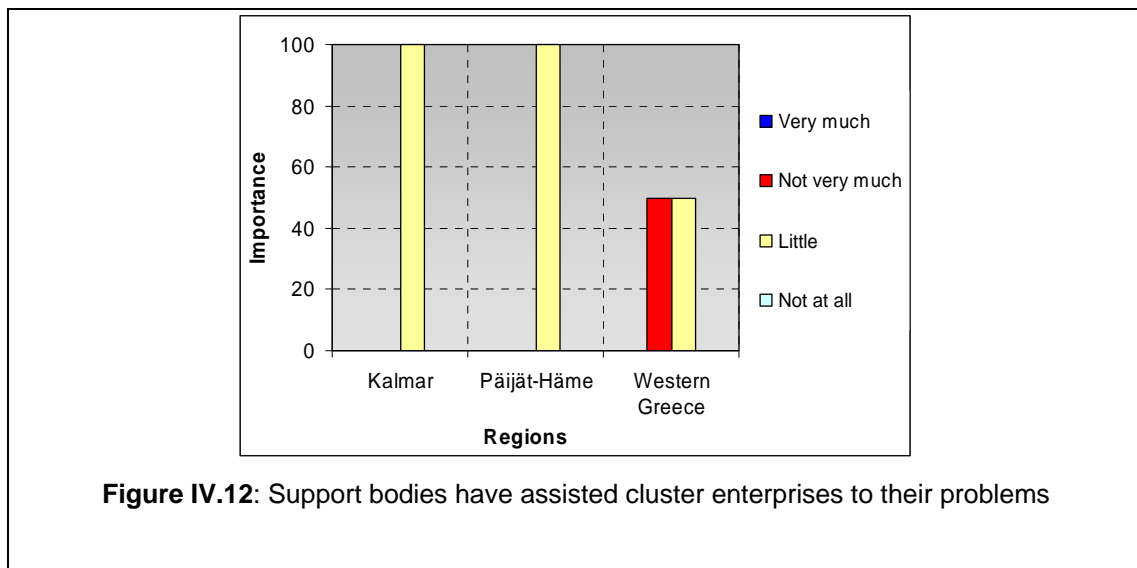


Figure IV.12: Support bodies have assisted cluster enterprises to their problems

IV.2 Viewpoints of Research & Technology Bodies

About the Enterprises

The enterprises of Kalmar's and RWG's cluster have not adopted **innovative results that the R&T bodies have produced** within their own cluster, whereas in the case of Päijät-Häme's cluster the enterprises have adopted on a higher than average level especially in biotechnology, soil ecology for ex. shooting range, lakes ecology, storm waters.

Regarding the **availability of research results that the companies could exploit but their infrastructures are not capable to adopt them**, half of the R&T bodies of Kalmar's cluster state that there is a large number available whereas the rest of them state the opposite. The R&T bodies of Päijät-Häme's and RWG's cluster stated that the number of such research results is at least average.

The next issue focuses on the reasons that **inhibit the collaboration between the R&T bodies and enterprises** of the same cluster. In Kalmar's cluster one main reason appears to be the difficulties in the communication between the two sides. In the case of Päijät-Häme's cluster, the R&T bodies state that such reasons are the lack of financial resources, as well as the different sectors the R&T bodies focus on from the enterprise's ones. This is due to the fact that the R&T bodies are 'older' than the cluster and thus because of "historical" reasons focus on different sectors. In RWG's cluster the main reasons that inhibit these collaborations are the lack of mechanism for the promotion of research results to the companies as well as the difficulties in the communication between them.

Finally, the level of satisfaction by the research bodies as far as the knowledge and the information (needs, trends of market, etc) that the enterprises have provided to them was examined. The R&T bodies of Kalmar's cluster are satisfied at a very high level, followed by the R&T bodies of Päijät-Häme's cluster which are satisfied at an average level whereas the R&T bodies of RWG's cluster demonstrate a lower than average level of satisfaction.

What more do the R&T bodies expect from the enterprises of their cluster

R&T bodies of Kalmar's Cluster

- To increase their ability/sensitivity to cooperate with researchers
- Invest more resources (financial, technical) to R&D, in order to take advantage of more research results.

R&T bodies of Päijät-Häme's Cluster

- Networking, more and new contacts
- Research bodies are looking for cooperation in R&D activities with cluster's enterprises
- Research bodies expect the enterprises to become strategic partners for marketing, production etc.
- Better communication, more targeted and focused

R&T bodies of RWG Cluster

- To define their R&D&I problems, which need scientific (and not only technical) contribution and to ask for cooperation with the scientific organizations of their region
- To support R&D activities (through active participation in projects, or through straight funding or research establishments)
- To trust and take advantage of the research results of the scientific organizations of their region

Viewpoints of Cluster R&T Bodies of Partner Regions

about the Enterprises

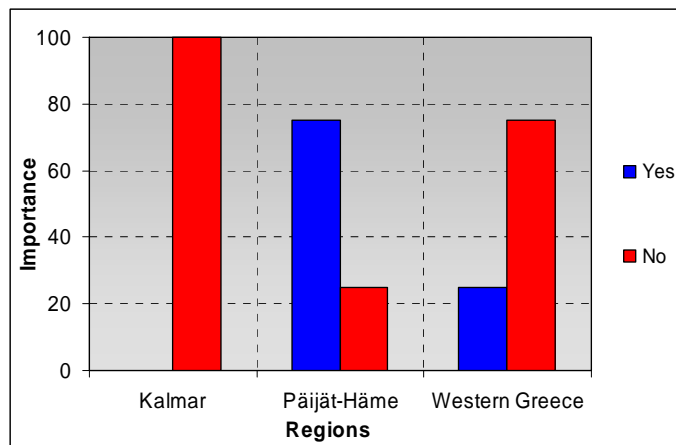


Figure IV.13: Enterprises have adopted innovative results that the R&T bodies have produced within their own cluster

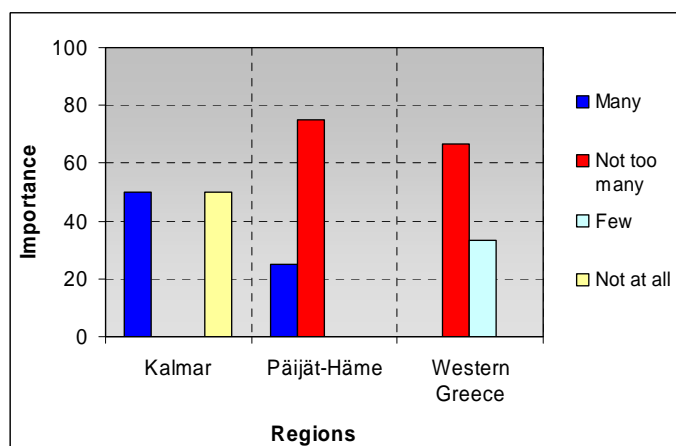


Figure IV.14: Research results that have not been exploited by the enterprises due to their infrastructures

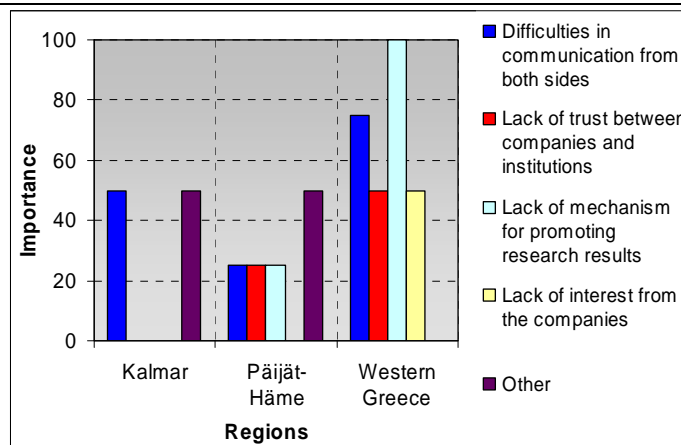


Figure IV.15: Reasons that inhibit collaboration with regional enterprises

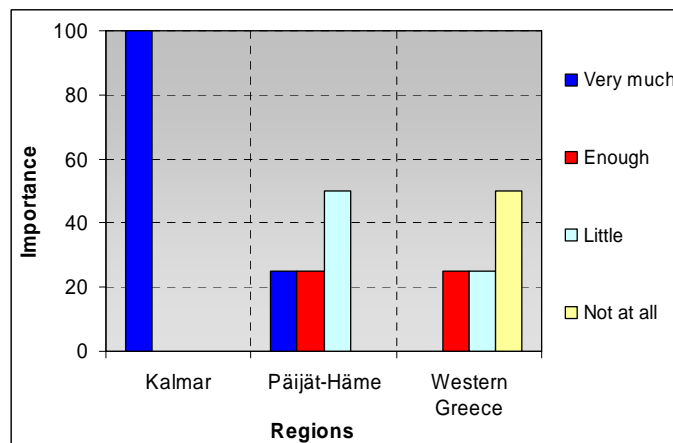


Figure IV.16: Degree of satisfaction with knowledge & information that the cluster enterprises provide

About the Support Bodies

The cluster's R&T bodies from the three partner regions believe that the support bodies of their clusters contribute at a very high level to the **development of their cluster**. Especially in the case of Kalmar's cluster it appears that the support bodies have helped the R&T bodies to expand their activities to other regions and/or countries. The corresponding level in the clusters of Päijät-Häme and RWG is at most of average level.

Regarding the **investments** that the research bodies have received by the support bodies of their cluster, the research bodies are satisfied overall on an average level. Kalmar's R&T bodies are more satisfied, followed by the R&T bodies of Päijät-Häme and then by the R&T bodies of RWG.

Finally, the research bodies of Päijät-Häme's cluster consider that the support bodies have assisted **to reduce or eliminate problems and obstacles** that have occurred at least on an average level. In the case of Kalmar's cluster, it appears that half of the R&T

bodies are very satisfied with the assistance by the support bodies, whereas the rest of them are not satisfied at all. The R&T bodies of RWG state that they have received little assistance in such cases.

What more do the R&T bodies expect from the support bodies of their cluster

R&T bodies of Kalmar's Cluster

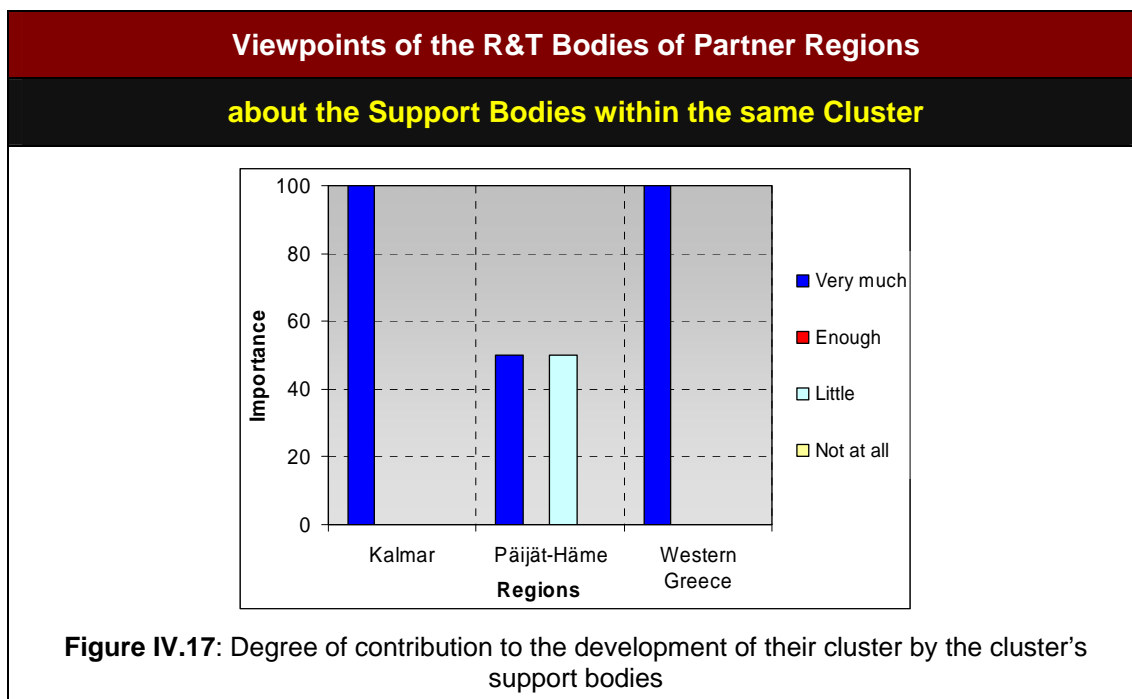
- The R&T bodies expect financial support in order to produce more doctors and MSc/BSc students, support for more equipment and instruments for chemical analysis.
- Support bodies need to provide clear directions on where the R&T bodies should focus.

R&T bodies of Päijät-Häme's Cluster

- Better and targeted communication with the support bodies
- The support bodies should bring together the companies with the research bodies.
- The support bodies could be more proactive in information delivery.

R&T bodies of RWG Cluster

- To liaise continuously between industry and scientific organizations, so that strong relations will be developed
- To support scientific organizations in finding new funding opportunities
- To help scientific organizations disseminate and exploit/commercialise their research results



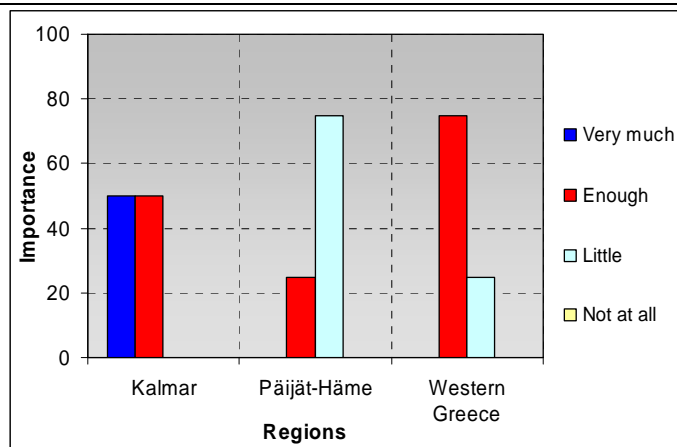


Figure IV.18: The cluster's support bodies helped the R&T bodies of same cluster to expand their activities to other regions/countries

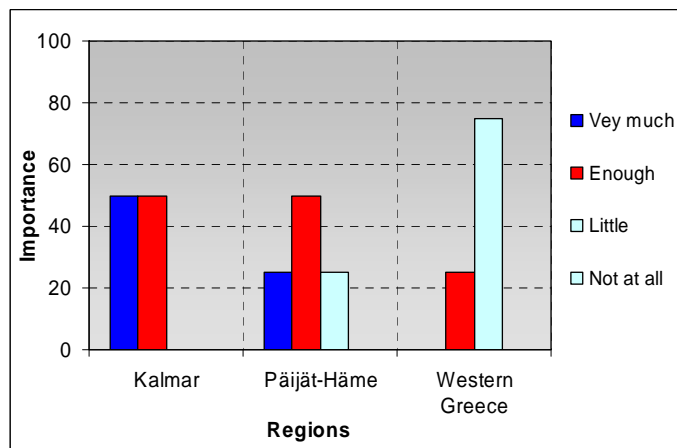


Figure IV.19: Degree of satisfaction of R&T bodies regarding the received investments by the support bodies of same cluster

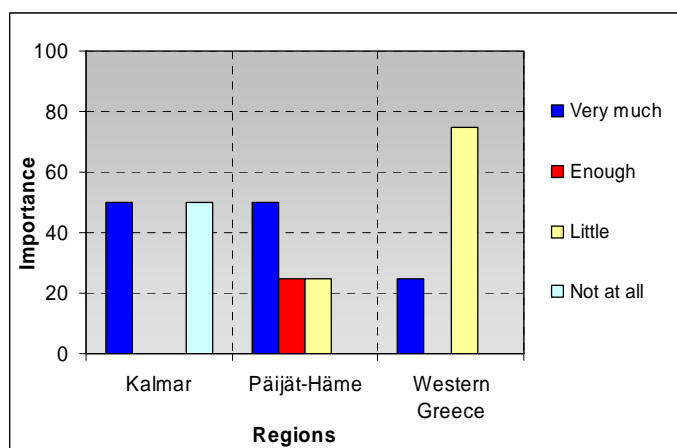


Figure IV.20: Cluster's support bodies have assisted the R&T bodies of same cluster to their problems

IV.3 Viewpoints of Support Bodies

About the Enterprises

The support bodies of Kalmar's cluster state that the contribution of the enterprises to the **development of their cluster** is of highest importance whereas in the case of Päijät-Häme's cluster the support bodies state that the corresponding level is of higher than average level. In the case of RWG's cluster the level of contribution of the enterprises is of average level. All support bodies from the three partner regions believe that the enterprises have adopted effectively on an average level the **innovative results produced by the research bodies**. Similarly, regarding the availability of research results that have not been adopted by the enterprises due to their **inadequate infrastructures**, the support bodies responded that a great number of such research results are available. Moving on the support bodies are satisfied on an average and in some cases higher level with the enterprises, as far as their **contribution with knowledge and information** to the support bodies is concerned. Finally, the support bodies state that their level of collaboration with the enterprises of their clusters is good.

What more do the support bodies expect from the enterprises of their cluster

R&T bodies of Kalmar's Cluster

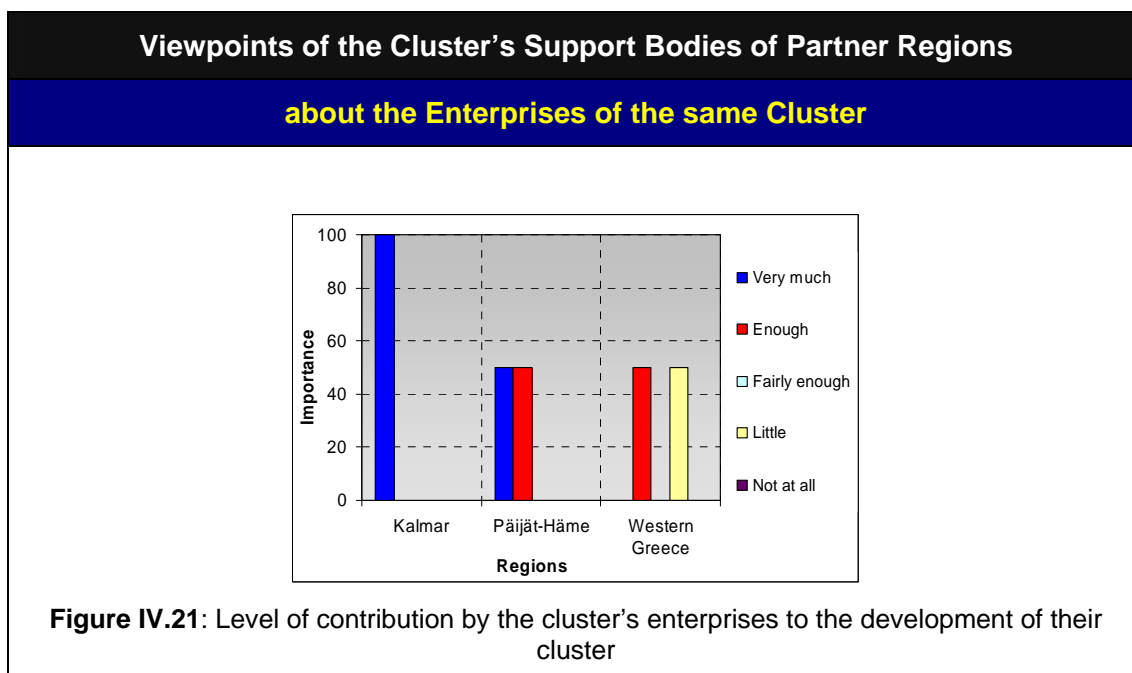
- The support bodies expect the enterprises of their cluster to take up a more active role and face new challenges.

R&T bodies of Päijät-Häme's Cluster

- Invest more resources to R&D, in order to take advantage of more research results.
- More networking
- Take advantage of practice based innovations

R&T bodies of RWG Cluster

- The support bodies expect the enterprises of their cluster to take up a more active role and get involved in the cluster development and in the forming of their policies.



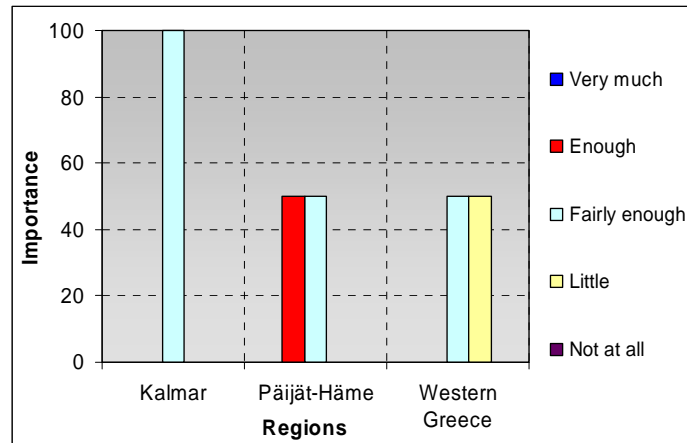


Figure IV.22: The enterprises of their cluster have adopted effectively innovative results of the research institutions

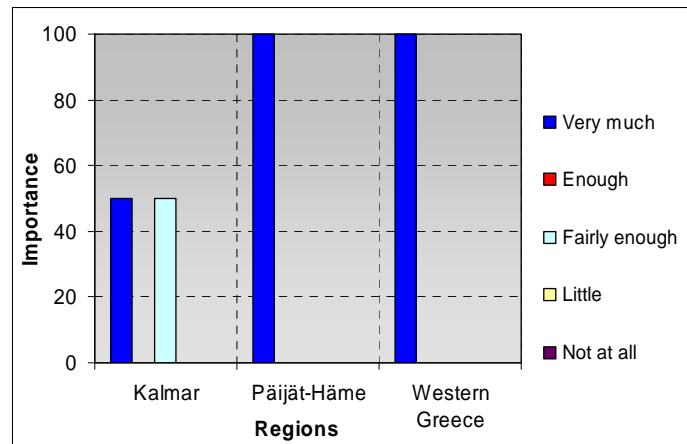


Figure IV.23: Availability of research results that the cluster's enterprises could exploit but their infrastructures are not adequate to adopt them

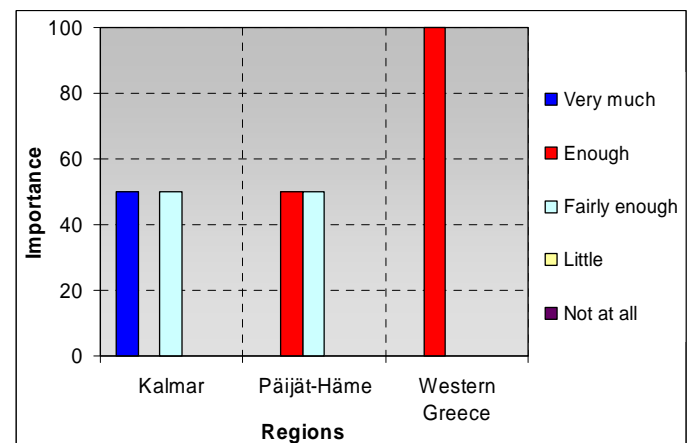


Figure IV.24: Degree of satisfaction with knowledge & information that the cluster's enterprises provide to the support bodies

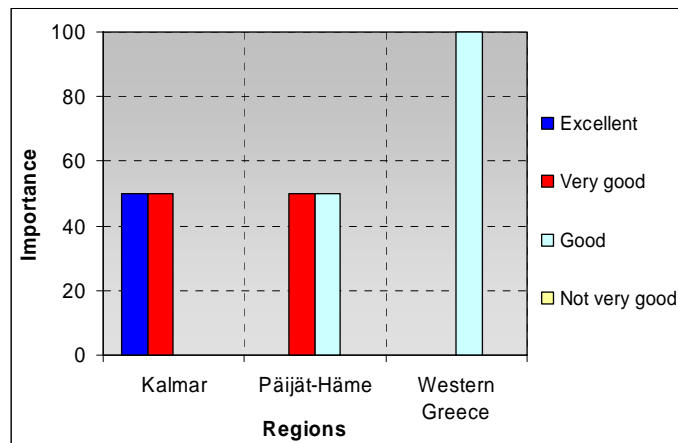


Figure IV.25: Level of collaboration of the support bodies with their cluster's enterprises

About the Research & Technology Bodies

The support bodies of clusters from the three partner regions state that the contribution of the research & technology bodies to the **development of their cluster** is average and in some cases it is of higher importance. The support bodies state that there are many **research results** which have not been exploited. Additionally they have **collaborated** my times with R&T bodies of their cluster. In most cases, the **initial contact** between them was done directly by either side and in some cases (RWG's & Kalmar's cluster) through a third party. Finally, it appears that the collaboration between the support bodies and the R&T bodies is very good.

What more do the support bodies expect from the R&T bodies of their cluster

R&T bodies of Kalmar's Cluster

- Stronger triple helix approach, e.g. use public sector/support bodies to a greater extent

R&T bodies of Päijät-Häme's Cluster

- Commercialization and market-focused research.
- Use better the research results for practice based innovations
- Research centres must increase their ability to acquire knowledge from other (international) R&D centres.

R&T bodies of RWG Cluster

- Exploit the research results
- Develop spin-off companies
- To cooperate closer with the local industry: Give more insight of their research results to the local companies so that they can take advantage of them (organize open days more often, etc)

Viewpoints of the Cluster's Support Bodies of Partner Regions

about the R&T Bodies of the same Region

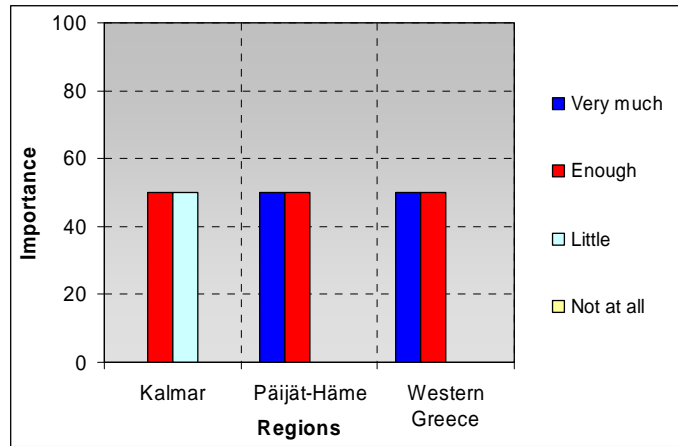


Figure IV.26: Level of contribution to the development of their cluster by the cluster's R&T bodies

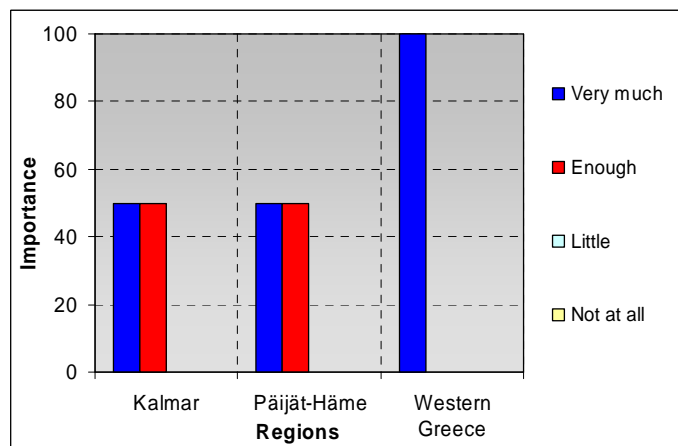


Figure IV.27: Research results that have not been exploited

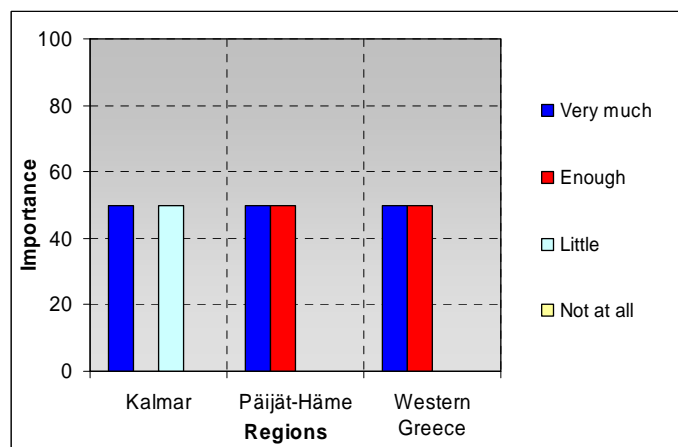


Figure IV.28: Level of collaboration with the cluster's R&T bodies

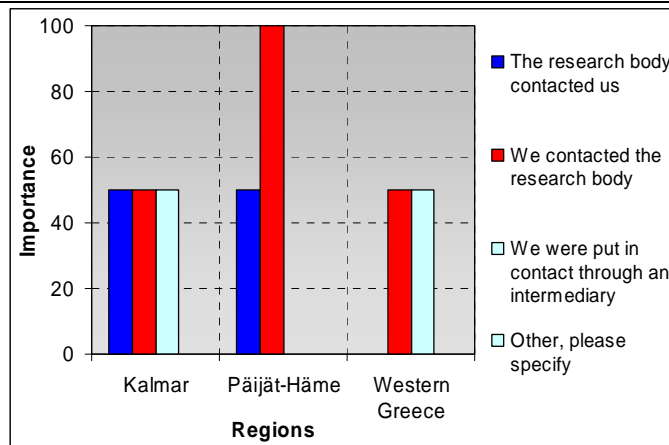


Figure IV.29: Initial contact with cluster's R&T bodies

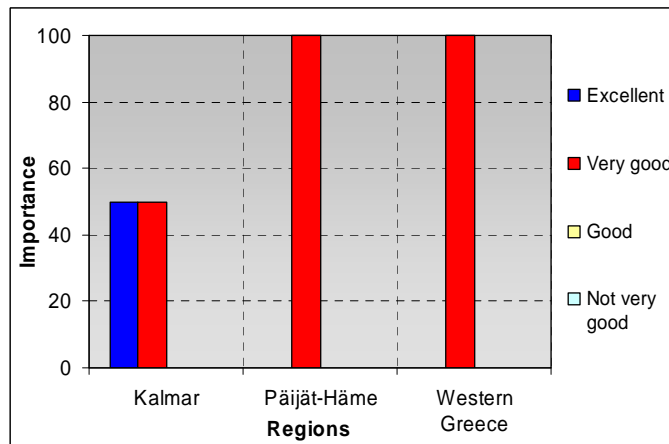


Figure IV.30: Characterization of collaboration with cluster's R&T bodies

V. Cluster Segmentation

This section focuses on the sector segmentation of the three types of bodies (enterprises, research & technology bodies, support bodies) of the participating clusters.

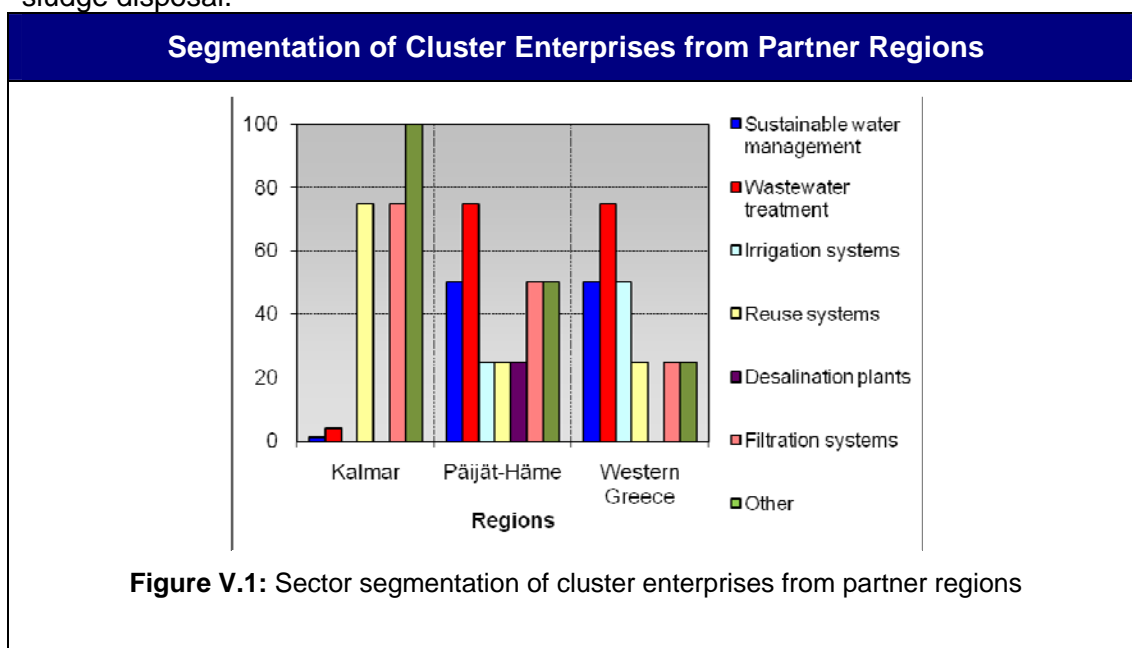
V.1 Cluster Segmentation of Enterprises

The produced services and products of the enterprises of the three participating clusters focus on a variety of sectors and are satisfied on a higher than average level with the existing segmentation.

The enterprises of **Kalmar's cluster** focus mainly on the sectors of reuse systems, filtration systems as well as swarf handling systems, issues on dewatering of external sludge and mobile treatment plant for water containing heavy metals, oil, water treatment, leachate water treatment, biogas production, biogas upgrading, etc.

Following, the enterprises of **Päijät-Häme's cluster** focus mainly on the sectors of wastewater treatment, followed by sustainable water management, filtration systems and other such as Automation services, plastic pipe systems and HEPAC [heating, plumbing, air-conditioning] products. Other sectors in which enterprises are involved but are less popular are irrigation systems, reuse systems and desalination plants. When the enterprises were questioned whether **more directions**, segments or niche technologies concerning water management should be pursued from the cluster, the enterprises overall stated that the existing directions are covering all demanding and niche technologies required nowadays.

Finally, the enterprises of **RWG's cluster** focus mainly on the sectors of wastewater treatment, followed by sustainable water management and irrigation systems. Other sectors in which enterprises are involved but are less popular are reuse systems, filtration systems and food processing water waste. When the enterprises were questioned whether more directions, segments or niche technologies should be pursued from the cluster, they stated that other directions should involve water management and sludge disposal.



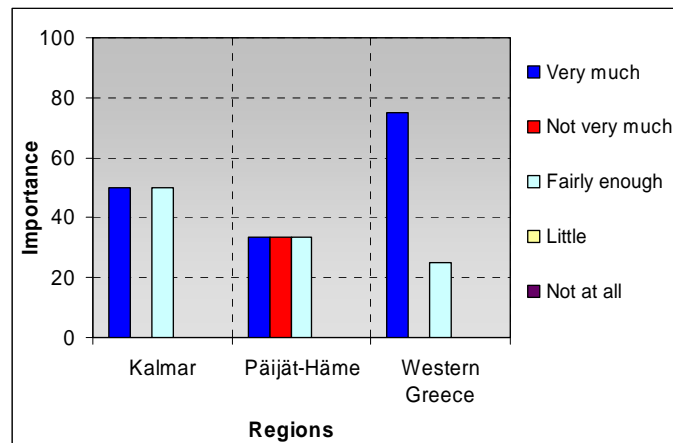


Figure V.2: Degree of satisfaction of enterprises regarding sectors that the cluster focuses on.

V.2 Cluster Segmentation of Research & Technology Bodies

The produced services and products of the R&T bodies of the three participating clusters focus on a variety of sectors and are satisfied on a higher than average level with the existing segmentation.

The R&T bodies of **Kalmar's cluster** focus mainly on the sectors of filtration systems as well as waste management, environmental economics, leachate treatment, landfill mining, phytoremediation and wetlands, storage of organic materials and fires, energy utilization etc. Other sectors of less use are the ones of sustainable water management, wastewater treatment, irrigations systems and reuse systems. When the R&T bodies were questioned whether **more directions**, segments or niche technologies concerning water management should be pursued from the cluster, the R&T bodies stated that nanotechnology could be one such sector.

Following, the R&T bodies of **Päijät-Häme's cluster** focus mainly on the sectors of wastewater treatment and industrial wastewater treatment, on restoration soils and fresh water systems as well as innovation management. Other sectors of less use are sustainable water management and reuse systems. When the R&T bodies were questioned whether **more directions**, segments or niche technologies concerning water management should be pursued from the cluster, the R&T bodies stated that such directions could be the urban environment as well the use of ICT in environmental monitoring. Finally, the R&T bodies believe that such technologies should be aiming at satisfying the real needs of possible users/customers.

Finally, the R&T bodies of **RWG's cluster** focus mainly on the sectors of wastewater treatment, followed by reuse systems, water treatment, consolidation of poorly consolidated oil reservoirs, stabilization of sandy soils for building purposes, protection of soil from water and wind erosion, water proofing of underground constructions (tunnels) and rainwater reservoirs. Other sectors in which R&T bodies are involved but are less popular are filtration systems sustainable water management. When the R&T bodies were questioned whether more directions, segments or niche technologies should be

pursued from the cluster, the R&T bodies stated that they could direct the involvement of the cluster further into groundwater pollution and soil remediation as well as sludge management, small and decentralized systems and exploitation/valorization of industrial wastewaters.

Segmentation of Cluster R&T Bodies Enterprises from Partner Regions

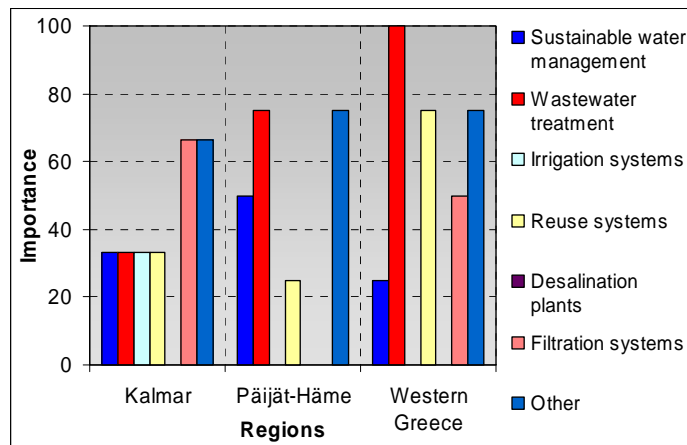


Figure V.3: Sector segmentation of cluster's R&T bodies of partner regions

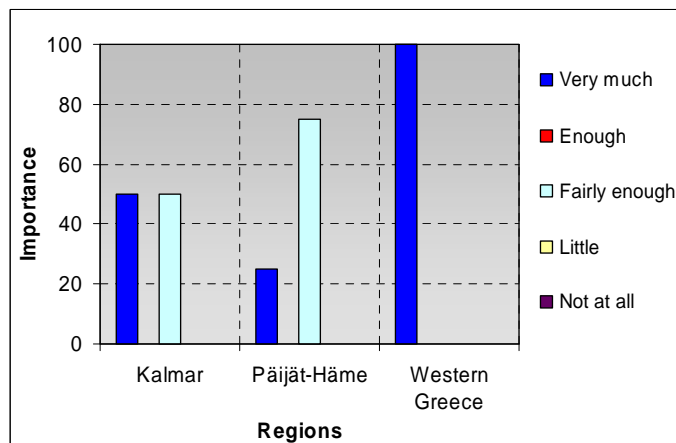


Figure V.4: Degree of satisfaction of R&T bodies regarding sectors that their cluster focuses on.

V.3 Cluster Segmentation - Support Bodies

The support bodies of the Kalmar's and Päijät-Häme's cluster are very satisfied with the sectors that their cluster focuses on whereas RWG's cluster is satisfied on an average level.

The support bodies of **Kalmar's cluster** focus mainly on the sectors of sustainable water management, wastewater treatment, reuse systems and energy efficiency, wind power, biogas, waste to energy (e.g. biogas), renewables etc.

Following, the support bodies of **Päijät-Häme's cluster** support all the companies that need internationalization services and such companies can focus on sectors as wastewater treatment, reuse systems, and other.

Finally, the support bodies of **RWG's cluster** focus mainly on the sectors of sustainable water management, wastewater treatment. A number of the support bodies of the cluster are organizations of a particular structure, establishing mechanisms and services primarily targeted on promoting the creation, operation and growth of "innovative firms". These firms may focus on any sector. When the support bodies were questioned whether more directions, segments or niche technologies should be pursued from the cluster, these stated that ICT applications in the water sector, efficient environmental awareness, technology supported policies for sustainable water management as well as hydropower could be new areas of interest for the cluster bodies.

Segmentation of Cluster's Support Bodies from Partner Regions

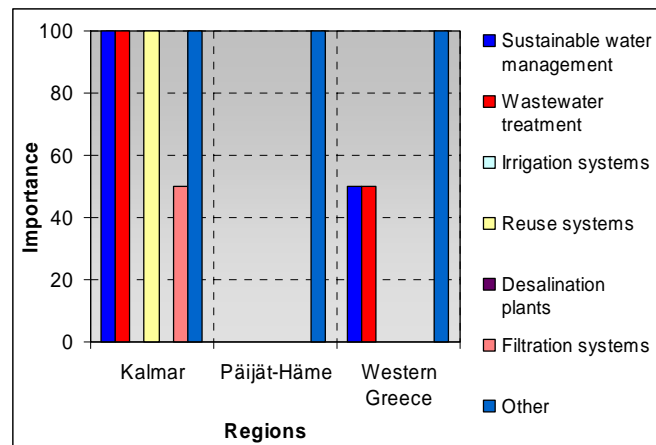


Figure V.5: Focused sectors

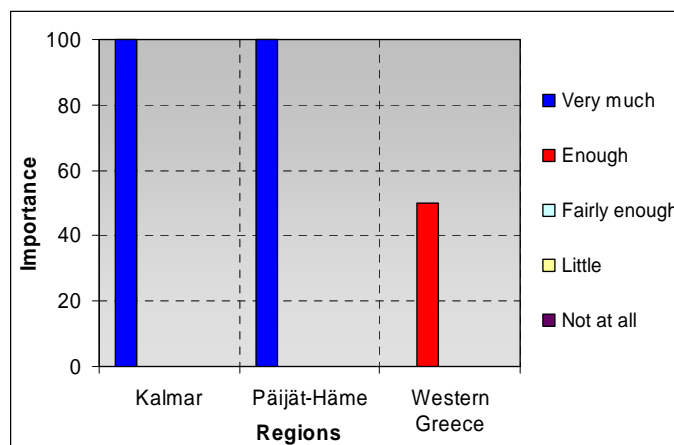


Figure V.6: Degree of satisfaction of support regarding the sectors that their cluster focuses on.

VI. Future Challenges

The final part focuses on defining the future challenges for the three clusters from the partner regions according to the feedback from the interview forms. Matters such as expectations from the clusters as well as future priorities that the cluster needs to focus on so as to ensure its viability and development of the cluster are examined.

VI.1 Challenges for the enterprises

Ways the clusters can help their enterprises achieve their objectives

Kalmar's Cluster

-

Päijät-Häme's Cluster

- Provide more services to the enterprises
- Assist the enterprises through the sharing of know-how and acceleration of business issues.
- Research on specified needs of companies

RWG's Cluster

- The cluster can assist the enterprises through providing information on new technologies and innovations, especially those that focus on water quality, as well as on the protection and restoration of the environment.
- The cluster can bring together and assist to the creation of collaborations among the cluster bodies with real common interests aiming at common benefits.
- New customers and partners and promotion of their activities at least on a regional level.
- Assist to the solutions of problems and adoption of innovative technologies

Interesting world regions for the enterprises to establish research & technology links

Kalmar's Cluster

-

Päijät-Häme's Cluster

- Finland as a whole, especially nearby regions,
- Europe, Baltic countries
- Western Russia

RWG's Cluster

- Balkans, Eastern Europe
- Mediterranean region.
- Regions where bodies are involved in the exploitation of food's by-products.

Main business applications that can drive wastewater technologies developments in the next decade

Kalmar's Cluster

-

Päijät-Häme's Cluster

- The treatment methods will evolve into more recycling and reuse options included processes
- More efficient purification methods
- Storm water treatment and restoring will increase
- Sludge treatment and nutrition recycling will increase
- Reuse of water will become more common

RWG's Cluster

- Food and food by-products added value products

Priorities that Europe should set in order to ensure the viability and development of the cluster

Kalmar's Cluster

-

Päijät-Häme's Cluster

- The co-operation between companies should be strengthened in order to enable the smaller companies to get involved in larger projects.
- The competitiveness should be increased and more efficiency on receiving order inquiries is needed from the European region
- Promotion of new co-operations with in international projects
- More coordination in research sector

RWG's Cluster

- Networking & creation of synergies between the clusters
- Exchange of knowledge & know-how
- Continuous promotion of cluster activities & bodies
- Promote the consulting of enterprises by experts & focus on research on specified needs of companies.

VI.2 Challenges for the research & technology bodies

Ways the clusters can help their research & technology bodies achieve their objectives

Kalmar's Cluster

- Long term (4 years or more) financial support so that more doctors can be produced
- To maintain stability in the research area – no need to change research focus so often
- In identifying new partners for cooperation

Päijät-Häme's Cluster

- Networking, by means of generating new partnerships between R&D centers, companies, etc
- By establishing collaboration directions/lines among cluster partner
- Provide useful insights about the innovation management

- Creation of synergies among cluster partners even in small scale so that more resources will be available for bigger projects

RWG's Cluster

- By enhancing collaboration between regional stakeholders
- By helping local authorities to focus themselves on solving the significant regional problems in the water and wastewater sector
- By promoting the participation of members in R&D&I project
- By enhancing collaboration between regional stakeholders
- By matching the developed technologies with end-users

Interesting world regions for the R&T bodies to establish research & technology links

Kalmar's Cluster

- Increase activities within EU.
- Eastern Europe
- They have been cooperating with Asia and South America as well as in Africa
- Expand to US

Päijät-Häme's Cluster

- Any similar region in terms of population in EU, developing countries.
- China, India, USA, Russia

RWG's Cluster

Due to organizational restrictions for funding, regions of EU countries in Central and Eastern Europe (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia) are more attractive to establish research and technological links because they have many problems with water, water pollution and water management.

Also Spain, Israel, Egypt as well as Australia have similar problems with water pollution and water management

Future priorities to be set to ensure the viability and development of the clusters

Kalmar's Cluster

- Improve the process for transforming a good research result into a market product
- Strengthen marketing ability of clusters
- Adoption and evaluation of new technologies as e.g. nanotechnology

Päijät-Häme's Cluster

- Funding for research projects, development of large scale collaborative projects with enterprises

RWG's Cluster

- Development of clear objectives and promotion of new ideas between members and out of the cluster
- Becoming a valuable tool for innovation in the region
- Development of strong relations between researchers, industrial managers and investors
- Creation of spin-off companies
- Essential matching of interests

VI.3 Challenges for the support bodies

Ways the cluster can help the support bodies achieve their objectives

Kalmar's Cluster

- The cluster can really bring together the support bodies with business and the university sector for knowledge sharing, creation of joint activities and make developments projects
- The region has a clear focus on environment and climate. The cluster is a strong actor to achieve those goals (fossil fuel free region by 2030).

Päijät-Häme's Cluster

- Clusters should be more based on bottom-up approach. The companies should not find enemies from the cluster but win-win situations.
- The cluster should create an environment of trust among its bodies.

RWG's Cluster

- A dynamic regional cluster by adopting the triple-helix principle could move up all regional development, and moreover act as a regional best case.
- The regional objective from cluster development is the reinforcement of entrepreneurship in the specific sector which subsequently will stimulate the local economy and boost the regional development.

Interesting world regions for the support bodies to establish research & technology links

Kalmar's Cluster

- Baltic Sea region, China, Turkey
- Other regions with similar goals and poorer regions which face global challenges regarding climate and environment (water, waste etc)

Päijät-Häme's Cluster

- Los Angeles and Singapore because of their very developed systems
- Regions in Russia and China

RWG's Cluster

- Innovation leaders (according to RIS), Spain, Sweden, Finland
- Mediterranean countries (European, North Africa, Asia Minor, Middle East)
- Balkan & Black Sea countries

Regional priorities that could ensure the viability and development of the clusters

Kalmar's Cluster

- The priority to be fossil fuel free region by 2030
- Secure the high quality of the ground water, lakes, streams and seas, with emphasis on reducing the discharge of phosphorus and nitrogen.
- Kalmar County will be an exemplary region with regards to work aimed at reducing pollution while concurrently achieving sustainable growth.
- Reduced pollution in line with sustainable growth.
- Reduced pollution of oil and chemicals from ships.

- Limit the increase of generated waste and reduce the amount of deposited waste.
- Sustain and improve the valuable biotopes and environments in the county.

Päijät-Häme's Cluster

- Environmental technology (cleantech, water cluster) is one of the main development targets in the regional development programme of the Päijät-Häme region
- R&D focus
- To create trust, in order to get companies motivated and commit to their cluster as a business development activity.

RWG's Cluster

- Cluster participation in FP7 projects, implementation of regional R&D cooperation projects will provide further funding for the cluster development.
- At the same time common trust will be built among the cluster members and along with the right mentoring from other advanced clusters at national or European level the added-value of the cluster will soon be recognized and its viability will be safeguarded.
- Improvement of complementarity and cooperation beyond competition
- Enterprises need to be very active.

Europe's priorities that should be set to ensure the viability and development of the clusters

Kalmar's Cluster

- To give a higher priority to energy and climate questions
- Innovation

Päijät-Häme's Cluster

- Sustainable water management and desalination plants should be prioritized.
- Amount of waste should be diminished with various actions in general
- More R&D and commercialization of it

RWG's Cluster

- Internationalization of activities of clusters
- To develop a joint strategy, driving the clusters to where the water-tech market will go

VII. Conclusions

Through this task an effort has been made to identify and assess the research-driven clusters from the three partner regions. The aim is to define how these clusters work and operate in **real time** and not how they should.

At the beginning, an effort was made to understand and define the **internal and external operation** of each participating cluster. An attempt has been made to understand how the cluster bodies operate internally as well as how they act and interact with their environment on a regional as well as on a national and international level.

The section that focused on the **viewpoints** among the cluster bodies is of high importance. Within this context, the cluster bodies that were interviewed were asked to answer several issues regarding the other two types of cluster bodies. Additionally, they were asked to describe their expectations from the rest of the cluster members. Such expectations can be used as a source of information for the development of their cluster's policies or even for the construction of the Joint Action Plan that STInno project aims to construct.

Following, the **sector segments** were examined on which the enterprises, R&T and support bodies of the three partner clusters focus on as well as their corresponding degree of satisfaction.

The final part of the task focused on **future challenges** that the cluster members have identified. These challenges are described and are of high importance as through their realization each cluster can get the most out of their participation in their cluster. For instance, the participants from Kalmar's cluster stated that their region has a clear focus on climate and environment, as their region aims to become a fossil fuel free region by the year 2030. So it is a challenge for their cluster to become a strong actor in this direction so as to achieve those goals. In the case of Päijät-Häme's cluster, it was stated that overall a more bottom-up approach should be used within their cluster. Viewing other bodies of the same cluster as competitors should change and their inter relations should be faced as future win-win situations. So their cluster should work towards creating an environment of trust between its members. Finally, the cluster of Western Greece underlines another issue which is the need for improvement of the knowledge communication especially between the enterprises and the researchers. Both sides stress that a closer collaboration is required. In this context, it is necessary that the long-term R&D visions should develop into more practical, short-term visions.

Concluding, it appears that despite differences among the clusters from the three partner regions, there are common issues which all bodies from the three clusters underline as important and crucial for the development as well as the viability of their own cluster. These common factors focus on essential networking, dynamic and flexible coordination,

sharing of know-how and relevant information, correct dissemination of their activities, services and products as well as provision of sources of funding.

