

EIA-European Irrigation Association Survey results processing

This survey took place between May and June 2022, it was disseminated to about 500 actors involved in irrigation. The questionnaire was divided in two parts:

- identification of respondent and general considerations on Irrigation sector priorities and challenges;
- questions targeted by each EAI working group.

Each part ends up with a series of conclusions and priorities to address. A synthesis accompanies the report as a slide presentation.

The questionnaire was introduced as follows:

To comfort the good dynamics of irrigation sector

2021 has been a year of political unrest, social changes and above all the pandemic under the increasing pressure of climate change. The changes around us—whether they are social, political, environmental, technological, scientific, economic, or otherwise—require the actors of the sector to navigate through new and increasingly complex water landscapes, which profoundly impact our activity.

The European Commission presented a new EU Strategy on Adaptation to Climate Change as part of the Green Deal and is calling for faster and smarter measures to deal with the effects of more extreme weather while managing scarcer resources.

With Energy, Water is THE key topic in the climate adaptation approach of the EU today and smart Irrigation occupies a key position. Our sector has never been more relevant to address strategic questions of water usage at large. Un-doubtedly this is the time for the Irrigation sector to raise its voice and affirms its leadership.

The European Irrigation Association, of which you are, or could be, a valued member, strives to support its adherents by acknowledging the place of smart irrigation in the evolving climatic and political European landscape. These efforts bind all our companies together to share our experience, skills and knowledge to achieve a more efficient water use through progresses in technology and practices.

The EIA is supported by a structure of 6 Working Groups (WGs). Each WG consists of a group of experts, members of the EIA, who focus on a strategic topic of interest. In 2021 we have 6 working groups: Sustainability in Agriculture, Urban Landscaping, Standardization, Training and the Transfer of Knowledge, Wastewater and Communication on which you are invited to comment in the survey.

Taking advantage of the momentum in which irrigation sector is involved with, we propose members of the EIA, and selected non-members, to answer a 15-20 minutes survey to better identify weakness and opportunities irrigation sector is subjected to. Thanks in advance for your time for contribution to help drive our activity in the coming years for our common benefit.

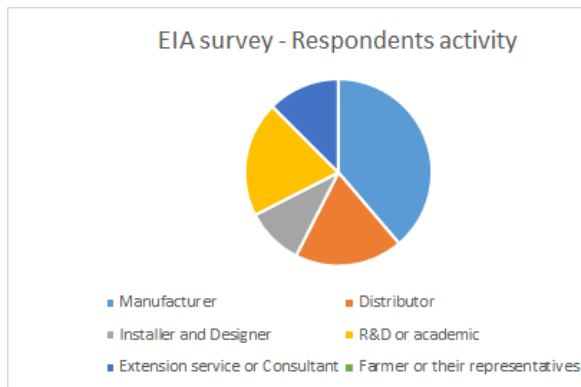
EIA Survey results processing

The survey was answered by 72 professionals, 34 of them being members of the association, if we exclude some multiple answers (5), we had 24 non-members respondents that will have to be contacted further.

The panel of answers is representing the different segments of activity (manufacturing, design, installation and distribution), the segment of extension services providers is under-represented. Geographical Europe and neighboring countries represents the vast majority of answers. In terms of type of market, we have a good balance between agriculture and urban irrigation. Finally, in terms of technology addressed the balance represents more or less the weight of the different markets.

Domain of activity:

keeping in mind that some respondents are involved in several domains



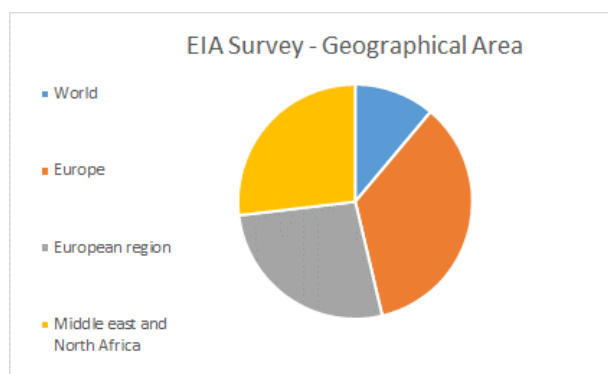
Manufacturer	43%
Distributor	20%
Installer and Designer	11%
R&D or academic	19%
Extension service or Consultant	14%
Farmer representatives	4%

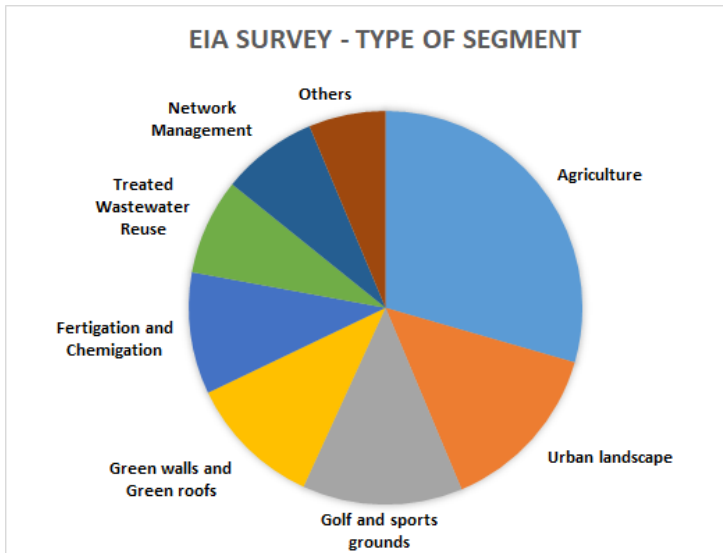
The extension that represents end-users or their representatives are not so much represented in the panel.

Geographical influence:

World	12
Europe	38
European region	29
Middle east and North Africa	29

Most of the panel is targeting Europe or a part of it and the neighboring areas

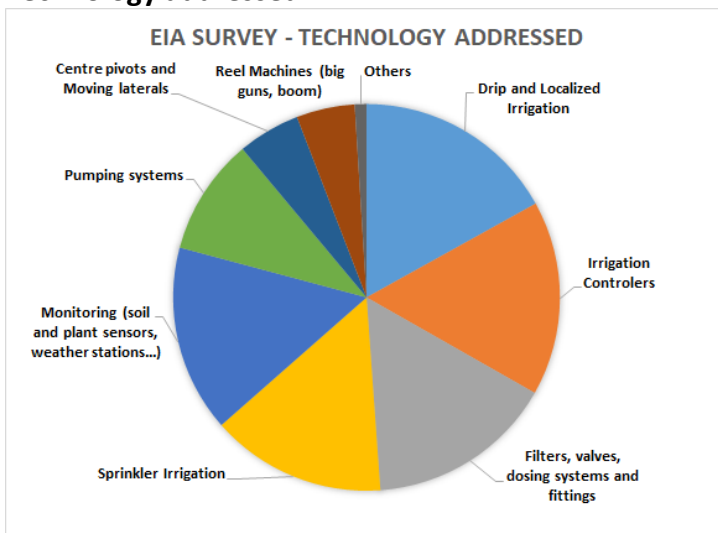




Segment	Count
Agriculture	56
Urban landscape	27
Golf and sports grounds	25
Green walls and roofs	21
Fertigation Chemigation	19
Treated Wastewater Reuse	15
Network Management	15
Others (Cooling, system monitoring, IWRM)	12

Agriculture irrigation seems dominant, but the professionals focusing on urban landscapes, green walls and roofs, and sport fields (mostly in urban areas) represent an equivalent proportion, considering that many of the respondent are quoting several domains.

Technology addressed



Drip and Localized Irrigation	52	72%
Irrigation Controllers	50	69%
Filters, valves, dosing systems and fittings	48	67%
Sprinkler Irrigation	45	63%
Monitoring (soil and plant sensors, weather stations...)	48	67%
Pumping systems	30	42%
Centre pivots and Moving laterals	16	22%
Reel Machines (big guns, boom)	15	21%
Others (Governance, lighting, Hydroponic)	3	4%

The main irrigation technology markets (drip, sprinkler, pivots and reel machines) and the trend in digitalization are well represented by the panel, again many of the respondent are quoting several lines. As it requires more equipment and specific skills the irrigation machines sector is

represented by a limited number of actors, the drip sector is the biggest in terms of actors, most if not all are involved also in automation and control.

Main challenges faced in irrigation business today?

This was a free text analyzed using the number of occurrence of the different words which highlights keywords.



From the word cloud, the issues around resource (**water, supply**) come first, then the question of **efficiency** for both **water** and **energy**, followed by the need for better communication (**awareness, public**) in general coupled with **citizen perception** and **prices**. As a majority of respondents is in the irrigation business, issues of **supply chain** and **raw material** shortages are very present, especially in a context of **war**. A consequence is the rise in **prices** and costs of installations.

The need to communicate to the public and decision makers that irrigating is not synonymous with wasting water, that maintaining vegetation in urban areas brings multiple benefits is very relevant in the free texts written. This will be addressed further.

The innovation and modernization of irrigation systems is always in the background (smart, probe, digitalization), provided that the performances are proven by practice or independent tests (demonstration, ROI), and that employees and users can be trained. The growing interest for digital tools connected to sensors makes monitoring and adaptive management easier, but issues remain with interoperability on which standardization have been working.

All professionals, including end-users, are struggling to find qualified employees, appropriate training or adapted guidelines.

The new cropping methods (precision and deficit irrigation, soil conservation, agroforestry) are also cited. These techniques are observed by professionals with interest, but adapted technical references and hence skills are lacking, connection to research is highly expected on these emerging or less adopted techniques.

As far as policies and regulations are concerned, they are considered to be unclear and most of time undergone, the actors would like to be able to present their perception to the regulator before policies are written.

Main concerns of irrigation industry as a whole?



The two key words that stand out are **water** and **smart**, showing a shared concern for better **water management** based on digital/smart methods. Immediately after, a series of words appear indicating the need to improve the performance of systems (**management, efficiency**) under the constraints of **climate** and **drought** conditions, and regulations (**authorities, bans**).

As in the previous question, **skills development** is a key point to support modernisation, and the use of alternative resources (**reuse**) or recycling (**plastic waste**).

From some texts, the main issue is not financial, as users don't pay much for water, but rather on the **establishment of quotas** to guaranty **equity in the distribution of a common good**. A strong expectation appears too for **long-term strategic development support**, as the business is inherently variable, due to variations in **climate** and international situations.

The modernization of technologies and practices will determine the efficiency of water and fertilizers use, while preserving the environment. This requires an increase in the skills of both the profession and the users (education), and an awareness by the **authorities** of the need for supervision (regulation) and support (finance), before imposing restrictions without consultation.

What would you expect from EIA?

A set of possible actions is proposed, to be quoted from 1 (low interest) to 5 (high interest). The highest score would be 350, these first actions came first was (more than 290/350):

- Understanding Agricultural Water Management Policy and Regulations;
- Accessing Technical Resources via EIA Website;

Then (260-290/350):

- Lobbying on Water Regulations;
- Organizing Technical Training and Conferences;
- Providing information on EU projects (calls and undergoing projects);
- Implementing a framework of Certification of Competences;

And finally (230-260/350)

- Expand my business network;
- Understanding Urban Landscape Water Management Policy and Regulations;
- Seeking for R&D Support;
- Promoting Gender Equality in Agricultural and Landscape Irrigation;

The two aspects that come in front relates to:

- The **regulation** that landscapes and agriculture are subjected to, that really need to be explained, as it governs water uses downstream;
- The **access of technical resources** via the web site, visits to pilot sites, **training** session or **forum**. It seems respondents are aware of a lot of innovation or good practices but have difficulties to access it;
- Training and certification are again largely cited.

Regarding the free text box, the following highlights could be made:

The professionals notice the huge **gap between public perception and the efforts made** by the profession to be efficient and to progress in parsimonious water and energy use. Same for the **benefits of maintaining vegetation active** in terms of food production and fertilizers use (minimizing residues at the end of the cropping season), **mitigation of climate excesses** (in urban environment) or **employment**.

In connection with what precedes the **communication canals between research, R&D and private sector** could be more developed. This now concerns almost all Europe where scarcity occurred recently even in northern part. Forum and conference are one of these canals. To touch a maximum of actors communication must be as often as possible multilingual.

Training and certification are then cited as solutions to **prevent unfair competition** and raise **professionals awareness**. Certification is cited for **validating professional's skills** but also quality of installations in the logic of fair competition. **Water and energy efficiency** are also mentioned as in previous questions requiring the support of standards and guidelines, possibly produced under EIA supervision.

From these first set of elements we could draw several actions to conduct in the coming month:

- Subjects to address in **Forum**:
 - **Water policies and water management**: principle, who leads, on what basis, with what objectives are they elaborated, support from successful regional/municipal examples;
 - **Water Regulation**: the elaboration process (consultation, construction), how to get involved or at least express our needs? How are they turned in actions regionally, locally?
 - The **benefits of vegetation in cities** (climate excess mitigation, biodiversity, quality of life...) not ignoring conflicting uptake;
- What concerns **documentation and technical support**:
 - **Access to technical documents** via the website: digest of guidelines and documents to serve as references;
 - **Training and education**: training sessions adapted to different countries, regions and contexts, and visits of emblematic projects;
 - Investigate the possibility of **organizing technical sessions** addressing a specific subject with high skilled members and university staff, for members (free) and external (paid);
- What concerns **communication and image**:
 - Highlight/Display **efforts and progresses of the profession toward a wise use of water** and energy;
 - Explain **direct and indirect benefits of irrigation** in agriculture and cities (jobs, climate, economy);
 - Associate with other NGO: on parks, golfs, gardens, cities, to **maintain municipalities greening efforts**; on **new ag practices** (agroforestry, soil conservation) to understand evolution trends in water issues;
 - **Promoting gender equality** is highlighted in two third of the answers, promotion options have to be investigated in WG Communication;
 - Follow on the **research project** oriented toward water management to identify future **evolutions** (technology, changes, management), get involved in projects.

WG-1 Sustainability in Agriculture and Landscape Irrigation

This working group pays attention to issues related to sustainable development goals, with a focus on wise use of water in irrigation, resource recycling and scarce energy use. The different priorities are quoted from 1 to 5, summed, and reported to the maximum score (360).

- Sustainability of water use is a concern in your projects design and Management=328/360
- Sustainability of Energy use is a concern in your projects design and Management=292/360
- Do you calculate the carbon footprint of your projects? Yes only for 5 respondents
- If Yes, What method do you use to calculate your Carbone Footptint? Externalized except 2
- How do you Calculate Water and Energy Balance and Savings in your Projects? 38 yes over 72
 - o Home made calculation Sheet 27/38
 - o Reference Standard or Guidelines 11/38
- Are you using Recycled Material in your installations and/or products? Please comment on issues encountered yes for 19, no for 33, others are not concerned
- Discussion is undergoing in several entities, problems of stability are pointed, some manufacturer are using recycled material but don't inform their dealers/customers

From these questions it appears the following priorities:

- ***Sustainability of water and energy use is in all actors mind, but its definition and the ways to calculate its indicators remain unknown or at least unexplored, these are prerequisite to create a sustainability label;***
- ***The recycling of plastics is also a concern but obstacles remain for their reuse in high quality products. Collect and recycling of these plastics in other industries seems to be the safest solution to avoid durability accident in the field.***

WG-2 Urban Landscapes

This WG focuses on the promotion of smart irrigation technologies and practices in urban areas.

The role of green areas in the cities (Order by priority, first is affected 5, last 1 for each respondent)

- Green areas contribute to Citizens' Health and Well Being=239/360= or cited in 66% of responses
- Green areas improve Urban environment (e.g. mitigate air pollution, reduce noise)=57%
- Green areas protect Urban biodiversity=45%
- Green areas help mitigate extreme weather events (heatwaves, extreme rainfall, flooding...)=44%
- Green areas increase the competition on water uses=21%
- Green areas open the way to circular water uses=14%

Most of the respondents placed well-being and urban environment, including biodiversity, as the key roles of urban vegetation, while resource availability and possible circular uses (namely wastewater recycling) are not or seldom considered. The competition between uses is not in professional minds...

What smart irrigation technologies may reduce the use of water? (ordered by priority, answers are quoted from 5 to 1)

- Use Controllers with flow management capacity=cited in 71% of responses
- Use products with high distribution of Uniformity DU=61%
- Select nozzles that match infiltration capacity=57%

- Use weather and soil sensors=52%
- Use pressure regulators=47%
- Use Native and Low-Water-Use Plants=36%
- Use multi-stream multi-trajectory rotating nozzles=38%

The nature of answers clearly reveals that actors mainly believe in technology to save water when other strategies based on agronomy are less considered. The use of weather stations or plants with low water requirements doesn't appear as solutions.

Other options cited concern sub-irrigation and drip, or the use of controllers integrating weather forecast in their software. Increasing soil water storage capacity and the use of artificial intelligence based on plant sensors and simulation models are also mentioned.

Urban green areas potential extension in your country?

- Large potential=38/56
- Low potential=15/56
- Will induce problems of water resources=3/56
- Not possible=0/56

This question reveals a very positive thinking, disregarding the potential problems of water resource availability.

The priorities coming out from these answers are:

- Investigate processes to better **qualify landscapes mitigation effects**, and the weight of irrigation practices;
- Anticipate **competition between water uses** in case of scarcity;
- What could be the definition and how to qualify **smart projects/techniques/practices**?

WG-3 Standardization

EIA with a status of Liaison Partner has the opportunity to influence the preparation of ISO and CEN standards in two key areas: Irrigation techniques and Safety of irrigation machines

Are you aware of the role of Standardization to reach international consensus on irrigation technology and safety?

Yes and May be for 38/57, and No for 19/57

About one fourth of the respondent are knowing the existence of standards, and those who are using it are using a few of them: on emitters performance evaluation (drip, sprinklers, pivots) or turf irrigation systems design and installation, a real lack of communication is revealed by the answers, e.g. requiring standards that already exist (turf systems design , reuse). A few respondents only cited precise standards.

What Standards are lacking in your opinion?

Water quality standards and the associated type of treatment and uses come first, the need for update on existing standards that may not follow the market evolutions, operation and maintenance standards, quantification of water savings, design standards.

What type of technical reference or guidelines do you use in your activity?

12 answers are given only citing internal docs, reference guidelines produced by landscape associations or international bodies (FAO, WHO, Universities...), or sharewares for supporting design process.

Are you or one of your colleagues ready to be involved in standardization process? If yes or may be on what subjects?

18 “yes” and 19 “may be” over 57 responses.

Respondents are favorable to contribute in: water quality and related potential uses, irrigation technology performance and design, control and distribution systems, water requirements and saving calculation, same for fertigation.

Priorities extracted from the answers are:

- *Need for a better **information and understanding** of existing standards ;*
- *Investigate a way to get **feedback from members** in the standardization process (water quality, design and performance evaluation, sustainability indicators);*
- *From the first part, the question of **interoperability**, addressed in ISO TC23/SC19-Agricultural Electronics has to be investigated.*

WG-4 Training and Certification

What is your opinion about availability of irrigation design and installation training in your territory?

- Available for landscape and agriculture irrigation=33/61
- Available only for landscape irrigation=3/61
- Available only for agriculture irrigation=4/61
- Scarcely available=20/61
- Unavailable=1/61

Good training programs are existing in half of the respondent regions for turf and ag, in one third of the answers they are difficult to access, apparently mostly in the eastern part of Europe, but not exclusively.

Different answers about availability came from participants from same countries and both from agriculture and landscape sector. This may indicate difference in individual perception of availability or lack of information about availability of some participants. Participants involved in landscape state “Scarcely available” slightly more regularly than those from agriculture.

Which channels are available for acquiring irrigation design and installation training in your territory? (% of occurrence, several response allowed)

- Courses provided by Irrigation manufacturers and distributors=58%
- Courses provided by independent consultants and specialists=37%
- Government supported courses at universities / trade schools / agencies=35%
- Courses provided by professional associations=30%
- No training available=6%

The providers of training sessions are of various origins. Manufacturers and distributors are delivering training sessions in 58% of the situations. We can suppose that they are mostly promoting

their own products. Independent training is mentioned in 93% of responses, we can suspect that some of them are in the scarcely available category from the previous question. The absence of training is only mentioned in 4 answers.

How would you rate the need for certification of professional skills in irrigation design/installation/audit?

- It should be mandatory=18/63
- It is highly needed=29/63
- It could be useful=14/63
- Not needed=2/63

This question of certification is considered necessary by 74% of the respondents ((18+29)/63), being mandatory for only 20% (18/63). Only 22% consider it can be useful and only 2% useless.

The answer “it should be mandatory” and “it is highly needed” mainly come from participants which declared smaller number of employees, probably those regularly providing irrigation design. Participants with higher number of employees (manufacturers, bigger distribution chains) take less relevance in certification.

How would you rate the relevance of certification of professional skills in irrigation design/installation/audit issued by EIA in your territory?

- EIA certificates would have sufficient relevance=20/61
- EIA certificates would be useful but with limited relevance=31/61
- EIA certificates would have no relevance in my territory=10/61
- Would you or your organization be interested in delivering web-based irrigation courses in your language through training and knowledge sharing platform developed by EIA?
Yes=32/65; No=7/65; May be=26/65

If certification is recognized necessary from the previous question (74%), EIA is not yet fully recognized to have the capacity of certifying technicians (67%), but may be relevant anyway in 82% of the responses ((31+26)/65).

About half of the respondent are ready to get involved in training and knowledge sharing, it grows to 82% with that may support such policy.

Would you be interested to take part in Professional Study Trips?

Yes=24/65; No=5/65; May be=36/65

The organization of visits is recognized as a good policy (83% of the responses), possibly in *connection with training sessions, but not only*.

Some priorities extracted from the responses:

- *Effort on **training development** seems more demanded in Turf and Landscape sector than in agriculture;*
- ***Independent or neutral training** is highly expected from installer and distributors;*
- ***Certification of skills** seems expected more from small actors than large companies, type of skills to certify deserve to be better identified, anyway EIA doesn't seem, yet, to be recognized as a certification organization. It will be easier to first certify training then certifying people will come naturally;*
- ***Visits on emblematic projects** is expected in parallel to any event that gather professionals.*

WG-5 Wastewater Reuse

Are you involved in wastewater reuse project?

The answer was Yes for 43% of the 69 respondents, answers were not commented.

What is your level of knowledge regarding wastewater Reuse in irrigation? (please comment)

14% of the respondent considered they have a good level of knowledge on irrigation with treated wastewater, 23% consider their knowledge as fair and 28% as poor.

Are you ready to share your experience with EIA members? If Yes: on what topics (3 to 5+ keywords)

Yes or May Be for 17+2/53 responses and No for 34/53 because of lack of knowledge or interest.

If Yes: on what topics?

Water treatment and concerns on water quality in general are the main concerns as they may impact on crops and landscapes. It appears that technical options (design, installation, management, maintenance) to prevent adverse impacts are expected but mostly ignored. Nevertheless, advantages of wastewater reuse are always cited: fertigation and nutrient supply, alleviation of pressure on good quality waters, in particular in Med countries, but hard to qualify. Some respondents are willing to get return of experience on long lasting projects.

Regulatory aspects (EU Regulation 2020/742) are always cited as well as not understood or rather complicated to address.

Would you be interested in following training courses organized by EIA?

Yes or May Be for 14+5/42 responses and No for 21.

This topic is raising concerns, the experiences of respondents are highly variable which makes it difficult to identify training and education needs for some of them. However the willingness to share knowledge is noticeable.

Topic to investigate:

- **Mobilize volunteer** members to share their experience;
- Better understand/define **benefits and risks associated to the Reuse** and the technical response to apply;
- **Understand the new European regulation**, and the possibility to share experience gained from existing projects applying this framework.

WG-6 Communication

As an EIA member, are you satisfied with direct communication (e-mailing, newsletter)?

Yes for 94% of the answers!

What should be improved on communication canals? Please Comment

- Design 14%
- Content 44%
- Frequency 42%

An effort should be put on the frequency (of the newsletter I suppose), regarding the content questions will be asked to members to precise their request.

What do you think about EIA website and What should be improved?

The website appears informational and nicely designed, with easy access to information. Some improvement may be investigated in the search (filter) functions on technical resources section, in particular when the number of articles will increase. Some professionals wish to see other languages than English displayed to extend the audience.

Did you see EIA on social networks ? Facebook/LinkedIn, Please comment

Yes for 45% of the answers.

Did you receive any information/invitations about EIA events ? Autumn Forum/Spring Forum/25th anniversary cocktail during Eima exhibition (Bologne, Italy), Please comment

Yes for 62%

If you registered for previous events, did you face any inconvenience in the process?

Yes for 3 over 54, but the answer may have been different for the last event where 114 persons registered and only 55 managed to confirm their participation and get registration logs.

**Would you accept to be called for a half hour open discussion to come back on your expectations?
If yes, Please provide email and phone number**

34 over 72 persons responded Yes

What to do?

- *Work on the content of the website from the ideas and inputs of the members;*
- *Increase the frequency of the newsletter;*
- *Improve the presence in social medias;*
- *Investigate the possibility to facilitate translation in other languages;*
- *Continue the forum;*
- *Contact the persons that accepted to be called directly with predefined series of questions....*