

# **Santorini Conference – Round Table Discussion**

(The discussion was transcribed from cassette recordings)

## ***Nikos Korovessis***

Good morning. Following two full days of presentations, finally the works of the 1<sup>st</sup> International Conference on the Ecological Importance of Solar Saltworks has come to end. Today we are closing the works of the conference.

The journey started in Samos in 1999 where we first organized an international symposium within the 6<sup>th</sup> international Conference on the Environmental Science and Technology. The Santorini conference was the next step in our effort to promote the uniqueness of solar Saltworks, which apart from being production plants they are also integrated saline coastal ecosystems. Despite the short time available to organize this conference, we had wide geographical coverage with participants from almost all countries that operate Solar Saltworks. The scientific works that have been presented the past two days gave an analytical insight of the biological process that develops in parallel with the solar Saltworks production process and outline their wetland function. However it is true that not so much work has been done on solar Saltworks and physical wetlands ecology and biological process and their relation. This should be one of our future targets that we have to fulfill.

I believe that with our discussion today first we have to conclude on the ideas, points, opinions that have been expressed during the works of the conference and second we have to figure out how we proceed what to do for the future what measures we will take towards our next conference and what action we think we should take in order to proceed with our target to identify and promote the ecological importance of Solar Saltworks and make our ideas known to the public and the decision making people. Of course it is an open discussion and everybody can give his own perspective and ideas on the subject.

## ***Tom Crisman***

We have to realize that good ecology is good business and that we have a number of targets that are changing. We have to realize that the climate is changing so are basic interactions with the land surrounding. This is the one thing that we have not really touched on. Saltworks are affected by the nutrients and the run off from the land surrounding the area. And many of the SS are now being surrounding by urbanization or irregular development in the case of the developing countries, and the result is that we have poor quality water getting into the SS from the coastal areas. So we have to look not only to the sea as far we put to much emphasis on the sea, but to look to the land surrounding and whether this trying to find buffers on in Italy or trying to control the water shed, how we do that for the quality of nutrients. The second question has to do not only with the current interactions but to make projections. And how do we project what is going to happen on areas such as Greece where the developing on the coast result in expanding changes of land use.

The third thing has to do with what do we do with those SS that have been abandoned. You just let them go idle and just as Nikos talked about yesterday they may go to airports or what ever. We have to make sure that we have a plan to show how to manage those ecosystems. How to put them back to some sort of functional value but above all we have to consider that SS are for multipurpose. They are not just to produce but they must be integrated within the local community. Following the example of Mexico which is really quite clear that we need to get into environmental education we need to consider added forms of interaction such as nature.

The case of Australia I found very fascinating where as soon as you mention SS there is a public queue and cry (cry) against them and part of that is to get public education now to show that they are having a positive benefit for the community. So in the case of Australia there was not possible because you pop it up and environmental community just comes up and has a negative attitude. However, I think that we have to be able to figure out how to place this within the landscape. The first conference that pr. Lekkas organized, there were a couple of papers on ecology. There were many compare to what in Samos. This conference was dedicated to ecology and I think the conclusions we come out of is to come up with an idea of a clear direction of what do we want for the next one. If we want a next one. What is going to be the direction of that and how we can get that information out, not only to the practitioners of salt but also to the general public. KH Burns a noted coastal ecologist said the coastal ecosystems with the most unstudied ecosystems, forgotten ecosystems in the word. I just want to review all the fresh water lakes along the coast of the world, we find that those are probably even worse And when we get into the literature for Salinas trying to put them in a perspective there is not a lot of literature out there. Therefore, I think we can show the value of the interaction between a classical Salina and a Saltwork. What are the attributes what is structural what is functional?

I think that what Nicos and I want to do this morning is try to figure out what can we summarize and then how do we go forward and what should our direction for going forward. If we have an organizing committee that is going to be established for the next meeting then it will be extremely helpful for us to have an idea what are the topics that we considered key, for covering in that conference. Moreover, I know that prof. Lekkas would appreciate that. So Nicos we can get into the comments of what have we accomplished what are the high points.

### ***Abdul Rahaman (India)***

Good morning thank you for the initiation of the discussion of the 1<sup>st</sup> Int. CEISSA. I am going to present what executive problem that we are facing and going to face. One is that due to tsunami the coastal lands have been affected. Proper manifestation of mangroos has not been done and has to be done. Second point is that in India that the industry is located on the banks of the rivers. These industries some times they treat and sometimes they don't treat the wastewater that cover and contains a lot of tedious, the seawater has 3,5 % and this water has 5,0 %. There is a program of taking this "treated" water and let it to the sea. .... The ... waters are going to be affected by the so-called treated waters. Third point is in the case of saltfield also that the bittern are not

properly utilize and goes to the insured waters of the sea that affect the osmotic problem of the insure water.

Fourth and most important information I would like to give you is that especially in our country particularly in Terminad (?) there I going to be a very huge desalination project. But this desalination project, which is going to come in a very huge way because of water scarcity in the area, of course the reject of the produced saline water, is going to be discharged directly into the sea. So we have to take care to use that saline water, the reject of the water for another activity of salt. Well that type of thing which ... the economic people they must be utilizing these resource and not just simply reject it to the sea.

Another point we are facing particularly in some of the areas with declining of drinking water supply to the community people and they are near saltfields, so we are going to help the community. Apart from that of course because of the eutrofication in the insured waters of sea and this eutrofication water gets for salt production and as a result, a large amount of microalgae contaminates the salt production. These are all the points, which I have been noticing and I am just putting them to you for discussion in the works of the successful conference especially in the ecological point of view. We have large protecting areas, the wetlands, number of wetlands is there where flamingos are usually bread and they have to be protected. So ecologically, many things have to be done. And this is the information I put across to you. Thank you very much.

### ***Tom Crisman***

I think we summarize the topics that prof. Rahaman has come up with. The first topic is the idea of how we reduce nutrients with an expanding human population. What are the options for maybe, an additional pretreatment and those options are there especially to use a wetland adjacent to the Saltworks as a pretreatment before getting into the ponds, which also adds value.

How do we establish a buffer zone with the population? I don't we can do much about the drinking water supply as part of this but we are changing the quality of the coastal seas and as one flies into Thessaloniki you can see the quality of Thermaikos gulf is really pretty poor. And it is near the Saltworks so how do we stop those nutrients. This one of the concerns here we really have I change my name the call me Crismanos so I ve become Greek but we are quite concern in Greece to find a way to lower the loading to our coastal waters.

### ***Nikos Korovessis***

Yes, I believe that the bad quality seawater creates serious problems in Solar Saltworks operation. But Saltworks develop their own biological process that takes care and in many cases overcomes these disturbances coming from seawater intake. In the cases where the quality of feeding seawater is pretty poor and it creates instability in the Saltworks biological system then we have to act and face the problem by either constructing a pretreatment wetland as Tom said or (and) make the proper change in the biological process itself. It is obvious that a well functioning solar Saltworks is actually an oasis for the avifauna because wastes from the surrounding agriculture doesn't affects them

So we are not going to be fault if we say that in some cases solar Saltworks can be better ecosystems than the natural wetlands.

### ***Debesh Sengupta (Kenya)***

My name is d. Sengupta I am from Kenya. We operate two Saltworks, one in Kenya one in Tanzania but what Nicos is telling me I fully support his views because I ve been to Mozambique in the South Africa and there is a small saltworks and I saw near the feed intake there the sewage water of the entire city going into the sea and you will be surprised to know that the density of seawater which it should be around 3 to 3,5 will always remain around two and it was very difficult to produce salt there because they are not utilizing the land. It is becoming a big problem for them because they need double of the area they actually needed to produce salt. I think that this is very important point that the quality of seawater, at what point we should draw where we should draw is very important in making salt from the sea.

### ***Tom Crisman***

The problem becomes, I am unfamiliar with the maboutou case but the problem becomes the Saltworks is put in place and the people come to you with their development. It is always funny when you consider the raw sewage is actually a resource and it is full nutrients nitrogen and phosphorous which could be used on the terrestrial ....plants and I think increasingly countries are beginning to utilize that and Mozambique is on the way up. I think there is a possibility. One of the concerns, which just came to me also when you talked about the quality of the water is how do we respond to sea laborise. In the case of Mexico, you are sitting in a very dangerous position there just a lit bit of play and hurricane frequency for Australia and both for Mexico are very important as well so I think climate change and how to integrate that into long term planning is a message that we are getting here as well.

### ***Phil Davidson (Australia)***

My comments will be on how we set up the committee. My recommendation would be, particularly if you want to get the information out to as many salt producing countries as possible then really the committee should be made up by a number the key countries should be USA China and get a number of committee members that be able not only for inputs to the overall conference or workshop but also be able to discriminate the information within their own industry within their own country.

It might be useful to set up a committee I am not sure to how many members should have a working committee but ..... I like to say two things that not only discriminate the information of the next forthcoming workshop and the draft agenda but also get some internal feedback within their own industry to say what are other co issues and we got time obviously a couple of years depending on what we run up to be crystallizing and solidate the agenda to cover the co issues from each region of the world that contain various Saltworks and I think it might be useful structuring how to move forward.

### ***Tom Crisman***

That is a very interesting point because one of the questions we have to ask is that we have the same key players and same countries that are being here. But there also small countries like Mozambique which they just trying to some salt production for their own country and how to get the technology transfer from these conferences that we are having to those very small countries that cannot afford to come.

### ***Themis Lekkas***

Tom if I may say something

I entirely agree with Mr Davidson that we should have a clever geographical coverage in our organizing committee. There is no reason not doing that. So we will do it!

### ***Tom Crisman***

I think is a good idea

### ***Carol Litcfield (USA)***

One way that the International Society for Salt Lake Research has gotten their message out is through a web page. The internet accessible in most countries these days and is a way of getting the information, including abstract and bibliographies, out to interested persons very quickly. The ISSLR has an extensive bibliography, and when you publish a paper, they ask you to send in the information for inclusion on their web-based bibliography. The bibliography is open to every one so you do not have to be a member to access it. Therefore, I think there are ways of overcoming the financial restrictions of coming to a meeting such as this. Of course, it is also desirable to have face-to-face contact with your colleagues.

### ***Ciro Zeno (Italy)***

I wish to focus my comments about two points. The first is concerning the strategically way that maybe is necessary to acquire following our work. I think that it could be a good idea if we start with a group of study for writing a chart for wetlands. In which there will be included, some important themes that discussed in this conference. The biological management of Saltworks. The idea that the Saltworks are the guard (keeper) of the territory, which they are located. The recognition that the companies that own the Saltworks are private company that has public interest. Because is a fact that we produce salt but we also we produce ecology. So it is necessary that the government and the public have this knowledge. So it is important to add these points into that chart (chapter?). Another idea it could be if for the following conference we write this chart. From the Saltworks that agree with the idea that is inside.

### ***Tom Crisman***

That is both the ecological sustainability and business sustainability.

### ***Ciro Zeno***

Yes

### **Tom Crisman**

I think is a wonderful idea. For example we can have Ramsar as many of these sites are connected with Ramsar and Ramsar is accepting a progressive approach to how to manage with insustainability of the local human population and it could be a very important discussion. Because we are representing all continents if we can get the United Nations involved as even observer through UNDP

### **Themis Lekkas**

It is a beautiful idea

### **Tom Crisman**

UNEP is possible but UNDP because we are looking for sustainable development. And I think that's the key is that we recognize that the development will go forward but it has to be in a way its going to have a maximum ..... For return benefit to the local community as well. And that includes the ecology.

### **Ciro Zeno**

This is the first point. It will be possible that some economic consequence about this for the Saltworks. If we take look at the work that has been done in past centuries the restoration wetlands the abandoned wetlands the abandoned Saltworks maybe some of this is possible to apply in the producing Saltworks.

Because if we accept the idea that abandoned Saltworks are important to sustain I think is more important that the producing Saltworks is a necessity to sustain more. We have some examples in Italy in which abandoned Saltworks were object of financial support by Life project like Saltworks of tarquinia, Saltworks of maso Comacio Saltworks of kaliari. But when we design a new project, details the action, what they do? to polish the channel to replace the .... to the pump station, the Saltworks production. So it is necessary to establish in a very strong way our function and before start with the particular which is important to focus is important to work all together and if we are a chart under (apass?) maybe we will be stronger will have more force.

The second point is about some consideration that are done in conference, the problem with buffer area (zones) we had some talks about the ecology of Saltworks but the degree of artificiality is were well recognized for our Saltworks. If we have problem with the territory it could be an idea that we amplify the Saltworks or better the wetland not in the terms of Saltworks but with wetlands for example fresh water. So we can increase the biodiversity and we acquire more value to the territory. There are in Italy several examples of region that paid the farmers to abandon their activity and produce wetlands. They pay for example, I just give a figure, 100 Euro for hectare for six years to produce wetlands and they manage the wetlands. I think this is a point it could be ..... Also for owners of saltworks. Maybe something is impossible to get from this idea to realize something for the developing of the wetlands.

### ***Tom Crisman***

Those are very good ideas. One question I would have, two comments. One comment on the second point is that we must view the Saltworks as an ecotone and is also a buffer zone from the land and a buffer zone from the sea. So if managed correctly it would protect both entities. The second thing has to do with a charter and how we feed in into these large organizations such as salt conference. Are we covering, I guess Rolan you were talking about some of the topics that they cover at this. Are we covering a void that is not covered by other salt conferences?

### ***Roly Mottershead (Australia)***

It's very much a technical conference predominantly from the rock salt industry so the salt institute its every seven years, we can't wait seven years before we meet again. So I think is very important, I've just been gathering my thoughts maybe now it's the time to put them down, but I do believe that we've got to look at the micropicture here. I know is very interesting to talk about details what is happened to all Saltworks in Italy or Greece or where ever but we have to remember that the majority of the solar Salt that is being produced and as the potential for all the disasters around this world in wetland areas are not in Europe. And if do not get China Mexico India Australia particularly involved in this particular new forum that you have created then it will die because without those participating we only representing a very small percentage of the solar salt worldwide.

### ***Tom Crisman***

This is why I want to get the United Nations involved because is much easier if they are a participant and we view what we are doing as coastal zone management, long term coastal zone management, and hoe to integrate Saltworks into the ecology, that's a wonderful point. We already have one Italian that's enough for a while!

### ***Ashraf Malick (Tata India)***

We have large Saltworks operating in India and for this forum we should tell people that more we should go for the green of the saltworks because if you see the saltworks becoming green and then the people see itself that apart from that salinity which is affecting the nearby people they should see that the saltworks are now becoming green and we should look that what are the different species of the plant...So that mangroves and sea which grows over there in the saltworks so that it becomes more and more environmentally friendly actually if you see that some of the places there are marine people there. To the saltworks they disturb a lot. Because they think that they are destroying the greenery, like the mangroves and other things. So we should look more for the green of the saltworks, one of the points was this ? and the second point was that we have saltworks we have reservoirs and condensers we should look that in sltworks which are big we should have some small a small island because this is a very small thing when you constructing a saltworks you can make a small island on that so there are a lot of birds where they can do the nesting a lot birds get attracted over there. Like in our saltworks we've got a aspire nesting over there and 43 to 45 species of birds. Are coming actually to

that particular location which we call mithapur. So this is one of things I was thinking and a second thing we should give a message like that saltworks it is preserving the ecosystem and is not conserving it. So this type of message should come from this, so who are with the saltworks don't have this feeling that those people are destroying greenery they just preserving the ecosystem.

### ***Tom Crisman***

This is very important point because it gets back to how do we target species of international concern. Mangroves are concern for Brazil Mexico, Africa, India, and these areas are disappearing we do not want to equate Saltworks with what is happening internationally with shrimp production. I've seen people try to make this comparison. I've seen this from Ecuador and else places where shrimp come in and Kenya, they come in and destroy all the mangroves and put a shrimp pond and it is productive for short time and move on, but if we target mangrove production which also helps the Saltworks by protecting the coast if we can come back and target particular birds that are on the fly with need the assistance of you can build an island as professor Lekkas said yesterday, just a small height for flamingos or turns, birds that are going to have protection within the system. So part of them what we should do is to look at how we enhance specific biota and biotic communities.

### ***Mario Giordano (Italy)***

I just want to make a brief comment. All speakers so far sounded somewhat too enthusiastic about this conference. I think that someone has to also highlight the negative sides. I shall thus play the "bad guy". The comment I am going to make is also meant to be a suggestion for the next meeting.

The title of this meeting was "The Ecological Importance of Solar Saltworks", however, very little ecology was discussed here, even if the word "ecology" was frequently mentioned. Ecology means data, means research; only from sound and detailed studies it is possible to obtain information that can then be of some practical use. Saying that we want to be "ecological" is not sufficient. Therefore, I think we should make a bigger effort to bring careful ecological and biological studies into the saltworks and to our next meeting.

I would also like to say that it is important that there is no confusion between ecology and production. If salt producers operate a self-celebration of their business by saying that it is environmentally friendly (especially in the absence of hard data), this may be perceived negatively outside of this community. The ecological components of saltworks and their impact of the environment should be determined by people outside of the business. If the message comes from the producers themselves, it can be easily misinterpreted.

I would finally like to add, that while I can endorse that saltworks are more "eco-compatible" than most other usages of the same territory and of most other mineral extraction procedures, and while I agree on the fact that saltworks are better than many alternative development plans for coastal areas (I'd rather have saltworks than shopping malls, on our coasts), it must be said that they are not cost free, that they are intrinsically artificial, and that they do not improve on the environment (think of the problem of bittern disposal). Also



that, as I often heard during this meeting, saltworks increase biodiversity is a very questionable concept that should be used with greater care. Trying to shoot too high by attributing thaumaturgy powers to saltworks may put our credibility at risk.

### ***Tom Crisman***

Thank you Mario. I think this is where we are trying to go and this is why we are looking to see what other groups should be included in a constructive way and to actually get a quantification next time of the ecological benefits. This time I think the message was to see if there are ecological benefits and which ones we want to focus on, so I think we are ready for the next time.

### ***Steve Davis (USA)***

This is to reiterate some of the concepts from my oral presentation on salt production from seawater. In order to meet the increased demand for salt production, particularly sodium chloride, new realities need to be confronted and properly dealt with. First and foremost, new solar saltworks need to be constructed to meet the increased demand for salt. Graphs presented by Roskill Information Service at the Salt 2000 meetings in The Hague showed that salt demand closely follows the increase in the human population. To meet this demand, the new solar saltworks need to be constructed as soon as possible, but their design must include new ideas. The new concepts need to consider both the physical systems and the biological systems. Specifically, it is well known that in every solar saltworks a biological system inevitably develops and that this system can either help or harm salt production. To enable the development of biological systems able to help salt production, construction details that enable close control of the microorganisms of the biological system need to be incorporated into the design of the new saltworks, and special management procedures must be part of brine handling procedures. Also, managers of solar saltworks need better public relations with environmentalists, local populations, and ecologists. Some solar saltworks employ full-time public relations personnel. Failure with public relations may result in expensive litigation in an existing solar saltworks, halt an intended new project such as at San Ignacio in Mexico, or seriously delay construction. By employing new concepts in the design and management of solar saltworks, carefully following government regulations, educating and informing professionals and others about the advantages of salt production from seawater when compared to mined salt, the future of sodium chloride manufactured from ocean water will be assured.

### ***Tom Crisman***

Thank you Steve, which raises. Now if we put what Rolan has said with what Steve has said we come up with the idea that we are going to need to expand salt production in the world. But what we've been doing here be proactive in helping in the new design. I think what Rolan was saying is critical that we have this meeting as soon as we possibly can so this information gets out so we can help and provide a framework for the construction of new Saltworks that are ecological friendly. I think this point is coming out. We can serve a positive

proactive role rather than a defensive role, which the industry seems to have been for a long time.

### ***Kimon Hatzibiros (Greece)***

Taking the message of the last two interventions I think is very important to promote an integrated approach to the problem because we have to be objective and to look objective when we speak to the rest of the world and of course there is a problem sometimes with these environmental impact assessments that are often not very objective because of different pressures of different groups etc. so

I think that there is an answer to this kind of problems. We leave in the era of certification and there is a very strong tool, the life cycle analysis. So what I propose is to consider this tool, the life cycle analysis of the activity of solar Saltworks and also the life cycle analysis of the product, of the salt. Depending on which way it is produced. By solar energy or other ways. So perhaps we could consider this topic in our next conference. Life cycle analysis.

### ***Tom Crisman***

I think what you are saying is Steve gave a good summary of the two species that are causing problems and have other people talk about that the reaction of the loss of the grassers and biomanipulation and how that changes that should go into the system. So look into a whole ecosystem footway and how it interacts with the land. That's a good idea.

### ***Vladimir Sedivy (Switzerland)***

A professor told us that one of the most stupid things that people do in the world is to burn oil. Because oil is one of the most beautiful starting raw materials for the whole organic chemistry. Everything you look at plastic colors, paints starts from oil. The other starting point in physics that I would like to put forward is that nowadays in the science and in the public approach we are getting more and more specialized and we know more and more about less and less until we everything about nothing. This is one of the problems. Also ecologists are getting into more and more detail, deeper and deeper in the sea to see how far the bitterns flow in the sea somewhere until it absolutely mixes with the sea water. And look in more and more detail where something is damaging something else.

The third starting point of what I want to say is that television is an excellent media but it also causing us to focus only on what we are been offered by television and other media. The media they peak things not according to some hierarchy of importance or relevance. They peak it only according to what they feel they could make the best story about it. So whether the story is a flamingo, whether the story is war in the Middle East, they are not interested in putting things in hierarchy. If we want to preserve oil as a raw material we have to stop burning it, we have to use nuclear energy to produce power. If I say, we have to use nuclear energy to produce power I feel like 2000 years ago when Jesus Christ and devil are the same and I feel that I make it crucified for saying that. The perception that nuclear power is something bad is unjustified and has been artificially created by influencing public opinion. If we take the hierarchy of

energy production, production of goods such as organic and inorganic compounds and hierarchy of mining and if we take solar salt production as one of these areas out of mining or substitute of salt mining underground then with an objective eye we would have to see that solar salt production is one of the most desirable fantastic ecologically positive ways of making something. Does anyone know anything else that would more ecologically positive? Perhaps agriculture perhaps forests, ok this is also a transfer of solar energy into some product and this perception is missing, this hierarchy is missing that actually solar salt production is at the bottom of the bad things and at the top of the good things, this perception is totally missing. And it is missing in the community of ecologists and it is missing in the community of media. A conference on ecology has no meaning unless it gives a message to the listeners, what we need is a public relation person or a group who will put this message across through the media and to the listeners they we need to get the message.

### ***Tom Crisman***

thank you, we have the same comment which come over again, Steve said didn't know how to come about reaching a public, to develop a positive public approach, Vladimir comes with the same thing and that application is the name of the game, just sitting here and talking among ourselves we are doing nothing so if we can get to the point of using professor Lekkas' experience on environmental education is one way to deal with the media, I think there is a message out there something like even BBC line, would film a film or a series or a show on the value of Saltworks. But we have to be proactive and I think that we can help the industry to device where they need to go and if they are interested they can help us get that message out. But we have the ecological expertise to feed back to them.

### ***Themis Lekkas***

I think that there are two very important points that we have to stress, Vladimir said something yesterday and repeated today something that we should not just overrun it and move forward. He did stress that we have a production based on renewable energy. We know that the pollution problem of the planet is because of the fossil fuels our source of energy. Therefore, we have a production, which is done by clean energy and renewable energy. Each year we have the energy we need from the sun, this is very important. Now if we couple this issue with the issue that the land we occupy for salt production is habitat for birds for species that almost are in a distinction level and we can support that, because if we can sustain that production we won't make this land available foe other uses but for that which we have the critical experience that this could go alone with the survival of those species then we have two very strong key points that energy and the ecology which are at their best when we are talking about solar Saltworks as compared to other uses. Because I don't know if we can move to absolute values and say that Saltworks are a better wetland than any other wetland. That would be an overstatement which won't do good to us but we can stop there and if we want to have a third argument is that in some cases we can create a wetland. The wetland is not there, there is of course some surface of land, which is short of biotope but is not a wetland and we can keep it as

wetland and using Nikos argument that having all the salinities in various parts of the land we have all the phases of a wetland of that kind present at any time.

In a wetland we have other salinities in June other in April other in August so different species will leave or nest there but having the Saltworks which is a constructed wetland with the characteristics of its own and of course this has not been analyzed enough, we don't have many scientific works on that or studies or research but is a third point that we can upgrade an area as a wetland when we construct a solar saltwork.

So I think that these are the three points but the energy point is very important.

### ***Tom Crisman***

It is important to stress, Prof. Lekkas used the proper English word. Many people refer to constructed wetlands as artificial wetlands. Never ever use that phrase!! Constructed wetlands can very quickly organize themselves into the same structure and function as a natural wetland. So we are constructing we are adding wetlands through the process of having Saltworks.

### ***Drossos Koutsoubas (Greece)***

I just wanted to add to what prof. Giordano said earlier, I think that our knowledge on ecology of these wetlands and I am talking about Saltworks is still away from been considered as complete. Therefore, I think that this conference was a big opportunity to come and try to start speaking more in details on ecological aspects of these wetlands. But I agree with what Giordano said that we need to bring in this kind of conference more people from universities, research institutes, working on the ecological aspects because in the end I think that even people from industry what they ask for is tell us the mechanisms, tell us which is creating, what is fault here, what we have done wrong. This is one point I would like to raise. The second thing I would like to say is that I know that depends on the view. Two years, is too much salt, two years is too much time. So what I would suggest is that possibly to share the idea of a production of a Saltworks newsletter which could be, probably university of the Aegean and Hellenic Saltworks and of course other people from other countries, which would be distributed around every six months or it would be a let say forum for young people or for every body to send a very short communication on different things dealing with these wetlands. It has been happened in the past and recently with other projects in the European Union for example in MARBETH is producing a newsletter every 3 months we can produce it every six months and it is let say 20 pages with output of projects not only purely scientific but also other approaches would be instated there. Apart from the communication point which is very crucial I think.

### ***Tom Crisman***

That would be one way to get to these small producers that could not afford to come to conferences.

### ***Sergio Ortiz (Mexico)***

I have two observations; one of these is in the same line of the pollution in the Saltworks. My first observation is that in the last two days we didn't talked

about our industries to produce salt as a hazardous waste generators and is very important because every industry need machinery in a different rate and is important because these machinery generate hazardous waste and is very important for me talk what can I do or we are doing with these waste. This is my first observation. The second one is about the erosion coast. All the industries that produce salt are in the coast and the erosion coast is not a problem for one country I know is a problem for many countries this problem of erosion coast by the hurricanes by the tsunamis and it is important to know what can I do to protect the coast line of our Saltworks

### ***Tom Crisman***

Mangroves, like we are doing! Because mangroves build land they stabilize the land, but is also very difficult because of sea laborise.

### ***Abdul Rahaman (India)***

I have also a small recommendation that the future conferences like this we should, as all countries all countries have environment ministry we should remind to the people from that ministry and also the NGO's it will be a constructive criticism and we could have there views and we can try to convince or at least put our views across that would be a much more interactive meeting.

### ***Tom Crisman***

That was one of the reasons I wanted to invite Ramsar to the next because all countries are involved with Ramsar.

### ***Carol Litcfield (USA)***

I think that we are sitting here preaching to the choir. In other words, everyone here is someone who believes in the importance of solar salt works as wetlands. The problem is to get the message out to those who don't believe in this concept. One of the ways to do this is to invite not just people from industry and the trade associations but from the environmental groups and the print and oral media. We could have sessions where they can present their points of view and they could listen to us and get a real dialogue going as to how and why we should save the solar salt works.

### ***Themis Lekkas***

There is a small joke about this, 20 years ago there was an ornithologist who was counting birds in Mesolongi lagoons in general and when he counting the birds in the Saltworks well the numbers were increased and there were some very rare birds there he didn't want to disclose in his figures, we try to convince him to publish and announce his figures, you know Nikos I am talking about Pergantis. He kept his figures secret for ten years! Because he didn't want to accept that there were more birds in the Saltworks. There was a bad attitude against Saltworks there. But we also have some good ecologists who are present here, Prof. Hantzibiros ie is one one of the leading ecologist in this country

### ***Tom Crisman***

Since I am not involved with Saltworks at all but I am here as an ecologist spy I find it rather interesting that we have nothing to hide with this group and I go

back to my favored American president, he was a democrat, Franklin Roosevelt was the one. And Franklin Roosevelt absolutely hated General Douglas MacArthur who was a republican. And he made him chief of the army, and they ask him: Mr. President why do you have this MacArthur as head of the army and he answered: “you keep your enemy as close to you as you possibly can to convinced them and keep an eye on them” and so I think in this case if you a potential advisory, bring them in and we don’t want to have this as a small group and talking to ourselves.

### **M. Matrat (France)**

I just have some comments from the producer’s point of view. First we have to keep in mind that Saltworks have to be considered on energy site of subject and in the global aspect from the economy of salt. So we have to emphasize the fact that Saltworks is really energy server first and in a second hand creates particular milieu that consequence of the activity so according to the general problems and aspects of habitat and fauna like birds I think we have to consider the fact that birds will be used as attractive tools for public and this will give to producers the opportunity to brink to the public the true message of the sustainability of the activity, according to the global biological aspects we discussed here for two days. And also producers have now the habit to brink the message by media, directly by media like websites and it might be a good opportunity to relate all these messages based on sustainability aspects and energy save aspects. According to the tools that we can use to pick up the specific aspects of Saltwork activity I would like to focus the fact that we have to consider certain tools like the proposal of life cycle analysis on the view it might be in four certain practical ..... because these tools fore act mainly as yes or not or black and white tools – processes and it will be in certain part ....productive according to biological aspects but are mainly as you can see during these two days not absolutely white not absolutely black but in all the colors will be all the range of beneficial of detrimental aspects is special characteristic of biological systems. So there is a risk to use tools that all industrial activity applies but tools are useful for certain activities like industrial ones but not for such a process based on biological systems. And I would also emphasize the fact that we have to consider what Mr Sedivy said about the power of media and I think that with the producers website and with the proposal of Saltworks newsletters and with the grit part for providing information by the direct access for by products to websites it will be a good opportunity to use tools as Saltworks letters and it will be also in fact a good opportunity for producers to direct focus the main points laid to Saltworks activities. Ant at last I will point that we have also to use opinions relay like in fact NGO’s because we have to keep in mind that when the public visit our sites and when the public sees a bird the only direct question that point the public is what about fecal matters? So we have to give response to these trivial points, but it is a part of the problem also. Thanks

### **Tom Crisman**

Thank you very much

There three words that he used or three areas that I think summarizes the larger scale approach which I think you are taking, one is energy which was

stress by prof Lekkas was stressed by Mr. Sedivy it was also stressed by others, communication and sustainability. Now you can put these together when you consider one of the worlds' greatest living conservationists, is also a businessperson named Luke Hoffman from Switzerland. It is possible to have a marriage between business and ecology to be very effective and I think that one of the things that impressed me most about this meeting was the perspective that Mr. Sedivy brought by bringing in and showing me a flow diagram where things go, this is what I want to know. So we have it for the process, we don't have it for the ecology and if you put those two together and put it terms of solar energy and sustainability and how business and ecology come together, in other words we need a system's model normally such things I ... away from because they used more as a religion than they are as a tool but in this case we need one for marketing and in markets where they are in terms that the business people can understand the flow the ecologists can understand the flow and together it shows how that is related to solar energy as a renewable ... source. There are number of people around the world that do this Jorgans? from Danmark is the one Constanza? from the United States is another. And so we might want to invite well in advance one of these people to consider in a model on our behalf for the next conference. But we need to have this model that shows the business sustainability the ecological sustainability and how they are integrated. That is we need a tool for the communication, so I thank you for your comments very much.

Are they any final comments before we wrap up?

### ***Ciro Zeno (Italy)***

There is another point that for me is important and there is the lack of data or several aspects are investigated more times so I think that maybe is a good idea to try to establish a database in which we can insert all the information we can get about Saltworks. I spend almost a day on my weekly work to find information on Internet about Saltworks. So I have added news about several people that are inside and my process of acknowledgment has started. But for me is important to acquire other information if they are available. So before we have a talk about news letter, which is a good idea, but why not to add also a website where we can take some information for example I got a lot of information from the salt institute from the website and the only paper that spoken fluently about Saltworks was a pdf file from that site. But it was very old, 1982. So I have an Italian book about Saltworks, I also have a book about a Cuban professor and a book from UNESCO 1982 and that's it. So where we can take more information about Saltworks? We discussed the necessity to design new Saltworks but we need data we need the information!

### ***Tom Crisman***

There two comments with that, the first is that together with the Turks and the Dutch we put together an interactive site dealing with water level in lakes and people can just come on and sub form for talking, so if you have a question, I guess what are you proposing is something where you can post what you are finding that might be of interest to the whole group and people can go there and ask questions. This is an easy thing to set up with a domain. And I think that if you do a model, the beauty of doing a model is to find out what are the critical

areas that we don't have the data. Now what help us to direct future studies? So it is a good idea there data out there but in very specific topics do we have the interactive terms that we need. And a model will help us do that.

### ***Vladimir Sedivy***

Well, I just wanted to say that S A L T is not only sodium chloride but also Self African Large Telescope. There is an awful lack of data on that, the other salt is Salt Lake City and the Olympic games there, and I think that all the websites that we are putting before the Olympic Games are still there. And the third point is a question to the public. Who knows who the successor of Kaufman is? Who wrote the next monograph on salt after Kaufman?

### ***Tom Crisman***

You win a prize if you come with an answer.

### ***Phil Davidson (Australia)***

Before you rap up I guess I've got some general comments at the end of the day going forward is ..... to manage the salt process it is worth, I don't know how it is going to be funded, we talked about websites and interactive and data collation and all the rest obviously it is going to take some kind of organization or some persons time to do that and we talked about a charter and we talked about how we proceed forward and how we discriminate information we talked about presenting the staff out to the media but who I going take a lot of organization? And I guess it is going type some kind of funding so I am not sure if we are going to be looking at developing a soluce society or some sort of a society in favor of the biological importance of solar saltworks or some sort of name society were we contribute to an annual phase with information and all the rest of it so that might be one way setting up the registration type things enroll members of a specific society or is it a matter of being a member of Global NEST with an annual sort of subscription so .. To get some clarification of that and what sort of fundamental resources is going ... to drive this potential to go out some responses .... To assist in providing some ...funds to help put this up. At the end of the day I ma not sure how we are going to move forward from here as soon as we collide these comments and email to the participants here but how do we crystallize which country which part will be part of the committee and how we are going forward.

### ***Tom Crisman***

I think is a very good way to wrap up.

### ***Themis Lekkas***

Good administrative questions

### ***Tom Crisman***

We cannot assume that the curtain is gonna fall on Korovessis and Lekkas I mean that we cannot do that to these people. But we have to figure out what is the sustainable mechanism but why we consider those points I think is important now to begin to plan for the next one and in the process we are going to need to put together an organizing committee and as prof Lekkas has



suggested which I strongly support we try to reach a balance among the continents and so if there people who would like to serve on the conference please let us know but we are going to need to put together that organizing committee very quickly with representatives from each continent so I don't know do you want to do any more with this prof Lekkas.

### ***Themis Lekkas***

Yes, the questions raised by Mr. Davidson are very good questions, what is next. We are talking we are presenting our ideas our good ideas some very good thoughts, which have been heard this morning, but down on the ground on the every day practice what is next? First of all I think that we should issue a summary of this event with what was covered what was discussed and what are the plans for the future and the best thing to finish this text is to circulate via email to all the people that are present in this discussion and then to the people of the conference and the Global NEST members which is a rather sleeping beauty. It is an organization which has grown through our big conference which will be organized next year for the tenth time and it has 1000 members from 80 countries most of them are senior people on the environmental field so it is a strong network so we will present this summary to them, of course these are not salt people so it would be more interesting of circulating that to the various salt institutions to United Nations and then we should go on with organizing a committee which will have a good geographical coverage of the planet, this we can do as we can judge from the people who are present here, we are lucky of that that was beyond our expectations, so we can create this organizing committee with agreed that the scientific committee will be all the people who are present here so we can use with a good meaning of the word these people for the forthcoming event and of course I don't want to formulate more my thoughts.

### ***Tom Crisman***

It is brought make new friends identify some key questions and I think as we go forward in the organization of the next conference those of you who brought up key points that we wish to see addressed it is ... upon you to find those people who would fill those slots at the conference and participate, don't just suggest to us ideas but go out and help find the people in those areas who would participate with us and Nicos do you have anything to add?

### ***Nikos Korovessis***

Thank you Tom, It is very important that everybody in this room can be a life advertisement in his own country of the meaning of this conference and all the expressed ideas here today. It is very important in order to proceed and fulfill our goals. I think that the subject is covered from all sides (by all means) and also the way to proceed is also outlined analytically from all speakers today and I don't have more things to add. It is obvious that the problem of identifying and promoting the ecological importance of solar Saltworks is not a regional problem but an international one. Another strong tool in promoting our ideas and inform the people and organizations it can be an international film where will be involved pictures from solar Saltworks from all over the world or a photography exhibition with the same subject can also be very helpful. Actually,

in Greece we are collecting all films from Greek solar Saltworks that related with their importance as ecosystems. This can be done in all countries that are represented in Santorini Conference and make an international solar Saltworks film out of them.

I believe that despite of the fact that the conference's subject is of high importance too little work has been given over to that worldwide. I hope that our meeting in Santorini will be the kick off meeting of a long march. I would like to thank all the participants for coming in Santorini. Tom

***Tom Crisman***

Just one comment of what he was saying in terms of publicity those European GEO's always looking for articles and I think GEO will be an absolutely wonderful place to get the message out here in Europe, the National Geographic in the United States that I have contacts with them so we can get a positive article out of this that would get out and if people want to put that together please let us know on what your ideas are. I thank you all I thank Mr. Korovessis and Prof. Lekkas for a wonderful conference in a beautiful place, although we did not do Greek dancing that's the only thing we missed! So thank all for all for coming.

**Good-bye!**