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*The analysis of small hydropower sector in Poland and promotion actions
on its development within the SHERPA EC Project
(„Intelligent energy for Europe” programme, contract no. EIE/06/088/SI2.442906)*

*Analiza sektora małej energetyki wodnej w Polsce i działania promocyjne
na rzecz jego rozwoju w ramach projektu Komisji Europejskiej SHERPA
(program „Inteligentna energia dla Europy”, umowa nr EIE/06/088/SI2.442906)*

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SHERPA

**SHP NATIONAL POLICY FORUM,
WARSAW (POLAND), SEPTEMBER 11TH, 2008**

A report on the debate organized under contract 08/TEW/2007, closed between EC BREC
and the Polish Hydropower Association on July 12th 2007



Gdansk, November 2008

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General

Following the agreement between the EC BREC / IEOP (EC Baltic Renewable Energy Centre / Institute of Renewable Energies and Fuels) the SHERPA National Policy Forum in Poland took the form of the series of following events:

1. **“Realistic capabilities to achieve the unmanned system of hydropower plants operation”**, IASE, Wroclaw (Poland), May 17/18th, 2007.

A symposium in the *Automation in Power Engineering* conference series organized jointly by:

- the Institute of Power Systems Automation (Instytut Automatyki Systemów Energetycznych, IASE), Wroclaw
- Polish Hydropower Association (Towarzystwo Elektrowni Wodnych, TEW)
- Association for Development of Small Hydropower Plants (Towarzystwo Rozwoju Małych Elektrowni Wodnych, TRMEW)

under collaboration with

- The Szewalski Institute of Fluid-Flow Machinery of the Polish Academy of Sciences (Instytut Maszyn Przepływowych im Roberta Szewalskiego PAN)
- Institute of Power Engineering, Gdansk Division, (Instytut Energetyki Oddział Gdańsk)
- Jelenia Gora Hydropower Plants Ltd (Jeleniogórskie Elektrownie Wodne sp. z o.o.)

2. **MEW’2007 (SHP’2007)**, Duszniki Zdrój, June 15-17th, 2007

A national conference organized by the Association for Development of Small Hydropower Plants (TRMEW).

3. **ECO-€URO-ENERGIA 2007**,

Intelligent energy for Poland and Europe 2007-2013, Bydgoszcz, June 26-27th 2007

The 4th International Conference on Energy Processors, organized by the SAWO Bydgoszcz Fair Ltd. (Targi Bydgoskie SAWO Sp. z O.O.) under collaboration with

- The University of Technical and Natural Sciences in Bydgoszcz (Uniwersytet Techniczno-Przyrodniczy, UTP, Bydgoszcz)
- Polish Hydropower Association (Towarzystwo Elektrowni Wodnych, TEW)
- Association for Development of Small Hydropower Plants (Towarzystwo Rozwoju Małych Elektrowni Wodnych, TRMEW)
- Świecie starost (county president)
- Bydgoszcz starost (county president)
- Cuiavian & Pomeranian Marshal Office
- The Office for the Town of Bydgoszcz

- The Voivodship Fund
for Environmental Protection and Water Management, Toruń
(Wojewódzki Fundusz Ochrony Środowiska i Gospodarki Wodnej w Toruniu)
- The European Institute of Energy Observance
(Europejski Instytut Poszanowania Energii)
- Polish Biomass Chamber (Polska Izba Biomasy)
- Polish Commercial Chamber of Renewable Energy
(Polska Izba Gospodarcza Energii Odnawialnych, PIGEO)
- European Association for Environmental Protection
(Europejskie Stowarzyszenie Ochrony Środowiska)

4. **Small Hydropower National Policy Forum 2008**,
Institute for Fuels and Renewable Energy, Warsaw, September 11th, 2008

A national debate organised jointly by:

- EC BREC / Institute for Fuels and Renewable Energy
(Instytut Paliw i Energii Odnawialnej, IP&EO)
- Polish Hydropower Association (Towarzystwo Elektrowni Wodnych, TEW)
- Association for Development of Small Hydropower Plants
(Towarzystwo Rozwoju Małych Elektrowni Wodnych, TRMEW)

The first three events were reported in the TEW Report 78/2007. The Small Hydropower National Policy Forum 2008 was the final event in the series, accompanying the national assembly of the Polish Hydropower Association (TEW) held on September 11th and 12th. The event is reported in this document.

The lectures and the discussion, taking place during the last Forum, were recorded by a Dictaphone, and documented in a written form by the TEW staff. This report comprises extended English summaries of several lectures and discussion statements prepared basing on the abovementioned written documents. In numerous cases free translation of individual statements is given in order to reproduce the atmosphere of the debate and avoid deforming opinions that may be a matter of controversy.

Small Hydropower National Policy Forum 2008, Institute for Fuels and Renewable Energy, Warsaw, September 11th, 2008

The Forum was organized jointly by the

- EC BREC / Institute for Fuels and Renewable Energy (Instytut Paliw i Energii Odnawialnej, IP&EO)
- Polish Hydropower Association (Towarzystwo Elektrowni Wodnych, TEW)
- Association for Development of Small Hydropower Plants (Towarzystwo Rozwoju Małych Elektrowni Wodnych, TRMEW)

and held on September 11th 2008 in the premises of the Institute of Fuels and Renewable Energy in Warsaw.



Institute for Fuels and Renewable Energy, Warsaw, Poland

Unlike previous events, the main form of the debate was an open discussion on the issues vital for the development of SHP sector in Poland rather than on delivering specialized lectures.

The invitation to the Forum was sent to a number of institutions and NGOs, including

1. Ministry of Agriculture
2. Ministry of Economy
3. Ministry of Environment
4. Ministry of Regional Development
5. National Water Management Council (KRGW)
6. National Water Management Board (KZGW)
7. Regional Water Management Boards (RZGW)
8. Voivodship Boards of Reclamation and Water Infrastructure (WZMiUW)
9. Institute of Meteorology and Water Management (IMGW)
10. Renewable Energy Association (SEO)
11. Polish Renewable Energy Chamber (PIGEO)
12. Polish Angling Association (PZW)
13. Greenpeace Poland
14. Members of TEW and TRMEW



**Dr Magdalena Rogulska (EC BREC) is opening the Forum.
On the left: Mr S.Lewandowski and Dr J.Steller (TEW President and deputy President, respectively)**



A view at the auditorium

The Forum Bulletin issued, in the beginning of September comprised the Forum Programme and the information on topics to be discussed during the debate (Appendix A).

Eventually, the Forum was attended by ca 70 persons, representing private and public hydropower sector, water management administration, governmental agencies and institutions as well as some NGOs (see Appendix B for the list of participants). The final programme (Appendix C) differed slightly from that presented in the bulletin as it appeared impossible to discuss all the items proposed within the time planned. All the Sessions were chaired by Mr **Stanislaw Lewandowski** and Dr **Janusz Steller**, President and Deputy President of the Polish Hydropower Association, respectively. During the debate and the breaks all relevant discussion topics were presented on the screen behind the discussion panel table.

Opening Session

The Forum was opened by Dr **Magdalena Rogulska**, head of the EC BREC agency, now within the structures of the Institute for Fuels and Renewable Energies. Her brief welcome address was followed by that of Mr Stanislaw Lewandowski.

Mr **S. Lewandowski** welcomed all the participants, appreciating especially the effort of academicians, participating in a number of conferences at this time of year. He acknowledged also that the number of those interested in the Forum exceeded expectations of the Organisers who were forced to refuse registration of some late applicants.

In the main part of his address, Mr Lewandowski characterised hydropower as a RES sector subject to the climate, energy and economic EU policies – all of them of key significance for Europe. Unfortunately, the renewable energy sector in general and the hydropower sector in particular are underestimated and repeatedly shifted to the peripheries of the power and environmental protection sectors in Poland. This results in failure to keep pace with EU-15 countries in developing new renewable energy sources. After implementing the new EU directive on the renewable energy sources promotion Poland may become a country paying huge financial contributions for supporting development of renewable energy sources in other EU Member States.

This may happen if the Polish Energy Sector does not start to use intensely the renewable energy sources in Poland. The delays and negligence may result in the necessity to finance acquisition of green certificates by investments in other countries. In order to avoid such a scenario, it is needed that the Polish Government and the Parliament start immediate and intense dialogue aimed at creating procedures facilitating investment in the renewable energy sources and providing financial support means for such investments and the development of the Polish electrical power system. The changes in numerous parliamentary acts and governmental decisions in the fields of spatial planning, building, environmental protection, public aid, taxes, power industry, water management and agriculture are needed.

Referring to the SHERPA project, the speaker mentioned that despite to its restriction to the SHP sector, the project concerns the prevailing majority of Polish hydropower plants. Even with the SHP power capacity limit as low as 5 MW, there are only 17 large hydropower plants in this country. All the remaining ones (over 750 today) constitute the small hydro sector. While hydropower plants with relatively high outputs (including large hydro) are linked with the public sector, represented by the Polish Hydropower Association (TEW), the mini and micro plants are mainly in the private hands. In fact, the largest SHP in the private hands shows output of 2,5 MW. The private SHP sector is represented in Poland by the Association for the Development of Small Hydropower Plants (TRMEW). The speaker emphasised that it was in fact the private sector that gave the new impetus to hydropower development in Poland in the recent years. With this statement he gave the floor to Mr **Piotr Lantecki**, Member of the TRMEW Board.

Mr **P. Lantecki** welcomed all the Participants in the name of his association and stressed the significance of the debate for the SHP sector in Poland.

The final address in the Opening Session was delivered by Dr **Janusz Steller**, who recalled the purpose and the formula of the debate. Dr J.Steller informed also about recording taking place. Next, the speaker gave a brief presentation on ESHA and the SHERPA project, mentioning its main goals and tasks as well as National SHP fora, having taken place in Lithuania, France, Sweden and Italy. He delivered also an information on the SHERPA events having taken place in Poland in 2007. His presentation of SHERPA project concluded the Opening Session.

Session I

SHP sector in Poland - state of the art and challenges

Session I was started by a keynote lecture prepared by the TEW Presidium and delivered by Dr **Janusz Steller**. The speaker started his presentation with discussing the hydropower potential of Poland. Poland is featured with rather modest water resources. The technical hydropower potential of this country is assessed at the 12 TWh/annum level although some sources indicate that 1,7 TWh/annum should be added to this value in order to account for the remaining small hydro potential, which was disregarded in the original study of sixties. The so called normalized energy production is close to 2300 GWh/annum. Hence, depending on the assessment method, only 16 ÷ 19 % of the technical potential is used.

Rough assessments of SHP technical potential indicate the value of 5050 GWh/annum. With about 900 GWh annual production (normalized value) we are again close to 18 % utilisation of national resources. As it can be seen from the diagrams in the next page, a major part of the installed power and annual production rise in the recent period is due to the private sector. The public sector is generally more interested in projects of higher capacity. Some of them are listed in page 9.

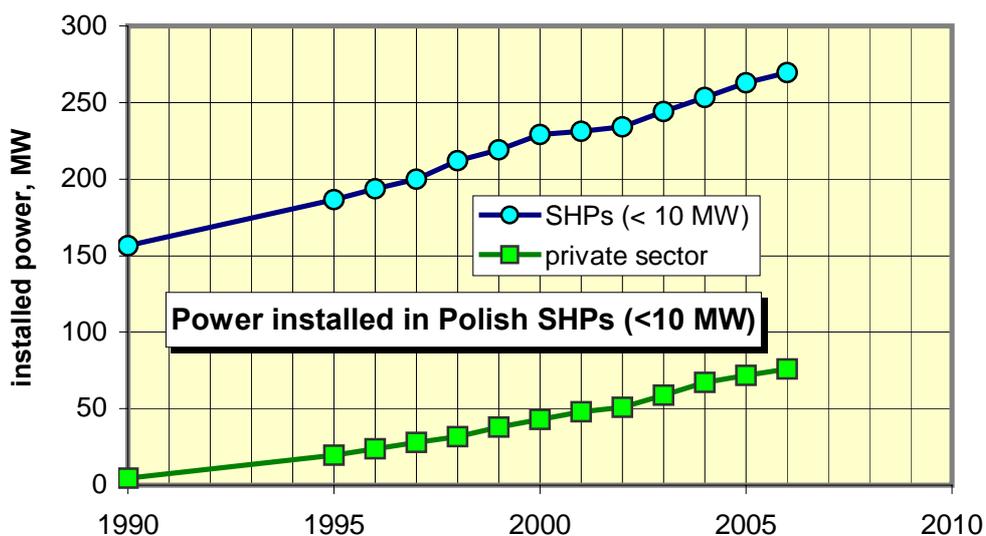
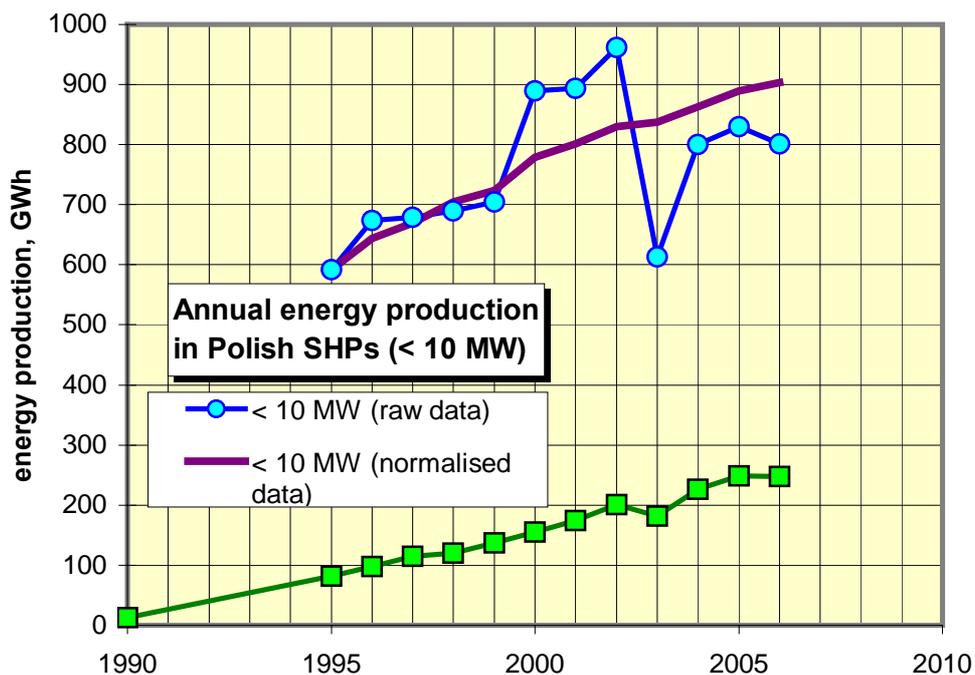
There exist already numerous Polish SHP sector oriented companies, including

- Developer companies (co-ordination of investments)
- Design office and consulting companies;
- Civil engineering companies
- Mechanical and electrical equipment suppliers

However, the current status, especially in the field of mechanical equipment (hydraulic turbines), is far from being considered satisfactory.

Due to various reasons small hydro sector is subject to lesser ecological constraints than the large hydro, almost completely blocked since eighties. Nevertheless, there exist a number of significant barriers, including

- a) Troublesome legal and administrative procedures;
- b) Limited access to the attractive locations
- c) Insufficient collaboration between the SHP sector and the water management authorities when erecting new plants
- d) Conflict with the Water Framework Directive and opposition of the ecological circles.



Annual electrical energy production and installed capacity in the Polish SHP sector (< 10 MW).
Source: Session I keynote lecture

Barriers (b) and (c) are especially painful as the specific investment costs are rising substantially with falling power plant output and the economically most attractive sites are located at the existing weirs. These are usually owned by the water management authorities, often reluctant to lend it to an independent company. On the other hand side the number of the remaining sites is falling down and without joint effort of both water management and the SHP sector, numerous SHP projects may remain economically infeasible. The situation may get only worse within the next years.

It is worthwhile to notice that the requirement of intensifying collaboration of both sectors in erection of water management infrastructure is well in line with the current hydrological situation of Poland, which falls ever shorter of water resources.

Wybrane małe elektrownie wodne uruchomione i planowane do uruchomienia po roku 2000

L.p.	Elektrownia	Rzeka	Rok	Moc, MW	Inwestor
1	Kozielno	Nysa Klodzka	2001	1,85	RZGW Wrocław
2	Więmierzyce	Nysa Klodzka	2001	1,89	Hydroenergia Sp. z O.O.
3	Topola	Nysa Klodzka	2002	1,20	RZGW Wrocław
4	Kościuszko	Wisła	2003	3,08	Fundacja Ks.Siemaszki
5	Januszkowice	Odra	2003	1,50	Elektrownie Górnej Odry
6	Łączany	Wisła	2004	2,50	ZEW Niedzica
7	Krępna	Odra	2004	1,50	Elektrownie Górnej Odry
8	Krapkowice	Odra	2006	1,50	Elektrownie Górnej Odry
9	Smolice	Wisła	2006	2,00	ZEW Niedzica
10	Rakowice	Bóbr	2006	1,92	ESP SA
11	Dobrzeń	Odra	2007	1,50	Elektrownie Górnej Odry
12	Malczyce	Odra	w budowie	9,00	RZGW Wrocław
13	Świnna Poręba	Skawa	w budowie	5,00	RZGW Kraków

Krajowe Forum Polityki Wspierania Rozwoju MEW, Warszawa 2008

Session I keynote lecture: Some small hydropower plants erected and under erection since 2000

ELEKTROWNIE WODNE wnoszone przez jednostki budżetowe



Inwestor: **RZGW Wrocław**

$H = 4.2 - 6.4 \text{ m}$

Dostawca hydrozespołów: **Mavel**

$P = 2 \times 4.5 \text{ MW}$

Session I keynote lecture: Malczyce (Oder) low head SHP under construction.
Power plant investor: Regional Water Management Board in Wrocław

In the final part of TEW presentation, Dr J. Steller characterised several actions needed to provide proper technical conditions for further development of the small hydro sector in Poland. The actions indicated include:

- a) Creating/updating the inventory of all utilised and so far not utilised weirs;
- b) Indicating the new locations and assessing feasibility of their hydropower utilisation, especially in a cascade system;
- c) Developing public programme for utilisation of the hydropower potential, taking into account the interests of all engaged parties with priority attributed to the social goals at the national level;
- d) Initiating interdisciplinary research and development programme oriented on low head stages featured by low hydropower potential, including the low head dams;
- e) Initiating the educational programme for small hydro specialists in Polish higher schools.

The main goals, which should be achieved in order to create legal and administrative conditions for further development of the sector were characterised as follows:

- a) Acknowledgement of the hydropower sector role in economical development of the regions and in regulation of hydrological relationships;
- b) Development of unambiguous legal rules allowing the private subjects, self-government organisations, water management administration to establish commercial law companies with the purpose of economic activity within the weir area, including the use of civil engineering structures and related installations;
- c) Creating conditions of hydropower utilisation of civil engineering structures erected for the water management purposes using the central and local budget means;
- d) Eliminating activity leading to burdening the tax-payer with additional costs of hydropower plant erection from the practice of institutions responsible for the water management sector;
- e) Increasing profitability of investing in erection of hydropower dams;

The lecture was finished by the list of problems planned for discussion during the Session (see Appendix C).

Discussion of the first of topics listed, the SHP sector image as seen by the Polish authorities and the European Commission; was initiated by Mr **Grzegorz Wisniewski**, one of chief Polish experts in the field of renewable energy sources, former head of the EC BREC agency. Mr S. Lewandowski asked also G. Wisniewski to present his opinion on EU expectations on Member States policy regarding the renewable energy sources.

The speaker expressed his gratitude for the invitation and explained that while being no expert in the field of small hydro, he perceived it in a wider context of the whole renewable energy sector. The main part of his address was started with stating limited prospects for hydropower development and the need to change a lot in the perception of the sector in order to keep its position both in the European and Polish energy markets.

According to G. Wisniewski, the lack of any strategy for hydropower, renewable energy sector and even for the whole power sector is a characteristic feature of the current situation. In fact, there exists only a consciousness of the 7,5 % indicative target for 2010, written down somewhere in the Polish acts of law. However, as one looks at the year 2020 prospects which is the proper time horizon for investors, at the prospects of year 2030 or even 2050, all of them resulting from a long term prognosis conducted once upon time by EC BREC, a gloomy image of swiftly falling hydropower significance emerges.

Such prospects should be considered quite realistic despite proper functioning of the hydro-power sector and the efforts undertaken. The main reason of such situation seems to lie in the rising role of alternative renewables, quite often with better image and stronger support. The speaker expressed also the opinion that the development of the Polish renewable energy sector in the 2020-2030 decade might depend on decisions taken in Brussels rather than in Warsaw. In this context he criticised the draft version of the “Polish energy policy till 2030”, issued recently by the Ministry Economy. In fact, no reasonable conclusions can be drawn from this document. Inclusion of hydropower sector into the policy is mentioned in one single sentence without giving any details on the issue.



Mr G. Wisniewski presenting the hydropower sector image from the perspective of Polish authorities.
From the left: Katarzyna Trojanowska (TEW, Energa ZEW Co.), Piotr Lantecki (TRMEW), Jerzy Kujawski (SHP private entrepreneur), Edyta Tużnik-Kosna (Ministry of Environmental Protection) Grzegorz Wisniewski (consultant of the Ministry of Economy)

In the further part of his address, the speaker focused his considerations on the 2020 perspective. He emphasised the need to modify the existing support mechanisms in view of the new renewable energy directive. In his comments to the directive draft he stressed the mandatory character of the targets on the one hand side and shifting detailed specifications to the Action Plans on the other side.

According to current stipulations Poland is obliged to raise the renewable energy contribution to the gross energy consumption up to 15 %. However, the kind of energy concerned and the expected structure of energy carriers/technologies will be specified only in the Action Plan. The cheapest way to achieve the target under Polish conditions is to prefer heat generation. On the other hand side Poland is entering the period of electrical energy deficit and it is electrical energy generation that should be preferred. The strong pressure to use biomass both for heat and electrical energy generation seems to be over, as this would substantially increase prices at both the food and energy market. So it seems reasonable to use the biomass rather for heat generation and transport biofuel production. These problems will be put under public discussion within a short period of time – stated Mr G. Wisniewski.

In the next part of his address, Mr G. Wisniewski expressed highly positive opinion on the enterprises manufacturing equipment for Polish small hydropower plants. He stressed their difficult position in the market with only a dozen or so plants being erected each year. On the other hand side they represent only 3 % of companies supplying equipment for the Polish renewable energy sector – stated the speaker. He stressed also high need for innovations and indicated the Institute for Fuels and Renewable Energy, as a unit in charge of the Infrastructure and Environment Programme in Poland. The Programme includes action 10.3, oriented on initiating and enhancing manufacture of equipment for renewable energy sector – mentioned Mr G. Wisniewski. The speaker suggested also joint appliances for funds supporting projects aimed at developing and integrating various technologies.

According to Mr G. Wisniewski, the prices for green and black energy may converge in a short time and activity in the balancing energy market may get more profitable than supply of basic energy. In this context he suggested creating energy balancing groups representing various technologies, e.g. small hydropower, biogas and wind. His other suggestions included using SHPs for loading batteries used in cars with hybrid propulsion and, perhaps, for hydrogen production.

In the last part of his considerations, Mr G. Wisniewski addressed the cost of electrical energy generation. He mentioned the report of the Polish Electricity Association (PKEE), stating that the rise of black energy price and the need to pay for the CO₂ emission rights would probably result in substantial rise of electrical energy cost in the budgets of Polish households (up to 20 % in a pensioner family). In this context the speaker expressed opinion that supporting large paid-off hydropower plants should be considered unjustified.

The Chairman (S.Lewandowski) thanked Mr Wisniewski for his extensive survey and recommendations, stressing significance of the problems mentioned. In his brief comments to Mr Wisniewski's considerations he stated:

S. Lewandowski: *The hydropower sector is generally conscious that it cannot play a significant role in the Polish power mix. Despite of this, we are for hydropower promotion. The members of our association are authors of papers and conference contributions concerning, among others, local energy safety, spreading the use of renewables in local communities, creation and sustaining workplaces (...).*

You have mentioned the topic of large hydro, which - in your opinion - should no more benefit from donations. One may conceive it like this, but there is also another approach possible – with assumption that donation should be utilised exclusively for supporting the hydropower development – including the small hydro. This should be somehow monitored, as the development of our sector requires support.

As there was practically no time to discuss all the items mentioned by Mr G. Wisniewski, the Chairman asked representative of the Ministry for Environmental Protection, Mrs **Edyta Tuznik-Kosna**, to express her opinion on the subject. In his introduction Mr S.Lewandowski noticed that the Ministry was in a strange position, straddled between the renewable energy and environmental protection priorities.

E. Tuznik-Kosna: *This is quite correct, Mr President. Quite correct! (...) In fact, we have nature on the one hand side and the renewable energy sector elements on the other side.*

S. Lewandowski: *You have a lot to select. If you come here, you support elements of the renewable energy sector. And somewhere else, when you meet the Greenpeace organisation it is quite different ...*

E. Tuznik-Kosna: *Oh, no, it isn't like that! However, I agree completely with my respectable predecessor that the small hydropower sector, mainly because of its power capacity, is unlikely to play a significant role in the total energy balance.*

However, I can see some light in the tunnel. Just now we have to do with the Water Framework Directive, which puts requirements concerning water quantity and quality.

And it is the reconstruction of small weirs, which makes us richer in water. Here, in Poland, we are at the level of Egypt. We should be by no means satisfied with having some watercourses at the moment. The truth is that we have to take care about our water resources. And it is very important what Mr President has just mentioned. Developing wise action strategy would be highly desirable. Moving in this direction and with these arguments would result in water retention by dams. These are not only large reservoirs that may be used for this purpose. It is quite clear that we'll have fantastic opportunity to show our advantages in this respect.

The other matter: I can only confirm that applying for location of a new hydropower plant – especially in case of landscape protection or Nature 2000 area – is a real ordeal. This should be stated quite openly, having in mind all these issues linked with fish ladders and pathways, regulations on environmental impact assessment etc. We are just at the eve of adopting EU standards on environmental impact assessments – it is already known that this assessment will be quite lengthy and scrupulous. In the same way, obtaining the environmental decision on the whole undertaking, whether reconstruction of the existing weir or erection of quite a new plant, will be surely a very difficult challenge. However, this is putting the matters clear – you have an environmental decision, so we can start talking about the installation.

In the further part of her address Mrs E. Tuznik-Kosna indicated that utilising the already existing weirs, even if located not according to the contemporary standards, may be the most reasonable outcome. In this context she mentioned the existing Small Retention Programme comprising the inventory of such locations.

Finally, she admitted the difficult situation of the Minister for Environmental Protection who has to care both for fulfilment of all environmental requirements and for development of renewable energy sources. She mentioned also the energy & climate package which may be a positive factor for the SHP sector development.

At the end, Mrs E. Tuznik-Kosna added:

In my opinion the meetings like this are really valuable as they show that the topics discussed are really close to people. They prove also that there are people with endeavours, interested in undertaking relevant activity.

However, at this moment I can merely keep my fingers crossed for you. The law is as it is. There are absolutely no significant legal facilities helping to erect a small hydro power plant. We have just to stand the situation. The situation was always difficult and today it gets dramatic.

S. Lewandowski: *Thank you very much indeed. I feel rather uncomfortable when listening to the statements on utilising the existing dams. In my opinion we should look over all the rivers and study their hydropower potential. Some dams were erected in the past out of reasons having nothing to do with hydropower and today they may even block the optimum utilisation of watercourses.*

E. Tuznik-Kosna: *I agree with you on this item. My statement was more general, intended to show that with some recognition of the current status, we can start to select and analyse.*

The Chairman agreed with the last statement, indicating at the same time that the new technologies might decrease the cost of erecting new dams. Afterwards, he gave over the floor to Mr **Jerzy Kujawski**, a private SHP entrepreneur, owner of several small hydropower plants and a hydraulic turbines manufacturing workshop in Kosciierzyna (Kashubia region, some 60 km away from Gdansk).

J. Kujawski: *My opinion is different, standing in collision with the views of my predecessors. I am an SHP owner and I see the problems every day from the other perspective.*

It has been said there are such and such regulations and nothing can be done about this. Perhaps, the best way is to do nothing in order to avoid errors. However, as I hear that there is no reason to produce electrical energy, which can be imported, as I hear that the public hydropower sector should not be supported if it has been already paid-off ...

It is really a pity we are not allowed to invest in anything. There are so many weirs reserved (...) for the Regional Water Management Boards (RZGW) with no access given to investors. The RZGWs consider themselves owners of water bodies and declare investing after receiving financial means from the Ministry. I'm very sorry, but the Water Management Boards are merely watercourse administrators. Water is owned by the State Treasure. Your legal duties (according to § 2) include preserving water for the needs of local society and agriculture. They include also creating conditions for using the watercourse for hydropower purposes. However, dams are blocked for the RZGW needs. The RZGWs receive concessions to produce electrical energy despite being state administration agencies with no legal capability of economic activity. Afterwards they deal with energy production instead of their statutory activities, like care for free flow of water. If the RZGWs cared more about facilitating free flow of water, there would be perhaps less ailments, and the condition of water bodies would probably improve.

If larger power plants are in possession of financial means, if there are capital groups formed, if people receive donations or dispose with their own means then one should allow them to act instead of blocking the sites.

We show the willingness to do something, but we are told our production is insignificant. Perhaps, if you look at the statistics, the position of hydropower is rather low. However, the energy price consists of two components. One of them is the transmission fee. If our energy is consumed at the site, by the nearby consumers, then there will be no need to transmit it from a coal fired power plant at the other end of the country. Therefore, it should be less expensive. Local consumption of energy does not contribute to climate warming due to energy transmission. If starting from the next year we are going to pay charges for introducing greenhouse gases to the atmosphere through the chimneys of our coal-fired power plants, as we are informed in the media, if the energy market is going to be liberalised then all of us will carry the consequences of energy transmission, climate warming and inactive waiting for the situation to resolve by itself. Therefore, I have a request to our administration – if you do not help us, please, don't hinder our efforts at least.

Our power plants are small - that's true. However, even in an SHP you can often find 3-4 workplaces for the local work market. The rivers are contaminated and the RZGWs have insufficient means for cleaning water. Water is cleaned at the hydropower plant trash racks in order to avoid contaminants getting to the turbine. We remove contaminants, fallen trees, and everything works somehow thanks to our effort. We are needed.

S. Lewandowski: *I thank Mr Jerzy Kujawski for presenting his opinion. There are representatives of the watercourse administrators (RZGW). We would like to hear your opinion on this issue.*

Artur Wójcik, Deputy Director of the Gliwice Regional Water Management Board:

Basing on the statement I have just heard, I could suppose that small hydropower sector arranges everything – it cleans rivers, takes care about their condition.

In fact, RZGW is an administrator of water bodies, takes care about their condition and does not carry any economic activity by itself. If there is any electrical energy production then this is conducted by the Auxiliary Firms, acting under RZGW auspices. These carry out their activity basing on normal commercial rules.

Now, referring to the infrastructure. Indeed there exists a civil engineering infrastructure at our rivers. This infrastructure is in various conditions, when functioning of the existing weirs is concerned and there is no blockage of their utilisation. The statements on blocking some locations for the RZGW purposes are unjustified. (...)

Awarding locations for SHP erection is related to capabilities and rights in this area. One has to account for ecological constraints and the plans for future utilisation of the river. As you have already indicated, water is a common element for a number of sectors.

Referring to the problem of erecting new reservoirs Director A. Wójcik explained that the majority of planned reservoirs should serve various purposes – e.g. supply of drinking water, flood protection, hydropower purposes. Therefore, a compromise is usually needed when looking for a final solution.

He referred also to the problem of request for erection, sites stating that this is usually on the side of investors and in most cases positive decisions are issued. However, he admitted, this does not refer to the Vistula river basin due to the Vistula 2020 strategy document under preparation. The programme is assumed to assign some river segments priority goals depending on the local plans and these may sometimes prevent damming of rivers.

Explaining the causes of long decision taking process, Director A. Wójcik stated the following:

Some self-governments, some regions have already their spatial development plans that have been adopted in the long-term strategies. There have been resolutions taken in this respect and relevant documents have to be taken into account. Lack of these documents slows down issuing relevant decisions. As you know, a change in the watercourse character inconsistent with the decision issued would result in financial consequences taken over by the administration unit responsible for this decision. (...) These are aspects that appear here and there as legal constraints (...).

S. Lewandowski: *Thank you a lot, Mr Director. As already mentioned, we are rather unlucky with being subject to regulations imposed simultaneously by numerous acts of law, and in particular the Environmental Protection Law, Water Law, Energy Law and a lot of other legal or administrative constraints that limit our capabilities to utilise the hydropower potential of watercourses.*

As I understand from your address, RZGW Gliwice, being no magnate in the hydropower development, shows some openness to our problems. On the other hand side, it follows from your statement that legal constraints are a limitation also for the water management sector.

(...)

Now, I would like to ask a representative of the Association for SHP Development to present his opinion. Peter, please focus on the problem of SHP sector perception by the society and the administrative authorities, especially the local ones.

Piotr Lantecki, Member of the TRMEW Governing Board

With pleasure, although I reserve myself also the right to refer to the words expressed by Mr Director. Our observations are quite different.

Referring to the opinions expressed by previous discussers, I have to admit that the statements on negligible contribution of hydropower, and especially small hydropower, to the national energy balance sound alarming to me. Why to develop something that cannot be optimized economically? Using reasoning like one can reduce whole the discussion on renewable energy sources to a single conclusion – let us erect nuclear power plants! They are economically effective, capable to contribute substantially to the energy mix, and stimulate efficiently industry development (...)

Under these circumstances, the reasoning assuming the significant role of hydropower in generation of some contribution to the target, negotiated with Brussels, is not a proper method of hydropower perception. This is not the proper method to perceive RES neither ...This is also not the power sector model we need. We do not need centralized power industry, with large sources and power transmission all over the country. We are in need of dispersed electrical power sector, with generation close to the sites where energy will be needed and consumed. We should support technologies with significance extending beyond the energy sector limits. (...) Hydropower does not mean solely electrical energy generation. This means also water retention. The situation with water is getting tragic in Poland today. You cannot see it from the perspectives of Warsaw where great Vistula flows, and an impression of abundant water resources may emerge. You can see it in the countryside. It is sufficient to ask the inhabitants on the situation in their wells. How do their fields look like? Poland is country with a realistic threat of resembling ever more a desert. Remedies include developing small retention that is erecting small reservoirs, damming small watercourses, collecting water in order to use it in dry seasons.

Small hydropower implies also development of local communities. This is a problem of taking care of watercourses and infrastructure. That's a hint meant for the Regional Water Management Boards and the Reclamation Managements.

In fact, these are almost exclusively the local owners that take care about the smallest components of water management infrastructure. Large dams are supported from the central means. Small ones are so neglected that in some cases the administration is not aware of their existence. It is quite often that that nobody knows, who is the owner of a particular civil engineering work, e.g. weir etc. In case a small hydro power plant exists at the site, there is also a private owner present who will take care about its condition. In Poland we have the oldest European hydropower plant still in operation using the same turbine for over 100 years now. The civil engineering works survived, as the plant has been all the time in operation (...)

S. Lewandowski: *And how are you perceived by the local communities and the administrative authorities? What is their approach to you?*

P. Lantecki: *I'll be glad to share my observations with you. In some sense, my knowledge concerns the national level as we receive information from investors all over the country. However, I'm quite sure that Mr Jerzy Kujawski can provide you with some very specific examples (...)*

Generally, local communities perceive us in a highly positive way. It is quite often that we encounter reactions, like " Oh, you'll save our mill! That's great as it is falling into ruin now!"

However, the situation may get very difficult at the local administration level. And this is not only in case the "Natura 2000" area is concerned. It is difficult practically everywhere!

Starting from the environmental issues, of course, from the decision on utilisation of SHP suitable sites It is not true that the Regional Water Management Boards do not block access to potential SHP sites. And they do not even conceal this very fact. At the RZGW Poznan web-site you can see a list of such sites, reserved for the RZGW disposal. These are the already existing dams, planned for hydropower utilisation, but blocked to private investors.

S. Lewandowski: *We still deviate towards session II. I know, these are the issues of the highest interest for us – collaboration with water management authorities. But let us return to collaboration with local authorities.*

In his response, Mr **P.Lantecki** stated that the local decisions are highly dependent on the central policy. However, there is a general feeling that no such common policy exists. Everybody knows that the development of water management infrastructure is highly needed, but there is no general agreement on the means and methods to be applied. Referring to the “Natura 2000” areas he stated:

It is not true that Natura 2000 areas are exempted from erection of civil engineering structures. Moreover, there was an opinion expressed during the conference in Kliczkow¹ that this document might be not the most severe obstacle for us and would merely shift some weight points (...). Unfortunately, as there is no clear sign from the central administration on recommended policy, local decisions are not issued. Suitable sites are blocked, problems at the local planning level occur, few communes write down RES utilization into their energy balance plans, not to mention small hydropower (...). One of sub-Warsaw communes made such an attempt, but there was no success, according to my knowledge.

Next, Mr P.Lantecki characterised the existing RES support systems within the Infrastructure and Environment Programme. The lower limit of supported investment has been established at the 10 million PLN level which excluded the smallest investors within the first support axis. The Ministry stated also that the projects should not be of local significance, excluding thus all the SHPs from this support. There is another mechanism, enabling support of local initiatives. However, in 7 voivodships (out of total number of 16), private entrepreneurs have been excluded from the support which limited dramatically the potential support for the sector as most of SHPs are erected in Poland by private entrepreneurs.

President **S. Lewandowski** thanked Mr P.Lantecki for his considerations, mentioning that some of topics were planned for the next sessions. He mentioned also internally contradictory position of the Ministry of Economy, which encourages for development of RES installations in the special economic zones while refusing to issue any power generation licence for these plants.

Finally, he gave voice to Dr **J. Steller** who tried to summarise the discussion by addressing some of the speakers. Referring to the contribution of Mr G.Wisniewski, he emphasised that both small and large hydro should seek their chance in the areas where any effective competition could be hardly found. In case of small hydro this is mainly care of water management infrastructure and contribution to water retention programme in Poland. Better collaboration with Water Management Boards should be only a matter of time. Dr J. Steller mentioned also SHP significance for the local grid, including energy costs and quality, and possible contribution to supply security. The great and hardly replaceable role of large hydro in Polish power system may consist in provision of regulatory power and ancillary services. In this respect the speaker mentioned river cascades in swell operation as especially valuable source of energy.

Dr J. Steller commented critically Mr G.Wisniewski’s opinion on detrimental role of financial support to large hydro, stressing artificial nature of any power threshold between small and

¹ HYDROFORUM’2005 Conference, Kliczkow Castle, December 2005 (J.Steller)

large hydro. In his opinion, any attempt to introduce differentiation in public support to hydropower sector should involve multistage dependence on plant capacity.

Referring to the problem of utilising existing dams for hydropower purposes, as discussed by several speakers, Dr J.Steller mentioned the existing dams inventory prepared in 80-ies by the ENERGOPROJEKT Design Office. The inventory showed economically feasible potential of 200 MW. As some 120 MW of this potential have been already utilised, there is a threat that the SHP sector capacity increase rate may slow down if intense investment into further civil engineering structures is not commenced immediately. This seems unfeasible without close collaboration of the hydropower and water management sectors.

Before the session was closed, **Dr Andrzej Szamowski** (Warsaw University of Science and Technology) asked for the voice. The speaker addressed the problem of unequal approach of Polish authorities to various RES technologies, and especially high preferences for the biomass technology and opposition to some hydropower projects.

Dr Andrzej Szamowski: (...) *No case of combustion without oxygen consumption and carbon dioxide emission is known to me. So, while you may call biomass technology a renewable energy source, you should also bear in mind the related pollution with greenhouse gases – perhaps without nitrogen peroxides and sulphur compounds, but still with great amounts of carbon dioxide getting to the atmosphere and making harm to the environment. So, I can't really comprehend, why is biomass such a priority in the Polish government programme (...)*

I would like also to add few comments on item 1. In addition to Warsaw University of Science and Technology, I am also a co-worker of Water Laboratory in Wloclawek, the largest lab of this kind in Poland, conducting hydrological model tests for various customers. It seems to me, I know Wloclawek local community pretty well. As you may expect, I mean possible erection of Nieszawa or Ciechocinek hydropower plant and supporting thus Wloclawek HPP, which is currently in a bad technical condition. The local press and local population support fully erection of a dam downstream of Wloclawek and use the term “ re-naturalisation of Wloclawek dam tailrace” for the efforts aimed at restoring the original water surface level in Vistula. In fact, the current level is by some 4 m lower than the original one. The quasi-ecologists (called also eco-fans) are strongly opposed to these efforts, calling them placing concrete into the river bed while this action is nothing else than reverting the processes of Cuiavian region conversion into a steppe-like area. The underground water level in Cuiavia fell already to a value affecting the agricultural production in this region. There are sprinkling devices used in the West European agriculture. However, they need also water storage. The representative of the Ministry for Environment has mentioned the small retention. This is so closely related to the small hydropower! Let us allow people to take over and maintain good condition of dams suitable for hydropower purposes. Today there is no proper care taken about them (...).

President **S. Lewandowski** thanked Dr A.Szamowski for his contribution. At the same time he noticed crossing the assumed limits of discussion scope by the speaker. As the debate was by far over the time schedule, he followed Dr J.Steller's suggestion to close the session even if not all the Discussion Panel Group members were given a chance to take part in the discussion.

Session II

SHP and water management, natural and social environment

Session II was started with a lecture on hydropower delivered by Prof. **Wieslaw Wisniowski**, head of the Department of River Fishery in the Stanislaw Sakowicz Institute for Midland Fishery in Olsztyn, member of the Polish Angling Association (PZW) Governing Board. Mrs **Jadwiga Oleszkiewicz** (“Czysta Energia”, Editor-in-Chief) and Mr **Andrzej Tersa** (President of ENERGA Hydropower Division) joined the Discussion Panel Group.



Small Hydropower Plants -

Are they harmful for the environment ?



Wieslaw Wisniewolski

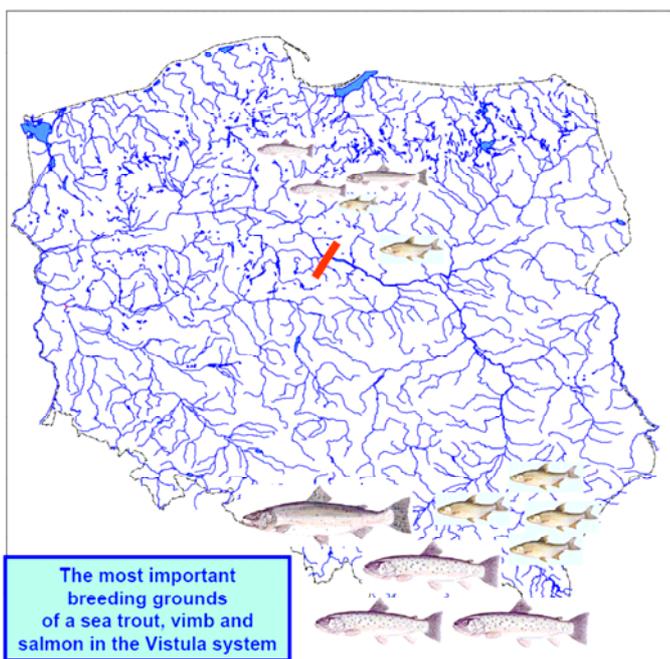
Stanislaw Sakowicz
Institute for Midland Fishery in Olsztyn

Presentation by Prof. W.Wisniowski: Title slide (English translation)

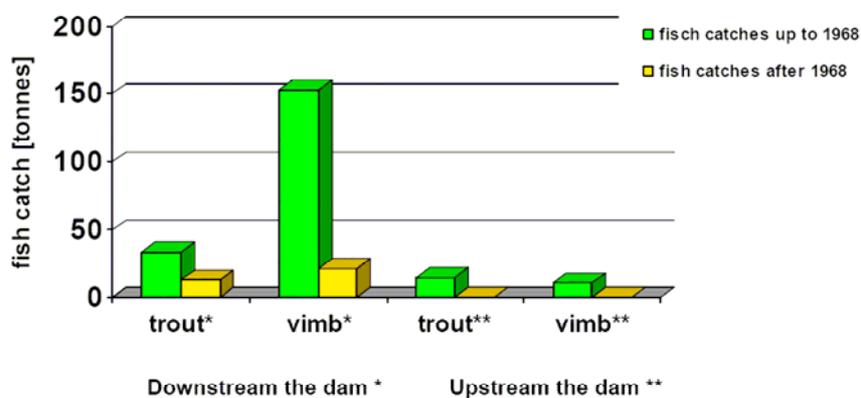
Prof. **W.Wisniowski** presented himself and his authorisation to represent his association in the discussion. He explained that the purpose of his contribution is to help in better understanding of the PZW position in some issues of controversy with the hydropower plant owners.

As Prof. W.Wisniowski stressed, the main problem is fish migration. In fact, all midland fish species migrate at shorter and longer distances in order to fulfil activities related to their life course. Water dams form obvious obstacles disturbing this cycle. This refers especially to the diadromous fish, such as trout, salmon, eel, vimb and the recently re-introduced sturgeon, which are thus cut-off from their breeding grounds.

Prof. W.Wisniowski illustrated his explanations with the impact exerted by the Wloclawek Dam on Vistula on the migrating stocks of trout and vimb. Dramatic fall of these stocks may be observed despite regular introduction of fish upstream the dam.



Damming in 1968



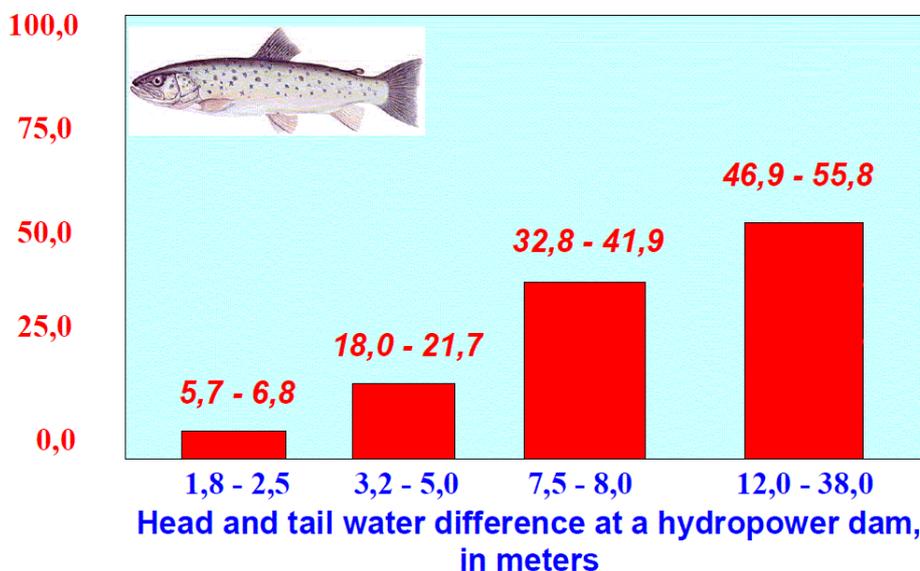
Annual average catches of vimba and trout in the Vistula system Before and after damming Vistula in Wloclawek

The impact exerted by the Wloclawek Dam on Vistula on the migrating stocks of trout and vimba (Presentation by Prof. W.Wisniowski, English translation)

HYDROPOWER EFFECT ON FISH (rainbow trout 12- 22 cm length, Francis turbines)

Fish damaged
%

(Acc. Bieniarz et al 1992, Bartel et al. 1993, 1994, 1996)



Fish damage after passing a Francis turbine, depending on gross head
(Presentation by Prof. W.Wisniowski, English translation)

Results of the marked rainbow trouts passing through the turbines of hydropower plants in the Słupia river system (Wiśniewski i Ziola 2007 after Bartel et al., 1993).

Site	Loss percentage (killed or damaged fish)			Loss percentage, %, at turbines
	1989	1990	1992	
Krzynia	19,1 – 32,1	21,9 – 34,0	31,2 – 37,0	19,1 – 37,0
Kondratowo	41,5 – 54,5	41,0 – 51,0	38,3 – 45,4	50,1 – 71,3
Gałężna Mała	-	-	40,9 – 48,5	70,5 – 85,2
Soszyca	-	-	45,5 – 53,9	83,9 – 93,2

Cumulative loss of fish in a river cascade
(Presentation by Prof. W.Wisniowski, English translation)

The situation may get even worse when migration of smolts (young trouts and salmon of 15 – 25 cm length) downstream a river is considered, as fish stock damage cumulates when passing consecutive turbines in a cascade. The damage rate depends on various factors including trash rack design, turbine design and speed, fish length and species etc. Prof. W. Wisniowski mentioned eel as especially endangered species, as typical length of fish migrating downstream is several tens of cm. He illustrated his statement with an example taken from Wahnhausen Hydropower Plant (4 MW capacity, Fulda river, Hessen, Germany) where about 1 ton of fish was killed within one night¹.

When discussing the general water management policy, Prof. W. Wisniowski stressed that any sudden stopping of water flow in a river, even for 2 or 3 hours, might have deadly effect on a lot of species living in a river, including fish population. In this connection, he mentioned the aims of the Water Framework Directive and the *Natura 2000* network. He informed also on the Polish programme of migrating fish restitution, developed in 1996 and initiated in 1998 by the Ministry of Environment. This involves identification of fish species occurrence area and biology, breeding and planting of the stocking material, transporting spawners over the barrages and restoring migration routes, including erection of new fish paths and ladders.

In the final part of his lecture, the speaker discussed also some measures that might be taken in order to mitigate the detrimental effect of SHPs on river stocks. He discussed in particular the problem of disregarding environmental aspects when erecting new SHPs even in case the dam with a previously existing fish path was used. He stressed also great care needed when erecting fish ladders and paths, illustrating this statement with examples of improper fish path location and/or design. When discussing the problem of fish migrating downstream the river, Prof. W. Wisniowski emphasized the influence of both the trash rack bar density and flow velocity towards the trash rack. He expressed opinion that only trash racks with bar spaces below 15 mm and flow velocity below 0,3 m/s may be considered safe, enabling most of fish population flowing along the trash racks to the downstream migration start point. However, he explained that using modern electrical and electronic equipment, discouraging fish from approaching the trash racks, might be also an effective measure.

Prof. W. Wisniowski concluded with stressing the need for seeking compromises and taking into account the interests of various parties. In his opinion, this implies keeping the condition of environmental protection, including protection of fish population.

The final statement of Prof. W. Wisniowski was as follows:

One should bear in mind that there are sites where, due to their significance for the natural environment, no hydropower installations shall be erected at all, despite favourable energy production conditions. And there are numerous other sites, especially those with already existing dams, where such an investment is possible and an SHP can be put in operation while keeping the condition of natural environment protection.

President **S. Lewandowski** commented the lecture of Prof. W. Wisniowski with the following statement:

We have also a number of examples showing environmental impact of our hydropower plants. The examples, you have presented are really unpleasant for our sector.

Afterwards he asked Mr P. Lantecki for his comments on the issue.

¹ Over 10 years later this unfortunate incident was followed by installation of an electronic MIGROMAT warning system under the Az 17627 project of the German Federal Fund for Environment (Deutsche Bundesstiftung Umwelt) (J. Steller)



Fish killed at Wahnhausen Hydropower Plant at Fulda river within one night of 1991 (after Adam et al. 2005). Presentation by Prof. W.Wisniowski



Ineffective fish path due to hydropower installation at the opposite side of an existing weir. Presentation by Prof. W.Wisniowski

P. Lantecki: *That's true. The examples are devastating. I have no doubts that they reflect also the true facts. However, I'll allow myself to present a counter-argument.*

There is no doubt that hydropower plants affect the environment - both small and large ones. (...) We should not delude ourselves. However, it is worthwhile to look at it from another perspective. These plants give also positive contribution to the environment. The industrial milling of fish is not always the case.

It is also worthwhile to notice that with over 6000 plants before the war, we had rivers full of fish. Now, we have 800 installations and problems with fading fish stocks. In this context, the thesis that hydropower plants contribute to destruction of the environment is rather risky. However, they exert surely an environmental impact.

My private expertise shows that SHP investors are generally people with high respect for the environment. Surely, in some cases the regulations are not respected. The fish ladders you have shown were designed improperly. However, most of SHP installations are operated by people keeping environmental problems deep in their hearts. They are ready to do a lot for the environment. As SHP operators, we would rather expect telling us how to act. What can we really do for the natural environment?

The process of awarding water-legal consent is a complex procedure, involving also angling associations. It is not so that we are refused on any occasion and called "fish murders". There exists a consensus space. Most of investors would be glad to listen to advices on erecting fish friendly fish ladders. I suppose, a consensus on trash rack density is also possible. I'm thinking about horizontal trash racks or increasing their surface area in order to minimise the fish losses. A number of SHP operators are anglers themselves. They fight against poaching. Our installations increase air content in water. We could vie each other in arguments for and against, but it is starting a dialogue between the hydropower and fishing environment that is really essential now. I strongly believe in a possible consensus.

I would like to mention that there exist also some curious cases from the other side. One of recently commissioned SHPs, localised in Przechowo¹ and equipped with two units of 400 kW total capacity, has been furnished with a fish ladder at the cost of 2.5 million Polish zloty (PLN). In order to show you the distorted proportions, let me mention that the total annual revenue of this SHP is 700 thousand PLN (...). There is a camera installed in the ladder, which allows you to monitor its performance in the web. However, the erection of this fish ladder is a result of proper performance of a support programme - in fact almost proper, as the investor is still waiting for the refunding of his expenditures. (...)

Professor Stefan Bednarczyk (Technical University of Gdansk): *Some time ago I dealt with the probability of fish survival when passing through turbines. The problem is that a fish passes through Francis turbines quite differently than through Kaplan ones. This should be clearly distinguished. In Kaplan turbines the runner blades pass the guide vane row at a substantial distance and a lot of fish quits the turbine without any damage. Clearly, the larger is the fish and the higher is the speed, the lower is the probability of its safe passage through the turbine. However, there should be no damage to a fish in good condition when passing through a Kaplan turbine. As most currently installed turbines are tubular ones, the fish is not threatened there (...).*

Example: Some time ago dead fishes were found downstream the Smukala HPP at Wda river. The plant was accused. We went there and recognized a toxic drop of sewage.

¹ Przechowo is today a part of the town of Swiecie on Vistula. The SHP mentioned is located at Wda river, close to its estuary to Vistula (J.Steller)

Now, to the trash racks. Small fishes may be really squeezed by the stream of on-flowing water. However, larger ones are stronger and capable to detach from the rack. It depends on the fish size.

The Wloclawek issue: I read recently a report showing that the quantity of migrating fish is the same upstream and downstream the dam. This could prove that the fish passes the dam. On the other hand side, in the beginning of seventies Vistula got highly polluted in this region. This kind of fish cannot stand dirty water. This is a factor that affects severely fish migration.

Furthermore, I have never ever seen dead fishes downstream hydropower plants with Kaplan turbines. It has been different with those equipped with Francis turbines. These are mainly old machines to be replaced on a step-by-step basis.

It is a pity that you have not mentioned other problems. I mean low and high waters. The low waters are well known to emerge on a mass scale in some seasons of the year – e.g. the autumn low waters, taking place in the beginning of September. And the fish dies on a pretty large scale then. Fish, and especially fry, die on a mass scale also during floods – in particular spring and autumn ones (...). If you create water reservoirs, the water velocity falls down and the fish gains a chance for survival. If you dam watercourses, the floodwaters and shallows emerge, where the fish lays down the spawn willingly. Is this not true?

W. Wiśniowski: *This is not true! I'm sorry to interrupt you.*

S. Bednarczyk: *You are welcome! However, you should perceive the problem in a more general and objective way! And I repeat again - one should take account of the machines involved. Thank you.*

W. Wiśniowski: *I would like to address immediately this statement.*

Firstly, my presentation shows research-based examples of environmental impact. This impact is true! And there is a need to seek a compromise, to use safeguards and solutions that will allow minimising these negative impacts.

Secondly, I would like to refer to the proceedings of an international conference held in Berlin in 2005, dealing with fish migration and the influences exerted by the damming of rivers, and especially by the power industry. Results from all over the world have been collected and published. You express your opinions basing on your own feelings and observations while the results received show unambiguously the scale of the problem as well as the methods and directions to be followed in order to find a solution.

Referring to the diadromous fish in Vistula, the situation is as follows. As there is a permanent sea trout restocking taking place, with several hundred thousand up to a million fish pond bred smolts let out annually into the river, this fish is there. However, there is no more any vimb stocking. The annual catches of this fish in the system of Vistula before damming were about 200 tonnes, which you can compare with 3-4 tonnes caught annually nowadays. There is no more any vimb in the coastal catches.

Referring to the purity of water you mentioned as the main problem (...). Our institute has some expertise in this respect. In 70-ies the vimb was caught downstream the dam and taken over upstream. It was assumed that if we would catch this fish and take it upstream then it would swim further to the sub-Carpathian breeding grounds, which should result in increased catches. And the amount of fish really increased. However, immediately after fish transportation was stopped due to lack of financial means, the vimb extinguished as well.

Further on, you mentioned fish dying during low waters and floods. River fish is adapted by its biology to the variable hydrological river regime! It is in case of regulation and unsettling

this regime that a whole number of species falls out! For instance, there will be no pikes without deep waters – that's clear. River fish is used to swim in well-oxygenised water, with gravel-stony bottom. You have no such conditions in reservoirs. Therefore, a natural reconstruction of trophic systems takes place. Species with such requirements fall out and – as there is no vacuum possible in the nature – other species, more suited to these conditions, develop.

I stress again. This forum is an excellent opportunity to exchange opinions, viewpoints, to let you learn about specialist results that are not known to you. You are not naturalists and I have poor knowledge about turbines. You know there is some fish swimming in water ...

Meetings like this should not serve mutual refuting the arguments, but rather an increase of consciousness on both sides - and looking for solutions and compromises. As there is no progress possible without compromises!

S. Lewandowski: *I suppose, you have put it in a proper way. It is not our intention to banter or to vie each other in arguments (...). Our goal is to seek a compromise that would enable utilisation of hydropower potential – as there is such a need – while minimising the harm to the natural environment, including fish population.*

J. Kujawski: *I am decisively for a dialogue. As a practitioner, I watch what comes to the racks. And I watch also anglers. I have few opportunities to see an angler leaving no mess flowing down to the river.*

We could use more dense trash racks in the summer seasons. However, I appeal for engagement on the other side of the dialogue. For education and ecological consciousness. For keeping order close to the civil engineering structures.

We have to understand that everything has its price and using water both for communal and power generation purposes disturbs the environment.

However, our waters were cleaner in the past. And there was fish swimming there.

S. Lewandowski: *Purity of waters and personal culture of their users are a quite different topic. We have to seek for solutions that will allow us to avoid such dramatic environmental effects for the environment as those shown here.*

Andrzej Tersa (President of ENERGA Hydropower Division): *We are an owner of numerous plants, including those at Radunia river. Radunia is excluded from fish migration. However we have been stocking it together with the Angling Association for several years now. And we can't see any fish at our trash racks. Once upon a time a catastrophe happened at the Straszyn cross-section (close to the lower part of the river). Some 5 tonnes of dead fish were caught downstream. It turned out that toxic pollution was introduced into water.*

I don't know what a conclusion can be drawn from the above. I know only the examples of environmental damage shown are shocking. Fish milled when passing turbines or dying when trying to cross cascade stages. I don't know to what extent this information is representative.

However, by no means we would not like to vie each other with arguments, but to find a reasonable solution. Both as a sector and as owners of individual hydropower plants, we should collaborate with you in order to investigate the true impact of hydropower on migration and the extent in which alternative solutions affect the condition and quantity of fish. We have to start a dialogue, to exchange our knowledge and expertise. Perhaps we should conduct research at our plants...

W. Wiśniowski: *There is a question of acquiring financial means for investigation, including experimental tests. However, as a head of the Department of River Fishery in the Institute for Midland Fishery, I declare full openness for joint resolving of the list of problems and related research.*

President **A.Tersa** confirmed his readiness to take part in such a research. Further discussion concerned the possible source of financing. Sector and Operational Programmes, supported by the EU Cohesion Fund, were mentioned as a potential source of such financing in the 2007-2013 perspective.

In this context President **S.Lewandowski** noticed that the problem new fish ladders and fish paths is not confined to finding erection funds, but includes also further maintenance and payment of taxes. *The larger is the facility, the more friendly for fish – the higher tax of civil engineering structures has to paid* - explained President S.Lewandowski.

This statement evoked brief discussion on legal aspects, including insufficient support from the Ministry for Environment.

The session was closed by Dr **J.Steller**, who assessed highly the initiative of joint research. In his closing statement he mentioned also the related EU projects co-ordinated by ESHA and specialized seminars on fish paths and fish ladders.

Session III/IV

Technical, administrative and economic conditions for SHP development

The debate was restarted immediately after the lunch break. A representative of the Ministry of Regional Development, Mrs **Sylwia Wilk**, was asked to join the Panel Group. Due to scarce time the previously planned separate sessions III and IV had to be merged into one session. Most of the time was taken by presentations:

- *Assessment of the current system of investment projects economic support*
- *European funds for renewable energy sources.
Operational Programme “Infrastructure and Environment”, Actions 9.4 and 10.3*

delivered by IP&EO/EC BREC co-workers, Mr **Łukasz Kowalski** and Mrs **Magdalena Mielczarska-Rogulska**, respectively



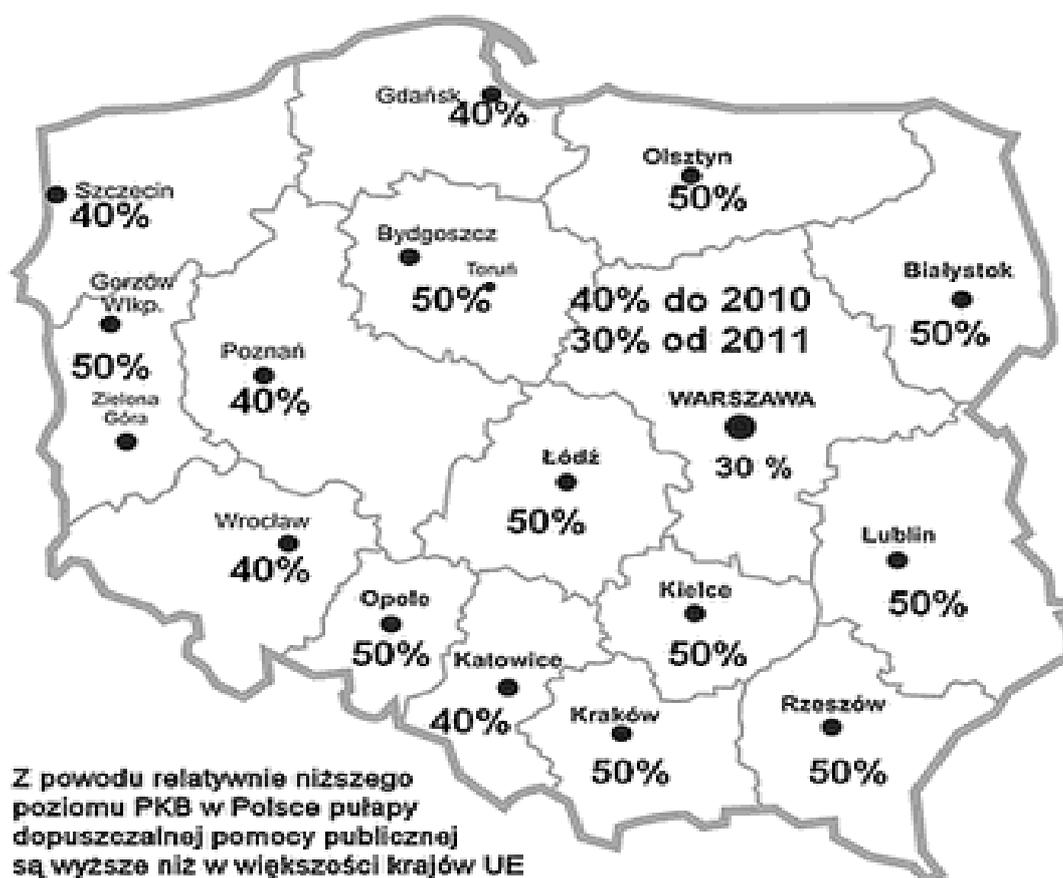
Mr L.Kowalski delivering a lecture on the current system of economic support to the investment projects
From the left: Lukasz Kowalski and Magdalena Mielczarska-Rogulska (both IP&EO),
Jerzy Kujawski (SHP private entrepreneur), Andrzej Tersa (TEW, Energa ZEW Co.),
Sylwia Wilk (Ministry of Regional Development), Piotr Lantecki (TRMEW)

As Mr **Łukasz Kowalski** explained, there are four basic sources of financial support for RES related projects in Poland, that is:

- Operational Programme „Infrastructure and Environment”;
- National Fund of Environmental Protection and Water Management (NFOŚ&GW);
- Voivodship Funds of Environmental Protection and Water Management (WFOŚ&GW);
- Regional Operational Programmes.

The basic proportion of maximum available financial assistance ranges between 30 and 50 % of the qualified costs. The support is differentiated throughout the country and generally higher than that in most EU countries. The financial assistance mentioned may be increased by 20 % in case of micro- and small size enterprises, and by 10 % in case of medium size enterprises.

Mapa pomocy regionalnej w Polsce w latach 2007 - 2013



The maximum proportion of financial aid to be awarded for RES related projects in Poland in the period 2007-2013. Presentation by Mr Lukasz Kowalski

As Operational Programme „Infrastructure and Environment” was to be discussed in the presentation by Mrs Magdalena Mielczarska-Rogulska, the speaker focused his attention on the Environmental Protection and Water Management Funds.

The means from the National Fund may be used among others for erection or refurbishment of hydropower plants, excluding dams for hydropower plants of capacity exceeding 10 MW. The following forms of support are available:

- preferential loans;
- payment loans;
- donations;
- donations to the preferential credit and loan interests;
- loans within the consortium contracts;
- promises of financial assistance to the undertaking;
- redeeming of preferential loans.

The loans may not exceed 80 % of the undertaking. However, it may not be lower than 2 000 000 Polish zloty. The redeeming is possible if at least 50 % of the loan has been already paid off.

The support within the Voivodship Funds is awarded basing on local principles, which were discussed by the speaker at an example of Pomerania.

In each of voivodships there exists also the Regional Operational Programme „Infrastructure and Environment”. The basic principles of green energy production support within these programmes are as follows:

- **Action purpose:** Increase of renewable energy sources utilisation
- **Beneficiaries:** same as in the „Infrastructure and Environment” Operational Programme
- **Financing:** European Regional Development Fund (EFRR)
- **Financing form:** non-fundable assistance;
- **Payment form:** refunding of traceable qualified expenditures;
- **Minimum project value:** 1 million PLN.
- **Maximum EFRR subsidy level:** 75%
- **Expenditure qualification criteria:** same as in the „Infrastructure and Environment” Operational Programme

The basic principles of the „Infrastructure and Environment” Operational Programme were explained in the presentation by Mrs **Magdalena Mielczarska-Rogulska**.

There are altogether 15 priority axis within this programme. As Mrs Mielczarska-Rogulska explained, the RES related projects are covered by:

- **Priority axis IX**
Environment friendly power industry infrastructure and power generation effectiveness
- **Priority axis X**
Power supply security, including diversification of supply sources

Priority axis IX includes actions

9.4 Power generation using the renewable energy sources

9.6 Networks enabling absorption of energy produced in the renewable energy sources

with the Institute of Fuels and Renewable Energy as an implementing/intermediary institution.

Action 9.4 is surely the most interesting ones for the SHP investors. There has been in total 1762,31 million Euro allocated for this action. The value of SHP erection/refurbishment projects should be not less than 10 million PLN and the financial assistance is up to 20 % of the project value.

The list of beneficiaries in action priority axis 9 includes:

- Entrepreneurs;
- Local self-government units and their federations;
- Subjects with majority of shares owned by a local self-government, rendering public services basing on a contract with a self-government unit;

- Subjects selected in result of a tendering process, rendering public services basing on a contract with a self-government unit;
- Churches, church legal subjects and their federations, religious communities.

Priority axis X includes action 10.3

Development of RES oriented industry.

91,33 million Euros have been allocated for this action with the purpose to promote energy sources diversification and development of RES based power industry sector by supporting the manufacturers of equipment used to produce fuels and energy out of renewable energy sources. The supported activities include manufacture of equipment for hydropower plants with capacity up to 10 MW. Also in this case the Institute of Fuels and Renewable Energy is an implementing/intermediary institution.

The beneficiaries of this action are entrepreneurs and the value of the supported project should be not less than 20 million PLN. The financial assistance covering 30 % qualified costs, but no more than 30 million PLN is assumed.



System of projects selection and evaluation

Competition system

Projects will be selected in a closed competition system.

Competition stages:

Announcement of the competition
Collecting applications
Evaluation of projects

Projects will be evaluated in two stages :

Stage I – Preselection
Stage II – Final evaluation

Decision on financial assistance to the project;
Announcement of competition results;
Signing a contract on financial assistance to the project.

The system of projects selection and evaluation within the Infrastructure and Environment Programme. From presentation by Mrs Magdalena Mielczarska-Rogulska (English translation)

Two-stage project evaluation system has been assumed with formal and substantive criteria in the preselection stage and only substantive criteria in the final evaluation stage.

The formal criteria include, among others, the feasibility study and the declared readiness to start the project after the application submission deadline (18 months in case of action 9.4 and 12 months in case of action 10.3).

The substantive criteria include investment costs per 1 MWh of annual production and 1 MW of installed power in action 9.4, and investment costs per capacity unit of manufactured equipment in action 10.3.

The presentations by Mr Łukasz Kowalski and Mrs Magdalena Mielczarska-Rogulska were followed by brief discussion on accessibility of the financial assistance means to various legal

subjects. Some controversies arose about pretty high thresholds of project value required and other related issues¹.

Due to scarce time, the debate was closed at 16:30, in order to allow for a break before the National Assembly of the Polish Hydropower Association.

Conclusion

The Small Hydropower National Policy Forum, held in Warsaw on September 11th, 2009, has shown again a need for an open discussion between various parties involved in economical utilisation and protection of water bodies. The discussion with representatives of the Polish Angling Association was especially fruitful, as it proved willingness to a compromise on both sides. It has shown also a possibility of common action aimed at finding the most reasonable solution to the problem of mitigating some negative impacts of hydropower on the natural environment.

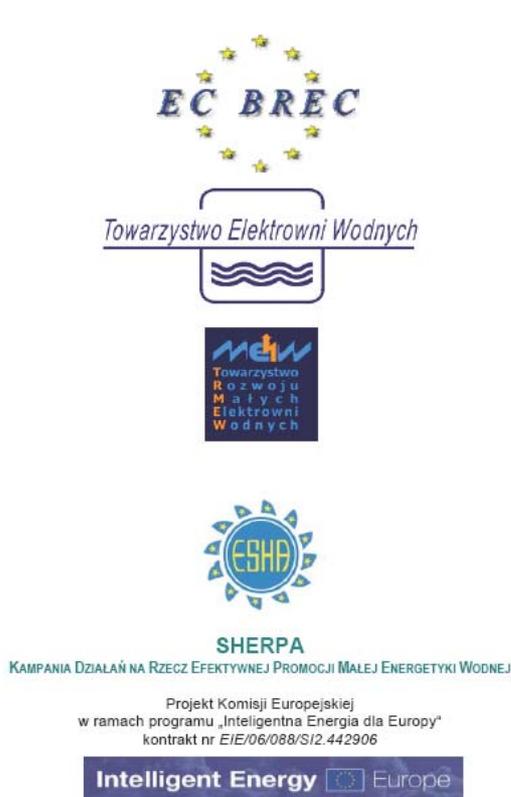
The debate has proved also rather low interest of the Polish state in development of hydropower in our country, despite rising problems with CO₂ pollution, insufficient capability of regulatory power generation and unsatisfactory level of green energy production. This shows again the need for systematic lobbying.

Some discussions started during the Forum were continued during the TEW National Assembly. As no proceedings of the National Forum were published, it is planned to place the presentations delivered and this report at the TEW website.

¹ This part of the debate was not recorded using the Dictaphone equipment.

Appendix A

National SHP Policy Forum Bulletin



Komunikat

Projekt SHERPA

Mimo wciąż dostępnego potencjału hydroenergetycznego i niezaprzeczalnych atutów w porównaniu z innymi odnawialnymi źródłami energii, mała energetyka wodna (MEW) rozwija się w Europie wolniej niż to przewidywano w latach dziewięćdziesiątych. Stan ten jest przedmiotem troski nie tylko Europejskiego Stowarzyszenia Małej Energetyki Wodnej (ESHA), ale również Komisji Europejskiej, która podejmuje szereg działań na rzecz promocji odnawialnych źródeł energii. Jednym z takich działań jest projekt SHERPA (*Small Hydro Energy Efficient Promotion Action*), koordynowany przez ESHA z wsparciem ze strony programu *Inteligentna Energia dla Europy*. Polskim partnerem ESHA w ramach projektu SHERPA jest Ośrodek EC BREC, działający obecnie w strukturach Instytutu Paliw i Energii Odnawialnej i współpracujący bezpośrednio z Towarzystwem Elektrowni Wodnych (TEW).

Istotną formą realizacji projektu jest tworzenie warunków do debaty z udziałem przedstawicieli sektora MEW, ośrodków administracji rządowej i lokalnej, a także organizacji pozarządowych. Debata ta prowadzona jest między innymi poprzez Krajowe Fora Polityki Wspierania MEW (*National SHP Policy Fora*) zmierzające do identyfikacji subiektywnych i obiektywnych barier dla rozwoju sektora MEW oraz wskazania ośrodkom decyzyjnym skutecznych mechanizmów jego wsparcia z uwzględnieniem racji różnych środowisk. Fora tego rodzaju odbyły się już na Litwie, we Francji, w Szwecji i we Włoszech. W Polsce zebrania z tego cyklu miały miejsce przy okazji Zgromadzeń Krajowych TEW i Towarzystwa Rozwoju Małych Elektrowni Wodnych (TRMEW) oraz konferencji Eko-Euro-Energia 2007.

Organizacja i tematyka Forum

Tegoroczne Forum obradować będzie w Instytucie Paliw i Energii Odnawialnych, ul. Jagiellońska 56, 03-301 Warszawa. Wydarzenie to poprzedzać będzie bezpośrednio Zgromadzenie Krajowe TEW, które rozpocznie swoje obrady późnym popołudniem tego samego dnia. Zgodnie z przyjętą formułą, Forum obejmować będzie 4 sesje dyskusyjne poświęcone kolejno następującym zagadnieniom:

1. Stanowi rozwoju sektora MEW i stojącym przed nim zadaniom
2. Relacjom sektora MEW z gospodarką wodną, środowiskiem naturalnym i społecznym
3. Uwarunkowaniom technicznym i administracyjnym rozwoju MEW
4. Uwarunkowaniom ekonomicznym rozwoju MEW

Zabiegamy o to, by poszczególne sesje poprowadzili kompetentni przedstawiciele agend rządowych lub organizacji pozarządowych, którzy dokonają wprowadzenia w tematykę obrad, a następnie pokierują dyskusją. Przewidujemy, że oprócz przewodniczącego, za stołem prezydyjnym zasiądzie od 2 do 4 osób reprezentujących różne środowiska. To do nich przewodniczący będzie kierować w pierwszym rzędzie swoje zapytania celem zainicjowania dyskusji. Organizatorom zależy jednak również na spontanicznych głosach z sali obrad i doprowadzeniu do autentycznej debaty, w której wezmą udział różne środowiska.

Wśród zagadnień szczegółowych, jakie zamierzamy poruszyć, wymienić należy zagadnienia następujące:

W ramach sesji I

- Postrzeganie sektora MEW przez społeczeństwo i władze administracyjnych.
- Oczekiwania wobec sektora MEW - argumenty przemawiające za i przeciwko włączeniu rozwoju MEW do programów gospodarczych kraju (Program rozwoju Gospodarczego do 2030; Program dla Energetyki - 2020);
- Potencjał hydroenergetyczny dla MEW i metody jego oceny.
- Inwentaryzacja lokalizacji i istniejących piętnów dla MEW - zamawiający, możliwości i sposoby finansowania, potencjalni beneficjenci,
- Obecna polityka państwa wobec rozwoju MEW - dobre i złe strony aktualnych rozwiązań prawnych. Realne możliwości wprowadzenia korzystnych zmian w stosowanych przepisach.

W ramach sesji II

- Obiekty MEW w świetle wymagań Ramowej Dyrektywy Wodnej
- Oddziaływanie MEW na środowisko przyrodnicze i gospodarkę wodną - pozytywne i negatywne.
- Racjonalizacja hydroenergetycznej zabudowy cieków wodnych z punktu widzenia gospodarki wodnej i energetycznej.
- Maksymalizacja korzyści wynikających z instalowania MEW w określonej lokalizacji - możliwe płaszczyzny współpracy właścicieli MEW ze społecznościami lokalnymi i organizacjami pozarządowymi.

W ramach sesji III

- Zaplecze techniczne dla sektora MEW w Polsce - stan aktualny i pożądane kierunki rozwoju.
- Współpraca z lokalną siecią energetyczną - doświadczenia i wnioski.
- Dostęp potencjalnych inwestorów MEW do lokalizacji i istniejących piętnów. Zasadność udziału administracji państwowej na poszczególnych procesach inwestycyjnych.
- Problemy formalne, jakie zmuszony jest pokonać inwestor na etapie przygotowania i realizacji budowy MEW - propozycje zmian idących w kierunku uproszczenia procedur.
- Użytkowanie obiektów stopni wodnych - zasady współpracy z administracją rządową i i samorządową.

W ramach sesji IV

- Ocena funkcjonowania aktualnego systemu rozliczeń za dostarczoną energię elektryczną z OZE - pozytywne i negatywne oraz propozycje zmian.
- Ocena aktualnego systemu wsparcia ekonomicznego projektów inwestycyjnych.
- Formuła partnerstwa publiczno-prywatnego w warunkach regul rządzących gospodarką na szczeblu krajowym i regionalnym.
- Zasady ustalania priorytetów przy kwalifikowaniu projektów instalacji wykorzystujących odnawialne zasoby energii do wytwarzania energii elektrycznej. Zasady formułowania kryteriów konkursowych i przyznawania dotacji.

Program Forum

- 10:00 ÷ 11:00 Rejestracja uczestników (drobny poczęstunek)
- 11:00 ÷ 11:15 **OTWARCIE OBRAD**
- 11:00 ÷ 11:10 Wystąpienia Prezesa TEW oraz przedstawicieli TRMEW oraz IPIEO
- 11:10 ÷ 11:15 Informacja o ESHA i projekcie SHERPA
- 11:15 ÷ 12:00 **Sesja I: STAN ROZWOJU SEKTORA MEW I STOJĄCE PRZED NIM ZADANIA**
- 11:15 ÷ 11:30 Referat programowy i wprowadzenie do dyskusji
- 11:30 ÷ 12:00 Dyskusja plenarna
- 12:00 ÷ 12:15 *Przerwa*
- 12:15 ÷ 13:00 **Sesja II: MEW A GOSPODARKA WODNA, ŚRODOWISKO NATURALNE I SPOŁECZNE**
- 12:15 ÷ 12:30 Referat programowy i wprowadzenie do dyskusji
- 12:30 ÷ 13:00 Dyskusja plenarna
- 13:00 ÷ 13:15 *Przerwa*

Program Forum (c.d.)

- 13:15 ÷ 14:00 **Sesja III: UWARUNKOWANIA TECHNICZNE I ADMINISTRACYJNE SEKTORA MEW**
- 13:15 ÷ 13:30 Referat programowy i wprowadzenie do dyskusji
- 13:30 ÷ 14:00 Dyskusja plenarna
- 14:00 ÷ 14:15 *Przerwa*
- 14:15 ÷ 15:15 **Sesja IV: UWARUNKOWANIA EKONOMICZNE**
- 14:15 ÷ 14:25 Informacje o niektórych dostępnych mechanizmach wsparcia ekonomicznego projektów inwestycyjnych (Narodowa Strategia Spójności)
- 14:25 ÷ 14:40 Referat programowy i wprowadzenie do dyskusji
- 14:40 ÷ 15:10 Dyskusja plenarna
- 15:10 ÷ 15:15 *Przerwa*
- 15:15 ÷ 15:30 **ZAMKNIĘCIE OBRAD**
- 15:30 ÷ 17:00 Wspólny obiad

Miejsce obrad

Instytut Paliw i Energii Odnawialnych,
ul. Jagiellońska 55, 03-301 Warszawa

**Organizatorzy Forum**

Instytut Paliw i Energii Odnawialnej / EC BREC
Towarzystwo Elektrowni Wodnych
Towarzystwo Rozwoju Małych Elektrowni Wodnych

Patronat

Europejskie Stowarzyszenie ds. Małej Energetyki Wodnej

Komitet Organizacyjny

1. Magdalena Rogulska, IPIEO / EC BREC
2. Stanisław Gołębiowski, IPIEO / EC BREC
3. Stanisław Lewandowski, TEW / ENERGA ZEW
4. Katarzyna Trojanowska, TEW / ENERGA ZEW
5. Janusz Steller, TEW / IMP PAN
6. Henryka Stachowicz, TEW
7. Bogusław Kuba Puchowski, TRMEW

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Zgłoszenia

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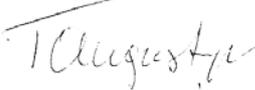
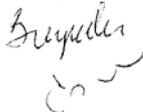
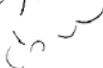
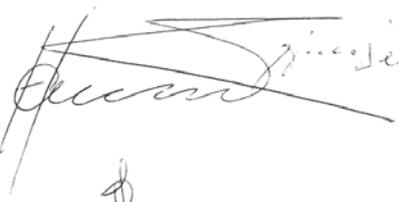
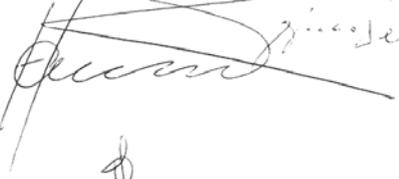
Appendix B

List of Participants

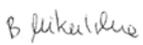
Lista uczestników seminarium

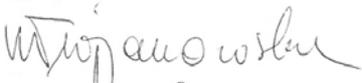
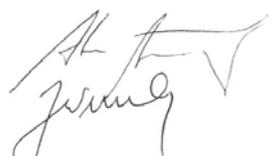
Krajowe forum polityki wspierania rozwoju MEW

Instytut Paliw i Energii Odnawialnej
ul. Jagiellońska 55, Warszawa, 11 września 2008

LP	IMIĘ I NAZWISKO	INSTYTUCJA	PODPIS
1.	Augustyn Tomasz	ITT Flygt Sp. z o.o. Warszawa	
2.	Bagiński Leszek	RZGW Warszawa	
3.	Bajorek Leszek	Zespół Elektrowni Wodnych Niedzica	
4.	Bartel Ryszard	Polski Związek Wędkarski Zarząd Główny Warszawa	
5.	Bazyliczuk Cezary	Elektrownia Wodna Sp. z o.o. Samociążek	
6.	Białek Tadeusz	Emeryt	
7.	Białkiewicz Krzysztof	Południowy Zakład Automatyki i Zabezpieczeń „Energiefekt” „Ruda Śląska	
8.	Bielawska Mała	Dyrektor Biura Ministra Rozwoju Regionalnego	
9.	Borodynko Jarosław	Dychowskie Przedsiębiorstwo Eksploatacji Elektrowni ELDEKS Dychów	
10.	Bubła Leon	Towarzystwo Elektrowni Wodnych	
11.	Chaberski Henryk	Zakład Remontowy Energetyki Gdańsk	
12.	Chmielewski Stanisław	Voith	
13.	Depowski Roman	Polski Związek Wędkarski Zarząd Główny Warszawa	
14.	Dubel Jan	Regionalny Zarząd Gospodarki Wodnej w Krakowie	
15.	Filipek Stanisław	Alternet Consulting Warszawa	
16.	Folcik Józef	ZEW Solina-Myczkowce S.A. Solina	

- | | |
|---------------------------|---|
| 17. Gołębiowski Stanisław | IPIEO |
| 18. Gramza Marek | Koszalińskie Elektrownie Wodne |
| 19. Gutowska Joanna | Dolnośląski Zarząd Melioracji i Urządzeń Wodnych we Wrocławiu |
| 20. Herder Janusz | Elektrownia Wodna Sp. z o.o. Samociążek |
| 21. Jagielska Julitta | Towarzystwo Elektrowni Wodnych |
| 22. Jakimiuk Stanisław | Wojewódzki Zarząd Melioracji i Urządzeń Wodnych Lublin |
| 23. Jamka Piotr | Regionalny Zarząd Gospodarki Wodnej w Krakowie. |
| 24. Kamonciak Andrzej | Energa ZEW Sp. z o.o. Straszyn |
| 25. Kiebasa Władysław | Towarzystwo Elektrowni Wodnych |
| 26. Kledyński Zbigniew | Politechnika Warszawska |
| 27. Kłalo Stanisław | NaMurBeton Stanisław Kłalo Warszawa |
| 28. Korkosz Grazyna | Dolnośląska Fabryka Maszyn Elektrycznych Sp. z o.o. Wrocław |
| 29. Król Dominik | Intop Intop LTD Gdynia |
| 30. Krzyzanowska Krystyna | Energoprojekt Warszawa |
| 31. Kujawski Jerzy | Małe Elektrownie Wodne S.C.
J.M.P Kujawscy Kościerzyna |
| 32. Lewandowski Stanisław | Energa ZEW Straszyn/ Towarzystwo Elektrowni Wodnych |
| 33. Makaro Tomasz | Energa ZEW Sp. z o.o. Straszyn |
| 34. Marchewka Jan | Śląski Zarząd Melioracji i Urządzeń Wodnych Katowice |
| 35. Michalczuk Dariusz | NaMurBeton Stanisław Kłalo Warszawa |
| 36. Michalczyk Agnieszka | NaMurBeton Stanisław Kłalo Warszawa |

37. Mikulska Beata	Ministerstwo Rolnictwa i Rozwoju Wsi Departament Rynków Rolnych Specjalista w Wydz. Energii Odnawialnych i Biopaliw	
38. Nadolny Adam	Elektrownia Wodna Sp. z o.o. Samociążek	
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40. Niewiadomski Jarosław	Energa ZEW Sp. z o.o. Straszyn	
41. p. Olbrysz		
42. Oleszkiewicz Jadwiga	Ekopartner	
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44. Rogało Wiesław	Intop LTD Gdynia	
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47. Sitko Adam	Intop Intop LTD Gdynia	
48. Skoczko Piotr	Energa-Operator S.A. Gdańsk	
49. Sobolewski Tadeusz	Emeryt	
50. Spoz Jerzy	Emeryt	
51. Spytek Jarosław	ITT Flygt Sp. z o.o. Warszawa	
52. Stachowicz Henryka	Towarzystwo Elektrowni Wodnych	
53. Stanke Andrzej	Energa ZEW Sp. z o.o. Straszyn	
54. Steller Janusz	Instytut Maszyn Przepływowych PAN Gdańsk	
55. Stolarz Piotr	Elektrobudowa SA Katowice	
56. Tersa Andrzej	Energa ZEW Sp. z o.o. Straszyn	

57.	Trojanowska Katarzyna	Energa ZEW Sp. z o.o. Straszyn	
58.	Tużnik – Kosno Edyta	Ministerstwo Środowiska	
59.	Walko Piotr	ZEW Solina-Myczkowce S.A. Solina	
60.	Wawrzyniak Maciej	Dolnośląska Fabryka Maszyn Elektrycznych Sp. z o.o. Wrocław	
61.	Wiktoro Wiktor	ZEW Solina-Myczkowce S.A. Solina	
62.	Wilk Sylwia	Ministerstwo Rozwoju Regionalnego	
63.	Wiśniewski Wiesław	Polski Związek Wędkarski Zarząd Główny Warszawa	
64.	Wójcik Artur R.	Z-ca Dyrektora ds zasobów wodnych RZGW Gliwice	
65.	Wójcik Józef	Zespół Elektrowni Wodnych Niedzica	
66.	Wygoda Dorota	Dolnośląska Fabryka Maszyn Elektrycznych Sp. z o.o. Wrocław	
67.	Zabuński Lesław	Instytut Budownictwa Wodnego PAN Gdańsk	
68.	Żmuda Kazimierz	Ministerstwo Rolnictwa i Rozwoju Wsi Departament Rynków Rolnych, Z-ca Dyrektora Departamentu	
69.		Instytut Budownictwa Wodnego PAN Warszawa	
70.	<i>Dąbrowski Henryk</i>	Wielkopolski Urząd Melioracji i Urządzeń Wodnych w Poznaniu, Rejonowy Oddział w Pile	
71.		Ministerstwo Rozwoju Regionalnego	
72.		ADAM SOŁOŃSKI POKŁ. ZARZ. MELIORACJI I URZ. WOD.	
73.		SEBASTIAN NOJEC ENERGA SA	
74.	GOLATOWSKA JOANINA	TOWARZYSTWO ROZWOJU MEW	
75.	LANTECKI PIOTR	TOWARZYSTWO ROZWOJU MEW	
76.	ANDRZEJ WITA	INSTYTUT METEOROLOGII I GOSPODARSTWA WODNEJ	
77.	MICHAŁ CERAŃ	INSTYTUT METEOROLOGII I GOSPODARSTWA WODNEJ	

Bednarczyk Stefan, Politechnika Gdanska
Wroblewski Jon RZGW - Gdansk
Szamowski Andrzej Politechnika Warszawska

Oleszkiewicz Edward EN Samocielnik.

Kwanke Jacek EN

Dawsonski Guyon EW. Samocielnik Oddzial PTSTY. *Gu*

Przekwas Kuczycki BIER Energooprojekt *Pr*

Kowalczyk Kazimierz — cc — cc — *cc*

Mazur Mariusz Instytut Energetyki Oddzial Gdansk *ll ll*

Slupiarke Ewa Gupchik Wodna zupelnosc
Toma Tamas "Pracownicy"

Appendix C

Final Programme

OPENING OF THE FORUM

Magdalena Rogulska (EC BREC),
Stanisław Lewandowski (TEW), *Piotr Lantecki* (TRMEW)

Welcome speeches

Janusz Steller (TEW)

Information on the SHERPA programme

SESSION I

SHP SECTOR IN POLAND - STATE OF THE ART AND CHALLENGES

Janusz Steller, Stanisław Lewandowski, Andrzej Tersa (all: TEW)

- a keynote lecture

Problems proposed for discussion:

- SHP sector as seen by Polish society and administrative authorities;
- Expectations related to the SHP sector – arguments for and against including the SHP sector in the Polish economic development programmes (*Economic Development Programme up to 2030; Power Industry Development Programme – 2020*);
- SHP potential and the methods of its assessment;
- Identification of potential SHP locations, including existing barrages – ordering institution, financing possibilities and methods, potential beneficiaries;
- Current state policy on SHP development – advantageous and disadvantageous aspects of the existing legislation. Realistic possibilities to introduce advantageous changes in the legislation.

SESSION II

SHP AND WATER MANAGEMENT, NATURAL AND SOCIAL ENVIRONMENT

Wiesław Wiśniewolski (Polish Angling Association)

Small Hydropower Plants – Are they harmful for the environment?Problems proposed for discussion:

- SHP sector in context of the Water Framework Directive;
- SHP interaction with the natural environment and water management sector – advantages and disadvantages;
- Optimum planning of hydropower cascades in context of water management and hydropower purposes;
- Maximisation of the advantages following from SHP installation in a specified location – possible collaboration platforms of SHP owners with local societies and non-government organizations.

SESSION III/IV

TECHNICAL, ADMINISTRATIVE AND ECONOMIC CONDITIONS FOR SHP DEVELOPMENT

Lukasz Kowalski (IP&EO/EC BREC)

Assessment of the current system of investment projects economic support

Magdalena Mielczarska-Rogulska (IP&EO/EC BREC)

European funds for renewable energy sources.**Operational Programme “Infrastructure and Environment”, Actions 9.4 and 10.3**Problems proposed for discussion:

- Technical support for the SHP sector in Poland
 - the current state and the desirable development directions.
- Collaboration with the local grids – experience and conclusions.
- Access of potential SHP investors to the potential SHP erection sites and the existing weirs. Justification for the state administration participation in specified stages of an investment process.
- Formal problems to be solved by an investor when preparing and executing a small hydropower plant erection project – proposals for changes aimed at simplifying the procedures.
- Running the water stages
 - collaboration principles with state and local administration.
- Assessment of functioning of the current accounting system for the energy delivered from RES – positive and negative aspects, modification proposals.
- Assessment of the current economical support system of investment projects.
- Public/Private Partnership Formula under rules governing economy at the national and local level.
- Principles of establishing priorities when qualifying projects of installations utilising the renewable energy resources for electrical energy generation. Principles for formulation of competition criteria and donation awarding.

SESSION V

CLOSURE OF THE DEBATE

Information on the processing of proceedings and final conclusions