



EUROPEAN SMALL HYDROPOWER ASSOCIATION

Small Hydropower Policy and Market Development in Europe

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What is ESHA?

- Non-profit Organisation, founded 1989
- Headquarters in Renewable Energy House in Brussels
- Founding member of EREC, the European Renewable Energy Council
- Members in mostly all EU countries and worldwide
 - National SHP associations
 - SHP industry (manufacturers, etc.)
 - Scientific community
 - Individual members



ESHA Objectives

- Promotion of SHP with an installed capacity up to 10 MW
- Lobbying for SHP on European level (European Parliament, European Commission, etc)
- Information dissemination and awareness raising for SHP issues- Hydroenergia conference

ESHA activities

- Lobbying for SHP interests (policy position papers)
- Information dissemination on SHP issues
 - Newsletter, articles
 - Hydroenergia conferences (Crieff, Scotland 7-9 June 2006)
 - SHP seminars
 - Website www.asha.be
- Studies on SHP issues
- International cooperation IN-SHP (China), TERI (India)
- European projects (in partnership with other organisations and EREC)

ESHA projects

- Thematic Network on Small Hydropower (TNSHP)
- SPLASH- Spatial Planning and Local Agreements for Small Hydro
- SINERGY project with China
- SHYCA- Promotion of Small Hydro Power Retrofitting and Implementation in the Caucasus and Carpathian Region-



European Policy framework for renewables

Small hydropower is under the European policy for RES

Art 2. RES-E Directives: Renewables are; wind solar, geothermal, wave, tidal, **HYDROPOWER**, biomass, landfill gas, sewage treatment plants gas and biogas.



Why Renewables?

- Security of supply
- Protection of environment - Kyoto Commitments
- Energy mix for the future
- New innovative business sector



EU Policies & Targets

RES White Paper (1997)

To double the share of renewable energy from 6% to 12% of gross energy consumption in Europe (EU-15) by 2010

Projections for each renewable energy technology were made. **For small hydropower it means: 14 GW in 2010 of installed capacity. +4.500 MW regarding 9.500 MW installed in 1995**

White Paper Small hydropower scenario for 2010- EU15	
Feature	2010 Scenario
Installed capacity	+ 4,500 MW
Electricity generation	55 TWh
Gross energy consumption	4.75 Mtoe



EU Policies & Targets

- **RES Electricity Directive (2001)** To establish a framework to increase the share of renewables electricity from **14% to 22%** of gross electricity consumption by **2010**
- **11% in the New Member States (EU-10)**

TARGETS	RES-e %, 1999	RES-e %, 2010
EU -15	13.9	22
EU-10 ⁴	5.4	11.1
EU - 25	12.9	21



Principles of the renewable electricity directive 2001/77/EC

Promotion of electricity from renewable energy sources among those **small hydropower**, through:

- **Quantified national targets** for consumption of electricity from renewable sources of energy
- **National support schemes** plus, if necessary a harmonised support system across Europe
- **Simplification of national administrative procedures** for authorisation
- **Guaranteed access** to transmission and distribution of electricity from renewable energy sources

National Indicative Targets

- MS should set National Targets taken into account the reference value in the Annex of the Directive
- This targets have to be consistent with:
 - White Paper Target
 - with the RES-e Directive Target
 - and with National commitments, Kyoto protocol etc.
- MS inform the Commission how they have set the targets and how they intent to achieve them

Support mechanisms



- Conventional energy sources do not pay their full external costs.
- To facilitate an accelerate RES-SHP in particular Governments have a range of policy options at their disposal (feed in tariff, green certificates, tenders, etc.)
- Feed in tariff more used model in EU-15 and EU-10;
 - It guarantees a pay back rate for a period time
 - Security for investments
 - Spain, has a feed in tariff for the electricity generated SHP plants with an installed power from 10 to 50 MW, although the premium decreases with the increase of capacity.
 - Austria increases the support to the smaller plants by decreasing the value of the premium when production increases. where the first GWh generated on a new plant is paid at 5.96 cts €, the next 3 GWh at cts €4.58 and once exceeded the 24 GWh at 3.31 cts €



Administrative procedures

- MS should reduce regulatory barriers for RES by streamlining the authorisation process
- Ensure that the rules are objective and transparent
- Ensure that the rules take into account particularities of each technology

Access to the grid

- MS should ensure that transmission and distribution system operators guarantee the transmission & distribution of electricity produced by RES
- To require TSO and DSO to provide any new RES-E producer wishing to be connected with a comprehensive and detailed estimate of the costs associated with the connection
- To ensure that the charging of transmission and distribution fees does not discriminate against RES-E
- They may provide also priority access to the grid

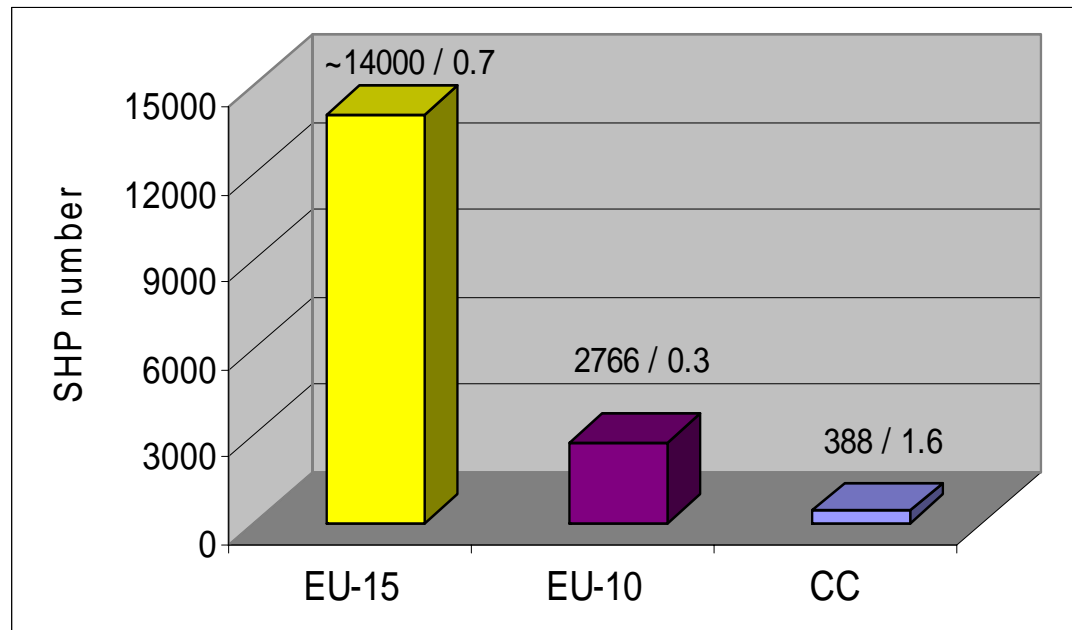


Small hydropower Market development in Europe

RE market development depends on a coherent, predictable, supportive political & legal framework.



Market development- SHP plants in operation



The average plant size is:

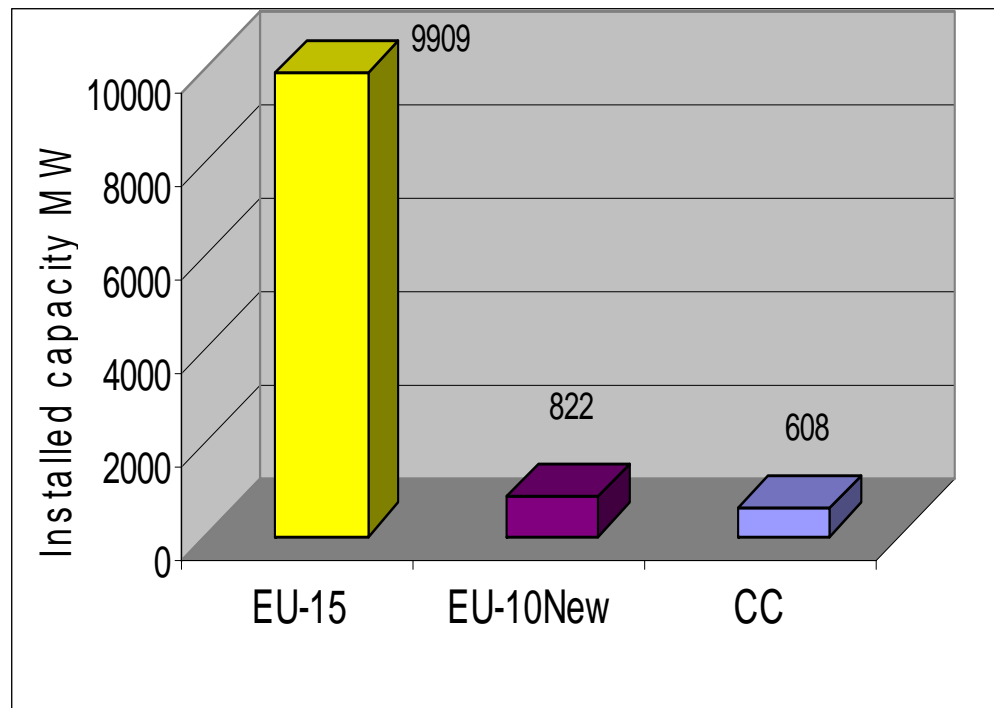
700 KW EU-15

300MW EU-10

1.6 MW in EU-CC.

ESHA, 2004

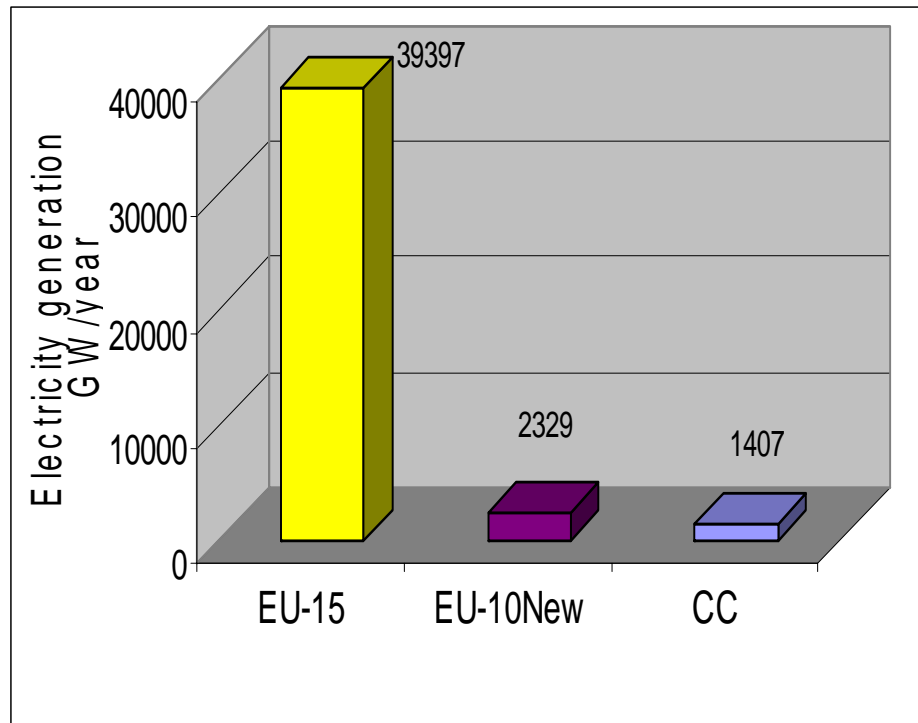
Market development- SHP installed capacity



The total installed capacity of SHP plants in New Member States and CC is at least 10 times smaller than in the former EU-15.



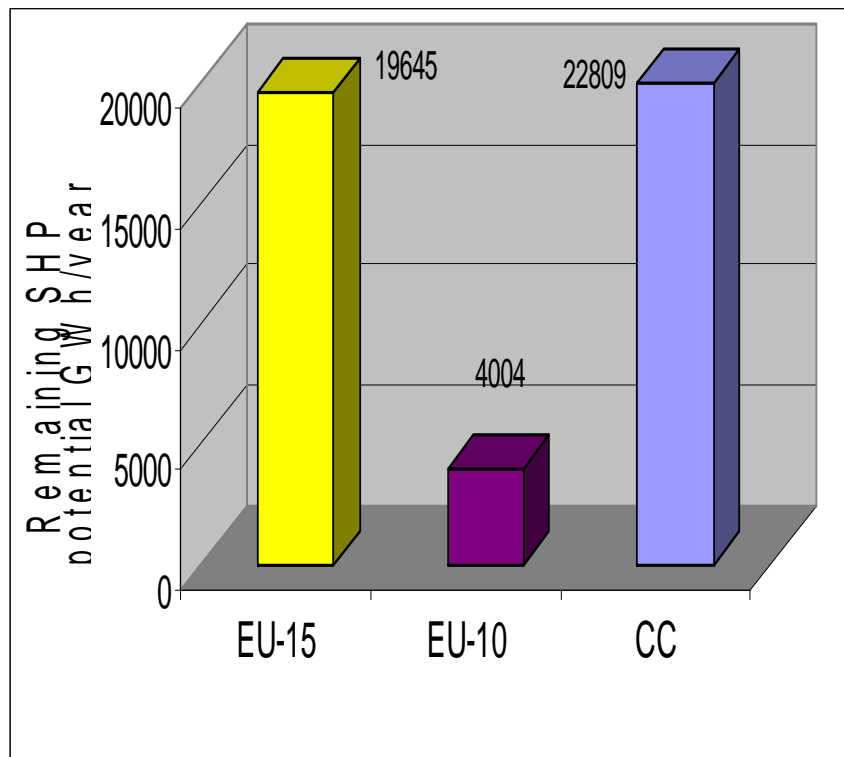
Market development- Electricity generation



Electricity generation by SHP plants in the former EU-15 is considerably higher by comparison to the EU-10 and the CC; production is nearly 15 times bigger than in the EU-10 and 30 times than in the CC

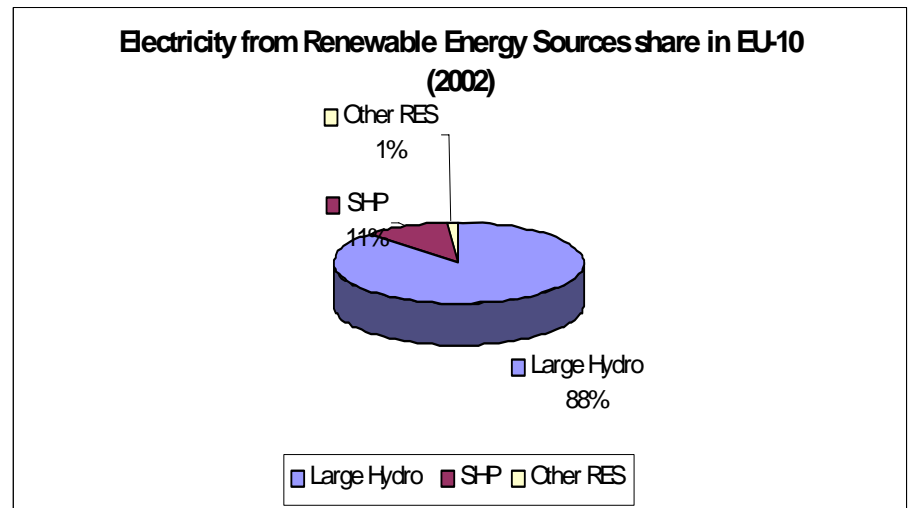
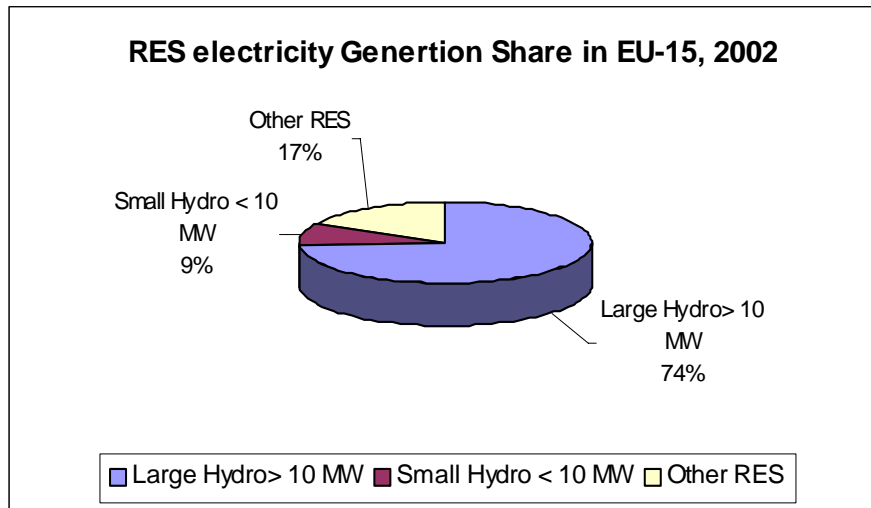


Market development- Potential



- The remaining economically feasible potential amounts to some 20 TWh/year in EU-15.
- 26 TWh/year in the New Members States and CC.
- The majority of this potential (roughly 80% or 19 300 GWh/year) is located in Turkey.
- Poland and Romania rank second, having indicated potential 6 to 10 times lower than that of Turkey

Market development- SHP in the renewable energy mix



- SHP only represented 9% of the RES electricity generation in the EU-15 in 2002. This contribution is similar to wind and lower than biomass
- In almost all New MS and CC hydropower is the dominant source of energy in RES-E production

Market development- SHP

economic and costs

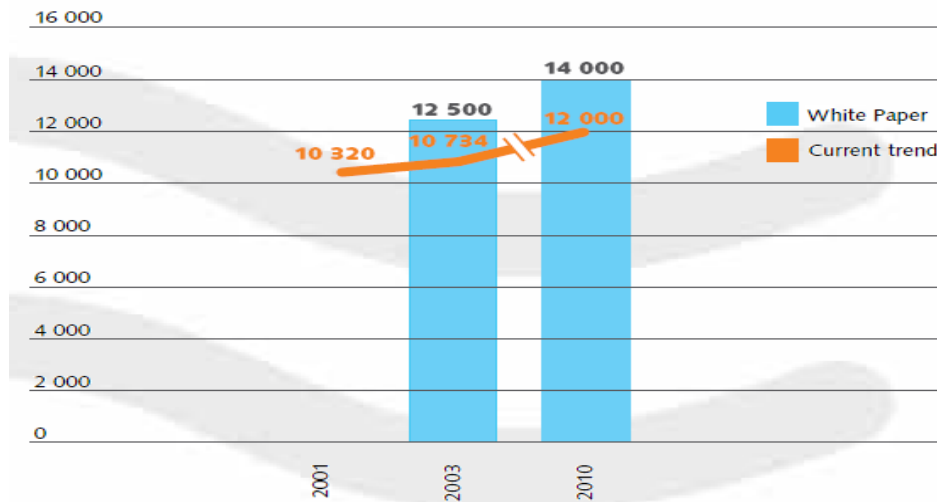


Country	Average SHP production costs €cents/kWh	Range Investment Costs €/kW	Average O&M costs (€cents/kWh)
Spain	3.5 - 7	1500	0.9
Austria	3.6 – 14.5	2500	0.4
Sweden	4 – 5	1800-2200	1.4
Czech Republic	2-3	660-2000	-
Lithuania	2.5-3	2200-2500	-
Poland	3	500-1200	-

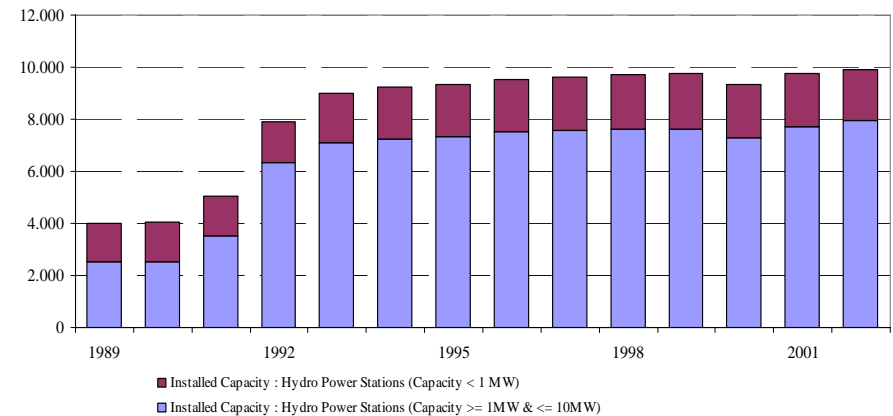
- Power production costs for SHP-generated electricity will not fluctuate much in the future for being a mature technology. Further development will therefore focus on installation costs.
- Two potential areas of improvement exist, the first concerning cost reductions for heads smaller than 15 meters, the second for developments supplying less than 250 kW.
- Large proportion of the potential in Europe involves low-head plants,



Market development- projections for the future



Src: EurObserv'ER 2004



Following the annual growth rates of 2%/year in the last 10 years, the European SHP installed capacity would be around 12 000 in 2010. This figure is clearly far short of the European Commission White Paper target of 14000 MW.



Market development - Barriers

- Since the RES-E Directive is in force a further development of SHP has taken place.
- Due to the implementation of support schemes, which establish more favourable tariffs for the electricity produced by SHP
- However the real barriers the SHP has to cope with are:
 - Administrative and
 - Environmental
- RES- e Directive is under revision ESHA and EREC are lobbying for removal administrative barriers, give grid access priority to renewables among other issues.

First Conclusions



- Still SHP potential in Europe
- SHP have tangible economic, ecological and social benefits.
- Policy framework crucial for SHP development.
- Still some barriers- will not reach the target



Necessary Conditions and Solutions

In European policy:

- Establishment of legally binding targets
- Raise Awareness
- Reduce administrative barriers
- Change of subsidies policy
- Increase R&D for renewables and grid integration



Necessary Conditions and Solutions

And for outside Europe:

- Combine energy and development policy
- Shift towards RES in international financial institutions
- International collaboration a must
- CDM an opportunity



European Support programmes

- **Research Framework programmes:**
 - FP5- (1998-2002), FP6- (2002-2006)
 - FP7-(2007-2013), EREC and ESHA are lobbying for renewables budget line there.
 - Thematic priorities among others: sustainable energy
 - Horizontal priorities: INCO: among others Specific International Cooperation
 - Managed by DG TREN and DG RESEARCH
 - http://europa.eu.int/comm/research/fp6/index_en.html



European Support programmes

- **Intelligent Energy for Europe (EIE)**
 - is the Community's support programme for non-technological actions in the field of energy efficiency and renewable energy sources. (2003-2006)
 - COOPENER: cooperation with developing countries aiming at RES and E energy efficiency
 - Africa, Asia, Latin America and the Pacific
 - Manage by EIE Agency
 - http://europa.eu.int/comm/energy/intelligent/index_en.htm
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European Support programmes



- TACIS: Launched by the EC in 1991, the Tacis Programme provides grant-financed technical assistance to 12 countries of Eastern Europe and Central Asia:
- Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan)
- key areas;
 - Sustainable management of natural resources (climate change)
 - Promoting trade and investments flows (in the field of energy among other fields)
- Managed by DG RELEX and EUROPAID
- All the tenders and proposals are published on a website, consult it regularly in order to be informed in due time of their publication :
<http://europa.eu.int/comm/europeaid/cgi/frame12.pl>



Thank you for your attention

For more information

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