

Water Framework Directive and Heavily Modified Water Bodies Common Implementation Strategy Workshop

SMALL HYDROPOWER PERSPECTIVE

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SMALL HYDRO DEFINITION

“Hydroelectric power plant with an installed (maximum) capacity up to 10 MW”

Key conclusion nr. 12 – Berlin 2007:

“Small and large hydropower should be treated equally with regard to promotion. Promotion should be based on basin-specific as well as site-specific WFD criteria and global environmental criteria (climate change) and not on the size of the hydropower plant per se”



Do small hydro and hydro in general heavily modify WBs?

Difficult to say....



DESIGNATION OF HMWB

		SHPs nr	HMWB		HMWB_ HP	%_HP/ TOT	SHPs/H MWB_ HP
			%	Nr	Nr	%	
	EU-15						
90% of EU-15 SH	Austria	2.485	8%	580	293	51%	8,5
	France	1.717	16%	650	119	18%	14,4
	Germany	8.000	35%	3.428	358	10%	22,3
	Italy	1.799	NA	NA	NA	NA	NA
	Spain	1.119	19%	874	140	16%	8,0
	Sweden	1.869	4%	499	369	74%	5,1
	EU-12						
80% of EU-12 SH	Bulgaria	102	30%	214	94	44%	1,1
	Czech Rep.	1.389	21%	245	71	29%	19,6
	Poland	676	NA	NA	NA	NA	NA
	Romania	221	48%	126	43	34%	5,1
	Norway	NA	17%	2.329	700	30%	NA



DESIGNATION OF HMWB

Are all those SHPs located in HMWBs?

Probably not, but we don't care so much about it...

Because we are looking to future and to figures and not to still not so clear objectives

And the starting point counts for almost nothing...



DESIGNATION OF HMWB

HMWB



GEP

Complete loss of use !!
Reduction of peak load production
Reduction of security of electricity supply
Stop of base load electricity production
% of loss of energy generation
Hydro-power reduction (**with more than 30%/yr!!**)
Increase in operation costs

WB



GES

Ecological status



DESIGNATION OF HMWB

Substantial changes in character of water bodies

Impact-related Pressure-related Use-related Mix



“Great diversity of criteria used by the MS”



Risk of lack of
homogeneity

Harmonisation of
approaches and of
thresholds needed



DESIGNATION OF HMWB

Significant adverse effects of measures on water use or the wider environment

Complete loss of use !!

Any reduction of peak load production including loss of ancillary services

Any reduction of security of electricity supply on regional level or national level

Stop of base load electricity production

% of loss of energy generation

Hydro-power reduction (**with more than 30%/yr!!**)



DESIGNATION OF HMWB

Significant adverse effects of measures on water use or the wider environment

The majority of the surveyed MS responded that they have not developed specific criteria on significant adverse effects to help prepare the draft river basin management plans.

Why? Should they? Must they?

What is “significant”? Complete loss of use, 30%, 15%, 5%...?

➔ Incorporation of the external costs and benefits analysis needed

➔ Risk of lack of homogeneity

➔ Harmonisation of approaches and of thresholds needed



DESIGNATION OF HMWB

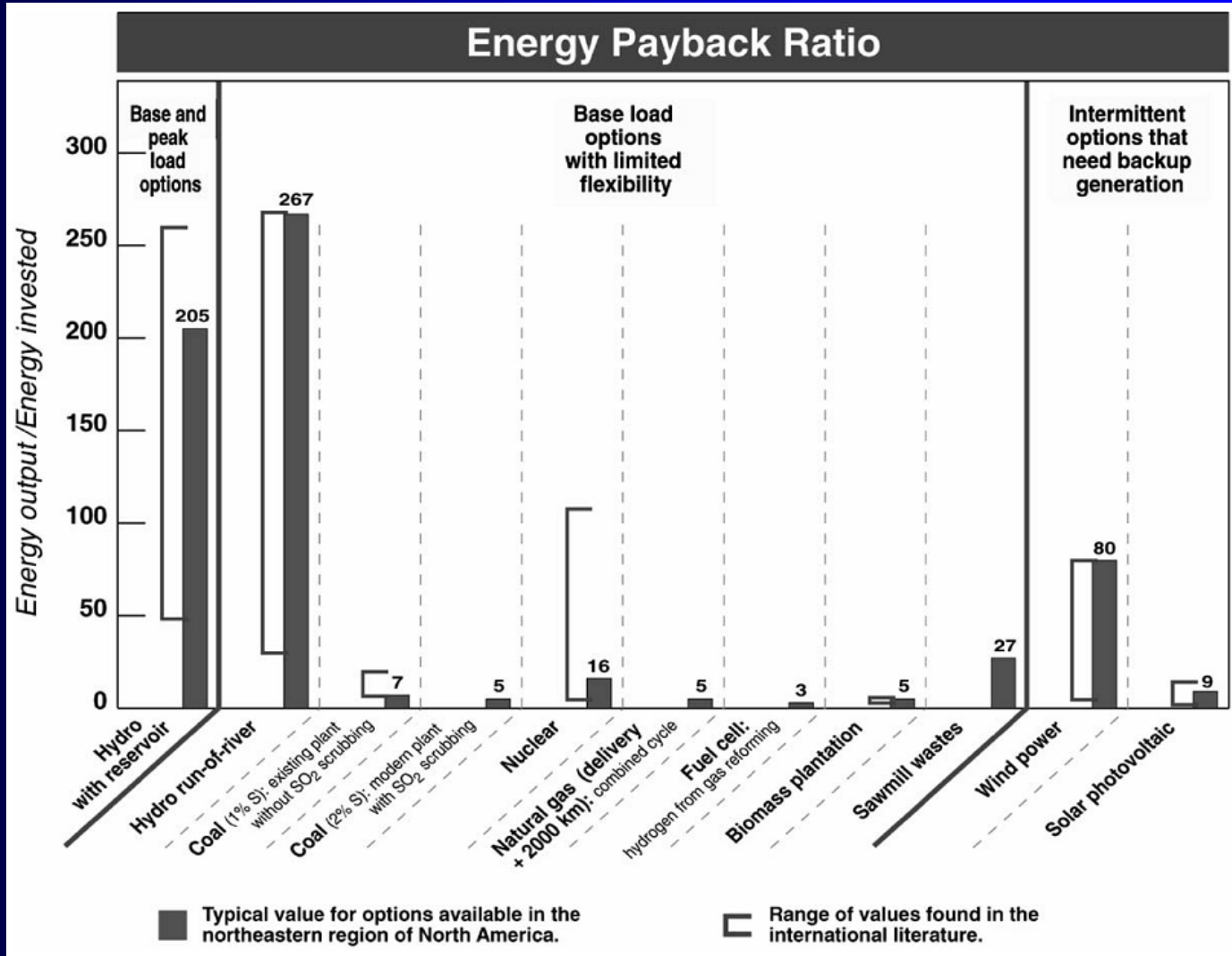
Better environmental options?

- Replacement by other renewable energy (national level)
 - *Difficult with another RES with the same characteristics (continuity, predictability, storage, etc....)*
- Replacement of peak load production/ ancillary services /security of electricity supply by other renewable energy
 - *Which other RES?*
- Power generated by wind mills or other renewable energy sources.
 - *See above*
- Building of NPS, other renewable resources (small HPP)
 - *That's good!*
- National studies show that hydropower has a) the lowest cost per unit among renewable energy sources today and b) the lowest environmental costs as compared with energy production based on biomass, gas production and coal-fired power
 - *That's good!*



DESIGNATION OF HMWB

Better environmental options?



DEFINITION OF GEP

MS scattered and in open order to the goal....

Lack of transparency in definition of GEP in many MS

Source of risk of un-homogeneity of treatment among MS:
two basic different approaches *likely* (?) to get comparable
final results in definition of GEP

Key conclusion (NO): *the most important potential measure was environmental flow with adverse effect on use (power production), independent of approach.*

➡ Risk of lack of
homogeneity

➡ Harmonisation of approaches
and of thresholds needed



MEASURES

MS scattered and in open order to the goal....

Exemptions:

Extension of deadlines: Yes

Less stringent objectives: Not at all

No exemptions at all

➡ Risk of lack of
homogeneity

➡ Harmonisation of approaches
and of thresholds needed



CONCLUSIONS

Definitions of fundamental terms (Significant, less stringent, GEP), is still too different from MS to MS

Choice of different approaches must lead to the same conclusions

Harmonisation of approaches and of thresholds needed

Definition of measures and measurement of their effectiveness must be univocal

Final question: in which extent the implementation of new hydro is possible within HMWBs?



THE END

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Contribution of RES to total final energy consumption (Mtoe)

Type of energy	2005		2006		Projection 2010		Targets 2020	
	Eurostat	%	Eurostat	%		%		%
Final Energy Consumption ¹ (Trends to 2030) [*] (Combined RES and EE) ^{**}	1,211.5		1,214.8		1,272		1,378 1,266	
Wind	6.06	0.50	7.05	0.58	15.13	1.19	41	3.0-3.2
Hydro ²	29.82	2.46	30.71	2.53	30.95	2.43	33	2.4-2.6
Photovoltaic	0.13	0.01	0.22	0.02	1.72	0.14	15.5	1.1-1.2
Biomass	67.51	5.57	73.11	6.02	102.60	8.07	175.5	12.7-13.9
Geothermal	1.10	0.09	1.16	0.10	3.86	0.30	9.4	0.7
Solar Thermal	0.68	0.06	0.77	0.06	1.5	0.12	12	0.9-1.0
Solar Thermal elect.	0		0		0.16	0.02	2.2	0.2
Ocean	0		0		0.08	0.01	0.4	0.03
Total RES	105.3	8.69	113.02	9.30	156.0	12.3	289	20.9-22.8

