



27-28.07.2011

# LP: HES-SO

## WP6.2 Implementation of the strategy on CLD

Presentation within the PP-Meeting 27<sup>th</sup> & 28<sup>th</sup> July 2011

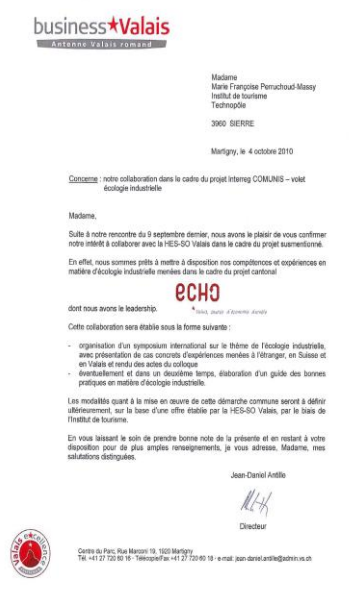
AF-definition: Action 6.2: HES-SO & SEREC implement the CLD strategy together with the 3 pilot cities and the economic steering authority of the canton Valais (SDE) demonstrating the improved efficiency of the enhanced inter-municipal cooperation.

# Reminder of implementation objectives

Figure 1, Commitment of the "Antenne régionale du développement économique du Valais Romand"

Organizing an international symposium on the theme of industrial ecology, with presentation of case studies from Switzerland and abroad.  
Record of the colloquium proceedings.

Figure 2, Objective of implementation of HES-SO





- **13.01.2011: Meeting in Martigny**
- **Participants:** COMUNIS-responsibles from HES-SO, Antenne régionale du développement économique du Valais romand
- **Contents :** Following the decision to organize the international symposium on industrial ecology, following questions were raised: who does what? what could be the topics covered? What is actually the concept of this symposium? It was decided to prepare a first draft of the program, contact Mr. Erkman, and clarify the available dates for this symposium.



- **23.02.2011: Meeting in Sierre**
- **Participants:** COMUNIS-responsibles from HES-SO, Antenne régionale du développement économique du Valais romand
- **Contents :** Attempt to clarify the registration procedure on the Internet (Amiando) and the participation of Mr. Délétroz group of students for the preparation of this symposium in the option "Event Management". New version of the program following Erkman's responses, first budget outline.



## 30.03.2011: Meeting in Martigny

- **Participants:** COMUNIS-responsibles from HES-SO, Antenne régionale du développement économique du Valais romand
- **Contents :** Presentation of reflexion and action tracks for industrial ecology in the "breakfast ECHO". At the request of Mr. Erkman it was decided that the symposium won't be held in December as originally planned. The final date is to be announced later. The order and the duration of interventions is revised. Cultural visits are removed. It is planned to seek the presence of Doris Leuthard - Head of the Department of the Environment, Transport, Energy and Communications - for the opening of the symposium. The budget should be adjusted accordingly, once the name and origin of the speakers is known.

- Industrial Ecology Symposium
- 19-20 January 2012
- Aula François-Xavier Bagnoud
- HES-SO Valais - Route du Rawil 47 1950 Sion
- Hotels : des Vignes, Ibis, Elite, [www.sion.ch](http://www.sion.ch)



- The International Symposium is organized jointly by Business Valais, HES-SO Valais, UNIL
- The program will include keynote speeches by the Swiss Federal Minister - Energy and Transport, Mrs. Doris Leuthard and Valais State Councilor J.-M. Cina.
- Prof. Suner Erkmann from UNIL will select industry and academic keynote speakers. [www.icast.org](http://www.icast.org)
- Dr. Marie-Françoise Perruchoud, from ITO - HESSO will be leading some panels. Included in the two-day event will be a field trip to industrial sites.
- Students enrolled in an event class at the HES-SO will assist in the organization of the symposium, under the leadership of Prof. Nicolas Délétroz.



Regionalentwicklung  
Vorarlberg





27-28.07.2011

# **LP: HES-SO**

## **WP5.2 Cost-benefit analyses and environmental assessments for CLD**

Presentation within the PP-Meeting 27<sup>th</sup> & 28<sup>th</sup> July 2011

AF-definition: Action 5.2: HES-SO & BuP: methodological input for carrying out cost-benefit analyses in order to compare the business-as-usual-scenario with models of an established CLD.



**Table I** Indicator standards for sector-integrated eco-industrial parks (EIPs) in China

Item	No.	Indicator	Unit	Value
Economic development	1	Added industrial value per capita	10,000 ¥/p	≥15
	2	Growth rate of added industrial value	%	≥25%
Material reduction and recycling	3	Energy consumption per added industrial value	SCE/10,000 ¥	≤0.5
	4	Fresh water consumption per added industrial value	m <sup>3</sup> /10,000 ¥	≤9
	5	Industrial wastewater generation per added industrial value	t/10,000 ¥	≤8
	6	Solid waste generation per added industrial value	t/10,000 ¥	≤0.1
	7	Industrial water reuse ratio	%	≥75%
	8	Solid waste reuse ratio <sup>a</sup>	%	≥85%
	9	Middle water reuse ratio <sup>b</sup>	%	≥40%
Pollution control	10	COD loading per added industrial value	kg/10,000 ¥	≤1
	11	SO <sub>2</sub> emission per added industrial value	kg/10,000 ¥	≤1
	12	Disposal rate of dangerous solid waste	%	100%
	13	Centrally provided treatment rate of domestic wastewater	%	≥70%
	14	Safe treatment rate of domestic rubbish	%	100%
	15	Waste collection system	Yes/no	Available
	16	Centrally provided facilities for waste treatment and disposal	Yes/no	Available
	17	Environmental management systems	Yes/no	Established, certified according to ISO 14001
Administration and management	18	Extent of establishment of information platform	%	100%
	19	Environmental report release	Yes/no	1 issue/year
	20	Extent of public satisfaction with local environmental quality	%	≥90%
	21	Extent of public awareness degree with eco-industrial development	%	≥90%

Note: One cubic meter (m<sup>3</sup>, SI) ≈ 1.31 cubic yards (yd<sup>3</sup>). One metric ton (t) = 10<sup>3</sup> kilograms (kg, SI) ≈ 1.102 short tons. SCE = standard coal equivalent energy ¥ is the symbol of Chinese currency, RMB. As of 21 July 2008, US\$1 equals 6.83 RMB, and one Euro equals 10.83 RMB. COD = chemical oxygen demand; SO<sub>2</sub> = sulfur dioxide.

<sup>a</sup>Reuse in this context means direct reuse of discarded products, such as printing on the reverse of once-printed paper and reuse of some solid wastes (with basic treatment), such as cleaning polyethylene terephthalate (PET) bottles and glass containers for refilling.

<sup>b</sup>Middle water is a Chinese term for the recyclable treated wastewater from wastewater treatment plants. This indicator does not need to be assessed if there is no water treatment plant in the industrial park.

**Table 2** Indicator calculation and explanation

No.	Calculation formula	Explanation
1	$\frac{\text{AIV}}{\text{total employees at the end of the year}}$	AIV: Annual added industrial production value
2	$\frac{\text{AIV examination year} - \text{AIV last year}}{\text{AIV last year}}$	
3	$\frac{\text{total energy consumption}}{\text{AIV}}$	Energy consumption includes coal, electricity, oil, and other energy consumption (including energy consumption for both heating and cooling). Different energy sources are converted to standard coal equivalent (SCE) according to the coefficients prepared by the National Statistical Bureau.
4	$\frac{\text{industrial freshwater consumption}}{\text{AIV}}$	Industrial freshwater use for production and living within the enterprises, equal to the sum of tap water and self-provided water (e.g., wells within the company). If the domestic wastewater is not blended with the industrial wastewater, then water consumption for living should not be included.
5	$\frac{\text{industrial wastewater generation}}{\text{AIV}}$	Industrial wastewater generation does not include water obtained from cascading <sup>a</sup> and domestic wastewater from residents living in the park. Recycled wastewater treated by enterprises should be included.
6	$\frac{\text{industrial solid waste generation}}{\text{AIV}}$	Solid, semisolid, and high-density liquid waste, including smelt residues, fly ash, bottom ash, coal gangue, dangerous waste, gangue, and radioactive wastes.
7	$\frac{\text{industrial repetitive water use } Q}{\text{industrial water consumption}}$	Industrial reuse water includes water that is recycled or cascaded. Industrial water consumption includes water consumption for both industrial and living purposes.
8	$\frac{\text{industrial solid waste integrated utilization } Q}{\text{generation } Q + \text{reserves utilization } Q}$	Industrial solid waste integrated use includes reuse, recycling, and incineration. <i>Industrial solid waste</i> is defined to include all kinds of nondomestic, nondangerous solid wastes generated by industries. <i>Reserved utilization</i> refers to use of wastes from prior year's production, reserved within industrial depots.
9	$\frac{\text{middle water } Q}{\text{effluent from treatment plants}}$	<i>Middle water<sup>b</sup> reuse</i> means the wastewater treated through tertiary treatment. Such water comes from local wastewater treatment plant and could be reused within the park.
10	$\frac{\text{industrial COD emission } Q}{\text{AIV}}$	The amount of chemical oxygen demand (COD) loading includes COD loading both from companies and wastewater treatment plant.
11	$\frac{\text{industrial SO}_2 \text{ emission } Q}{\text{AIV}}$	

Table 2 Continued

No.	Calculation formula	Explanation
12	$\frac{\text{dangerous industrial waste disposal } Q}{\text{dangerous industrial waste generation } Q}$	Dangerous industrial wastes include those toxic and hazardous wastes as defined by the national environmental standards.
13	$\frac{\text{sec-domestic waste water } Q}{\text{domestic waste water in built-up area}}$	Ratio of total amount of treated domestic wastewater (after secondary treatment) to amount of domestic wastewater generation.
14	$\frac{\text{decontamination } Q \text{ of urban refuse}}{\text{urban refuse clean-up } Q}$	Ratio of total amount of safely treated domestic rubbish to total amount of domestic rubbish.
15	Waste collection system	Yes or no
16	Facilities for all waste treatment and disposal	Yes or no
17	Environmental management system	This means that the park management should pass ISO 14001 certification and have an emergency response plan.
18	Extent of information platform establishment	Indicates whether the park has established a comprehensive information platform. Four modules should be established, including intranet module for electronic administration, module for releasing pollution emission information, module for releasing solid waste information, and module for providing information with cleaner production and eco-industrial development. Each module has 25% factor, and the four modules should total to 100%.
19	Environmental report release	Annual environmental report should present information on park-level environmental quality, total reduction of different wastes and energy consumption, environmental monitoring measures and outcomes, waste treatment, and disposal data.
20	Public satisfaction with local environmental quality	This indicator is calculated on the basis of a questionnaire-based survey. Number of interviewees should not be less than 0.1% of total population of the whole park. Ninety percent of survey results should score as "satisfied" or "basically satisfied" on selected items. <sup>c</sup>
21	Public awareness of eco-industrial development	This indicator is also calculated on the basis of a questionnaire-based survey. Number of interviewees should not be less than 0.1% of total population of park. Ninety percent of survey results should score as "satisfied" or "basically satisfied" on selected items. <sup>c</sup>

Note: AIV = added industrial production value; Q = quantity.

<sup>a</sup>Cascading refers to the reuse of spent water for a lower quality use.

<sup>b</sup>Middle water is a Chinese term for the recyclable treated wastewater from wastewater treatment plants.

<sup>c</sup>Sample survey questionnaires can be found in Supplementary Appendix S2 on the Web.

# Economic benefits

- Lower insurance costs
- Lower waste treatment costs
- Increased revenues from the sale of wastes
- Increased sales of green marketing
- Avoidance of penalties

# Environmental benefits

- Conservation of natural resources
- Reduced environmental emissions
- More efficient materials and energy use
- Less use of toxic materials
- Improved environmental quality

# Societal benefits

- Improved public health
- Improved public environmental awareness
- New business and employment opportunities
- Improved community relations

## Symposium internation sur l'écologie industrielle

Estimated attendees	100
# of days	2

Expenses	Budget			Costs per Attendee	Financing							
	Attendees	Costs per Attendee	Total CHF		HES-SO Valais	HES-SO	Etat VS	Sponsor 1	Sponsor 2	Sponsor 3	Sponsor 4	Sponsor 5
Forfait journalier Hôtel du Parc (pauses café, lunch, boissons)	100	CHF 85.00	CHF 8500.00	CHF 85.00								
			CHF -	CHF -								
<b>Total Food services</b>			CHF 8500.00	CHF 85.00								
			CHF -									
Impressions PPT présentations (100 partic. x 10 pages x 7 présentations)	1	CHF 1000.00	CHF 1000.00									
Enregistrement et mise sur Internet (Kiewel)	1	CHF 6000.00	CHF 6000.00									
Publicité, journaux	1	CHF 1500.00	CHF 1500.00									
<b>Total Communication</b>			CHF 8500.00	CHF 85.00								
Traduction simultanée Français-Anglais	1	CHF 4500.00	CHF 4500.00									
<b>Total Technical equipment</b>			CHF 4500.00	CHF 45.00								
			CHF -	CHF -								
Apéro de clôture 7 décembre	100	CHF 30.00	CHF 3000.00	CHF 30.00								
Soirée de gala hors les murs	100	CHF 100.00	CHF 10000.00	CHF 100.00								
Farewell, apéritif dînatoire du 8.12.2011	100	CHF 40.00	CHF 4000.00	CHF 40.00								
<b>Total Apéritifs et Repas</b>			CHF 17000.00	CHF 170.00								
Hôtels pour les intervenants (2 nuits x 5 intervenants)	10	CHF 150.00	CHF 1500.00									
Transports des intervenants	5	CHF 500.00	CHF 2500.00									
Honoraires intervenants (6 intervenants yc Suren Erkman)	6	CHF 800.00	CHF 4800.00									
			CHF -									
<b>Total Honoraires et frais Intervenants</b>			CHF 8800.00	CHF 88.00								
Administration	20	CHF 55.00	CHF 1100.00									
Honoraires HES-SO Valais	100	CHF 110.00	CHF 11000.00									
Honoraires Antenne Valais Romand	100	CHF 110.00	CHF 11000.00									
Frais administratifs	1	CHF 1000.00	CHF 1000.00									
<b>Total Staff</b>			CHF 24100.00	CHF 241.00	CHF -							
Frais visites sites Ecologie Industrielle (transports)	1	CHF 500.00	CHF 500.00									
Cadeaux participants (bag)	100	CHF 10.00	CHF 1000.00									
Cadeaux intervenants	6	CHF 100.00	CHF 600.00									
			CHF -	CHF -								
<b>Total Divers</b>			CHF 2100.00	CHF 21.00								
<b>Total expenses</b>			CHF 73500.00	CHF 735.00	CHF -	CHF -	CHF -	CHF -	CHF -	CHF -	CHF -	CHF -
<b>Incomes</b>												
Attendees registration	80	CHF 250.00	CHF 20000.00									
Attendees registration no members	20	CHF 50.00	CHF 1000.00									
			CHF -									
			CHF -									
<b>Total income</b>			CHF 21000.00		CHF -	CHF -		CHF -		CHF -	CHF -	
<b>Profit / Loss</b>			CHF 52500.00	CHF -	CHF 0.00	CHF 0.00	CHF 0.00	CHF 0.00	CHF 0.00	CHF 0.00	CHF 0.00	CHF 0.00

- La plupart des modèles économiques n'intègrent qu'une évaluation des effets directs sur l'acteur économique porteur de l'activité. Les externalités (impacts environnementaux, sociaux, voire économiques indirects) sont négligées dans la mesure où elles ne se traduisent pas par une valeur ou un coût économiques. Il existe bien des dispositifs d'intégration des externalités (principe du « pollueur payeur », crédits carbone, certificats d'économies d'énergie), mais ils sont souvent considérés et traités comme des « obligations » à respecter et non comme des opportunités de création de valeur. L'économie de la fonctionnalité s'attache justement à ce dernier aspect;
- La création de valeur est désolidarisée de la production matérielle. Il s'agit d'une véritable rupture par rapport aux modèles économiques actuels (le PIB indicateur de richesse