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**SOLVAY** way  
doing business, being responsible

# Sustainable Water Management at SOLVAY

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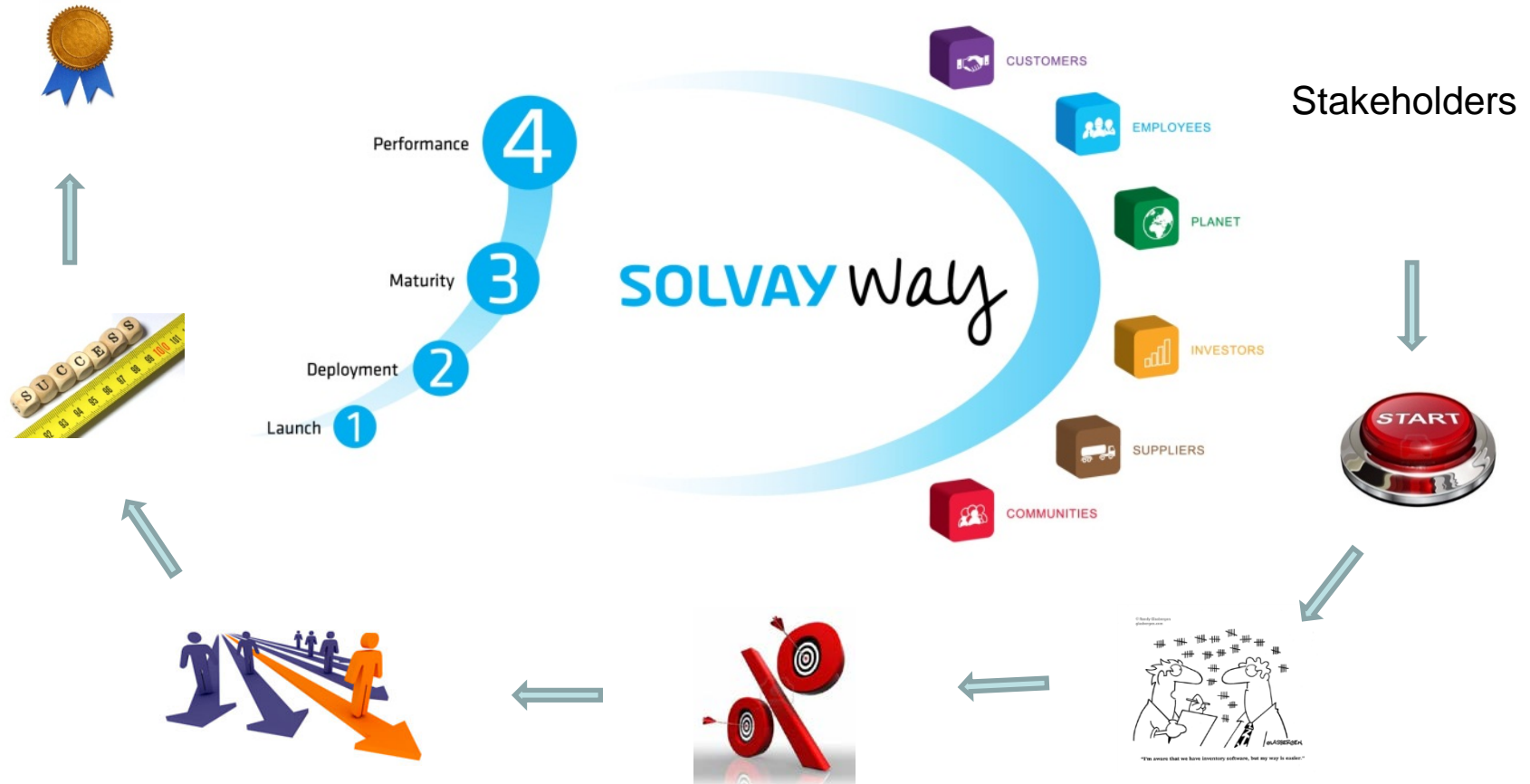
# Outline

- Sustainable Development Policy
- Environmental Plan 2012 – 2020 (Water)
- Key Performance Indicators
- Reducing fresh-water withdrawal
- Mitigating water risks
- Example: Aretusa project



# Sustainable development policy

SOLVAY Way (ISO 26000 / CSR)

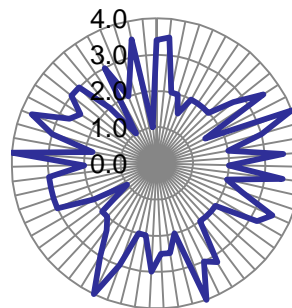


# SOLVAY-Way

Applied to water as a resource

## 3. Planet

### 3.2. Preserving natural resources



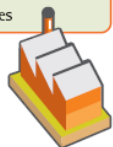
2007 data (average = 1.5)  
2012 data (average = 2.6)

TOP



DOWN

Acteurs de l'auto-évaluation Sites



1  
Launch

2  
Deployment

3  
Maturity

4  
Performance

#### 3.2.3. Reducing water consumption

Determining the water consumption profile of the entity and its water footprint.

Defining an action plan to achieve the group's objectives and undertaking an environmental impact study of water intake.

Deploying the action plan and monitoring results. The entity has achieved the annual target set by the group.

Implementing the best available technologies in water consumption.

## LEVELS OF MATURITY

# Environmental Plan 2012-2020 (\*)

## Water Objectives

- To reduce further by 10% (\*\*) the withdrawal of drinking water and groundwater
- To implement a Sustainable Water Management in 100 % of sites under water stress

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(\*) Sustainable Development report 2012, <http://www.solvay.com/EN/Sustainability/Sustainability.aspx>, p 7

(\*\*) At constant operational perimeter


# Key Performance Indicators


- Total water intake

- drinking
- surface
- ground
- estuary
- sea
- other

- Fresh water withdrawal / consumption 

- Percentage of recycled water

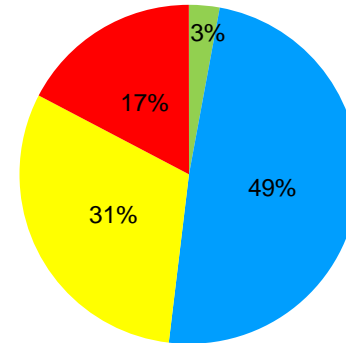
- Self-assessment score of sites (Water as a Resource, SOLVAY *Way* 

- Impact Indicators : TN, TP, COD, HM, AOX, TSS & eutrophication  , eco-toxicity, human toxicity

- Water footprint

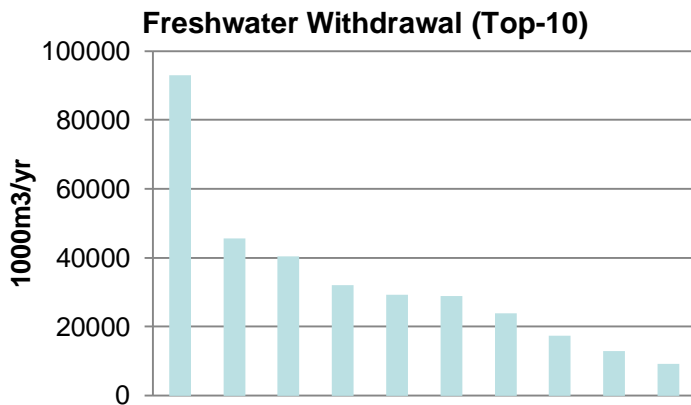
2012 Total water intake (800.10<sup>6</sup> m<sup>3</sup>)

■ Drinking water ■ Surface water ■ Ground water ■ Estuary / Sea water



# Reducing fresh-water withdrawal (\*)

- Annual reporting of water intakes, uses and consumptions from all plants
- Action plans per BU / plant
- Status reviewed with industrial directors and technology division managers
- Water Efficiency Guide (R<sup>4</sup> : Reduce, Recycle, Re-use and Replacement)
- Leveraging between energy and water efficiency



GBU	2010			2011			S1 2012			Delta WE 2011/2010 (%)	Delta WE S1 2012/2010 (%)
	Prod (t)	Water intake (10 <sup>6</sup> m <sup>3</sup> )	Water efficiency (m <sup>3</sup> /t)	Prod (t)	Water intake (10 <sup>6</sup> m <sup>3</sup> )	Water efficiency (m <sup>3</sup> /t)	Prod (t)	Water intake (10 <sup>6</sup> m <sup>3</sup> )	Water efficiency (m <sup>3</sup> /t)		
SILICA	300 000	10 136	33,8	343 000	12 015	35,0	256 853	5 725	22,3	-10,4	-34,0
AROMA PERFORMANCE	80 376	20 317	259,8	79 890	18 092	226,8	36 451	9 336	256,0	1,1	-1,2
ECO SERVICES	3 080 924	8 807	2,9	3 150 271	9 101	2,9	1 468 050	4 239	2,9	1,8	-4,1
P&I	2 669 313	240 795	90,2	2 498 759	229 405	91,8	1 203 549	104 120	86,5	-3,3	-26,2
ACETOW	234 336	33 062	143,1	235 812	32 160	136,4	103 147	18 080	175,3	-7,8	-37,0
COATIS	613 023	15 665	25,6	646 340	15 217	23,5	275 721	8 240	29,9	-2,3	-1,7
ENGINEERING PLASTICS	219 400	2 254	10,3	239 200	2 400	10,0	117 863	1 190	10,1	-7,4	-33,3
RARE EARTH SYSTEMS	13 938	1 896	136,0	15 514	1 954	125,9	9 204	835	90,7	-11,7	-10,7
ENERGY SERVICES		1 934		2 144			1 004			11,4	55,2
NOVEKARE	653 000	9 043	13,6	858 651	9 990	11,6	427 912	5 214	12,2	-11,4	-55,2
FIBRAS	139 477	522	3,7	132 149	551	4,2	43 567	253	5,8	-5,7	-7,3
<b>Total Rhodia</b>	<b>8 013 787</b>	<b>346 920</b>	<b>43,29</b>	<b>8 199 586</b>	<b>334 907</b>	<b>40,84</b>	<b>3 942 317</b>	<b>158 230</b>	<b>40,14</b>		

(\*) Sum of groundwater and drinking water

# Mitigating water risks

- Application of macroscopic pre-screening tools to identify future hot spots
  - Global Water Tool (WBCSD)
  - Aqueduct (WRI)
  - ...
- Confirmation of hot spots by a detailed analysis taking into account local situations
  - GEMI Local Water Tool (IPIECA & WBCSD)
  - ...
- Action plan with BUs to address risks



# Screening tools for assessing water risks

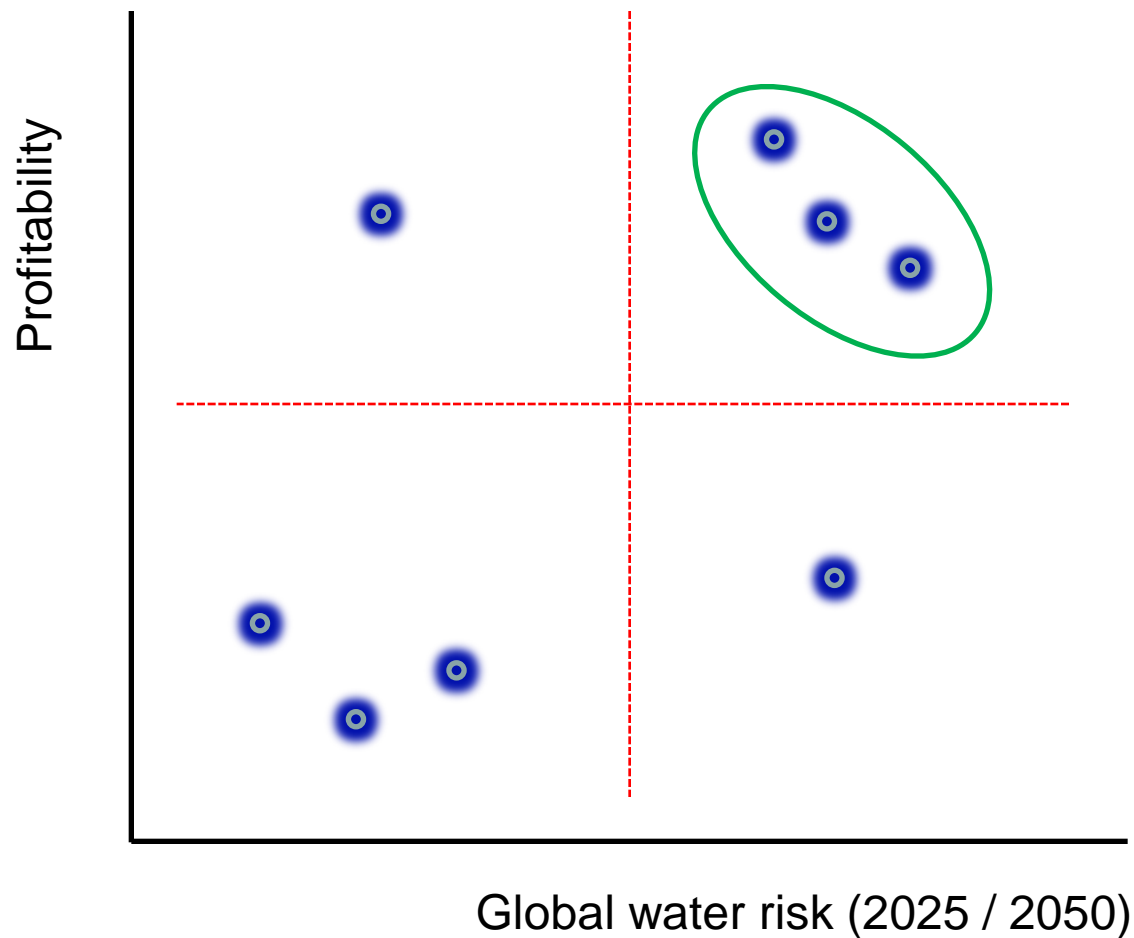
- *Global Water Tool (WBCSD)*

- On-line mapping system plotting site locations with water, sanitation, population and biodiversity datasets
- Generates DJSI, GRI, CDP Water and Bloomberg external reporting metrics
- Inventories, risk and performance metrics charts and maps combining company sites' location with country and/or watershed data
- Establishes relative water risks in a global company's portfolio, in order to prioritize action

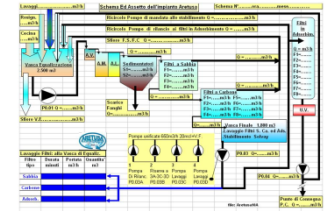
- *Aqueduct (WRI)*

- Creates high-resolution maps of water risks, tailored to unique risk exposure profiles for different industry sectors based on the analysis of a total of 14 aggregated indicators
- Indicators are divided into three main risk categories: physical (quantity, quality), regulatory and reputational

# Site prioritization



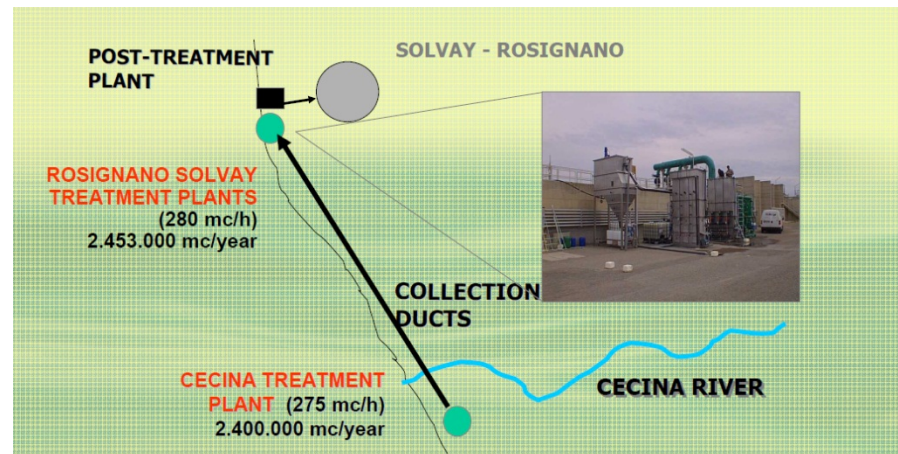
# Example : Aretusa project



- Solvay plant (IT) was partly depending on ground water ( $4 \cdot 10^6 \text{ m}^3/\text{yr}$ ) from the Cecina river basin, regularly suffering from scarcity episodes.
- Around  $4 \cdot 10^6 \text{ m}^3/\text{yr}$  is now re-used from 2 nearby municipal WWTPs after an ad-hoc physicochemical treatment.
- An additional  $4 \cdot 10^6 \text{ Mm}^3/\text{yr}$  of ground water became available for potable use and the quality of the coastal waters (previously receiving the effluents from the 2 WWTPs) has been greatly improved.



Cecina river bed in summer



[www.solvay.com](http://www.solvay.com)



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