



# **Unlocking Supply Chains: Using Water Footprint Assessment to Prioritize Strategic Action**

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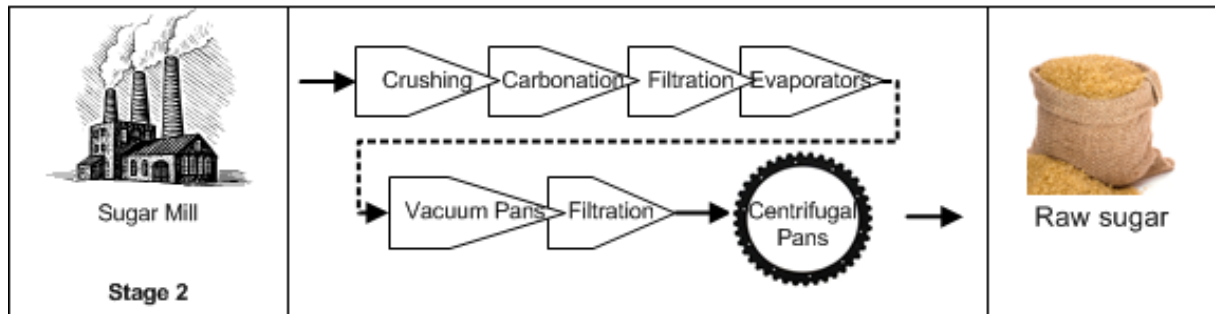
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# Sugarcane supply chain

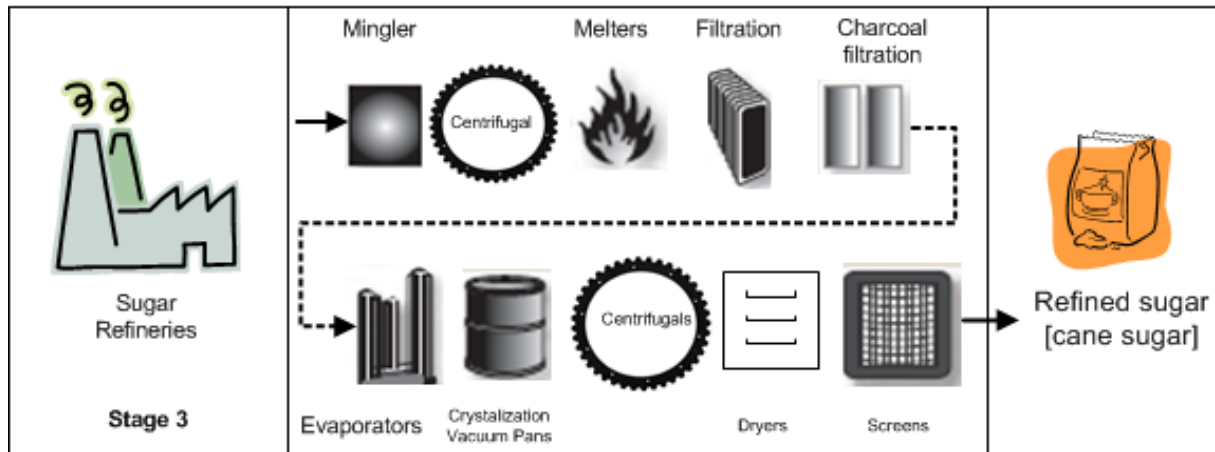
## Tier 3 Suppliers



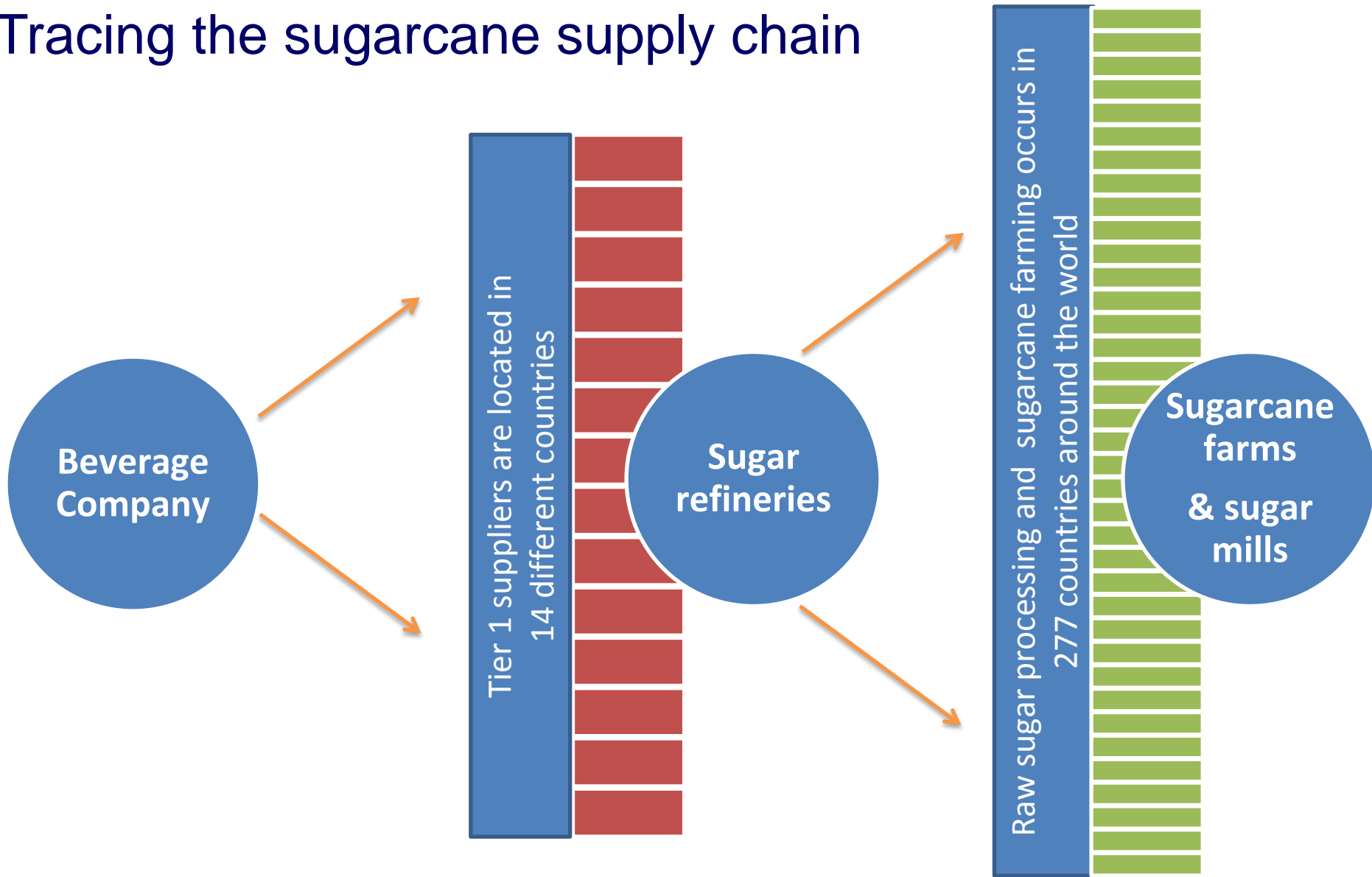
## Tier 2 Suppliers



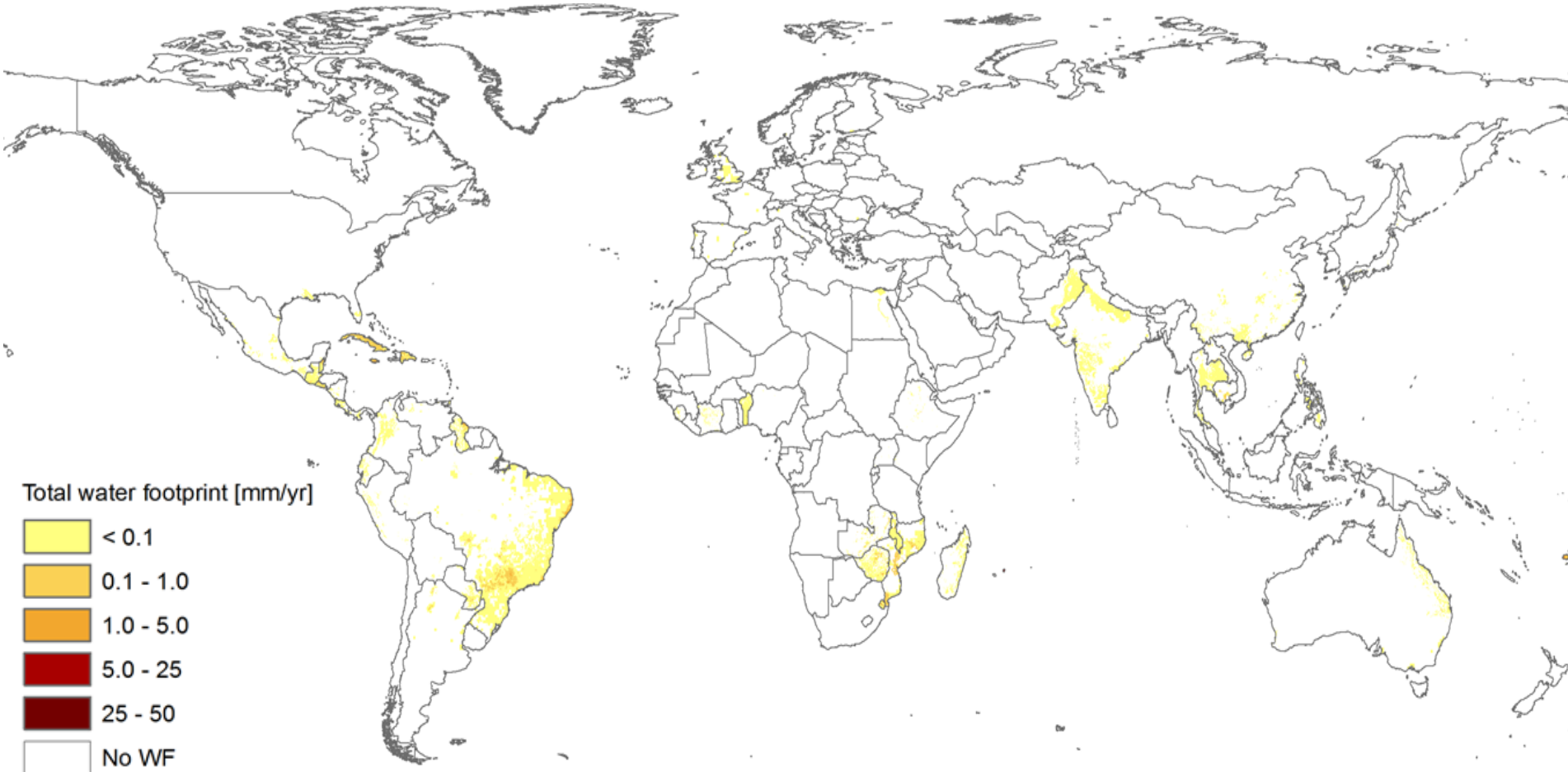
## Tier 1 Suppliers



# Tracing the sugarcane supply chain



# Global distribution of total water footprint



Total WF: 391,571,000 m<sup>3</sup>/y

# Is the supply chain water footprint sustainable?

For each WF component:

**Geographic hotspots:** Is the water footprint component located in a river basin and period of the year where environmental criteria are violated?

*[checked using blue water scarcity & water pollution levels]*

**Process efficiency:** Is the water footprint of the process itself unsustainable?

*[checked using global benchmarks]*

# Is the water footprint in a blue water scarcity hotspot?

River basin	Blue water footprint of company's cane sugar supply chain	% of blue water footprint located in the basin	Number of months per year under blue water scarcity				Hotspot check
	(m <sup>3</sup> /y)		Moderate	Significant	Severe	Total	
Zambezi	15,369,600	27.7%	0	0	0	0	No
Maputo	5,179,690	9.3%	1	0	3	4	Yes
Parana	2,803,780	5.1%	0	0	0	0	No
Mekong	2,259,290	4.1%	1	0	3	4	Yes
Incomati	1,795,630	3.2%	1	0	3	4	Yes
Buzi	1,157,580	2.1%	0	0	0	0	No
Sao Francisco	381,539	0.7%	0	0	0	0	No
Ganges	373,411	0.7%	0	2	5	7	Yes
Limpopo	365,177	0.7%	2	0	5	7	Yes
Congo	235,488	0.4%	0	0	0	0	No

## Does the water footprint exceed the benchmark?

River basin	Total green + blue water footprint of sugarcane in the company's supply chain (000 m <sup>3</sup> /y)	Green + blue water footprint of sugarcane (m <sup>3</sup> /ton)	% deviation from global benchmark
Parana	61,700	124	-3%
Zambezi	32,030	212	<b>66%</b>
Mekong	11,426	239	<b>87%</b>
Maputo	10,755	145	<b>13%</b>
Incomati	6,528	222	<b>73%</b>
Buzi	3,130	563	<b>340%</b>
Sao Francisco	2,276	149	<b>17%</b>
Amazonas	1,430	142	<b>11%</b>
Ganges	1,255	264	<b>107%</b>
Lempa	1,093	149	<b>16%</b>

Global benchmark of sugarcane green + blue WF = 128 m<sup>3</sup>/t

# Is the water footprint in a basin with high water pollution levels?

River basin	Grey water footprint of company's cane sugar supply chain (m <sup>3</sup> /y)	% of grey water footprint located in the basin	Nitrogen WPL	Hotspot check
Parana	7,968,670	28.0%	1.13	Yes
Sao Francisco	893,407	3.1%	1.10	Yes
Zambezi	638,068	2.2%	1.01	Yes
Amazonas	501,148	1.8%	0.94	No
Paraiba Do Sul	471,783	1.7%	1.10	Yes
Tocantins	357,344	1.3%	0.96	No
Uruguay	278,355	1.0%	1.01	Yes
Rio Doce	270,504	1.0%	0.99	No
Lempa	257,164	0.9%	1.51	Yes
Rio Parnaiba	247,457	0.9%	1.02	Yes



# Does the water footprint exceed the benchmark?

River basin	Total grey water footprint of sugarcane in the company's supply chain (000 m <sup>3</sup> /y)	Grey water footprint of sugarcane (m <sup>3</sup> /ton)	% deviation from global benchmark
Parana	7,969	10.0	25%
Sao Francisco	893	14.6	82%
Zambezi	638	2.3	-71%
Amazonas	501	7.8	-2%
Paraiba Do Sul	472	9.6	20%
Tocantins	357	11.3	41%
Uruguay	278	6.3	-21%
Rio Doce	271	11.9	49%
Lempa	257	14.2	78%
Rio Parnaiba	247	13.3	66%

Global benchmark of sugarcane grey WF = 6.15 m<sup>3</sup>/t

# Priority river basins: where to work first?

Priority basins are selected using the following two criteria:

## 1. **Sustainability:**

Product WF is above the global benchmark or the basin is a hotspot, or both; and

## 2. **Share of the WF**

The basin's share relative to the company's total WF is above 1%.

The selection was done separately for blue WF and grey WF components, resulting in two lists of priority basins.

# Priority river basins with respect to blue water footprint

River basin	Green + Blue water footprint (m <sup>3</sup> /ton)	Deviation from benchmark (%)	% of company's blue water footprint located in the basin	Number of months the basin is under blue water scarcity	Sugarcane share of total agriculture blue WF in the basin
Zambezi	212	66%	27.71%	0	54%
Maputo	145	13%	9.34%	4	84%
Mekong	239	87%	4.07%	4	12%
Incomati	222	73%	3.24%	4	35%
Buzi	563	340%	2.09%	0	86%

# Priority river basins with respect to grey water footprint

River basin	Grey water footprint (m <sup>3</sup> /ton)	Deviation from benchmark (%)	% of company's grey water footprint located in the basin	Water pollution level in the basin (Nitrogen)	Sugarcane share of total grey WF of agriculture in the basin
Parana	10.0	25%	27.99%	1.13	27%
Sao Francisco	14.6	82%	3.14%	1.10	11%
Zambezi	2.3	-71%	2.24%	1.01	-
Paraiba Do Sul	9.6	20%	1.66%	1.10	41%
Tocantins	11.3	41%	1.26%	0.96	7%

# Priority regions for supply chain engagement

Regions	% of blue water footprint located in priority basins	% of grey water footprint located in priority basins
<b>Southeast Asia</b> [Mekong, Chao Phraya]	4.23%	0.19%
<b>Southern Africa</b> [Zambezi, Maputo, Save, Incomati, Buzi, Limpopo]	46.81%	1.31%
<b>South America</b> [Parana, Sao Francisco, Paraiba Do Sul, Rio Paraiba, Tocantins, Uruguay, Rio Doce, Rio Vaza-Barris, Mucuri]	6.40%	20.22%
<b>Total</b>	57.44%	21.62%

# Selecting priority river basins for strategic action

Raw sugar processing and sugarcane farming in supply chain occurs in 277 river basins around the world

277 river basins



Priority river basins



Priority regions

**Region 1**

- Priority river basins
- Adjacent river basins

**Region 2**

- Priority river basins
- Adjacent river basins

**Region 3**

- Priority river basins
- Adjacent river basins

# Taking strategic action in priority river basins

Response formulation is guided by sustainability assessment:

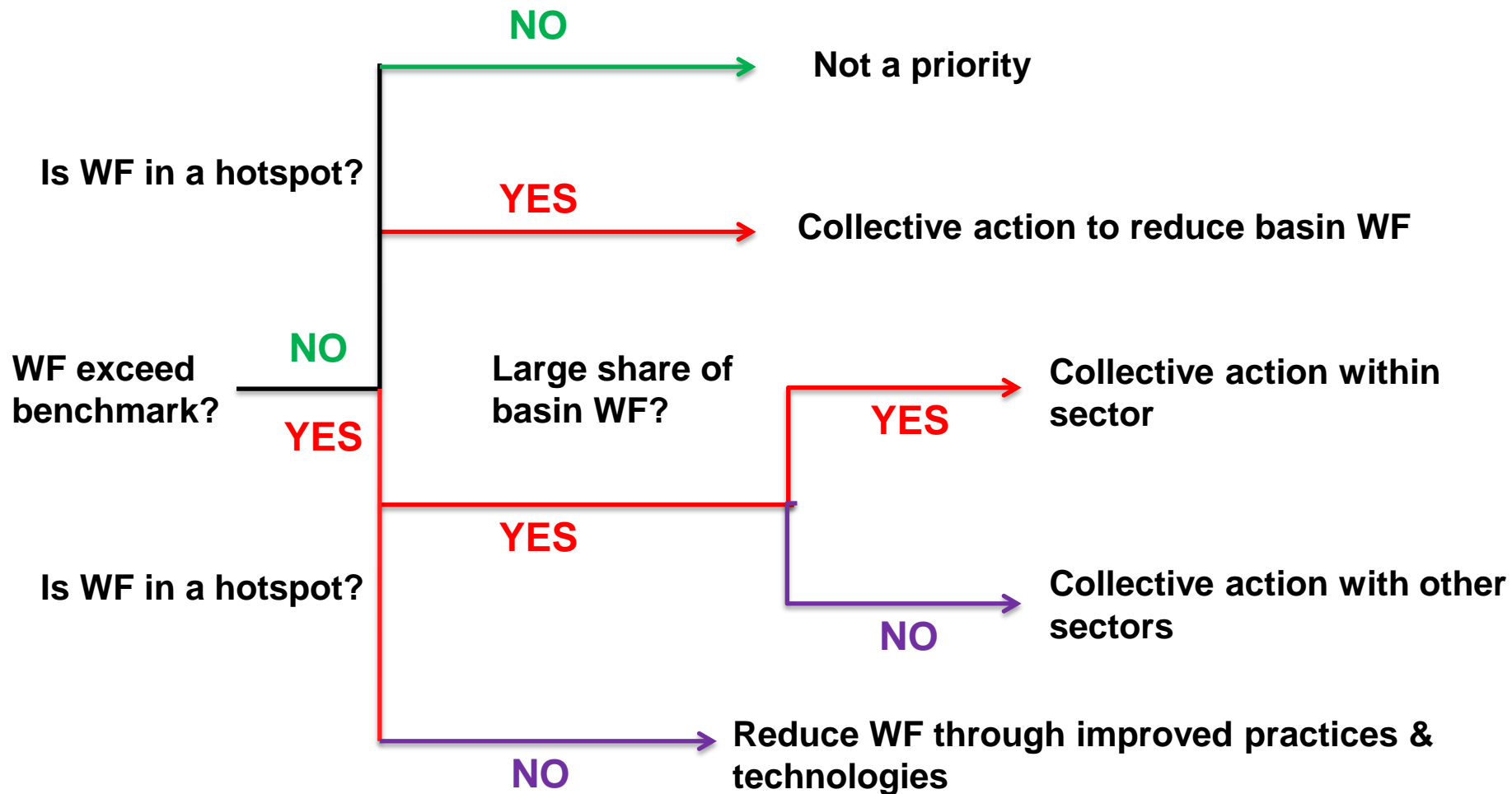
## 1. **Is the water footprint above the benchmark?**

If yes, the water footprint can be reduced at reasonable cost through changes in practices and technologies.

## 2. **Is the water footprint is a hotspot?**

If yes, then the total basin water footprint needs to be reduced.

# Strategic response formulation in priority river basins







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Thank you

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