

**Lake Champlain Basin Program**  
*Draft Agenda - Executive Committee Meeting*  
November 20, 2019 12:30 PM – 3:30 PM  
LCBP Office, Gordon Center House, Grand Isle, VT

**Executive Committee Members:**

Bob Stegemann (Chair, NYSDEC), Mark Naud (VTCAC), Nathalie Provost (QC MELCC), Pete Laflamme (VTDEC), Neil Kamman (TAC Chair); **Phone:** John Krueger (HAPAC Chair), Mario Paula (EPA R2), Vic Putman (NYCAC), MaryJo Feuerbach (EPA R1), Pierre Leduc (QCCAC), Brian Steinmuller (NYS Ag&Markets)

**Staff:**

LCBP: Eric Howe, Meg Modley, Lauren Jenness; Bethany Sargent (VTANR), Fred Dunlap (NYSDEC), Bryan Dore (EPA R1), Susan Sullivan (NEIWPC), Aisha Sexton-Sims (EPA R2), Koon Tang (NYSDEC), Stefanos Bitzakidis (QC MELCC)

**Guests:** Tom Berry (Sen. Leahy)

**12:30 PM Meeting begins**

- **Introductions** around the room, conference call participants. *Bob Stegemann, NYS DEC will Chair this meeting.*
  - **Public Comment** – None provided.
  - **Approval of minutes from previous meeting**
- ACTION ITEM:** Approve Meeting Minutes from October 28, 2019 Executive Committee
- Motion By: Neil Kamman to approve as amended
  - Second by: Pete LaFlamme
  - Discussion on the motion: add Enhanced BMP information to minutes, change Mark Naud's affiliation. He is chair of VTCAC not NYCAC.
  - Vote: All
  - Abstentions: Nathalie Provost
- **Updates from partners around the table**
  - Pete Laflamme – Vermont's 3-acre permit is in public comment phase. Oliver Pierson is the new VTDEC Lakes and Ponds program manager. Bethany Sargent is the new director of the Monitoring, Assessment, and Planning program within the VTDEC Watershed Management Division. DEC is working to refill Bethany's position in the next month.
  - Neil Kamman – stakeholder engagement is standing up Vermont Act 76 – decentralized clean water service providers in which implementation dollars will flow through.
  - Bob Stegemann – NY Governor Cuomo announced NYS Agricultural Nonpoint Source Abatement and Control program grant awards. NYS has renewed their contract with APIPP to continue invasive species work. Adirondack lake survey confirmed lake trout in Lake Colden.
  - Nathalie Provost – Quebec's 10 year strategic plan is being released soon. The action plan will gather all actions done by the different Ministries involved in Lake Champlain and Memphremagog. A new orientation regarding floodplain politics is being developed with guidelines. She will share both as they are made available.
  - Tom Berry – the appropriation process is moving along, there was a Continuing Resolution to fund the federal government through Dec 20<sup>th</sup> passed by house yesterday, and needs to pass tomorrow in Senate. Bundle of appropriation bills has passed the full

senate and full house and is a position to go to conference. Minibus 2 – Ag and Interior in it. Conference conversations are ongoing at this time.

- Bryan Dore – EPA in process to reviewing their competition objective – what allows them to place funding in VT, NY, NEIWPCC.
- Neil Kamman provided a written update for TAC. TAC reviewed core-line and State-line items in the LCBP budget, approved The McKenzie Brook Flow and Water Quality project Final Report, drafted language for 3 LCBP RFPs, approved 5 LCBP workplans, and listened to 5 informational presentations. Neil highlighted the “Evaluation of a Woodchip Bioreactor Pilot Project for Denitrification of Tertiary Effluent from the Bolton Wastewater Treatment Plant (Lake George, Warren County, New York)”.
- Tom Berry – USDA-RD awarded a \$2.5 million grant and a \$16 million loan to Montpelier and Berlin WWTF system upgrades.
- John Kreuger – HAPAC received 41 proposals for \$370,000 for the FY20 budget. Proposals are being reviewed now.
- Colleen –E&O has issued 3 RFPs in the past few weeks, including E&O grants, organizational support grants. Artistic design for a sail at Community Sailing Center RFP out. EM River models delivered to groups in NY, VT and QC. ECHO hosted a couple of recent events, including the New England Museum Alliance and a welcome event for the NALMS conference.
- Mark Naud acknowledged Bethany’s work as the Lake Champlain Coordinator for VT DEC, coordinating the CAC work as well as her grant management and other responsibilities that she did very well in this role.
- Fred Dunlap reported for NYCAC. The group met with Jim Brangan in October for a CVNHP presentation. The November meeting was cancelled twice due to weather. December meeting TU presentation - Imperial Dam and Adirondack Council is working on wastewater infrastructure needs in Adirondacks and the Lake Champlain basin. NYCAC is working on a focused plan, to be finalize at the December meeting.
- Pierre Leduc – IJC public meetings tonight and tomorrow night for the Missisquoi Bay project.
- Eric Howe –Public comment period related to the IJC Public meetings for the Missisquoi Bay Project is open until December 14<sup>th</sup>. The report will be delivered to IJC and IJC will issue by March. The NALMS conference was very successful – 3<sup>rd</sup> largest number of registrations in the history of NALMS. LCBP and NEIWPCC recently conducted interviews for the Technical Associate position; Ellen Kujawa is returning to work as an hourly employee during her semester break in December through early January 2020. Matt Vaughan will be returning from family leave after Thanksgiving.
- Meg Modley – VIDA – working with EPA and Great Lakes on the report to Congress to be submitted by the end of the year.

#### **1:00 PM Updates on NY-VT-QC Lake Champlain MOU and QC-VT Missisquoi Bay MOU, LCBP Steering Committee Chairs (NYS DEC, QC MELCC, VT ANR)**

- Eric Howe presented. The QC-VT Missisquoi Bay MOU language is agreed to by the VT and QC Chairs of the Lake Champlain Steering Committee, with a goal for signatures by early summer. The three Steering Committee Chairs (or their delegates) also met this morning to discuss the NY-VT-QC Lake Champlain MOU, also with the goal for signatures by summer or fall of 2020. The MOU will remain largely unchanged but will reference Appendix A of OFA for clarification on Steering Committee membership. The Chairs agreed that the development

of the MOU is determined by the signatories of the MOU and not Steering Committee members, and that this does not require a public comment period. The current NY-VT-QC MOU identifies the role of the Steering Committee and who can serve. Appendix A of OFA provides the rest of the details. The Steering Committee approves Appendix A of *Opportunities for Action*, and the MOU signatories approve the agreement that describes their charge to the Lake Champlain Steering Committee and the commitment of their jurisdictions to the cooperative management of Lake Champlain.

**1:15 PM Presentation/discussion from VT DEC on LEAN to streamline LCBP processes (Pete Laflamme/Bethany Sargent)**

- Pete and Bethany described the LEAN business partner improvement process. State of Vermont achieved good and surprising results that improved their overall processes. Wondering if a Basin-program focused LEAN effort would be a good idea. Executive Committee Members voiced their support to continue this conversation at the Steering Committee level noting that it will be LCBP staff that determine how and if the process will be established.

**1:40 PM Presentation:**

**IJC Water Quality Reference Draft recommendations for Missisquoi Bay (Eric Howe)**

- Eric Howe presented. Priority recommendation 7 (added new) was questioned first by Neil Kamman as the study's committee hasn't vetted this developed lands recommendation. Pierre Leduc stated that it was recommended based on feedback from the OBVBM Board of Directors as they were quite clear that the priorities were too agriculturally focused. They highly recommended the developed lands recommendations be bumped up from a regular recommendation to priority level. A discussion took place on whether the Developed lands recommendation should stay priority level. Stefanos asked to make clear that it is not a CSAG recommendation it's an OBVBM recommendation.
- **Group discussion led to the following action item:** Recommendation to the Lake Champlain Steering Committee to consider forming a standing committee to address phosphorus reduction in Missisquoi Bay after the report is issued.

**2:15 PM EXECUTIVE SESSION: Local Grant Award Decisions (LCBP staff)**

- Exit Executive Session
- **ACTION ITEM:** Motion to approve LCBP FY19 PPHC Grant awards as proposed by PPHC Review Committee.
  - **Motion:** Nathalie Provost
  - **Second:** Mark Naud
  - **Vote:** All in favor
  - **Discussion:** none
  - **Abstentions:** none
- **ACTION ITEM:** Motion to approve LCBP FY19 AIS Grant awards as proposed by AIS Review Committee.
  - **Motion:** Nathalie Provost
  - **Second:** John Kreuger
  - **Vote:** All

- **Discussion:** none
- **Abstentions:** none

### **3:30 Adjourn**

#### **Outputs for this meeting include:**

1. Grant Award Decisions for Local Grant categories: Pollution Prevention/Habitat Conservation and AIS Spread Prevention
2. Recommendation to the Lake Champlain Steering Committee to consider the creation of a Missisquoi Bay Phosphorus Reduction Task Force

#### **Teleconference Information:**

<https://global.gotomeeting.com/join/656589293>

#### **Join the conference call:**

(802) 372-0299

Host Extension: 221

PIN: 372-0200

#### **Upcoming Meetings:**

2019 meetings

November 20: LCBP Executive Committee (Grand Isle, VT)

November 20: IJC Water Quality of Missisquoi Bay public meeting, Venice-en-Quebec

November 21: IJC Water Quality of Missisquoi Bay public meeting, Saint Albans

December 2: LCBP Technical Advisory Committee (Grand Isle, VT)

December 17: Lake Champlain Steering Committee (Venise-en-Quebec, QC)

2020 meetings

January 23: LCBP Executive Committee (Grand Isle, VT)

February 19: LCBP Executive Committee (Grand Isle, VT)

## Technical Advisory Committee Report for 11/20/19 Executive Committee

This report outlines TAC activities accomplished in September, October and November of 2019.

### **TAC Discussions on Budget Priorities:**

In September, TAC reviewed and discussed proposed core budget line-items.

In November, TAC reviewed four State line-item budget priorities initially proposed to the Steering Committee in October 2019. TAC noted that the forest load allocation and forest road network proposals fill a void that adds value to the management program at DEC.

There was no activity on this topic in October.

### **New Final Reports Approved:**

The McKenzie Brook Flow and Water Quality project was presented by *Blaine Hastings and Angie Allen*, VTDEC.

The purpose of LCBP funding was to determine if these smaller south LC Basin streams could be reliably gauged and monitored to develop annual nutrient load estimates, and if so, to continue implementing gauging over time. Costs of some of DEC time and UVM Extension's sampling efforts were covered by LCBP. Remaining costs for sample analysis and analytical work was covered by DEC-WSMD - a real partnership project. The short conclusion is that these are particularly difficult streams to gauge, and with current technology and capacity, we cannot reliably monitor for load across the length of the watershed. However, one of the gauge stations on the Dead Creek have been picked up as a long-term gauge, managed by the USGS, in conjunction with the NRCS Conservation Effects Assessment Program for the coming years.

### **Requests for Proposals Issued:**

TAC worked up content for the following RFPs.

FFY 2020 Technical Program RFP. This RFP implemented the set of priorities developed jointly by TAC and the Steering Committee. There were submitted 35 proposals for \$6.3, which the TAC will review for the December meeting, in the following priority areas:

1. Projects that evaluate water quality BMP design standards, maintenance and operation standards, and long-term performance, including those that address removal of dissolved phosphorus and or environmental conditions related to climate change.
2. Conservation and restoration research or implementation projects that support:
  - a. native species and their habitat,
  - b. water quality, and or
  - c. flood resilience.
3. Basin-wide streambank erosion assessment and inventory.
4. Research to better understand the water quality impacts of road de-icing alternatives and recent changes in de-icing agent application rates.
5. Research to better understand winter season in-lake biogeochemistry, or watershed nutrient fate and transport.

FFY19 TMDL Funding - Internal phosphorus loading management study for Missisquoi Bay.

FFY19 TMDL Funding - Private and park road assessment and improvement in the Lake Carmi Watershed.

**Workplans Approved:**

TAC reviewed and approved six workplans for FFY 2019 Technical Program funds.

- Quantifying the road salt pollution load to Mirror Lake and the Chubb River, *Brendan Wiltse (Ausable River Association)*
- Fish Community Monitoring, *Ellen Marsden, University of Vermont*
- 2020 Lake Champlain Cyanobacteria Monitoring, *Lori Fisher, Lake Champlain Committee*
- Evaluating Performance of Media Filters to Remove Phosphorus in Stormwater Pond Outflow, *Dave Braun, Stone Environmental*
- Boquet River Geomorphic and Habitat Assessment, *Michelle Brown, TNC*
- Removing Dams in the Vermont portion of the Lake Champlain Basin – *Brian Fitzgerald, VNRC*

**Informational:**

Lake Carmi groundwater phosphorus source evaluation, Jonathan Kim, VT Geological Survey.

This presentation described the approach Dr. Kim uses to characterize groundwater contributions to surface water contamination. These approaches will be applied to the FFY 2019-funded Lake Carmi assessment of groundwater phosphorus.

Cotton Brook Landslide and the Vermont Landslide Hazard Mapping Project, Marjorie Gale, Vermont Geological Survey

Dr. Gale provided an update on the Cotton Brook Landslide, and describe the value of the Landslide Hazard Mapping Project.

Phosphorus trends in Vermont's Oligotrophic Lakes, Leslie Matthews, VTDEC

Dr. Matthews presented evidence from DEC-Watershed Management Divisions monitoring program documenting substantial increases in the nutrient levels of Vermont's cleanest lakes.

Evaluation of a Woodchip Bioreactor Pilot Project for Denitrification of Tertiary Effluent from the Bolton Wastewater Treatment Plant (Lake George, Warren County, New York) – Chris Navitsky, Lake George Waterkeeper and Matt Coon, Bolton WWTP operator

This small-scale and relatively low-tech pilot project documented substantial reductions in nitrate in effluent. This technology presents some real opportunities to address N from lagoon plants in nitrogen-impacted watersheds, such as the Long Island Sound.

IJC Flood Study Update

SUNY Plattsburgh faculty and graduate students provided an update on how the IJC is conducting its public outreach efforts and information gathering.



# ***Public Meeting Lake Champlain Science Advisory Group***

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La Cache

Venise-en-Québec, Wednesday, November 20 2019

700-900 PM

# Objectives of the meeting

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- Share information about the study
- Seek your input on the draft study report
- Allow you to talk with technical experts
- Allow you to ask questions and share your views
- Written comments to:

<https://ijc.org/en/lclm/>

Or by e-mail to : [lclm@ottawa.ijc.org](mailto:lclm@ottawa.ijc.org)

until Saturday December 14, 2019



# Agenda for Tonight's Meeting

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- First Hour – Presentation of the Study and Recommendations
- Second Hour – Public Comment
  - We listen to your comments and points of view
  - Record Comments
  - Answer Questions
- Simultaneous translation available
  - Audio is recorded

**Please hold questions until the end  
Your question may be answered during the presentation!**

# Acknowledgements

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## **Advisory Group (CSAG)**

Sébastien Bourget – MELCC  
Gerardo Gollo Gil - MAPAQ  
Simon Lajeunesse – MRC Br.-Miss.  
Aubert Michaud – IRDA  
Nathalie Provost – MELCC  
Pierre Leduc – OBVBM - Président

Ryan Davies – Clinton Cty.  
Laura DiPietro – VT AAFM  
Fred Dunlap – NY DEC  
Neil Kamman – VT DEC  
Andrew Schroth - UVM  
Angela Shambaugh – VT DEC  
Eric Perkins – EPA - Chair

## **Research and Writing**

OBVBM  
Johanne Bérubé  
Frédéric Chouinard  
Martin Mimeault

### COLLABORATORS

Stéfanos Bitzakidis  
Sébastien Bourget  
Mikael Guillou  
Simon Lajeunesse  
Aubert Michaud  
Claire Michaud

LCBP  
Eric Howe  
Ellen Kujawa

NEIWPCC  
Jane Ceraso  
James Plummer  
Christina Stringer

## **Other Collaborators**

Marc Simoneau

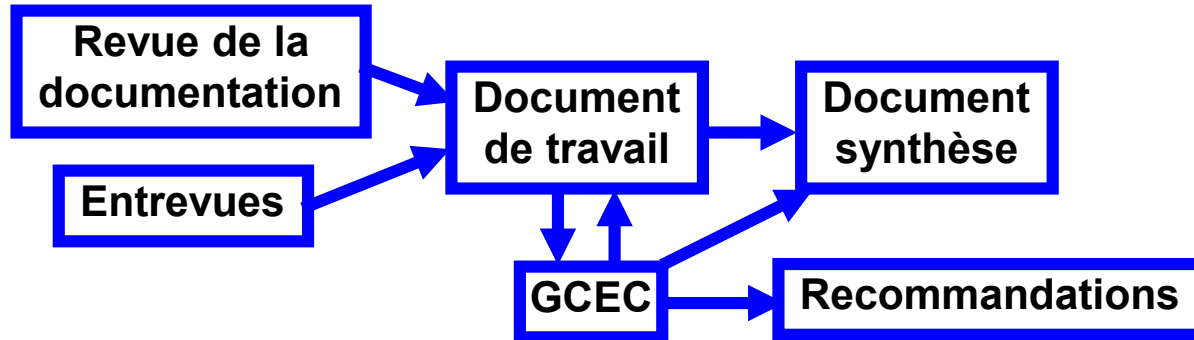
Lauren Jenness  
Meg Modley  
Matthew Vaughan  
Elizabeth Lee  
+24 TAC members

Lori Fisher  
Kent Henderson  
Marty Illick  
Carrie Johnson

**...and the team at the International Joint Commission**

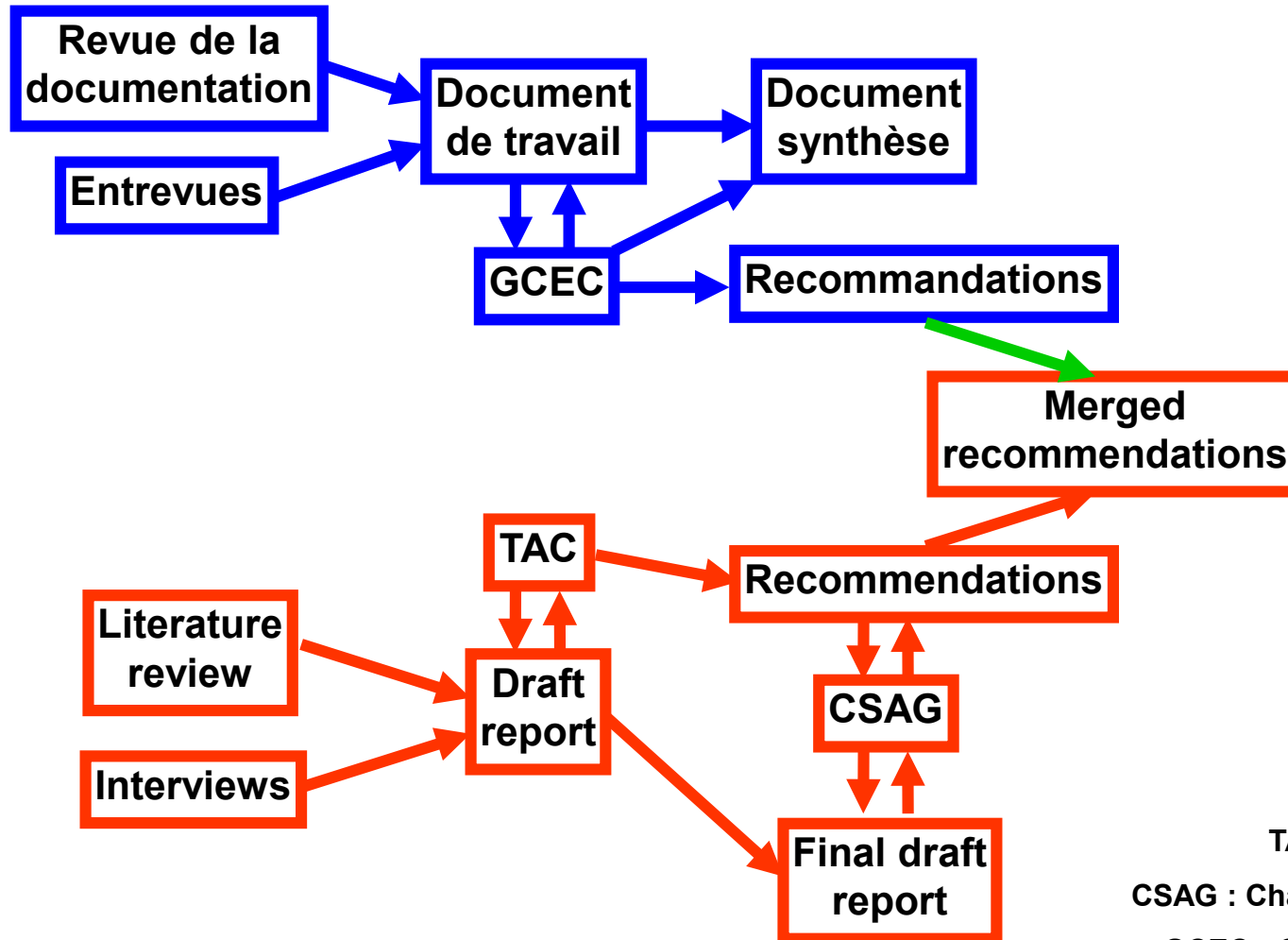
# How did we get here (Québec Study)

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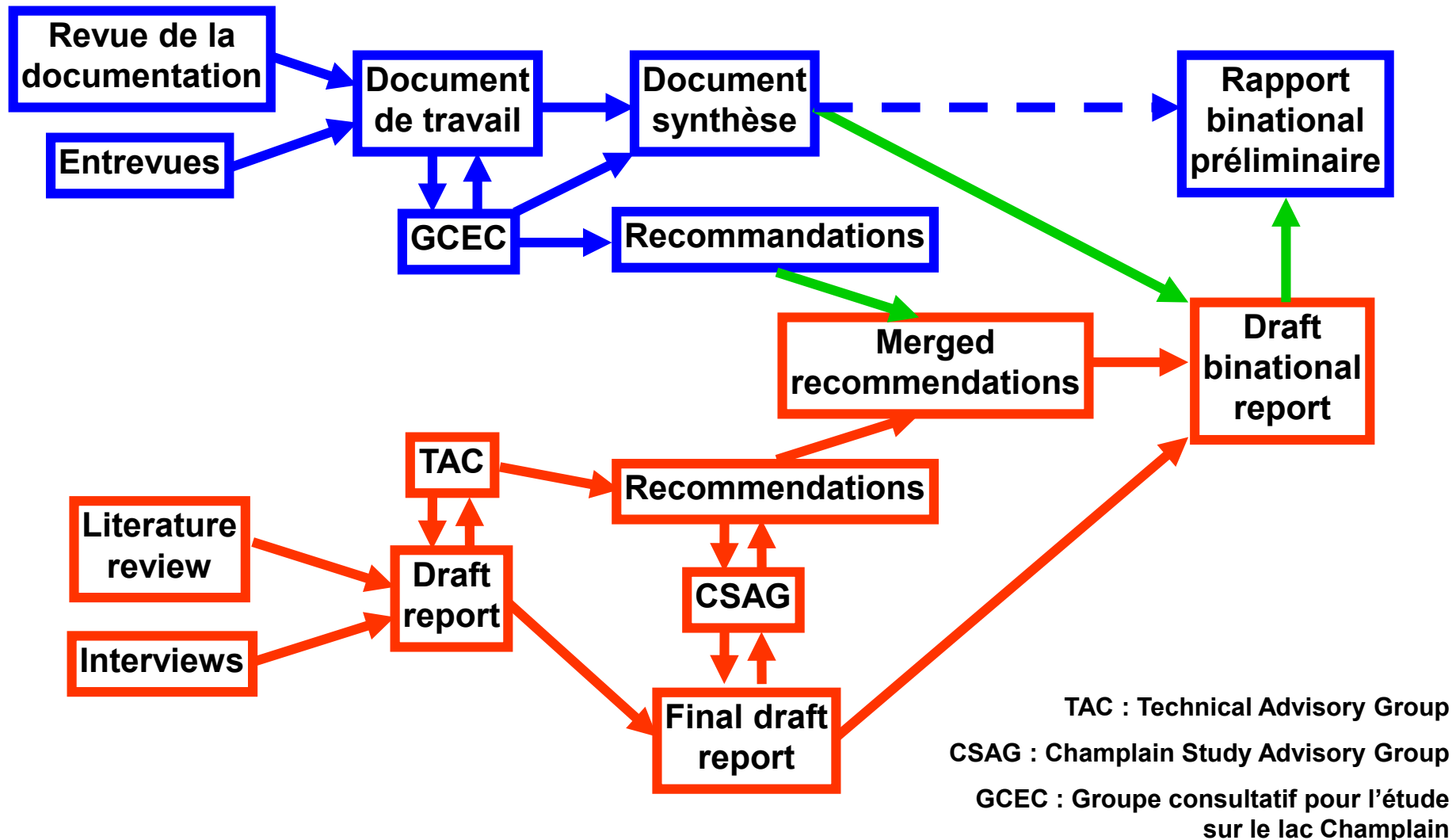
GCEC : Groupe consultatif pour l'étude  
sur le lac Champlain

# How did we get here (US+Québec)



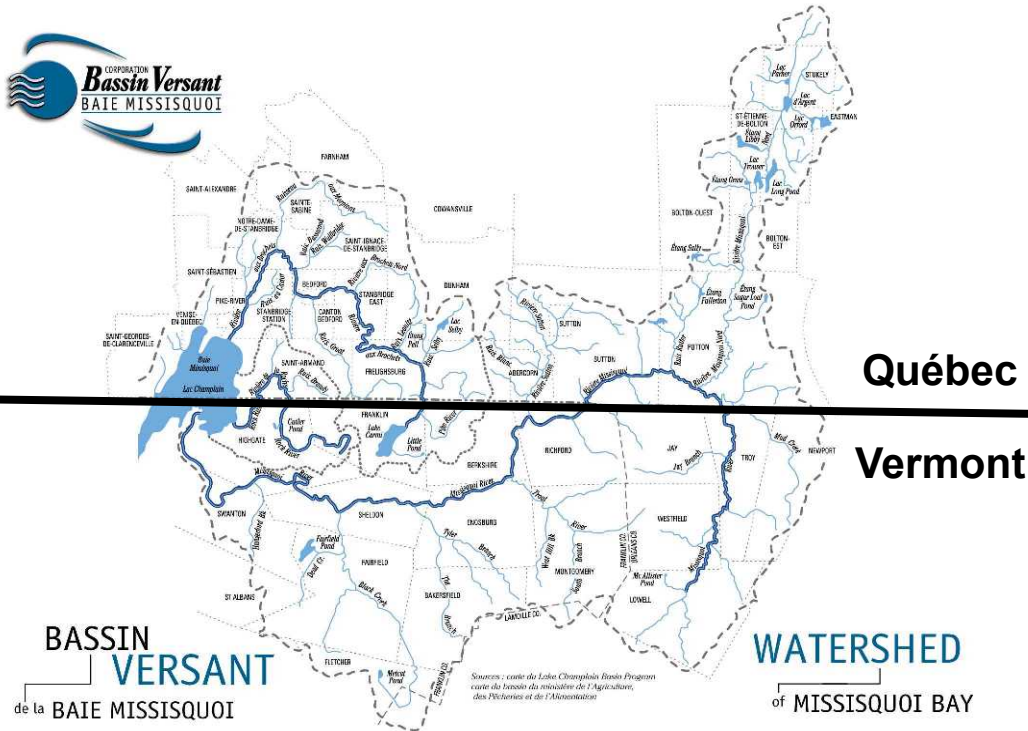
TAC : Technical Advisory Group  
CSAG : Champlain Study Advisory Group  
GCEC : Groupe consultatif pour l'étude  
sur le lac Champlain

# How did we get here (Bi-national Report)



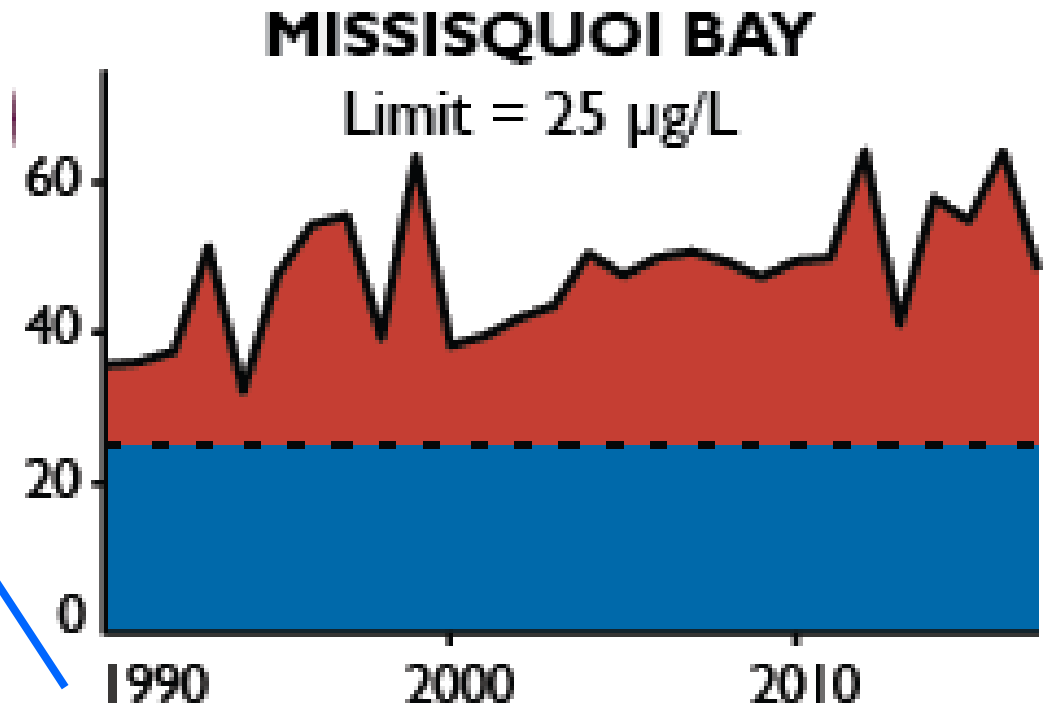
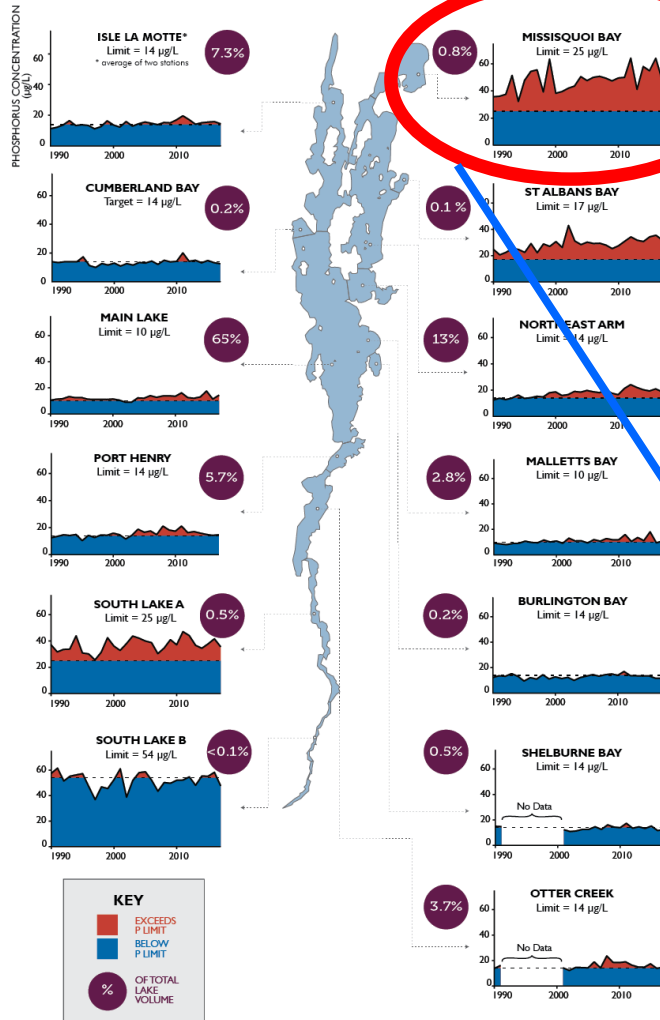
# The Missisquoi Basin

	Missisquoi Bay		Lake Champlain
• Area (basin)	15 %	1,200 miles <sup>2</sup>	8,234 miles <sup>2</sup>
• Area (water)	7%	30 miles <sup>2</sup>	
• Average Depth		10 feet	65 feet
• Volume of water	0.8 %		
• Phosphorus load	24 %		



# Phosphorus Concentrations

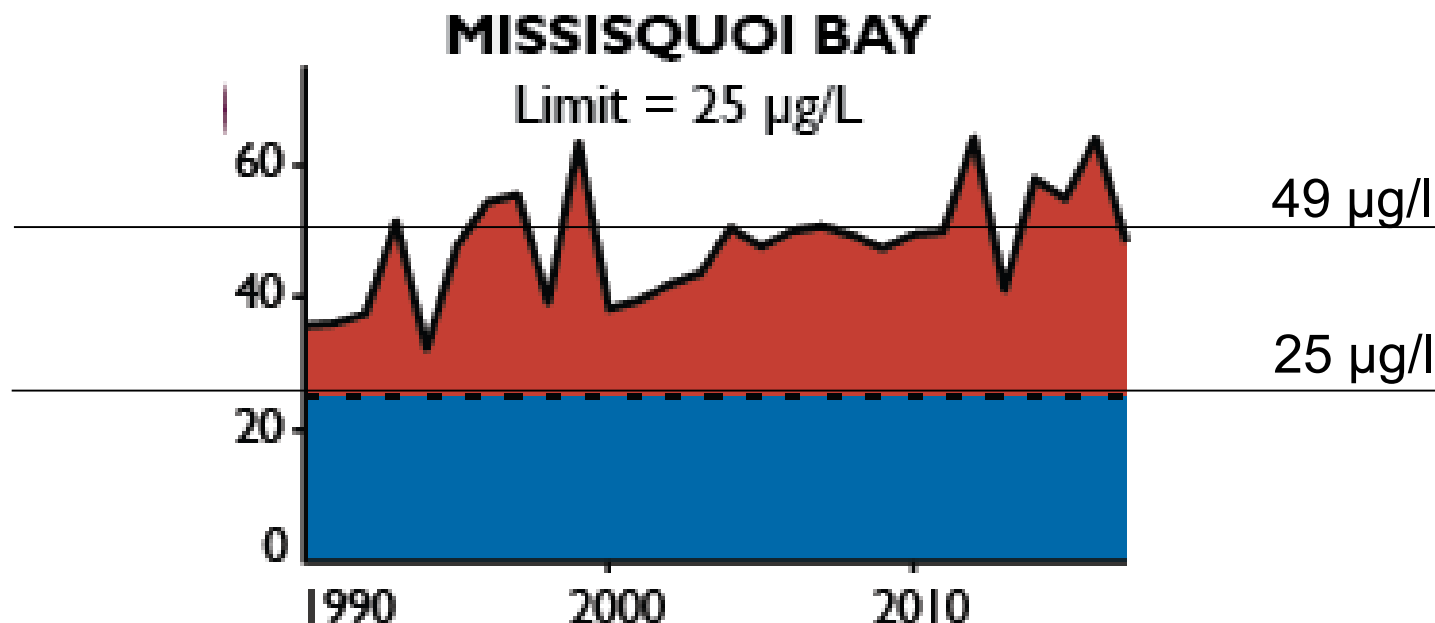
Annual mean phosphorus concentration by lake segment,  
1990-2017



Source : LCBP – State of the Lake 2018

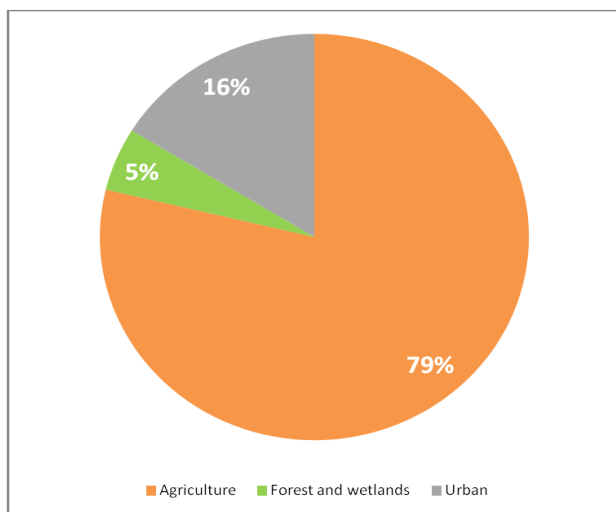
# Phosphorus concentration in Missisquoi bay

Between 1992 and 2017, mean annual concentration of phosphorus in Missisquoi bay has been 49 µg/l, generating many problems such as massive Blue-green algae blooms with impacts on drinking water supply and touristic and economic activities in the region.





# Phosphorus sources by land use - Québec



- Agriculture**
- Developed areas**
- Forest and wetland**

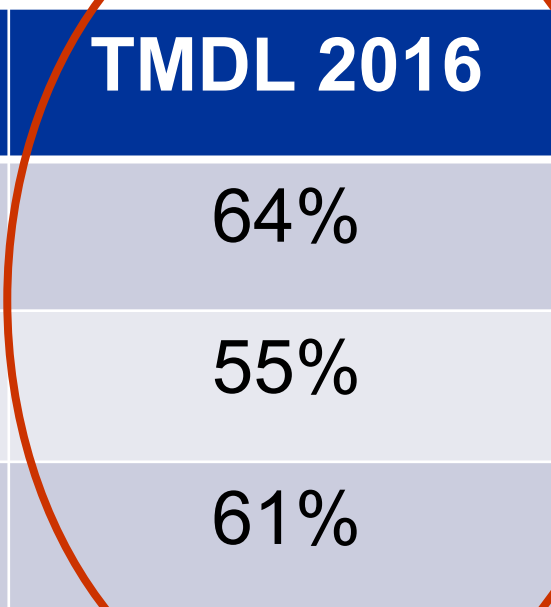
Utilisation du sol	Québec		Vermont		Total bassin versant	
	Km2	%	Km2	%	Km2	%
Agricole	436	33%	345	19%	780	25%
Forestier	764	58%	1105	61%	1869	60%
Anthropique	48	4%	74	4%	122	4%
Autres	0	0%	51	3%	51	2%
Eau	15	1%	34	2%	49	2%
Milieux humides	49	4%	201	11%	250	8%
<b>Total</b>	<b>1311</b>	<b>42%</b>	<b>1810</b>	<b>58%</b>	<b>3122</b>	<b>100%</b>

**Not surprising – these are fertile grounds that are good for farming!**

# Load Reductions Required to Achieve Goals

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EPA	TMDL 2002	TMDL 2016
Vermont	42%	64%
Quebec	41%	55%
Total	42%	61%



*Sources : Hegman et coll., 1999, TetraTech, 2015*

# Too much phosphorus

**Creates public health  
problems**





## ***Philipsburg – 5 August 2018***

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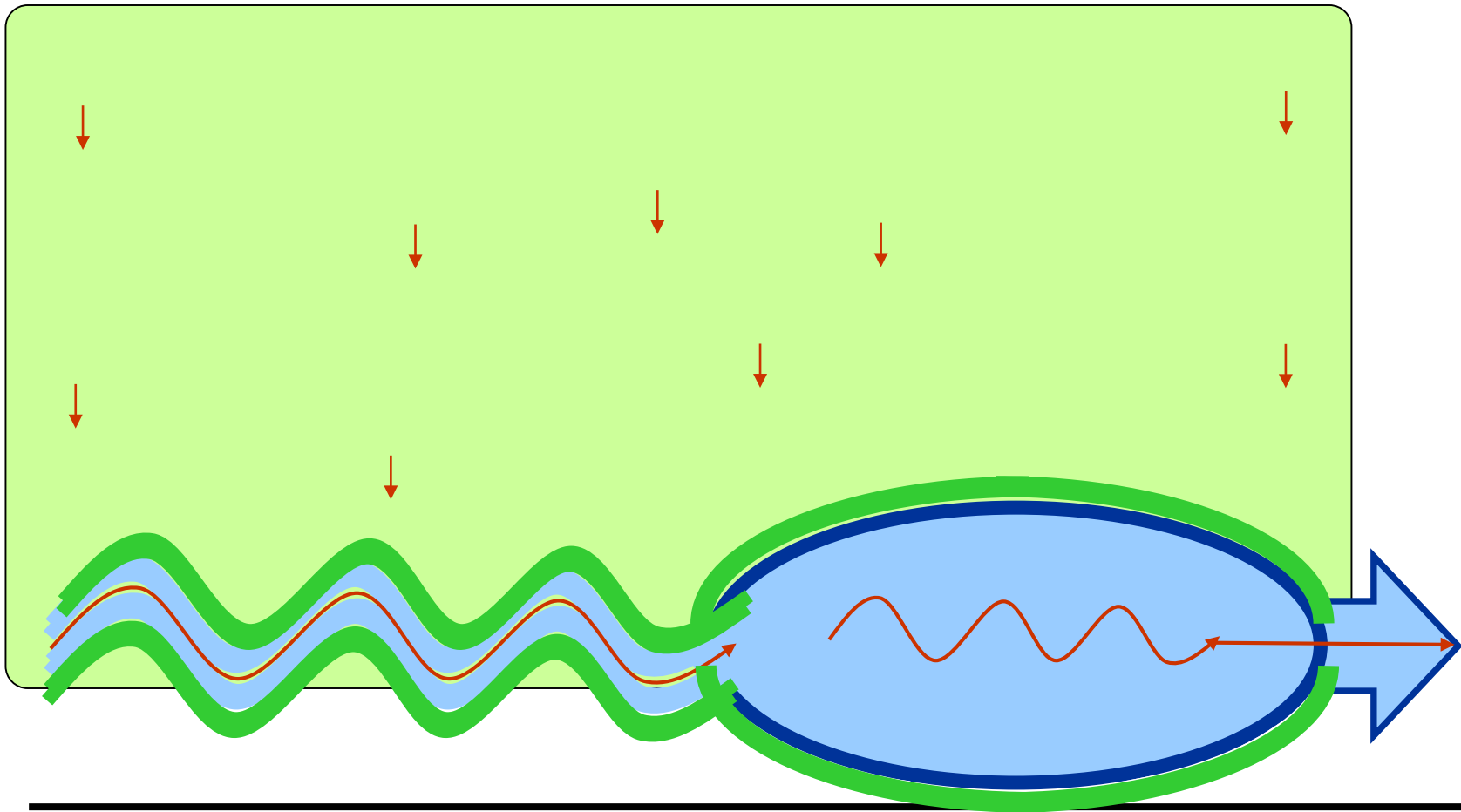
## ***Venise-en-Québec - 28 August 2018***

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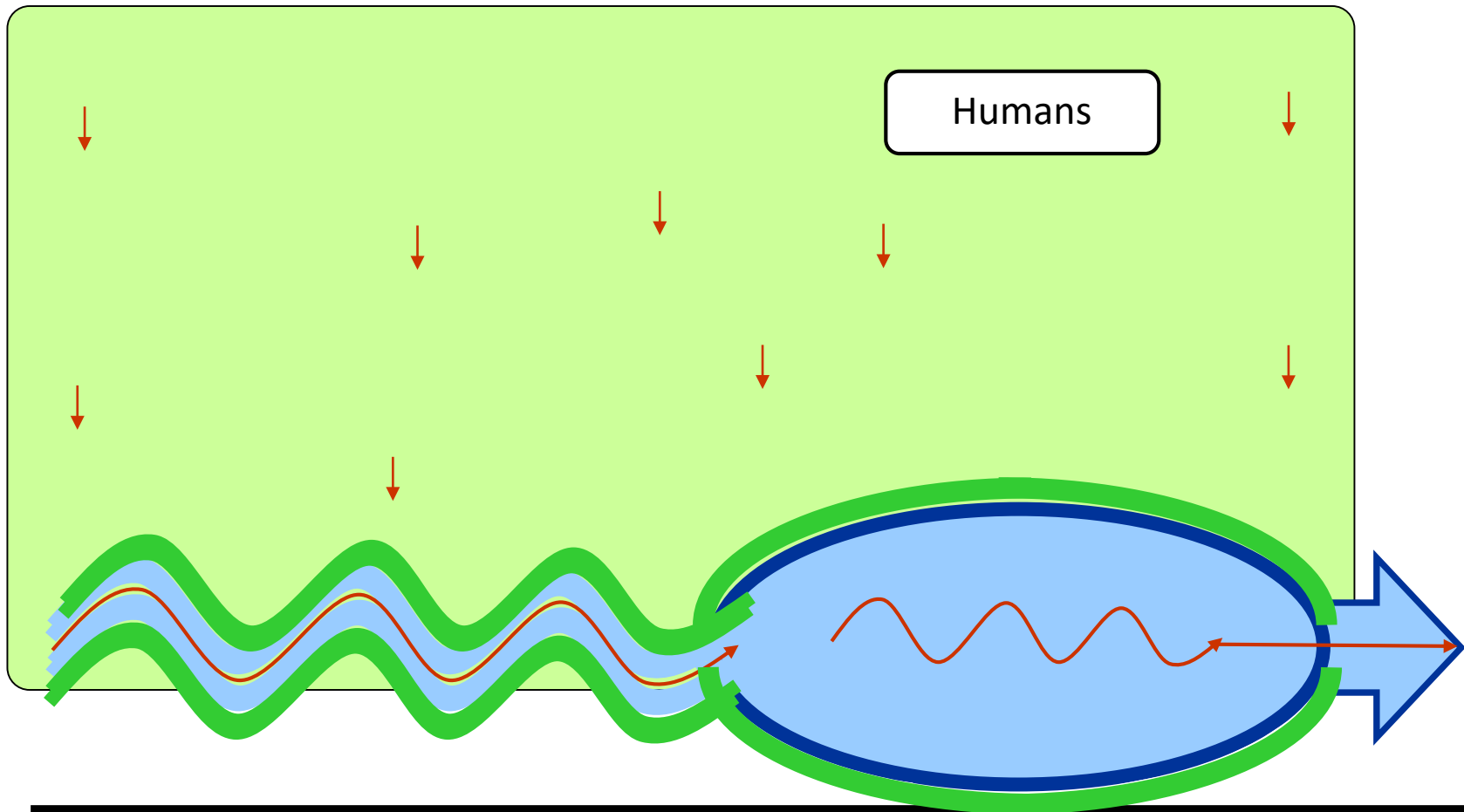
# Watershed Model

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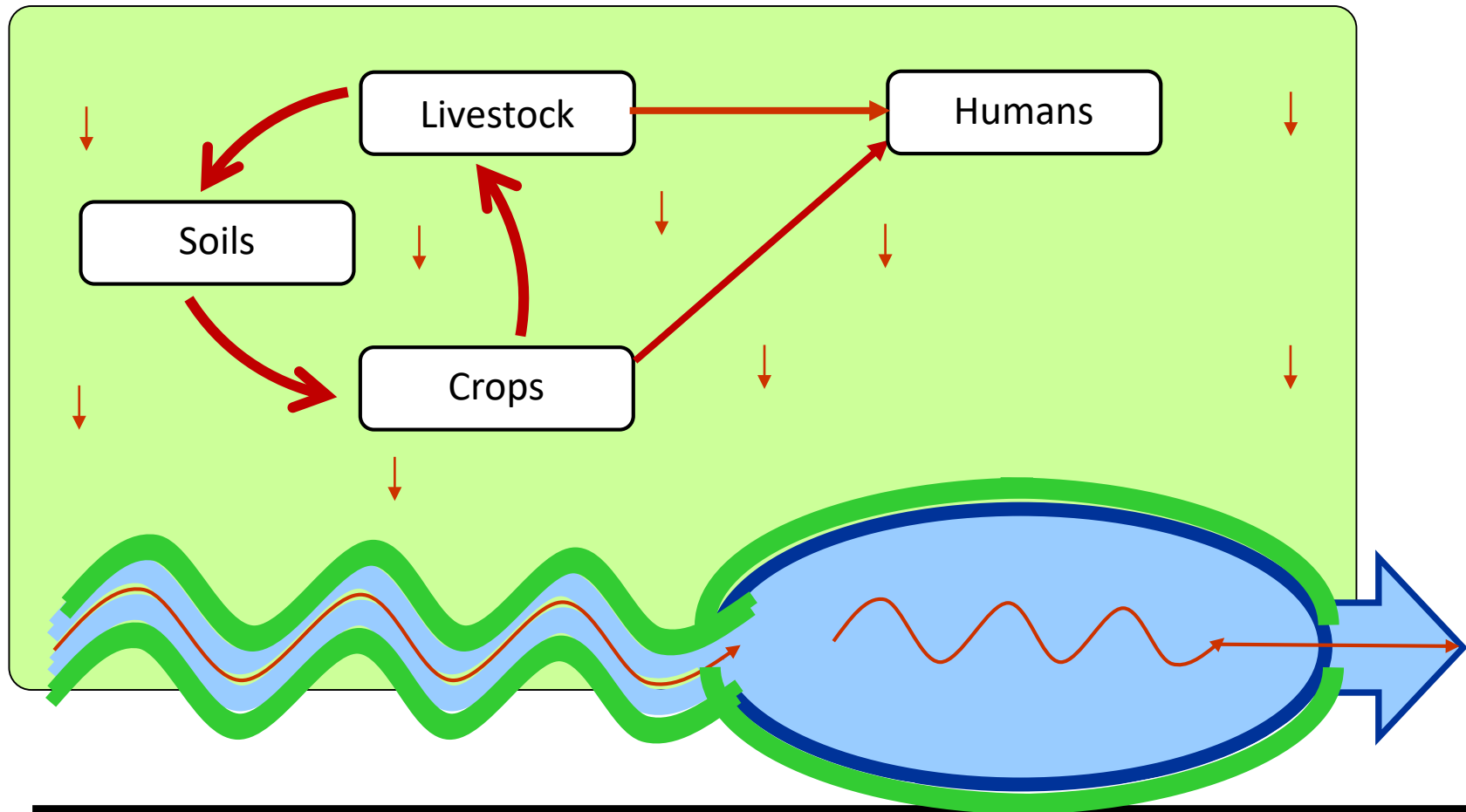
# Watershed Model

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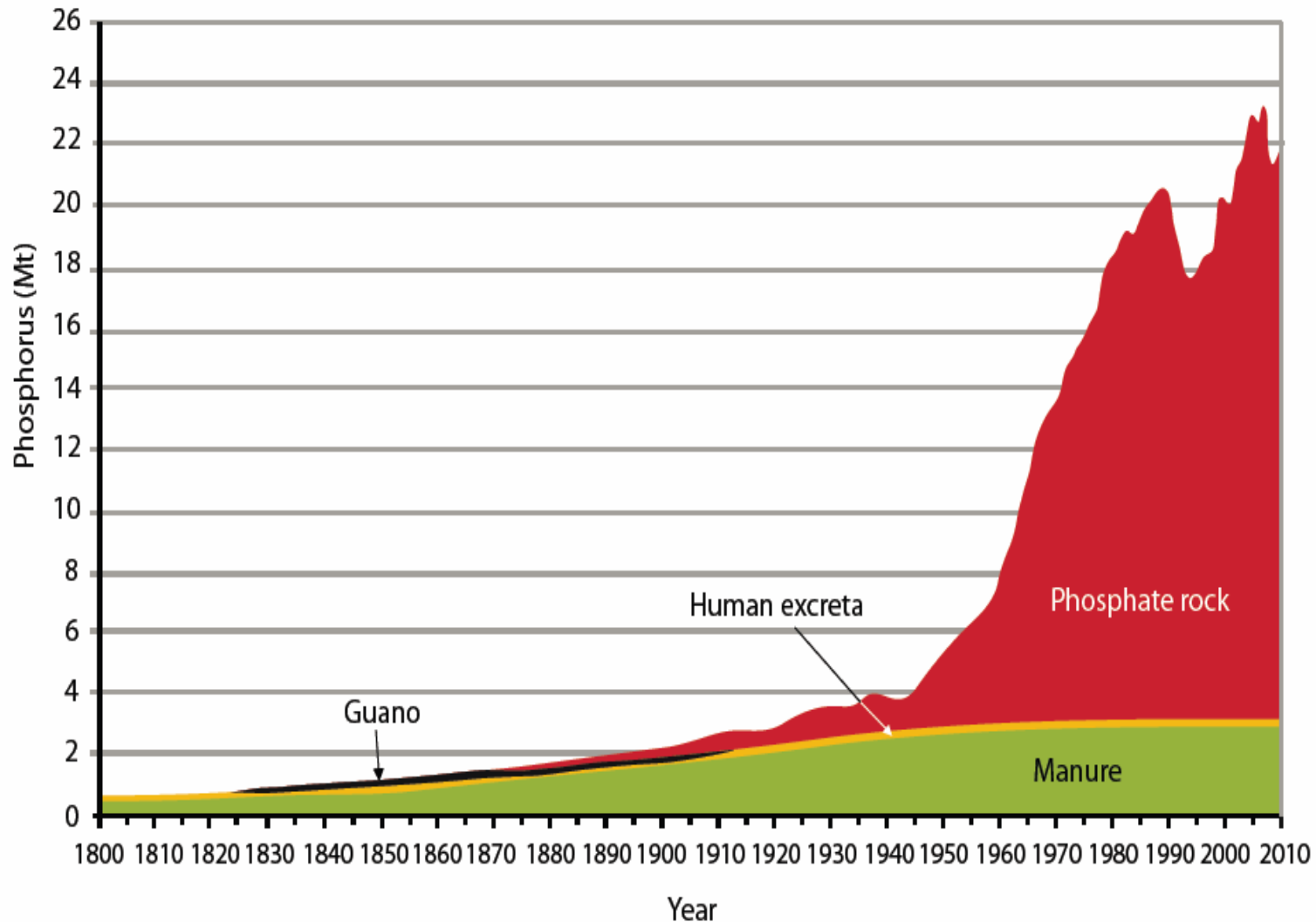
# Watershed Model

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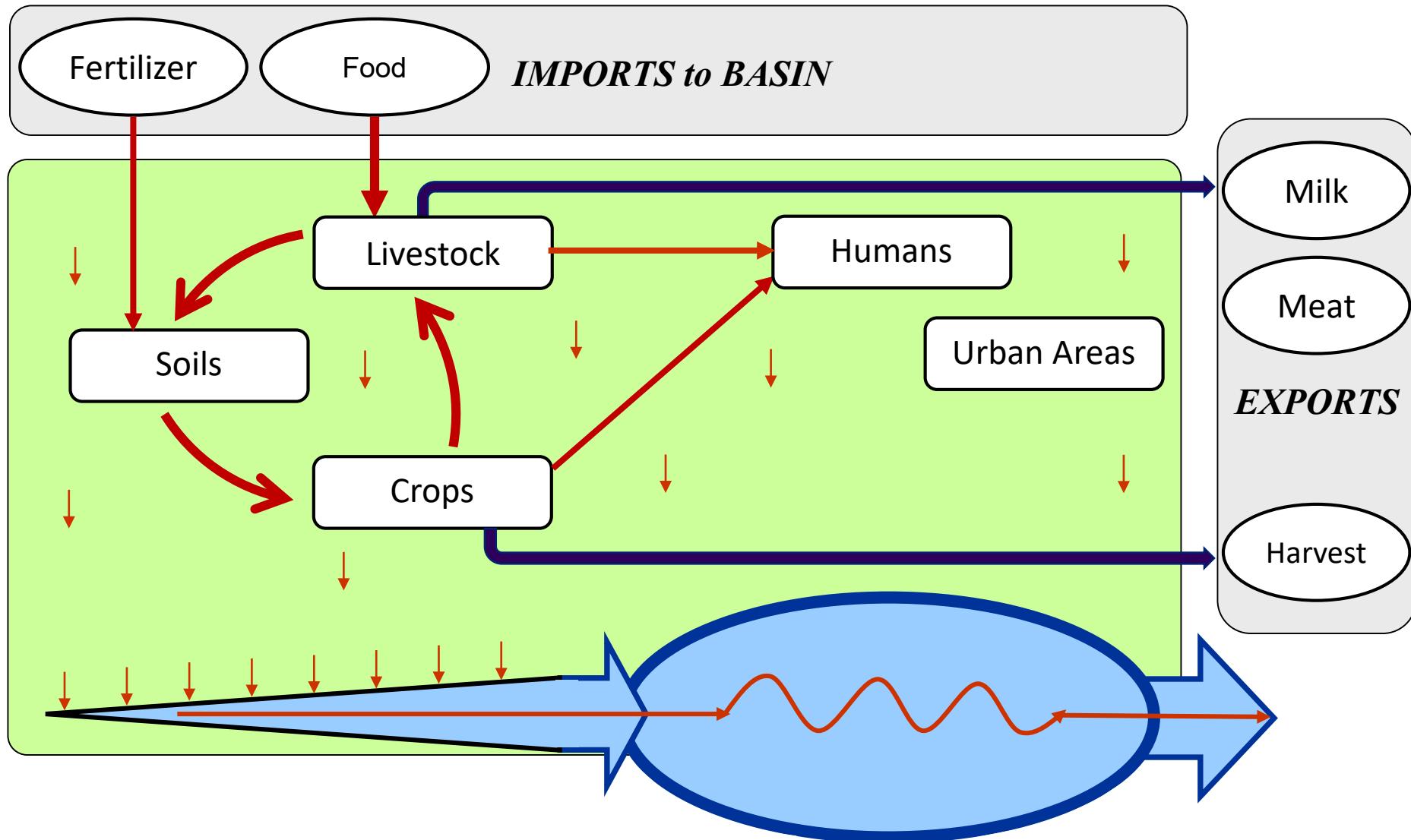




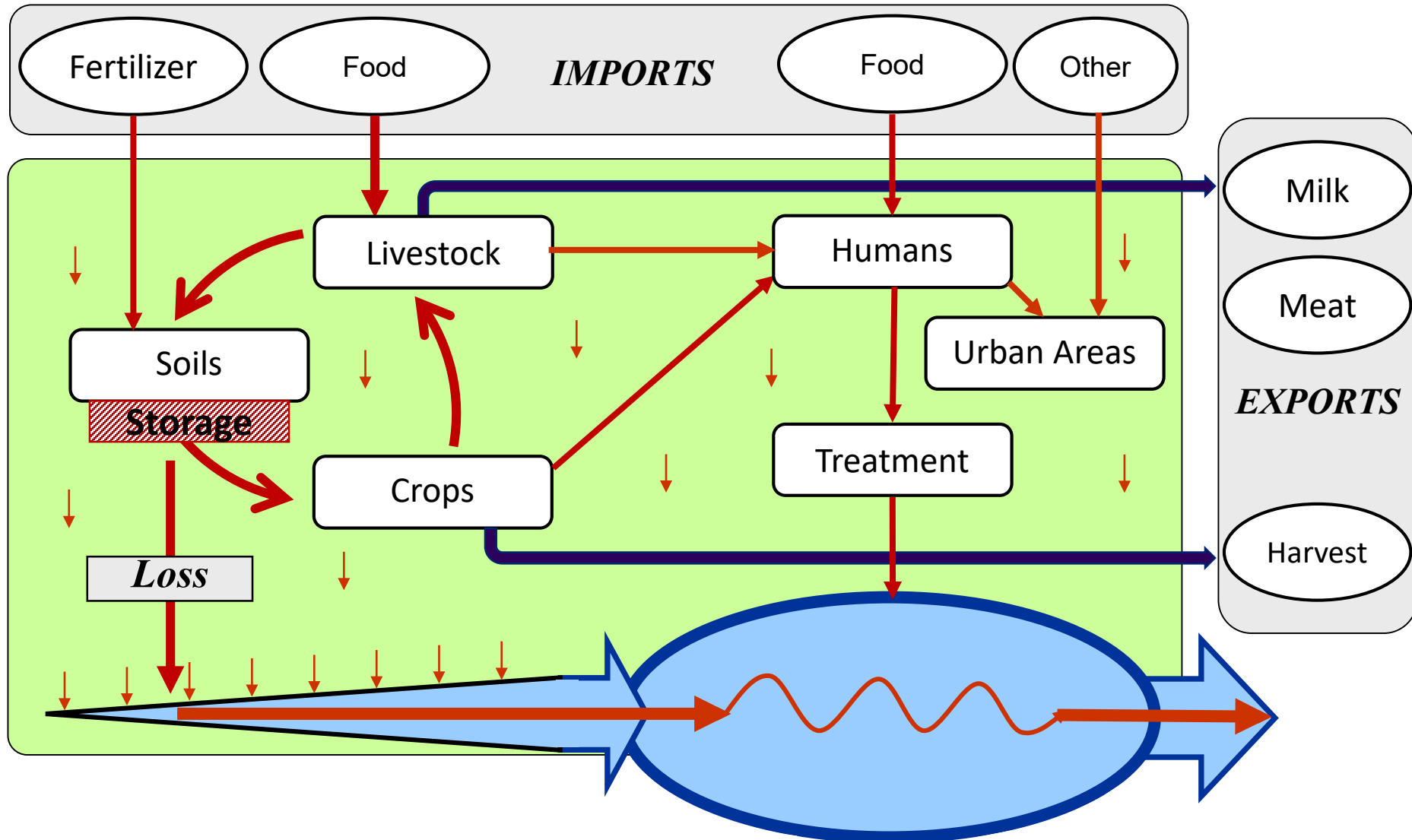
# Introduction of phosphate rock



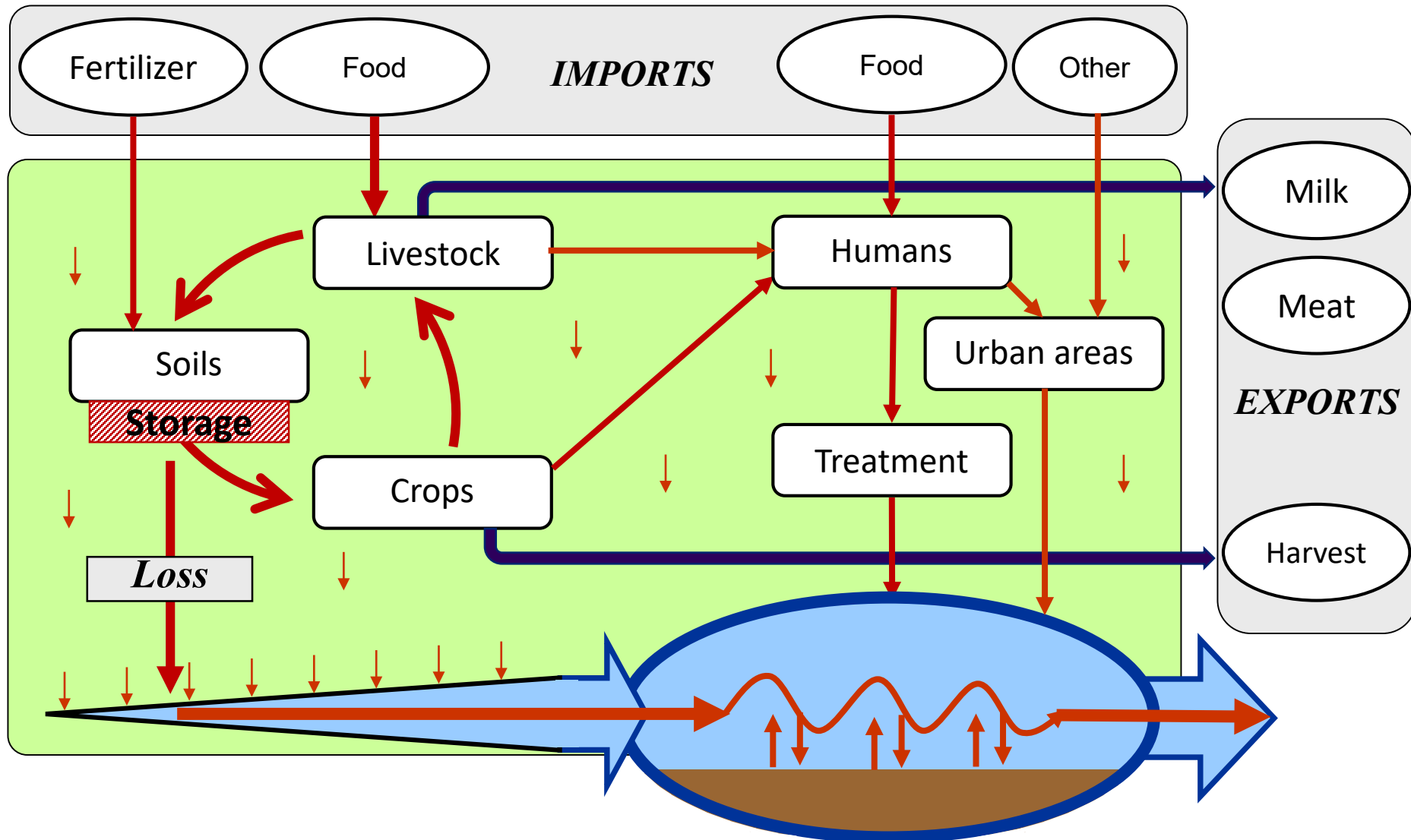
# Watershed Model



# Watershed Model



# Watershed Model



# Changes are slow in an ecosystem

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- There are 2 large phosphorus storage areas that react slowly
  - Soils
  - Sediment
- Many decades of human land use have created current conditions
- Will require similar amount of time to reverse the trend and achieve goals

# Principles to Guide the Recommendations

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# Principles to Guide the Recommendations

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## Supported by Science and Research



# Principles to Guide the Recommendations

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## Significant Impact



We aim to solve the problem

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# Principles to Guide the Recommendations

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**Bold**



Not more of the same

# Principles to Guide the Recommendations

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## Actionable



Report should not be “shelved”

# Principles to Guide the Recommendations

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- **Limited number of Priority Recommendations (6)**
- **Additional Recommendations (16)**

# A note about the recommendations

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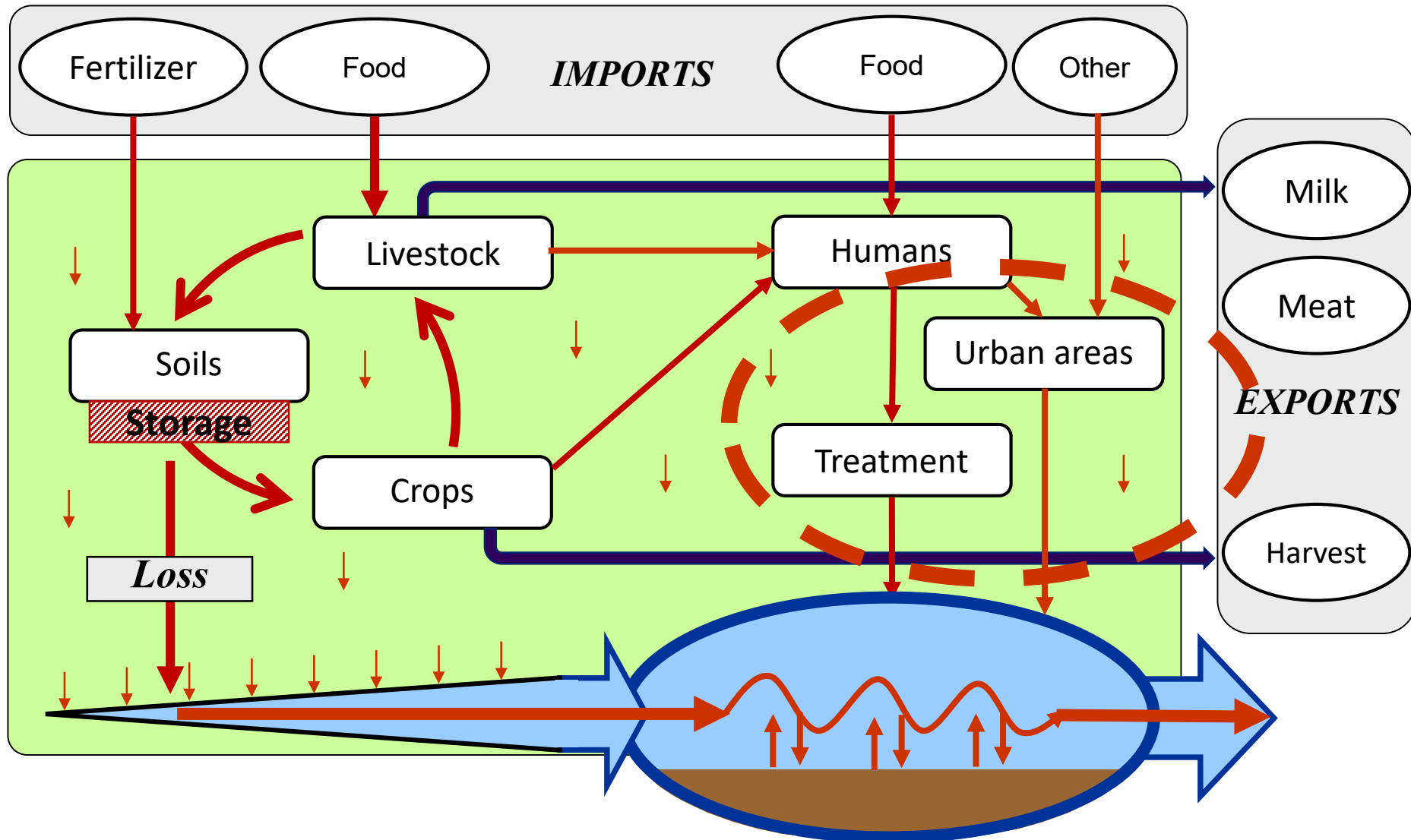
- The recommendations are addressed to Canadian and US governments, and partners
- The recommendations may be applied differently in Quebec and Vermont
- Although Missisquoi Bay has special conditions, almost all recommendations can be applied across the Lake Champlain basin
- Do not act to the detriment of individuals or companies
  - Financial support
- Target critical areas

# Priority Recommendations

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1. Establish and coordinate a binational phosphorus reduction working group to enhance cooperation and accountability of parties to achieve mutually agreed goals
2. Develop a Binational Mass Balance for Phosphorus Imports and Exports in the Missisquoi Bay Watershed
3. Reduce the use of phosphorus on the lands of the Missisquoi watershed
4. Increase the proportion of cropping systems that exhibit less phosphorus loss
5. Increase protection and increase the area of floodplains, wetlands and forest lands and ensure that they are reconnected to promote nutrient retention
6. Engage public stakeholders to commit to the goals of safe water and healthy ecosystems

# Urban areas



# One additional priority recommendation?

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- Consider a Recommendation 7
- Developed areas
  - Ensure full compliance of wastewater infrastructure – public and private
  - Implement ecological stormwater management practices to reduce combined sewer systems and overland storm flows
  - Encourage amenities that protect the quality of water through regulatory tools

## R1 – Form a permanent binational working group

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- **Common Objectives** for partners (QC-VT)
  - Average annual target concentration of 25 µg/L in the Bay
  - Harmonize the collection and publication of data
- **Permanent Binational Workgroup**
  - Develops, implements and tracks an action plan to achieve goals by building on existing plans
  - Standing subcommittee of the LCBP
- **Accountability** – Must report progress annually
  - To the LCBP Steering Committee
  - OBVBM Board
  - And to the public
- **Ongoing funding** from the federal and provincial/state governments to achieve goals



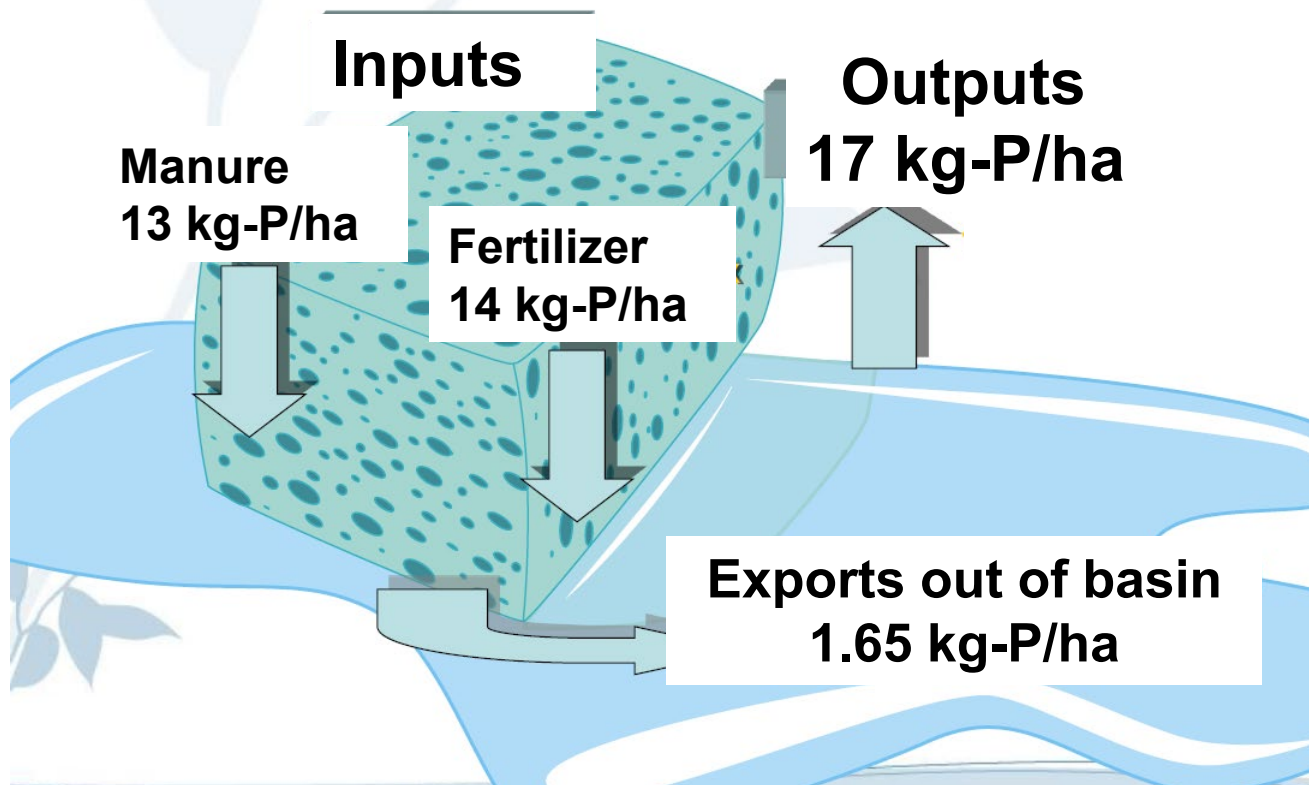
## R2 – Develop a binational mass balance for phosphorus

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- Understand sources of phosphorus:
  - External (imported)
  - Internal (in basin, in bay)
  - Storage (wetlands, soils, other places)
  - Exports
  - Loss
- Use results to target actions
- Will allow to improve strategy to reduce phosphorus imports and transport to waterways

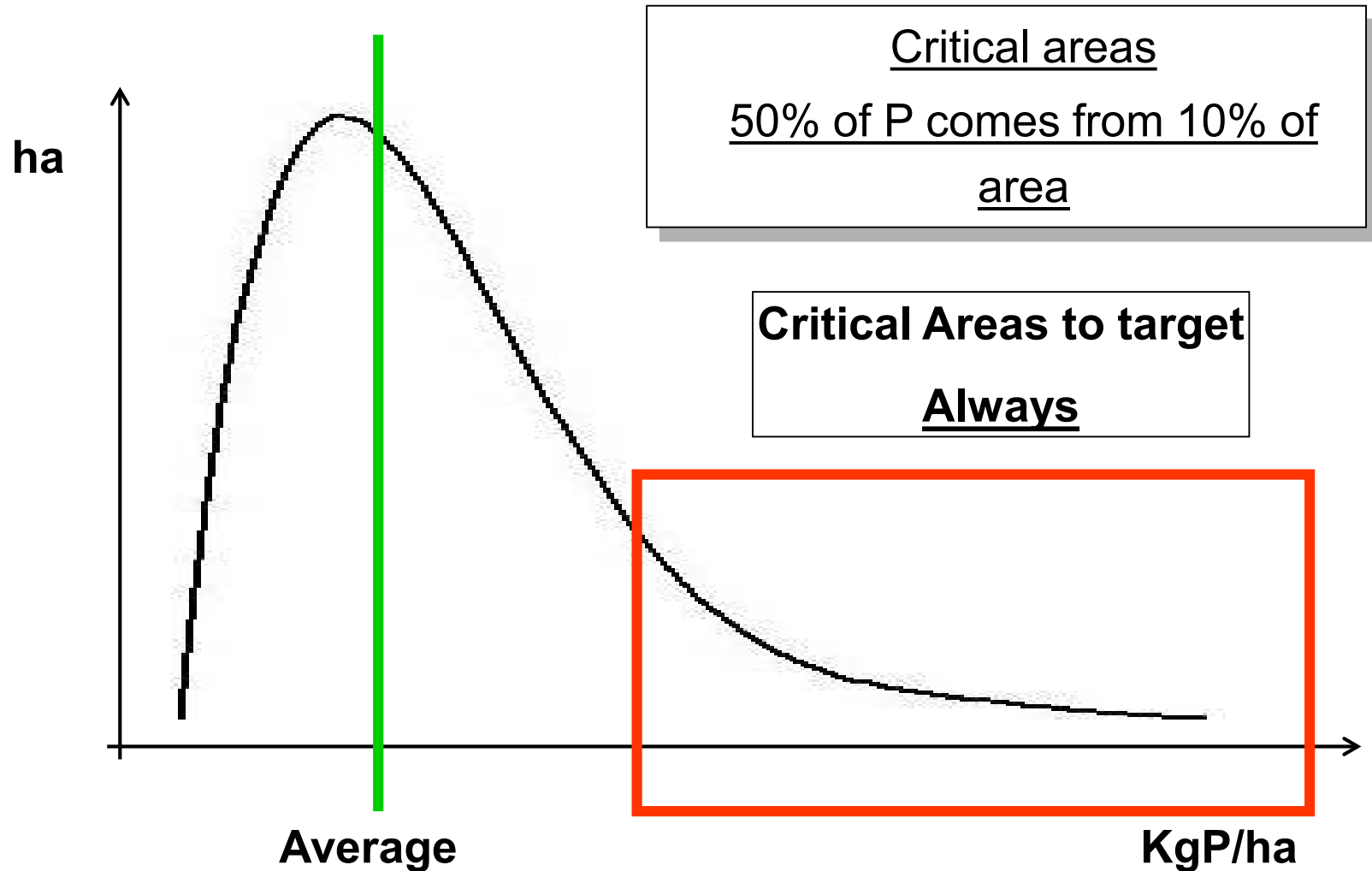
## R2 – An example of mass balance

**Mass balance of phosphorus:  
Nothing is lost, nothing is created**



Source : IRDA

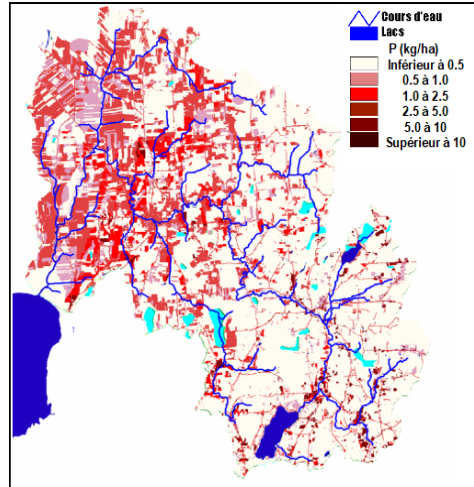
# What is a Critical Area ?



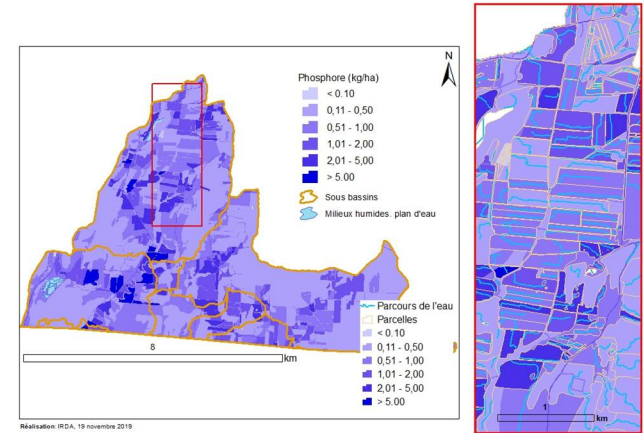
# We know where Critical Areas are

Have been mapped for

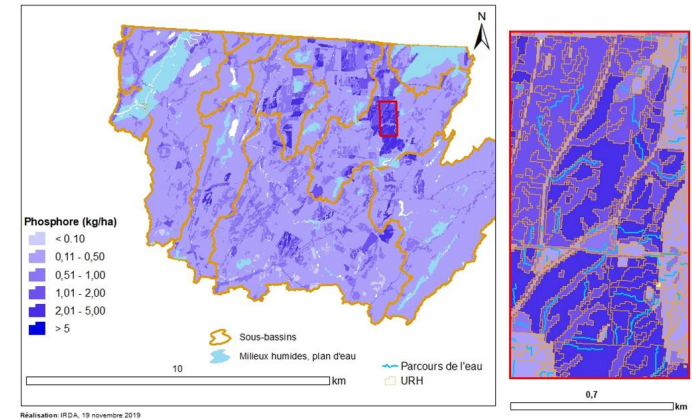
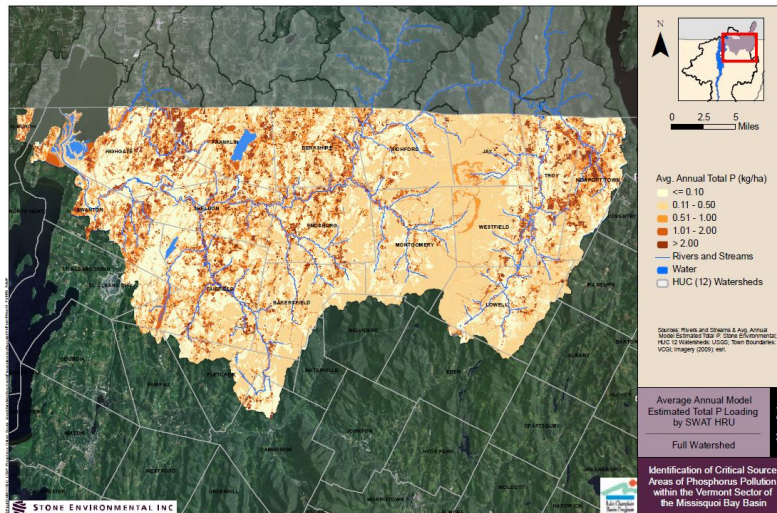
- Pike river
- Rock river
- Vermont



Exportation de phosphore du bassin La Roche  
Scénario de référence 2018



Exportation de phosphore du bassin La Roche (Vermont)  
Scénario de référence



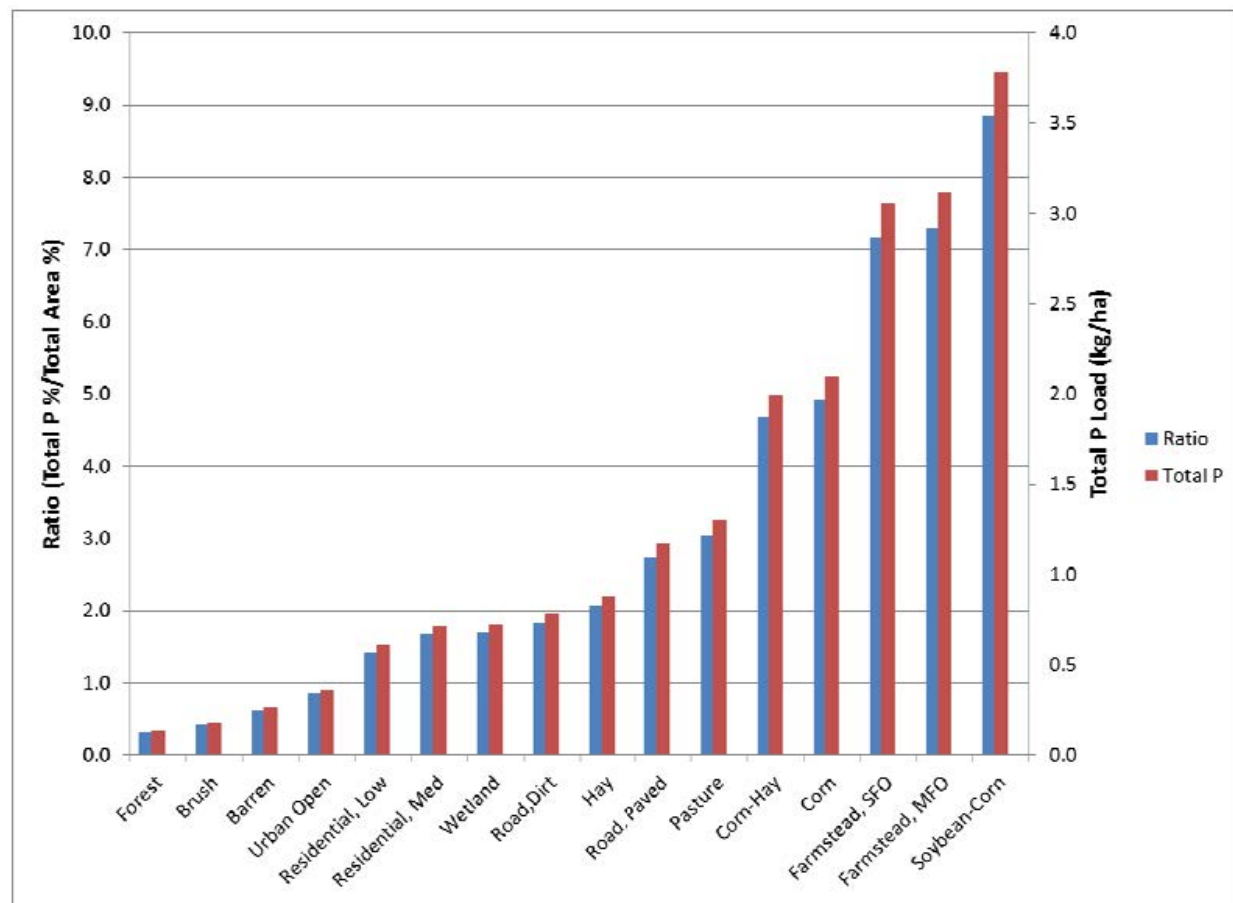
Sources : IRDA  
Stone environmental

## R3 – Reduce the use of phosphorus

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- **Challenge** – Reduce fertilizer....while maintaining yields
  - **Target the “Critical Areas”**
- Phosphorus stored in the soil allows to do it in many places
  - The soil is often richer than necessary
- But there is a risk, at least **perceived**, of yield loss
- We recommend:
  - **Eliminate** risk with “Yield Insurance”
  - **Review** agronomic recommendations with emphasis on the need for plants and soil capacity to retain phosphorus
  - Implement practices to **reduce residual phosphorus**
  - Develop protocols for **sustainable management** of phosphorus in soils
  - To study the processes and markets for transforming and **exporting** manure outside of the watershed or in replacement of mineral fertilizers

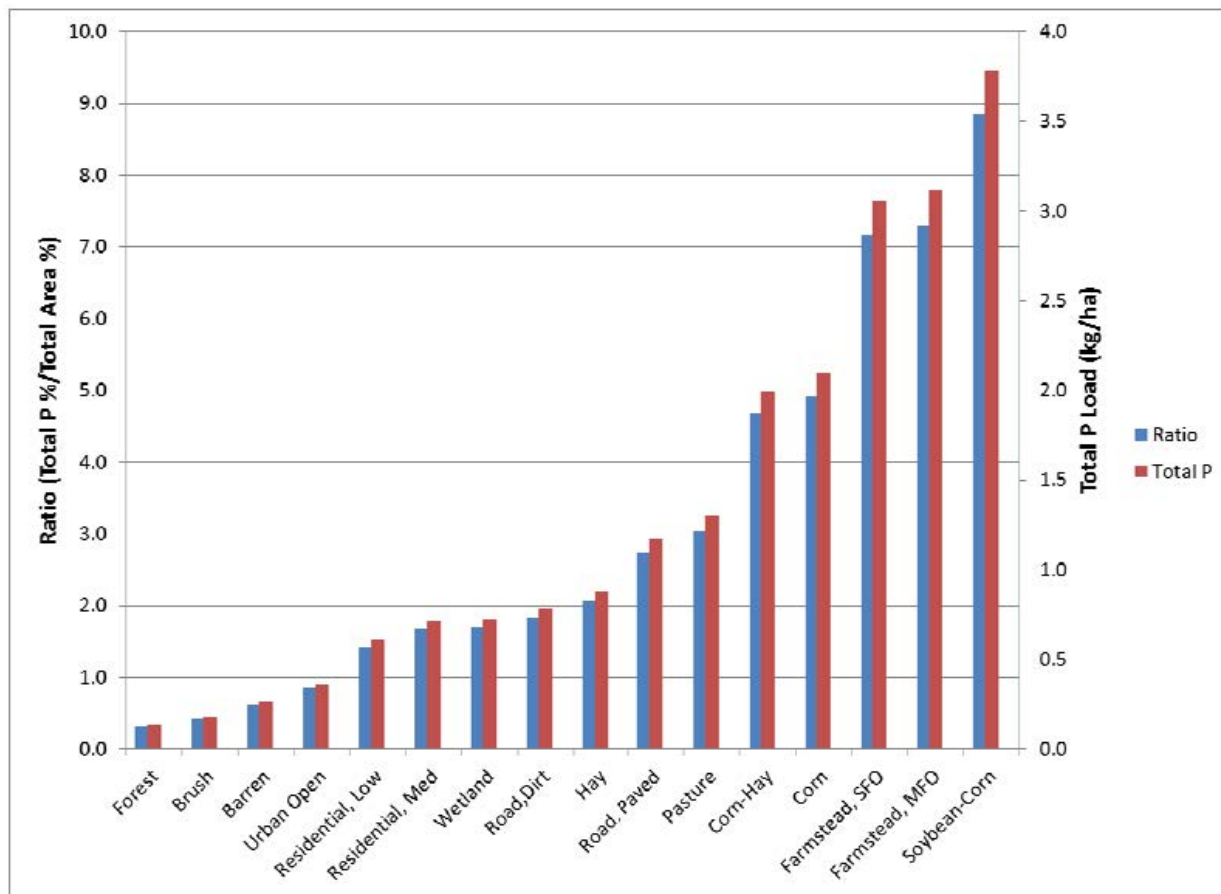
# Phosphorus Loss by Land Use



**P Loss by  
hectare**

**Land Use Type**

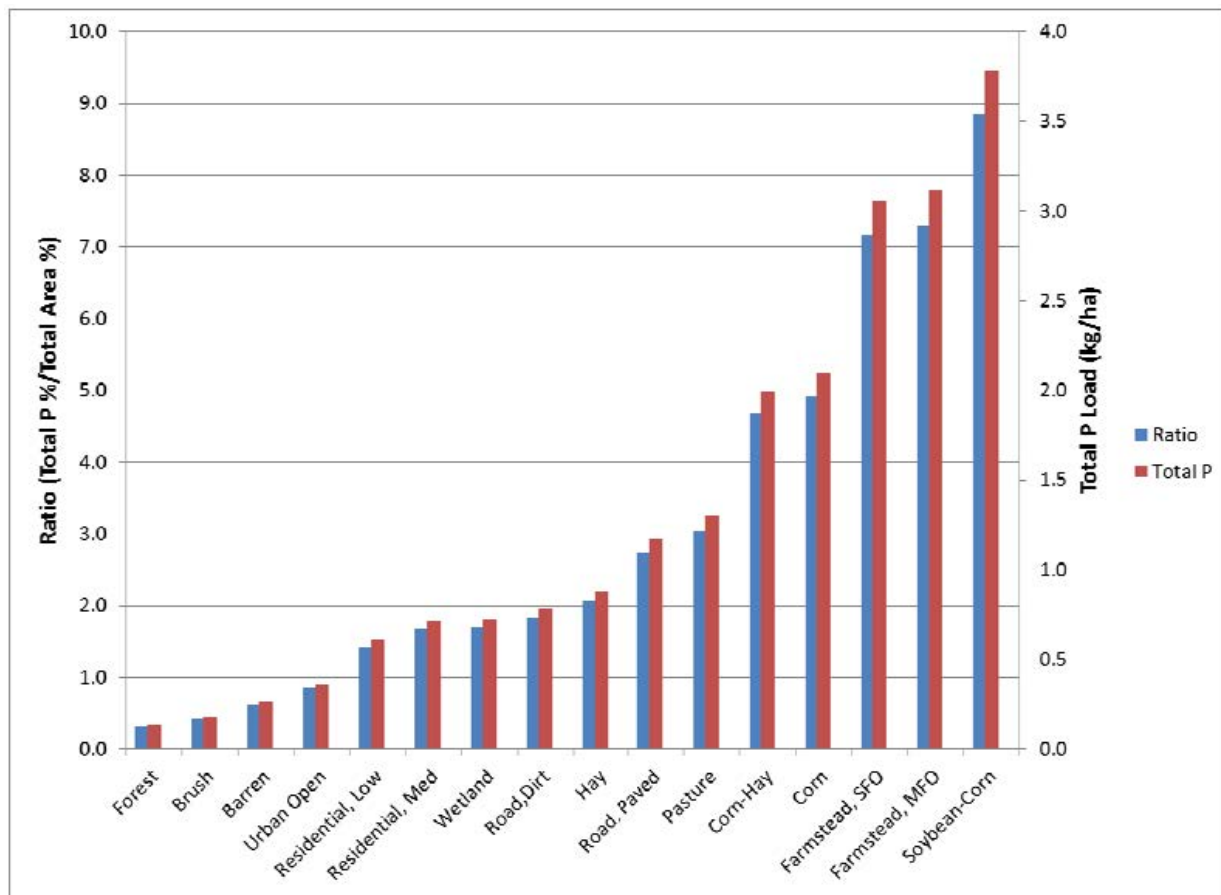
# Phosphorus Loss by Land Use



R3

Do as well with  
less phosphorus

# Phosphorus Loss by Land Use



**R3**

**Do as well with  
less phosphorus**

**Financial support  
Target critical areas**

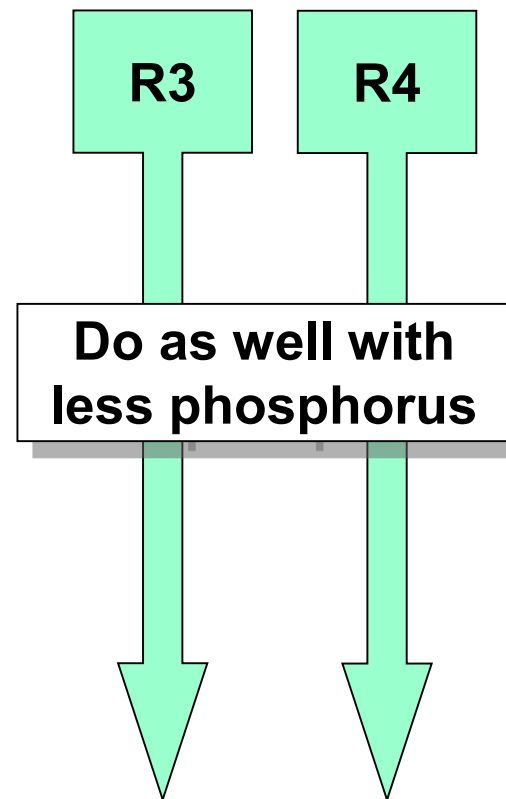
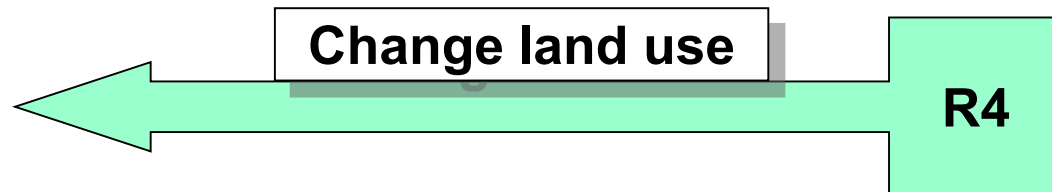
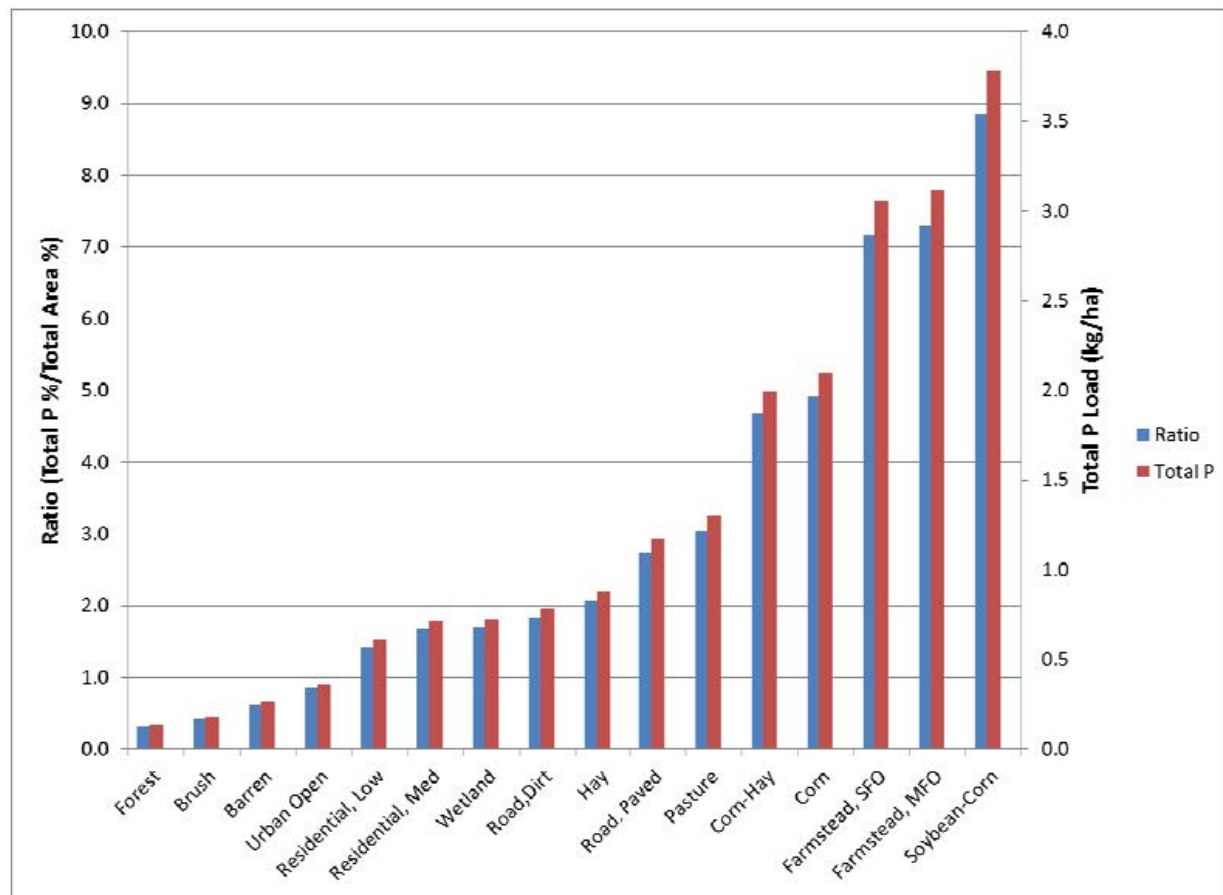


## R4 – Reduce phosphorus loss

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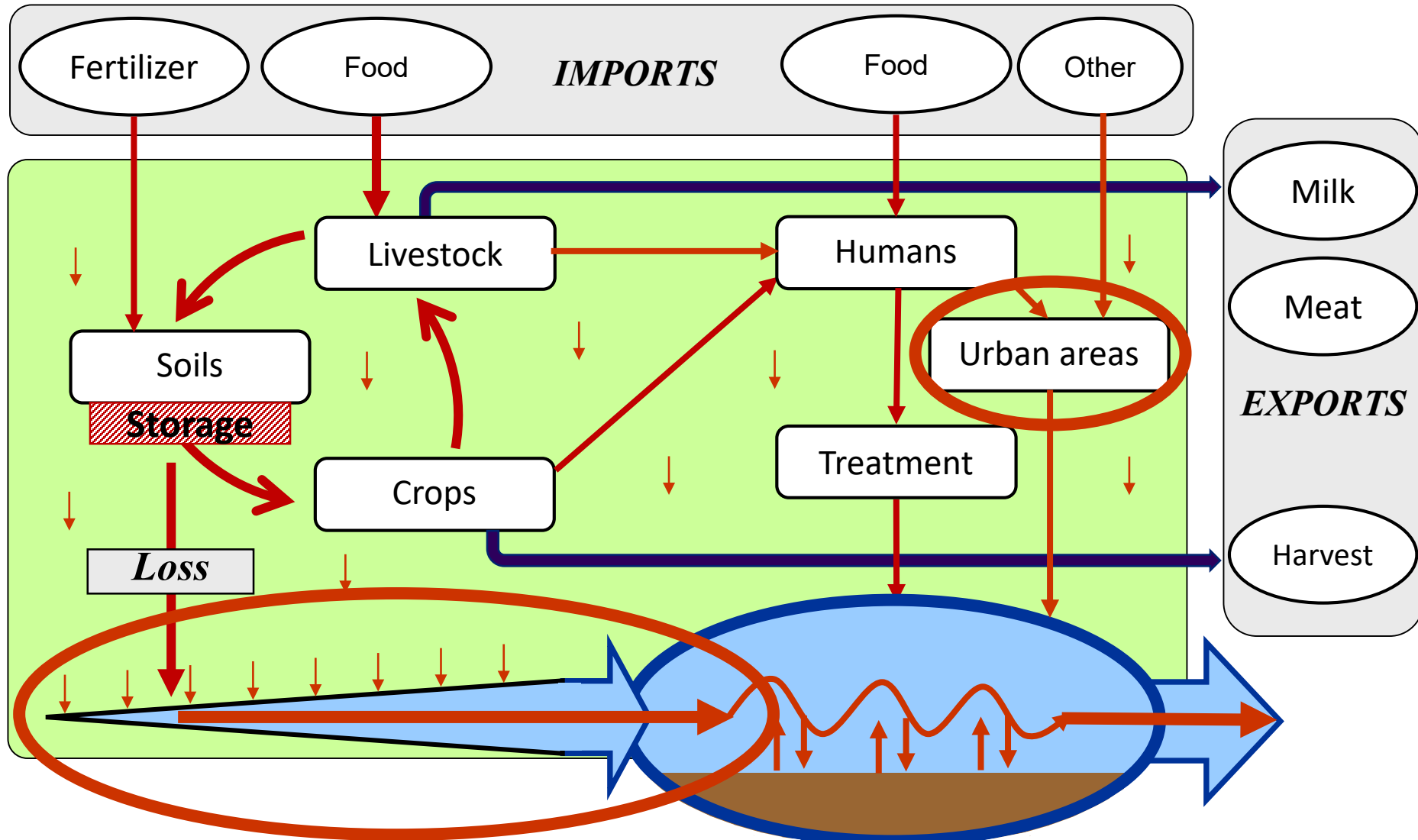
- **Reduce the risk of erosion** during winter and spring
  - Plant **cover crops** and intercrops
  - Promote the management of **crop residues** in spring
- Encourage **transition** from corn/soy to cereal grains
  - **Financial support**, market development
  - Revisit grant programs
- Establish financial support programs that promote conversion of crop systems supporting livestock operations to perennial forage (grassland) areas, **in critical areas** – sensitive to erosion

# Phosphorus Loss by Land Use



**Financial support**  
**Target critical areas**

## R5 - Increase storage and filtration

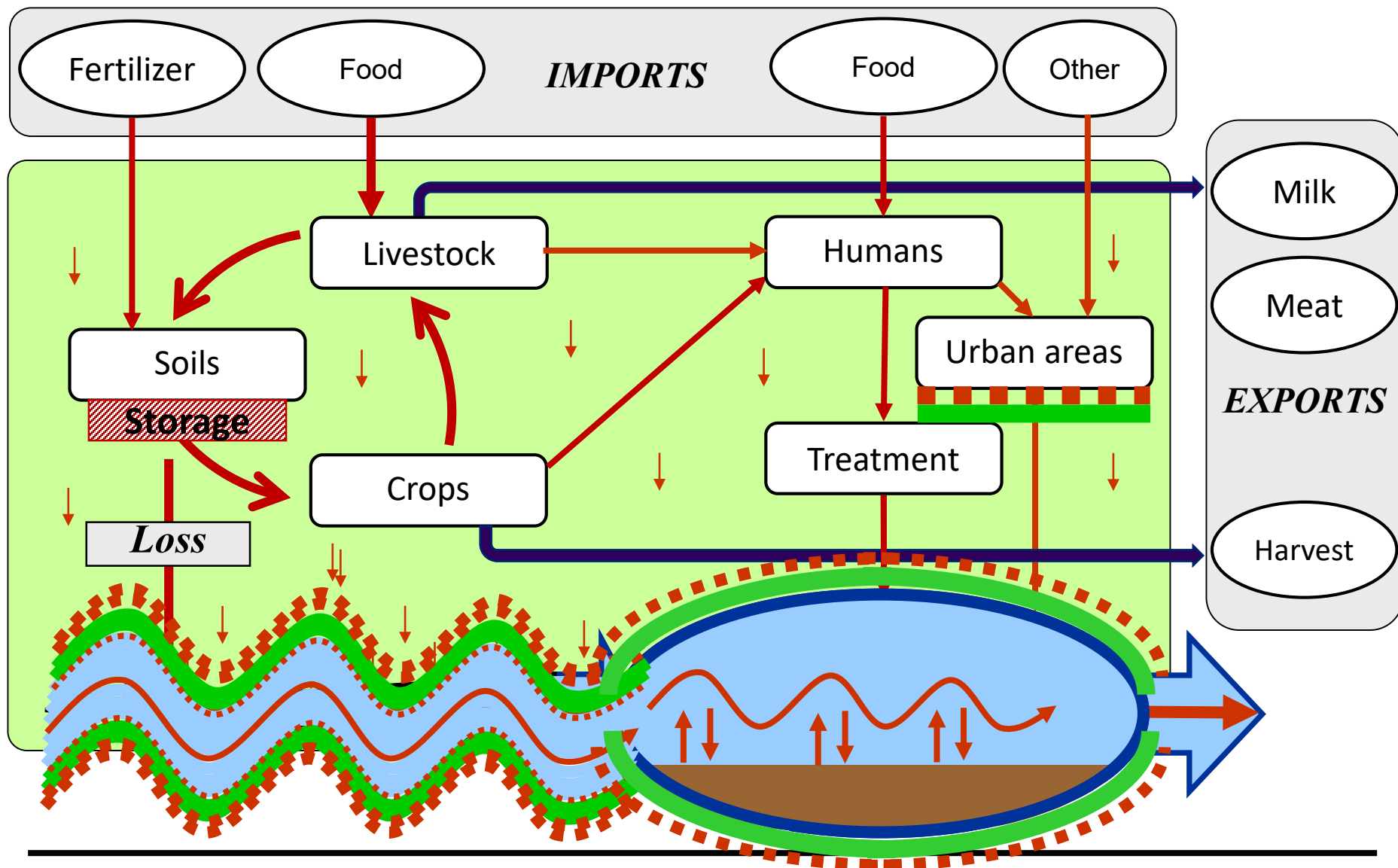


## R5 - Increase storage and filtration

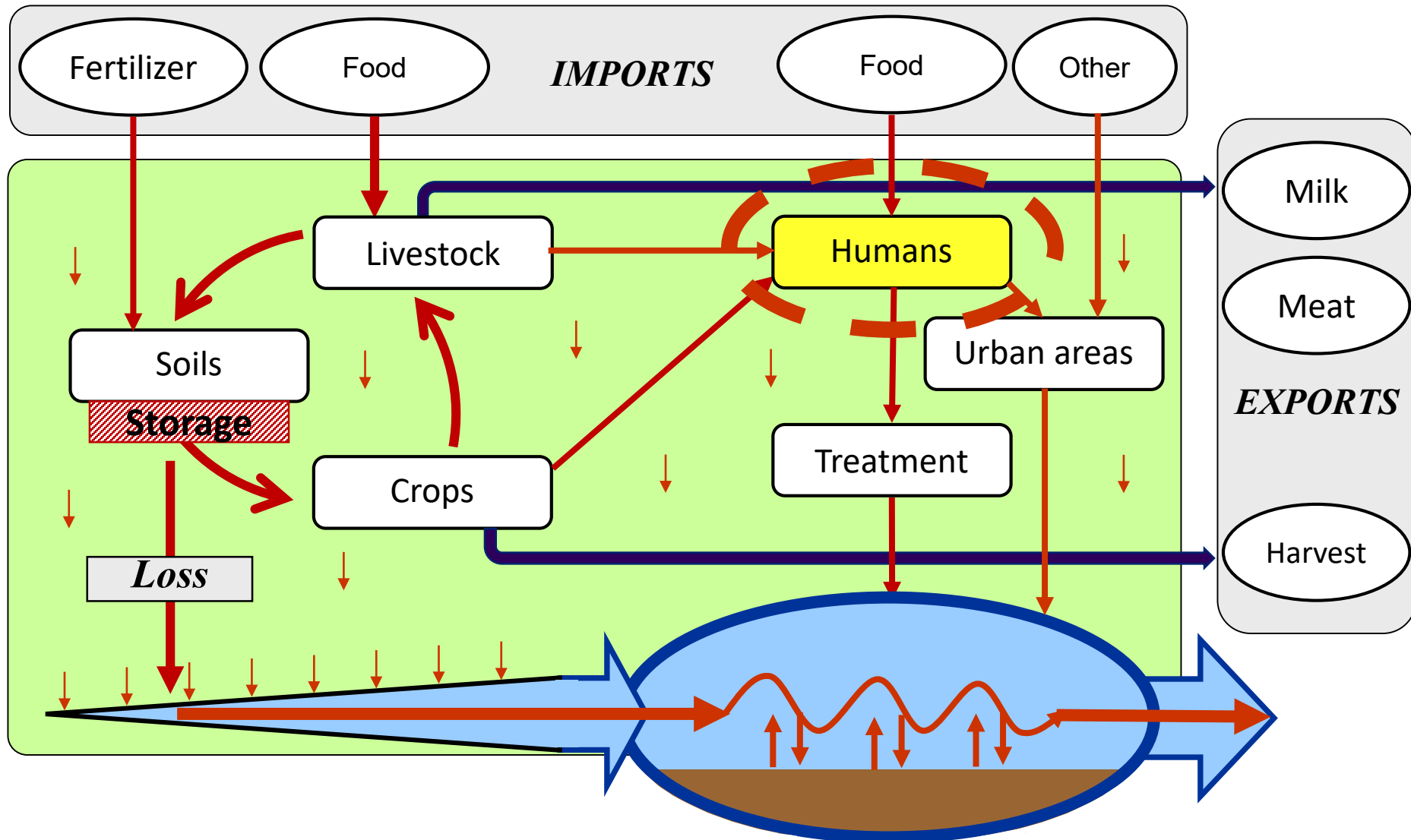
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- Promote **nutrient retention** by protecting:
  - Riparian areas
  - Wetlands
  - Forested areas
- Restore dynamic balance and ecosystem services of rivers
- Extend withdrawal and conservation programs and recognize the economic benefits and ecological services provided
  - Flood mitigation
  - Wildlife habitat - biodiversity

## R5 - Increase storage and filtration



# R6 – Engage the public



## R6 – Engage the public

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- Nothing will be done without **political will**
- Political will comes from **public pressure**
- The LCBP and OBVBM will **increase public education** awareness efforts to encourage participation
- The Workgroup should **report** progress (or lack of) and results achieved
- **Demand actions** from elected officials – at all levels
  - Does your municipality have an action plan?

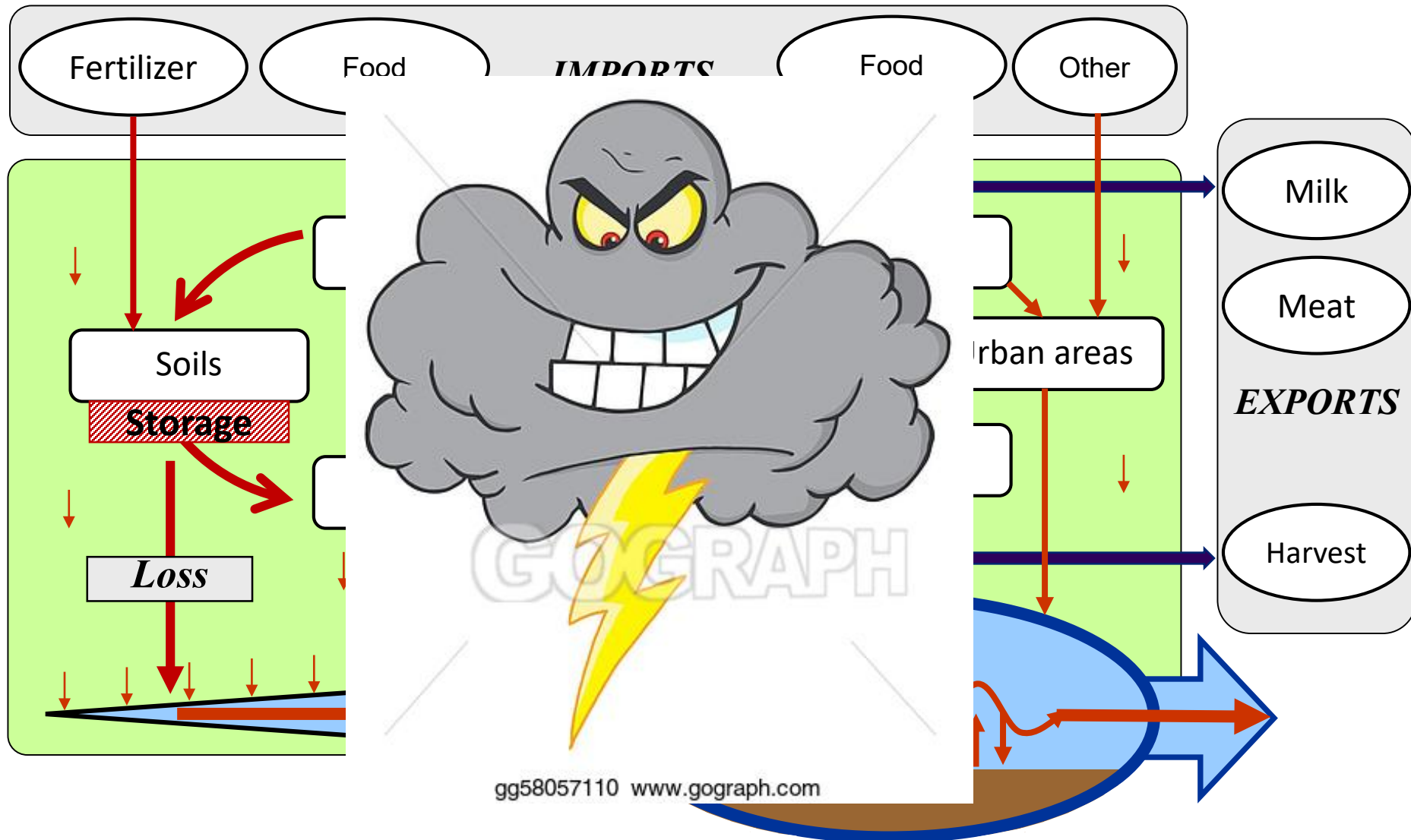


# WHAT YOU CAN DO: ACTIVATE!





# Watershed Model



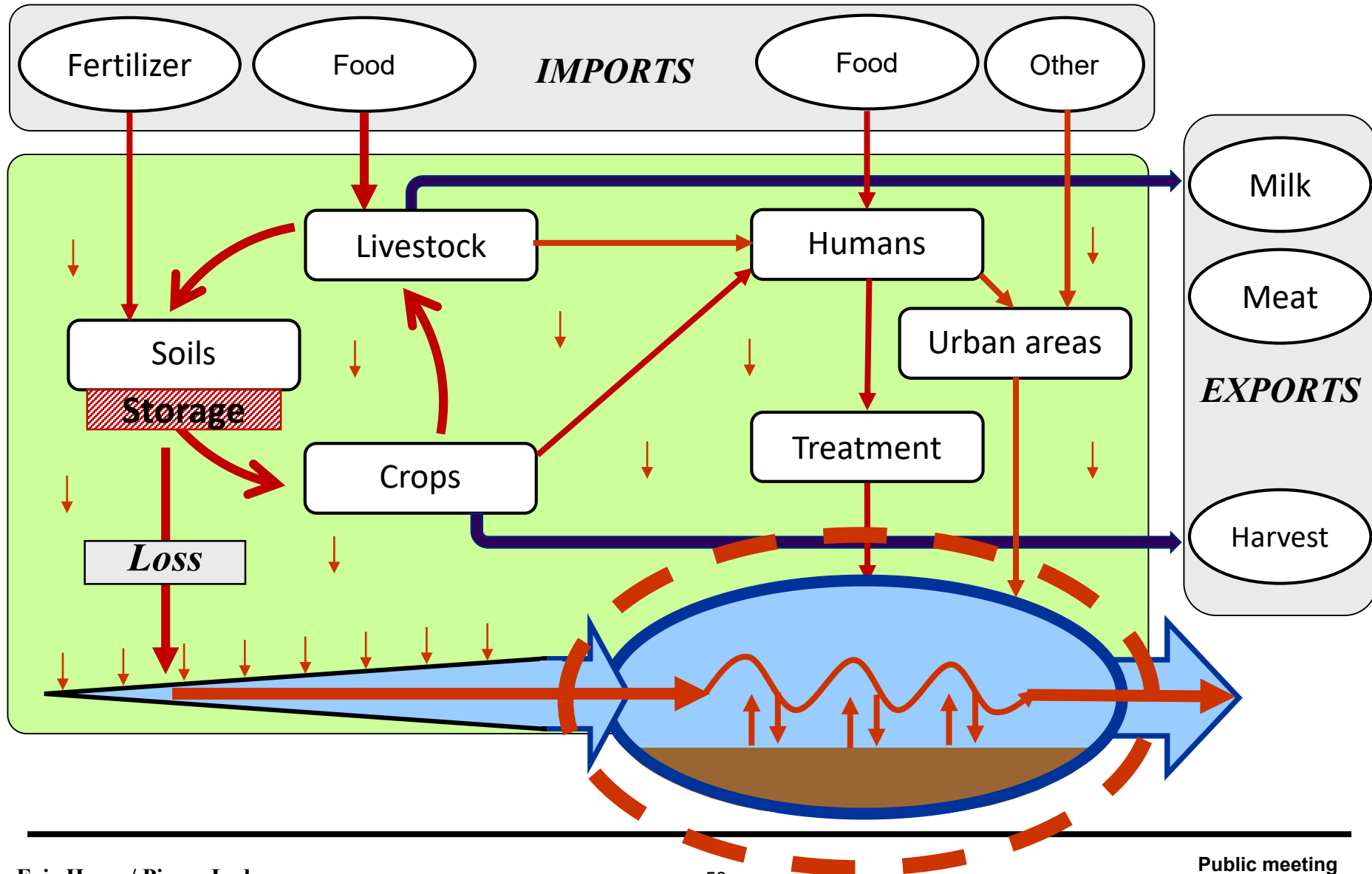
# A word on climate change

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- Governments must develop and implement measures to combat climate change
- Climate change impacts on hydrology is **an additional challenge** to achieving water quality objectives
- Increasing temperatures and extreme weather events are **already leading** to higher nutrient loads and more frequent cyanobacteria blooms

**Not a recommendation in itself but...  
it needs to be tackled seriously**

# Storage area - sediments



# Additional recommendations

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## Sediments accumulated in Missisquoi Bay

- In-situ restoration techniques have **limited effectiveness and limitations**
- Shallow Missisquoi Bay covers 78 km<sup>2</sup> and the wind and waves are strong, so no technique lends itself to this kind of condition.
- The identified in-situ restoration techniques are not adapted to a lake as large as Missisquoi Bay, or become **very expensive**
- We recommend:
  - Improve the understanding and modeling of phosphorus movement in the bay to facilitate the study of sediment management, neutralization or removal techniques that will eventually need to be addressed

# Additional recommendations

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- Financing and Regulation
  - Expand incentive programs to increase the implementation of best management practices, including in developed, wooded and agricultural areas
- Agriculture
  - Review fertilizer application standards and equipment to encourage nutrient incorporation into the soil
- Research
  - Increase funding for nutrient reduction research, especially in critical areas

# For more information

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- What is in the report – Background for the recommendations
- What is not –not a comprehensive summary of all of the work happening in Missisquoi Bay
- Where to find it:

**[www.ijc.org/en/lclm](http://www.ijc.org/en/lclm)**

# For More Information: [www.ijc.org/en/lclm](http://www.ijc.org/en/lclm)

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## **US EPA Champlain TMDL webpage:**

<https://www.epa.gov/tmdl/lake-champlain-phosphorus-tmdl-commitment-clean-water>

## **Vermont Champlain TMDL webpage:**

<https://dec.vermont.gov/water-investment/cwi/restoring/champlain>

## **Lake Champlain Basin Program webpage:**

[www.lcbp.org](http://www.lcbp.org)

## **LCBP's State of the Lake Report for Lake Champlain:**

<https://sol.lcbp.org/en/> (English)

<https://sol.lcbp.org/fr/> (Français)

## **LCBP's Management Plan for Lake Champlain (Opportunities for Action)**

<http://plan.lcbp.org/>

# For More Information: [www.ijc.org/en/Iclm](http://www.ijc.org/en/Iclm)

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## **Plan directeur de l'eau de l'OBVBM:**

<http://www.obvbm.org/pde>

## **Plan d'action de la MRC Brome-Missisquoi:**

[https://mrcbm.qc.ca/fr/eau\\_plan\\_d\\_action.php](https://mrcbm.qc.ca/fr/eau_plan_d_action.php)

## **Ministère de l'environnement et de la lutte aux changements climatiques du Québec (MELCC)**

<http://www.environnement.gouv.qc.ca/eau/bassinversant/bassins/missisquoi/>

<http://www.environnement.gouv.qc.ca/eau/strategie-quebecoise>

<http://www.environnement.gouv.qc.ca/eau/protection/index.htm>

## **Ministère de agriculture, des pêcheries et de l'alimentation du Québec (MAPAQ)**

<https://www.mapaq.gouv.qc.ca/fr/Productions/Agroenvironnement/Pages/Agroenvironnement.aspx>

## **Regroupement des Organismes de bassin versant du Québec (ROBVQ)**

<http://reperteau.info/>

<https://robvq.qc.ca/>

## **Institut de recherche et de développement en agroenvironnement (IRDA)**

<https://www.irda.qc.ca/fr/>



# Your turn

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Comments ?

Questions ?

Tonight !

or

[lclm@ottawa.ijc.org](mailto:lclm@ottawa.ijc.org)

or

<https://ijc.org/fr/lclm/nouvelles/consultation-publique-2019>



## ***Public Comment Period***

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Public Comments accepted until:

**December 14, 2019**

**Email: [lclm@ottawa.ijc.org](mailto:lclm@ottawa.ijc.org)**

**Online: [ijc.org/en/lclm](http://ijc.org/en/lclm) or [ijc.org/fr/lclm](http://ijc.org/fr/lclm)**

**Tonight! – step up to the microphone or fill out a comment card**

# Simple phosphorus cycle in a watershed

