Forward Looking Activities Governing Grand Challenges
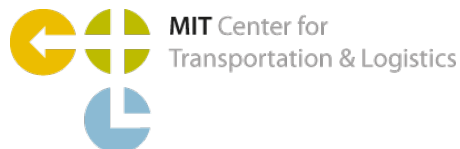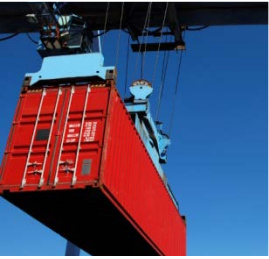European Foresight Platform Final Event
Young's research session – Vienna, 28 september 2012

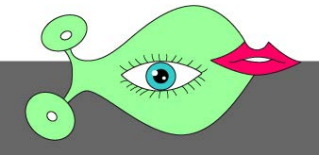**A Foresight Approach to Reshaping the Actions in Bogota's Food Supply and Security Master Plan**
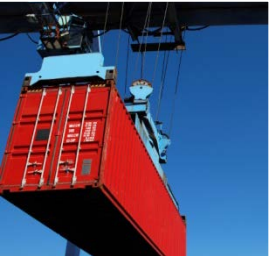
Contents

1. Overview
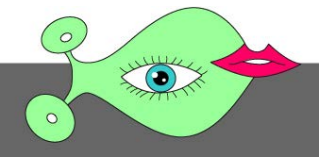
2. Foresight exercise

3. Future works

Contents

1. **Overview**

2. Foresight exercise

3. Recommendations

Overview: Bogotá

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LOGISTICS INNOVATION

Sin estrato
Estrato 1
Estrato 2
Estrato 3
Estrato 4
Estrato 5
Estrato 6

USAQUÉN
CHAPINERO
SANTA FÉ
SAN CRISTÓBAL
SUBA
BARRIOS UNIDOS
CANDELARIA
LOS MÁRTIRES
TEUSAQUILLO
ANTONIO NARIÑO
USME
ENGATIVÁ
PUENTE ARANDA
RAFAEL URIBE URIBE
FONTIBÓN
TUNJUELITO
KENNEDY
CIUDAD BOLÍVAR
BOSA

Fuente: Planeación Distrital.
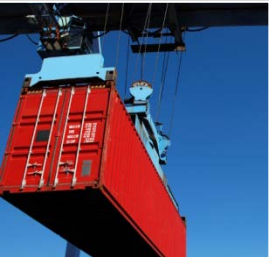
Population: 7,155,052 (2008)	**Area:** 1,587 km²	**Elevation**: 2.625 m	**HDI**: 0.904

Source: www.bogota.gov.co
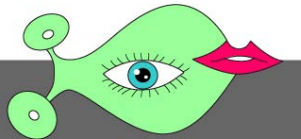
1. Overview: Nutrition in Bogotá

- **_Low nutrition levels of the population:_** The inhabitatns presented low consommation levels of basic food products in 2003 with regard to an ideal diet.

| Product	Consumed tons per day	Expected tons per day	Gap %
Dairy products	1.717	2.059	19.9%
Meat and pulses	716	1.354	89.1%
Vegetables	282	1.267	349.3%
Fruits	308	4.831	1468.5%
Fat oils	100	475	375.0%
Sugars	329	673	104.6%
Cereal	2.112	4.039	91.2%
Condiments	181	515	184.5%
Total	**5.745**	**15.213**	**164.8%**

Note: Expected tons per day were calculated on the basis of a set of products of 1921 grams and 2307 calories.
Source: Food Supply and Security Master Plan Technical Support Document – Consortium CPT-CIPEC 2004

1.1 Supply chain stakeholders and costs

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LOGISTICS INNOVATION
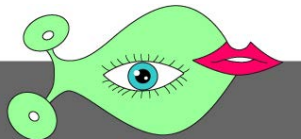
High supply costs: due to several actors and defficient management causing "*high costs and loss*".

Producer Brut margin: 35%		Middlemen Brut margin: 22%		Wholesaler Brut margin: 10%		Retailer (store, market) Brut margin: 33%		Final client 100

Accumulated price

35   57   67   **100**

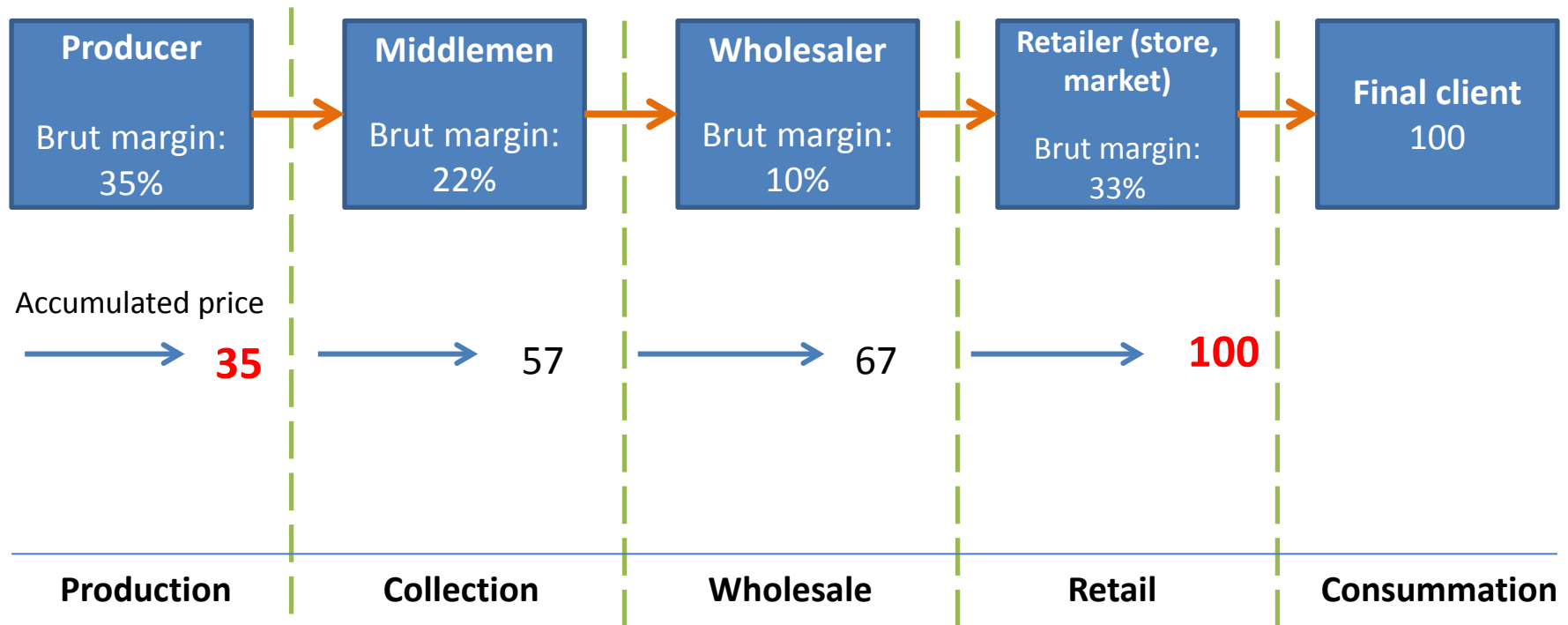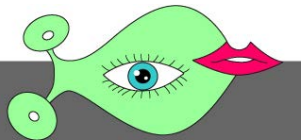| **Production**	**Collection**	**Wholesale**	**Retail**	**Consummation**

Source: Food Supply and Security Master Plan Technical Support Document – Consortium CPT-CIPEC 2004
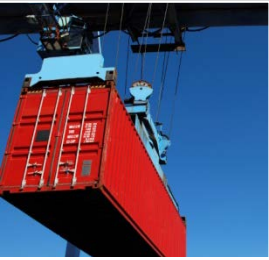
1.1 Supply chain stakeholders and costs
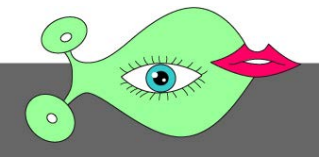
26,000 producers

1,800 middlemen

4,800 wholesalers 135,000 stores
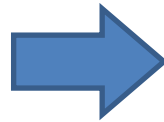
7.5 Bogotans of different likings and budgets

Source: Food Supply and Security Master Plan Technical Support Document – Consortium CPT-CIPEC 2004
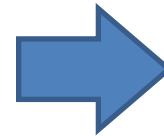
1.2 Schema of fruits and vegetables' flow

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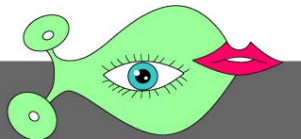LOGISTICS INNOVATION

Producers

Wholesale central

Stores

Markets

Nearby stock
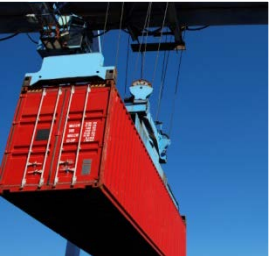
1.3 Food Supply and Security Master Plan

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Objective

Proposal

To create a new supply system which articulates, *the offer and demand.*

- *Informatic platform*
- *Logistics platforms*

In order to facilitate the flow of products.

Source: Documents Alimenta Bogotá

1.4 Schema proposed of fruits and vegetables' flow
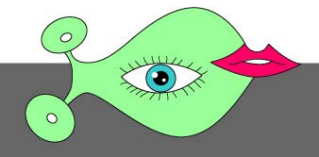
Nearby stock
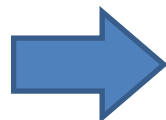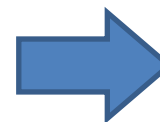
Producers

Logistic platforms

Informatic platform

Stores and markets
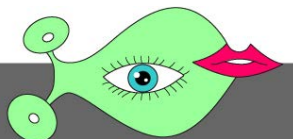
1.5 Wrap-up

• To **improve** nutrition levels of the **inhabitants**, specially in the food groups presenting more deficit.

• To **reduce costs** along the supply chain by eliminating steps and stakeholders that don't add value.

• To **introduce a new local distribution** schema based in **alliances** among producers and storekeepers, **logistics** and **informatic platforms**.
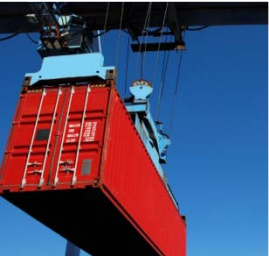
Agenda

1. Overview

2. **Foresight exercise**

3. Recommendations
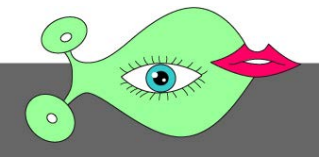
2.Objectives of the project

- *To increase the understanding of the supply dynamics of Bogota by analysing the supply chain of 5 fruits, vegetables and tubers (Banana, Orange, Potato, Plantain and Tomato).*

- *To create a tool which allows government to make decisions on the supply of fruits and vegetables in the city.*
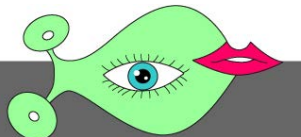
2. Foresight exercise

Type	Regional sector specific	**Duration**	18 months
Budget	178.000 Euros	**Time horizon**	2018

Pre-foresight	Recruitement	Generation	Action	Renewal
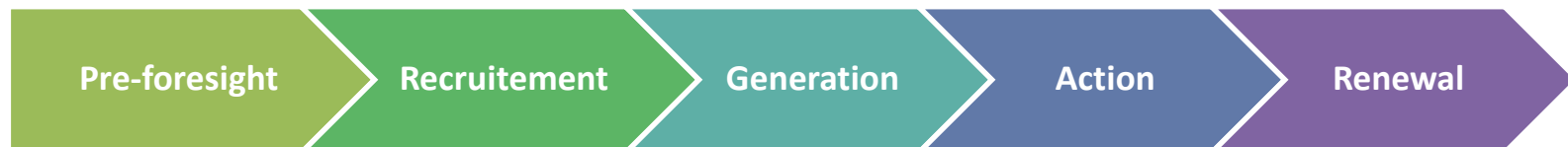
Adapted from: Miles 2002, Popper 2008

2. Foresight exercise

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2.1 Pre-foresight	2.2Recruitement	2.3Generation	2.4 Action	2.5 Renewal
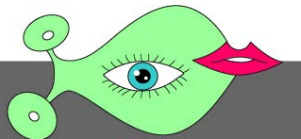
Characteristics

-Context: Bogotá, Colombia
-Domain: Food industry
-Territorial: Sub national

Methods
-Literature review
-System dynamics
-Interviews

Actors
-247 storekeepers
-15 experts on trade and production
-5 industry experts
-5 people from SDDE
-MIT-CTL researchers

Supply chain actors
Producer, middlemen, wholesaler, retailer and client.

Variables definition

-Trade channels
-Prices
-Stakeholders' profit
-Consummation variations

Model flows

Creation of a 900 variables model

Evaluation of impacts on small producers and stores

Recommendation to the FSSMP

Scenarios and possible outcomes

Consistency information

Proposal of revision du FSSMP

Model improvement
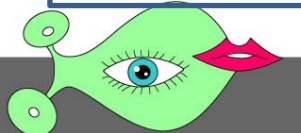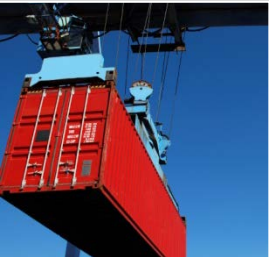
2.3 Generation: Product flows
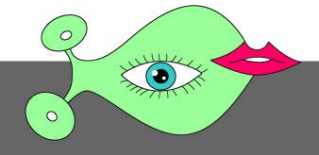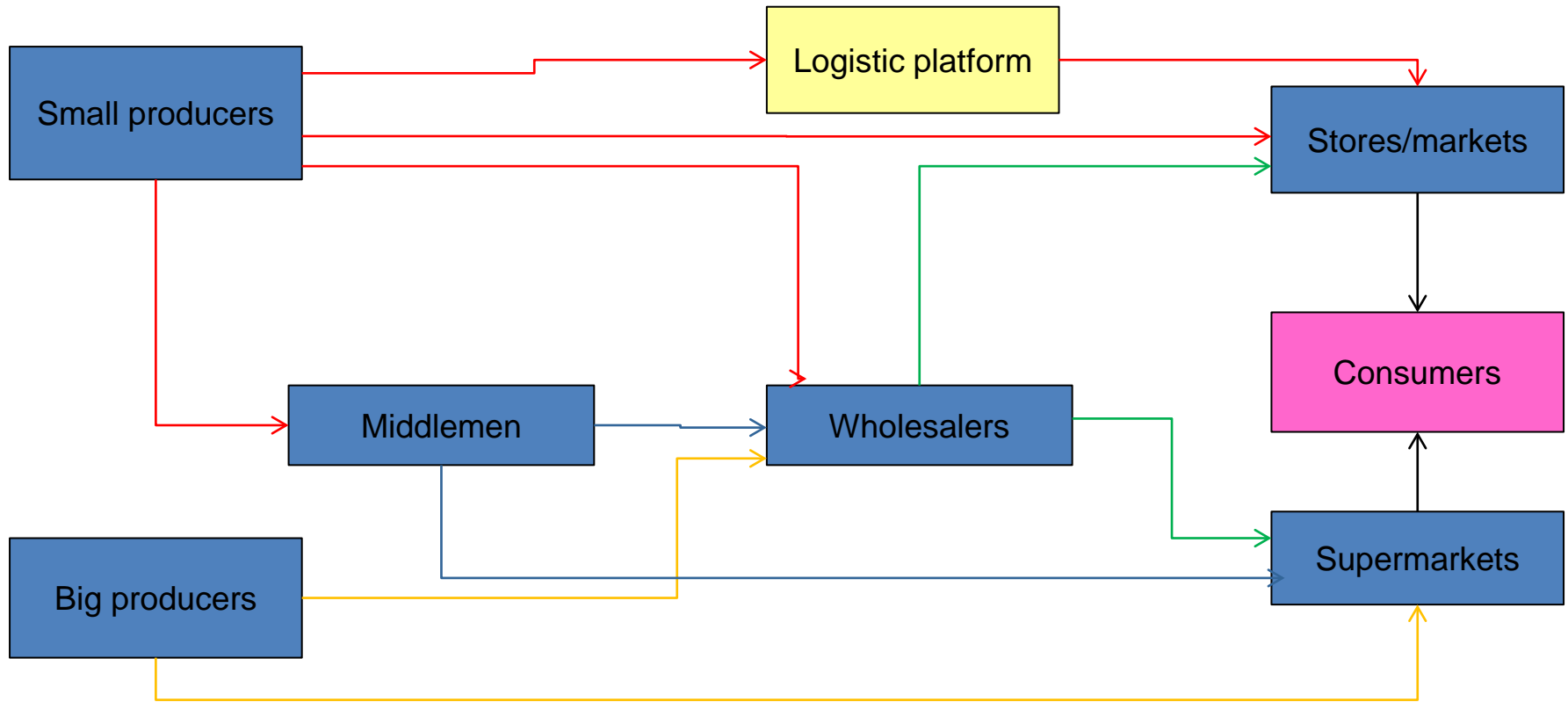
2.3 Generation: Money flow

Push of producers
And middlemen

Pull of retailers
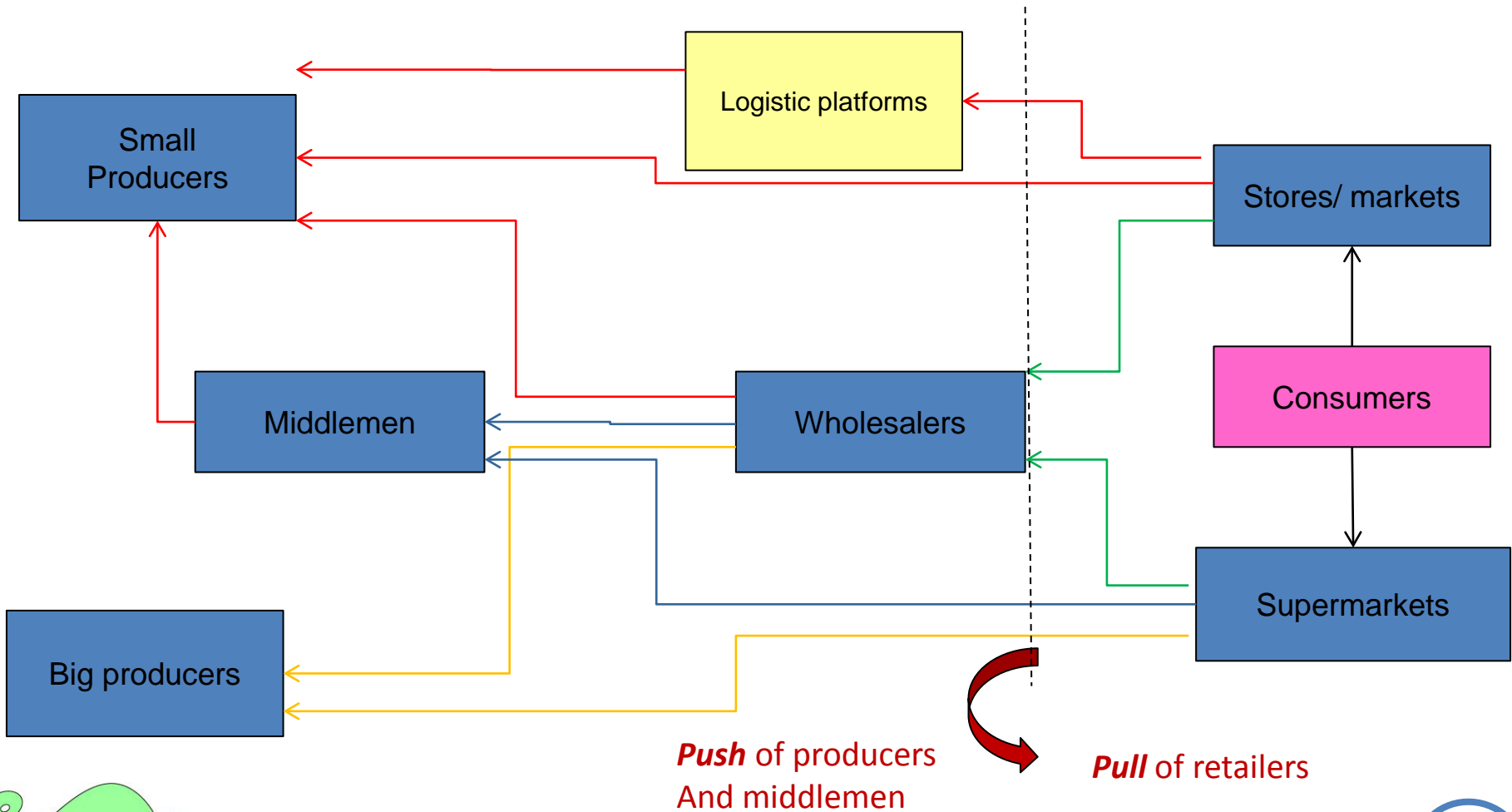
2.3 Generation: Information flow

Logistic platforms

Small producers

Stores/ markets

Wholesalers

Consumers

Middlemen

Big producers

Supermarkets
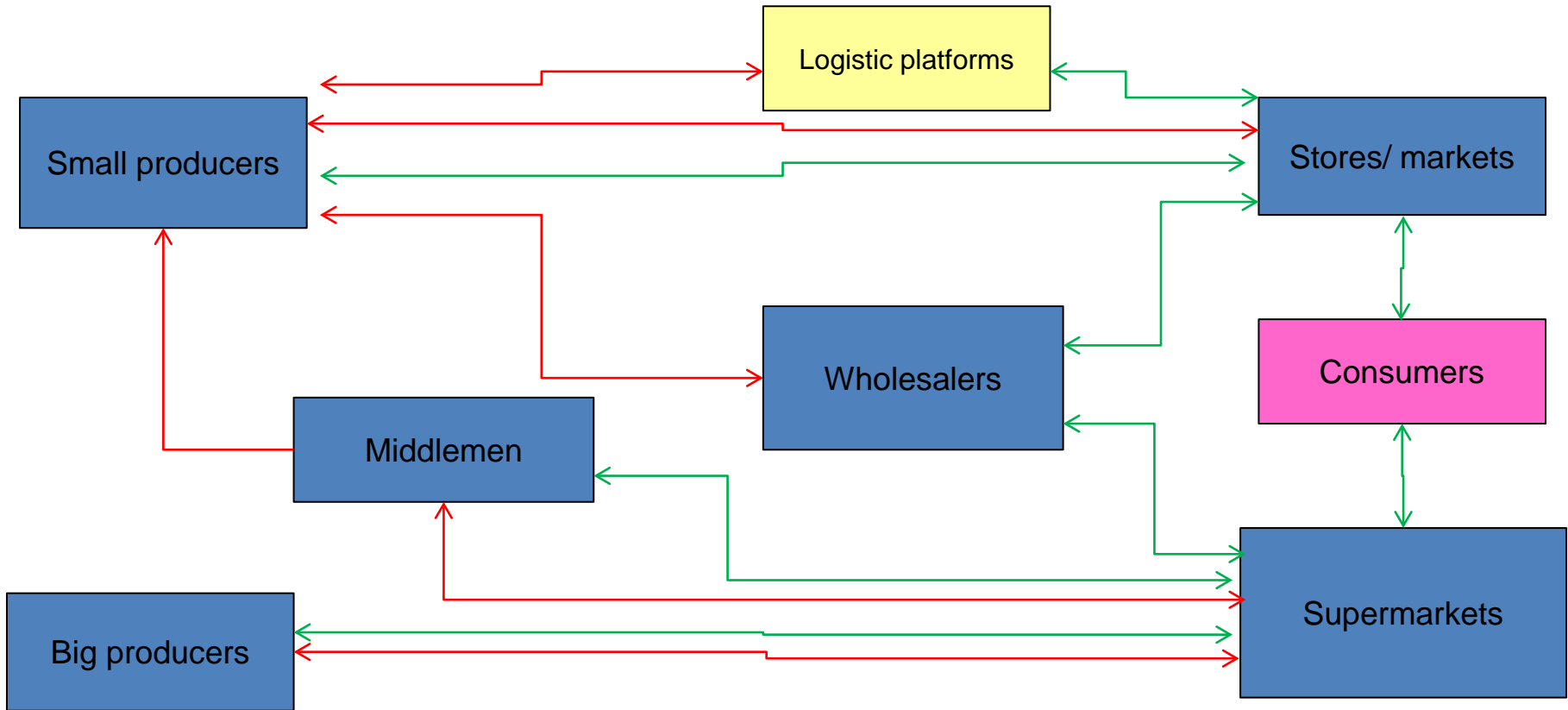
Purchase price (dir. Left) and offer (dir. Right)

Demand (dir. Left.) and Sale price (dir. Right)

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2.4 Action: Scenarios

Scenario 1: *Impact of producers' associations on the supply system*

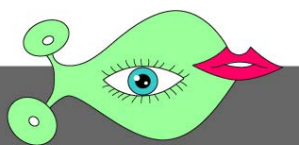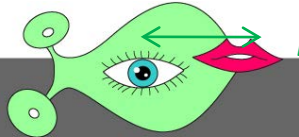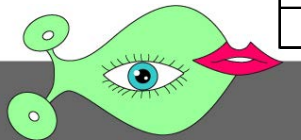| Variable	Assoc. Producers				
	Banana	Orange	Potato	Plantain	Tomato
Produit offer to platform	0,00	0,00	0,00	0,00	0,00
Produit offer to stores (direct)	↑ improve >5%	↑ improve >5%	↑ improve >5%	⇒ constant	⇒ constant
Produit offer to middlemen	↑ improve >5%	↑ improve >5%	↑ improve >5%	⇒ constant	⇒ constant
Produit offer to wholesalers	↑ improve >5%	↑ improve >5%	↑ improve >5%	⇒ constant	⇒ constant
Storekeepers purchases to platforms	⇒ constant	⇒ constant	⇒ constant	⇒ constant	⇒ constant
Storekeepers purchases to producers	↑ improve >5%	↑ improve >5%	↑ improve >5%	⇒ constant	⇒ constant
Storekeepers purchases to wholesalers	↑ improve >5%	↑ improve >5%	↗ improve <5%	⇒ constant	⇒ constant
Sales to stores	↑ improve >5%	↑ improve >5%	↗ improve <5%	⇒ constant	⇒ constant
Sales to supermarkets	↑ improve >5%	↑ improve >5%	↗ improve <5%	⇒ constant	⇒ constant
Product average monthly profit	↑ improve >5%	↗ improve <5%	↑ improve >5%	⇒ constant	⇒ constant
Stores average monthly profit	↓ decline >5%	↓ decline >5%	↓ decline >5%	⇒ constant	⇒ constant
Supermarket average monthly profit	↓ decline >5%	↑ improve >5%	↗ improve <5%	⇒ constant	⇒ constant
Wholesalers sale price	↗ improve <5%	↑ improve >5%	↗ improve <5%	⇒ constant	⇒ constant
Stores sale price	↑ improve >5%	↑ improve >5%	↗ improve <5%	⇒ constant	⇒ constant

- **Reduction in transportation costs and distribution of consolidation costs .**

- **Productivity increases for the banana, orange and potato supply chains**

- **Plantain and tomato supply chains do not present changes suggesting no benefits nor costs**

- Profit reduction in stores – *Sell other products to compensate loss.*

Symbol	Meaning		
↑	Improvement by more than 5%	⇒	Constant
↗	Improvement by less than 5%	↘	Decline by less than 5%
↓	Decline by more than 5%		

2.4 Action: Scenarios

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Escenario 2: *Impact of association of storekeepers on the supply system.*

Variable	Assoc. Storekeepers				
	Banana	Orange	Potato	Plantain	Tomato
Produit offer to platform	0,00	0,00	0,00	0,00	0,00
Produit offer to stores (direct)	⇒	⇒	↗	↘	↘
Produit offer to middlemen	⇒	⇒	↗	↗	↗
Produit offer to wholesalers	⇒	⇒	↘	↘	↘
Storekeepers purchases to platforms	⇒	⇒	⇒	⇒	⇒
Storekeepers purchases to producers	⇒	⇒	↗	↘	↘
Storekeepers purchases to wholesalers	↗	↗	↗	↗	↗
Sales to stores	↗	↘	↘	↘	⬇
Sales to supermarkets	⇒	↗	↗	↗	↗
Product average monthly profit	↗	↗	⬆	↗	⬆
Stores average monthly profit	⬆	⬆	⬆	⬆	⬆
Supermarket average monthly profit	↗	⬆	⬆	↗	↗
Wholesalers sale price	↘	↘	↘	↘	↘
Stores sale price	⬆	⬆	⬆	⬆	⬆

Symbol	Meaning				
⬆	Improvement by more than 5%	⇒	Constant	⬇	Decline by more than 5%
↗	Improvement by less than 5%	↘	Decline by less than 5%		

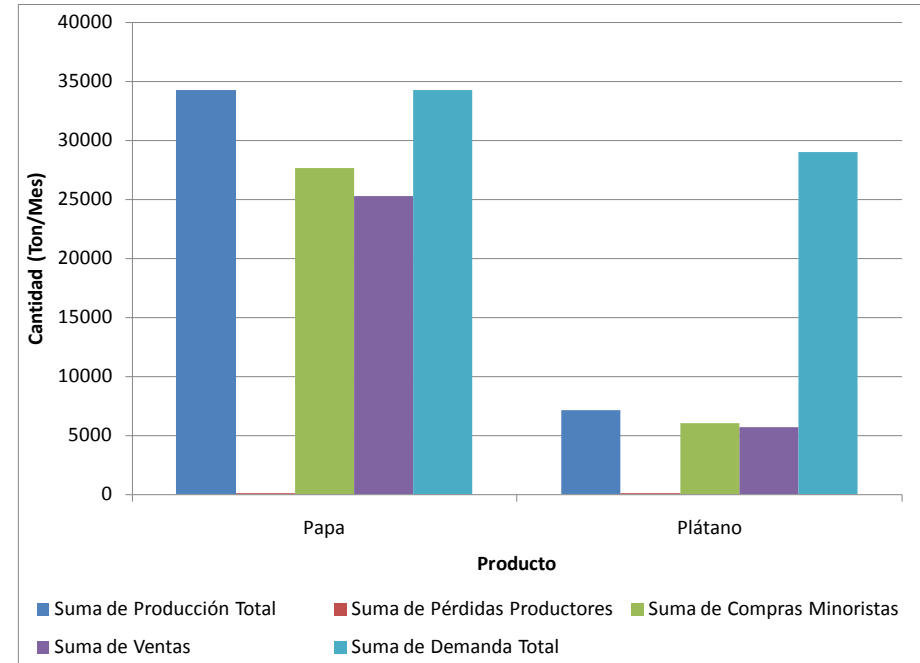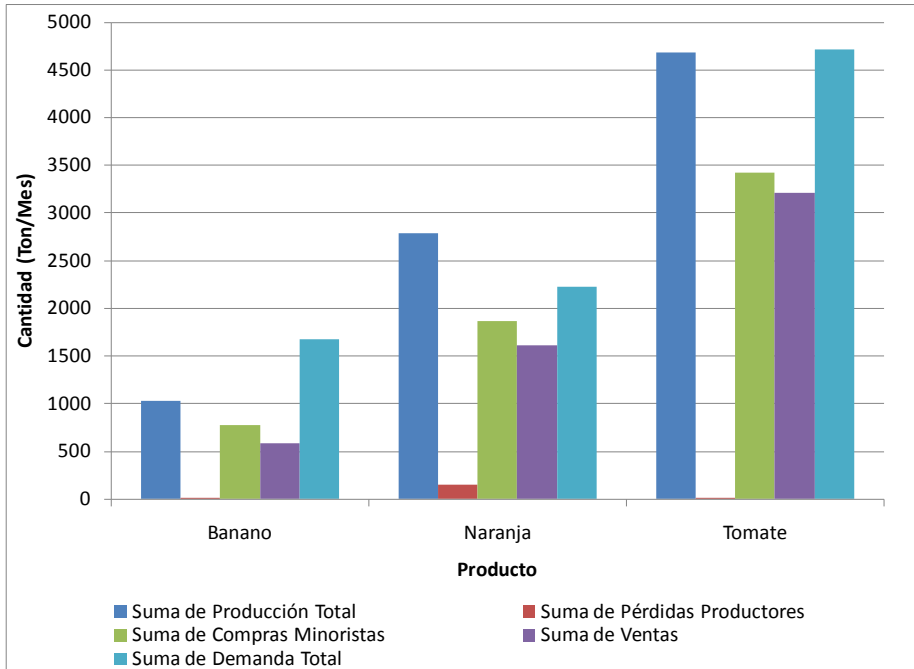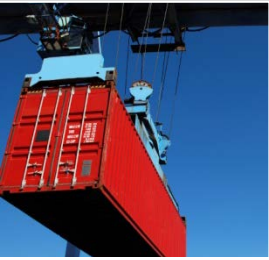**•Reduction in selection costs and products distribution.**

•Storekeepers and consumers would obtain reduction in sale prices of all products.

•Is it difficult to create an association schema where a central agent filters fruits and vegetables.
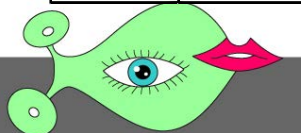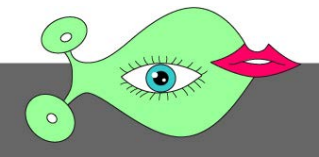
2.5 Action: Recommendations

Source: This research

- Every product has a specific dynamic to a demand, offer and supply extent.

- Analysis groups such as producer's volume and production place could be implemented in the model.

2.5 Renewal

Recommendation 1: To recognize and face differences among stakeholders
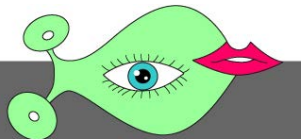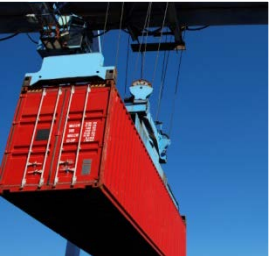

26,000
producers

1,800 middlemen

4,800 wholesalers
135,000 stores

7.5 Bogotans of
different likings
and budget

Recommendation 2: To study problematic of fruits and vegetables to a product extent.
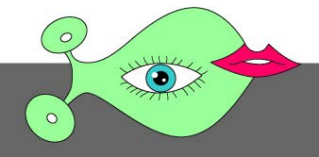
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¡THANK YOU!

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Andrés Baquero

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