

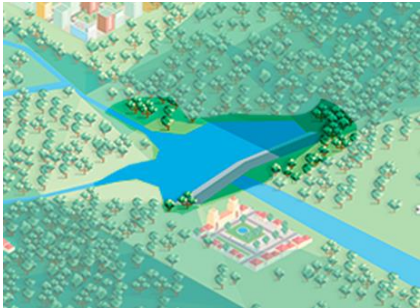
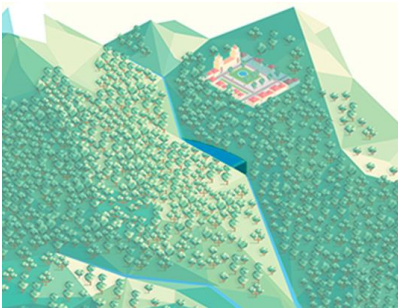
First period 2020-2024 (1 of 3)

First decision:

During the recent years of economic growth, policies to combat poverty and structural fiscal reforms have resulted in two phenomena: mass migration to the cities in search of work and a resulting increase in the residents' purchasing power. To meet rising energy demands, a consortium of national and international investors have presented two proposals for new hydroelectric projects, with equal generating capacity.

As decision makers, you have three alternatives:

1. Build a project in Napa
2. Build a project in Alva
3. Reject the projects for the moment and concentrate on energy saving campaigns

	Napa	Alva	Energy saving programme
			
Mean production:	2000 GWh/year	1800 GWh/year	Target audience: urban population
Steady production:	1650 GWh/year	1650 GWh/year	Duration: 12 months
Flooded area:	200km ²	20 km ²	Objective: educate people about where energy comes from and the impacts of its generation to reduce consumption in urban homes.
Head:	40m	190m	Key message: Spare a watt, save a lot!
Length of affected river:	0.25 km	4.0km	Media: public TV, radio and press

First period 2020-2024 (2 of 3)

Second decision

The swelling middle class and fiscal reforms have considerably increased local authorities' budgets. In addition, a large number of industrial and transportation projects have recently been approved and their promoters are now obliged to undertake ambitious compensation projects. A prestigious environmental organisation has proposed a model for coordinating all these investments in the management of the basin by creating a new Protected Area (PA), which will also restrict the expansion of agriculture in the region.

Your options are:

1. Declare a protected area in Pora covering 30.000 ha
2. Declare a protected area in Pora covering 8.000 ha
3. Don't declare any protected area, and let each actor decide what to invest in

	PA Pora (large)	PA Pora (small)
		
Area:	300 km ²	80 km ²
Protected systems and species:	Paramo and cloud forests; Andean bear and frailejón plants	Paramo; Andean bear and frailejón plants
Altitude:	2600-3650m	3100-3650m
Park status:	Some areas open to the public	Closed to the public

First period 2020-2024 (3 of 3)

Third decision

The central region, traditionally the “breadbasket” of the country, is suffering a drought and in recent month the food shortage has made the basic food basket considerably more expensive, threatening to send many of the families recently “graduated” from poverty reduction programmes back below the poverty line. Alarmed by the food vulnerability of the region, a group of businessmen and political leaders are proposing ways to increase food production.

The viable alternatives are:

1. Stimulate the replanting of fallow farmland in Tani to double production, through tax exemptions and stability agreements
2. Intensify agricultural production in Tani using new technologies
3. Invest in food importation from the sister republic of Caracuela, where agri-inputs receive a considerable subsidy, as an alternative to increasing local production

	Extend farming in Tani	Intensify farming in Tani	Importation investment
			
Project area:	1000 km ²	500 km ²	In an unprecedented trade agreement, the government has invested in a fleet of trucks which will transport basic foodstuffs from the border with Caracuela to the rest of the Basin.
Blue water footprint:	120 million m ³ /year	50 Mm ³ /year	
Green water footprint:	200 million m ³ /year	180 Mm ³ /year	
Expected yield in an average year:	1.3 million Tonnes	0.7 million tonnes	
Methods:	Tax exemptions stimulate increased production by relaxing the tax requirements for food production, and stability agreements ensure a favourable market condition for selling food products.	Intensification of food production using new technologies, including genetically modified seeds, innovative irrigation systems and greenhouses, to accelerate growth and food production more rapidly.	

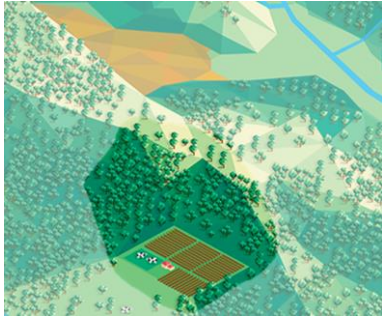
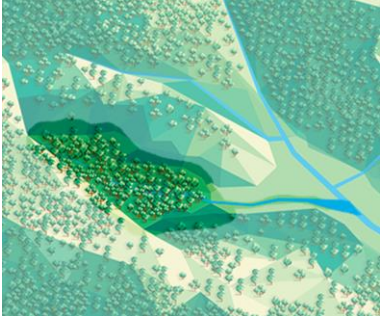
Second period 2025-2029 (1 of 3)

First decision

It's election time. The Radical Deep Green Party (RDGP), a new political force with its roots in radical groups of ecologists, has surprised the country by reaching 50% in opinion polls. Businessmen and regional leaders believe that immediate action for the environment is the best way to connect the political manifesto of the RDGP with the interests of the citizens.

The options are:

- 1. Declare the 15th of November Day of the Hummingbird after the enormous number of these little birds living in the region, and arrange a commemorative concert featuring famous artists The Cottonbuds
- 2. Coordinate a zero-deforestation pact in Balú
- 3. Degraded soil restoration project in Nafi in partnership with the National Royalties Fund

	15 of November: National Hummingbird Day	Zero-deforestation pact in Balú	Soil restoration in Nafi
			
General description:	15 of November, National Hummingbird Day: a day for all the inhabitants of the basin to express their pride in the rich tradition and natural exuberance of our land. The Cottonbuds define themselves as a fusion group, whose outlandish sound has taken the folklore of the region onto the world stage.	With the support and cooperation of the Indoeuropean Union, producers in Balú have signed a zero-deforestation pact, aiming to halt the loss of natural areas in the region and contribute to the Basin's carbon emission reduction commitments.	Nafi local authority has formulated a National Royalties Fund project with 1:1 fund matching from the private sector in the region. This project includes restoration activities in old mining zones, to help the degraded soils return to a farmable state.
Area:		10770km ²	5000 ha
Conversion of production methods:		Forestry reforms and implementation of silvopastoralism	
Conservation and restoration activities:		Protection of the hydrologically important areas and payments for ecosystem services over an area of 10000 km ²	Legume planting (acacia magna), restoration of river banks and planting of native plants. It is estimated the project will generate 350 jobs over 3 years.

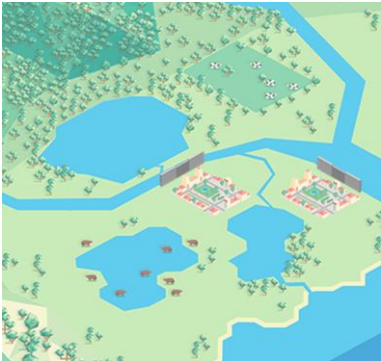
Second period 2025-2029 (2 of 3)

Second decision

The Weather Forecasting Institute and the National Agency for the Disaster Recovery and Prevention have published a list of areas at risk of flooding in a period of heavy rain. The list includes the town of Menestrey.

Your options:

- 1. Restore the wetlands upstream of Menestrey
- 2. Build a dyke
- 3. Build a mega-dyke

		Restore wetlands	Build dyke	Build mega-dyke
				
Funding (public and private):		The restoration of wetlands is a complex process requiring coordinated effort from local communities and authorities to: clean and maintain channels, reforest banks, formulate agreements with livestock owners for the protection of hydrologically important areas from livestock, seed native plants, increase fish populations and agree sustainable fishing practices. This project will directly generate 300 permanent jobs. Studies indicate that the wetlands have a potential floodwater storage of up to 1000 million m³.	With the resources available from the municipal administration and local endeavours, it is possible to build a dyke in Menestrey to heighten the southern bank of the river, increasing the flooding threshold by approximately 20%. Studies and engineering designs estimate that during wet seasons these dykes could prevent flows of up to 2500 m³/s from reaching Menestrey's vulnerable areas.	The National Engineering Council (NEC), in cooperation with consultants from Eliländ, a country with considerable experience in flood protection, have proposed an alternative which would forever eliminate the flood risk to Menestrey, using a complex system of dykes on the southern bank of the river. The project has a design return period of 9999 years and is designed for flows up to 20,000 m³/s.

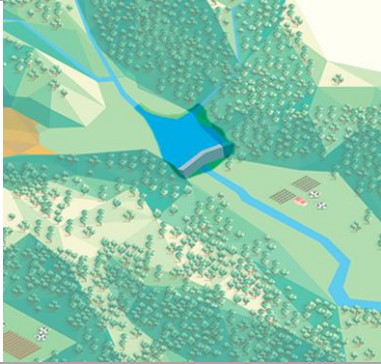
Third period 2030-2034 (1 of 3)

First decision

Variable weather and a strong El Niño threaten the energy security of the basin. Making matters worse, the provision of more than 100,000 free houses has considerably increased the energy demand.

The following proposals have been suggested:

1. Build a new plant at Nafi
2. Enlarge the dam at Rado
3. Reject both proposals, since opinion leaders believe that under climate change there will be more rain in the basin in the coming years and therefore existing infrastructure will generate more energy

	Nafi	Enlargement at Rado	The Twittersphere has spoken!
			
Mean production:	1600 GWh/year	Increase from 1500GWh/year to 2500 GWh/year	Various opinion leaders in the basin predict increased rainfall thanks to climate change, which (if it happens) will favour energy production. #LaNiña #Rain2016 #MoreRainMoreEnergy #Don'tWantToGetMyFeetWet #ClimateChange
Steady production:	600 GWh/year	Increase from 1300 to 1550 GWh/year	
Flooded area:	85 km²	36 km² additional to previous flooded area	
Head:	33m	82m	
Length of affected river:	0.1 km	1.5 km (additional)	

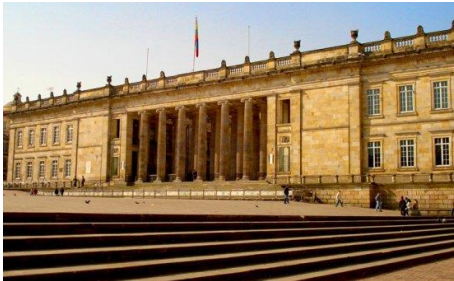
Third period 2030-2034 (2 of 3)

Second decision

The last National Development Plan included employment reforms for small-scale producers, the legislative framework needed to create ecological corridors, finance options for conversions to sustainable agriculture and the creation of Protected Areas to guarantee the provision of ecosystem services for agriculture. In the Basin natural areas are being lost to agriculture and the Government has stated its concern for the biodiversity of the region.

The options which have gained the largest traction are:

1. Promote a Decentralization Act in the National Congress which, among other things, will ensure that the central government cannot pressure regional administrations to create Protected Areas
2. Declare a protected area in Kina Alta
3. Take advantage of international cooperation funds to convert to sustainable agriculture in Kina Baja

	Act of Law in the Congress	PA Kina Alta	Conversion to sustainable agriculture
			
Area:	Under the Act, every region and/or district will have administrative autonomy over the declaration of Areas and/or Zones for the protection of Ecosystems and/or National Heritage for the Basin's inhabitants and/or future generations.	12500.0 km²	1500 km²
Protected species and systems:		Dry forest, howler monkey and spider monkey.	Proposals include creating foraging area, and hedgerows of native plants in livestock areas, as well as planting native trees amongst diversified crop plantations.
Altitude:		600-2000 m AMSL	
Park status:		Open to the public	

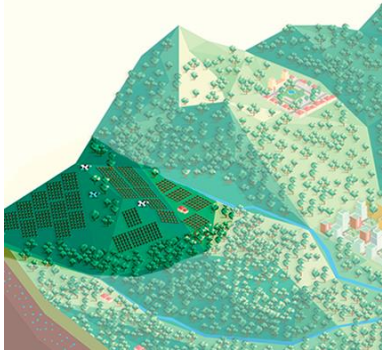
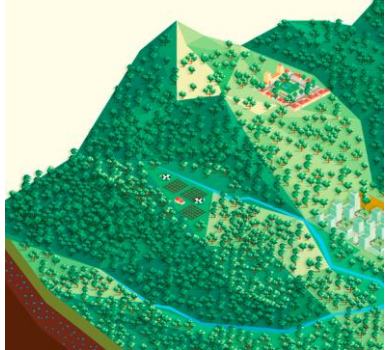
Third period 2030-2034 (3 of 3)

Third decision

Recent studies published by the University of Hogwarts have confirmed the appetite-suppressing benefits of Imbo alfalfa. The crops of the region are limited and the new global demand promises employment and income for the whole region.

Investors arriving in the region have three proposals:

1. Intensify alfalfa production as much as possible, speeding up the production to take advantage of the trend before the next miracle product arrives on the market
2. Invite the model Gisela Bundcheg on a tour of Imbo to promote alfalfa worldwide
3. Keep the traditional crops at Imbo, including the Basin's sweetest peaches and the cocoa used in "5pm Chocolates", the signature product of the region

	Intensify agricultural production	Invite Gisela Bundcheg	Support traditional crops
			
Area:	100.000 ha	Sign a contract for Gisela to: • Tour Imbo • Pose in front of the cameras • Photo hugging local farmers • Feature in <i>Vogue</i> magazine about the dietary properties of Imbo alfalfa • Appearances on at least two daytime TV programmes	Use the resources to incentivise the production of local, traditional fruits. Investments will be made in infrastructure to improve market access and by subsidising Imbo Transport Collective.
Description:	Agricultural intensification using new technologies, which include GM seeds, new irrigation systems and greenhouses, to accelerate growth and produce more alfalfa in less time.		
Increase in green water footprint:	250 million m ³ /year		0 million m ³ /year

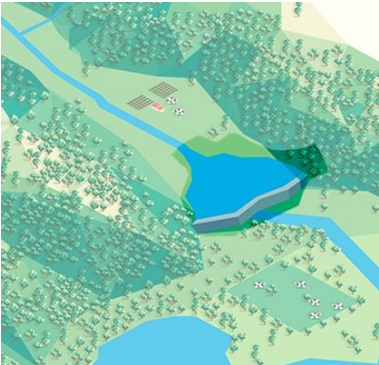
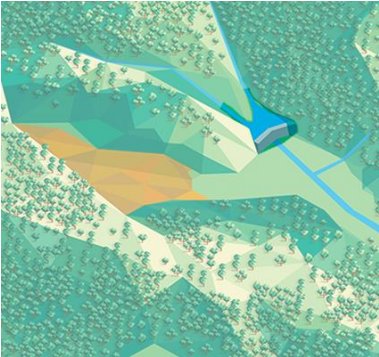
Fourth Period 2035-2039 (1 of 3)

First decision

A new Energy Strategy Plan has established the Basin to be the most promising for energy production in the entire country, thanks to its biophysical characteristics and connectivity. The Plan also recommends hydropower as a key strategy for meeting greenhouse gas emissions targets.

There are three proposals for exploiting this potential:

- 1. Build a new plant at Huango
- 2. Build a new plant at Naibi
- 3. Leave things as they are. Previous licencing and consultation experiences have eroded public confidence in hydropower.

	Huango	Naibi
		
Mean production:	1600 GWh /year	1300 GWh/year
Steady production:	1021 GWh /year	820 GWh /year
Flooded area:	100km ²	45km ²
Head:	26m	45m
Length of affected river:	0.3km	0.8 km

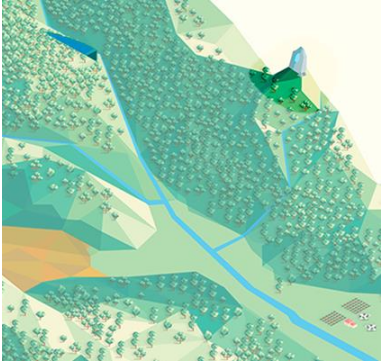
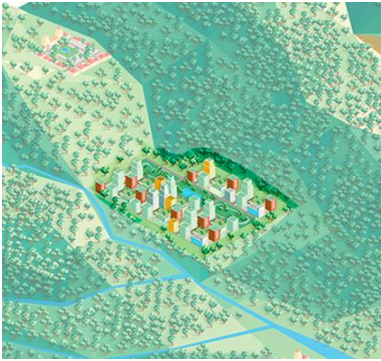
Fourth Period 2035-2039 (2 of 3)

Second decision

Funds are available for a cultural or recreation project in the region.

The competing projects are:

- 1. Build a Monument to Water in the shape of an enormous raindrop with an anguished expression, expected to receive international recognition
- 2. Build a park in the city of Rado
- 3. Save the funds until enough are available to construct something bigger, possibly visible from the Moon

	Monument to Water	Park at Rado
		
Description:	The Colombian artist known as Pierre Paolo Piraquive managed to capture the essence of this vital resource in whimsical curves and forms. The sculpture reflects the Renaissance style of the Florence school, where Piraquive completed his post-graduate studies, without neglecting an expression of the folklore of the Basin expressed through an explosion of colour. It is estimated that the construction of the monument will attract national and international tourists to the region.	Centre Park will run all the way through the centre of Rado. Designed as a recreation and cultural area for the citizens, the linear park will act as an ecological corridor, where urban birds (and people) will find a sanctuary from noise and pollution.

Fourth Period 2035-2039 (3 of 3)

Third decision

There continues to be a flood threat to Alloa.

In response, you can:

- 1. Construct a dyke to protect the town
- 2. Relocate the town
- 3. Don't do anything, even as the rains start

	Dyke in Alloa	Relocate Alloa
		
Description:	With the available resources, it is possible to construct a dyke in Alloa which will heighten the northern bank of the river, increasing the flooding threshold by up to 10% , compared to the current situation. Studies and engineering designs estimate that the dyke could prevent up to 900 million m ³ of water from reaching the town under critical conditions.	Even though the residents have become adjusted to the frequent flooding, it has been suggested that this important city be relocated. This expensive initiative is certainly ambitious; however, it would reduce the need for national disaster recovery funds.

Fifth Period 2040-2045 (1 of 3)

First decision

The final disappearance of all polar species, including polar bears, have increased public concern over climate change. Due to the large number of strategic ecosystems in the Basin, resources and assistance are available to conserve these ecosystems before they disappear.

The options available include:

1. Restore forests in the high regions of the Basin, upstream of Alva
2. Restore wetlands upstream of Menestrey
3. Do nothing: it's too late anyway

Period 5 Decision 1	Alva forest	Northern wetlands near Menestrey
		
Area:	3000 km ²	12000 km ²
Description:	Despite being one of the oldest Protected Areas in the Basin, the forests of the mountainous region have been significantly affected by illegal mining and deforestation. Due to the importance of the Area restoration activities have been improved including the planting of 10,000 oak trees and protection of frailejones. These actions will protect the habitat of isolated species such as the Andean bear.	The restoration of wetlands is a complex process requiring coordinated effort from local communities and authorities to: clean and maintain channels, reforest banks, formulate agreements with livestock owners for the protection of hydrologically important areas from livestock, seed native plants, increase the populations of local fish such as the striped catfish and agree sustainable fishing practices. This project will directly generate 300 permanent jobs.

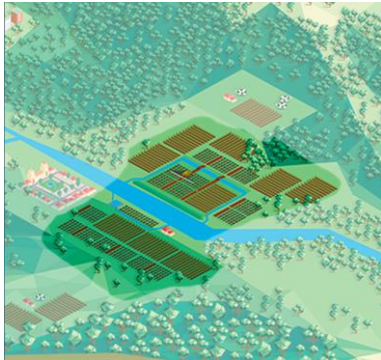
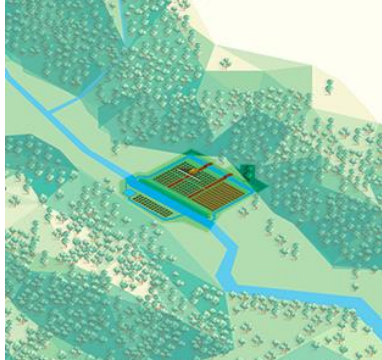
Fifth Period 2040-2045 (2 of 3)

Second decision

Investment in science and technology has led to the creation of a large number of hi-tech businesses, generating new employment. The demand for food with a low carbon footprint from the new cash-rich, time-poor professionals has attracted a large number of investors in agricultural ventures.

The alternatives include:

1. Production diversification at Napa
2. A new intensive project close to Huango
3. Leaving investors to invest as they please

	Agriculture in Napa	Agroindustry in Huango
		
Area:	5000km ²	2200km ²
Description:	Proposals include creating foraging area and hedgerows of native plants in livestock areas, as well as planting native trees amongst diversified crop plantations.	Intensification of food production using new technologies, including genetically modified seeds, innovative irrigation systems and greenhouses, to accelerate food production growth.
Increase in green water footprint:	650 million m ³ /year	450 million m ³ /year
Increase in blue water footprint:	100 million m ³ /year	300 million m ³ /year

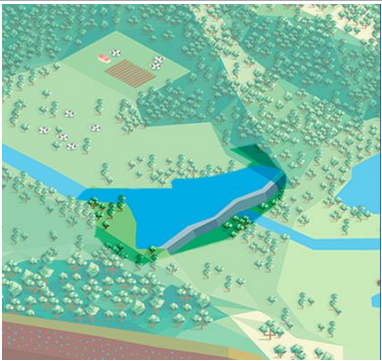
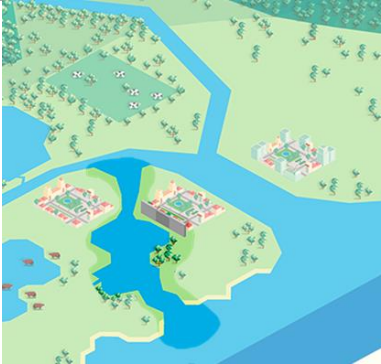
Fifth Period 2040-2045 (3 of 3)

Third decision

The resources available for climate change adaptation projects have tripled after recent vulnerability studies.

Proposed uses for the funds are:

- 1. Declare a National Disaster Prevention Day
- 2. A by-pass at Menestrey to reduce flooding in Alloa
- 3. Construction of a large flood control dam at Neti

	National Disaster Prevention Day	Flood control dam at Neti	Bypass in Menestrey
			
Mean production:	The day will serve to raise awareness in Rado of the mitigation of natural risks.	2200 GWh/year	N/A
Steady production:		0 GWh/year	N/A
Flooded area:		650km ²	N/A
Other:		The reservoir will be able to contain flood events of up to 4500 million m ³	The structure will allow the flow from the South River to be diverted during flood events before passing through Alloa. The hydraulic capacity of the by-pass is estimated at approximately 900 m ³ /s.