



# Economic Clusters of Innovation Project

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# THE STATE OF CEARÁ



# VALUE TO SOCIETY

## STRATEGY FOR PRODUCTIVE CHAINS

1. Leading positioning in the new environment of the fourth industrial revolution.
2. Ceará tourism as an international reference for sustainable development.
3. Development of agriculture and sustainable extractivism with high value added.
4. Clean and renewable energy production with technological development as an international reference.
5. Focal center for multimodal logistics and infrastructure of the country, highlighting the geographical position.
6. Water security, efficient and rational water use and resilience in face of rainfall regularities and climate change.
7. Sea economy with high added value and sustainability.
8. Health economy as a factor of economic and social development.
9. Information and Communication Technology innovation pole.
10. Creative economy and knowledge as a pillar of state development.

**HUMAN  
CAPITAL**

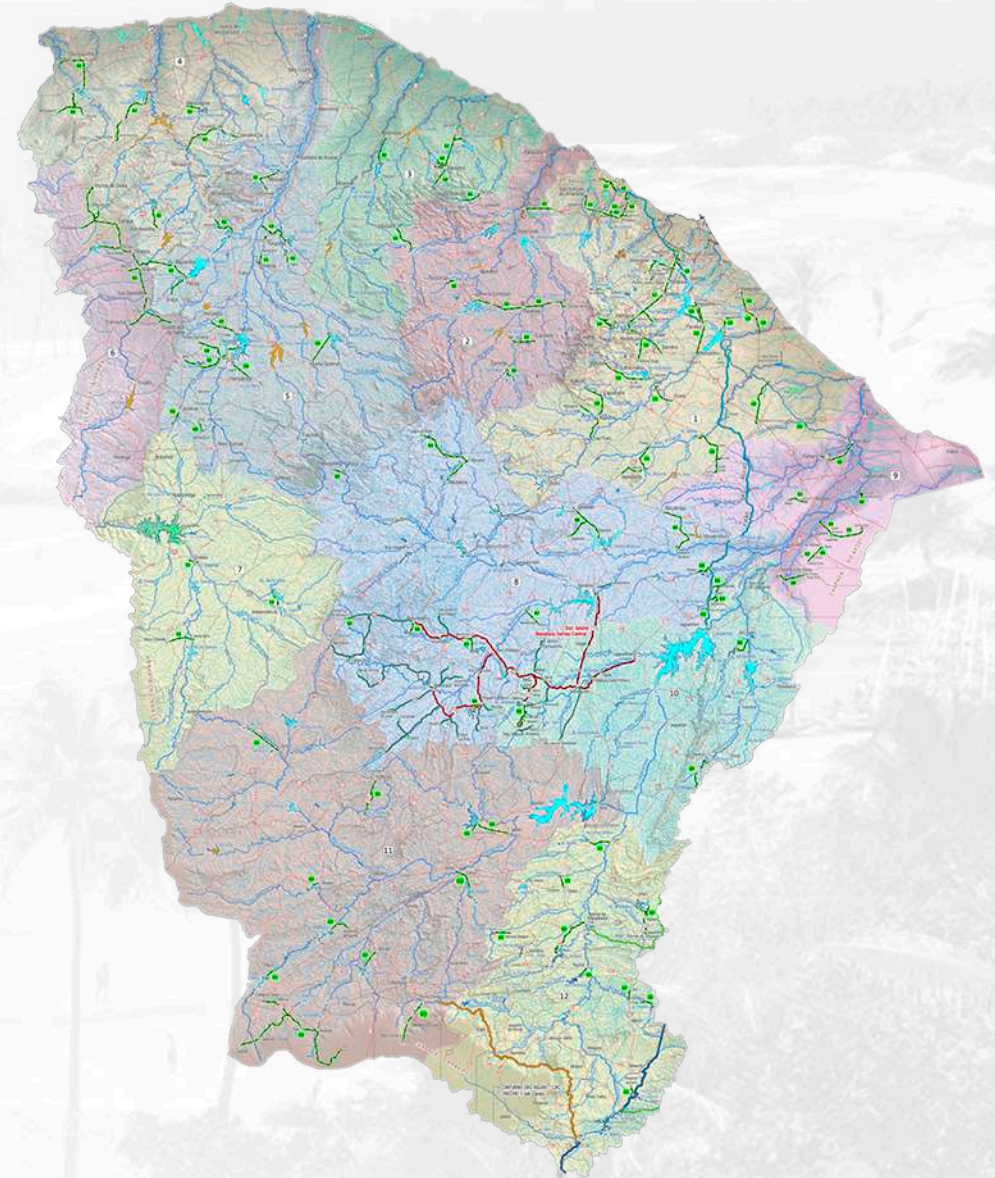
**CITIZEN-  
ORIENTED  
SERVICE**

## GOVERNANCE

# State Ready For Development



Hydro Network



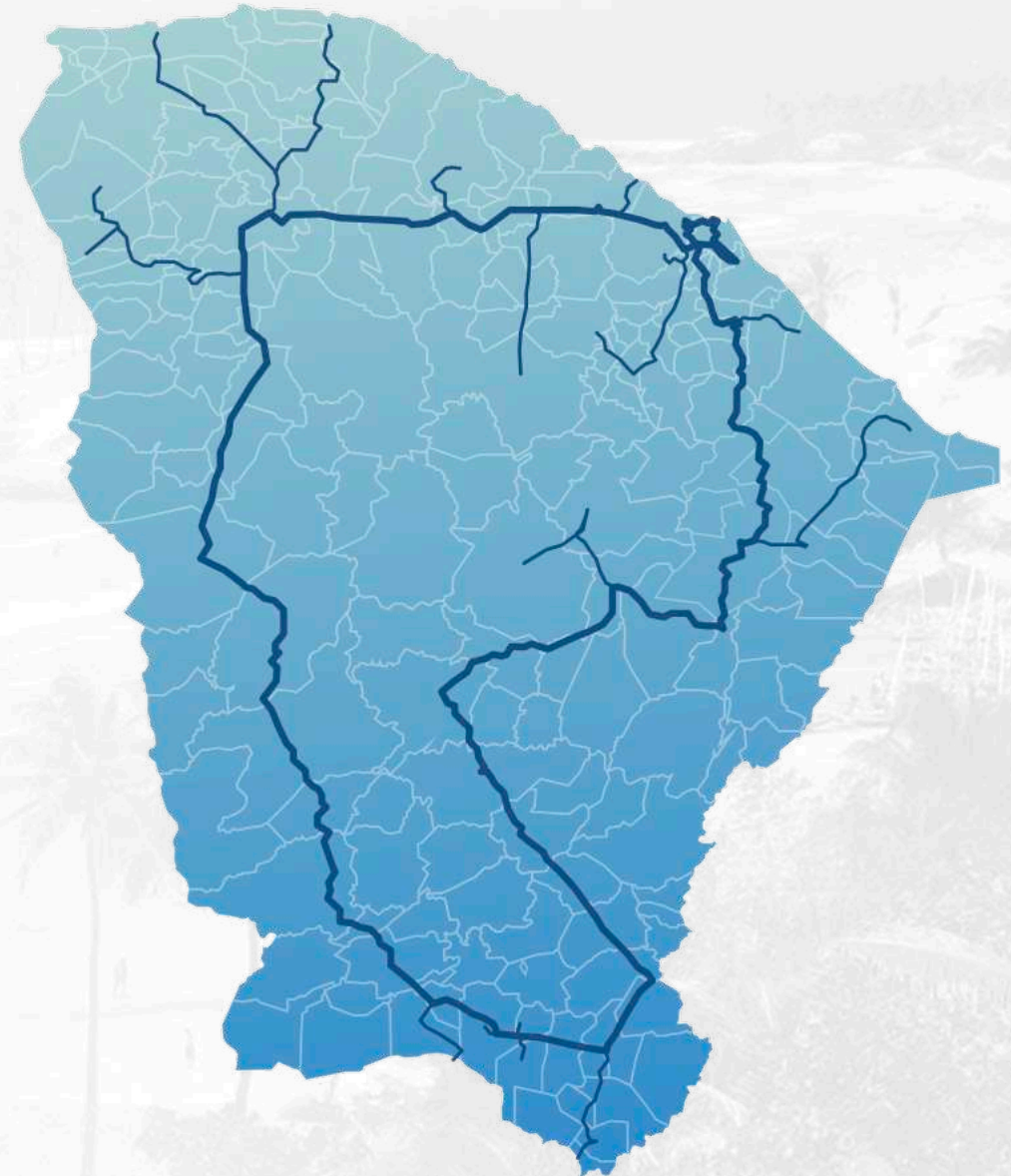
# State Ready For Development



Hydro Network



Broadband Network



# State Ready For Development



Hydro Network








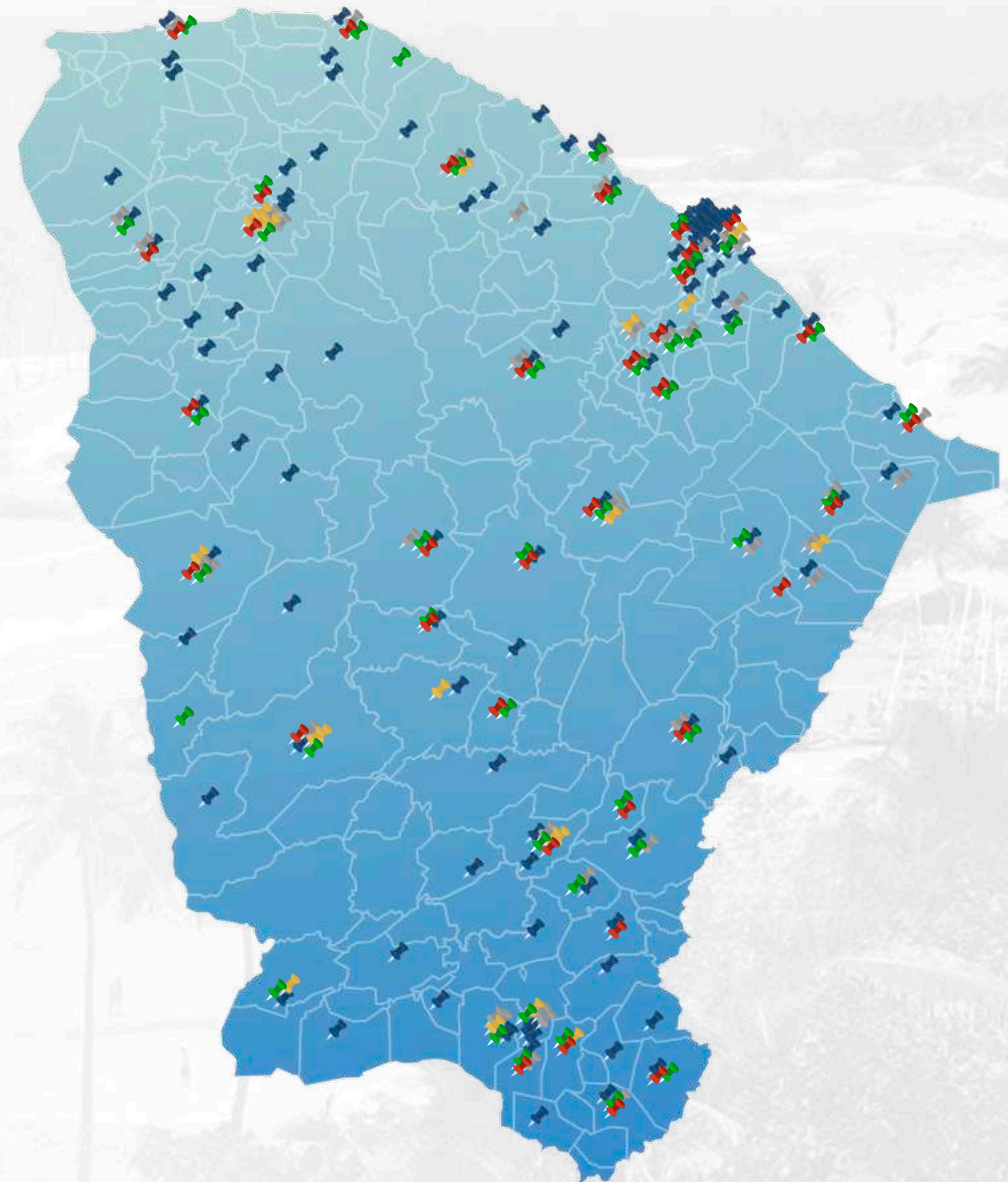
Broadband Network



Education Network

Legenda:

-  Vocational Schools;
-  Federal Unit;
-  State Unit;
-  Private Unit;
-  UAB Poles



# State Ready For Development



Water Chain



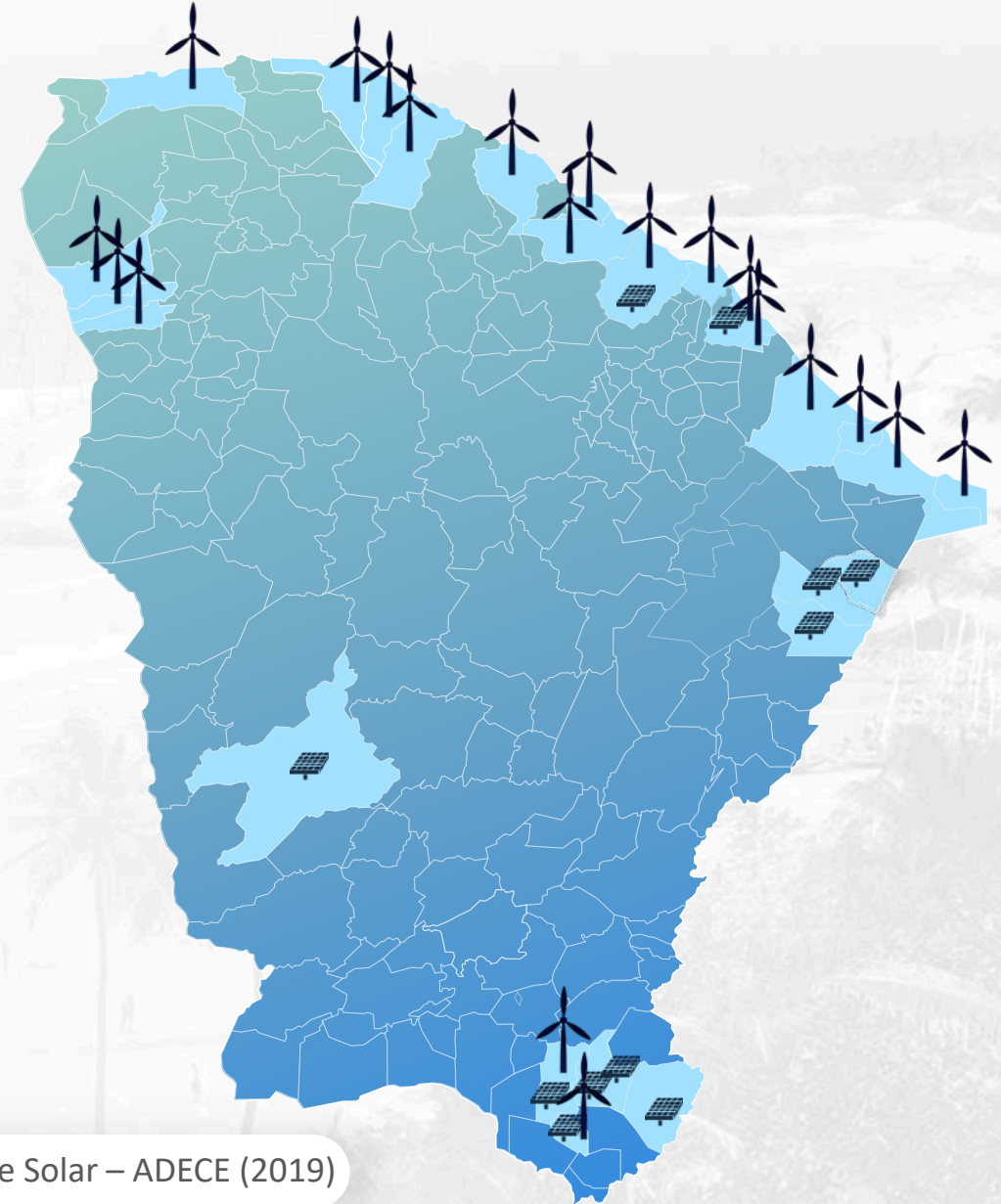
IT Network



Education Network



Renewable  
Energy Chain



Source: COGERH (2017); ETICE (2016); Diário do Nordeste (2014); Atlas Eólico e Solar – ADECE (2019)

# State Ready For Development



Water Chain



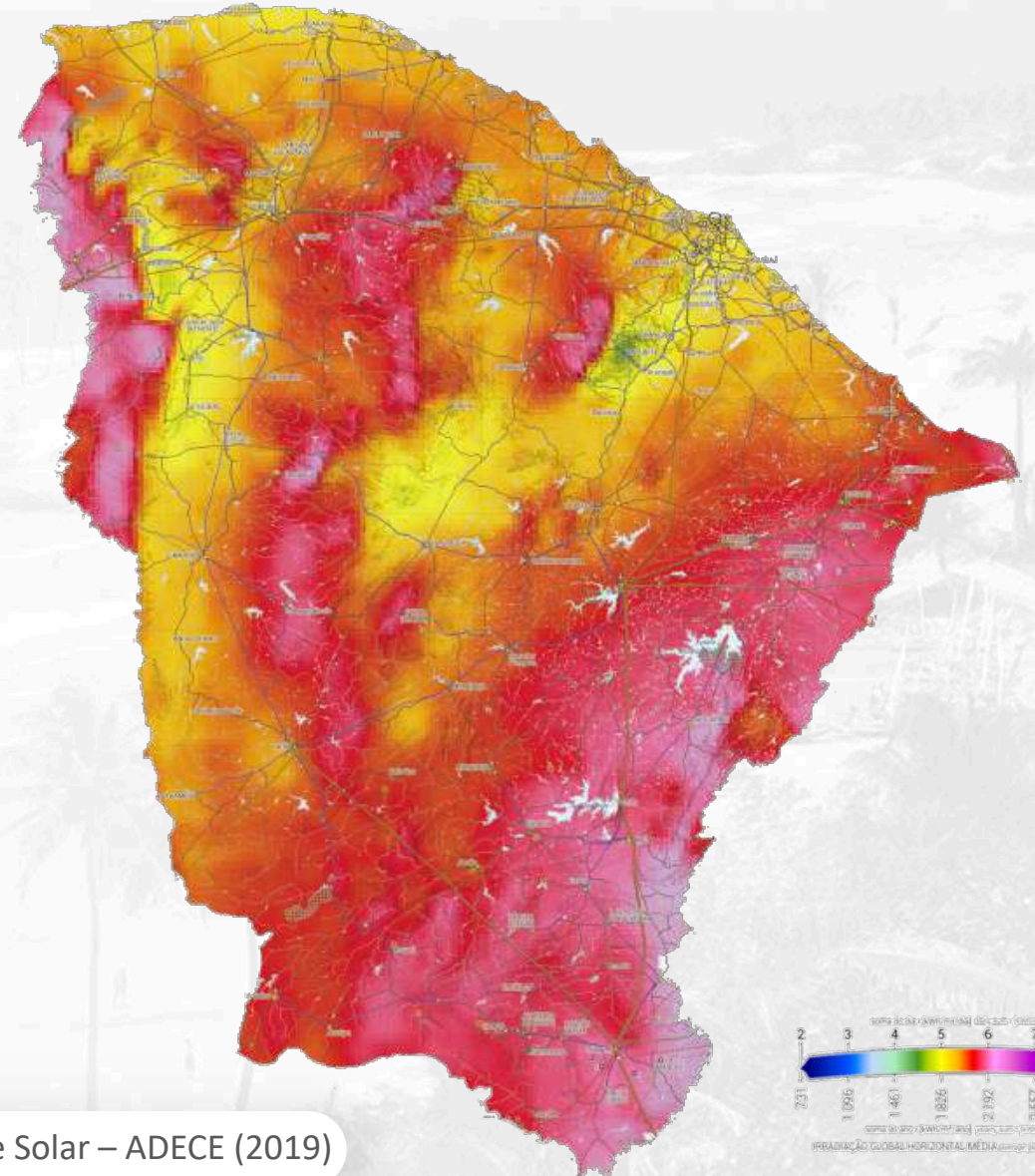
IT Network



Education Network



Renewable  
Energy Chain



Source: COGERH (2017); ETICE (2016); Diário do Nordeste (2014); Atlas Eólico e Solar – ADECE (2019)

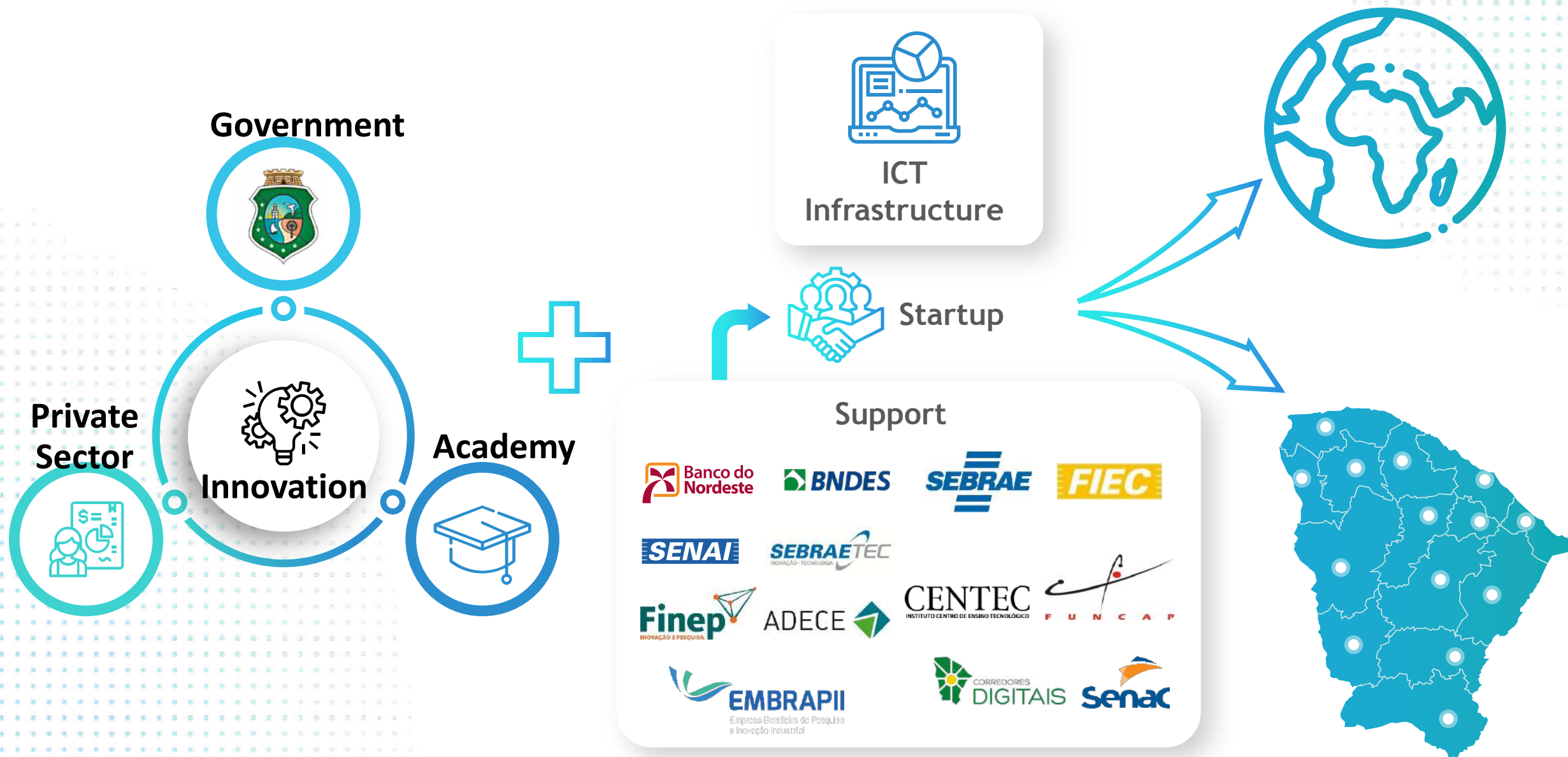
# Identification of Priority Sectors



# Prioritized Economic Sectors



# Innovation Economic Clusters Project



# Expected deliveries

- Strengthen regions' competitiveness by increasing the productivity of the higher potential activities
- Create a new economy based on innovative ventures in the state



# Metodologic of Choosing a Clusters

The criteria for choosing clusters by region was based on a score given by the summation, ponderation of ten standardized variables chosen in the fields of education and economics, whose unitary references were the highest values of each variable, as shown bellow:

$$\text{Cluster Punctuation} = \sum (\text{Ponderation}) \times (\text{Standardized Variables})$$

# Variables and Ponderations

## Economic Variables

## Weight Factors

GDP Participation (%) <sup>(1)</sup>

8,0

Growth Rate <sup>(1)</sup>

8,0

Average Salary <sup>(2)</sup>

5,0

Active Employments <sup>(2)</sup>

3,0

Establishments Number <sup>(2)</sup>

2,0

**Summation: 26**

Notes: (1) Ipece (2016). (2) RAIS (2016).

# Variables and Ponderations

Educational Variables	Weight Factors
Undergraduate Courses Enrollment <sup>(3)</sup>	3,0
Undergraduate Courses Number <sup>(3)</sup>	2,0
Technical Course Enrollment <sup>(4)</sup>	3,0
Technical Courses Number <sup>(4)</sup>	2,0
Postgraduate Course Enrollment <sup>(5)</sup>	3,0
Summation: 13	

Notes: (3) Inep (2017). (4) Inep (2018). (5) Capes (2017).

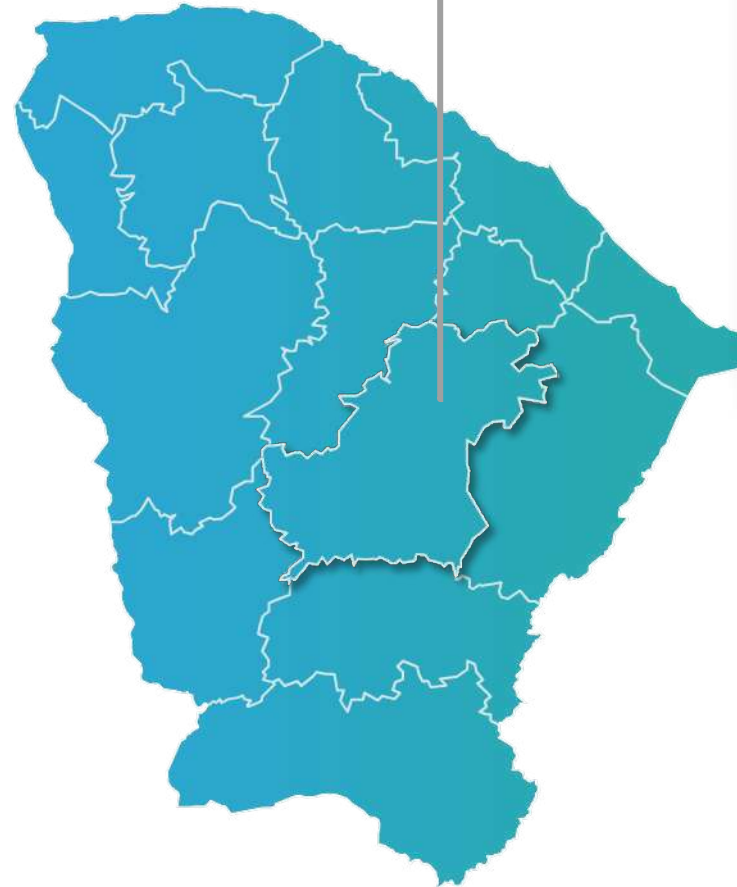
# Prioritized Economic Clusters

## PRIORITIZED CLUSTERS

**Health Economics Chain**

**Information and  
Communication Technologies  
(ICT)**

**Agriculture and extractivism  
/ Transformation industry -  
Foods and beverages**



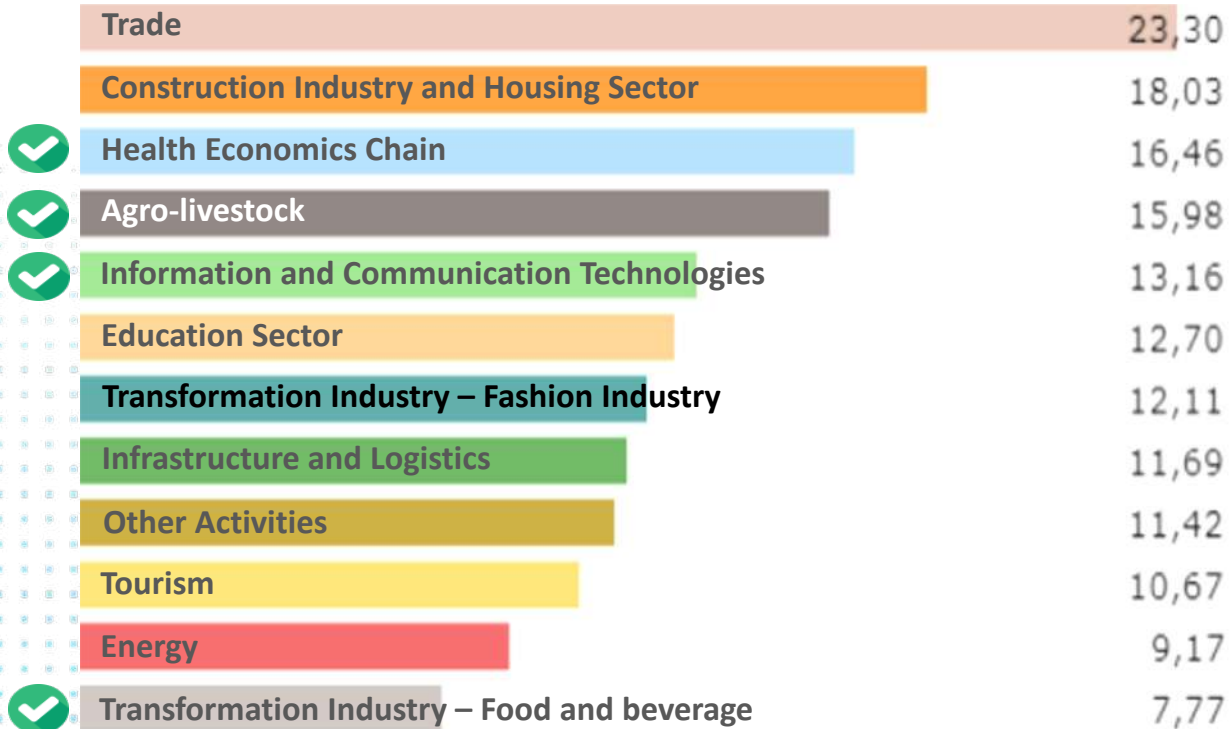
## Central Backwoods

### Municipalities:

<b>Banabuiú</b>	<b>Mombaça</b>
<b>Choró</b>	<b>Pedra Branca</b>
<b>Deputado Irapuan</b>	<b>Piquet Carneiro</b>
<b>Pinheiro</b>	<b>Quixadá</b>
<b>Ibaretama</b>	<b>Quixeramobim</b>
<b>Ibicuitinga</b>	<b>Senador Pompeu</b>
<b>Milhã</b>	<b>Solonópole</b>

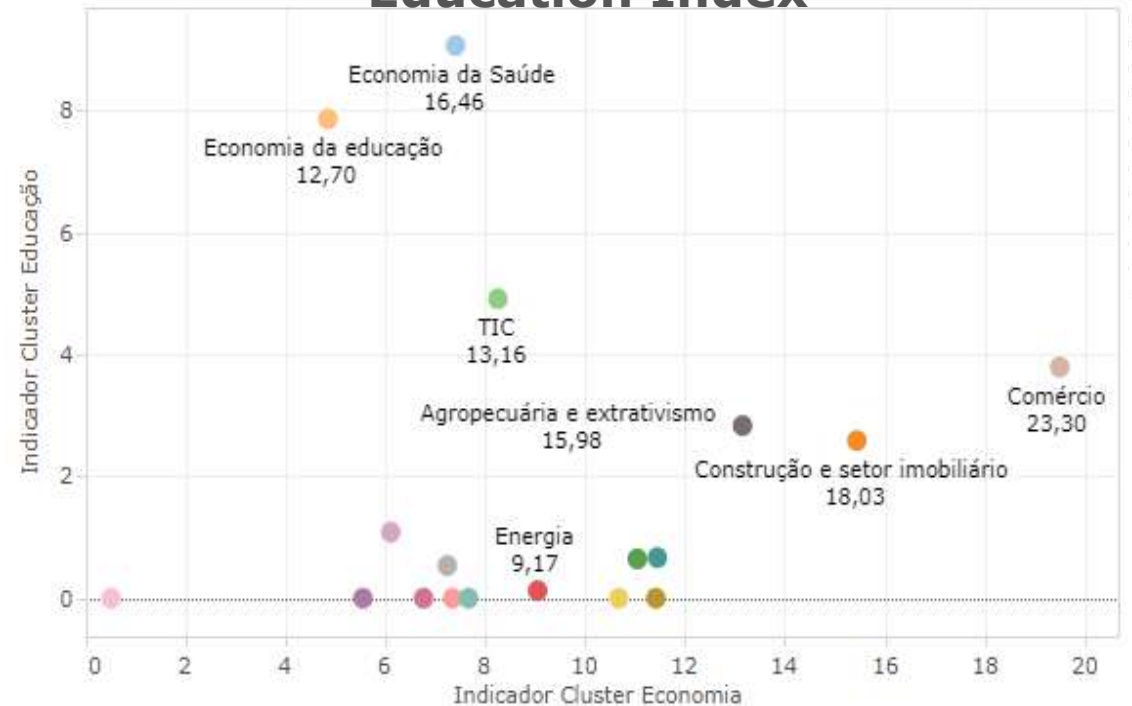
# Central Backwoods

## Clusters Ranking



By technical decision and negotiation with the regional innovation system, the prioritized clusters are marked beside the green checks.

## Clusters: Economic Index x Education Index



# Central Backwoods

## Selections Criterias



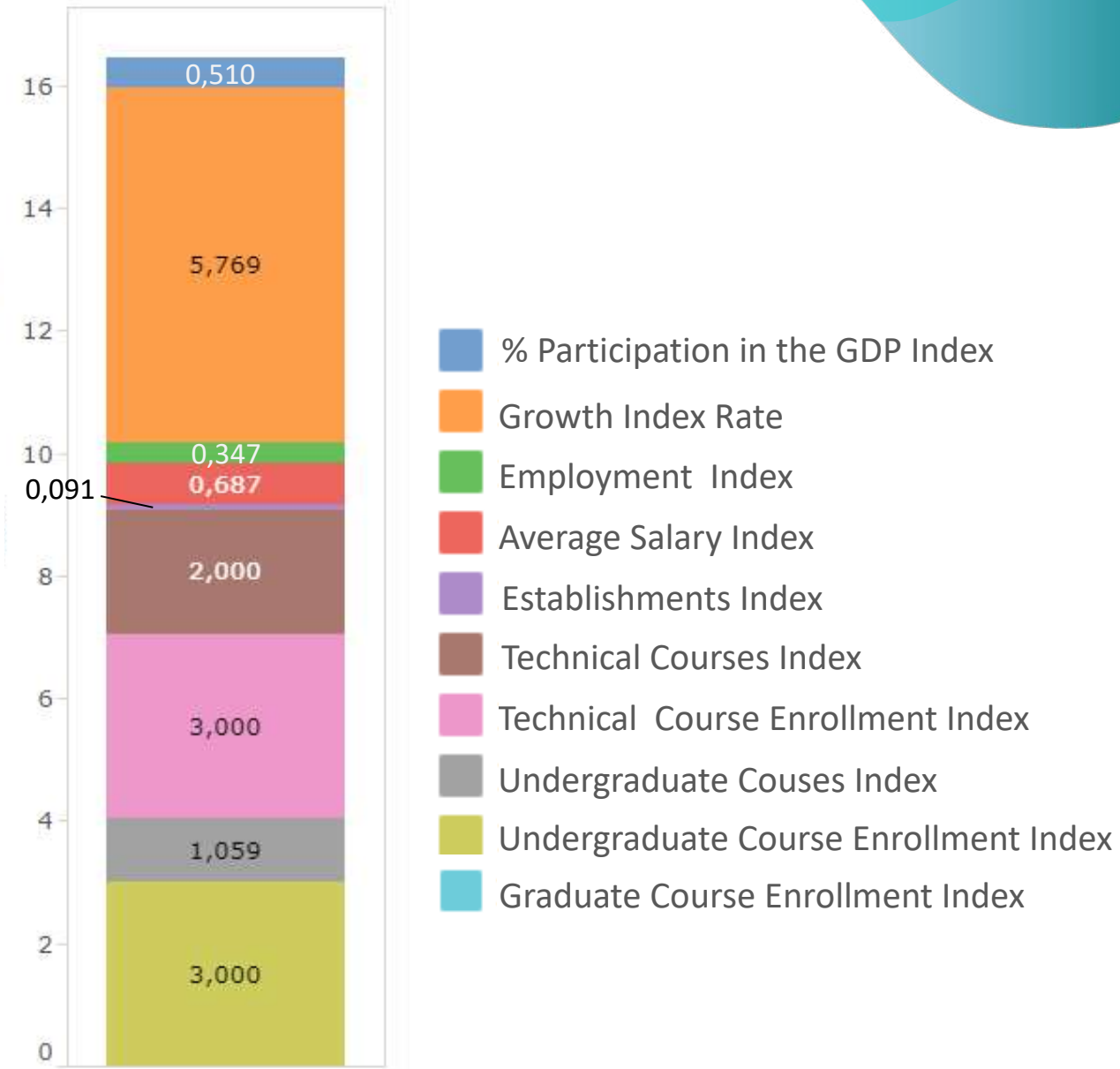
Planning Region

CENTRAL BACKWOODS ▼

Economic Activity

Health Economics C... ▼

Health Economics Chain



# Expected deliveries

- Strengthen regions' competitiveness by increasing the productivity of the higher potential activities
- Create a new economy based on innovative ventures in the state
- Regions' wealth growth with better income distribution
- Increase state's wealth with better distribution among the regions



# Expected deliveries

- Strengthen regions' competitiveness by increasing productivity of the higher potential activities
- Create a new economy based on high quality jobs in the state
- Regional development with better income
- Increase regional health with better distribution among the population

**Retain and attract talent trained in the region by offering high quality opportunities.**



# MacroSteps and Team

## Preparation of the Regional Innovation System

Prioritization of Regional Economic Clusters / Team Building / Infrastructure

## Solutions Modeling

## Implementation of Solutions as a Product

## Evaluation and Monitoring of Results

**Government**

**Companies**

**Education Institutions**

**S System**

**Innovative Ventures**

**Coordinator and Researcher of the Higher Education Institution**

**Economic Cluster Team**

**Others Representatives of the Region**

# Evaluation of Problem Prioritization

- There will be a two-hour meeting per Regional Economic Cluster.  
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- Dynamics of problem prioritization:
  - 8 problems will be presented, with 10 minutes to each presentation.
  - Each researcher/company team defends the problem that they chose.



# Problem Priority Criteria

- 1) The problem should impact as widely as possible the largest amount of companies within the cluster and have a high potential to solutions to be found that guarantee a leap in the cluster's competitiveness, making it a reference far beyond its borders.
- 2) The problem must exist in other regions of the world, making possible for the ventures to be commercialized to the markets outside their cluster, providing sustainability to the venture.
- 3) The problem must have its complexity compatible with the availability of human resources, with the possibility of implementing solutions within a maximum period of one year and be financially viable, with feasible budgets.



# Problem Priority Criteria

## Problem Definition

- 1) What is the cluster problem?

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- 2) What practical and / or scientific arguments demonstrate that the problem really exists for the prioritized cluster?

## Impact on cluster's competitiveness

- 3) Does the problem affect a large number of companies within the cluster?

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- 4) Does the problem have a high potential for solutions to be found that guarantee a leap in cluster competitiveness?

## Sustainability of the innovative company

- 5) Does the problem exist in other countries/regions of the world, generating market opportunities for a solution to be implemented?

## Execution Feasibility

- 6) Is the problem compatible with the availability of human resources in the region?

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- 7) Can the problem be solved within one year?

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- 8) Can the problem be solved with feasible budgets?



# Problem And Solution - Cluster Applied Example



Agro-livestock

## Example: Horus Aeronaves

Online platform of image processing using drones, that applies intelligent algorithms for agriculture analysis, which may be accessed by computer, tablet and smartphone. The technology is ideal for monitoring farmings, identify plagues and other problems in the planting.

**Problem Definition (1 and 2)** Low productivity compromises income in Ceara (IPECE, 2017; IPEA, 2012).

**Impact On The Competitiveness Of The Cluster (3 and 4)** In the state of Ceará, the production of fruit and flowers has a turnover of 1.5 billion and these products are 4th in the state's export basket (CEARÁ VELOZ, 2019).

**Sustainability Of The Innovative Company (5)** Even countries with high productivity need to elevate their productivity average per cultivated area, in both intern and foreign markets perspective (CNA, 2020; FAPESP, 2018; ONU, 2017; 2008).

# Schedule

MACROSTEPS	START	END
<b>First Cycle - 4 Planning regions (16 Clusters )</b>		
1. Preparation of the regional innovation system	May- 2019	Mar - 2020
2. Solutions modelling	Apr- 2020	Jun - 2020
3. Implementation of the solution as a product	Jul - 2020	Dec - 2020
<b>Second Cycle - 5 Planning regions (22 Clusters)</b>		
1. Preparation of the regional innovation system	Mar - 2020	Sep - 2020
2. Solutions modelling	Oct - 2020	Dec - 2020
3. Implementation of the solution as a product	Jan - 2021	Jun - 2021
<b>Third Cycle - 5 Planning regions (15 Clusters )</b>		
1. Preparation of the regional innovation system	Jul - 2021	Dec - 2021
2. Solutions modelling	Jan - 2022	Mar - 2022
3. Implementation of the solution as a product	Apr - 2022	Sep - 2022
4. Evaluation and monitoring of results	Dec - 2020	Dec - 2022
5. Planning of new cycles	Jul - 2022	Dec - 2022

# Expected Deliveries

53

Economic regional sectors  
incentivated

10 in Grande Fortaleza  
5 in Cariri  
5 in Sertão de Sobral  
3 in each of the other  
11 regions



159

New innovative ventures

3 ventures per economic  
sector incentivated



583

Scholarship holders  
incentivated

3 scholarships per startup  
3 startups per cluster  
2 researchers in each cluster  
53 clusters





**Thank you**

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**GOVERNO DO  
ESTADO DO CEARÁ**