# Costa Rica's approach to its current RL/REL work

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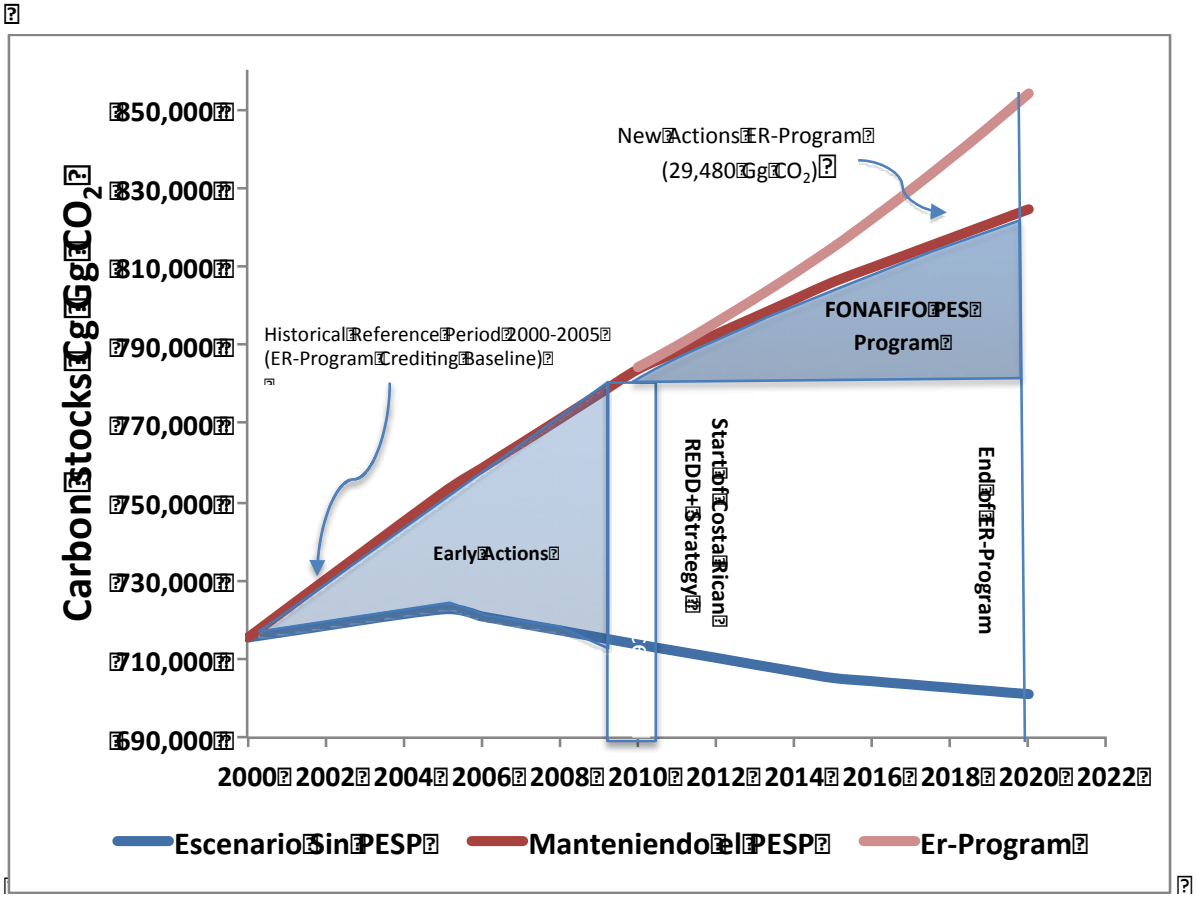
WWF-FCPF reference level workshop

# Context

- Since 1997, Costa Rica has had a Payment for Environmental Services Program (PESP)
- The ER Program covers only REDD R-PP activities that represent an increase in the country's efforts until now.
- Implementation of the ER Program is planned for 2010-2020.

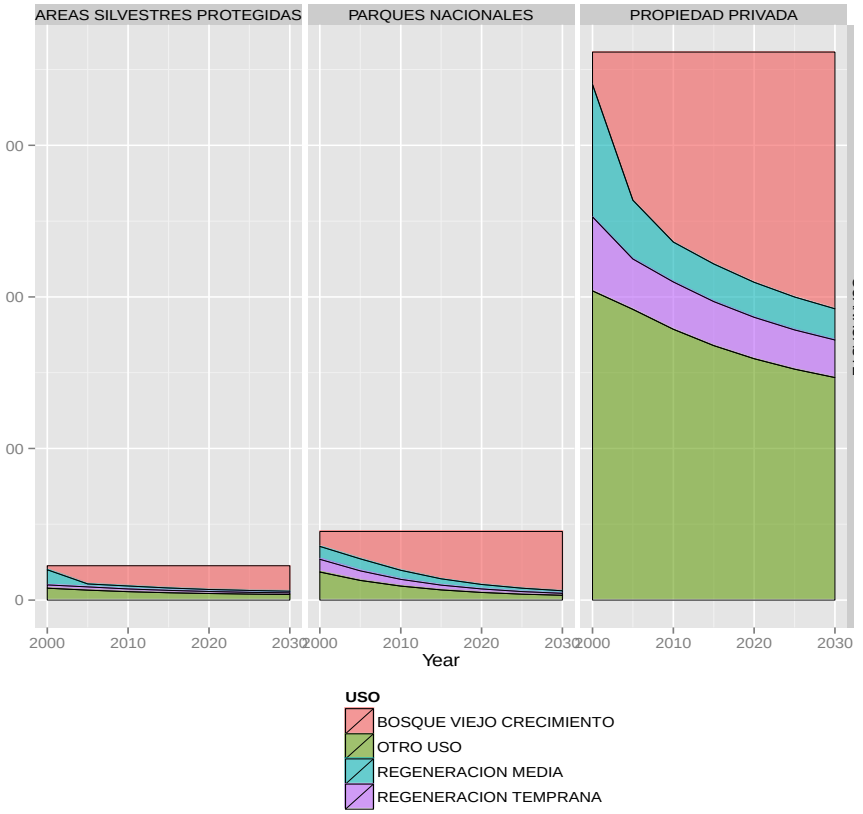
# Accumulated growth of carbon stocks through implementation of ER-Program and current activities under Costa Rica's REDD+ Strategy



# ER-Program Reference Level

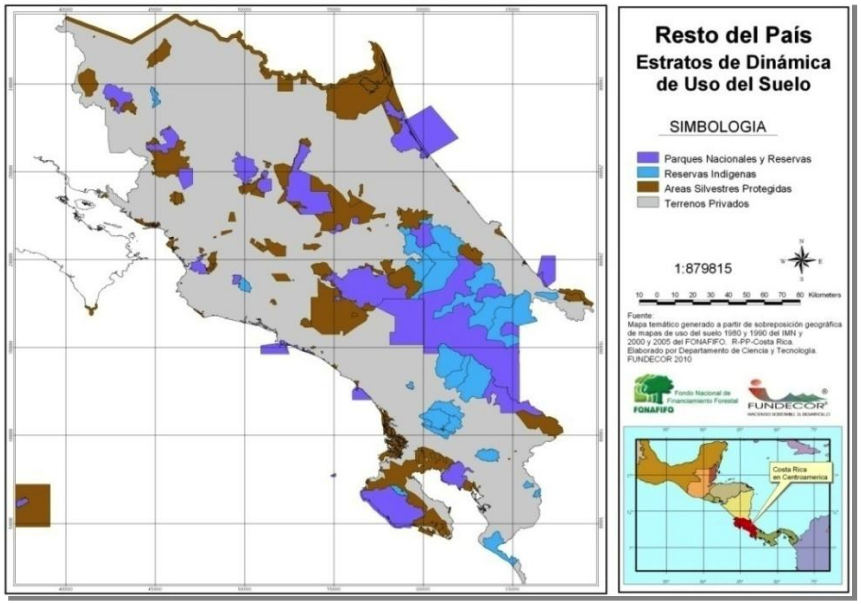
- **Reference Level:** Costa Rica's carbon stock on December 31, 2009 (could be above 777,000 Gg $CO_2$)
- **Scale:** National
- **Scope:** Deforestation and carbon stock enhancement are integrated into a single reference**.**
- **Historical emissions (ER-Program Crediting Baseline)**: net emission rate (deforestation and regeneration) for the period comprised between 2000 and 2005.
- **Additionality**: The ER Program covers only REDD R-PP activities that represent an increase in the country's efforts until now.
- **Spatial resolution**: Costa Rica RL can be expressed in Mg CO2 per year and also spatially explicit.

***Land use projection (in sq km) for Guanacaste region disaggregated by Uniform Strata***

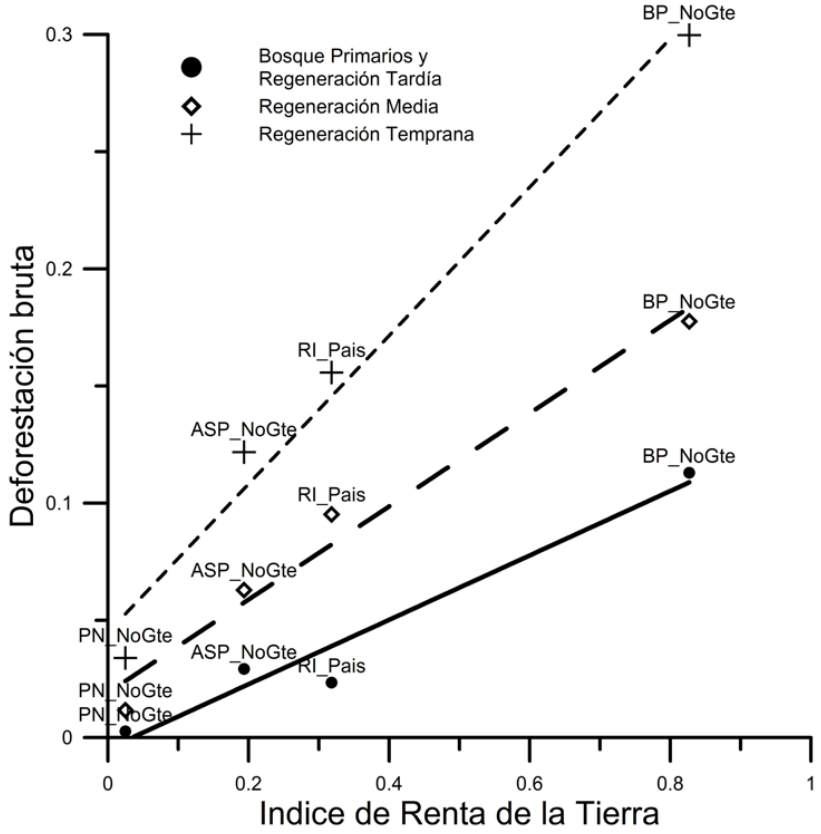


# RL Spatial Resolution

## Land use dynamics strata

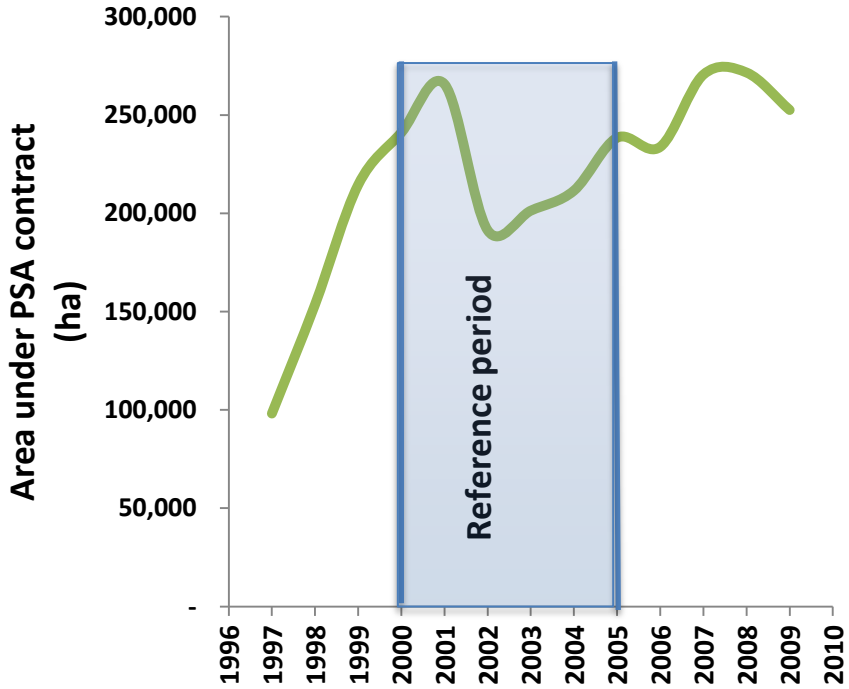



**Gross deforestation for each regeneration cohort sorted according the land revenue index from the land use dynamics strata**



# Historical emissions period

- The reference baseline of Costa Rica`s ER-Pin is preliminary.
  - It is based in the earliest estimation of the deforestation and regeneration of the historical reference period comprised between 2000 and 2005.
  - PSA program in Costa Rica exists since 1997, its extent was increasing over time, stabilizing in the period 2000-2005
  - 2000-2005 historical reference period was immediately prior to the Montreal Climate Change Conference, where RED discussions began by the Subsidiary Body for Scientific and Technological Advice (SBSTA) (VCS, 2012).



# Activities Costa Rica will include in a ER-PROGRAM RL

| Option | Type of Land Ownership | Emission Reduction Option | PES Area (ha) | Tons $CO_2$ |
|---|---|---|---|---|
| A | Private forests and indigenous reserves | Additional PES area for avoided deforestation in old growth forest | 107,600 | 8,540,929 |
| B | Private forests | Additional PES area for avoided deforestation in secondary regeneration | 19,191 | 628,952 |
| C | Private forests | Additional PES area for carbon sequestration through induction of early regeneration | 124,282 | 6,505,287 |
| D | Private forests | Additional PES area for carbon sequestration through establishment of forest plantations | 72,132 | 8,019,422 |
| E | Indigenous reserves | Additional PES area for carbon sequestration through induction of early regeneration | 18,742 | 785,370 |
| F | Not applicable | Carbon sequestration in wood products through increased use of wood | - | 5,000,000 |
| | | Total | 341,946 | 29,479,960 |

# Enhancement of forest carbon stocks activities Costa Rica will include in a ER-PROGRAM RL

- Historic regeneration rate (2000-2005) : estimated as 6.92% for the five-year period.
- Duplicate the regeneration rates of the 2000-2005 period, in private forests would produced between 2010-2020, 196,413 ha of new forests, of which 124,282 ha corresponds to early regeneration and 72,132 ha to plantation forests.

***Option C. Incorporation of additional PES area for carbon capturing in new private regenerated forests outside of Guanacaste, by incorporating additional PES area.***

| Year | Annual recruited PES area (ha) | Accumulated area (ha) | Accumulated carbon (Mg C) |
|---|---|---|---|
| 2010 | 4,838 | 4,838 | 50,686 |
| 2011 | 2,031 | 6,869 | 71,958 |
| 2012 | 10,110 | 16,979 | 177,875 |
| 2013 | 10,110 | 27,089 | 283,793 |
| 2014 | 10,110 | 37,200 | 389,710 |
| 2015 | 14,514 | 51,713 | 541,758 |
| 2016 | 14,514 | 66,227 | 693,806 |
| 2017 | 14,514 | 80,741 | 845,853 |
| 2018 | 14,514 | 95,254 | 997,901 |
| 2019 | 14,514 | 109,768 | 1,149,949 |
| 2020 | 14,514 | 124,282 | 1,301,997 |
| Totals | 124,282 | | 6,505,287 |

# *Land use dynamics in Private Forests for the 2000-2005 period.*

| | Other use | | Early Regeneration | | Mid Regeneration | | Old Growth Forests and Late Regeneration | | Total 2005 |
|---|---|---|---|---|---|---|---|---|---|
| | Area (ha) | Coefficient (%) | Area (ha) | Coefficient (%) | Area (ha) | Coefficient (%) | Area (ha) | Coefficient (%) | |
| Other use | 1.679.313 | 93,08 | 124.773 | 6,92 | | | | | 1.804.085 |
| Early Regeneration | 54.838 | 29,97 | | | 128.127 | 70,03 | | | 182.965 |
| Mid Regeneration | 33.149 | 17,76 | | | | | 153.484 | 82,24 | 186.633 |
| Old Growth Forests and Late Regeneration | 39.803 | 11,30 | | | | | 312.447 | 88,70 | 352.250 |
| Total 2000 | 1.807.103 | 71,54 | 124.773 | 4,94 | 128.127 | 5,07 | 465.931 | 18,45 | 2.525.933 |

# Enhancement of forest carbon stocks activities Costa Rica will include in a ER-PROGRAM RL

***Option D. Incorporation of additional PES area for carbon capturing in new plantation forests outside of Guanacaste, by incorporating additional PES area***

| Year | Annual recruited PES area (ha) | Accumulated area (ha) | Accumulated carbon (Mg C) |
|---|---|---|---|
| 2010 | 6,870 | 6,870 | 125,943 |
| 2011 | 7,109 | 13,979 | 256,282 |
| 2012 | 6,461 | 20,440 | 374,741 |
| 2013 | 6,461 | 26,902 | 493,200 |
| 2014 | 6,461 | 33,363 | 611,659 |
| 2015 | 6,461 | 39,825 | 730,118 |
| 2016 | 6,461 | 46,286 | 848,578 |
| 2017 | 6,461 | 52,747 | 967,037 |
| 2018 | 6,461 | 59,209 | 1,085,496 |
| 2019 | 6,461 | 65,670 | 1,203,955 |
| 2020 | 6,461 | 72,132 | 1,322,414 |
| Totals | 72,132 | | 6,697,008 |

# Enhancement of forest carbon stocks activities Costa Rica will include in a ER-PROGRAM RL

- Historic regeneration rate (2000-2005) : estimated as 10.3% for the five-year period
- Tripling the regeneration rates of the 2000-2005 period, would produced between 2010-2020 period, 18,742 ha of new early regenerated forests.

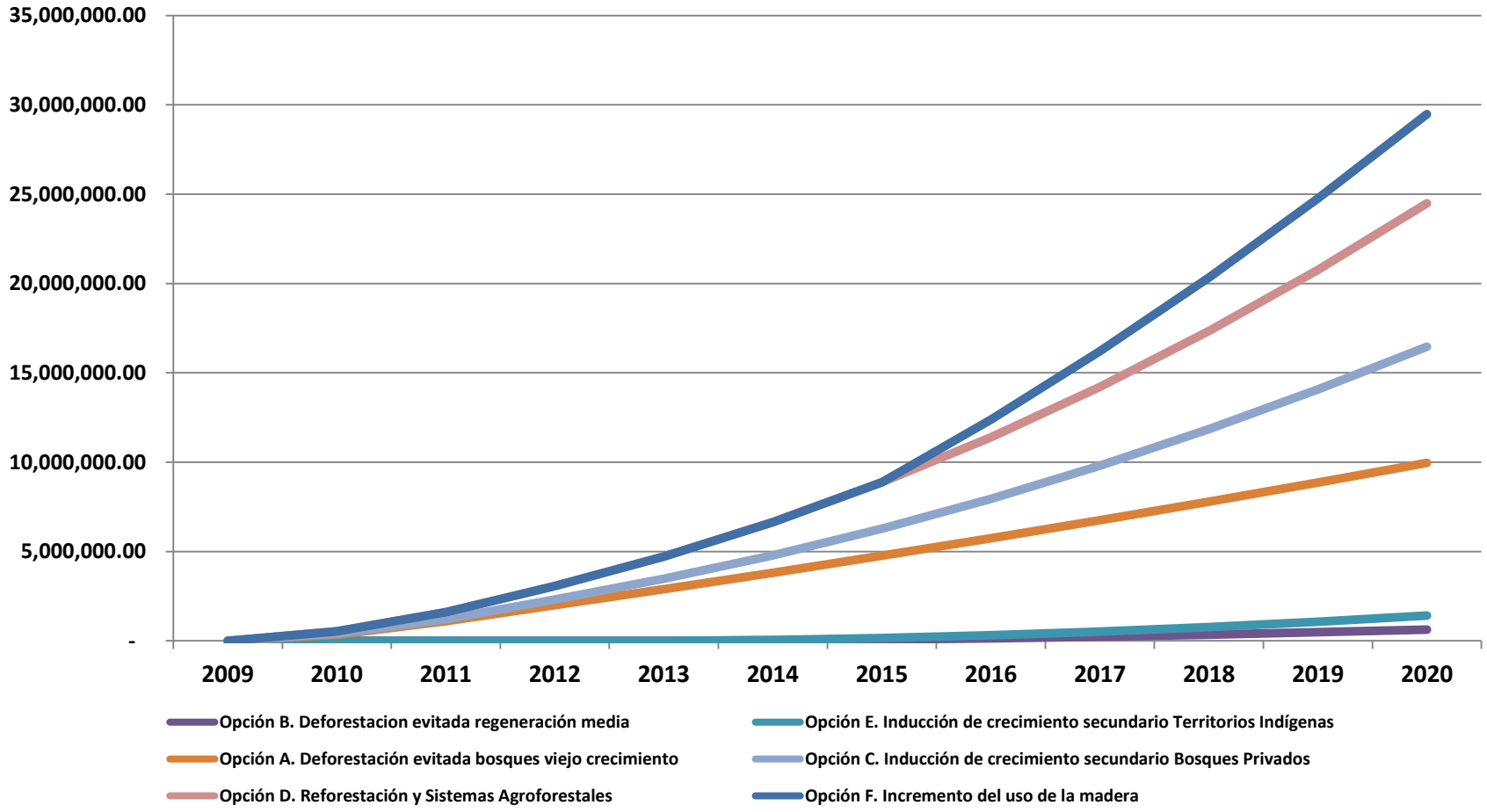
***Option E. Incorporation of additional PES area for carbon capturing in new regenerated forests in Indigenous Territories, by incorporating additional PES area***

| Year | Annual recruited PES area (ha) | Accumulated area (ha) | Accumulated carbon (Mg C) |
|---|---|---|---|
| 2010 | | - | - |
| 2011 | | - | - |
| 2012 | | - | - |
| 2013 | | - | - |
| 2014 | 2,677 | 2,677 | 28,049 |
| 2015 | 2,677 | 5,355 | 56,098 |
| 2016 | 2,677 | 8,032 | 84,147 |
| 2017 | 2,677 | 10,710 | 112,196 |
| 2018 | 2,677 | 13,387 | 140,245 |
| 2019 | 2,677 | 16,064 | 168,294 |
| 2020 | 2,677 | 18,742 | 196,343 |
| Totals | 18,742 | | 589,028 |

# Enhancement of forest carbon stocks activities Costa Rica will include in a ER-PROGRAM RL

- Reference wood consumption intensity: the estimated wood consumption intensity under this option is 0,034 Mg $CO_2$*$(m^2)^{-1}$.
- Target wood consumption intensity of 0.131 Mg $CO_2$*$(m^2)^{-1}$, which is four times greater than the reference one

***Option F: Constructed area (registered and projected) and historic storage estimation of Harvested Wood Products (HWP) for Option F of Costa Rican ER-Program.***

| Year | Constructed area ($m^2$) | Projected constructed area ($m^2$) | Without Project scenario Historic storage estimation of HWP (Mg $CO_2$) | With Project Scenario Storage increment of HWP by the ER-Program (Mg $CO_2$) | HWP total storage (Mg $CO_2$) |
|---|---|---|---|---|---|
| 2004 | 4,157,293 | | 141,541 | | |
| 2005 | 5,030,874 | | 171,283 | | |
| 2006 | 7,941,701 | | 270,386 | | |
| 2007 | 8,465,111 | | 288,207 | | |
| 2008 | 8,747,562 | | 297,823 | | |
| 2009 | 5,416,297 | | 184,405 | | |
| 2010 | 7,240,767 | | 246,522 | | |
| 2011 | | 7,627,450 | 259,687 | | |
| 2012 | | 8,014,133 | 272,852 | | |
| 2013 | | 8,400,816 | 286,018 | | |
| 2014 | | 8,787,499 | 299,183 | | |
| 2015 | | 9,174,182 | 312,348 | | |
| 2016 | | 9,560,865 | 325,513 | 925,165 | 1,250,678 |
| 2017 | | 9,947,548 | 338,678 | 962,582 | 1,301,260 |
| 2018 | | 10,334,231 | 351,843 | 1,000,000 | 1,351,843 |
| 2019 | | 10,720,914 | 365,008 | 1,037,418 | 1,402,426 |
| 2020 | | 11,107,597 | 378,174 | 1,074,835 | 1,453,009 |
| Total | 46,999,605 | 93,675,235 | 4,789,471 | 5,000,000 | 6,759,217 |

# Preliminary estimate of the anticipated impact of the ER Program proposed by Costa Rica.