MINISTÉRIO DAS RELAÇÕES EXTERIORES

Scenarios 2020: The Future of the Biofuels Industry

Challenges and Opportunities from an International Perspective

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Ministry of External Relations

Ethanol Summit

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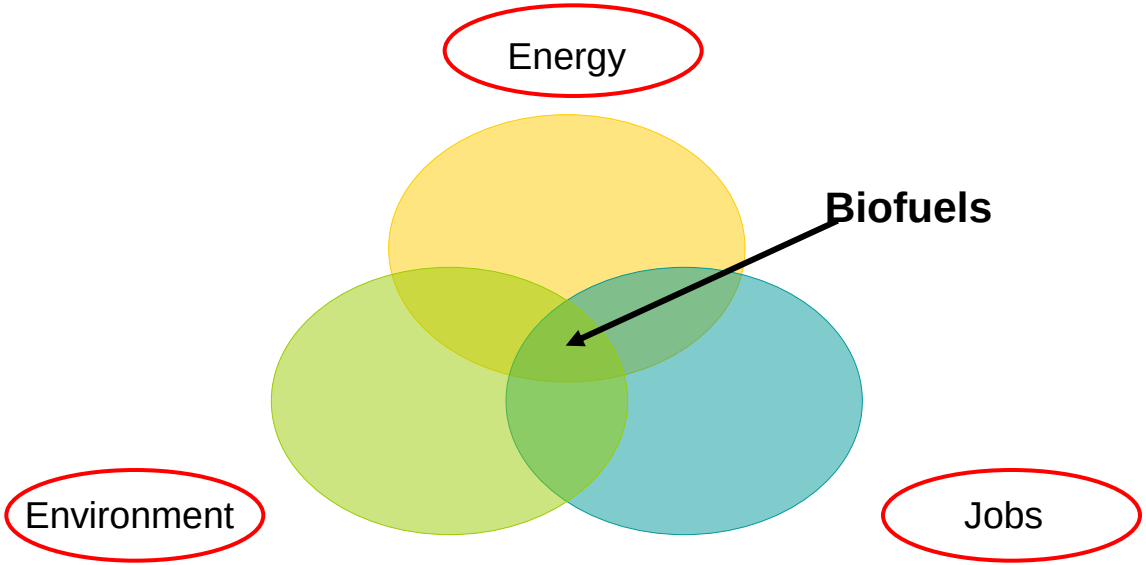
Opportunities: National Policies



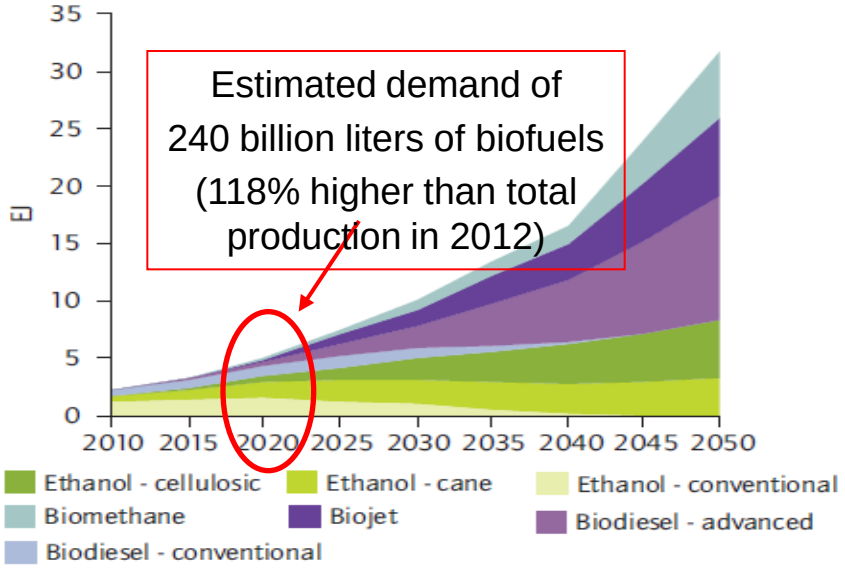
- ✓ Access
- ✓ Security
- ✓ Cost
- ✓ Employment
- ✓ Capacity building
- ✓ R&D
- ✓ GHG Emissions
- ✓ Sustainability
- ✓ Rural development

Biofuels are an alternative that can promote synergies between environmental, industrial and energy policies

Opportunities: Transportation

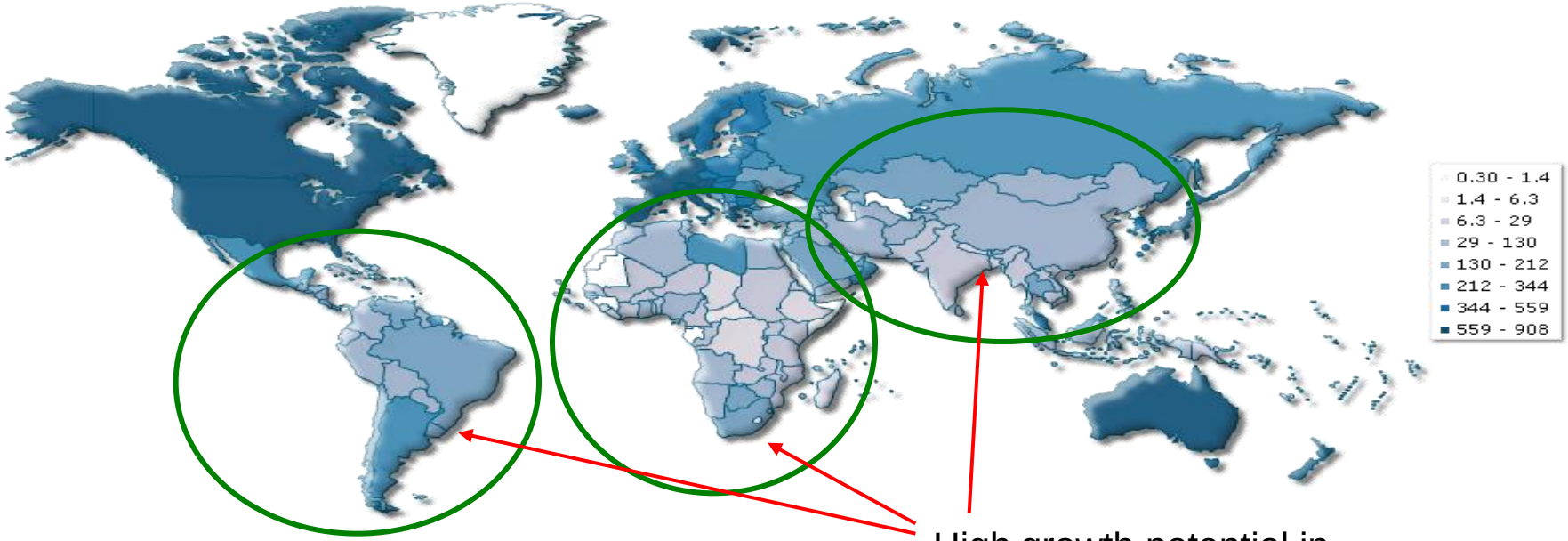
- Currently biofuels provide:
  - 3.4% of global road transport fuels;
  - 2.5% of global transport fuels.

- According to the IEA, by 2020 biofuels may provide up to 4.8% of total transport fuels.



Opportunities: Transportation

Motor vehicles (per 1,000 people)



Source: http://www.indexmundi.com

High growth potential in developing countries

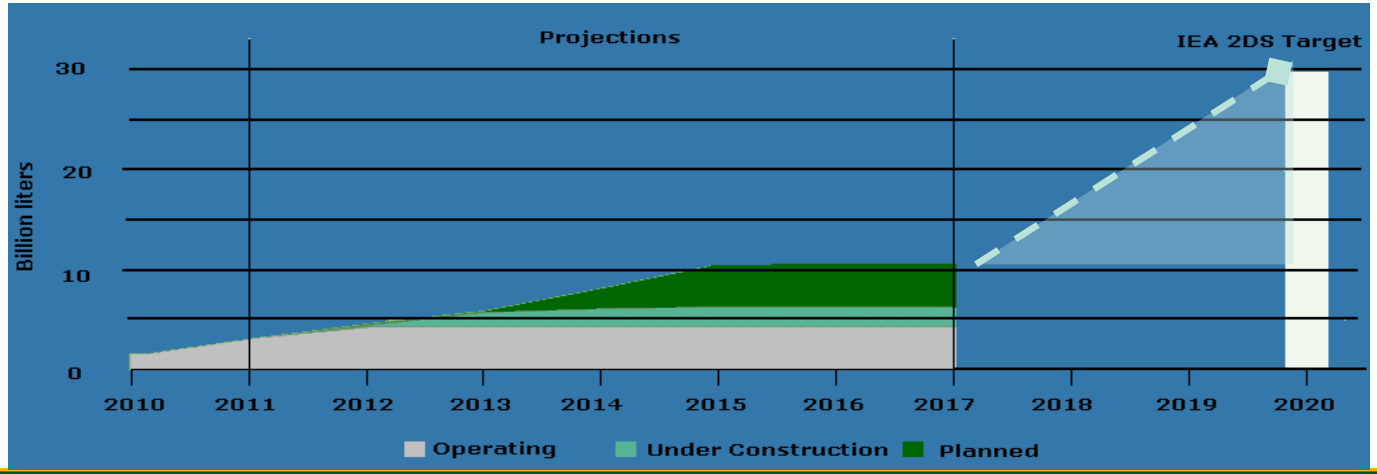
Opportunities: Transportation (Aviation)

- Increasing use of biofuels by the aviation sector
- On June 03, 2013, the International Air Transport Association (IATA) endorsed a resolution to implement a carbon-neutral growth strategy for 2020
  - IATA has set a target to be using 10% alternative fuels by 2017;
  - By 2020, a 6% mix of second-generation biofuels (80% lower life cycle carbon intensity) is expected.

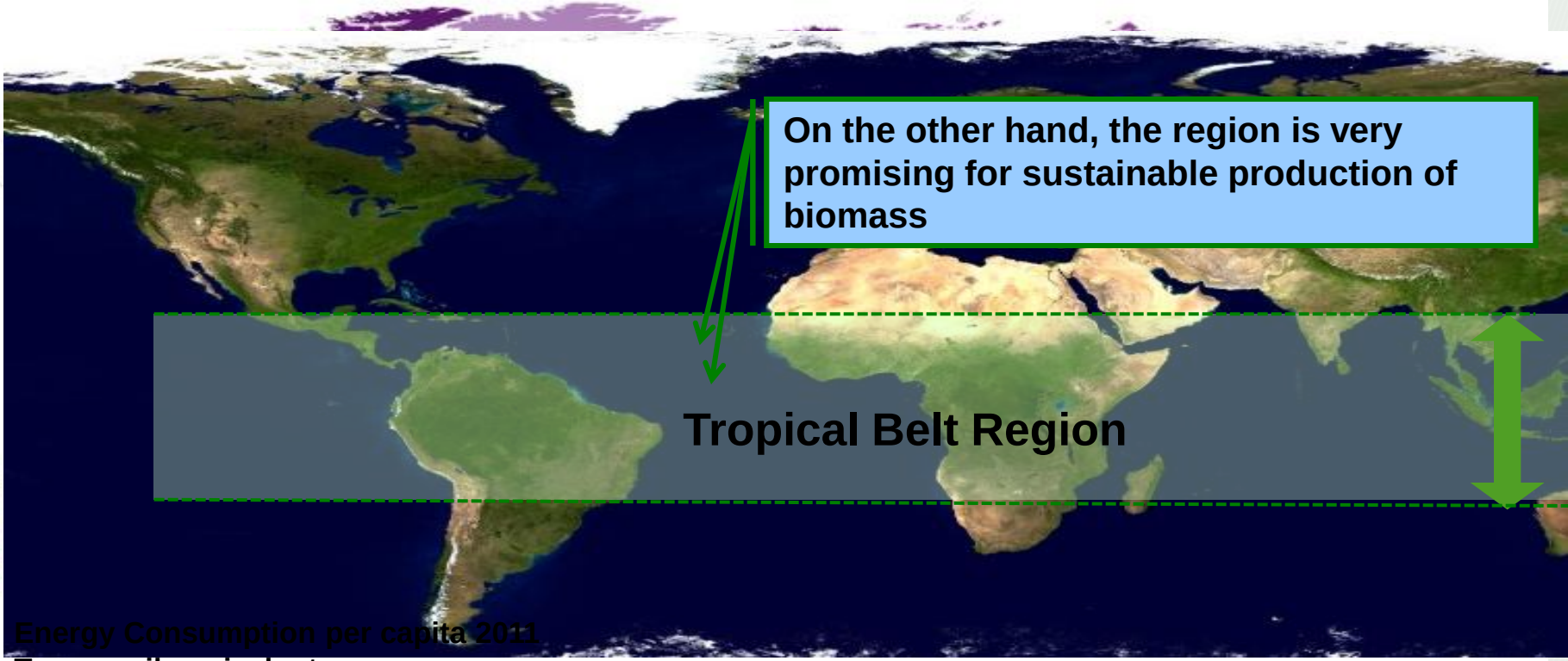
- The FAA has set a target of one billion gallons per year of aviation biofuel capacity by 2018

Opportunities: Cellulosic Ethanol

- Global capacity of second generation biofuels reached 4.5 billion liters in 2012 (30% increase from 2011);
- Over 100 plants are now operating;
- For 2017, global installed production capacity is forecast at 10 billion liters;
- Significantly more investments in commercial production is required to meet IEA 2DS target;
- BNDES and FINEP have developed a Joint Plan for Supporting Industrial Technological Innovation in the Sugar-based Energy and Chemical Sectors (PAISS);
- This initiative may drive Brazil's to a leading role in cellulose-ethanol production.



Opportunities: Cooperation



Energy Consumption per capita 2011

Tonnes oil equivalent

Source: BP Statistical Review of World Energy 2012

Challenges:

Cost

- Emission costs are not likely to be added to the price of fossil fuels in the near future;
- For biofuels to be widely used, they must eventually become competitive with gasoline and/or diesel fuel;
- Biofuel production costs fall as scale and efficiency increase

Trade Barriers

- Barriers may have different forms:
  - Certification schemes and biased sustainability criteria;
  - Tariffs;
  - Quotas.
- Transparent trade rules could benefit both energy producing and consuming nations.

Challenges: Sustainability

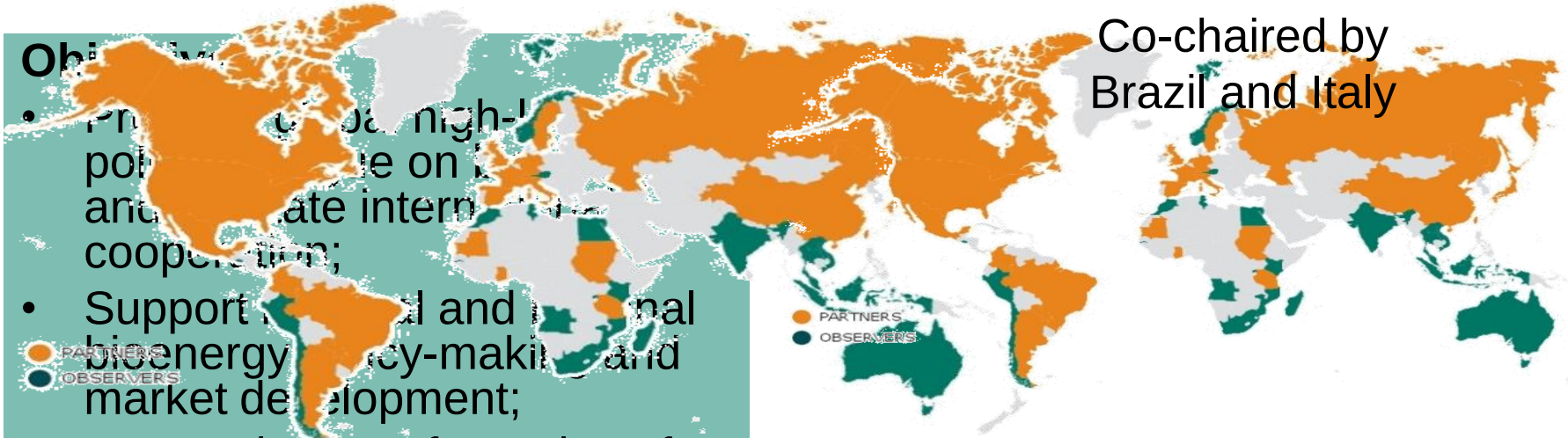
- Misconceptions about the sustainability of biofuels lead to public pressure against biofuels, which may result in restrictive policies;
- To overcome these misconceptions the Brazilian Government actively promotes the sustainable use of biofuels in several

GBEP
Global Bioenergy Partnership

CLEAN ENERGY MINISTERIAL
Accelerating the Transition to Clean Energy Technologies

SUSTAINABLE ENERGY FOR ALL

GBEP



Co-chaired by
Brazil and Italy

Ob

- Pr[illegible] high-l[illegible] pol[illegible]e on [illegible] ant[illegible]ate intern[illegible] coope[illegible]n;
- Support [illegible]al and [illegible]nal bioenergy [illegible]cy-maki[illegible] and market de[illegible]elopment;
- Favour the transformation of biomass use towards more efficient and sustainable practices; and
- Foster exchange of information, skills and technologies through bilateral

GBEP's 24 Sustainability Indicators

PILLARS		
Environmental	**Social**	**Economic**
INDICATORS		
1. Life-cycle GHG emissions	9. Allocation and tenure of land for new bioenergy production	17. Productivity
2. Soil quality	10. Price and supply of a national food basket	18. Net energy balance
3. Harvest levels of wood resources	11. Change in income	19. Gross value added
4. Emissions of non-GHG air pollutants, including air toxics	12. Jobs in the bioenergy sector	20. Change in consumption of fossil fuels and traditional use of biomass
5. Water use and efficiency	13. Change in unpaid time spent by women and children collecting biomass	21. Training and re-qualification of the workforce
6. Water quality	14. Bioenergy used to expand access to modern energy services	22. Energy diversity
7. Biological diversity in the landscape	15. Change in mortality and burden of disease attributable to indoor smoke	23. Infrastructure and logistics for distribution of bioenergy
8. Land use and land-use change related to bioenergy feedstock production	16. Incidence of occupational injury, illness and fatalities	24. Capacity and flexibility of use of bioenergy

GBEP

- In the context of the WG on Capacity Building, the Brazilian Government has organized and hosted a **“Bioenergy Week”** (BW) on March 2013;
- Held in Brasilia, the BW brought together specialist from close to 30 countries;
- The BW consisted of short training courses analyzing technical and public policy aspects of bioenergy development, in line with GBEP indicators of sustainability;
- A very successful initiative that can be replicated to promote the sustainable production and use of bioenergy, contributing to overcome misconceptions and resistance towards this energy source;
- The next BW will be held in Mozambique in the first

Conclusions

- Biofuels and bioenergy industry can have a bright future:
  - Global demand is expected to increase exponentially, expanding to new markets and applications;
  - Biofuels can be a driver for income generation in developing countries;
  - International cooperation can contribute to expand production to new areas, creating good examples that can be replicated.

- To profit from these opportunities it is necessary to:
  - Reduce costs to make biofuels cost-competitive with fossil fuels;
  - Maintain focus on sustainability;
  - Overcome trade barriers.

Thank you!

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