



The potential of bioenergy as a strategic renewable source

Remigijus Lapinskas
President, World Bioenergy Association

Advanced Biofuels Conference, Gothenburg, Finland
18.05.2017



**WORLD BIOENERGY
ASSOCIATION**

Official supporter of WBA –
Enerstena Group of Companies

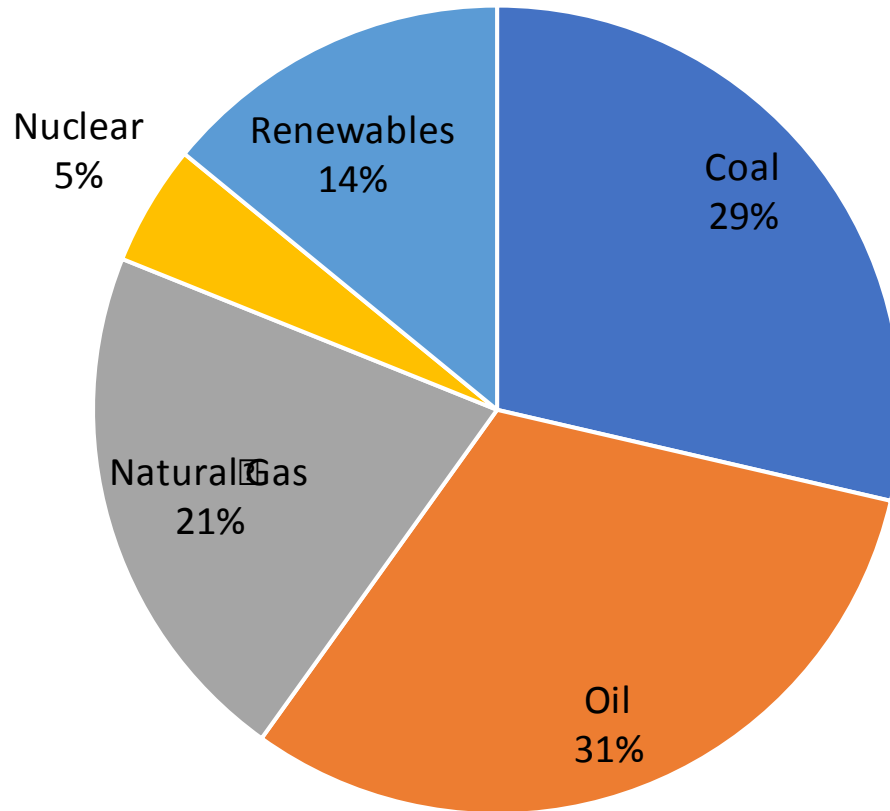


Content



- Energy supply and consumption
- Energy use in electricity, heat and transport fuels
- Liquid biofuels
- Advanced Biofuels and its role
- Potential of biomass towards 2035
- Biofuels Working Group
- About WBA
- Conclusion

Global energy supply

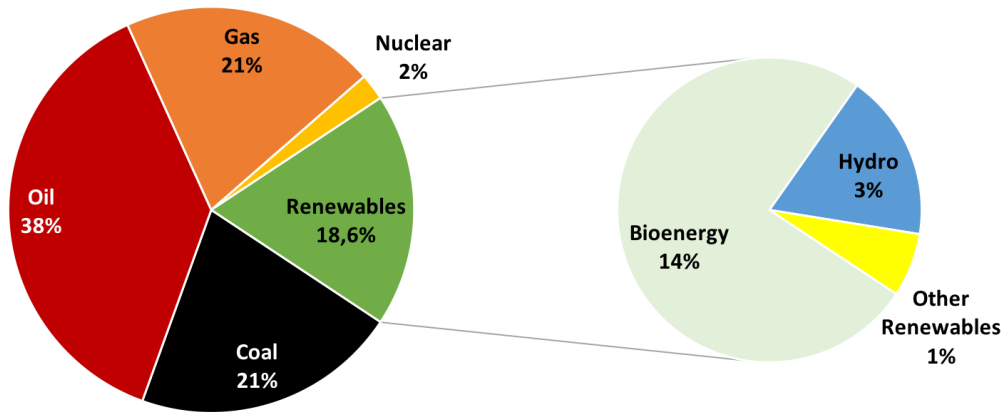


- 14% of global energy supply satisfied by renewable energy sources (Total – 573 EJ, 13 700 Mtoe)
- Supply of energy grew at an annual growth rate of 2.2%: (Coal + 3.8%, Oil +1.1%, Natural gas: 2.4%, Nuclear: -0.2%, Renewables: 2.8%)
- Global emissions (2014): 32 Bt CO₂

Global energy consumption



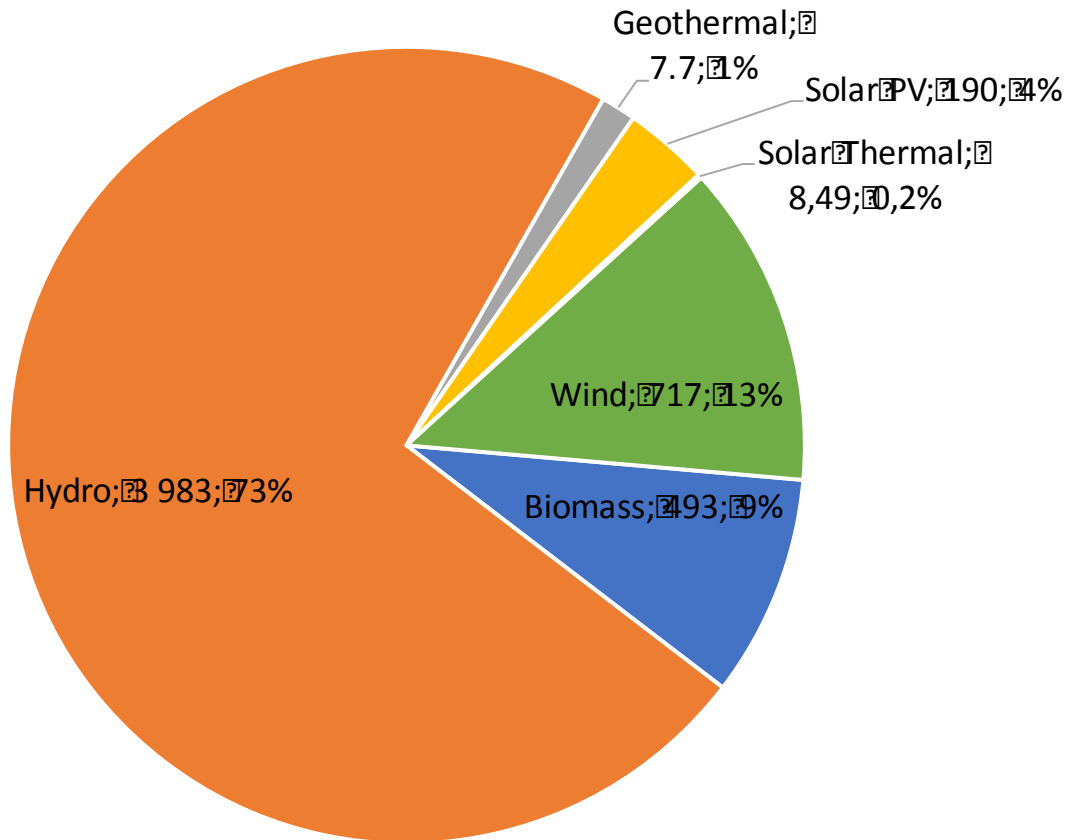
Global consumption of energy in 2014
(Total - 360 EJ/8 585 Mtoe)



- Total Global Energy Consumption – 360 EJ or 8 585 Mtoe or approx. 100 000 TWh
 - Total Renewable consumption – 18.6% - 67 EJ
 - Total Bioenergy consumption – 14% - 50.5 EJ

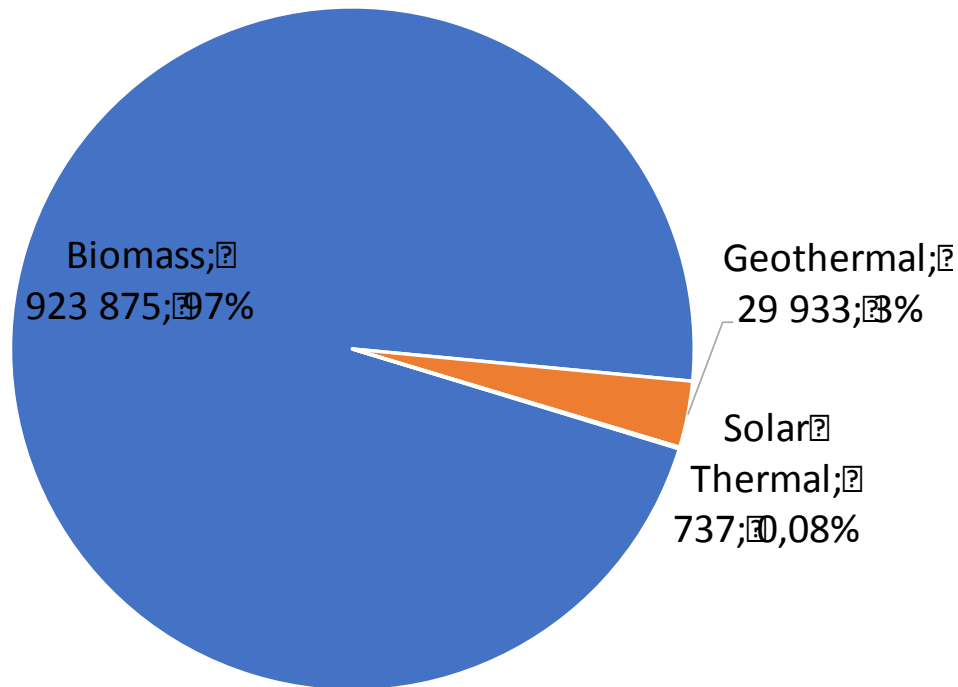
Bioenergy is the largest renewable energy source globally

Renewable electricity



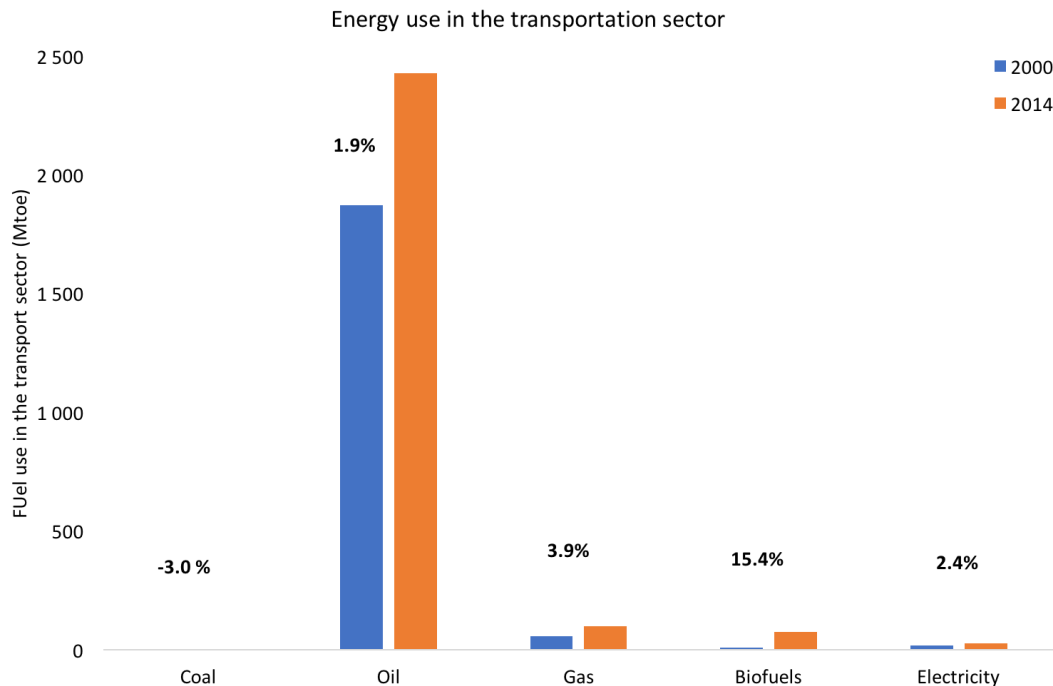
- 493 TWh of biopower generated globally
- 3rd largest after wind and hydropower
- New power plants being built especially in Asia while conversion of plants from coal to biomass is occurring in Europe (UK, Denmark etc.)

Renewable heat



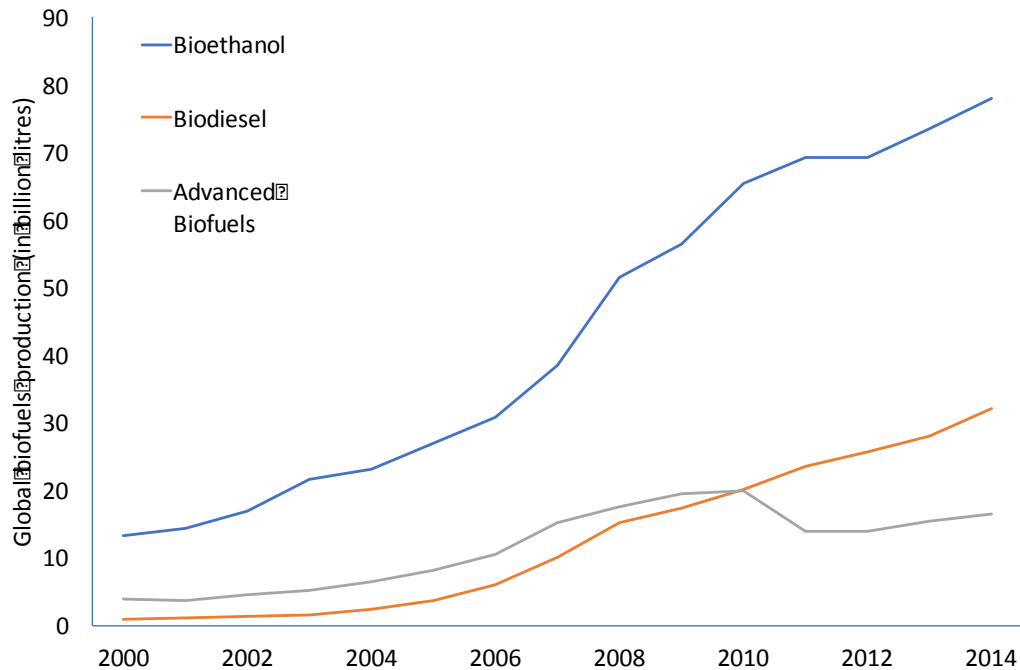
- Biomass heating is the largest renewable heat source globally - 923 PJ of heat (256 TWh)
- 50% of world's energy use is in heating sector
- Decarbonizing the residential and industrial heating sector will be a key driver for biomass development

Renewable Transport



- Renewables share in end sectors is low in transport (Electricity – 23%, Heating – 27%, Transport – 3%)
- Greening the transport sector is the biggest challenge in meeting energy and climate targets globally
- Rate of electrification is too slow to meet the growing demand
 - Electricity in transport – 0.99% (in 2014) vs. 0.96% (in 2000)

Liquid biofuels



- Biofuel production crossing 130 billion litres globally
 - Bioethanol – 62%
 - Biodiesel – 25%
 - Advanced/Other biofuels – 13%

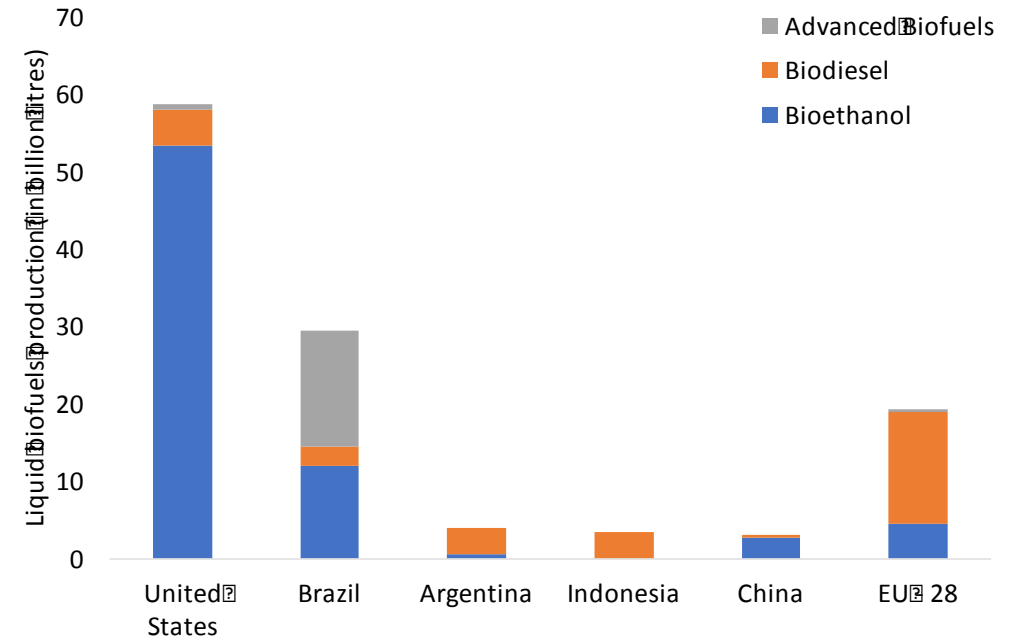
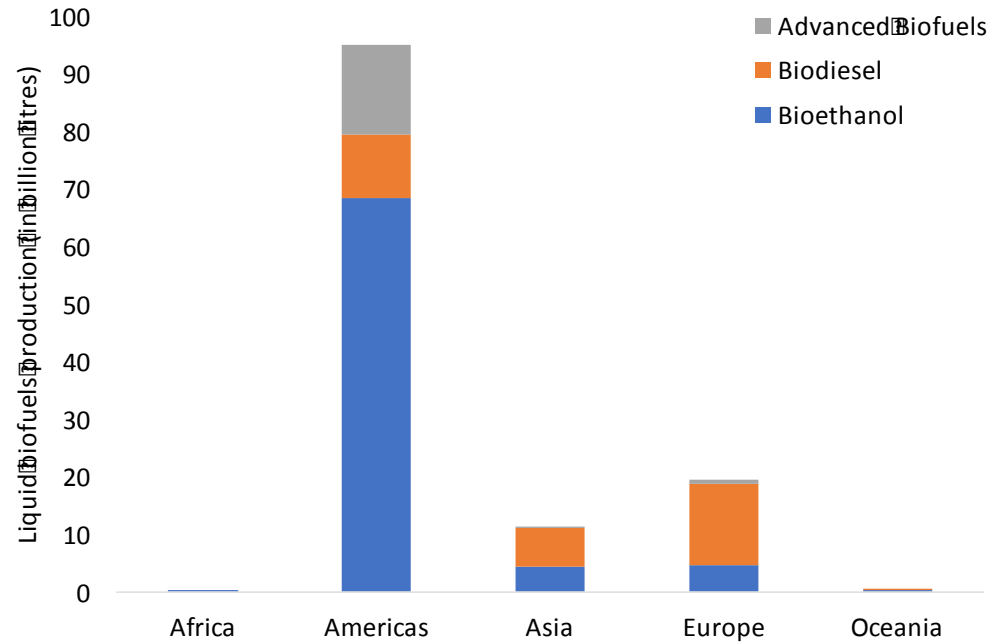


WORLD BIOENERGY
ASSOCIATION

Official supporter of WBA –
Enerstena Group of Companies



Regional biofuel production



**WORLD BIOENERGY
ASSOCIATION**

Official supporter of WBA –
Enerstena Group of Companies



Advanced Biofuel Plants



Company*	Location	Start of production	Product, Capacity (million litres, MW)	Capital costs (\$ million)	Feedstock (1000 tons/yr)	Feedstock
POET DSM	Emmetsburg, Iowa, US	Sep – 14	Ethanol, 95	275	285	Corn cobs, leaves, husk and stalk
Abengoa (Non - operational)	Hugoton, Kansas, USA	Oct – 14	Ethanol, 95	500	365	Corn stover, wheat straw, milo stubble, switch grass
Göteborg Energi	Gothenburg, Sweden	Dec – 14	Biomethane, 20 MW	170	50	Wood pellets
GranBio	Sao Miguel dos Campos, Brazil	Sep – 14	Ethanol, 82	265	400	Sugarcane straw and bagasse
DuPont	Nevada, Iowa, USA	Dec – 14	Ethanol, 113	225	700	Corn stover
Enerkem	Edmonton, Canada	June – 14	Methanol, 38	75	100	Municipal waste
UPM	Lappeenranta, Finland	Dec – 14	Biodiesel, 120	210	Not disclosed	Tall oil

* To be updated in June 2017



WORLD BIOENERGY ASSOCIATION

Official supporter of WBA –
Enerstena Group of Companies



Role of advanced biofuels



- Advanced biofuels are vital for meeting climate targets. Without biofuels in transportation, Paris Agreement will fail.
- Significant benefits
 - Reduction of fossil fuel dependency
 - Expanding available biomass resource
 - Job creation
 - Possibility for integration into fossil fuel infrastructure
- Issues – High costs and lack of stable government policies
- Outlook – Development need to be speed up for satisfying at least 5 – 15% of global transport sector need by 2035

Biomass potential towards 2035



TABLE 4: GLOBAL POTENTIAL OF BIOMASS IN 2012 AND 2035 (IN EJ)

Main sector	Sub sector	2012 - Current	2035 - Range	2035 - Average
Agriculture	Dedicated crops - Main product	3.5	26 - 34	30
	By products and residues including manure	2.1	30 - 38	34
	Total agriculture	5.6	56 - 72	64
Forestry		48.9	72 - 84	78
Organic waste		1.7	6 - 10	8
Total		56.2	134 - 166	150

Significant potential to expand the current use of biomass to at least 150 EJ by 2035 sustainably.



WBA Initiative – Biofuels Working Group



- *Aim:* To initiate a global policy for ramping up liquid biofuels development
- *Proposal* – Organize a working group on biofuels industry to formulate strategy towards 2035
- *Members* – Biofuels industry including companies, associations, institutions involved with biodiesel, bioethanol and advanced biofuels (12 – 20 in total)
- *Time frame* – 12 months
- *Key topics* – Definitions, Current situation, policy instruments, global potential, demand and outlook 2035

All are invited to inform about their interest to join!

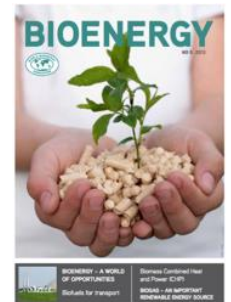
WBA – Organization

- Governed by the board
 - 19 board members from 17 different countries (*Lithuania, Germany, Canada, Australia, Kenya, Turkey, Brazil, Belgium, Singapore, Austria, Malaysia, Japan, Sudan, Sierra Leone, USA, China, Sweden*)
 - Representing all sectors of bioenergy from all continents
 - Private sector, academics, consultants, associations etc.
- Secretariat
 - President – Remigijus Lapinskas (Lithuania)
 - Office – Karin, Bharadwaj, Remigijus, Heinz, Viktorija
- Membership
 - More than 200 members from 50 countries



WBA – Activities

- Global Bioenergy Statistics
- Bioenergy Equipment Directory
- Factsheets
- Country mission reports
- Role of bioenergy in cities
- Setting up bioenergy associations/Bioenergy hubs
- Workshops, webinars and side events (e.g. COP)
- Bioenergy action plans
- Sustainability label
- Collaborations – REN21, IRENA, REN Alliance, Go100%, ISO
- Observer – UNFCCC, Green Climate Fund

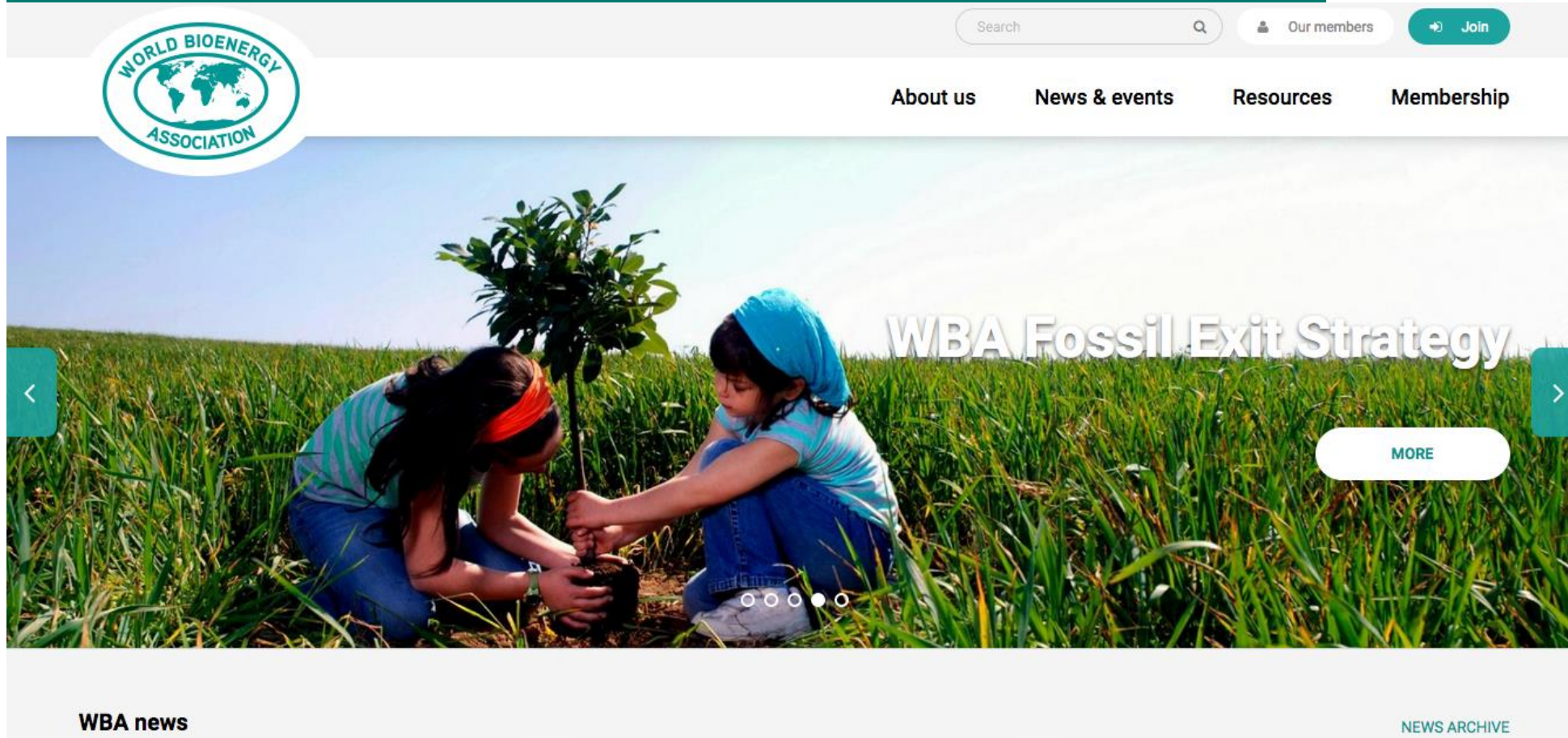


Membership



- Membership Types
 - Full Members – Bioenergy associations (300 – 5000 Euros/year)
 - Associated members – Companies (300 – 5000 Euros/year)
 - Individual members – Individuals (50 Euros/year)
- Benefits
 - Strengthen lobbying in favor of bioenergy
 - Access to WBA network of companies, partner associations and experts
 - Possibilities to collaborate on WBA projects
 - Invitation (WBA discounts) to conferences and workshops etc.

New Website



Subscribe on the website for latest information about bioenergy

Thank you!



World Bioenergy Association
Holländargatan 17, 111 60, Stockholm, Sweden

info@worldbioenergy.org

www.worldbioenergy.org



WORLD BIOENERGY
ASSOCIATION

Official supporter of WBA –
Enerstena Group of Companies

