

# Empleos bajo el modelo de economía circular.



Con:

**Jean-Paul Gauthier, Esq.**

Jugó un papel clave como consultor del Banco Mundial en la creación del Área Económica Especial, Panamá Pacífico. Es Gerente de la práctica de Comercio, Derecho de Deloitte Consulting LLP.

**Martes**  
**2 de junio** | **4:00**  
**p.m.**



# Planning a SEZ for Sustainability: Creating Jobs and a Circular Economy

Jean-Paul Gauthier, WEPZA Secretary General

[gauthier@wepza.org](mailto:gauthier@wepza.org) [www.wepza.org](http://www.wepza.org)

(former IFC advisor, Howard USAF Base Conversion / Panama Pacifico project, 2001-2007)

2 June 2020, 16:00h, Panama Time



London & Regional  
••• P A N A M A •••



# Planning for Knowhow-Driven, “Future-Proof” Jobs

- Make sure you have a flexible and enabling regulatory environment for labour and expat entry in place –*this enables talent attraction, hiring and employment sustainability*
- Make access to knowledge sectors’ regulatory services and agencies available onsite –this attracts these investors along with their workforces
- Experienced private developer with a track record, who understands private sector needs and servicing, as developer-operator –for instance through a concession or a JV –*this positions the zone to be “fit-for-business” in numerous sectors and to create maximum employment*
- Plan on a “work-live-play”, multiuse community environment –*this makes it easier to attract skilled employees*
  - Onsite civil defence and public health agencies & services
  - Onsite housing, retail and recreation facilities
  - Etc.

# Planning for Knowhow-Driven, “Future-Proof” Jobs (Cont’d)

- Siting:
  - Access to public transportation (buses, light rail, etc.)
  - Proximity to (or onsite) universities, tertiary-level institutes, training centres
  - Proximity to (or onsite) schools, hospitals, places of worship, etc.
- Master-planning
  - Worker housing
  - Childcare facilities
  - Greenspace/belts, woodlands, recreation facilities
  - Internal shuttle service
  - Cycling paths / shared “Boris Bikes” / bike-racks
  - Waking paths and blue lighting system
  - CCTV, roving patrols, gate-passes, PA system
  - Retail amenities
  - Incubators, business intel centres, etc.
- Specialized sectorial amenities, in emerging, knowledge-intensive fields (i.e., certification laboratories, shared moulding and casting machinery, 3-day laser printers, CAD, commodities exchanges, specialized repair & maintenance centres, etc.)
- Social inclusiveness, and occupational health & safety rules

# Green and Sustainable Site Selection and Master-Planning

- Dedicated SEZ Environmental Regulations
- Compliance with national and local master-plans
- Proximity to social superstructure and assets
- Avoidance of environmentally and culturally sensitive areas
- Seeking, where possible, to redevelop an already developed property
- Engaging stakeholders and the local community in a coordinated manner
  - Local government interest and support
- Socio-environmental assessment, and Environmental and Social Mitigation Plan (ESMP)
- Inclusive social infrastructure
  - Health and well-being, including park design catering to differently abled citizens
- Synergies of investor co-location, as well as physical connectivity to adjacent communities (circularity and industrial symbiosis)
- Use of renewable energy sources and energy conservation
- Segregated internal zoning, including: Utilities zones, including for sewage treatment plants, solid waste collection centres, electrical substations, CETPs, etc.; Residential zones; and Green zones
- Sustainable transport

# Green and Sustainable Development

- Protecting and enhancing environmental and landscape features
  - Preserving/restoring green cover
- Maximizing passive solar design through the orientation of plots & buildings
- High-bandwidth connectivity
- Planning for eco-efficiency, sustainable resource management, by-product synergies and integrated waste management, in order to deliver properly coordinated, clean and green services
  - Water conservation, including sub-metering, reuse, etc.
  - Energy efficiency, including reducing “heat islands”, use of renewable technologies, sub-metering, etc.
- Responsible Infrastructure and Use of Sustainable Materials
- LEED (Leadership in Energy and Environmental Design) and similar certifications & standards (i.e., DGNB, BREAM or WGBC)
  - Natural light & ventilation
  - Sustainable and local materials
  - LED (Light-Emitting Diode) or Solar Street lighting
  - Low-voltage (ideally photovoltaic) power electrical systems
- Buried power lines, sprinkler systems, water fountains, separate bathrooms, dispensaries and defibrillators

# Sustainable and Knowhow-oriented Site Operations

- Strengthening supply chains through linkage programmes
- Human Resources Agency & Recruiting Services
- Improving entrepreneur and/or resident workforce skills, and/or ensuring employee care
- Quality, Product, Process Standards, and/or Trade Certification services –including for
  - ISO14001 Environmental Management
  - ISO50001 Energy Management
  - OHSAS 18001 Occupational Health and Safety
  - SA8000 Social Accountability
  - GRI, G3, ISCC, Green Label, UN Global Compact, etc.
  - ISO 26000, ISO 9001, SA 8000, AA1000AP, AA1000AS Sustainability or AA1000SES Stakeholder Engagement
- Waste management / treatment
- Decent working conditions, labour dispute settlement, superior standards of worker welfare
- Patenting and IPR agents at One-Stop-Shop
- Networking events, as well as conferences and competitions
- Green education
- IoT, Joint Purchasing, SmartGrid systems for lean production

# Zone Management's Facilitation & Encouragement of Clean Production

- *Internal zoning* according to three broad waste generation and toxicity brackets: high, medium, and low or no toxicity --so that waste can be collected and treated in a single plant, enabling economies of scale and efficiencies both in terms of the investments in and operation of associated treatment systems
- *Treatment*, through technologies reducing the volume and toxicity of waste
- *Disposal*, in sites located fairly close to the source of the waste, separate from residential areas, off floodplains, on a geologically stable base



# Thinking in a “Circular” Manner 😊

- Moving beyond ‘linear’ production processes, in which raw materials are used to make a product, with resulting byproducts and wastes disposed of into the environment, whereby the planet’s finite raw materials will eventually run out, while waste accumulates –and into the use of resources beyond the walls of individual plants, with a view to ensuring their efficient use by groups of closely agglomerated companies
- ‘Lean production’, resource efficiency and synergies
  - *Water source development and harvesting*, including of rain and storm water
  - *Reuse and in-process recycling* of resources
- Recycling and synergies
  - *Separation* and sorting of waste and by-products
  - *Recovery*, through
    - materials exchange or marketplace programmes
    - reusing and recycling construction waste both onsite and offsite
  - *Industrial Symbiosis*, through:
    - energy- and resource- efficient construction practices, including installations capable of exchanging energy flows and enhancing collective heating, ventilation and cooling
    - exchange and repurposing of energy, water, industrial by-products, and process wastes among closely situated firms and communities --surplus energy (e.g., heat, electricity, steam, hot water, biogas, etc.) from a plant can be transferred to other companies, either in the zone or to nearby communities
    - composting

# Circularity in Energy

Helsingborg Business Park, Öresund, Sweden

Kalundborg Industrial Zone, Denmark

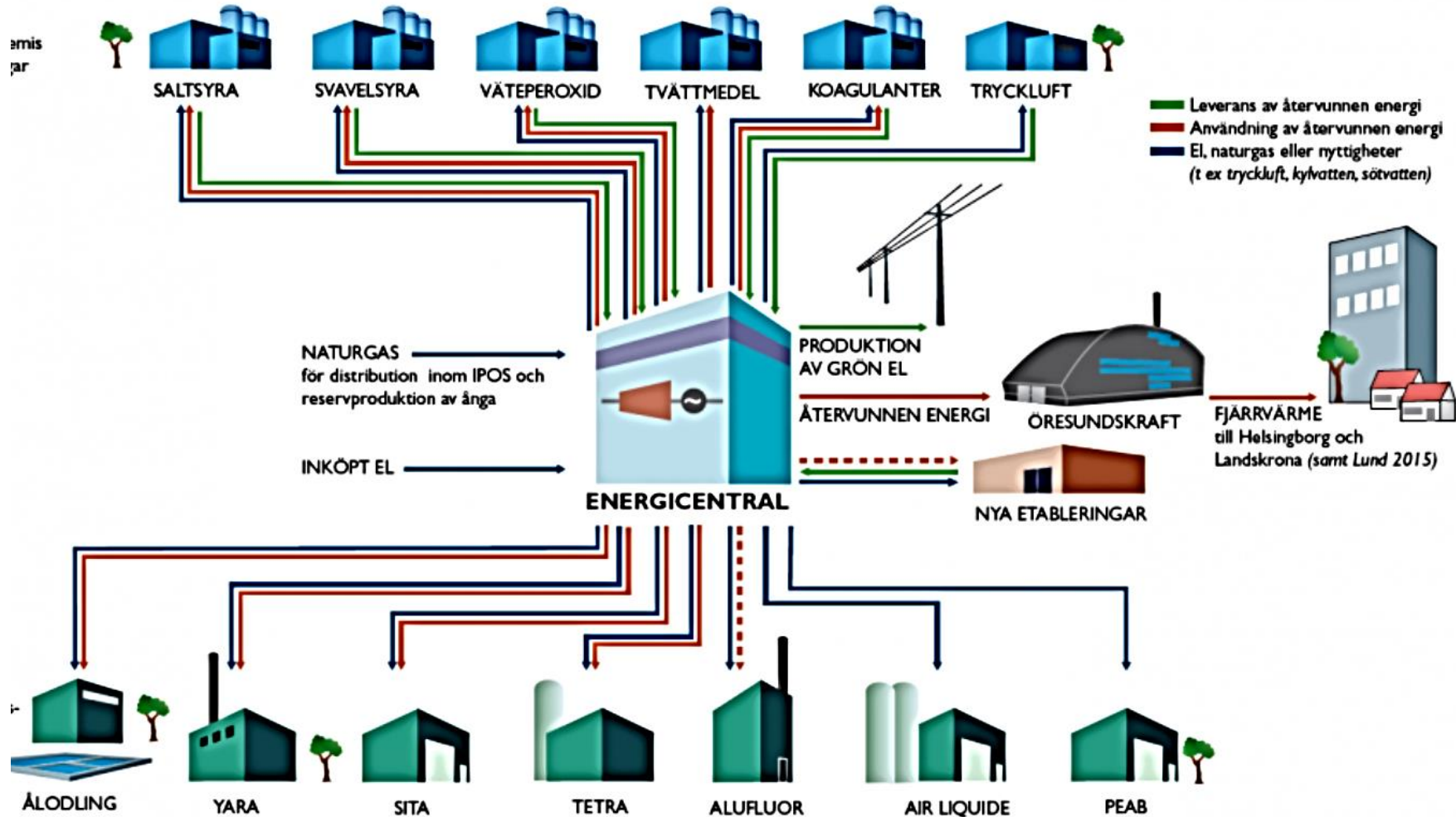
- **The Helsingborg Business Park** in Öresund, in southern Sweden, hosts some 20 chemical and service companies, the biggest one being Kemira Kemi, which also owns the park.
- Due to the energy-intensive industries onsite, its total energy turnover is considerable, at around 1,000 GWh/year.
- However, approximately 600 GWh/year (or 60%) of this figure is climate-neutral, being either 'green electricity' or '**recovered energy**' in the form of repurposed steam, hot water, compressed air and cooling water. **Approximately 350 GWh/year of the recovered energy is supplied as district heating to the nearby city of Helsingborg**, corresponding to 1/3 of the total district heating demand

(Source: Helsingborg Business Park website: [www.industrypark.se](http://www.industrypark.se)).



# INDUSTRY PARK OF SWEDEN

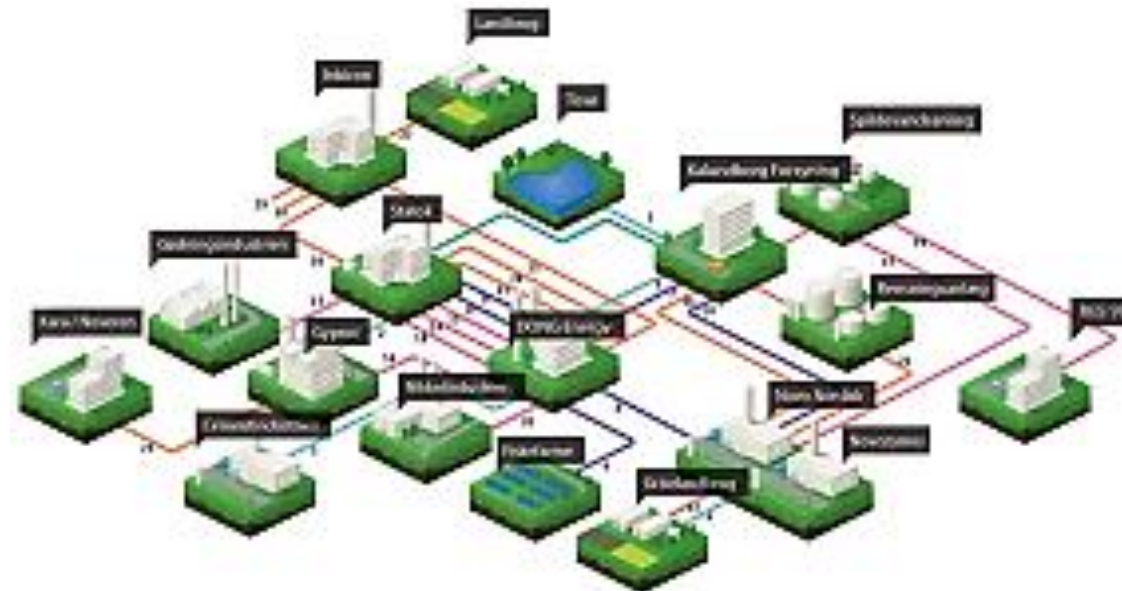
Industriell symbios – för minskad primärenergianvändning och minskade utsläpp och kostnader



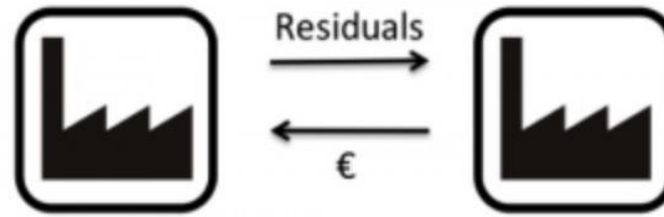
- The park's three pillars are: recycled energy, a shared distribution network and shared costs
- Recycled energy goes to the energy center/ plant, where it is converted into the form needed and then distributed to companies through a central distribution network, which includes electricity, recycled heat in the form of steam and hot water, cooling water, natural gas and compressed air
- The heart of the system is Kemira Kemi's sulfuric acid plant; in the production of sulfuric acid, chemical processes occur which emit large amounts of heat. No fossil fuels are used
- Energy from plants around the park is also redistributed internally and as district heating to the city of Helsingborg

- In **Kalundborg**, Denmark, a number of industrial companies exchange waste and resources with each other in an elaborate network of **pipelines**; among the participants are a refinery, a power plant, an enzyme producer, a producer of insulin, and a manufacturer of gypsum board.
- These companies send waste from their production process on to other companies in the system, which can then use this as valuable input for their process; **steam, sludge, fly ash or hot water** are some of the resources exchanged.
- The quantities involved are large:
  - Yearly CO2 emission reduced by 240.000 tons.
  - **3 million m3 of water saved** through recycling and reuse.
  - 30.000 tons of straw converted to 5,4 million liters of ethanol.
  - 150.000 tons of gypsum from desulphurization of flue gas replaced imported natural gypsum.

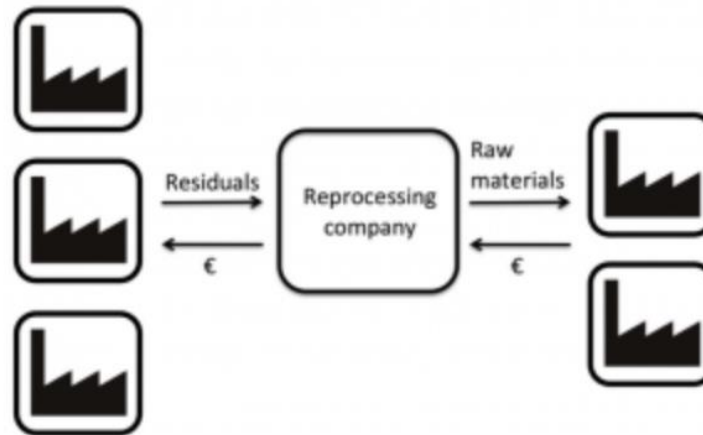
(Sources: <http://www.symbiosis.dk/en> ; <http://we-economy.net/case-stories/kalundborg-symbiosis.html>)



## Classic symbiosis



## Symbiosis via market



So far most exchange have been direct transfers of energy, materials or water, which could be used immediately without any processing. There are still waste streams, which could be turned into resources for other companies, but to makes these residuals useful takes some re-processing.



*A pipeline carrying steam to Novo Nordisk's insulin factory from DONG energy's power plant*

Keeping the resource local also saves transportation costs.

- Dong Energy's plant is coal-fired, and to remove sulfur from the exhaust, calcium is injected in the boilers.
- The result is gypsum, which is loaded on trucks and delivered to Gyproc, 3km down the road.
- Gyproc pays about the same price for the raw gypsum, as it pays for mined gypsum imported from Spain. However, the freight is much cheaper compared to sailing gypsum on boats from Spain to Kalundborg.

# Circularity in water

GAAR Aerospace & Industrial Park Hyderabad, India





# INFRASTRUCTURE

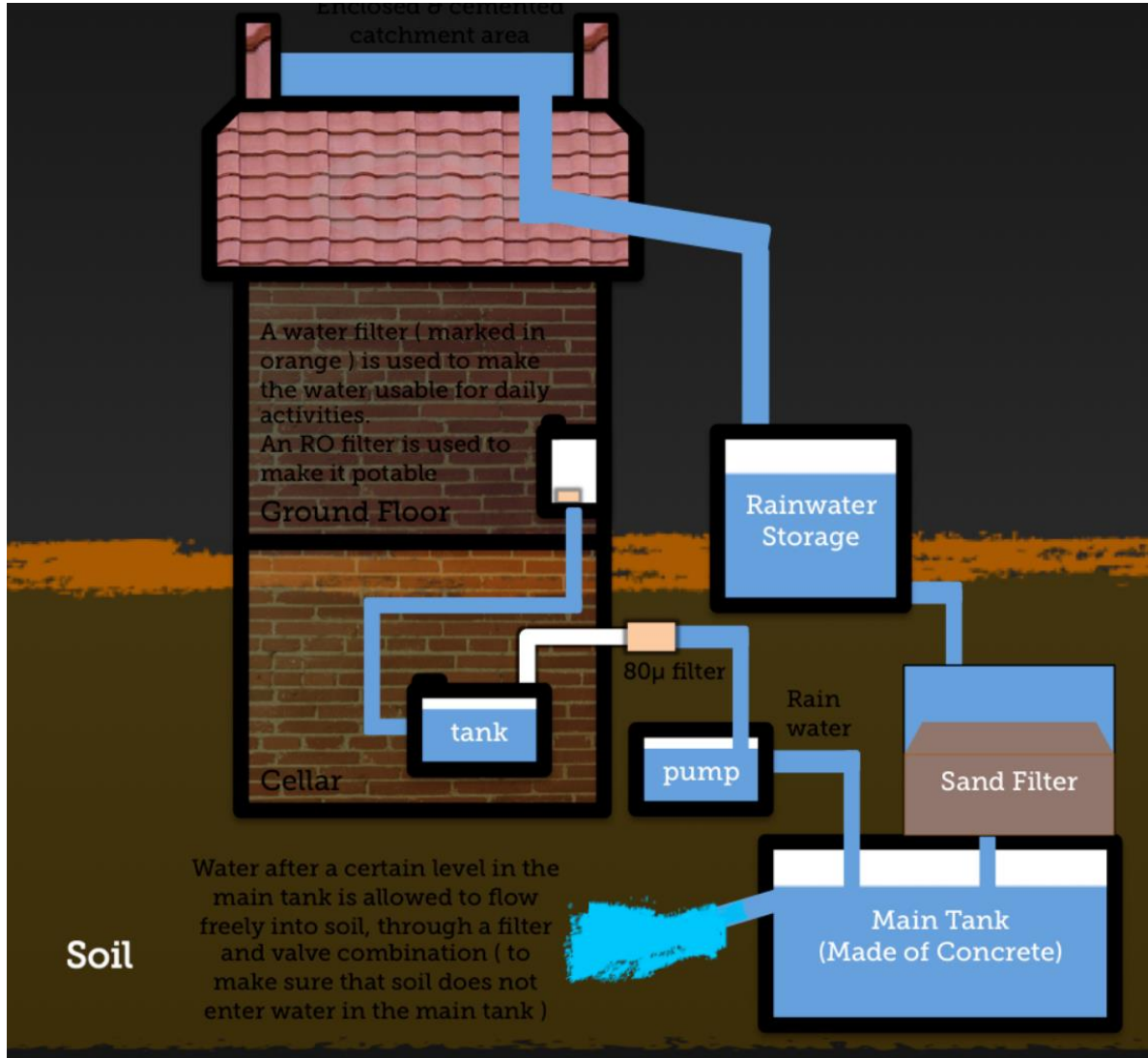
We offer an array of Infrastructural services.

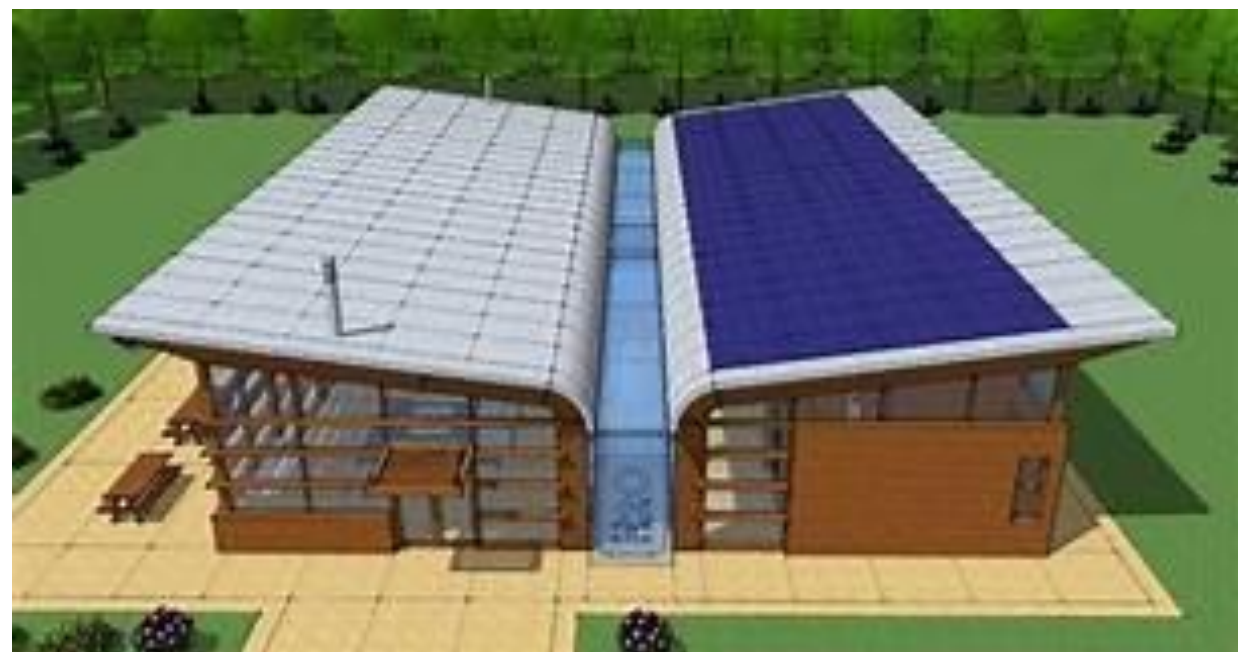


## Sewage and Drainage

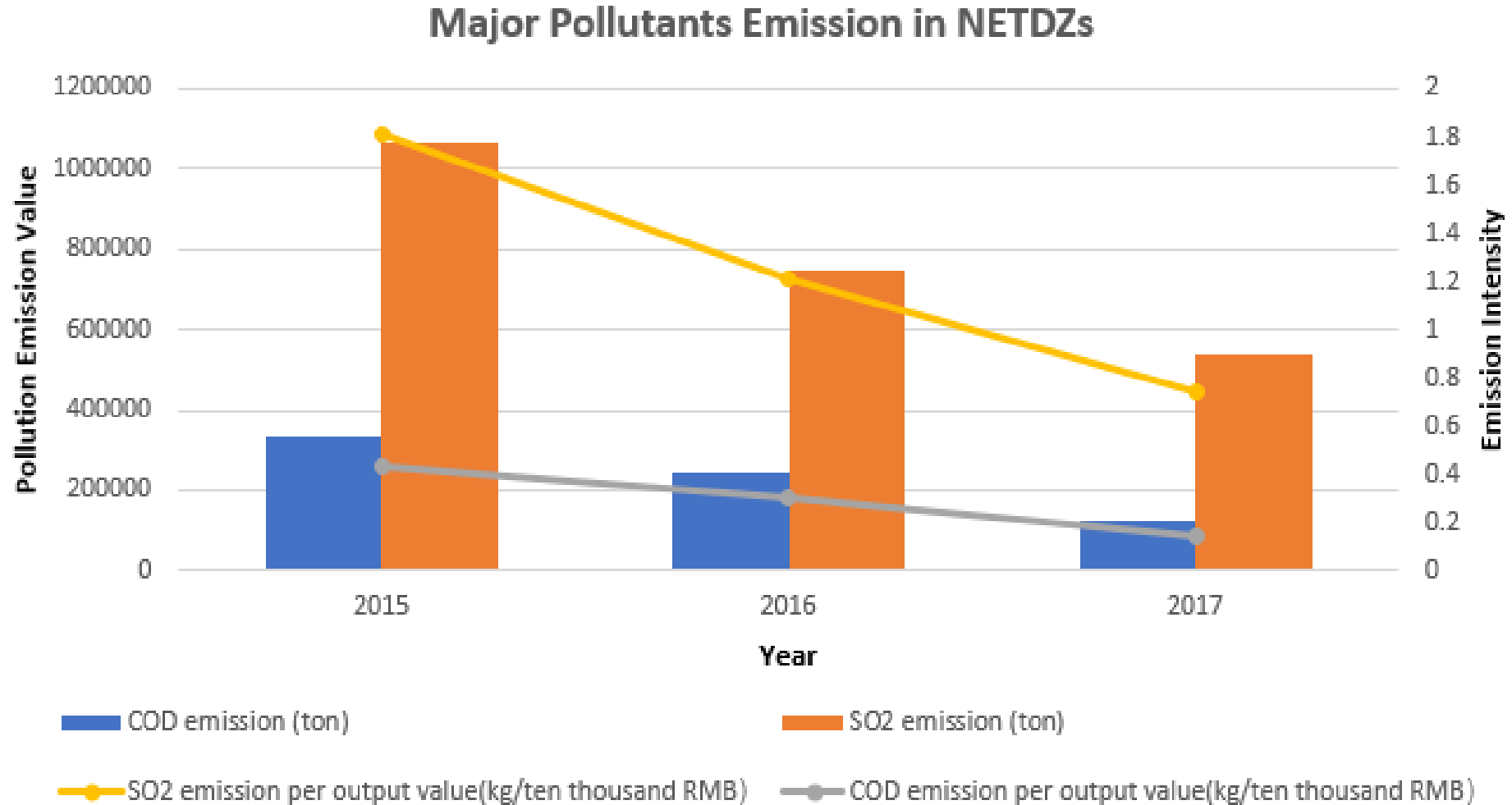
Rain/ Storm Water Harvesting is being implemented to maintain the natural balance of the ground water and improve the quality of the existing ground water through dilution.

Connection will be made available at the plot boundary.





# Green Zones Are Possible: The Case of China's 219 National Economic & Technological Development Zones



Source: NETZ Green Development League (June 2019)

## China's NETZs' Green Results

No.	Indicator	Unit	Average of NETDZs	Average in the State Level	Comparison
1	land area output per GDP	Hundred million RMB / km <sup>2</sup>	2.945	0.086	34 times
2	energy consumption per industrial added value	Tce / Ten thousand RMB	0.89	1.17	7/10
3	water consumption per industrial added value	m <sup>3</sup> / Ten thousand RMB	13.4	45.6	3/10
4	COD emissions per industrial added value	Kg / Ten thousand RMB	0.24	3.65	3/50
5	SO <sub>2</sub> emissions per industrial added value	Kg / Ten thousand RMB	1.03	3.13	1/3

Source: NETZ Green Development League (June 2019)