

Contaminated megasites in China

governance and management of complex areas

Taranto, 25 May 2023

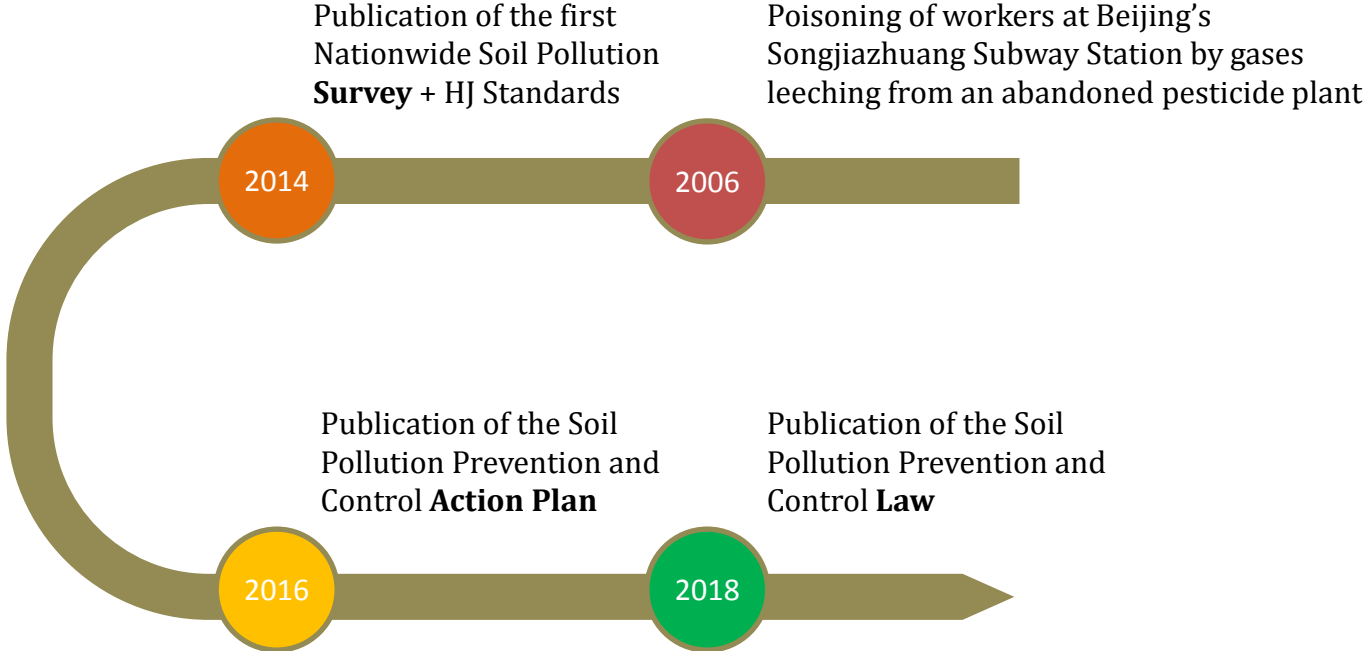
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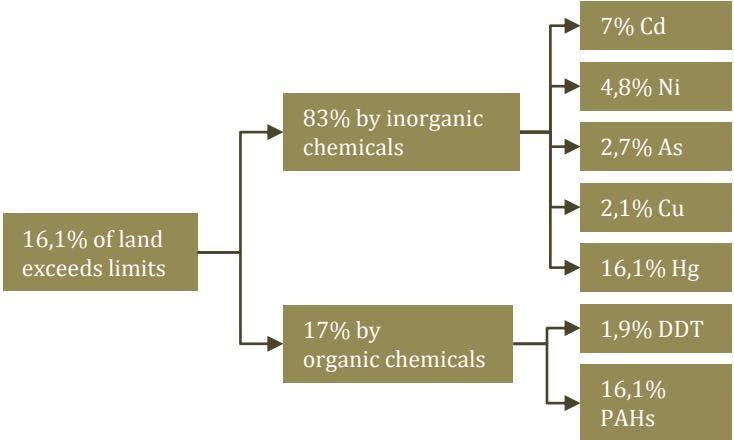
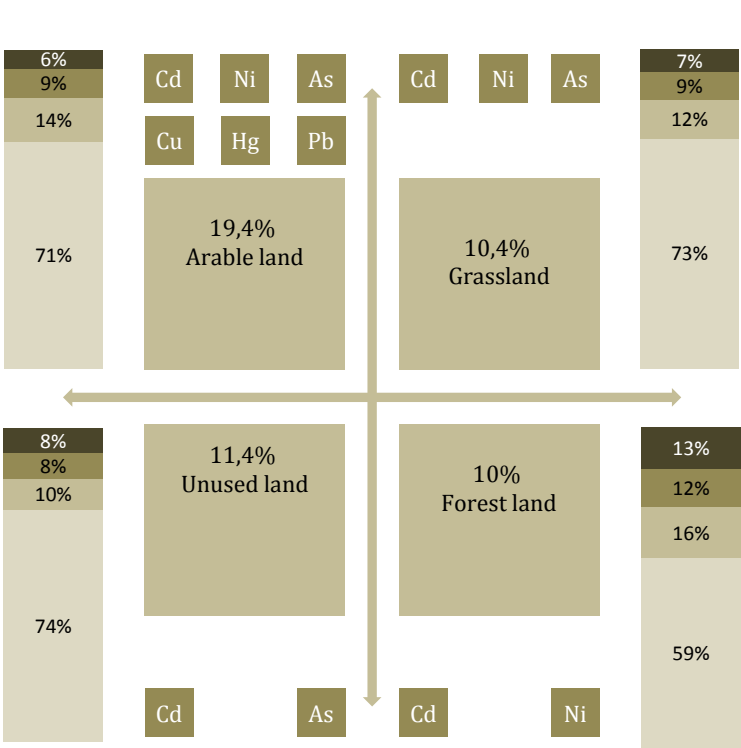
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General timeline



2014 – First Nationwide Soil Pollution Survey



- Heavily polluted
 - Moderately polluted
 - Mildly polluted
 - Slightly polluted
- Cd Cadmium
 - Ni Nickel
 - As Arsenic
 - Cu Copper
 - Hg Mercury
 - Pb Lead

From April
2005 to
December
2013

2016 – The birth of the Soil Remediation Market

31 May 2016, State Council issues the «**Soil Pollution Prevention and Control Action Plan**»

- To curb worsening soil pollution by 2020, and **control soil pollution risks by 2030**, and form a virtuous cycle in the ecosystem by 2050;
- To ensure over 90% of contaminated land can be utilised safely by 2020, and increase this to 95% by 2030;
- By 2020, soil environmental **quality monitoring** points to cover all the **cities and counties**; and
- By 2020, to establish soil pollution prevention & control related laws and regulation system.

11 April 2017, IISD – International Institute for Sustainable Development estimates that

- Cost of cleaning China's contaminated soil amounts to **1.3 trillion USD**
- China's Central and Local Governements can cover **less than 15% of such cost**



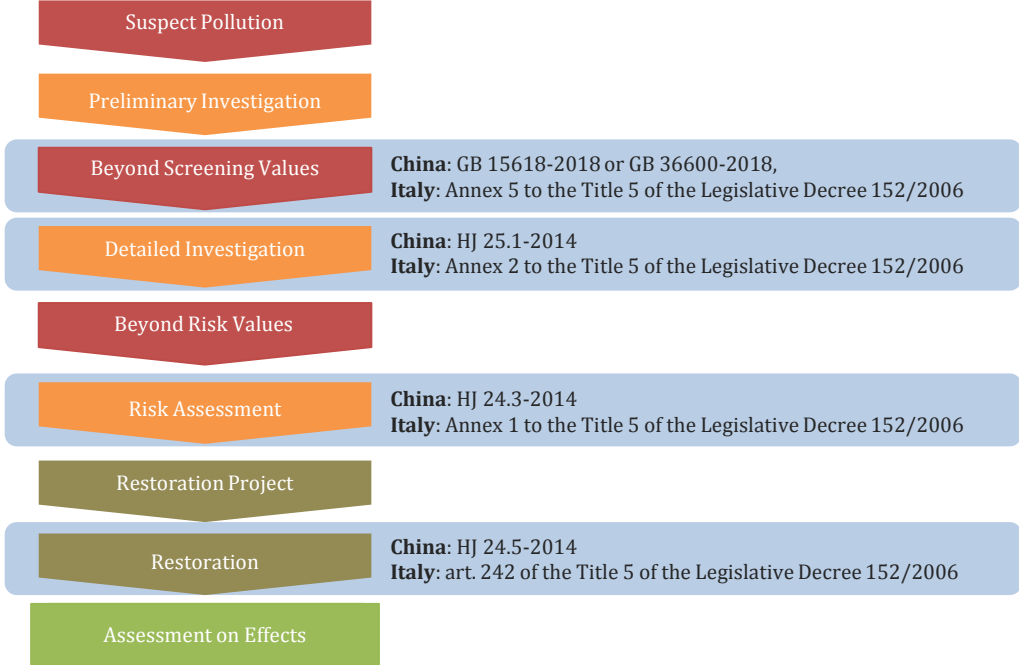
2018 – Soil Pollution Prevention and Control Law

General principles for soil pollution prevention and control and introduces a series of soil pollution prevention and control management systems

- ❑ **Risk Management and Control System:** if the concentration of soil pollutants exceed certain risk screening values for soil contamination, a detailed investigation and risk evaluation must be followed up to identify the scope of the contamination and associated risk level. If the concentration of soil pollutants exceed certain risk intervention values, treatment/remediation measures must be taken.
- ❑ **Soil Information Sharing Mechanism:** MEE, with other agencies, establish a basic soil environment database and build a national soil environment information platform to enable dynamic data updating and sharing, including:
 - an inventory of hazardous substances in soil subject to key controls (Article 20);
 - a directory of entities subject to key supervision for soil contamination (Article 21);
 - an inventory of construction land subject to risk control and remediation (Article 59);
 - a soil contamination survey including monitoring results and soil pollution prevention and control plans (Article 11);
 - official interview updates (Article 79)
- ❑ Management System for Agricultural Land.
- ❑ Management System for Construction Land.
- ❑ Directory of Entities Subject to Key Supervision for Soil Contamination
- ❑ Responsibility for Soil Contamination
- ❑ Supervision and Enforcement



National workflow for construction land



Province-level Registry (artt. 58,59,61,62,66)

National sharing system (artt. 8, 11,20,21,59,76)

1. “Responsible Person” (art 45)
2. the person with the right to use the land or the successor of the Responsible Person (artt. 45,47)

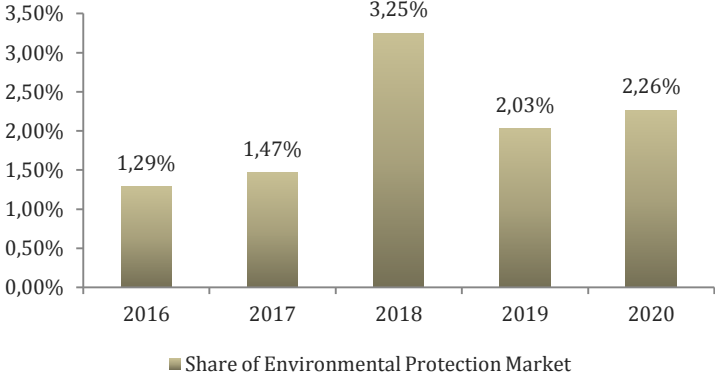
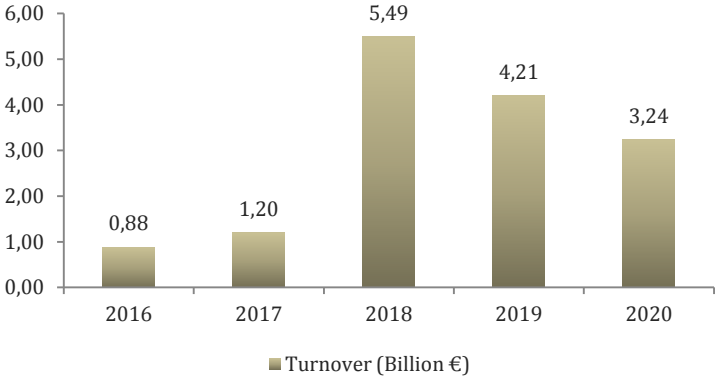
Responsibility and who pays what

- ❑ “Actions must be taken”, but **HOW** and **WHEN**? It falls under **local Governments’ authority**
- ❑ The law does not elaborate who the “**Responsible Person**” is. A definition was provided in the action plan as the “**polluter**”; in the law, in some points, it is referred to “**those who hold the rights on the land**”
- ❑ There is **no private property of the Land**. The Land is under **concession**, so the owner is the State, at central or local level and brownfields are often not assigned in concession to any developer/tenant
- ❑ Most likely, in industrial brownfields, **polluters were State-Owned companies** (owned by central and/or local Government)
- ❑ Local and central Government don’t have money to perform safety measures and remediation

A common Governance approach



Market Value in China



Source:
CAEPI
China Association of Environmental Protection Industry



Challenges and remediation approach

- ❑ Time limit (one year)
- ❑ Repetitive construction
- ❑ Difficulty of secondary pollution control
- ❑ Exist of Sensitive targets
- ❑ Low efficiency of resource utilization

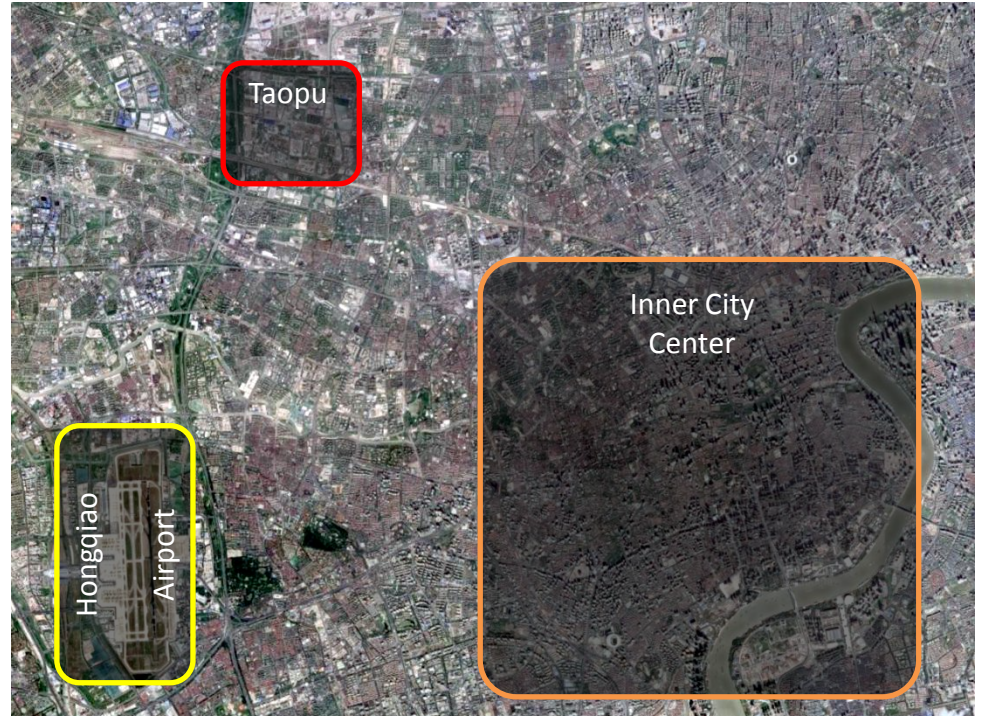


- “Ex situ” techniques
- “factory mode” (treated soil used as raw material), with permanent facilities and standardized process
 - Solidification/stabilization
 - Soil washing
 - Thermal pyrolysis
 - Electrokinetic separation



Case Study: Taopu – Shanghai

- ❑ 1950 – 1997 Shanghai Old Industrial Zone (Heavy Industry)
- ❑ 1997 – 2009 Urban Industry Area (logistics, packaging, printing and others)
- ❑ 2009 – 2012 Production Service Zone (urban area with productive services and high tech industries)
- ❑ 2012 Launch of Taopu Science and Technology City, renamed into Taopu Smart City (<http://www.tpsmartcity.com/tpzcc/en/index.html>)



Case Study: Taopu – Shanghai



Project 613 (former Sanwei
Pharmaceutical Factory)

- ❑ Area: 95,000 sqm (95 hectares)
- ❑ Budget: ~62 Mln € (653 €/sqm)
- ❑ Contaminated soil: 200,000+ mq
- ❑ Groundwater: 130,000+ mq

Soil:

- ❑ Thermal desorption
- ❑ Soil washing
- ❑ Chemical Oxidation

Groundwater:

- ❑ Separation-Extraction-Treatment

- ❑ Largest remediation project in China
- ❑ First implementation of “Remediation Factory in Shanghai
- ❑ 17 remediation projects



Case Study: Taopu – Shanghai



Project 613 visit on November 2019



- ❑ Land owner: Shanghai Government
- ❑ Asset Management: Shanghai Chengtou (Sovereign Fund 100% owned by Shanghai Government)
- ❑ Developer: consortium with 24 Partners



Thank you



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