



From Detection to Correction: How China's science funding agencies address research misconduct

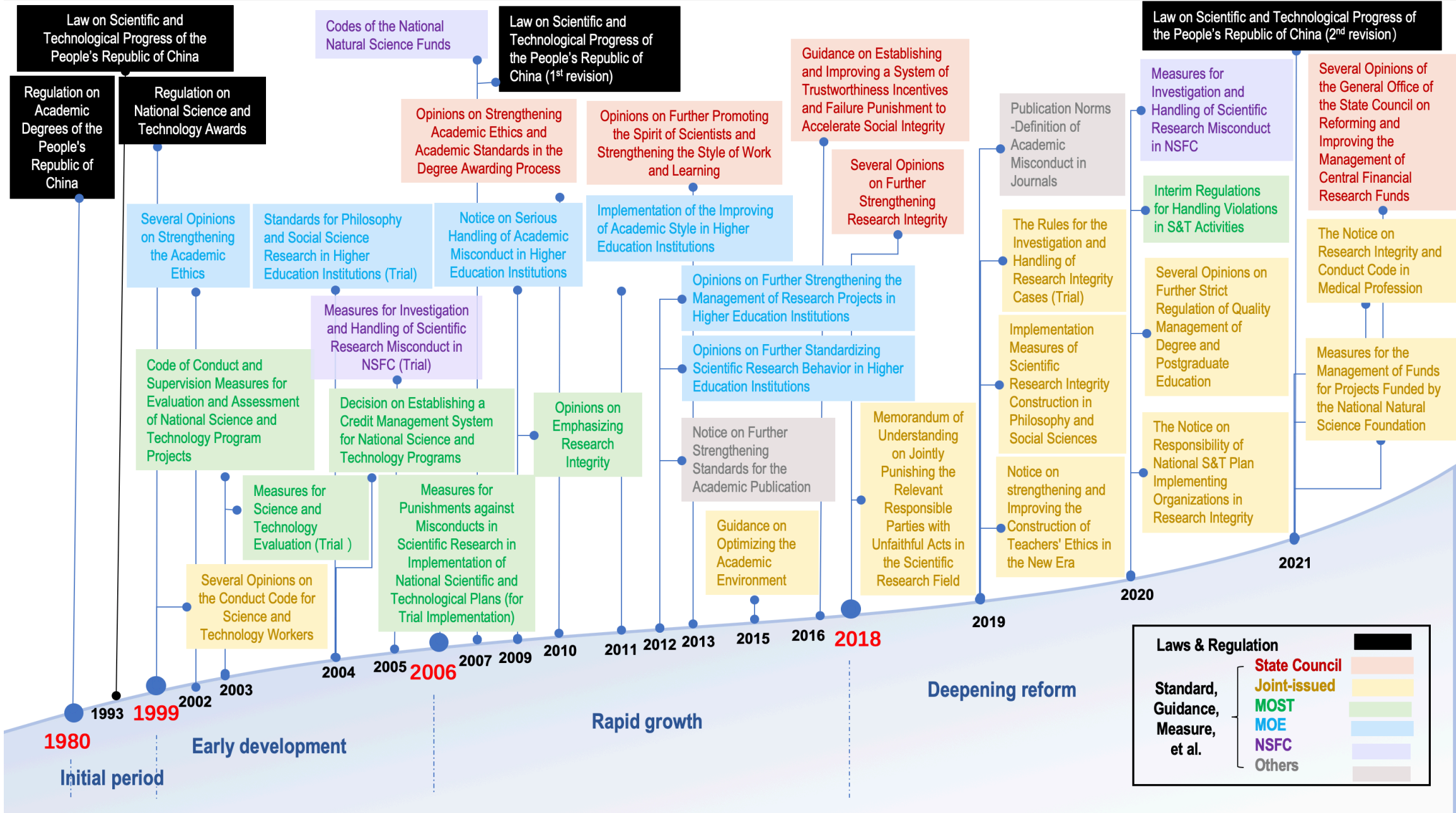
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Chinese science system: some key numbers

- **R&D researcher**
 - 6.35 millions in 2020 (# 1; MOST)
- **R&D spending**
 - 668 billions of PPP \$ in 2021: (# 2; NSB 2024)
 - 2.68% of R&D intensity in 2022 □ 12th □
- **Research publications**
 - 564 thousand paper in 2020 □ # 1 □ 26% □
 - 657 thousand paper in 2021 □ # 1 □ 28% □
 - 762 thousand paper in 2022 □ # 1 □ 32% □
 - 742 thousand paper in 2022 □ # 1 □ 33% □
 - **851 thousand articles in 2024 □ # 1 □ 36% □**
- **False science**
 - % of retracted paper ~ 3 times that expected from knowledge production (Tang 2019)

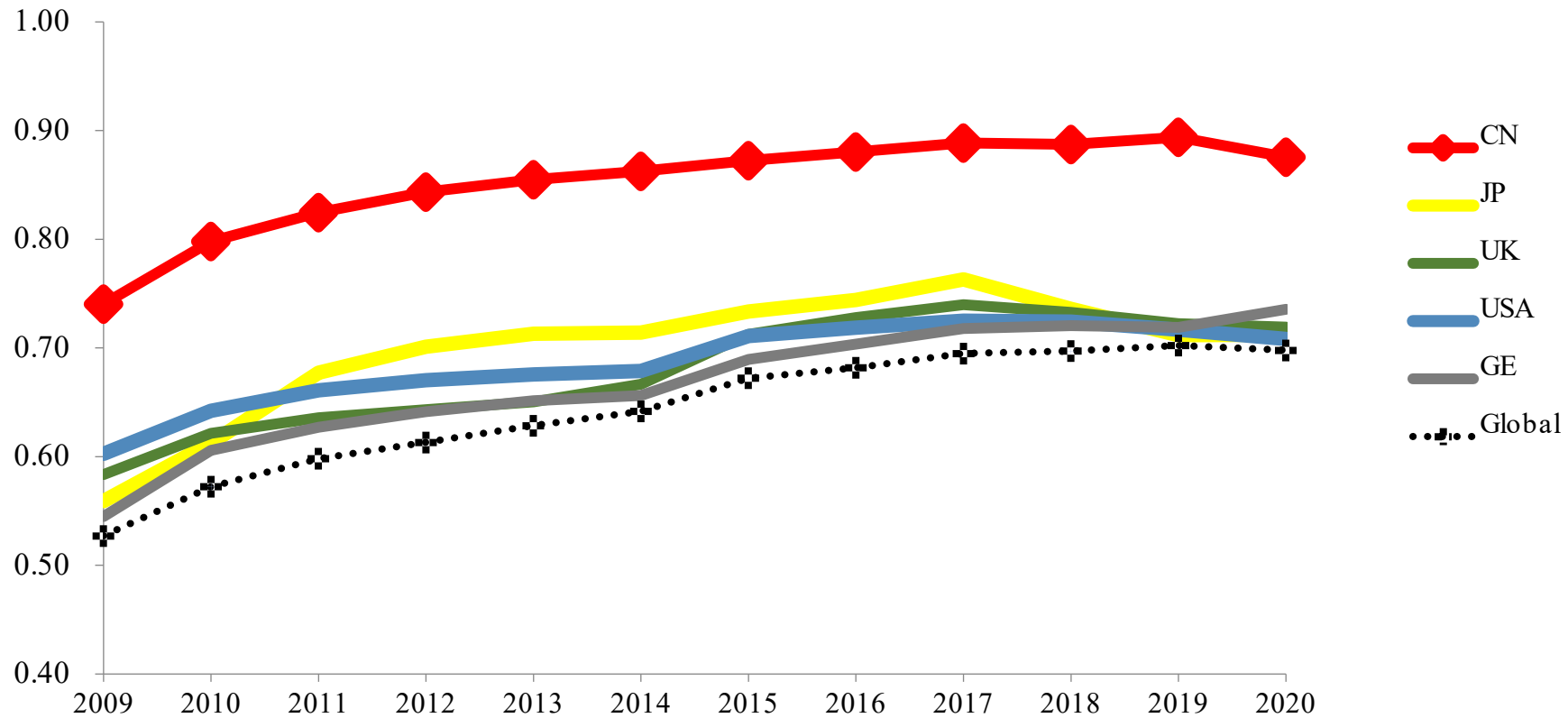


Policy Efforts to Address Misconduct

China's scientific community and government have been proactive in tackling academic misconduct.

But it's not just policy documents

Figure 1. Funding ratios of global publications by Top 5 most productive countries

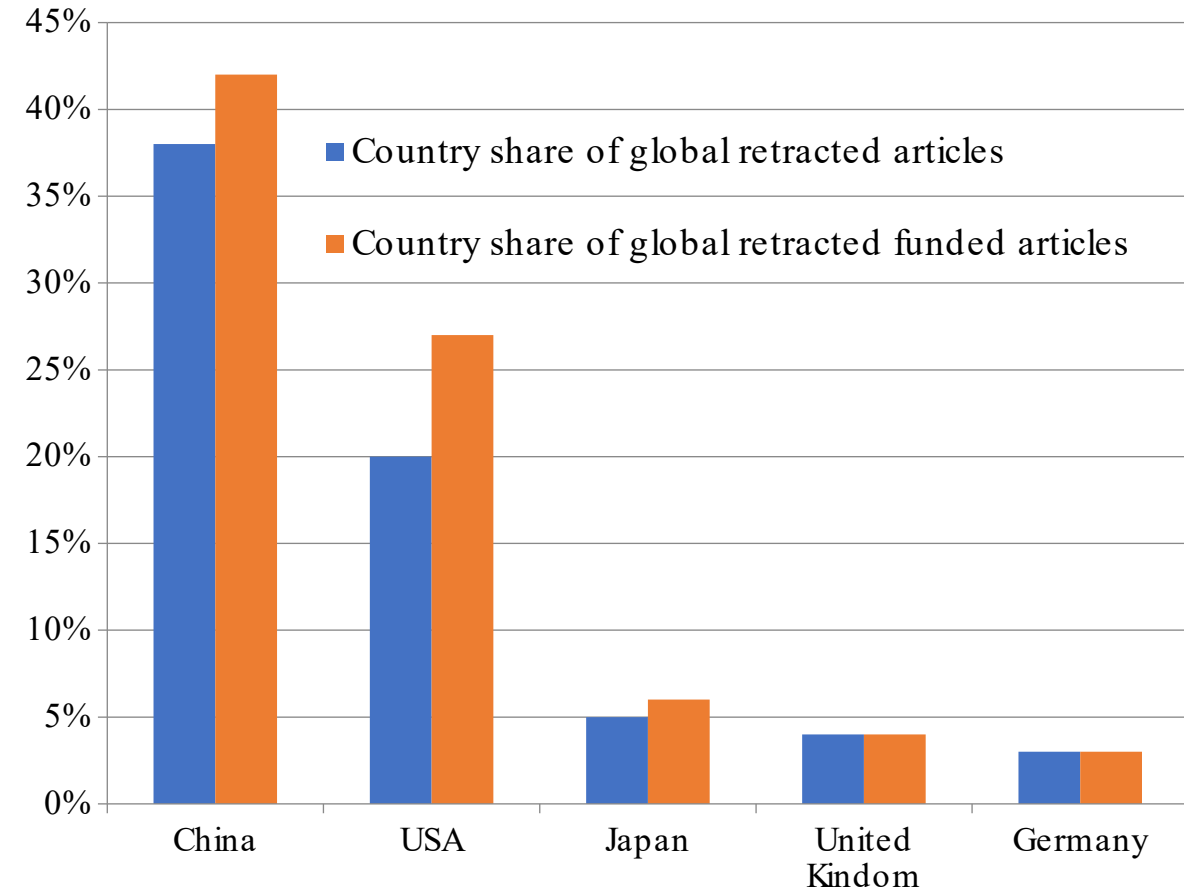


- For every 100 WoS paper, 65 acknowledge the financial support of grants.
- This is particularly salient in China □ Y2009-Y2020 □
 - Nearly 90% of Chinese WoS articles report grant funding □ Y2019 □
 - Over 2/ 3 report funding information from NSFC (Y2020)

China also features prominently in the retraction landscape

- >60% of retracted Chinese WoS articles report grant funding
□ Y2009-Y2020 □
- China ranks 1st in both the share of total retracted articles and the share of retracted articles that report grant funding

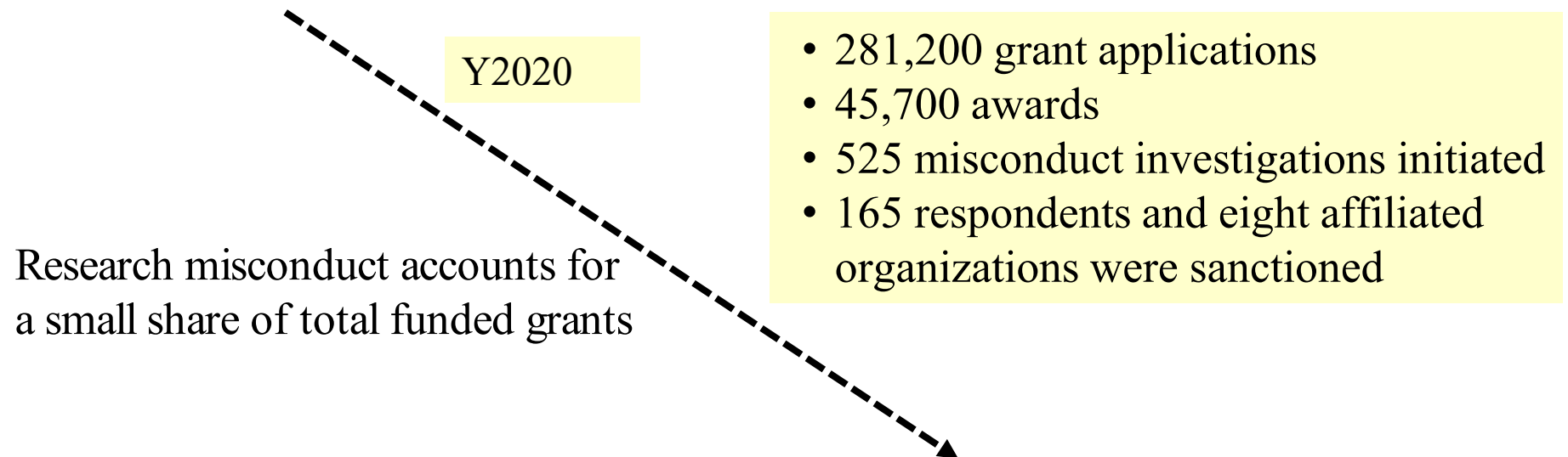
Figure 2. Country shares of retracted research and retracted funded articles



=> funding agencies **significant leverage** in shaping and promoting research integrity.

Public release of investigation results

- 211 decision notices
- 231 unique wrongdoers related to grants (1999–2021)
- 129 funded grants and 104 nonfunded applications (1999–2021)
- 68% of proven offenders are PIs



Detection mechanism

Misconduct identification mechanism

- Police patrol + Fire alarm
 - Grant plagiarism detected by software (21%);
 - Whistleblowing (29%)
 - Retracted NSFC-funded articles due to scientific misconduct (34%)

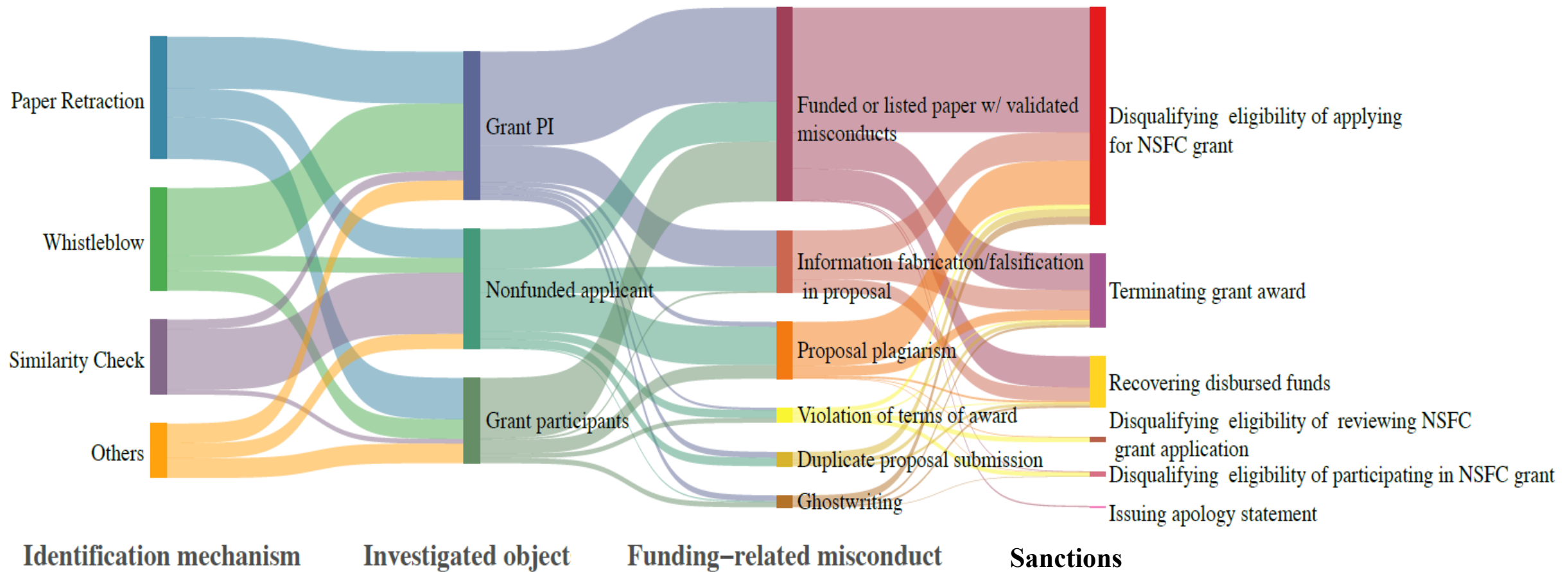
Correction

Remedy cost and punish wrongdoers

- Debarment of the individuals from receiving NSFC research grants
- Recoupment of grant money awarded
- Issuing apology statement
- Termination of award

3 key elements of misconducts sanctioned publicly

- Intent (i.e. knowing and willful)
- Materiality
- Preponderance of evidence



- Funded research: □ 50% misconduct investigations for **grant participants** are triggered by paper retractions.
- Nonfunded proposal: similarity check is the dominant mechanism of ID misconduct with main penalty of debarment.
- Both punitive and remedial measures are adopted.

Reflections & actions

- Publicized investigation is only the tip of iceberg of funding-related misconduct
- The large number of cases exposed indicates funders' commitment to curbing misconduct.
 - Limit # proposals & pubs an individual can submit
 - Release names of proposal reviewers
 - Earmark grants for integrity studies
 - Release investigation results
 - Other agencies follow (NHC)
 - One-vote veto of misconduct

Prospects

- A responsible and innovative China is critical to global community.
- China's integrity construction is on the move and will be continuing into future.
- Funding agencies can and should play bigger role in China's research integrity reform.
- For further advancement, systematic and orchestrated efforts from all stakeholders, within and beyond national borders, is a must.

Thank you!