Government R&D Policy for SMEs - Main in 2020 -

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* Total R&D Expenditures: more than 85 trillion KRW
<R&D Expenditures by Actor>

* Private sector invested approximately 69 trillion KRW

<Portion of R&D by Firm Scale>

* Large-sized enterprise
* Medium-sized enterprise
* Small-sized enterprise
* Venture company

Private sector invested approximately 69 trillion KRW.
Current Status of R&D for SMEs

R&D Support by Ministry of SMEs & Startups (MSS)

- About 1 trillion KRW per year during last 3 years
  - More than 840 million USD per year
- Categorized by object and scale
  - Start-ups or Incumbent Manufacturers
  - Industry-Academia-Research Partnership

<table>
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<th>Annual R&amp;D Budget (by 100 million KRW )</th>
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<td></td>
<td>2018</td>
</tr>
<tr>
<td>Original</td>
<td>Final</td>
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<td>10,917</td>
<td>11,036</td>
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- More than 1 trillion KRW per year during last 3 years
- More than 840 million USD per year

Target for R&D Support (SMEs)

- # of total SMES – 3.96 million
- # of SMEs with R&D demand – about 206,000
  - Among the, 12,000 firms carried out R&D
  - More than 50 million KRW R&D spending +
    - More than 1 researcher involved

* Source: KISTEP Report 2018
Outcome of R&D Investments for SMEs

2 of 11 Unicorn Companies in Korea received R&D Support by MSS

By providing R&D subsidy, MSS has supported start-up to grow up to Unicorn

Start-up can make huge performances even with small amount of R&D support

Viva Republica Ltd.

* After 5 years of R&D support by MSS, Viva Republica has grown up to Unicorn
  - Mobile application software for money transfer

Yellow Mobile Inc.

* Received R&D support by MSS
  - Biz model of venture-alliance
  - M&A by share exchange
Plan of Renovating R&D Support-system for SMEs

Support New Business Creation
- R&D support by phase - from idea to scale-up
- Focus on frontier technology (Industry 4.0)
- Technological autonomy - Material, component & equipment

Meet the demand by using various approach
- Type of venture capital investment
- Type of de-regulation
- Type of social-venture
- Type of do-over promotion

Industry-Academia-Research Partnership & Cooperation
- Increase cooperative R&D up to 50% - In terms of project number
- Matching tech-partner, R&D voucher
- Fraunhofer type entrust R&D
- Tech-Bridge R&D

Fair selection & convenient use
- Rookie First (foundation building)
- Enhance expertise in evaluation
- Block unfair competition
- Relieve the burden of failure
- Simplify application process
Plan of Renovating R&D Support-system for SMEs

Support New Business Creation – Industry 4.0

Support SMEs’ R&D by phase
- From idea to scale-up

Reform biz structure by supporting R&D by phase

- Challenge to new biz and make growth
- In the era of ‘Industry 4.0’
- Expand support in terms of period and scale

<plan to reform SMEs’ R&D supporting system>

1st stage (start)
- Tech. idea
- Market test

2nd stage (grow)
- Market competitiveness

3rd stage (mature)
- Globalization
- Frontier tech.

Innovation capacity building

- From start to grow until mature not vice versa
- exception: do-over, joint & strategic R&D

Focusing on frontier technologies (Industry 4.0)

Providing more than 200 billion KRW annually
- Frontier technologies ‘Industry 4.0’
  - System semiconductor, bio-technology, future car, cloud computing, AI, big-data, AR-VR, block-chain and so on.

Priority of AI – cross cutting technology & determinant of industrial innovation

System-semiconductor, bio-health & car of the future
- Funding more than 100 million KRW annually
  - System-semiconductor – Fabless company (design, R&D)
  - Bio-health (pharmaceuticals & medical device)
  - Car of the future (extinction of internal combustion engine)
Plan of Renovating R&D Support-system for SMEs

**Plan 1** Support New Business Creation – Industry 4.0

- Exempt duty of procurement
  * promote experimental-challenging R&D
- Expand period & amount of funding
  * Maximum 3 years/24 hundred million KRW
- Promote consortium R&D among large, middle and small companies

**01** Council for co-existing among companies*
- Support division-of-labor type cooperation between supplier-demander
  * Private council under the committee of material-component-equipment competitiveness

**02** Promote Reciprocal Joint R&D
- 100 Hidden Champs
  * preferential support on tech-firms
- Startup 100
  * SMEs w/ technological capacity in material, component, equipment

**03** Project of 100 Hidden Champs & 100 Start-ups

**04** Strategic Items R&D First
- Strategic fields: material, component & equipment
  * Preferential support
Plan of Renovating R&D Support-system for SMEs

Plan 2 Meet the R&D Demand with Various Approaches

**Investment Type R&D**

Private Investment First, Gov’t Matching Next

- By introducing type of venture investment, induce commercialization of innovative high-tech
- Re-design incentive scheme and share risk properly to promote high-risk/high-return R&D

**Type of De-regulation R&D**

Pre-eliminate obstacles in regulation

- Pre-respond to regulation (accreditation, certification) and eliminate regulatory obstacles
  - Package type support including consulting services

**Type of Social-Venture R&D**

Support the Creation of Social Value

- Evaluate separately for social-venture that can create social values such as welfare and pro-environmental effects
- By using innovative idea or technology

**Type of Do-Over R&D**

Biz Transition and Comeback

- Biz transition – Firms with clear plan will receive R&D support for biz transition
- Comeback – ‘Package projects for successful comeback’
  - Consulting, R&D and commercialization support
Plan of Renovating R&D Support-system for SMEs

Plan 3: Industry-Academia-Research Cooperation enforcement

Expand Tri-lateral R&D up to 50%

Expand Tech-Collaboration R&D (39%~50%)

- Encourage tri-lateral consortium and cooperation R&D

Fraunhofer Type Entrust R&D

Entrust Tech. Development to University & GRIs

Enhance Tech-Innovation by using national R&D Asset

- Individual demand – Entrust tech. development and boost recycle of initially unsuccessful product/technology
- Collective demand – GRIs and national labs develop common tech. and applied tech.

Promote Commercialization by

Tech-Bridge R&D

Tech. Transfer/Commercialization

- By utilizing Tech-Bridge (tech. transfer platform of Korea Technology Finance Corporation), transfer accumulated tech. owned by academia/research to SMEs and commercialize

Tri-lateral Cooperation Infra &

Global R&D

- Allow SMEs to use excellent human resources, R&D equipment and tech. infra at academia and research
- Promote joint R&D for global market targeting among SMEs, GRIs and local government
- To boost export toward ASEAN, India & Eurasia countries
Structure of R&D for SMEs

Firm Innovation (Individual)
- Mature Stage
  - Export-Oriented
  - Tech. Incubator Program For Start-up
- Grow Stage
  - Market-Expanding
  - Support Gazelle
  - Strategic Start-up
- Start Stage
  - Market-Oriented
  - Foothold Start-up

Open Innovation (Collaborative)
- Mature Stage
  - Commercialization of Foreign Tech.
  - Command Demand from local SMEs
- Grow Stage
  - Commercialization
  - Industry-Academia-Research Collabo
  - Tech-Bridge
- Start Stage
  - Leading Research Institute
  - Factory Quality
  - Collabo-Platorm
  - Tech. Holding Company

Policy Purpose
- D.N.A
- Local Industry
- Regulation
- Innovation Infra
- AI, Big-data, Smart-sensor, Smart city
- Locally specialized industry, Regulation-free zone
- Global accreditation
- R&D personnel, R&D equipment, networking
Thank you!
감사합니다!