

 **OPERATION OF THE GREEK NON-INTERCONNECTED ISLANDS (NII)**
Hellenic Electricity Distribution Network Operator S.A.

**Islands: Part of the solution to Europe's 2030
Climate and Energy Challenges**

EURELECTRIC Workshop
20 February 2017

Smartening the 32 Greek Island Systems

Kostas Komninos
Non Executive Member Board of Directors



 **HEDNO THE GREEK DSO** 

Hellenic Electricity Distribution Network Operator S.A.

HEDNO (Hellenic Electricity Distribution Network Operator S.A.) is the organizationally and functionally independent Company in Greece, which distribute electricity to **7,4 million customers** across the country, through Medium and Low Voltage Networks with a total length of **Distribution Lines of 236.000 km**. We employ about **6.500 people**



The **5th largest** Electricity Distribution Corporation in EU (based on the number of customers and the total length of its network)

02



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OUR MISSION

IS TO ENSURE

-  the proper operation, maintenance and development of the Distribution Network all over the country
-  the proper operation and management of the Non-Interconnected Islands (NII's) Electrical Systems
-  the access of Producers and Suppliers to the NII's Electrical Systems and the proper operation of the NII's Market in terms of transparency and impartiality.

03

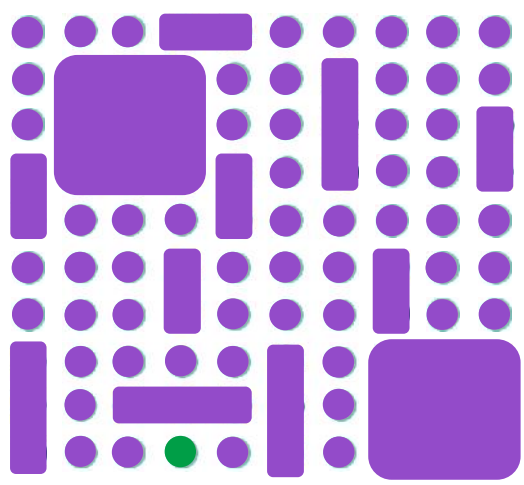


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NII Structure

- 60 Islands
- ↓
- 32 Electrical Systems (ES)
 - 11 ES consisting of 39 interconnected islands
 - 21 ES consisting of autonomus islands
- ↓
- 31 Isolated Microgrids
- 1 Small Isolated System (Crete)

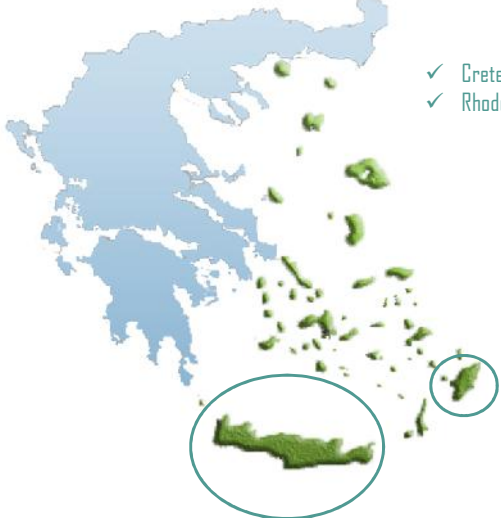


04

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NII Structure

- 32 Electrical Systems (ES)
- Categorized by Average Peak Demand (last 5 years)
 - Large (>100MW) : 2 ES



✓ Crete
✓ Rhodes

05

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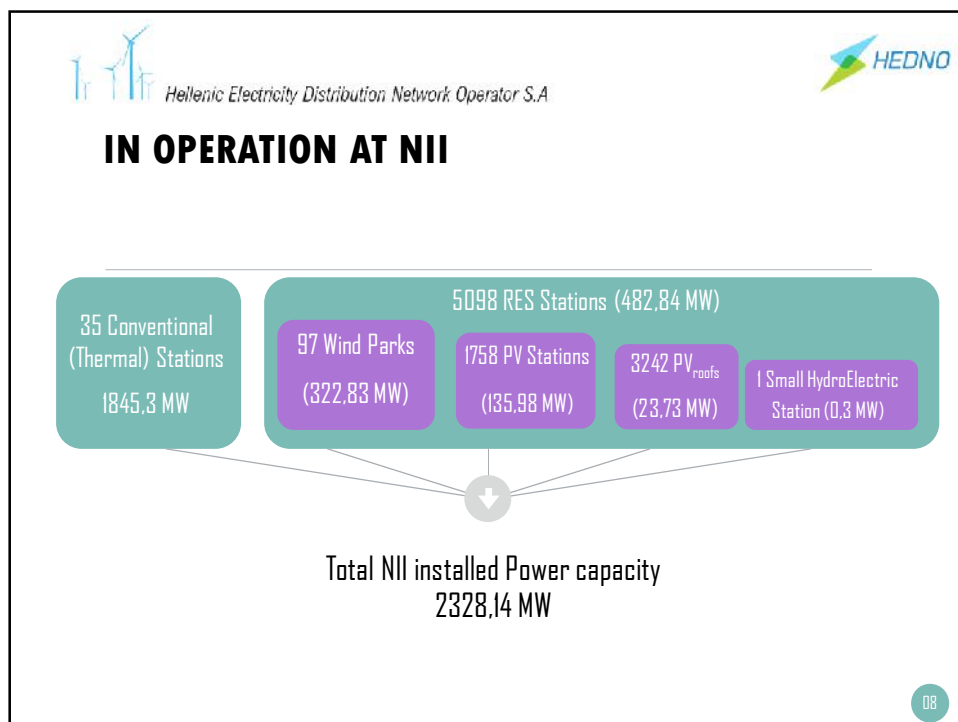
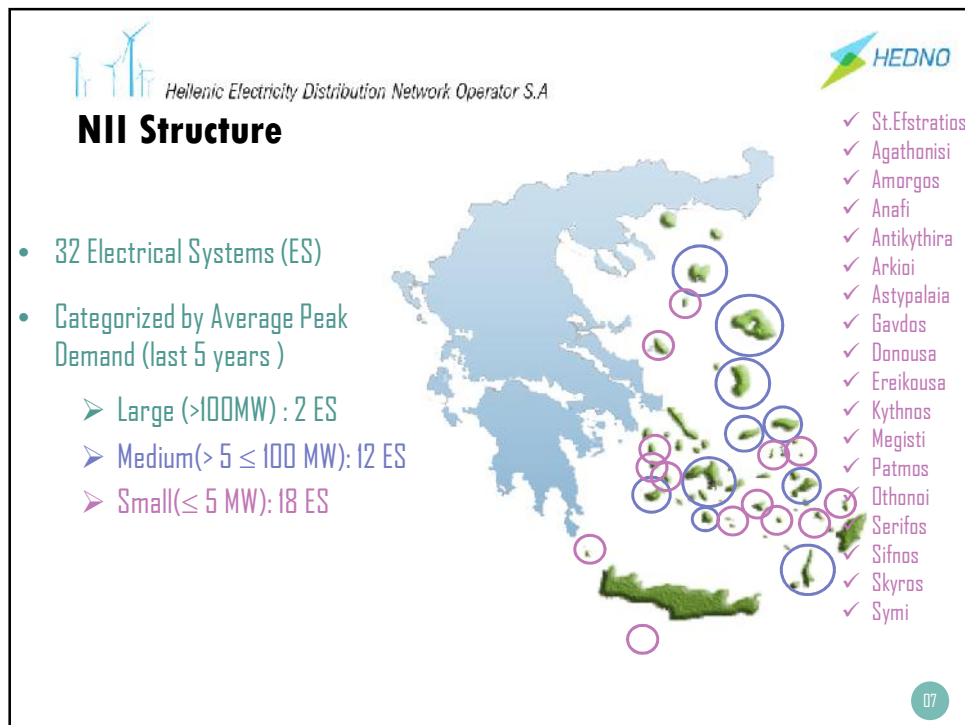
NII Structure

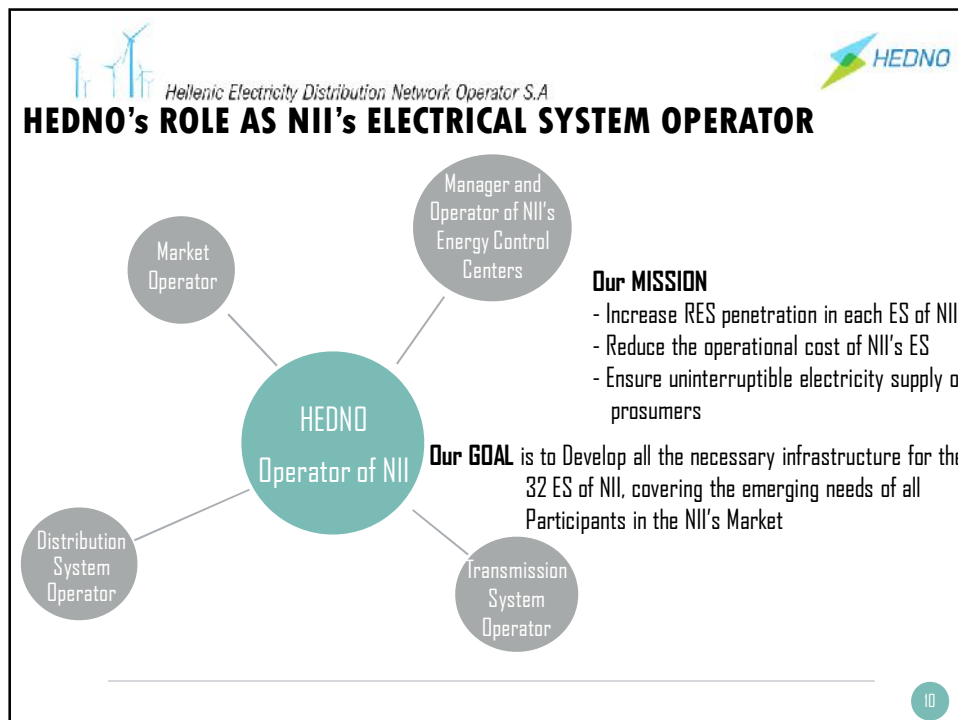
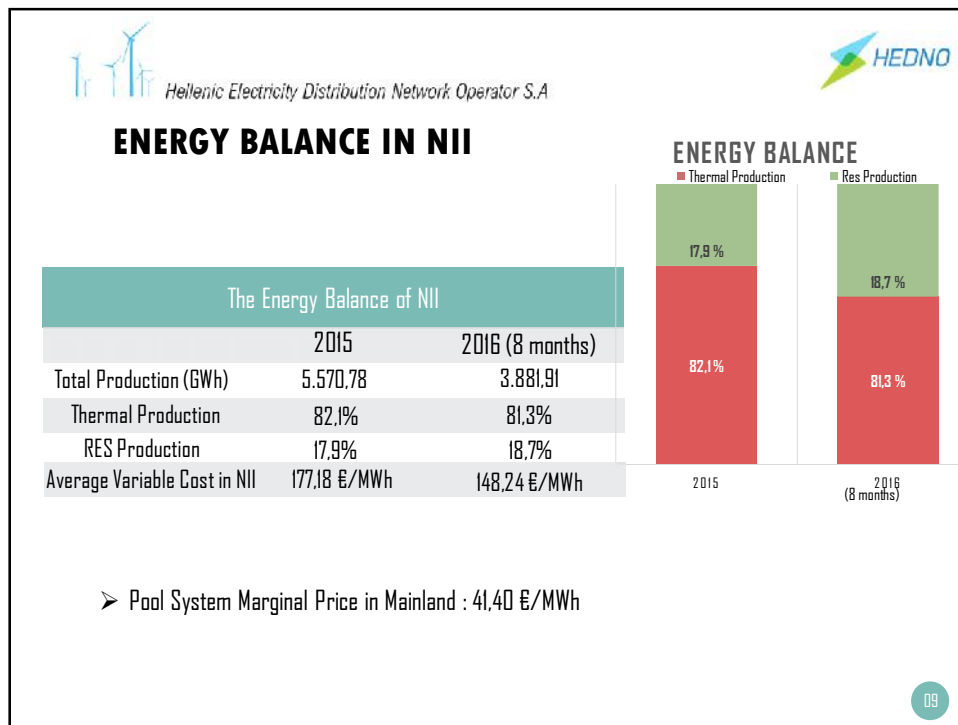
- 32 Electrical Systems (ES)
- Categorized by Average Peak Demand (last 5 years)
 - Large (>100MW) : 2 ES
 - Medium($> 5 \leq 100$ MW): 12 ES



✓ Paros
✓ Chios
✓ Mykonos
✓ Samos
✓ Syros
✓ Limnos
✓ Milos
✓ Ikaria
✓ Thira
✓ Karpathos
✓ Kos-kalymnos
✓ Lesvos

06







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SPECIFICS OF NII's ELECTRICAL SYSTEMS (ES)

- 01 Islands of different size, population and distance from the Mainland, without easy access at any time especially by the sea.
- 02 Large size range ES, with a peak consumption varying from 100 KW to 650 MW
- 03 High fluctuations of the demand both on a daily and monthly basis.
- 04 High production cost, in relation to the Pool System Marginal Price in Mainland
- 05 Isolated ES, without energy exchange ability, with direct bearing on ensuring the availability of energy supply

11



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SPECIFICS OF NII's ELECTRICAL SYSTEMS (ES)

- 06 Due to lack of interconnections with electrical systems of high inertia, the NII's ES face problems of voltage and frequency stability
- 07 High potential for RES due to very good wind regimes and solar irradiation levels
- 08 The max permissible RES penetration is limited due to the above specifics of operation of NII's ES.
- 09 The Market framework and legislation in Greece regarding the NII's ES operation is in progress

12



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OUR STRATEGY FOR NII

- HEDNO, as NII's Electrical System Operator, is committed to implement in the course of the following years (up to 2020) all the necessary infrastructure through which Smart Islands will transform from vision to reality.
- The operation of the Greek islands is unique in Europe and Smart Grid technologies can ensure the optimization of the management of NII's ES.
- Storage Systems are necessary to achieve ES with high RES penetration.
- Compliance to the
 - ✓ requirements of the NII code
 - ✓ European Commission's Decision for Greek NII
 - ✓ Greek Energy Regulatory Authority Decisions

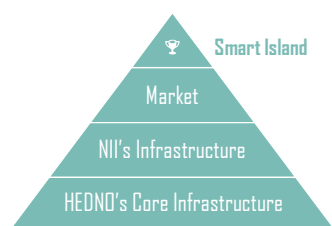
13



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OUR STRATEGIC PLAN FOR NII



HEDNO's Core Infrastructure

- Further implementation of Smart Metering Systems
- Digitalization and Data Management through smart and integrated systems

Market Infrastructure

- IT Systems
- Methodologies,
- Procedures

NII's Infrastructure

- Metering Infrastructure
- Methodological Infrastructure
- Energy Control Centers (ECC) in Athens, Grete and Rhodes
- Energy Control Centers (ECC) in the remain ES

Smart Island

- Design of a pilot Smart Island and formation of appropriate framework for the development and implementation of the project

14


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DEVELOPMENT OF SMART ISLAND



Smart Island

Design of a pilot Smart Island and formation of appropriate framework for the development and implementation of the project aiming at the proper operation and management of a pilot Electrical System of NII with very high RES penetration (annual energy penetration greater than 60% of the total demand of ES).

15


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DEVELOPMENT OF SMART ISLAND



Smart Island

The objectives of this innovative project are:

- the increase of RES penetration
- the reduction of the operational cost
- the positive contribution to the environmental protection
- the saving of resources
- to ensure reliable and uninterrupted supply of electricity

16


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DEVELOPMENT OF SMART ISLAND

The basic framework of principles, operation and management rules of the Smart Island, has already been drafted, on which the approval is anticipated, so that the needed framework of the project can then be drafted.



Smart Island

Following the adaptation of the relevant legislative and regulatory arrangements a Tender procedure will be held in order to designate the appropriate investment body, to which the project will be assigned

- Completion date estimation - 2018

17


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THANK YOU

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Islands: Part of the solution to Europe's 2030 Climate and Energy Challenges

EURELECTRIC Workshop

20 February 2017

The Initiatives of European Island Authorities

- ✓ **Pact of Islands**
- ✓ **Smart Islands Initiative**



Kostas Komninos

Director, Network of Sustainable Greek Islands

DAFNI

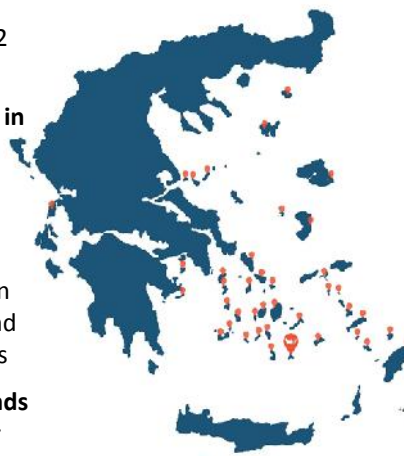
Network of Sustainable Greek Islands



The DAFNI network



- ❖ **DAFNI is a network of island local authorities**
- ❖ **DAFNI is a non profit organisation**
- ❖ **DAFNI has 42 members**, 40 Municipal and 2 Regional members
- ❖ **DAFNI promotes sustainable development in Greek islands** through integrated actions in the fields of energy, water, waste, mobility, environment and local development
- ❖ **DAFNI is founding member of the Pact of Islands**, initiative promoting sustainability in EU islands through local energy planning and engagement of local authorities and citizens
- ❖ **DAFNI is the coordinator of the Smart Islands Initiative** promoting islands as test beds for innovative projects



Opportunities for Islands

- ❖ Many islands regions (NI ones), unlike mainland regions, are **producing locally CO2 emissions** in their territories and can commit to reduce them.
- ❖ Islands **host locally all the energy, water, waste and waste water management utilities**. The integrated management of these infrastructures may create interesting paradigms and accumulated results.
- ❖ Insularity issues faced by islands are in many cases **similar with the insularity issues faced by mountainous and geographically isolated areas** of continental Europe. The experiences of islands can be easily replicated and transferred to these areas too.
- ❖ **Innovative investments** such as smart grids, energy storage and efficiency **have a much higher impact on islands**; especially non-interconnected ones.
- ❖ **Islands can function as test beds** for different innovative technologies in the sustainability area which then can be scaled up to towns and cities of continental Europe

Islands as test-beds

EURELECTRIC report – June 2012

“EU islands: Towards a sustainable energy future”

The report makes the following recommendations to national and European policymakers to incentivise the transition towards a sustainable energy future

1. *Set up an EU Island Sustainable Energy Action Plan 2020*
2. *Improve security of supply through diversification of power generation technologies, as well as interconnection where possible*
3. *Use islands as **a priority test-bed for innovative technologies** such as storage, smart grids and RES. Foster RD&D on islands*
4. *Use exemptions appropriately and address the market failures that often occur as a result of limited size and isolation*

Platforms for pilot initiatives

Winter Package Communication from the Commission

“Clean Energy For All Europeans”

ANNEX 2: Action to boost the clean energy transition

Chapter 8. Governance and partnerships for effective delivery

“Islands and island regions provide **platforms for pilot initiatives on clean energy transition and can serve as showcases at international level**, as, for instance, in the EU's outermost regions with the case of El Hierro (Canary Islands), 100% renewable energy island. The **Commission would like to help** accelerate the development and adoption of best available technologies on islands and island regions, including exchange of best practice in financing and legal and regulatory regimes, and in energy for transport. The first step is to **bring the islands themselves together, regardless of their size, geography or their location.**”

The Initiatives of European Island Authorities

The Pact of Islands



Pact of Islands – How it all started



64 signatories from:

- ✓ Cyprus
- ✓ Denmark
- ✓ Estonia
- ✓ Greece
- ✓ Italy
- ✓ Malta
- ✓ Spain
- ✓ Sweden
- ✓ Portugal
- ✓ United Kingdom

- ❖ EU supported initiative launched in 2011 under the ISLE-PACT project, co-funded by DG-ENERGY, to promote local sustainable energy planning taking into account the special characteristics of islands
- ❖ An initiative in liaison to the Covenant of Mayors but focusing on the islands' special characteristics
- ❖ Island Sustainable Energy Action Plans (iSEAPs) and Bankable Projects produced for the signatories
- ❖ Methodologies and tools for planning and monitoring the iSEAPs provided to the signatories

Commitments

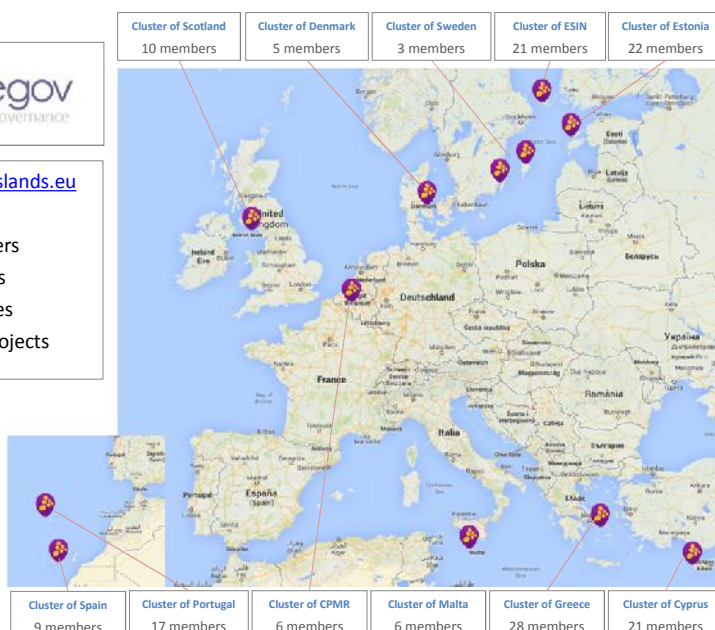
- ❖ To submit an iSEAP one year after signing the Pol
- ❖ To monitor and update the iSEAP at least every 2 years
- ❖ To realise projects contributing to the EU2020 KPIs

Sustainable Islands of Europe



www.sustainableislands.eu

150 members
11 clusters
250 trainees
61 bankable projects



Current Pol Signatories

Signatories = Islands

1. Cyprus – **16** municipalities
2. Denmark – **1** island
3. Estonia – **3** islands
4. Finland – **4** islands
5. France – **5** islands
6. Greece – **32** islands
7. Ireland – **1** island
8. Italy – **11** islands
9. Malta – **5** municipalities
10. Portugal – **11** islands
11. Spain – **11** islands
12. Sweden – **11** islands
13. UK – **1** island
14. Cape Verde – **10** islands

117 islands have signed the
Pact of Islands as of today

The Initiatives of European Island Authorities

The Smart Islands Initiative



Smart Islands Initiative

Following up on the SMILEGOV Smart Islands Strategy the Smart Islands Initiative seeks to demonstrate that **islands can host innovative projects and produce knowledge on smart and efficient resource and infrastructure management**, which may be then transferred in mountainous, rural and generally geographically isolated areas but also scaled-up in big cities of continental Europe and beyond

SI Initiative advocates in favour of a place-based, transformative development agenda that taps into islands' competitive advantages, generates local growth and prosperity and contributes to EU policy goals in the fields of

- ❑ energy, climate,
- ❑ innovation, circular economy,
- ❑ transport and mobility,
- ❑ blue growth, and
- ❑ the digital agenda

Where we stand today

1. **1st Smart Islands Forum** took place in Athens in June 2016 with the participation of over 40 island representatives from Croatia, Cyprus, Denmark, Finland, France, Germany, Greece, Italy, Malta, Spain, Sweden, the Netherlands and the UK setting the foundations for the Initiative
2. **Smart Islands Own Declaration** is currently being signed by local island authorities and Letters of Support to the Initiative are signed by representatives of the Quadruple Helix
3. **Smart Islands Event: Creating new pathways for EU islands** is planned and organised for **28 March 2017** as an outgoing Brussels event with the support of MEPs to present to key stakeholders the Initiative

Thank you



BRUSSELS EVENT
Smart Islands – Creating new
pathways for EU islands

28th March 2017
European Parliament

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